Abstract Book

2021 IASR/AFSP International Summit on Suicide Research

International Academy of Suicide Research

American Foundation for Suicide Prevention

PLENARY AND SPECIAL SESSION

SUNDAY, OCTOBER 24, 2021
8:45 AM - 9:15 AM

1. PLENARY SPECIAL SESSION: COVID-19

Chair: Gil Zalsman, Geha Mental Health Center, Sackler School of Medicine, Tel Aviv University

1.1 SUICIDE RISK AND PREVENTION DURING THE COVID-19 PANDEMIC

David Gunnell, University of Bristol

Individual Abstract: The substantial global disruption to populations, health systems and economies caused by the COVID-19 pandemic may be associated with short-term and long-term effects on suicidal behaviour and suicide deaths. The magnitude and duration of these effects is likely to differ in different countries and in different cohorts within countries depending on the severity of the pandemic, national and local responses to the pandemic, and underlying characteristics of the communities.
Drawing on the work of the International COVID19 Suicide Prevention and Research Collaboration (ICSPRC) – a collaboration with members from over 40 countries - this talk will highlight the most recent evidence about the effect of the pandemic on suicidal behaviour in several locations around the globe and outline priorities for suicide prevention in coming months.

11:00 AM - 12:00 PM

2. NEW UNDERSTANDING OF THE NEUROBIOLOGY OF SUICIDE

Chair: Gustavo Turecki, McGill University

2.2 HOW BRAIN IMAGING HAS ADVANCED OUR UNDERSTANDING OF SUICIDAL BEHAVIOR

John Mann, Columbia University and New York State Psychiatric Institute

Individual Abstract: Neurotransmitter system and neuroinflammation PET imaging studies that show both state-dependent and trait biological components of the suicide risk phenotype. Serotonin 5-HT1A autoreceptor binding is influenced by genetic and epigenetic mechanisms and is a trait that regulates serotonin neuron firing and release. Both postmortem studies of suicide decedents and PET studies of depressed patients who go on to make suicide attempts have higher 5-HT1A autoreceptor binding, an effect that results in less serotonin firing and release. PET serotonin abnormalities correlate with state-dependent HPA stress responses and to inflammatory markers related to suicidal behavior risk. HPA axis overactivity is state-dependent and also correlated with elevated suicide risk in mood disorders, perhaps via trait glucocorticoid receptor impaired function. Elevation in 5-HT1A autoreceptor binding

correlates with greater cortisol stress response and with indices of greater peripheral inflammation. Genetic and epigenetic mechanisms underly altered function in these systems and childhood adversity may contribute via a common epigenetic mechanism. Inflammation is more state-dependent than serotonin function, and like HPA axis, the immune system responds to sterile stress. Brain TSPO binding correlates with severity of current suicidal ideation and depression raising the question of cause and effect. Longitudinal studies are needed to determine if inflammation drives suicidal ideation and depression or the reverse. Such questions are crucial for prevention. The answers tell us if SSRIs lowering autoreceptor binding and reducing neuroinflammation with anti-inflammatory medication or ketamine help prevent suicidal behavior.

2.3 INFLAMMATION AND SUICIDAL BEHAVIOR

Lena Brundin, Van Andel Research Institute

Individual Abstract: Suicide is a major global problem, claiming over 700,000 lives every year. The neurobiological underpinnings of suicidal behavior are not fully understood, although the patients frequently display elevated levels of inflammation both in the central nervous system (CNS) and the peripheral blood. Increasing evidence indicates that inflammation is linked to a dysregulation of the enzymatic kynurenine pathway in suicidal patients, resulting in an imbalance of neuroactive metabolites. Specifically, an increase in the levels of the NMDA receptor agonist quinolinic acid and a decrease in other metabolites have been observed in suicidal patients and may contribute to the development of suicidal behavior via changes in glutamate neurotransmission. The cause of the inflammation and dysregulation of kynurenine metabolites in suicidality is not known, but could potentially involve infectious triggers, pro-inflammatory alterations in the gut microbiome, and a differential activity of the kynurenine pathway enzymes.
In conclusion, inflammatory markers and kynurenine pathway metabolites show promise for the development of biomarkers in suicide risk assessments. Moreover, targeting inflammation, its underlying causes, as well as the kynurenine pathway enzymes, may provide novel therapeutic approaches for managing suicidal behavior.

MONDAY, OCTOBER 25, 2021

9:30 AM - 10:30 AM

3. PREDICTION OF ACUTE SUICIDE RISK

Chair: Ping Qin, National Centre for Suicide Research and Prevention, University of Oslo

3.1 UNDERSTANDING THE TRANSITION FROM SUICIDAL IDEATION TO SUICIDAL ATTEMPTS

Rory O'Connor, University of Glasgow

Individual Abstract: Background: Suicide and self-harm are major public health concerns with complex aetiologies which encompass a multifaceted array of risk and protective factors.

There is growing recognition that we need to move beyond psychiatric categories to further our understanding of the pathways to both. Although there have been many advances in our understanding of suicide risk, our ability to predict suicidal behaviour remains no better than chance. New approaches to predicting suicidal behaviour focus on distinguishing between those who think about suicide and those who attempt suicide.

Methods: Although a comprehensive understanding of these determinants of suicidality requires an appreciation of biological, psychological and social perspectives, the focus in this presentation is primarily on the psychological determinants of self-harm and suicide. The Integrated Motivational–Volitional (IMV) Model of Suicidal Behaviour (O'Connor, 2011; O'Connor & Kirtley, 2018) provides a framework in which to understand suicide and self-harm. This tripartite model maps the relationship between background factors and trigger events, and the development of suicidal ideation/intent through to suicidal behaviour.

Findings: We propose that defeat and entrapment drive the emergence of suicidal ideation and that a group of factors, entitled volitional moderators, govern the transition from suicidal ideation to suicidal behaviour. According to the IMV model, volitional moderators include access to the means of suicide, exposure to suicidal behaviour, capability for suicide (fearlessness about death and increased physical pain tolerance), planning, impulsivity, mental imagery and past suicidal behaviour. I will present a selection of empirical studies derived from the IMV model – and beyond – to illustrate how psychosocial factors increase suicide risk and what can be done to ameliorate such risk.

Discussion. The IMV model identifies 8 key pillars that govern the transition from suicidal thoughts to suicide attempts. Clinical interventions need to target the volitional phase factors to reduce the likelihood that suicidal thoughts are acted upon. The implications for the prevention of self-harm and suicide will also be discussed.

3.2 NEUROIMAGING TO REAL-TIME MONITORING: IMPROVING THE PREDICTION OF ADOLESCENT SUICIDE

Randy Auerbach, Columbia University

Individual Abstract: Despite efforts to prevent suicide, rates within the United States are climbing, and suicide is now the second leading cause of death for adolescents. Although many distal risk factors are known, understanding imminent risk has remained elusive. Improving the short-term prediction of suicidal behavior among adolescents is critical, and the diathesis-stress model of suicidal behavior provides a framework to develop interpretable models that are informed by theory and ideally, will inform theory. Accordingly, the presentation will focus on the role of social processes—across different units of analysis ranging from neuroimaging to real-time monitoring—in the service of understanding risk for adolescent suicidal behaviors. First, the presentation will highlight neural and electrophysiological findings differentiating adolescent suicide ideators from attempters. Second, the presentation will focus on data across a series of studies that underscore the importance of probing interpersonal stress as a proximal process related to adolescent suicidal behaviors. Last, data from several ongoing projects will highlight the importance of acquiring both ecological momentary assessment and mobile sensing data (e.g., geolocation) in the service of improving the short-term prediction of suicidal behaviors. Guided by the diathesis-stress model of suicide and research implicating known risk factors, the presentation will feature risk domains that span proximal and distal predictors

seeking to improve short-term prediction of suicide in adolescents. Ultimately, identifying imminent risk factors and processes for suicide will save lives and have an enormous potential public health impact.

12:15 p.m. - 1:00 p.m.

4. HOW THE NIMH IMPACTS SUICIDE PREVENTION: TRANSLATING FUNDED RESEARCH INTO HEALTH CARE POLICY AND CLINICAL PRACTICE TO LOWER SUICIDE RATES

Chair: Christine Moutier, American Foundation for Suicide Prevention

Moderator: Maria Oquendo, University of Pennsylvania

4.1 HOW THE NIMH IMPACTS SUICIDE PREVENTION: TRANSLATING FUNDED RESEARCH INTO HEALTH CARE POLICY AND CLINICAL PRACTICE TO LOWER SUICIDE RATES

Joshua Gordon, National Institute of Mental Health

Individual Abstract: The first half of the 45 minute session will feature a talk by the head of NIMH, Josh Gordon, in which he will describe the NIMH research portfolio on suicide research and explain the NIMH vision for a pathway to improving suicide prevention and how research funding can make that happen. In the second half of the session, Maria Oquendo will ask a series of questions from a researcher's perspective about how well the research funding priorities of NIMH matches with what suicide researchers think are important opportunities and questions. The final 10 minutes will give the audience a chance to ask Josh Gordon questions, moderated by Christine Moutier.

TUESDAY, OCTOBER 26, 2021

9:30 AM - 10:30 AM

5. SYSTEM LEVEL SUICIDE PREVENTION

Chair: Marco Sarchiapone, University of Molise

5.1 SELECTED TREATMENT AND INTERVENTION FOR SELF-HARMING PATIENTS IN SECONDARY HEALTHCARE SYSTEM IN NORWAY

Ping Qin, National Centre for Suicide Research and Prevention, University of Oslo

Individual Abstract: Deliberate self-harm (DSH) is a frequent cause of presentation to emergency clinics and denotes a strong predictor for suicide and premature mortality. Consequently, appropriate psychiatric care and intervention following self-harm somatic treatment is of great importance in clinical management and could have a profound influence on the patient's life in both short- and long-terms. Although clinical guidelines for treatment of patients with self-harm have been available in a number of countries including Norway, the evidence-base to guide this management is sparse. Population studies with real-life data from

routine care are therefore important to get an unbiased and full picture of what follow-up psychiatric care is delivered and what effect it has on the patients' health prospectively. Using the rich source of data from Norwegian registries, I will present an overview of follow-up psychiatric healthcare received by DSH patients presenting to secondary healthcare system, with regard to psychiatric referral and treatment attendance as well as the associated risks of prospective mortalities by suicide and other causes. Briefly, of the national cohort of DSH patients, 16% received a direct referral to psychiatric services after somatic treatment of DSH, 51% attended psychiatric treatment subsequently, and 16.3% died during the follow-up up to 10 years. Patients´ attendance in psychiatric treatment was associated with reduced mortality with more pronounced effect for death by suicide and in patients of middle age or with a clear intent of self-harm. Patients with a psychiatric referral but no subsequent treatment attendance represented a group with the highest risk for suicide and other cause mortality both in short- and long-terms. These insightful findings underscore the importance of liaison psychiatry in somatic emergency services treating patients with self-harm and highlight the gravity of patients´ attendance and engagement in the follow-up psychiatric care.

5.2 LESSONS FROM SUICIDE PREVENTION EFFORTS IN ENGLAND

Nav Kapur, University of Manchester

Individual Abstract: In England, as in much of the world, suicide rates have varied over time. The trend over the past 20 years or so has been one of falling suicide rates but with evidence of a recession-related increase from 2007-2012 and a more recent rise in 2018 and 2019. Suicide prevention has been focused around a broad national strategy since 2002 with major updates to the strategy in 2012 and 2016. In this talk I will describe the main community, public health, and mental health developments in England, investigate their possible impact, and discuss the implications for the future prevention of suicide with a particular focus on systems-based approaches.

WEDNESDAY, OCTOBER 27, 2021

8:00 AM - 9:00 AM

6. PERSPECTIVES ON THE FUTURE OF SUICIDE RESEARCH

Chair: Jill Harkavy-Friedman, American Foundation for Suicide Prevention

6.1 ETHICAL AND AFETY ISSUES IN SUICIDE RESEARCH: ONGOING AND CURRENT CHALLENGES

Jane Pearson, National Institute of Mental Health

Individual Abstract: Conducting suicide research presents a range of safety and ethical questions. As the field progresses, investigators' approaches need to be updated to consider current risks and benefits in their research designs and study protocols. This presentation will consider examples of cross-cutting safety and ethical issues and consider emerging challenges for those utilizing mobile health (mHealth) paradigms (e.g., use of mobile and wireless devices). Cross-cutting issues appear in multiple aspects of the conduct of research, and

include: Research Design--Is the study setting and population appropriate for the aims of a suicide relevant research project with regard to safety, ethical approaches, and the knowledge to be gained? For suicide prevention trials, does the design allow for a comparator that is both informative and ethical? Informed Consent--What elements should be considered for inclusion as part of the informed consent process? Monitoring and Reporting--What level of data and safety monitoring is appropriate for the study? What are the adverse events and side effect reporting expectations for the study? What unique issues arise in monitoring and reporting in multi-site trials? What risk management and data and safety monitoring elements are appropriate to include in non-intervention studies? Responding to Suicidal Crises and Clinical Worsening-- What study procedures need to be in place to respond to suicidal crises and clinical worsening that occur during the study? End of Study Participation--What are the issues to anticipate and plan for when participants come to the end of their study participation due to early termination (e.g., patient worsening), study completion, or a participant death? In the case of a study participant death, what protocol is in place for contact with the family, and support of research staff? Regulatory Oversight--What issues and resources are useful to keep in mind when bringing suicide relevant studies to oversight boards for regulatory review?

6.2 PERSPECTIVES ON THE FUTURE OF SUICIDE RESEARCH

Merete Nordentoft, DRISP, Danish Research Institute for Suicide Prevention, Mental Health Center Copenhagen

Individual Abstract: Suicide is still a huge public health problem with 800,000 deaths per year. Some countries have experienced declining trends, especially in Asia, partly due to restrictions in access to highly lethal pesticides. USA are facing increasing trends and in many western European countries there has been declining tendencies, but most recently rates have been rather stable.

Suicide preventive strategies have focused on universal prevention, thus intervention targeting the who population, selective prevention aiming to reduce risk in different high-risk groups, and indicated prevention targeting people who are already having suicidal behavior. However, the distinction between universal, selective and indicated prevention needs to be specified into situation-specific prevention, since suicidal behaviour and intention fluctuate. Even for a person with a very high risk of suicide, survival is by far the most likely outcome each day. In most cases, suicidal acts are carried out within a short period of time, and in many cases without a long period of warning signals. In a way, suicidal acts resemble heart attacks or epileptic episodes more than other complications that often develop slowly and gradually. This makes the task of creating awareness programmes even more difficult.

However, a thorough mapping of risk groups and risk situations will enable us to plan a more targeted intervention. Thus, epidemiology and clinical research can play together. The suicide rates in different risk groups will be presented and linked to considerations about which interventions are needed.

The most important task is to identify those of immediate risk of suicide and provide treatment and support. There are four distinct risk groups with a very high suicide rate. These are 1) people sent home from psychiatric emergency room visits, 2) people recently discharged from psychiatric hospitalization 3) people who were hospitalized due to attempted suicide 4) people who have called life-line or other NGO-driven helplines because of suicidal thoughts. All these four groups have a very high risk of suicide and the help they are offered are in most countries fragmented and not well organized

It can be helpful to evaluate the population attributable risk associated with different risk factors. The population attributable risk is an estimate of the proportion of the problem that could be avoided if the increased risk in a specific risk group could be reduced to the level of the general population. This approach will be demonstrated.

Interventions involve persons who will never commit a suicidal act, and they also involve monitoring persons in high-risk groups for long periods with no suicidal acts.

Sunday, October 24, 2021

CONCURRENT SYMPOSIUM SESSIONS
9:15 AM - 10:45 AM

1. THE IMPORTANCE OF STUDYING SUICIDE IDEATION AS AN OUTCOME IN YOUTH

Chair: Catherine Glenn, Old Dominion University
Co-Chair: Adam Miller, The University of North Carolina at Chapel Hill

Overall Abstract Details: Suicidal thoughts and behaviors are a major public health concern in youth. Suicide is the 2nd leading cause of death among young people (10 to 24 years old), and suicidal thoughts and non-fatal suicidal behaviors are even more common in this age group. Notably, adolescence is a critical time period for the onset and escalation of suicidal thinking. Suicide ideation typically begins during early adolescence and rates increase drastically during this developmental stage. The onset of suicidal ideation is associated with developmental pathways toward recurrent, persistent, and escalating suicidal thoughts, as well as higher risk for suicidal behavior. It is clear adolescence presents a critical opportunity to intervene and prevent suicide ideation and contribute to more optimal development into adulthood. Moreover, suicide ideation is undoubtedly a key intervention target for suicide prevention in adolescence, even among youth who have already developed suicidal behavior. Prevention and treatments that target suicide ideation will prevent adolescent deaths by suicide.

Despite the importance of understanding and intervening on suicide ideation during adolescence, there is a growing sentiment in the field that research should focus primarily on suicidal behavior. This viewpoint is evidenced in grant and manuscript reviews that question the utility of studying suicide ideation as an outcome. However, this narrow focus on suicidal behavior fails to recognize the multitude of reasons that studying suicide ideation is critical for prevention and reducing distress and impairment among those with suicide ideation (Jobes and Joiner, 2019; Kleiman, 2020). The presentations in this symposium will discuss the critical importance of studying suicide ideation among adolescents.

First, Dr. Adam Miller will begin the symposium with a critical overview of the arguments for studying suicide ideation among youth, as well as key future research directions needed to prevent escalation of suicidal thought and behaviors in youth. This presentation will set the stage for the talks that follow. Next, Ilana Gratch will discuss the importance of careful assessment of suicidal thoughts in youth. Specifically, she will present findings from a recent study that compares single vs. multi-item assessment approaches, highlights how briefer tools may miss important presence of passive suicide ideation, and illustrates how multi-item assessment provides a more accurate and nuanced clinical picture of suicidal thinking among adolescents. Third, Dr. Jessica Hamilton will discuss the importance of using intensive longitudinal designs to elucidate time-varying and proximal risk factors for suicidal ideation in youth. Using an idiographic approach and intensive monitoring design, she will discuss findings from a recent study that evaluated two time-varying and modifiable risk factors for suicide ideation in adolescents – sleep quality and affective reactivity to interpersonal events.

Fourth, Emily Hutchinson will discuss the importance of studying suicide ideation in adolescents during critical time periods, such as during the COVID-19 pandemic. She will present a recent study examining how parent-adolescent connectedness and conflict relate to youth's suicide ideation during COVID. Finally, Dr. Regina Miranda, the discussant, will help to integrate the presentations and provide critical discussion of next steps in research on suicide ideation among adolescents.

1.1 WE STILL NEED TO KNOW WHY YOUTH THINK ABOUT SUICIDE

Adam Miller*[1], Catherine Glenn[2], Caroline Oppenheimer[3]

[1]The University of North Carolina at Chapel Hill, [2]Old Dominion University, [3]University of Pittsburgh Medical Center

Individual Abstract: Rates of suicidal ideation and behavior are higher than suicide death and associated with substantial emotional and financial burdens. As many as 18% of U.S. high school students will report that they have seriously considered suicide in the past year (Ivey-Stephenson et al., 2020). As suicide researchers, we must not lose sight of the importance in studying suicidal ideation as an outcome to prevent morbidity and mortality. This talk will present a recent invited paper highlighting critical areas of future research on suicidal ideation in youth.

Recently, several suicide researchers have articulated theoretical models that fall within an "ideation-to-action" framework, and these models have influenced current research and funding priorities. These models emphasize that the majority of individuals with suicidal ideation never go on to attempt suicide and call for research aimed at predicting the transition to suicidal behavior. We agree that this is an important question. However, the strong push in the field for research focusing on the transition from suicidal thoughts to suicidal behavior might suggest to some that it is only worthwhile to study this point in the pathway to suicide – to the exclusion of understanding how other forms of self-injurious thoughts and behaviors develop, such as suicidal ideation. Indeed, this troubling feedback has been received on manuscripts, grant applications, and presentations by national leaders in this area.

We argue that understanding the developmental course of suicidal ideation from early childhood throughout emerging adulthood is critical for reducing morbidity and mortality. Suicidal ideation is associated with significant distress and impaired functioning for children and their families, even in the absence of suicidal behavior. Youth with (vs. without) suicidal ideation had more problem behaviors, poorer overall functioning, lower self-esteem, poorer interpersonal relationships, lower salaries, and less residential independence by age 30 (Reinherz et al., 2006). Moreover, there are still many unanswered, but important, questions regarding the emergence and maintenance of suicidal ideation.

We will present these arguments as well as key future directions needed to prevent suicidal ideation in youth. These include:

1. Research aimed at better understanding the developmental course of suicidal ideation. The onset of suicidal ideation represents a critical inflection point in youth development starting a path to potentially persistent and escalating self-injurious thoughts and behaviors. We know little about factors that predict the onset of passive or active suicidal ideation, especially among preteens. The identification of early risk trajectories is one of the core principles of developmental psychopathology.

2. Longitudinal research aimed at carefully and comprehensively studying how suicidal ideation develops in relation to other self-injurious thoughts and behaviors. For example, some aspects of suicidal ideation emerge prior to NSSI, whereas others develop after NSSI.

3. Refine models of who develops suicidal ideation to prevent escalation towards behavior. We need developmental models that articulate under what conditions and when suicidal ideation will develop and progress.

4. Research on the dynamic nature of suicidal ideation. We frequently treat suicidal ideation as a between person, static variable. However, emerging work from ecological momentary data uncovers significant variability and associated outcomes in suicidal ideation across hours and days.

Research on suicidal behavior is important, but not to the exclusion or disregard for research on suicidal ideation.

1.2 COMPARING MULTI- AND SINGLE-ITEM ASSESSMENT OF SUICIDAL IDEATION AMONG ADOLESCENTS

Ilana Gratch*[1], Katherine Tezanos[1], Sara Fernandes[1], Kerri-Anne Bell[1], Olivia Pollak[2], Christine B. Cha[1]

[1]Teachers College, Columbia University, [2]The University of North Carolina at Chapel Hill

Individual Abstract: Background: There exist several barriers to routine assessment of suicidal thinking in adolescents across settings, including insufficient time, tools, and training. Such barriers may result in the use of brief or even single-item assessments of suicidal thoughts. While single-item assessments offer an alternative to those that are more burdensome to implement, prior research suggests that single-item approaches can result in misclassification. In the present study, we sought to compare single and multi-item assessment of suicidal thinking in adolescents, and to examine ideation severity and demographic factors associated with different response profiles.

Adolescents (n=206) were recruited from the community. Participants completed a lab visit, including the Self-Injurious Thoughts and Behaviors Interview-Revised (SITBI-R) and self-report questionnaires assessing ideation severity and demographics. The present study focuses on two questions from the SITBI-R: (1) Have you ever thought about killing yourself? (i.e., single-item screener question) and (2) Which of the following thoughts have you had (i.e., multi-item follow-up assessment listing nine specific suicidal thoughts, including passive and

active thoughts). All participants were asked both questions. Participants were classified into six distinct profiles based on their responses to the screener question, “Have you ever thought about killing yourself?” (Yes=Pos; No=Neg), and their subsequent endorsement of specific thoughts in the multi-item follow-up assessment (Endorsed at least one active thought = Active; Endorsed at least one passive thought and no active thoughts = Passive; Did not endorse any follow up-items = None).

The following response profiles emerged: Pos/Active (n=78), Pos/Passive (n=21), Pos/None (n=4), Neg/Active (n=1), Neg/Passive (n=41), and Neg/None (n=73).

Notably, individuals in the Neg/Passive group did not differ significantly in terms of ideation severity or demographics from the Pos/Passive group. Individuals in the Neg/Passive group reported more severe ideation ($p < .001$) than the Neg/None group, and reported lower ideation severity ($p < .001$) than the Pos/Active group.

Individuals in the Pos/Active group were older ($M = 17.9$, $SD = 1.4$; $p = .04$) than those in the Pos/Passive group ($M = 16.8$, $SD = 1.6$), and those in the Neg/Passive ($M = 16.6$, $SD = 1.9$) and Neg/None ($M = 16.6$, $SD = 2.1$) groups. Individuals in the Pos/Active group were more likely to identify their gender as distinct from their sex at birth compared to the Neg/None group, $\chi2(2, N = 120) = 9.86$, $p = .007$. Individuals in the Pos/Active group were more likely to identify their sexual orientation as non-heterosexual compared to the Neg/Passive group, $\chi2(1, N = 116) = 16.64$, $p < .001$, and those in the Neg/None group, $\chi2(1, N = 148) = 28.57$, $p < .001$. Individuals in the Pos/Passive group were more likely to identify their sexual orientation as non-heterosexual compared the Neg/None group, $\chi2(1, N = 92) = 7.84$, $p = .005$.

This study is the first to compare single vs. multi-item assessment of suicidal thinking in adolescents in an interview setting. Notably, our results suggest that when relying solely on single-item assessment, more than two thirds of participants reporting passive suicidal ideation will go undetected. Moreover, these same participants report equivalent suicidal ideation severity to those who respond affirmatively to the screener question and subsequently endorse passive ideation. The present study provides support for the notion that multi-item assessment paints a more accurate and nuanced clinical picture of suicidal thinking among adolescents and may be an important component of routine screening.

1.3 IDIOGRAPHIC APPROACHES TO UNDERSTANDING RISK FOR SUICIDAL IDEATION AMONG HIGH-RISK ADOLESCENTS: THE ROLE OF SLEEP QUALITY AND AFFECTIVE REACTIVITY

Jessica Hamilton*[1], Aliona Tsypes[2], Jamie Zelazny[3], Craig Sewall[4], Noelle Rode[2], Tina Goldstein[2], Peter Franzen[2]

[1]Rutgers University, [2]University of Pittsburgh Medical Center, Western Psychiatric Institute and Clinic, [3]University of Pittsburgh School of Nursing, [4]University of Pittsburgh School of Social Work

Individual Abstract: Risk for suicide is not static among youth who are considered to be high-risk for suicide, but rather fluctuates within and across days. Thus, it is critical to identify when youth are experiencing suicidal ideation, and to examine time-varying and proximal risk factors for suicidal ideation using an idiographic approach and intensive monitoring designs. Using such an approach, the current study evaluated two modifiable risk factors for suicide, sleep quality and affective reactivity to interpersonal events. Specifically, the current study examined the relationships between sleep quality and next-day affective reactivity to positive and negative interpersonal events in predicting daily suicidal ideation among adolescents in an intensive outpatient program (IOP). A total of 40 adolescents (Mean Age =15 years; 80% female; 88% White) enrolled in an IOP program for depression and suicidality completed up to 3 months daily assessments of subjective sleep quality, ratings of interpersonal events, and suicidal ideation. Multilevel modeling (with random intercept and slope) was conducted using R programming to examine the association between: 1) individual fluctuations of sleep quality and next-day affective reactivity to positive and negative interpersonal events, and 2) individual fluctuations of affective reactivity and same-day suicidal ideation, controlling for age, time in study, and depressive symptoms. Results indicate that poorer sleep quality compared to an individual's usual sleep quality predicted higher levels of next-day affective reactivity to negative interpersonal events (B = -.08; p = .04) and lower levels of next-day affective reactivity to positive interpersonal events (B = .10; p = .003). Within-person increases in affective reactivity to negative interpersonal events (B = .03; p < .001) and within-person decreases in affective reactivity to positive interpersonal events (B = -.02; p < .001) predicted days on which youth endorsed suicidal ideation. There were no direct effects of sleep quality on suicidal ideation (B = -.01, p = .11). Our findings highlight the importance of examining risk factors within an individual to better understand when an adolescent is at heightened risk for suicidal ideation. Specifically, results suggest a temporal relationship between within-person decreases in sleep quality and differential affective responses to negative and positive interpersonal events, such that poorer quality heightened next-day negative affect and reduced positive affect associated with interpersonal events. Further, youth were more likely to report suicidal ideation on days when they were more reactive to negative and less reactive to positive interpersonal events. Though there was no direct effect of sleep quality on suicidal ideation, our findings support a potential pathway through which sleep quality indirectly predicts heightened risk for suicidal ideation among high-risk youth. Further, our study highlights the importance of evaluating suicidal ideation on a daily basis among high-risk youth and evaluating modifiable risk factors within-person and using intensive monitoring designs.

1.4 THE ASSOCIATION BETWEEN SUICIDAL IDEATION, CONNECTEDNESS, AND CONFLICT WITH PARENTS DURING THE COVID-19 PANDEMIC IN U.S. ADOLESCENT GIRLS

Emily Hutchinson*[1], Caroline Oppenheimer[1], Cecile Ladouceur[1], Lori Scott[1], Jennifer Silk[1]

[1]University of Pittsburgh

Individual Abstract: Background: The COVID-19 pandemic has dramatically disrupted adolescents' lives, as mandated stay-at-home orders have largely confined youth at home with their families. These unprecedented changes in daily family functioning have unknown consequences on adolescent suicidal ideation (SI), a known risk factor for future suicide attempt (Glenn et al., 2017). Although peer relationships and seeking greater autonomy become paramount during adolescence, evidence prior to the pandemic has shown that family relationship factors are associated with adolescent SI (Oppenheimer et al., 2018). The increased

time youth are spending with their families during the pandemic could lead to increased levels of family conflict, a known risk factor for SI (Oppenheimer et al., 2018). Alternatively, spending more time with family members may lead teens to feel closer to their families and protect against SI during the pandemic. While emerging research has shown greater conflict and low connectedness with family to be associated with adolescent depressive and anxiety symptoms during the pandemic (Silk et al., under review), it remains unknown how family functioning impacts adolescent SI during the pandemic.

This study investigated the association between parent-adolescent connectedness, conflict, and adolescent SI during the COVID-19 pandemic. We hypothesized that reduced connectedness and increased conflict with mothers and fathers would be associated with an increased likelihood of SI during the pandemic.

Ninety-three U.S. adolescent girls ages 12-17 (M=15.02, 71% white) were recruited from a larger longitudinal sample of girls at temperamental risk for internalizing disorders (67% high risk). Participants completed a COVID-19 follow-up during the initial stay-at-home orders in the study's geographical region (April–May 2020) that was comprised of a ten-day daily diary protocol and pre-/post-diary questionnaires. On each diary assessment, participants indicated how close/connected and how much they argued/felt irritated with their mothers and fathers (0-100). Mother and father connectedness and conflict were aggregated across all completed diary assessments (88% compliance). SI was assessed during the pre-/post-diary questionnaires via the Suicidal Ideation Questionnaire–Junior Version (Reynolds, 1987). Participants were divided into groups (no SI, SI) based on the SIQ-JR. The effects of mother and father connectedness and conflict were estimated in separate logistic regression models, with age and depressive symptoms entered as covariates.

Approximately 39% of girls reported SI during the COVID-19 pandemic. Reduced connectedness (OR=.97, p=.007, 95% CI [.94, .99]) and greater conflict (OR=1.04, p=.028, 95% CI [1.00, 1.06]) with mothers was significantly associated with an increased likelihood of SI during the pandemic. However, mother conflict was not significantly associated with SI during the pandemic when controlling for age and depressive symptoms. Father connectedness and conflict were not associated with SI during the pandemic (ps>.05).

Approximately one third of adolescent girls endorsed SI during initial stay-at-home orders of the COVID-19 pandemic. Reduced connectedness with mothers, but not fathers, may confer risk for SI during the pandemic among adolescent girls. Although adolescents may be spending more time in the home due to stay-at-home orders, adolescents may not be spending quality time with their mothers, which may result in feeling less connected. Further work is needed to clarify the association between family factors (e.g. conflict) and adolescent SI among boys and across diverse family structures.

Discussant: Regina Miranda, City University of New York, Hunter College and The Graduate Center

2. ENTERPRISE-WIDE SUICIDE RISK SCREENING AND ASSESSMENT WITHIN THE VETERANS HEALTH ADMINISTRATION

Chair: Lisa Brenner, VHA Rocky Mountain Mental Illness Research, Education, and Clinical Center, University of Colorado

Overall Abstract Details: The speakers on this panel will discuss various components of the Department of Veterans Affairs, Veterans Health Administration national Suicide Risk Identification Strategy (Risk ID), the largest population-based screening and evaluation initiative in any United States healthcare system. Lisa A. Brenner, Ph.D., moderator, will introduce the rationale for Risk ID, highlighting that people who die by suicide are more likely to receive care in medical, rather than mental health, settings shortly before their death. As such, VA has implemented suicide risk screening across its system of care. She will also provide an overview of the two-stage strategy employed and provide descriptive data regarding the number of Veterans screened in various settings thus far.

To support uptake of Risk ID across VA, our team deployed a comprehensive implementation strategy. Bridget Matarazzo, Ph.D. will discuss this strategy, which is consistent with the Evidence-Based System for Innovation Support Logic Model. Our team developed tools, training and technical assistance (TA) with a quality assurance measure to develop a robust support system for implementation. Dr. Matarazzo will also discuss how our team engaged with researchers, policy makers, supervisors and providers in the field to ensure that all voices were and continue to be incorporated into the implementation of Risk ID.

Dr. Nazanin Bahraini will provide information about a VA-funded research project aimed at offering and evaluating additional tailored implementation interventions for facilities who have had challenges meeting the national benchmark for implementation success. This project will focus on developing an adaptive implementation strategy that provides different degrees of implementation support in a step-wise fashion (i.e., audit and feedback followed by external facilitation). In addition, she will share data from a survey used to collect data on users' preferences for the audit and feedback implementation strategy. The work described by Dr. Bahraini will allow facilities with intensified implementation challenges to receive the level of support that they need, facilitating more Veterans to be screened and evaluated properly. These processes thereby improve the overall equity of our work.

Finally, Dr. Ryan Holliday will discuss implementation of Risk ID within VHA Homeless Programs. Homeless veterans are an at-risk subset of the veteran population. However, implementation of mental health programs within homeless services remains challenging (e.g., poor adherence; prioritization of other medical concerns). Dr. Holliday will discuss uptake of this program, including rates of suicide risk assessment and acuity of risk. Moreover, interventions administered to this at-risk population will be highlighted.

As the moderator, Dr. Brenner will ensure that there is adequate time for questions from the audience. She will invite the audience to provide feedback on components such as implementation strategies employed, data collected and additional opportunities for ensuring that multiples voices are heard and incorporated into our work.

2.1 IMPROVING IMPLEMENTATION OF THE VA SUICIDE RISK IDENTIFICATION STRATEGY USING AN ADAPTIVE IMPLEMENTATION STRATEGY

Nazanin Bahraini*[1], Bridget Matarazzo[1], Steven Dobscha[2], Catherine Barry[3], Edward Post[4], Jeri Forster[1], Trisha Hostetter[1], Katherine Dollar[5], Lisa Brenner[6]

[1]VA Rocky Mountain MIRECC, [2]VA Portland Health Care System, [3]Program Evaluation and Resource Center, [4]VA Ann Arbor Healthcare System, [5]VA Center for Integrated Healthcare (CIH), [6]VA Rocky Mountain MIRECC, University of Colorado

Individual Abstract: Emerging evidence indicates that many individuals who die by suicide are not identified as having psychiatric disorders and often present for nonbehavioral health care prior to their death.

In October 2018, VHA leadership responded by creating a population-based national suicide risk identification strategy (Risk ID) designed to improve the detection and management of suicide risk across all healthcare settings. Risk ID uses evidence-informed tools and processes to standardize suicide risk screening and evaluation enterprise-wide. To date, over 5 million Veterans presenting to VHA ambulatory care settings have been screened for suicide risk through the Risk ID program.

Continuous quality improvement methods are critical to ensuring that evidence-based programs, such as Risk ID, can be delivered in routine clinical settings and lead to improved patient outcomes

VHA facilities will vary with respect to Risk ID uptake and some facilities will face unique barriers to implementation. Thus, the dose and type of implementation support needed may vary across VHA facilities.

This project is designed to use an adaptive implementation strategy to adjust the level of implementation support to the needs of different facilities. By utilizing a sequential multiple assignment randomized trial (SMART) design, two evidence-based implementation strategies will be evaluated: Audit and Feedback followed by Audit and Feedback plus external facilitation.

In this presentation, we will focus on the development of the audit and feedback intervention. Specifically, we will describe how feedback from end users were gathered to inform the development of the audit and feedback tool that was used in this study. The process of involving end users in the development of the implementation strategy and tool will be described as well as the data collected to build and refine the tool. The final version of the audit and feedback tool and how it can be used to facilitate quality improvement activities across a large and diverse healthcare system as well as preliminary impact on uptake of suicide risk screening and evaluation will also be presented.

2.2 APPLYING THE EXPLORATION PREPARATION IMPLEMENTATION SUSTAINMENT (EPIS) FRAMEWORK TO IMPLEMENTATION OF THE VETERANS HEALTH ADMINISTRATION SUICIDE RISK IDENTIFICATION STRATEGY

Bridget Matarazzo*[1], Lisa Brenner[2], Suzanne McGarity[3], Megan Harvey[1], Nazanin Bahraini[1]

[1]VA Rocky Mountain MIRECC, [2]VHA Rocky Mountain MIRECC, University of Colorado, [3]VA Eastern Colorado Health Care System/Rocky Mountain MIRECC

Individual Abstract: The impact of innovative practices adopted by healthcare systems hinges on successful implementation of those practices. The Veterans Health Administration's (VHA) Suicide Risk Identification Strategy (Risk ID) was required for enterprise-wise adoption in October 2018. Consistent with VHA's public health approach to suicide prevention, the strategy ensures that universal, selected, and indicated populations of VHA users are screened for suicide risk. Those that screen positive are then evaluated with the VA Comprehensive Suicide Risk Evaluation to support the conceptualization and stratification of risk and to guide the development of individual risk mitigation plans. A multifaceted and comprehensive implementation approach, rooted in implementation science, was required to support successful implementation of this complex strategy.

The presenter will utilize the Exploration Preparation Implementation Sustainment (EPIS; Aarons et al., 2011) framework to describe Risk ID implementation. EPIS is comprised of four phases of implementation and incorporates factors related to the inner and outer context of the organization implementing an innovation (Aarons et al., 2011). During the Exploration phase, VHA leadership considered Veteran suicide prevention gaps and needs (inner context), recommendations from entities such as The Joint Commission (outer context), as well as growing literature related to suicide risk identification and care utilization among those who die by suicide (outer context). An interdisciplinary (e.g., primary care, general mental health, suicide prevention, informatics) internal stakeholder workgroup was convened to support the Exploration phase and provide recommendations.

Risk ID entered the Preparation phase as leadership decided to adopt and implement Risk ID. Risk ID became mandated by VHA policy and a centralized technical assistance team was established to support VHA facilities tasked with carrying out Risk ID requirements. The Implementation phase of Risk ID officially began October 2018 and is currently ongoing (i.e., it has not reached the Sustainment phase). Multiple implementation strategies included in the Expert Recommendations for Implementing Change (ERIC; Powell et al., 2015) compilation were employed during the Preparation and Implementation phases.

During this presentation, the presenter will discuss the implementation strategies utilized during the Preparation and Implementation phases of Risk ID. For example, strategies such as making changes in the VHA electronic health record system, developing educational materials and identifying facility champions were employed during Preparation. Strategies such as training, identification of early adopters, and the development and deployment of quality monitoring tools are used during Implementation. The presenter will also discuss bridging factors between the inner and outer context that have impacted implementation. For example, changes made to The Joint Commission requirements related to suicide prevention impacted Risk ID policy changes. Innovation values fit, or how well the Risk ID innovation aligns with the values of those implementing Risk ID, will also be discussed. Finally, the presenter will

discuss implementation strategies the technical assistance team anticipates using once Risk ID moves into a Sustainment phase.

2.3 SUICIDE RISK SCREENING AMONG VETERANS ACCESSING VHA HOMELESS SERVICES: A NATIONAL EXAMINATION

Ryan Holliday*[1], Catherine Barry[2], Trisha Hostetter[3], Nazanin Bahraini[3], Bridget Matarazzo[3], Alexandra Schneider[3], Jack Tsai[4], Lisa Brenner[5]

[1]Rocky Mountain MIRECC, [2]Program Evaluation and Resource Center, [3]VA Rocky Mountain MIRECC, [4]National Center on Homelessness Among Veterans, [5]VHA Rocky Mountain MIRECC, University of Colorado

Individual Abstract: Veteran suicide prevention remains the top clinical priority of the Veterans Health Administration (VHA), with rates of veteran suicide being 1.5 times greater relative to non-veteran U.S. adults. Risk appears especially salient among homeless veterans, whose rates of suicidal self-directed violence exceed those of the general veteran population. To identify and prevent homeless veteran suicide, VHA has implemented an upstream, population-based screening approach which facilitates assessment for suicide risk among all veterans, including those accessing specialty homeless-specific services (Risk ID).

Nonetheless, logistical barriers specific to care for homeless Veterans may impede suicide risk screening, assessment, and intervention. Differing from the general veteran population, care for homeless Veterans is often "reactive" in nature, with programming focusing on addressing acute symptoms or stressors likely to result in the most immediate complications (e.g., exposure-related illnesses such as hypothermia, facilitating access to stable housing or employment). Unfortunately, in these circumstances, mental health, including the assessment of suicidal ideation and self-directed violence, is often not an explicit priority, especially when working within the context of time-limited clinical capacities.

The current study seeks to characterize how often homeless veterans are routinely screened and assessed for elevated acute suicide risk as well as type of intervention provided in the context of elevated acute suicide risk. To carry this out, data from all veterans accessing VHA homeless programs during Fiscal Year 2019 (10/2018-9/2019) was utilized. As part of Risk ID, these veterans were screened for elevated acute suicide risk using validated measures. Should the veteran endorse items indicating potential elevations in acute suicide risk (e.g., suicidal intent), a comprehensive suicide risk assessment, including stratification of severity of acute suicide risk as well as appropriate intervention (e.g., Safety Plan; hospitalization), was conducted.

We will discuss rates of suicide risk screening and evaluation among Veterans accessing VHA homeless services, as well as how such rates compare to other VHA services. This will include rates of positive screens for elevated suicide risk. We will also discuss similarities and differences in rates of suicide risk assessment and positive screens for elevated suicide risk based on type of VHA homeless service accessed (i.e., permanent housing relative to transitional housing), to further elucidate at-risk subsets of the homeless veteran population as well as potential logistical challenges to implementing suicide risk screening and intervention in such settings.

We will conclude by presenting rates of comprehensive suicide risk assessments administered in the presence of elevated acute risk. As part of this, we will report stratification of acute risk (i.e., low, moderate, high) as well as type of intervention administered. Differences in acute risk and intervention will be further discussed between differing types of VHA homeless services. These findings, overall, have the potential to inform current health service delivery at a national level for an at-risk subset of the veteran population as well as gaps in care in need of further attention.

2.4 VA RISK ID: PARTICIPANT INPUT

Lisa Brenner*[1], Nazanin Bahraini[2], Ryan Holliday[3], Bridget Matarazzo[2]

[1]VHA Rocky Mountain MIRECC, University of Colorado, [2]VA Rocky Mountain MIRECC, [3]Rocky Mountain MIRECC

Individual Abstract: Dr. Brenner will ensure that there is adequate time for questions from the audience. She will invite the audience to provide feedback on components such as implementation strategies employed, data collected and additional opportunities for ensuring that multiples voices are heard and incorporated into our work.

3. SUICIDE, ILLNESS, AND PAIN

Chair: Annette Erlangsen, Danish Research Institute for Suicide Prevention

Overall Session Description: Mental disorders have repeatedly been identified as one of the strongest risk factors for suicide. Psychiatric patients with mood and psychotic disorders have been associated with particular high rates of suicide. Several predictors related to psychiatric hospitalisation, such as time since admission or discharge and specific disorders, have been linked to elevated risks. Nevertheless, relatively few of the persons who died by suicide were seen in psychiatric healthcare facilities within the months preceding the death, suggesting that we must consider identifying people at risk of suicide in other settings as well.

People with specific physical illness and chronic pain have been found to have rates of suicide than people not exposed. Yet, the causal pathways are not entirely clear. Considering the large population segments exposed to physical illness and chronic pain, makes it highly relevant to assess whether certain groups are at elevated risk of suicide and to consider possible opportunities for intervention.

In this symposium, the existing evidence regarding illness – both psychiatric and somatic - and suicide will be reviewed, and possible causal mechanisms and theoretical models presented. We will discuss the roles mediators and modifiers, such as multi-comorbidity and chronic pain. Data sources will consist of clinical data as well as data from national registers and systematic reviews.

3.1 SUICIDE IN MOOD DISORDERS & PSYCHOSIS

Erkki Isometsä*[1]

[1]University of Helsinki and Helsinki University Hospital

Individual Abstract: Mood and psychotic disorders have a central role as risk factors for suicide. In psychological autopsy studies, about one half of suicides have suffered from unipolar or bipolar mood disorders, and a significant minority of subjects have likely been psychotic at time of death. Representative national register-based studies have found about 40% of all suicides to be by people who have at some point in their lives been psychiatric inpatients. Vast national diagnosis-specific register-based cohort studies show about 2-8% of inpatients with major depressive disorder, bipolar disorder or schizophrenia to have died by suicide during the last few decades. However, such mortality estimates do not necessarily generalize to outpatients, depend on time and context, and have been shown to change. In all the three patient groups, incidence of suicide has been shown to be extraordinarily (standardized mortality ratios exceeding 100) high during the first week of psychiatric admission or first week after hospital discharge, declining steeply thereafter. Of all risk factors for these suicide deaths, preceding suicide attempts, comorbid substance use disorders and male sex are the most robust. Longitudinal clinical epidemiological studies of suicide attempts complement this view by providing more detailed information on importance of illness course, episodes, and their duration on accumulating risk, and role of psychiatric comorbidity, psychological traits and psychosocial factors for suicidal acts. Features of borderline personality disorder have a strong impact on risk of suicide attempts among patients with mood disorders. Knowledge of such risk factors is important and helpful in providing clinical targets – traits, clinical syndromes and specific time periods – for preventive interventions.

3.2 PHYSICAL DISORDERS AND SUICIDE: AN OVERVIEW AND EXPLORATION OF OPTIONS FOR PREVENTION

Annette Erlangsen*[1]

[1]Danish Research Institute for Suicide Prevention

Individual Abstract: Numerous studies have confirmed associations between physical disorders and suicide. Although mental disorders consistently have been emphasized as a risk factor for suicide, only around half of all people who die by suicide have been in contact with mental health providers. It is, therefore, vital to identify other markers of suicide. A substantial percentage of people who died by suicide have been in treatment for physical disorders, for instance, 14% of all persons dying by suicide have previously been diagnosed with a neurological disorder. Identification of high-risk groups among somatic patients might prove to be a feasible way to reach target groups that we would elsewise miss.

The aim of this plenary will be to provide an overview of the association between different major physical disorders and suicide based on recent international evidence in this field as well as examine the support for different causal mechanisms and explore venues of prevention.

This plenary will:

1) provide an overview of the existing evidence for links between different physical disorders and suicide.

2) explore different causal mechanisms for the association between physical disorders and death by suicide.

3) discuss options for improving preventive measures among patients with severe physical disorders.

3.3 IDENTIFYING NOVEL TRANSDIAGNOSTIC RISK AND PROTECTIVE FACTORS FOR SUICIDAL IDEATION AND BEHAVIOUR AMONG INDIVIDUALS WITH CHRONIC PAIN

Olivia Kirtley*[1], Karen Rodham[2], Catherine Crane[3]

[1]KU Leuven, [2]Staffordshire University, [3]University of Oxford

Individual Abstract: People with chronic pain are a high-risk group for suicide, however, the psychosocial factors that may play a role in this relationship have been largely overlooked. Strikingly, research on suicide and chronic pain only incorporates a small number of factors associated with suicidal thoughts and behaviours from the suicide research field. We set out to map the existing literature on chronic pain, suicidal ideation and behaviour, by conducting a review of under- and un-explored psychological factors associated with suicidal ideation and behaviour, and chronic pain. Our goal was to identify novel, transdiagnostic psychological factors associated with suicidal ideation and behaviours in individuals with chronic pain, to provide new targets for research and clinical practice.

We developed a broad list of search terms based on the three major "ideation-to-action" theoretical models of suicide: the Interpersonal Psychological Theory, the Integrated Motivational-Volitional model, and the Three-Step Theory. We searched the Web of Science, Embase (including Medline), and PsycINFO databases, limiting our search to articles published between 2008 – 2018.

The review identified mental defeat/defeat, future orientation, mental imagery and psychological flexibility as key factors that should be explored in future research investigating suicide in individuals with chronic pain. These factors are independently associated with both suicidal ideation and behaviour, and chronic pain, however are notable in their overlap.

Research on chronic pain and suicide has suffered from a lack of cross-pollination. Focusing on factors with transdiagnostic relevance for both suicide and chronic pain is key to moving forward and to achieving a better understanding why some individuals with chronic pain end their own lives, whereas others do not.

3.4 PAIN AND SUICIDE IN ADULTS

Maurizo Pompili*[1]

[1]Sapienza University of Rome

Individual Abstract: Changes in physical and mental health can signal suicide risk. Risk factors for suicide include physical health conditions such as chronic pain, trauma/brain injury, common chronic medical problems, and new or deteriorating health problems. Evidence supports the notion that chronic pain itself, regardless of type, is a significant independent risk

factor for suicide risk. Regarding pain-related aspects, sleep problems, poorer perceived mental health, concurrent chronic pain conditions, and more frequent intermittent pain episodes are all predictors of suicide risk. Among the constructs used to describe the wish to die, a simple but extraordinary model has proved, for its straightforwardness, to help explain the suicidal mind. Edwin Shneidman first posited that the suicidal individual experiences unbearable psychological pain (psychache) or suffering and that suicide might be, at least in part, an attempt to escape from this suffering. Thus, Shneidman considered psychache to be the main ingredient of suicide. According to this model, suicide is an escape from intolerable suffering, emphasizing that suicide is not a movement toward death but rather an escape from unbearable emotion, unendurable or unacceptable anguish. Experiencing negative emotions, with an internal dialogue making the flow of consciousness painful and leading the individual to the ultimate conclusion, may be related to the fact that, if tormented individuals could somehow stop consciousness and still live, they would opt for that solution. Thus, suicide occurs when that individual deems the psychache to be unbearable. The author will describe new results pointing those with suicide attempts (compared to non-attempters) had higher odds of reporting worse psychological pain and suicidal intent with/without a specific plan. They also had higher odds of having a personality disorder and major depression. Contrary to our hypotheses, higher degrees of childhood trauma were not associated with more severe mental pain scores.

4. SUICIDE IN UNDER-SERVED POPULATIONS

Chair: Murad Khan, Aga Khan University

Overall Session Description: Suicide in under-served populations.

4.1 SUICIDE AMONG REFUGEES - A MOCKERY OF HUMANITY

Lakshmi Vijayakumar*[1]

[1]M.B.B.S., D.P.M., Ph.D. FRCP sych (Hon.)

Individual Abstract: "Suicide among refugees- A Mockery of Humanity"

Each year approximately 700,000 individuals die by suicide in the world. Majority of suicides (79%) in the world occurs in in Low- and middle-income countries. Suicide is now the second leading cause of death among young people aged between 15-29 years. Similarly, there are 26 million refugees and 4.2 million asylum seekers in the world and majority of refugees (85 %) are in developing countries. The fact that majority of suicides and refugees are in Low- and middle-income countries signals suicide among refugees as a humanitarian crisis.

Suicidal behaviour among the refugees is under reported because of lack of reliable data, limited access to official archives and politically sensitive nature of information.

In total, 639 refugees from intervention and 664 from control camps participated. Prevalence of suicide attempts was 6.1%. Following intervention, differences between sites in changes in combined suicide (attempted suicides and suicides) rates per 100,000 per year were 519 (95% confidence interval (CI): 136–902; $p < .01$).

The overall prevalence of suicidal behaviours in refugees ranges from 3.4 % to 40 %. Majority of refugees have no mental disorders. Anxiety, Depression, PTSD and Substance abuse disorder are prevalent among refugees. Suicide related maternal mortality is also high among refugees. Refugees with better education, females, and higher economic status pre

displacement have worse mental health outcomes. Loss, trauma, violence, physical abuse, torture, and economical issues have been linked to suicidal behaviour.

Specific suicide prevention program for refugees is virtually non-existent. Recently some countries like Palestine have initiated strategies to prevent suicide among refugees.

An intervention study assessed the feasibility of regular contact and use of safety planning card (CASP) by community volunteers in reducing suicidal behaviour in refugees camp in India.

Preventing suicide in refugees should be considered as a social and ethical objective rather than as a traditional exercise in health sector.

4.2 SUICIDE IN INTERNATIONAL MIGRANTS AND REFUGEES

Ellenor Mittendorfer-Rutz*[1]

[1]Karolinska Institutet

Individual Abstract: Several European countries have experienced one of the most dramatic demographic changes due to increasing global migration and have become multicultural societies in the new millennium. Moreover, many European countries, among them Sweden, have seen historically high numbers of refugees seeking asylum in the preceding years. A considerable proportion of these refugees have experienced traumatic events (i.e. ones in which they experienced or witnessed severe injury, death or dying) in their country of origin or during migration. This puts issues of mental ill-health, particularly common mental disorders, i.e. depressive, anxiety and post-traumatic stress disorders (PTSD), on the agenda. These disorders in turn are known to be strong risk factors for suicidal behaviour. Still, studies on suicidal behaviour in international migrants and particularly refugees are very limited. Moreover, research on the risk of suicidal behaviour in individuals seeking asylum in high-income countries is almost non-existent. Here, unaccompanied minors seeking asylum might be a specific risk group as they are experiencing harsh circumstances during flight in their formative years. In order to close this knowledge gap, we performed several register-based cohort studies on refugees with residence permit in Sweden and large field studies on asylum seekers in Sweden and Denmark.

Findings on several aspects will be presented in the symposium, i.e. occurrence, the role of an underlying mental disorder, the country of origin, the time period resettling in Sweden, treatment trajectories and the prognosis after a suicide attempt. Results compare estimates in refugees with those of individuals born in the host population in Sweden. Findings will be discussed in relation to their clinical and public health implications as well as their contribution to our understanding of suicidal behaviour in vulnerable groups.

4.3 SUICIDE IN MUSLIM COUNTRIES

Murad Khan*[1]

[1]Aga Khan University

Individual Abstract: Suicide is a serious global public health problem, with approximately a+800,000 people killing themselves worldwide every year. Suicide occurs in every country of

the world, cutting across all national, ethnic, religious, sectarian, linguistic and cultural boundaries, though there are significant variations in rates, gender, age and methods employed, between countries and even different regions of the same country. Traditionally, it has been observed that suicide rates are relatively low in Islamic countries compared to non-Islamic countries. Both the Koran and Hadith strongly condemn suicide as a major and unforgivable sin.

These strong religious proscriptions, along with the religious prohibition on alcohol appear to have a rate-lowering effect against suicide in Islamic countries. This effect is independent even when socioeconomic development, education and other population characteristics are controlled. However, more recently individual level studies from a number of Islamic countries such as Pakistan, Iran, Turkey and Bangladesh show that suicide rates have been gradually increasing in these countries. From available evidence it appears, that in face of adverse political, social and economic conditions, Islam may be losing some of its traditional deterrent effect and the notion that suicide is a negligible problem is being challenged in many Islamic countries.

While the relatively low rates in Islamic countries provide several lessons in naturalistic suicide prevention strategies for non-Islamic countries, there is also need to address the apparent rising rates of suicide in Islamic countries. Suicide prevention should not only be addressed from mental health but also from the socio-cultural, religious and political perspectives in Islamic countries.

4.4 SUICIDE AMONG BLACK YOUTH

Michael Lindsey*[1]

[1]New York University Silver School of Social Work

Individual Abstract: Suicide is preventable. For Blacks, stigma regarding mental health challenges and a common belief that Blacks don't die by suicide add complexity to the challenge of saving lives. Sadly, the suicide death rate among Black youth has been found to be increasing faster than any other racial or ethic group. Black adolescents are significantly less likely to receive care for depression with pervasive structural inequities, social determinants of health, stigma and mistrust of the healthcare system creating daunting barriers to treatment. What can we do to prevent these deaths? What can schools, funders, family members, health institutions and governmental entities do to provide the necessary investment and training to properly address the mental wellness needs of Black youth?

5. IMPLEMENTATION SCIENCE AND SUICIDE PREVENTION STRATEGIES

Chair: Danuta Wasserman, Karolinska Institute/NASP

Overall Session Description: In this session the Zero Suicide model in 165 outpatient clinics across New York State to improve screening, safety planning, engagement, and follow-up of high-risk patients will be presented by Barbara Stanley from Columbia University College of Physicians and Surgeons, New York, United States. Implications of problematic treatment engagement will be elucidated.

Michael Phillips from Shanghai Jiao Tong University School of Medicine, China, will present his thoughts about why any of the 200 plus countries in the world will not achieve the UN's Sustainable Development Goal (SDG) of reducing national suicide rates by one-third from 2015 to 2030 (SDG indicator 3.4.2).

Danuta Wasserman from Karolinska Institutet, Stockholm, Sweden, will present challenges and opportunities in the design, implementation, and evaluation of randomized controlled trials in schools. The SEYLE sample consisting of 11 110 adolescent pupils, median age 15 years, recruited from 168 schools in ten European Union countries and the Youth Aware of Mental health (YAM) programme, effective in reducing depression, suicide attempts and severe suicidal ideation, will be used as an example.

Ella Arensman from University College Cork, Ireland, will speak about public mental health significance of suicide and non-fatal suicidal behavior and the needs of national actions.

5.1 ZERO SUICIDE IMPLEMENTATION IN STATEWIDE BEHAVIORAL HEALTH OUTPATIENT CLINICS

Barbara Stanley*[1], Christa Labouliere[2], Hanga Gafalvy[3], Gregory Brown[4], Kelly Green[5], Molly Finnerty[6]

[1]College of Physicians and Surgeons, Columbia University, [2]Columbia University Irving Medical Center, [3]Columbia University and NYSPI, [4]Perelman School of Medicine University of Pennsylvania, [5]University of Pennsylvania, [6]New York State Office of Mental Health

Individual Abstract: Despite increased efforts, suicide prevention within healthcare systems remains a challenge particularly in outpatient behavioral health (OBH) settings; >25% of those dying by suicide and >50% of individuals who attempt suicide receive OBH care in the year prior to their suicidal behavior. We implemented and evaluated the Zero Suicide model in 165 outpatient clinics across New York State to improve screening, safety planning, engagement and follow-up of high-risk patients. The Zero Suicide model is a multi-component, system-wide approach combining individual care and systems-level elements to effectively identify and treat suicidal patients. We found that systematic screening of all new intakes was successfully implemented with >90% of all new patients screened for suicide risk. Additionally, safety planning was successfully implemented with >80% of patients identified as high risk receiving safety plans. However, treatment engagement was problematic with >30% of patients identified as high risk and placed on the high risk suicide care pathway not returning for a second visit after being placed on the pathway and <50% of patients receiving 6 or more visits while on the pathway (recommended number of visits=12). Implications of these findings and directions for future research will be discussed.

5.2 IS RESEARCH ABOUT SUICIDE REDUCING SUICIDE RATES?

Michael Phillips*[1]

[1]Shanghai Mental Health Center, Shanghia Jiaotong University School of Medicine

Individual Abstract: It appears unlikely that ANY of the 200 plus countries in the world will achieve the UN's Sustainable Development Goal of reducing national suicide rates by one-third from 2015 to 2030 (SDG indicator 3.4.2). Why not? Research about other types of injury deaths over the last couple of decades has lead to substantial reductions in mortality from these causes, but research about suicide has not resulted in any sustained change in suicide rates. The major fluctuations in suicide rates that have occurred in some countries do not appear to be related to research activities about suicide; in some cases researchers can retrospectively identify the reasons for such fluctuations, but they can not prospectively use their results to produce such changes. Is this simply because the recommendations of suicide experts have not been followed by governments and other stakeholders or do we need to rethink suicide, to develop different research paradigms for understanding and preventing 700,000 plus deaths each year?

5.3 YOUTH AWARE OF MENTAL HEALTH (YAM): CHALLENGES IN THE DESIGN AND EVALUATION OF UNIVERSAL SUICIDE PREVENTION PROGRAMS FOR ADOLESCENTS

Danuta Wasserman*[1], Vladimir Carli[1], Camilla Wasserman[2]

[1]Karolinska Institute/NASP, [2]Columbia University, New York State Psychiatric Institute

Individual Abstract: Suicidal behaviours in adolescents are a major public health problem and evidence-based prevention programmes are greatly needed. The golden standard are RCTs. However, many problems arise not only in the design and evaluation but also on building sufficient big consortia to achieve statistical power in a socioeconomically and culturally reasonable similar settings.

The Saving and Empowering Young Lives in Europe (SEYLE) study is a multicentre, cluster-randomised controlled trial. The SEYLE sample consisted of 11 110 adolescent pupils, median age 15 years (IQR 14–15), recruited from 168 schools in ten European Union countries. We randomly assigned the schools to one of three interventions or a control group.

Each school was randomly assigned by random number generator to participate in one intervention (or control) group only and was unaware of the interventions undertaken in the other three trial groups. This study was registered with the Clinical Trials Registry.

YAM was effective in reducing the number of suicide attempts and severe suicidal ideation in school-based adolescents. These findings underline the benefit of this universal suicide preventive intervention in schools. Challenges and opportunities in the design, implementation and evaluation of the study will be discussed.

5.4 IMPLEMENTATION AND EVALUATION OF NATIONAL SUICIDE PREVENTION STRATEGIES: AN UPDATE

Ella Arensman*[1]

[1]National Suicide Research Foundation, School of Public Health

Individual Abstract: Suicide and non-fatal suicidal behavior (suicide attempts/self-harm) are major, global public health challenges, with an estimated annual number of 703,000 deaths worldwide and up to twenty times as many episodes of attempts and self-harm episodes (WHO, 2020). Currently, suicide is the second leading cause of death among young people aged 15-29 years at global level (WHO, 2019). Although, overall, suicide rates in low- and middle-income countries (LMIC) are lower than the rates in high income countries (HIC) of 11.2 per 100,000 compared with 12.7 per 100,000 population, the majority of suicide deaths worldwide occur in LMICs (WHO, 2019). However, it must be noted that there are ongoing challenges in relation to the accuracy of suicide figures obtained from many countries (WHO, 2019).

The ongoing global priority of suicide prevention is highlighted by the United Nations Sustainable Development Goals (SDGs) for 2030, which include a target of reducing by one third premature mortality from non-communicable diseases, with suicide mortality rate identified as an indicator for this target by 2030 (UN, 2015). SDG target 3.4 calls for a reduction in premature mortality from non-communicable diseases through prevention and treatment and promotion of mental health and wellbeing (WHO, 2015). The suicide rate is an indicator (3.4.2) within target 3.4. Approximately 40 countries at all income levels have adopted a national suicide prevention strategy, with some countries already developing or implementing further revision(s) of their national strategy (WHO, 2018). However, among LMICs, only a few have adopted a national suicide prevention strategy, even though 79 % of suicides occur in these settings (WHO, 2018).

Currently, the number of countries with a completed evaluation of the effectiveness of a national suicide prevention strategy or action plan is limited. Evaluations of national suicide prevention strategies are available for Finland, Scotland, Northern Ireland, and Australia, with a recent interim strategy review completed for the Republic of Ireland and a 15-year review also conducted in Japan following the conception of a national policy for suicide prevention. National strategies representing complex interventions should consider multiple interacting activities, changes over time, the quality of the implementation, and synergistic effects. Evaluations also need to account for the measurement of multiple outcomes, which are not confined to rates of suicidal behaviour and are inclusive of broader outcomes such as attitudes and knowledge of suicide, for example. In addition to the measurement of primary and intermediate outcomes, evaluation of any national strategy will require including an assessment of process indicators.

Many countries face the challenge of delays in relation to published suicide figures by their national bureaus of statistics, with additional problems associated with late registration of suicide deaths after the official suicide figures have been published. The need for real-time suicide data has been greater than ever during the COVID-19 pandemic considering an increasing number of requests from policy makers and other stakeholders in suicide prevention. The absence of real-time suicide data represents a barrier to providing a timely response to emerging suicide trends in certain demographic groups, to suicide contagion and clustering, and to the emergence of new highly lethal suicide methods. In order to facilitate the role of policymakers and key stakeholders in suicide prevention, more efforts need to be made to develop real-time suicide surveillance systems.

Monday, October 25, 2021

CONCURRENT SYMPOSIUM SESSIONS

8:00 AM - 9:30 AM

6. APPLYING EXPERIMENTAL THERAPEUTICS TO BRIEF INTERVENTIONS FOR SUICIDE PREVENTION – HOW DID WE GET HERE AND WHERE ARE WE GOING?

Chair: Stephen O'Connor, National Institute of Mental Health

Overall Abstract Details: Recent meta-analysis (Doupnik et al., 2020) demonstrates that brief interventions delivered to individuals surviving a recent suicide attempt are effective at reducing risk of subsequent suicide attempts and linking to follow-up care. These approaches often distill elements of more comprehensive treatments for suicide prevention into time limited interactions matching specific clinical contexts, such as acute care settings and/or after a suicide attempt. However, there are also novel components to brief interventions, reflecting differences in the processes theorized to create and maintain suicide risk. As such, it is important to consider the mechanisms by which brief interventions ameliorate suicide risk, as they help inform 1) the degree to changes may reflect shorter vs. longer-term improvement and 2) how they may serve as either independent or adjunctive approaches to care. The National Institute of Mental Health emphasizes this 'experimental therapeutics' approach to research, where clinical trials test the process by which interventions engage the targets/mechanisms that lead to clinical outcomes. Rather than focusing solely on the distal main effects, such studies allow the field to evaluate 'why' interventions work, the sufficient dose needed to cause meaningful change, and the validity of proposed conceptual frameworks.

This symposium will feature four presentations by clinical trials researchers who have developed brief interventions for suicide prevention - Safety Planning Intervention, Crisis Response Planning, Attempted Suicide Short Intervention Program, and Jaspr Health. Each presenter will describe their intervention from an experimental therapeutics paradigm, in terms of 1) the conceptual model that informs their intervention elements, including the targets or mechanisms of action, 2) what their research has demonstrated in terms of target engagement and the associated changes in the clinical outcomes (e.g., suicide ideation, suicide attempt), and 3) how previous results on target engagement have informed current and future work. The session addresses an important topic in the research field, as contemporary healthcare demands scalable approaches to suicide prevention. The experimental therapeutics approach can help maximize efficiencies in health systems without sacrificing effectiveness and quality of care.

6.1 HOW DOES SAFETY PLANNING WORK TO PREVENT SUICIDE?

Barbara Stanley*[1], Gregory Brown[2]

[1]College of Physicians and Surgeons, Columbia University, [2]Perelman School of Medicine University of Pennsylvania

Individual Abstract: The Stanley-Brown Safety Planning Intervention (SB-SPI) is an evidence-based intervention designed to help suicidal individuals avert imminent and escalating suicidal crises and provide strategies to reduce risk in the short term (Stanley et al, 2018; Stanley et al, 2015). The intervention is seated within a framework that conceptualizes suicide risk reduction as consisting of two components: 1. Addressing the underlying more chronic risk factors, e.g. depression, substance misuse and persistent psychosocial stressors; and 2. Enhancing individual's capacity to cope with escalating suicidal thoughts and urges during distressing periods or crises. This second goal is what brief interventions like SB-SPI and Crisis Response Planning can address. The SB-SPI relies on the three strategies: distraction, social support and lethal means reduction. Distraction techniques and lethal means reduction reduce suicide risk through similar means and are premised on the notion that suicidal crises are relatively short-lived. By diverting attention through distraction or by removing access to lethal means allows time to pass and the crisis to subside. Distraction has been mostly overlooked as a means of coping with suicidal impulses. We will present data (Stanley et al, 2020) from an ecological momentary assessment study that found that distraction strategies led to decreases in suicidal ideation in the short-term while mindfulness-oriented strategies did not. Along these same lines, individuals who use distraction techniques following a psychosocial lab stressor had their stress response as measured by cortisol levels decrease faster than individuals who used other strategies. Thus, a hypothesized mechanism of action for the SB-SPI is attentional control/distraction. The studies to date examined the strategies individuals used naturally. An important next step would be to determine if distraction/attentional control when taught can decrease suicidal ideation.

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6.2 MARSHMALLOWS, BRAKING SYSTEMS, AND CRISIS RESPONSE PLANNING FOR SUICIDE PREVENTION

Craig Bryan*[1]

[1]The Ohio State University Wexner Medical Center

Individual Abstract: The crisis response plan (CRP) is a brief, empirically-supported intervention shown to reduce suicide attempts when used in emergency and acute care settings (Bryan et al., 2017), or within the context of suicide-focused outpatient psychotherapy (Rudd et., 2015; Sinyor et al., 2020). Correlational research with similar interventions (e.g., safety planning) lend further support to brief interventions that promote self-regulatory processes during momentary periods of acutely elevated suicide research. In addition to testing its effectiveness, research focused on the CRP has also sought to identify several hypothesized neural, behavioral, and environmental mechanisms and processes underlying the intervention's effects on suicidal thoughts and behaviors, especially reward-based decision-making and behavioral inhibition. Preliminary research suggests one potential mechanism involves positive emotional states, which can be influenced when the CRP includes a brief discussion of the patient's reasons for living. Studies currently underway are aimed at understanding the CRP's effects on reducing suicidal thoughts and behaviors, and use unique combinations of assessment methods cutting across multiple units of analysis (e.g., self-report, physiology, neural circuits) and design strategies (e.g., behavioral tasks, ecological momentary assessment). Results of these studies promise to significantly advance our understanding of what prevents people acting upon suicidal urges and impulses. This presentation will review findings to date and provide an overview of studies currently underway.

6.3 THE ATTEMPTED SUICIDE SHORT INTERVENTION PROGRAM (ASSIP)

Anja Gysin-Maillart*[1]

[1]Translational Research Centre, University Hospital of Psychiatry, University of Bern, Switzerland

Individual Abstract: The Attempted Suicide Short Intervention Program (ASSIP) is a brief therapy, which has proven efficacious in reducing the risk of repeated suicide attempts by approximately 80% over a period of 24 months (Wald $\chi 21 = 13.1$, 95% CI 12.4–13.7, $p < 0.001$). ASSIP is based on the concept of action theory, which defines suicidal behavior as an action. Thus, suicide may appear as an option, if important life goals or needs are threatened. A major objective of ASSIP is to establish an early therapeutic relationship, which is maintained by sending follow-up letters over the course of two years. Within three to four sessions, ASSIP aims to reach a shared understanding of the individual mechanism leading to suicidal behavior in a biographical context, to identify specific vulnerabilities, and trigger events. Important individual warning signs are revealed, and a personal crisis plan is developed to reduce the risk of future suicide.

The first session consists of a narrative interview, which provides the basis for a therapeutic alliance and treatment engagement (first session, median = 4.91, IQR = 4.3–5.2; third session, median = 5.32, IQR = 4.9–5.6, W= 257.5, $p < 0.001$, paired test). Therapeutic alliance was inversely related to suicidal ideation at 12 months follow-up, in the ASSIP group ($t57 = -3.02$, $p = 0.004$; coefficient: −0.26, 95% CI −0.43 to −0.09). The video-playback gives the patient the possibility of a controlled "re-immersion" into the suicidal mode, without getting lost. In terms of action theory, the patient and the therapist aim to understand the suicidal crisis in a life career (biographical) context and simultaneously develop meaningful preventive measures. Recent findings indicate that both, the reduction of dysfunctional coping and the development of problem-focused coping strategies are essential in overcoming suicidal crises. The ASSIP group showed 11% less dysfunctional coping compared to the control group (ASSIP, median=1.83; CG, median=2.05, W = 1316, $p = 0.011$, $r = 0.21$), and 6% more problem-

focused coping (ASSIP, median=2.83; CG, median=2.67, W = 2217, p = 0.029, r = 0.17) after a 24-month follow-up. Further analysis of broader strategies showed a statistically significant group difference regarding self-distraction after 12-months (F3, 354 = 4.84, p = 0.003, η2 = 0.02) and self-blame after 24-months (F3, 354 = 3.10, p = 0.027, η2 = 0.01) compared to a control group. Higher rates in active coping (e.g. efforts on doing something about the situation or taking action to make it better) were associated with lower rates of suicidal ideation (F4, 55= 26.48, p < 0.0001).

To further examine the mechanisms of action, a different approach was required. Therefore, a longitudinal analysis to investigate the influence of the brief therapy ASSIP on neuropsychological correlates (inhibition, implicit associations,) and psychological process factors (e.g., sense of self-efficacy, locus of control, movement synchrony) is currently being carried out.

The brief therapy ASSIP is provided for suicide attempters in addition to treatment as usual and does not replace any long-term treatment. This presentation aims to describe the different elements of ASSIP, its underlying conceptual model, its mechanism of actions and its corresponding research results.

6.4 EXPERIMENTAL SUPPORT FOR A SUICIDE-FOCUSED, TABLET-BASED, BRIEF INTERVENTION FOR SUICIDAL RISK

David Jobes*[1], Linda Dimeff[2], Kelly Koerner[2]

[1]The Catholic University of America, [2]Evidence-Based Practice Institute

Individual Abstract: "Jaspr Health" is a tablet-based application for patients who are suicidal that has been developed with funding from the National Institute of Mental Health (NIMH). The initial "proof-of-concept" prototype included an avatar-based assessment and intervention on a computer tablet using a modified version of the Collaborative Assessment and Management of Suicidality (CAMS—Jobes, 2016). CAMS is an evidence-based suicide-focused clinical intervention with extensive clinical trial support showing quick reductions in suicidal ideation, overall symptom distress, impacting hope/hopelessness, and improved treatment acceptability in comparison to control care (see meta-analysis by Swift et al., 2021). Based on the success of the prototype (Dimeff et al., 2018), and with continued NIMH support, we significantly expanded the app employing a user-centered design process with extensive feedback from persons in the midst of a suicide crisis and who were seeking psychiatric crisis services in an emergency department (ED), along with people with lived experience advisors. Patients engaging Jaspr are invited to consider a full menu of tablet-based options including psychoeducation (about the ED experience), a range of comfort and skills exercises (e.g., breathing techniques and various DBT skills), various comforting activities (e.g., watching videos of puppies or a burning fire), along with personal stories of hope by people with lived experience who have previously been through serious suicidal episodes and ED experiences thereby providing valuable perspectives to patients in the ED. During the course of a patient's engagement with Jaspr, a thorough CAMS-based assessment is facilitated, and lethal means safety considerations are explored along with the development of a tailored stabilization plan (again fashioned after the CAMS approach to stabilization planning). Patients are able to mark and then download their "favorites" from their Jaspr experience onto their mobile device for future use following discharge (i.e., "Jaspr at Home"). In support of clinical providers, the tablet-based Jaspr app engagement also creates a detailed "Jaspr Care Planning Report" that

can be used by ED providers to better understand the patient's suicidal risk and pursue optimal discharge and disposition planning for their patient in a least restrictive and evidence-based manner. Importantly, the documentation materials created by Jaspr Health ensures thorough record keeping of the patient's suicide-specific assessment, intervention, and clinical disposition that can then be readily entered into the electronic medical record, ensuring both excellent evidence-based practices and the decrease of malpractice liability exposure therein. Following its completion, we conducted a randomized controlled trial (RCT; N=31) of Jaspr Health (n=14) comparing it to Care as Usual (n=17) in suicidal ED patients recruited from two EDs associated with two separate healthcare systems. Despite the small sample size secondary to ending the study due to the Covid-19 pandemic, results overwhelmingly support Jaspr's feasibility and effectiveness (even with limited statistical power). This presentation will report on our research results to date and discuss possible mechanisms for change and the future Jaspr research and use across a range of settings.

7. SUICIDE RISK IN YOUTH WITH AUTISM: ASSESSMENT, PREVENTION, AND TREATMENT

Chair: Joy Benatov, University of Haifa, Israel

Overall Abstract Details: Suicide risk in youth with Autism: assessment, prevention, and treatment.

Increase in children and adolescents diagnosed with Autistic Spectrum Disorder (ASD) during the past two decades has brought attention to the fact that they are at increased risk of experiencing mental health difficulties, including suicide and depression. Accumulating evidence shows individuals with ASD to be at increased risk of experiencing suicide ideation, engaging in self-harm, attempting suicide and are at higher risk of dying by suicide. Thus, the compelling need to study the intersection between ASD and suicidality and develop adapted assessment tools, prevention and treatment interventions. The current symposia places focus on youth with ASD, bringing together studies that may promote suicide prevention among individuals with ASD.

7.1 THE SUICIDE IDEATION ATTRIBUTES SCALE-MODIFIED (SIDAS-M): A NEW SUICIDE RISK SCREENER DESIGNED FOR AUTISTIC ADULTS

Darren Hedley*[1], Phillip Batterham[2], Mirko Uljarević[3], Simon Bury[4], Angela Clapperton[5], Jo Robinson[6], Julian Trollor[7], Mark A Stokes[8]

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Individual Abstract: Background: Few instruments are designed to assess suicide risk in autistic people. The Suicidal Ideation Attributes Scale (SIDAS) is a 5-item assessment of recent suicidal ideation developed in Australia. Its strong psychometric properties and straightforward questions make it a strong candidate for suicide risk assessment in the autistic population. This study describes the co-development and psychometric validation of SIDAS-M, a newly modified version of the instrument developed for use with autistic adults. Methods: The study was approved by the university ethics committee (#HEC20235). Participants were 88 (52 female, 28 male, 8 non-binary) autistic adults (MAGE=43.07, SD=13.67, Range=21-71 years). A panel of content experts, including the original author of the SIDAS, and autistic people (representing gender, cultural, mental health, suicide behavior, and ability diverse populations), modified the original SIDAS based on recommended guidelines until consensus on the final version was reached. Modifications included improved clarity of language and item wording, a visual analogue scale, and addition of response exemplars. Results: SIDAS-M correlated significantly with the Suicide Behavior Questionnaire, Revised (SBQ-R; r=.669, p<.001) and Patient Health Questionnaire (PHQ-9; r=.539, p<.00) total scores, suggesting good convergent validity. McDonald's omega (ω) was .923, indicating excellent internal reliability. Factor structure was examined using Principal Component Analysis (PCA). Kaiser-Meyer-Olkin (KMO) measure verified sampling adequacy (KMO=.838) and Bartlett's test of sphericity indicated correlations were sufficiently large ($\chi 2$=330.54, p<.001). The PCA indicated a single factor (using Kaiser's criterion of 1) with an eigenvalue of 3.81, accounting for 76.29% of total variance. Factor loading for individual items ranged between .824-.917.
Conclusions: SIDAS-M demonstrated convergent validity with both SBQ-R and PHQ-9 and excellent internal reliability. The factor analysis suggested a unidimensional construct of suicidal ideation, consistent with the original version of the SIDAS. This study offers support for the use of SIDAS-M to assesses suicide risk in the autistic population. Funding: This research was funded by a Suicide Prevention Australia National Suicide Prevention Research Fellowship awarded to the first author.

7.2 PREVENTING DEPRESSION IN ADOLESCENTS WITH AUTISM: ADAPTING A MULTILEVEL MODEL TO PROMOTE INDIVIDUAL RESILIENCE AND PARENT PROTECTIVE FACTORS

Ian Shochet*[1], Jayne Orr[1], Astrid Wurfl[1]

[1]Queensland University of Technology

Individual Abstract: Despite increased depression and risk of suicidal behaviour in adolescents with autism, effective prevention approaches for this population are limited. To address this need we adapted for this population a strength-focused resilience building program, known as the Resourceful Adolescent Program (RAP), that has previously been implemented successfully to prevent depression with neurotypical adolescents. We will first describe this adapted manualised program that promotes protective factors protective factors by intervening with the adolescent (RAP-A-ASD) and parent (RAP-P-ASD). We will then present two trials of these interventions, including a mixed-methods pilot randomised control trial of RAP-A-ASD (N = 29), and a 3-year multisite proof-of-concept longitudinal study with adolescents with ASD (n = 30) using RAP-A-ASD, and their parents (n = 31) using RAP-P-ASD. Promising findings across the two studies include an increase in adolescent coping self-efficacy, decreased anxiety, diminished behavioural and emotional difficulties, increased school connectedness, and reduced depressive symptoms.

7.3 MODIFYING A SCHOOL-BASED SUICIDE PREVENTION PROGRAM FOR STUDENTS WITH AUTISM SPECTRUM DISORDER (ASD)

Joy Benatov*[1], Ella Sarel-Mahlev[2], Shahar Bar Yehuda[3]

[1]University of Haifa, Israel, [2]Levinsky College of Education, [3]Bar-Ilan University

Individual Abstract:
Over the past decade, there has been an alarming increase in the suicide rates of children and adolescents. Unfortunately, this phenomenon is also common among children and adolescents diagnosed with autism spectrum disorder (ASD). Recent studies have shown that individuals with ASD are at elevated suicide risk, highlighting the importance of taking preventive measures specifically adapted to the population of youth with ASD.

The current study presents the modifying process of "Choosing Life", a school-based suicide prevention program for students with ASD. The study included a focus group consist of 26 suicide prevention and autism specialists from the Israeli Ministry of Education, a research assistant and three supervisors (the writer and researcher of the choose life program, a senior ASD specialist at the Ministry of Education, and a clinical psychologist and researcher). The group met for 30 hours divided into 10 meetings. Each meeting was comprised of three parts: (1) a 45-minute learning session in which the specialists were introduced with the original program contents; (2) a 45-minute session in which the specialists were asked to write their reservations and recommendations, in order to adapt the activity for students with ASD; (3) a 45-minute session in which the specialists were discussing the recurring individual recommendations and agreeing as a group to the modifications needed to be made in order to adapt the program. In addition to the group meetings, the supervisors have regularly met to monitor, update and improve the ongoing process. The study included observations of the group sessions and semi-structured interviews with the participants.

The observations and interviews emphasize the program's adaptation in three main domains: (1) Adjustment of school referrals protocols for ASD students at potential suicide risk (2) Reinforcement of stakeholders' alliances in order to promote the implementation of the intervention in the special education system. (3) Adaptation of the programs' curriculum and pedagogical content, in accordance with ASD students pedagogical needs, (e.g. visual, audio, concrete language, learning tempo adaptations). In addition, the development of specific contents that address ASD student's needs: emotional awareness, theory of mind, knowledge of and awareness to ASD characteristics, and knowledge concerning possible links between ASD and depression.

Recommendations and guidelines based on the modified "Choosing Life-ASD" intervention for students with ASD are discussed. The Outcomes highlighted the necessity of developing a special education preventing training program for educators on a national level.

7.4 ADAPTING SAFETY PLANS WITH AND FOR AUTISTIC ADULTS AND THOSE WHO SUPPORT THEM

Emma Nielsen[1], Jane Goodwin[2], Lucy Isard[2], Victoria Newell[1], Rory O'Connor[3], Ellen Townsend[1], Robin Bedford[4], Jacqui Rodgers[2], Sarah Cassidy*[1]

[1]University of Nottingham, [2]Newcastle University, [3]University of Glasgow, [4]Public Health South Tees

Individual Abstract: Research shows that autistic people are at significantly increased risk of suicide compared to the general population. Yet, our research, designed in partnership with autistic people, highlights a lack of appropriate support and treatment for autistic people experiencing self-harm, suicidal thoughts and behaviours. At an engagement event with autistic people, families, practitioners and researchers, we identified a suicide prevention intervention to adapt with and for autistic people - suicide safety plans. Safety plans are a simple, cost-effective, potentially life-saving intervention that autistic people could find indispensable in times of crisis. We have developed an Autism Adapted Safety Plan (AASP) for use with autistic adults. The current project aims to refine and test the acceptability and feasibility of our AASPs, with and for autistic adults and those who support them. Given that autistic people experience significant difficulties accessing NHS clinical services, we are testing the acceptability and feasibility of AASPs in third sector autism or mental health organisations where autistic adults are more likely to be receiving support. This presentation will focus on data from stage one of the project, which refined the AASPs in partnership with autistic adults, their family members and third sector support organisations. We report results from six focus groups, consisting of 34 autistic adults, family members and third sector service providers, who recommended adaptations to refine our draft AASP. There was broad consistency of feedback between each participant group. Participants spoke to the content and layout of the AASP as well as delivery, resources, and scaffolding. Autistic adults emphasised the importance of developing trust and understanding between autistic adults and service providers when developing the AASP. We will discuss implications of our results for safety planning with autistic adults, to reduce self-harm, suicidal thoughts and behaviours in this at-risk group.

8. NEUROBIOLOGY OF SUICIDE II

Chair: Douglas Meinecke, NIMH

Overall Abstract Details: Part II of the Neurobiology of Suicide Symposia continues the discussion of biologic factors associated with suicide and risk. Key questions in each panel focus on identifying biologic mechanisms that might be independent and causal for suicidality or co-segregating contributory factors in suicide. Part II extends the observations of Panel I, with three presentations speculating on suicide-specific neural mechanisms of early life adversity, inflammatory pathways, and neural signaling and one presentation on the dopaminergic system and pain perception in suicide. The implications of these neural indices of suicide will be discussed in the context of how they can inform clinical practice, risk prediction, and targeted treatment.

Mark Underwood will begin a trio of presentations centered on neuroinflammatory mechanisms. He will elaborate on the hypothesis linking suicidality with stress and early life adversity to cytokine production and subsequent neurotoxicity associated with neuroinflammation. New data on markers of neuroinflammation will be presented that includes translocator protein (TSPO) in the mitochondrial membrane, microglia markers Iba-1 and CD11b, and other cytokines. His data suggest a complex interpretation for suicide risk in which some individuals experiencing early life adversity may be resilient to the acute neuroinflammatory effects of stress associated with suicide. Interestingly, this data does not confirm a clear inflammation phenotype for death by suicide.

Lena Brundin will continue the discussion on the question of how inflammatory cytokines modulate neurotransmission that can lead to suicide behavior. She will present data showing that inflammatory cytokines and kynurenine metabolite levels are altered in the CSF of several cohorts of patients with suicidal behavior, with a specific focus on the increased levels of the kynurenine metabolite Quinolinic acid (an NMDA-receptor agonist). New data will be presented showing associations between plasma and CSF levels of these factors in suicide behavior, including associations between the acute phase reactants and the metabolites of the kynurenine pathway.

The third speaker, Nadine Melhem, examined peripheral expression of inflammatory genes in a sample of psychiatric patients at high-risk for suicidal behavior to study their relationships to suicidal behavior cross-sectionally and prospectively. Her data adds to the growing evidence for mRNA differential expression among suicide attempt and ideation in several classes of inflammatory genes. New PET imaging data will be presented using PBR28 to examine neuroinflammation in acutely suicidal patients. These findings point to the possibility for generating brain-penetrant compounds and therapeutic target development.

Multiple neural signaling abnormalities are long-recognized in suicide. These findings may be independent factors, or distal to suicide related events such as inflammation. Sabina Berretta will present human postmortem data on the involvement of dopaminergic signaling and the nociceptin pathways in major depression and suicide. Her data point to sexual dymorphism and region-specific expression of nociceptin and its receptor in the human brain. The findings suggest that these neuromodulatory systems may be disrupted within the basal ganglia and prefrontal cortical areas of suicide victims.

Although the biology and neural mechanisms of suicide are complex, these presentations demonstrate that there is both a diversity and specificity of data to inform the pathophysiology of the phenomenon.

This symposium panel is gender balanced with participants across the range of career stages at several different institutions.

8.1 CENTRAL-PERIPHERAL INFLAMMATORY SIGNALS IN SUICIDE

Lena Brundin*[1], Eric Achtyes[2], Sophie Erhardt[3], Gilles Guillemin[4]

[1]Van Andel Research Institute, [2]Pine Rest Christian Mental Health, [3]Karolinska Institute, [4]Macquarie University

Individual Abstract: Accumulating evidence suggests that inflammation, and metabolites generated during inflammation, could be involved in the mechanisms underlying suicidal behavior. The activity of the enzymatic kynurenine pathway is induced during inflammation, leading to an increased production of several neuroactive metabolites including quinolinic acid (QUIN), which is an N-methyl-d-aspartate receptor (NMDAR) agonist. We have found the cerebrospinal (CSF) levels of QUIN to be increased in patients who recently attempted suicide.

Additionally, we have found two other metabolites, believed to be neuroprotective and counteracting the effects of QUIN, kynurenic- and picolinic acids, to be reduced. These findings were present in several cohorts of suicide attempters, both acutely after a suicide attempt when the levels of QUIN were highest, and also long-term, at a lower level, for up to two years after the initial suicide attempt. While some changes, such as increases in IL-6 and other inflammatory factors, can be detected both in CSF and plasma, the alterations in the kynurenine metabolites follow somewhat different patterns, as metabolism and permeability over the BBB impact certain metabolites.

The enzyme amino-β-carboxymuconate-semialdehyde-decarboxylase (ACMSD) limits QUIN formation by competitive production of the neuroprotective metabolite picolinic acid. Therefore, decreased ACMSD activity can lead to excess QUIN. We tested the hypothesis that deficient ACMSD activity underlies suicidal behavior and found evidence of a reduced PIC, or PIC/QUIN ratio in both CSF and blood from several independent cohorts of suicide attempters. Taken together, we observe increased inflammation in the form of IL-6 in both CSF and plasma from our cohorts, together with reductions of picolinic- and kynurenic acids and an increase of QUIN in patients with suicidal behavior. This evidence implies that inflammation ultimately impacts glutamate neurotransmission in the suicidal patients, via induction of the kynurenine pathway.

8.2 AT THE CROSSROADS BETWEEN ANHEDONIA, DEPRESSION AND ANXIETY: THE NOCICEPTIN RECEPTOR SYSTEM IN MAJOR DEPRESSION AND SUICIDE

Sabina Berretta*[1], Tanya Wallace[2], Diego Pizzagalli[3], Jonathan Samuel Vogelgsang[1], Anne Boyer-Boiteau[4]

[1]McLean Hospital, Harvard Medical School, [2]BlackThorn Therapeutics, [3]McLean Hospital, Harvard University, [4]McLean Hospital

Individual Abstract: Suicidal behavior is thought to arise from multifactorial disruption of the interactions between complex neural and signaling networks. Although the pathophysiology underlying such disruption is not well understood, evidence for key interacting elements is beginning to emerge. Dopaminergic signaling has been found by our group and others to be disrupted in persons with major depressive disorder (MDD) who died by suicide (MDD/suicide). The nociceptin receptor (NOPR), the most recently discovered member of the opioid receptor superfamily, and its endogenous ligand nociceptin (NOC) are key regulators of dopaminergic signaling and have been implicated in MDD and suicide. We tested the hypothesis that the expression of NOC and NOPR in the human brain is region- and sex-specific, predominantly associated with neurons involved in aversive behavior and anxiety and altered in MDD/suicide. We used Western blotting and RT-PCR to assess NOPR protein and mRNA expression in several cortical and subcortical brain regions of healthy control donors matched by sex and age (n= 6-10 female / 6-10 male). An independent cohort of healthy human donors (n=4) was used for single nucleus RNA-seq (snRNA-seq) studies on the amygdala. Protein expression studies show that in the amygdala (p=0.02) and in the nucleus accumbens (p=0.01), the expression level of the NOPR 31.8 kDa protein isoform is significantly higher in males as compared to females. Conversely, in the nucleus accumbens, expression of the NOPR 42.6 kDa isoform is significant higher in females (p=0.02). Expression level of the NOPR 39.9 kDa in the entorhinal cortex was found to be higher in males (p=0.02).

Gene expression analyses show that the expression of NOPR mRNA is significantly lower in females in the ventromedial prefrontal cortex (p=0.003), and a trend level in the orbitofrontal and, amygdala, dorsolateral prefrontal cortex, nucleus accumbens and putamen. Results from snRNA-seq show that NOC is expressed in several subpopulations of amygdala GABAergic neurons, such as those expressing somatostatin, corticotropin releasing hormone (CRH), and enkephalin, known to be involved in aversive behavior and anxiety. NOPR was expressed in at least one glutamatergic neuronal population also expressing dopamine receptor DRD1, CRHR1 and FKBP5, a co-chaperone known to modulate glucocorticoid receptor activity and to be involved in anxiety and depressive symptoms and in suicide. Finally, we used Western blotting to assess NOC expression in the nucleus accumbens of MDD/suicide as compared to unaffected controls (n=12/group). Our results show a significant increase of NOC protein in MDD/suicide (p<0.01). Investigations still in progress include expanding assessments of NOC expression to additional prefrontal cortical and subcortical regions of MDD/suicides donors. Together, these results support a role of the NOC/NOPR signaling system, and its interactions with dopaminergic and stress signaling factors, in MDD and suicide. Sexually dimorphic region specificity of NOPR expression may underlie sex differences in vulnerability to MDD, suicide attempts and death by suicide.

8.3 NOVEL PERIPHERAL MARKERS OF INFLAMMATION AS PREDICTORS OF SUICIDAL BEHAVIOR

Nadine Melhem*[1], Eli Goodfriend[2], Stephen Murata[2], Anna Marsland[3], Antoine Douaihy[1], David Brent[4]

[1]University of Pittsburgh School of Medicine, [2]University of Pittsburgh Medical Center, [3]University of Pittsburgh, [4]University of Pittsburgh Medical Center, Western Psychiatric Institute and Clinic

Individual Abstract: Postmortem studies show alterations in the expression of genes in the inflammatory pathways in brains of people who died by suicide. Differential expression for inflammatory genes is also reported in peripheral blood among subjects at risk for suicidal behavior; however, these studies are limited by their cross-sectional design and often combine suicidal ideation and attempt as outcomes. We examined peripheral blood expression of inflammatory genes in a sample of psychiatric patients (n=152) at high-risk for suicidal behavior and examined their relationships to suicidal behavior cross-sectionally and prospectively. There were 23 suicide-related behaviors prospectively including actual attempt, interrupted, ambiguous, and aborted attempts as measured by the Columbia-Suicide Severity Rating Scale (C-SSRS). For RNA analysis, we used Clariom S microarray from Thermo Fisher, which covers >20,000 well annotated genes. In our cross-sectional analyses, our top genes included differential gene expression between groups of IL17RC, PRCP, LPCAT3 mRNA. PRCP mRNA differentiated suicide attempters (SA, 9.5 +/- 1.1) at baseline from those with suicidal ideation (SI, 9.9 +/- 0.7, p=0.037), psychiatric controls (PC, 10.2 +/- 0.7, p=0.002), and healthy controls (HC, 10.1 +/- 0.6, p=0.003). SA only showed significantly lower levels of PRCP mRNA compared to all other groups. Similarly, SA (SA, 9.3 +/- 0.9) showed significantly lower levels of LPCAT3 mRNA compared to SI (9.8 +/- 0.6, p=0.012), PC (9.9 +/- 0.7, p=0.004), and HC (SA, 9.9 +/- 0.7, p=0.007). All psychiatric patients showed significantly lower levels IL17RC mRNA compared to healthy controls, a gene involved in cytokine signaling and chemokine induction. PRCP encodes an enzyme involved in the hypothalamic circuitry and in the degradation and inactivation of α-melanocyte-stimulating hormone (α-MSH) in the brain and plays an important role in metabolic regulation and energy

balance. PRCP is also an important regulator of blood pressure and electrolyte balance and is the target of several compounds that act selectively in peripheral tissues. Efforts are underway to generate brain-penetrant compounds to target its activity. LPCAT3 mRNA is involved in lipid metabolism and mice deficient in LPCAT3 show lipid changes that are associated with brain microgliosis. LPCAT3 mRNA also plays a role in blood pressure regulation. Several novel inflammatory genes were also found to predict time to onset of suicidal behavior prospectively. These findings add to prior evidence on the important role of inflammation in suicidal behavior and highlight novel inflammatory markers. mRNA for inflammatory genes involved in lipid metabolism and blood pressure regulation shed light on potential mechanisms for the relationships between suicide attempt, mortality from cardiovascular events, and higher burden of cardiovascular risk reported in prior studies. We are currently conducting a PET imaging study to examine neuroinflammation using PBR28 in acutely suicidal patients and will examine the relationship of mRNA of these genes to PBR28 PET binding.

8.4 INFLAMMATORY EFFECTS ON NEURONS AND GLIA IN POSTMORTEM SUICIDE DECEDENTS: PRELIMINARY FINDINGS REGARDING IMPACT OF EARLY LIFE ADVERSITY

Nicole K. Hinz[1], Suham A. Kassir[2], Mihran J. Bakalian[2], Angela Citrola[2], J. John Mann[3], Mark Underwood*[3]

[1]Barnard College, [2]NYSPI, [3]NYSPI, Columbia University

Individual Abstract: Neuroinflammation is observed in psychiatric illnesses including individuals with suicidal behavior. Inflammatory responses may be altered in individuals reporting early life adversity (ELA). Stress stimulates the production of neuroinflammation markers including translocator protein (TSPO) in the mitochondrial membrane, microglia markers Iba-1 and CD11b, and cytokines; the elevated cytokine levels can persist for years. Conversely, ELA can increase responses in the HPA axis with sustained cortisol levels partly due to impaired glucocorticoid receptor feedback inhibition. We hypothesize the ELA/stress leads to cytokine production which leads to neurotoxicity associated with neuroinflammation which can lead to neuropathology and mental illness, including suicide. We sought to determine whether TSPO, Iba-1 and CD11b are elevated in suicide and ELA in the prefrontal cortex (PFC) in postmortem human brain.

We examined 52 cases, grouped into 13 quadruplets of nonpsychiatric healthy controls with (HC+ELA) and without ELA (HC-ELA) and DSM-IV depressed suicide decedents with (Sui+ELA) and without ELA (Sui-ELA). Quadruplets were matched for sex (12M:1F), age (+/- 5 years) and postmortem interval (PMI, +/- 5 hours). Immunocytochemistry was performed on free-floating tissue sections (50 μm) from dorsolateral prefrontal cortex Brodmann Area 9 (BA9). Single-labeling was performed using antibodies to TSPO, Iba-1 and CD11b; double-labeling with the neuron-specific protein NeuN for each antibody was performed in adjacent sections to distinguish between glial localization and neuronal co-localization. Photomicrographs were rated for staining intensity and double-labeling (0-4, absent–marked) and ranked (1-4, least-to-most) by 2 independent raters. Statistical comparisons were made using the Kruskal-Wallis test and Dunn's test for post hoc multiple comparisons.

TSPO was observed throughout BA9 with marked labeling and co-labeling with NeuN in neuronal soma, but also in glia, with a punctate appearance; labeling was also evident in microvessels. Neither TSPO staining intensity ($p=.22$) nor double-labeling frequency differed

between groups (p=.66). However, the TSPO rank of SUI-ELA was significantly greater than the SUI+ELA (p=.04). When cases were grouped by ELA, ELA+ ranked TSPO below ELA- (p=.031), suggesting ELA attenuated TSPO levels. Iba-1 had a widespread distribution in BA9 with a punctate appearance associated with microglia and was rarely observed in double-labeled NeuN+ neurons. No group differences were found in Iba-1 intensity (p=.09), but Sui+ELA had fewer observed double-labeled neurons than HC-ELA (p=.040) suggesting more Iba-1 in glia. Given the role of Iba-1 in membrane cytoskeleton maintenance, structural alterations may be part of the pathology associated with ELA in suicides. CD11b is a marker of microglia and microglia activation. Accordingly, CD11b was observed throughout the cortex in cells with a morphology of microglia; labeling in neurons was infrequent. No group differences were observed in the intensity of CD11 immunolabeling (p=.77). Sui-ELA had fewer double labeled neurons expressing CD11 (p=.04). NeuN+ density was not different between HC and suicide in the ELA-, or any ELA+ group. However, ELA+ groups were ranked as having fewer NeuN+ neurons than ELA- (p=.05) suggesting a lower density of PFC neurons with ELA. Neither TSPO, Iba-1, nor CD11b, rating or ranking, correlated with age, PMI or brain pH (p>.05).

Individuals with ELA, who have prolonged cortisol responses to stress, may have blunted acute immune responses to the stress associated with suicide. Vulnerability to the adverse effects of stress may be exacerbated by a lower PFC neuron density and increase the risk for suicide.

9. BIG DATA, REGISTRY AND EHR IN SUICIDE RESEARCH

Chair: Philippe Mortier, Health Services Research Group, IMIM (Hospital del Mar Research Institute)

Overall Session Description: Machine learning techniques have shown potential to improve the statistical prediction of suicidal behavior using electronic healthcare record data. In this session, leading experts from the field will focus on the various aspects of how machine learning and artificial intelligence can contribute into improved clinical prediction of suicidal behavior: a review of the current state of suicide risk prediction models as well as their potential clinical implementation; the potential benefit of combining various sources of data using database linkage studies (healthcare record data, medical claims datasets, data collected using wearable technology, smartphones, or social media); an overview of existing as well as newer machine learning techniques using illustrative examples; the potential of machine learning to identify new suicide risk factors and sex-specific risk profiles; the potential transformation of advanced suicide prediction algorithms into clinical decision support systems; and the social relevance, challenges and pitfalls of artificial intelligence-driven healthcare applications.

9.1 PREDICTING SUICIDAL BEHAVIOR FROM HEALTH RECORDS DATA: USEFUL BUT FAR FROM MAGICAL

Gregory Simon*[1], Susan Shortreed[1], Julie Richards[1], Yates Coley[1]

[1]Kaiser Permanente Washington Health Research Institute

Individual Abstract: Several research teams have developed statistical models predicting suicidal behavior from health records data with overall accuracy approaching 85%. Those

findings have prompted both exaggerated expectations and exaggerated fears regarding the role of artificial intelligence in suicide prediction. This presentation will review the current state of suicide risk prediction models and describe early experience with clinical implementation. Key steps in the development and implementation of risk prediction models include: defining the specific clinical decision that a prediction model hopes to inform, examining completeness of ascertainment for predictors and outcomes, considering potential trade-offs between accuracy and interpretability, guarding against over-fitting to idiosyncratic associations, exploring generalizability across time and clinical setting, examining potential biases in predictions for traditionally under-served groups, and transparent reporting of all methods and validation results.

9.2 MACHINE LEARNING AND SUICIDAL BEHAVIOR

Hanga Galfalvy*[1], Tse-Hwei Choo[1]

[1]Columbia University

Individual Abstract: Machine Learning and Suicidal Behavior
Ongoing advances in digital technology, together with progress in data science, statistics and artificial intelligence have already transformed the way mental health is investigated and are on the way to transform the diagnosis and treatment of mental health problems. During the last few years, a series of studies appeared that described pragmatic and reasonably accurate suicide risk prediction, capable of identifying high-risk patients for additional screening or intervention. In large part, these advances are due to the availability of high quality, large datasets of at least two types: electronic health records and/or medical claims datasets covering a hundred of thousands, and often millions, of patients; and in-depth, high-frequency datasets collected using wearable technology, smartphones, or social media. In addition, database linkage studies are combining datasets of administrative, medical and social data that were previously analyzed separately and improving the quality and the quantity of data available for suicide research on the population level.

Many of the data analytic methods used for analyzing these new types of data, including the machine learning algorithms, even deep learning techniques, existed decades ago. If modified to suit the specific aims of the suicide prevention projects, long-existing algorithms can be very effective. In this talk, through examples, I will discuss some old and some newer techniques for prediction of suicidal behavior to illustrate similarities and advances. Namely, I will contrast the performance of several basic ML algorithms for retrospective and prospective prediction of suicide attempt using an in-depth research database with few follow-up timepoints; show that while off-the-shelf Recurrent Neural Networks likely outperform conventional statistical models on high-frequency data, they require special attention to be able to predict the periods of highest risk in individuals; and will contrast partitioning suicidal patients into classes based on markers of suicide risk severity in data sets of a few hundred patients as opposed to the tens/hundreds of thousands.

Ultimately, the Artificial Intelligence (AI) that is being built today into healthcare applications is unlikely to be sufficient for the task of ongoing, accurate prediction of suicidal behavior in a socially positive way. It is inevitable that as our techniques for predicting suicidal behavior

improve, so will our interventions to prevent the behavior, thus the models/techniques will need to be constantly updating themselves to take into account their own effects on both individual choices and on the populations at risk. So far there have not been convincing studies that the AI algorithms will be capable of this in the long run. Moreover, there is now solid evidence that machine learning algorithms themselves can perpetuate or aggravate discriminatory practices in healthcare. Suicide prevention may need Artificial Wisdom (AW), a wise algorithm that will learn from its own experiences, can integrate multiple perspectives, can exhibit compassion and empathy on the individual level, and has superior social conscience. I will close with a brief discussion about whether the findings of studies contrasting clinical judgment and machine learning based prediction can teach us anything about AW in suicide prevention.

9.3 DATA-DRIVEN CLINICAL DECISION SUPPORT FOR SUICIDE RISK ASSESSMENT – PROTOCOL OF THE CSRC-EPI STUDY

Philippe Mortier*[1], Gemma Vilagut[2], Itxaso Alayo Bueno[2], Laura Ballester Coma[3], María Jesús Blasco Cubedo[4], Narcis Cardoner[5], Cristina Colls[6], Ana De Inés Trujillo[7], Matilde Elices[8], Anna García-Altés[9], Manel Gené Badia[10], Rosa Morros Pedrós[11], Bibiana Prat Pubill[12], Beatriz Puertolas-Gracia[2], Ronald C. Kessler[13], Ping Qin[14], Lars Mehlum[14], Diego Palao[15], Víctor Pérez[16], Jordi Alonso[17]

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Individual Abstract: Suicide attempts (SA) pose a major burden on our society. Lifetime SA prevalence is in the range 0.5-5.0%, and suicide claims 34.6 million years of life worldwide. High proportions (57-80%) of individuals have contact with healthcare services in the critical period preceding a suicide attempt. However, clinicians are prone to heuristic-based decision-making, leading to failure in detecting real suicide potential. Centralized EHR systems have high potential to provide data-driven clinical decision support in SA risk assessments. Our previous work among college students showed that suicide risk prediction algorithms using logistic regression have AUC values range 0.79-0.91. Here we present the Catalonia Suicide Risk Code Epidemiology (CSRC-Epi) study, which objectives include developing clinically useful suicide risk prediction algorithms. The CSRC-Epi study is a two-stage exposure-enriched nested case-control study of SA in Catalonia, Spain (period 2014-2021; target population ~9.5 million). Cases come from a case register part of a comprehensive regional SA surveillance program (expected episodes registered n = ~22,400). Controls will be selected from population-representative registers. Predictor variables come from centralized EHR systems representing emergency care, primary care, outpatient mental healthcare, and general and psychiatric hospitalizations. Predictor variables consist of sociodemographic variables, small area geocode data, somatic conditions and psychiatric disorders, medical procedures, healthcare contacts, and prescription drugs. SA risk prediction tools will be constructed using machine learning techniques (e.g., elastic net penalized logistic regression, gradient boosting). Stacking ensemble techniques will further optimize prediction accuracy. Cross-validated algorithms will estimate SA risk for different prediction windows, and for specific healthcare contacts, and will be evaluated using AUC, positive predictive values, sensitivity values, and F1-scores. This will lead to the development of a proof of concept of a CDSS for the assessment of suicide risk. The CDSS will consist in a software package that uses the previously developed suicide attempt risk prediction algorithms and integrates them in a real-time clinical interface. The clinical interface will be able to use clinically assessed as well as electronic health record data to calculate and visualize personalized risk for future suicide attempts across various healthcare settings. Specifically, the clinical interface will provide clinicians with: (1) dynamic risk factor maps, i.e., a visual overview of the relative importance of the patient's identified suicide attempt risk factors over time; (2) a decision tree based on the patient's suicide attempt risk factors, including warning alerts that important risk factors may be missing and in need for additional assessment; and (3) dynamic suicide risk line graphs that show predicted risk for suicide attempts over the next days to months, including expected reductions in suicide attempt risk if risk factors are tackled by clinical interventions. The data-driven decision support tools we will develop could have high potential in optimizing the allocation of clinical resources, such as in-depth suicide risk assessments and targeted treatment interventions in multi-stage suicide risk screening programs.

9.4 PREDICTING SEX-SPECIFIC SUICIDE RISK IN THE POPULATION OF DENMARK

Jaimie Gradus*[1]

[1]Boston University School of Public Health

Individual Abstract: Suicide is a public health problem, with an etiology that is poorly understood. The increased focus on combining healthcare data with machine learning approaches in psychiatry may help advance the understanding of suicide risk. Thus the objective of this case-cohort study was to examine sex-specific risk profiles for death from suicide using machine learning methods and data from the population of Denmark. The source population for this study was all persons born or residing in Denmark prior to 1995. Exposures included 1,339 variables spanning domains of suicide risk factors and the outcome was death from suicide from the Danish cause of death registry. Cases died by suicide between 1995 and 2015 (n = 14,103; 72% male, M age = 44). The comparison subcohort was a 5% random sample of living individuals in Denmark on January 1, 1995 (n = 265,183; 49% male, M age = 37). Using classification trees and random forests, we observed sex-specific differences in risk for suicide, with physical health more important to men's suicide risk than women's suicide risk. Psychiatric disorders and associated medications were important to suicide risk, with specific results that may increase clarity in the literature. Generally, diagnoses and medications measured 48 months before suicide were more important indicators of suicide risk than when measured 6 months prior. Despite decades of research on suicide risk factors, our understanding of suicide remains poor. In this study, the first to develop risk profiles for suicide based on data from a full population, we found consistency with what is known about suicide risk but also potentially important, understudied risk factors with evidence of unique suicide risk profiles among specific subpopulations.

10. POPULATION AND SYSTEMS BASED APPROACHES TO SUICIDE PREVENTION

Chair: Keith Hawton, Warneford Hospital, Oxford University

Overall Session Description: Suicide is a complex phenomenon. Approaches to prevention must therefore address multiple causal factors. This necessitates having a clear understanding of the factors that are most relevant in specific communities. The presentations in this symposium will address how the most important factors in a community can be identified as the focus for interventions, specific prevention initiatives and their evaluation within healthcare systems, and the effectiveness and potential drawbacks of prevention of suicide from self-poisoning.

10.1 RESEARCH SUPPORTING SUICIDE PREVENTION APPROACHES IN HEALTH SYSTEMS

Brian Ahmedani*[1]

[1]Henry Ford Health System

Individual Abstract: Background: Suicide is a major public health concern in the United States (US). Over 45,000 individuals die by suicide per year in the US and over 1.5 million attempt suicide. The 2012 US National Strategy on Suicide Prevention highlighted the importance of healthcare systems in suicide prevention efforts. Nearly 85% of individuals make

healthcare visits in the year before suicide. Over the last two decades numerous suicide risk detection, prevention, and treatment approaches have been developed and implemented in health systems. Based on growing research evidence on this wide range of clinical approaches, health systems across the nation (and around the world) have begun implementing a variety of suicide prevention models. These approaches have been adopted by the zero suicide model, originally developed at Henry Ford Health System, and now promoted worldwide. In addition, several national healthcare quality boards and accreditation bodies have developed quality metrics and patient safety goals requiring suicide prevention activities enhancing the importance of implementing evidence-based approaches in health systems. Nonetheless, there remains an urgent need to understand the research supporting these approaches within health system settings.

Innovations in Research: This presentation highlights recent and ongoing research on suicide prevention approaches and their implementation in health systems. This study examines a wide range of suicide prevention approaches. These approaches have differing levels of evidence from implementation in health systems, including through several large multi-site studies via the US NIH-funded Mental Health Research Network (MHRN). The MHRN is a consortium network of 21 health systems, with embedded researchers, providing care for over 30 million individuals across the US. MHRN health systems have organized data and resource infrastructure to support large scale and rapid research on mental health conditions and care, including the ability to study rare events, such as suicide attempts and mortality. We highlight real-world evidence and research findings from several ongoing MHRN studies on a series of suicide risk identification tools, safety planning, care management and follow up approaches, and universal and targeted interventions. Suicide attempt and mortality outcomes are presented from these real-world clinical settings. Opportunities, challenges, and clinical and policy implications based on these findings are presented.

Several suicide prevention approaches have been developed over the last 20 years and are starting to be implemented in health systems. The MHRN provides an ideal platform to evaluate implementation of these approaches, while also supporting innovation of new and adapted models. Suicide prevention identification and treatment approaches can be implemented effectively in health systems.

10.2 SYSTEM THINKING IN COLLABORATIVE COMMUNITY-BASED SUICIDE PREVENTION: BRIDGING THE GAP BETWEEN COMMUNITIES OF PRACTICE AND RESEARCH

Ann Marie White*[1]

[1]University of Rochester Medical Center . Children's Institute

Individual Abstract: Despite increasing investments in health care and public health systems, community rates and burdens of suicide death in the U.S. increased overall across this millennium pre-pandemic, while rates in other countries declined. When premature deaths from suicide occur one by one, this brings about event-oriented interventions to reach individuals in or near crisis in communities. What can be relevant to the enactment of comprehensive suicide prevention, such as focused populations and component interventions,

can remain narrowly scoped in local communities – for instance, within a single system or sector hierarchically managed and producing small, fleeting, or hard to replicate effects. Helping communities adopt systemic approaches to address multiple causes of burden changes within U.S. local communities is a timely need as effective interventions target underlying causes, self-injurious behavior can be a lagging indicator of risk, and existing intervention approaches remain largely singular focused on individuals identified at risk and produce limited effects.

Learning how to respond to underlying causes in trends observed at a community level can help reduce suicide burdens in a lasting way. Community stakeholders can develop system level prevention capacities to respond to the dynamic nature of suicide rate changes as both a "wicked" and a "complex" problem. Causes of suicide rates are complex, driven by intersecting socio-ecological, contextual, interpersonal, and individual features such as those linked to substance use. Reducing suicide burdens requires local collective knowledge of how a mosaic of evidence-based prevention and interventions, risk, and protective conditions - supported by interactions across many community systems - interplay in "bending the curve" over time.

System-thinking can help coordinate learning across different agents taking action by showing underlying causes driving burden changes and forecasting possible trends over time. Causal loop diagrams visualize multiple stakeholder hypotheses of how local changes in suicide are produced over time. Feedback effects due to the interplay of social contagion, social isolation and loss of community, loss of trust in crisis services and when seeking mental health treatment, support seeking norms, as well as short-term numbing effects of trauma or sustained effects due to gun violence trauma or long-term social distress are described. We demonstrate how systems science can help generate actionable knowledge supportive of stakeholder collaboration across public health, prevention leaders and community sectors in the design of broadly effective prevention systems that span agency boundaries and multiple sectors.

10.3 INTERVENTIONS TO LIMIT SUICIDE BY SELF-POISONING

Keith Hawton*[1]

[1]Warneford Hospital, Oxford University

Individual Abstract: Interventions to Limit Suicide by Self-Poisoning
Keith Hawton, Centre for Suicide Research

Self-poisoning is one of the more common suicide methods. It includes overdoses of medication, especially analgesics and psychotropic drugs. It also includes ingestion of substances not intended for human consumption, of which pesticides are by far the most important in that intentional pesticide poisoning is responsible for a very large number of deaths globally This method is especially common in several low and lower middle income countries where farming is a major occupation. Interventions for prevention of use of self-poisoning for suicide can include several different approaches, some of which have been shown to be effective. However, they can also have untoward effects.

Examples will be presented of effective interventions to reduce suicide by self-poisoning, including: reduction of pack sizes of analgesics, withdrawal of particularly toxic medication,

and removal of more toxic pesticides. Potential adverse effects of preventive interventions will also be discussed, of which method substitution is the most important, especially when other methods people may turn to involve greater risk of death than self-poisoning.

10.4 SUICIDAL BEHAVIOR AMONG U.S. VETERANS, 2001-2019, AND EVALUATION OF THE VETERANS HEALTH ADMINISTRATION REACH VET CLINICAL PROGRAM

John McCarthy*[1]

[1]Department of Veterans Affairs

Individual Abstract: The Department of Veterans Affairs (VA) is committed to Veteran suicide prevention. The VA's national strategy for suicide prevention includes a focus on suicide data and surveillance. This presentation:

- Describes VA suicide surveillance efforts,
- Presents findings from the 2021 National Veteran Suicide Prevention Annual Report, and
- Highlights the application of VA health system surveillance data to support suicide predictive modeling and implementation of a novel clinical program, REACH VET, that provides care enhancements for patients identified in the top 0.1% risk tier at their local VA facilities.

Tuesday, October 26, 2021

CONCURRENT SYMPOSIUM SESSIONS
8:00 AM - 9:30 AM

11. PSYCHOSIS-SPECTRUM EXPERIENCES AND SUICIDAL BEHAVIORS AMONG YOUTH IN THE UNITED STATES: FINDINGS FROM CLINICAL AND COMMUNITY SAMPLES

Chair: Jordan DeVylder, Fordham University

Overall Abstract Details: Individuals with psychosis-spectrum disorders have an elevated risk for suicidal thoughts, attempts, and death by suicide, and risk may be particularly high among those in the early stages of illness (i.e. adolescents and young adults in the prodromal and first episode phases of illness). Moreover, psychosis-like experiences, which are less severe and impairing than full threshold symptoms, have also been linked to suicidal thoughts and behaviors in clinical and general population samples. These findings indicate a need for

widespread attention to psychosis-spectrum symptoms in the assessment and management of suicide risk.

This symposium presents emerging research on links between psychosis-spectrum experiences and suicidal thoughts and behaviors among adolescents and young adults in clinical and community samples within the United States. We will discuss the current state of the literature and present original research that corroborates previous findings and extends these findings to new samples of interest (e.g., a nationally representative sample of young adults in the U.S., psychiatrically acute adolescents at critically high risk for suicide). We explore relations between specific types of psychosis symptoms and suicidal behaviors, which could inform targeted assessment and intervention. We also introduce novel findings in two new areas of research at the intersection of psychosis and suicidality: (1) we characterize the co-occurrence of hallucinations and suicidal mental imagery (i.e., imagined scenes or pictures of suicide), which has been linked to greater risk for suicide, and (2) we explore social media behaviors among adolescents with psychosis-spectrum symptoms and at high risk for suicide. Furthermore, we discuss public health and clinical implications of this research, and we present novel approaches to suicide risk assessment for use with individuals experiencing psychosis-spectrum symptoms. As such, this symposium will build upon the discussion initiated through the invited symposium on psychosis and suicide at the 2019 IASR/AFSP conference, and features research from AFSP-funded projects.

In the first talk, Dr. DeVylder will present findings from a national probability sample of young adults in the U.S. linking psychotic experiences to suicidal ideation and suicide attempts. Psychometric analysis of the psychosis screening measure used in this study indicate that simple self-report items on hallucinations may be a particularly useful clinical predictor of suicide attempts. Dr. Thompson will present data linking psychosis-spectrum symptoms to suicidal ideation and attempts among psychiatrically hospitalized adolescents at very high risk for suicide. She will then present new data linking hallucinations to suicidal mental imagery in this sample; adolescents experiencing hallucinations are more likely to endorse suicidal mental imagery, which is associated with greater suicidal ideation and attempts. Dr. Visser will present data exploring social media use among adolescents experiencing comorbid suicidality and psychosis symptoms, emphasizing patterns of social media behaviors directly related to self-harm and suicidal thoughts (e.g., discussing and posting about self-injury and suicide). S. Jay will then introduce a new research tool designed to explore suicidal thoughts and behaviors as they co-occur and/or intersect with psychosis-spectrum experiences. She will present data from a multi-site study piloting this measure in community and clinical samples of adolescents and adults. Our symposium chair, Dr. DeVylder, will close by discussing the overarching implications of this research and directions for future research.

11.1 PSYCHOTIC EXPERIENCES AS RISK MARKERS FOR SUICIDAL BEHAVIOR IN A U.S. NATIONAL PROBABILITY SAMPLE

Jordan DeVylder*[1], Hans Oh[2], Lisa Fedina[3]

[1]Fordham University, [2]University of Southern California, [3]University of Michigan

Individual Abstract: Self-reported psychotic experiences, which resemble hallucinations and delusions of schizophrenia but of lesser severity, intensity, or associated impairment, have been shown to be associated with suicidal behavior in the general population. However, this has not been studied in a nationally representative samples of young adults in the U.S. Further, item-by-item analyses are needed in order to identify psychotic experience sub-types that may be clinically useful as indicators of suicide risk.
METHODS: A national probability sample of young adults (18-29) was surveyed on a variety of mental health constructs and related socioenvironmental risk exposures (N=1077, weighted to be representative of this age group in the U.S.). We examined associations between past-year psychotic experiences, assessed using the World Health Organization Psychosis Screen, and past-year suicidal behavior, assessed using the Columbia Suicide Severity Rating Scale, adjusting for demographic factors and depressive symptoms. In addition, we used psychometric analyses to determine the potential value of individual psychotic experiences items as indicators of risk for suicidal behavior, both in the entire sample and among the sub-sample with suicidal ideation.

Suicidal ideation was reported by 28.3% of respondents with psychotic experiences, compared to 13.2% of those without, adjusted odds ratio (95% confidence interval)=2.71 (1.94-3.78). Suicide attempts were reported by 4.5% of those with PE reported past-year ideation, compared to 0.2% without, adjusted odds ratio (95% confidence interval)=20.91(3.46-126.58). There was a significant interaction between psychotic experiences and depression on suicidal ideation, such that depression was more strongly linked to suicidal ideation in the absence of psychotic experiences. In contrast, neither depression nor the interaction between depression and psychotic experiences were significantly associated with suicide attempts. A positive psychosis screen was a highly sensitive indicator of risk of suicide attempts (sensitivity=0.95; specificity=0.60). Item-by-item psychometric analyses of the psychosis screen among respondents with ideation showed that the visual/auditory hallucinations item was the best indicator of risk for suicide attempts (sensitivity=0.65; specificity=0.86; positive predictive value=32.5%).

In the first study to test for associations between psychotic experiences and suicidal behavior among a nationally representative sample of young adults in the U.S., we found that psychotic experiences were significantly associated with both suicidal ideation and behavior. Consistent with past research, these associations were robust to adjustment for depression and were particularly pronounced for suicide attempts, relative to ideation. Notably, we also conducted item-by-item analysis of four binary psychosis screening items, showing that the item assessing hallucination-like experiences indicates risk for suicide attempts (among those with underlying ideation) with good specificity and predictive value, such that nearly one third of respondents with hallucination-like experiences and ideation also attempt suicide during the concurrent 12-month period. While this positive predictive value may appear low, this is on par with common predictive indicators of risk in healthcare (e.g., mammograms for breast cancer) and notably exceeds the predictive validity of many accepted suicide risk indicators (e.g., suicide screening tools). Prospective clinical research is needed to determine whether this potential predictive utility translates to real-world settings.

11.2 AN EXPLORATION OF LINKS BETWEEN HALLUCINATIONS AND SUICIDAL MENTAL IMAGERY AMONG PSYCHIATRICALLY HOSPITALIZED ADOLESCENTS AT HIGH RISK FOR SUICIDE

Elizabeth Thompson*[1], Katherine Visser[2], Hannah Lawrence[3], Anthony Spirito[2], Jennifer Wolff[2]

[1]Rhode Island Hospital, Alpert Medical School of Brown University, [2]Alpert Medical School of Brown University, [3]Harvard Medical School McLean Hospital

Individual Abstract: Individuals with psychosis-spectrum symptoms are at a markedly high risk for suicidal thoughts and behaviors. Hallucinations in particular may be linked to suicidal ideation (SI) and attempts. Although suicide risk measures most commonly assess verbal thoughts of suicide (e.g., suicidal words), many individuals report experiencing suicidal mental imagery (e.g., imagined scenes or pictures), which may be linked to greater risk for suicide. The co-occurrence of hallucinations and suicidal mental imagery warrants exploration given the central role of sensory experiences in both phenomena; no known research has explored these links. Inpatient settings that treat teens with acute mental health concerns offer a unique opportunity to investigate the interrelations of hallucinations and suicidality. In this chart review study, we explored cross-sectional links between hallucinations and suicidal mental imagery among psychiatrically acute teens. We hypothesized that hallucinations would be positively associated with suicidal mental imagery.

Teens admitted to a psychiatric inpatient unit completed a brief assessment battery at intake. The Suicidal Ideation Questionnaire-Jr (SIQ-Jr) assessed SI; scores > 30 indicate clinically significant SI. A suicidal cognitions questionnaire designed for this battery assessed whether teens experienced suicidal mental imagery (yes/no). A series of questions probed suicide attempts (yes/no), ever and in the past year, month, and week. The Pediatric Symptom Checklist-17 was used to measure internalizing symptom severity (range 0-10). A brief diagnostic interview (MINI-KID) was used to screen for mental health diagnoses, and the psychosis module assessed history of auditory or visual hallucinations (yes/no).

This study included 219 teens (ages 11-18). A history of hallucinations was significantly correlated ($p < .001$) with SI ($r = .33$) and suicidal mental imagery (phi = .29), but not with any suicide attempt variables. The correlation between hallucinations and SI held when controlling for internalizing scores ($r = .27$), indicating that this association is not accounted for by depressive and anxiety symptoms. Furthermore, logistic regression indicated that youth with hallucinations had 2.98 times higher odds ($p = .001$) of reporting suicidal mental imagery when controlling for internalizing symptoms. Suicidal mental imagery was positively correlated ($p <.001$) with SI ($r = .49$), lifetime attempts (phi = .28), and past year, month, and week attempts (phi = .22, .20, .19). Among the 116 teens with clinically significant SI, those with hallucinations (n = 48/116, 41.4%) were more likely to endorse mental images of suicide (n = 34/48; 70.8%) compared to those without hallucinations (n = 35/68; 51.5%; $X2 = 4.38$, $p = .036$). Logistic regression indicated that hallucinations were associated with 2.29 times higher odds ($p = .001$) of reporting suicidal mental imagery in this particularly vulnerable subsample of youth with elevated SI.

Our novel findings indicated that in this acute sample, hallucinations were linked to SI and suicidal mental imagery. Suicidal mental imagery was also associated with greater SI and attempts, indicating the clinical importance of these types of suicidal cognitions. These data highlight the need for more research exploring suicidal mental imagery among high risk teens, and particularly those with hallucinations. These youth are already at elevated risk for suicide, and suicidal mental imagery may further increase their risk. These findings have important implications for suicide prevention, as attending to suicidal mental imagery may be critical for risk assessment, safety monitoring, and developing effective treatment strategies.

11.3 AN EXPLORATION OF SOCIAL MEDIA BEHAVIORS AMONG PSYCHIATRICALLY HOSPITALIZED ADOLESCENTS WITH PSYCHOSIS-SPECTRUM SYMPTOMS AND AT HIGH RISK FOR SUICIDE: PATTERNS OF GENERAL SOCIAL MEDIA USE AND ONLINE ACTIVITIES DIRECTLY RELATED TO SELF-HARM AND SUICIDE

Katherine Visser*[1], Elizabeth Thompson[2], Jacqueline Nesi[2], Jennifer Wolff[1]

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Individual Abstract: Youth hospitalized for suicidal thoughts and behaviors report that certain social media (SM) behavior, such as talking about self-injury with online friends, is associated with higher risk for suicide. However, little is known about SM behavior among particularly vulnerable populations, such as adolescents experiencing comorbid psychosis-spectrum symptoms (PS) and suicidality (both of which have been linked to social difficulties among youth). Research indicates that SM use (general use and specifically venting feelings) by individuals developing PS predicts greater negative affect; they may also be more likely to report suicidal thoughts and attempt suicide. This highlights the need to explore interrelations among SM behaviors, suicidal thoughts/behaviors, and PS. This cross-sectional study explored whether PS are linked with particular SM behaviors in psychiatrically hospitalized adolescents who made a suicide attempt (SA) in the past year.

This chart review study included adolescents (aged 11-18 years) who were hospitalized on an inpatient unit in a children's psychiatric hospital from February 2019 - October 2020. During this period, adolescents completed a standard intake battery including an SM use questionnaire and an item from the Self-Injurious Thoughts and Behaviors Interview asking whether an SA was made in the past year. The SM questionnaire was designed for this setting to assess general SM use and use as related to self-harm (e.g., posting, viewing, talking about self-harm). This battery was followed by a brief clinical interview (the Mini International Neuropsychiatric Interview for Children and Adolescents) to screen for common mental health symptoms, including PS (e.g., lifetime and current delusions and hallucinations). Lifetime history of PS was coded yes (1) or no (0). Data were analyzed via point-biserial correlations and univariate ANOVA.

A total of 749 adolescent charts were scanned. Those with a history of PS (n = 161) were more likely to have made a past-year SA than those without PS ($X^2 = 8.35$, $p < 0.01$). Among youth who reported a past-year SA (n = 276), there were significant differences in SM behavior between youth with a history of PS and those without; Youth with PS reported checking SM

more frequently ($F = 6.48$, $p < 0.05$), feeling more hurt by online comments ($F = 4.64$, $p < 0.05$), feeling less supported by online friends ($F = 4.38$, $p < 0.05$), feeling like others are doing better ($F = 4.80$, $p < 0.05$), feeling worried they are missing out ($F = 3.96$, $p < 0.05$), and posting more about their mental health ($F = 5.10$, $p < 0.05$). They were also more likely than youth without a history of PS to talk with online friends about suicide or self-harm ($F = 3.98$, $p < 0.05$) and share pictures or posts related to injuring themselves ($F = 7.15$, $p < .01$). Sharing pictures and posts related to self-injury was also linked to past year SA in the full sample, ($r = 0.10$, $p = 0.05$), whereas talking with online friends was not ($r = 0.09$, $p = 0.10$).

These data indicate that adolescents with a history of PS are more likely to have made an attempt in the past year. Specific types of SM use may also be associated with PS among youth reporting a past-year SA; for example, those with PS were more likely to believe they had less social support online than those without PS. Youth with PS were also more likely to use SM to discuss suicide or self-harm or share related images. This suggests a duality where despite feeling less supported by online communities, youth with PS at potentially elevated risk for suicide still search for it. This may aid in identifying particularly vulnerable adolescents and lead to the development of treatment targets focusing on more adaptive use of SM (e.g., challenging thought distortions, building positive relationships).

11.4 THE SUICIDE HISTORY ASSESSMENT FOR PEOPLE WITH PSYCHOSIS-SPECTRUM EXPERIENCES: THE DEVELOPMENT OF A NOVEL SUICIDE RISK MEASURE FOR PEOPLE ACROSS THE PSYCHOSIS SPECTRUM

Samantha Jay*[1], Peter Phalen[2], Elizabeth Thompson[3], Jordan DeVylder[4], Jason Schiffman[1]

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Individual Abstract: People with psychosis-spectrum symptoms are at a greater lifetime risk for suicidal thoughts, suicide attempts, and deaths by suicide than the general population. Despite substantial evidence of elevated rates of suicidal thoughts and behaviors, there are currently no validated suicide risk measures for this high-risk population. Moreover, there is a paucity of research on the temporality of the development and emergence of these symptoms. Thus, to further understand the relation between attenuated positive symptoms and suicidal thoughts and behaviors, we developed the "Suicide History Assessment for People with Psychosis-spectrum Experiences" (SHAPE), which can be administered to individuals across the psychosis spectrum. The SHAPE measures suicide risk by assessing symptoms that may be particularly relevant for individuals with psychosis-spectrum symptoms. The SHAPE also examines the temporality of symptoms and whether participants report that their attenuated positive symptoms contribute to their suicidal thoughts and behaviors. We are piloting this measure across five sites with a range of psychosis-spectrum experiences (i.e., community, outpatient, and inpatient samples; UMBC, Temple, Baltimore VA, Brown, and FSU). Initial data from one site (UMBC, $N = 98$) of community adolescents and young adults has found that 46 (47%) endorsed lifetime passive SI, 35 (36%) endorsed lifetime active SI, and 7 (7%) endorsed a lifetime SA. Within the subsample of youth at clinical high risk for psychosis (CHR; $n = 16$), 11 (69%) endorsed lifetime passive SI, 8 (50%) endorsed lifetime active SI, and 2 (13%) endorsed a lifetime suicide attempt. Most participants at CHR reported that sadness, loneliness, and mental health symptoms (e.g., depression) contributed to their suicidal

thoughts. Preliminary results revealed that 3 of 11 participants reported that their SI co-occurred with one or more of the following: suspiciousness (n = 2), visual hallucinations (n = 1), unusual thought content (n = 2), and grandiosity (n = 1); and 1 of 11 reported that these directly impacted their SI (suspiciousness; participants can endorse more than one symptom). Out of the 2 participants who endorsed a lifetime suicide attempt, one participant endorsed that the attempt co-occurred with the experience of suspiciousness, and that their suspiciousness directly impacted their SA. Results from this study may validate a novel and needed tool for the assessment of suicide risk among people at risk for psychosis, and thereby contribute to the field's understanding of elevated suicide risk rates in individuals with psychosis-spectrum symptoms that may subsequently facilitate the identification of prevention and intervention targets.

12. SCHOOL BASED SUICIDE PREVENTION

Chair: Nicholas Ialongo, Johns Hopkins Medical Institutions

Overall Abstract Details: School Based Suicide Prevention

Youth suicide is a serious and increasing public health problem in the United States. In recent years, suicide has become a major concern at schools throughout the United States (Carroll, 2017). National education associations have issued joint statements and developed frameworks to support schools in establishing a continuum of mental health supports (Cowan, Vaillancourt, Rossen, and Pollitt, 2013). Suicide prevention in schools is important for many reasons. First, research clearly demonstrates that a child's mental health can significantly determine academic achievement (Taylor, Oberle, Durlak, and Weissberg, 2017; Durlak, Weissberg, Dymnicki, Taylor, and Schellinger, 2011). Second, when a student does take his or her life, it often has a devastating impact on the entire school and the surrounding community. Finally, and more generally, there has been a growing national movement to improve school safety, which has included widespread advocacy for increased access to a continuum of mental health supports within schools (Cowan et al., 2013; Federal Commission on School Safety, 2018). Taken together, current nationwide, state, and school-based initiatives align with "upstream" approaches to suicide prevention that propose broadening prior efforts by reducing risk factors and building protective factors before the onset of suicidal thoughts and behaviors (Wyman, 2014).

Unfortunately, school based suicide prevention research has not been given the same attention as primary care and emergency room interventions. Teacher focused gate keeper programs have likely received the most effort, but findings are inconsistent. To address this need, three well established investigators will talk about the outcomes, successes and challenges of their school based prevention efforts. We will leave ample time for questions and discussion.

The first presentation will be led by Laura Hart from Melbourne Australia. She will present a study on Teen Mental Health First Aid (tMHFA) for students in years 10-12 to improve supportive behaviors towards peers. Nearly 2000 students were randomized in a cluster cross-over trial design. The tMHFA program appears effective in improving recognition of suicide warning signs and intentions to assist when a peer has suicidal thoughts.

The second study, presented by Guy Diamond at Drexel University, examines the effectiveness of the More Than Sad gate keeper program. Using a quasi-experimental design with nearly 1500 teachers, outcomes were measured with a standardized assessment tool at pre, post, and two month follow up. Findings showed an improvement in school staff suicide literacy and an improvement in referral of students for mental health assessment, even by staff who had not made referrals in the past.

The third study will be presented by Holly Wilcox from the Johns Hopkins School of Public Health in Baltimore. They are conducting pre-, post- and follow-up assessments of Teen Mental Health First Aid to assess how much students learned and whether the program changes their knowledge and behaviors. They also explore implementation challenges perceived by instructors.

The Discussant will be Nicholas Ialongo, PhD, a Professor in the Department of Mental Health at the Johns Hopkins Bloomberg School of Public Health, where he is also Director of the Center for Prevention and Early Intervention. Dr. Ialongo has a particular interest in adolescent mental health promotion in schools and is the author of numerous publications in this area. He will comment on the studies, and the challenges ahead for school based suicide prevention. Ample time will be left for questions and discussion.

12.1 TEEN MENTAL HEALTH FIRST AID: EVALUATING SUICIDE FIRST AID OUTCOMES FROM A CLUSTER RANDOMIZED CROSSOVER TRIAL IN SCHOOLS

Laura Hart*[1], Anthony Jorm[1], Amy Morgan[1]

[1]University of Melbourne

Individual Abstract: Background: teen Mental Health First Aid (tMHFA) is a classroom-based training program for students in years 10-12 to improve supportive behaviours towards peers. tMHFA teaches a 5-point action plan, with a particular emphasis on getting an adult involved when there is a mental health crisis, such as a peer experiencing suicidal thoughts. This research evaluated the capacity of tMHFA to improve suicide first aid among adolescents.

Methods: A cluster cross-over trial matched four schools in two pairs, then randomised each to first receive tMHFA or physical first aid training (PFA) for all Year 10 students. In the subsequent calendar year, the new Year 10 cohort received the opposite intervention, giving 8 cohorts. Online surveys were administered at baseline and 1-week post-training, measuring problem recognition and quality of first aid intentions towards a fictional adolescent with depression and suicidality (John).

Results: 1942 students were randomised (979 received tMHFA, 948 received PFA); 1605 (84%) included at baseline, and 1116 (69% of baseline) provided post-training data. Between baseline and post-training, there was a significantly larger increase in the proportion of tMHFA students, as compared to PFA students, who correctly labelled John as experiencing suicidal thoughts (OR 2.06, 95%CI 1.18 – 3.60, p=.011), who endorsed the first aid intention “Ask John

if he is thinking of suicide" (OR 46.76, 95%CI 24.30 – 90.01, p<.001), and a significantly larger decrease in tMHFA student endorsements of "Avoid talking about suicide, because it might put the idea in John's head" (OR 0.12, 95%CI 0.08 – 0.19, p<.001).

Conclusion: The tMHFA program appears effective in improving recognition of suicide warning signs and intentions to assist when a peer has suicidal thoughts. Follow-up research is planned to gather qualitative data on students' actual experiences of providing first aid to assess whether intentions predict future suicide support behaviours.

12.2 EFFICACY OF MORE THAN SAD GATEKEEPER TRAINING FOR SCHOOLS

Guy Diamond*[1]

[1]Drexel University

Individual Abstract: The Effectiveness of the More Than Sad School based Gatekeeper Training Program

Background. Schools have been identified as an opportunity to identify and refer youth at risk for suicide. School based gatekeeper training programs aim to improve staff's ability to talk to students about mental health concerns and refer them for an assessment. While the importance of gatekeeper training is enormous, the research examining its effectiveness remains limited (Platt and Niederkrotenthaler, 2020). In the last decade, several good papers have reviewed the state of the science around gatekeeper training (e.g., Katz et al., 2013; Holmes et al., 2019; Mo et al., 2018; Robinson et al., 2013; Torok, et. al., 2019). Across these papers, authors generally find few studies and the outcomes are quite mixed. The open trails studies show more consistent outcomes on suicide literacy domains; this is less consistent in the better controlled studies with a comparison group and long-term outcomes (Toro, 2019; Yonemoto et al., in press). Surprisingly, outcomes related to behavioral change receive limited attention, and when they do, findings are poor. The More Than Sad program which is used widely had never been rigorous evaluated to date.

This study evaluated the effectives of the More Than Sad program in a quasi-experimental, wait-list control design with a large number of school personnel, across geographically diverse communities. Fourteen school districts with over 1475 school personal received the training. A standardized assessment tool was used before and after the training and two months later. Half of the schools served as a wait list control before receiving the treatment.

In comparison with the wait list, we saw a significant increase in knowledge about depression and suicide, feeling more prepared to discuss mental health concerns with students, feeling more confidence to talk about mental health problems, and feeling more likely to reach out to students who display psychological distress. These improvements persisted two months after the program. Teacher/staff self-reporting indicated an increase in the number of students they talked with, and referred for concerns about depression/suicide. Using records of actual teacher referral, staff showed an increase documented referrals for suicide related concerns (44 referrals increase to 66 referrals). This increase in referral behavior was found for staff who had done this in the past two months and those that had not.

More than Sad can effectively improve suicide literacy and willingness to refer youth at risk for suicide to school mental health resources. We think the program potency results from the intervention modality: well-produced dramatization of the challenges facing youth, school personnel, and parents. Rather than slides and lectures, this film medium conveys information in a visual format that combines education and entertainment. This film presentation format also reduces the training burden on school staff and thus reduces barriers to dissemination. With 90% of the training pre-recorded on DVDs, this program has potential wide face to face and on line disseminated with limited burden and cost to schools.

12.3 UNIVERSAL SCHOOL-BASED TRIAL OF TEEN MENTAL HEALTH FIRST AID USA

Holly Wilcox*[1], Elise Pas[1], Sarah Murra1[2], Aubrey DeVinney[1], Lacey Rosenbaum[2], Sanjana Bhakta[3], Karen Girgis[2], Kayla Blasher-Burch[2]

[1]Johns Hopkins Bloomberg School of Public Health, [2]National Council for Behavioral Health

Individual Abstract: The teen Mental Health First Aid (tMHFA) program is a highly practical, 3-4 session universal interactive school-based curriculum that teaches high school students how to identify a peer with mental health and substance abuse problems or crises, and what to do to help that peer connect with a responsible adult who can help them to get the care they need. In the United States, the tMHFA content aligns with state health education policies and standards and thus is highly scalable. The program includes role plays, videos, visuals, and artwork. This program was developed and tested in a randomized trial in Australia with an 18 month follow-up. tMHFA is delivered universally to all students in school which could lessen stigma and provide students with a baseline skillset to know how to handle potentially life threatening situations. Most other programs like this focus on training the adults working with students to identify those in crisis rather than directing training students. Research shows that most young people first seek out a friend when they are struggling. Even after training, the majority of adults working in k-12 schools are not comfortable intervening with students at risk. The National Council for Behavioral Health was funded by the Born This Way Foundation to adapt and implement the tMHFA program in over 100 schools or community settings in 43 states with approximately 25,000 students and 200 trained instructors. Our team at Johns Hopkins University is currently conducting the research evaluation of tMHFA USA. We started implementing a randomized trial in the 2019-2020 school year. The majority of schools were not able to implement or complete the program before COVID-19 school building closures. Our sample resulted in 1,548 students with consent and completed pre-tests, 675 with post-tests, and 242 with completed 6-month follow-up surveys, although data collection is still in progress.

We have conducted surveys from 93 of 101 instructors that implemented tMHFA USA to assess whether the program was easy to teach, whether students were engaged, and whether students approached them after the course to discuss concerns about themselves or others, or to help link them with school mental health professionals for a referral.

School personnel find tMHFA easy to teach and highly relevant to their students. After tMHFA implementation, students were much more likely to correctly identify possible clinical

depression and suicide risk in a case scenario about a severely depressed high school student. A greater number of students expressed willingness to help this student by asking the student directly whether they are thinking about suicide (before tMHFA, 16% were willing and after, 45% were willing). Students were also more likely to encourage their peer to speak with an adult about their situation (before tMHFA, 37% responded that they would encourage their peer to talk to an adult and after tMHFA, 71% responded in this way). At the 6th month follow-up, during the COVID -19 pandemic school closures, over 26% reported being in contact with a suicidal peer. Over 65% reported using the knowledge and skills they had learned from tMHFA to manage their own stress and to help a peer in crisis. We will present the results of randomized and nonrandomized tMHFA USA implementation to date.

12.4 SCHOOL BASED SUICIDE PREVENTION

Nicholas Ialongo*[1]

[1]Johns Hopkins Medical Institutions

Individual Abstract: The discussant will talk about the three studies and the emerging need for more programmatic research on school based suicide prevention. He will also discuss his experience of 30 years of early prevention research at John Hopkins and how it can inform suicide prevention.

13. SUICIDE PREVENTION ACROSS THE LIFESPAN

Chair: Lars Mehlum, National Centre of Suicide Research and Prevention, Institute of Clinical Medicine, University of Oslo

Overall Session Description: With the exception of small children, suicide affects all age groups in most populations, but risk factors may differ substantially among young, middle-aged and elderly individuals. These differences may be linked to age-specific characteristics, cohort specific variables or it may be linked to factors linked to generation roles. Suicide preventive strategies and interventions need to take such factors into considerations while retaining ample focus on what seems to be universally applicable knowledge common to all age groups. Through several presentations this symposium will highlight important research findings for suicide risk factors in diverse age groups and discuss their implications for suicide preventive strategies and practices across the lifespan.

13.1 PROMISES OF DBT IN PREVENTING SUICIDE AND SELF-HARM

Lars Mehlum*[1]

[1]National Centre of Suicide Research and Prevention, Institute of Clinical Medicine, University of Oslo

Individual Abstract: Dialectical behavior therapy (DBT) was developed for the treatment of suicidal and self-harming behaviors in adults with Borderline Personality Disorder (BPD) – a group of patients that is often regarded by many clinicians as extremely challenging to treat successfully. DBT has later been expanded to reach wider groups of suicidal people, such as

adolescents or people with substance abuse, eating disorders or other disorders of emotion or behavior dysregulation.

Although the boundaries between non-suicidal (NSSI) and suicidal self-harm are not very sharp, clinical experience suggests that NSSI behaviors tend to be more strongly linked to difficulties of regulating emotions and cognitions, while suicidal self-harm will have stronger associations with depressive states and hopelessness. DBT is a multimodal treatment offering clinicians many innovative strategies to effectively manage suicidal crises and to help their patients overcome problems that are closely linked to suicidal ideation and both suicidal and non-suicidal self-harming behavior. The treatment adopts a behavioral approach to suicide and self-harm and therapists will typically, in collaboration with their patients, conduct "ideation-to-action" - analyses in order to acquire a more detailed understanding of how suicide risk progresses from ideation to potentially lethal suicide attempts with the aim of identifying targets for therapeutic change to prevent future suicidal behavior to occur.

More than 40 randomized trials have demonstrated the effectiveness of DBT in reducing suicidal behavior and NSSI, emergency room visits, psychiatric hospital days, and a range of symptoms and behaviors related to suicidality. We lack firm evidence, however, as to which strategies in DBT are the exact mechanisms of change with respect to self-harming behaviors. Currently, it seems likely that strategies such as adopting a behavioral approach to suicide and self-harm in order to identify antecedents and consequences either causing or maintaining the behaviors are central. Treating suicidal behaviors directly and specifically and making such treatment the top priority may also be important. Multiple and specific strategies to manage suicidal crises and to prevent suicidal crises from occurring may also promote good outcomes. In particular, teaching patients a range of skills in emotion regulation, distress tolerance, and interpersonal problem solving combined with a focus on generalization of skills use to crises and other challenging situations in their daily lives may drive clinical outcomes. Keeping patients alive while they are making progress in treatment builds in DBT on a strong therapeutic relationship that balances the therapeutic strategies of validation and change. This presentation will highlight key findings of current DBT research and discuss future directions using this treatment method for suicide preventive intervention.

13.2 EVALUATION OF SUICIDE RISK AS A TOOL FOR SUICIDE PREVENTION

Vladimir Carli*[1]

[1]NASP, Karolinska Institutet

Individual Abstract: Suicidal behaviour is the most common psychiatric emergency. A large proportion of suicidal behaviour can be prevented, particularly in cases associated with mental disorders. Early recognition of suicidality and reliable evaluation of suicide risk are crucial for the clinical prevention of suicide. Evaluation of suicidal risk involves assessment of suicidal intent, previous suicide attempts, underlying psychiatric disorders, the patients' personality, the social network, and suicide in the family or among acquaintances as well as other well-known risk factors. Suicide risk assessment should take place on several levels and relate to the patient, the family and social network but also to the availability of treatment, rehabilitation and prevention resources in the community. As suicide risk fluctuates within a short period of

time, it is important to repeat the suicide risk assessment over time in an emphatic and not mechanistic way. The suicidal person may mislead both family members and hospital staff, giving a false sense of independence and of being able to manage without the help of others. Although extreme ambivalence to living or dying is often strongly expressed by the suicidal individual, it is not seldom missed by others. If observed in the diagnostic and treatment process, dialogue and reflection on such ambivalence can be used to motivate the patient for treatment and to prevent suicide. If ambivalence and suicidal communications go undiscovered, the treatment process and the life of the patient can be endangered. Today, several measurement tools of suicide risk exist, including psychometric and biological measurements. Some of these tools have been extensively studied and measures of their sensitivity and specificity have been estimated. This allows for the formulation of an approximate probability that a suicidal event might happen in the future. However, the low precision of the predictions make these tools insufficient from the clinical perspective and they contribute very little information that is not already gained in a standard clinical interview. Psychiatrists and other mental health professionals have always longed for reliable and precise tools to predict suicidal behavior, which could support their clinical practice, allow them to concentrate resources on patients that really need them, and backup their clinical judgement, in case of eventual legal problems. In order to be useful, however, the approximate probability that a suicidal event might happen in the future is not sufficient to significantly change clinical routines and practices. However, this doesn't mean that the evaluation of suicide risk is not a useful tool for clinicians and researchers. The information collected in a thorough suicide risk evaluation is critically needed to inform suicide preventive strategies to be implemented at the individual level.

13.3 PHYSICAL DISEASE, PAIN, AND SUICIDE AMONG RURAL OLDER ADULTS IN CHINA

Liang Zhou*[1], Guojun Wang[2], Jiali Wang[3], Cunxian Jia[4], Zhenyu Ma[5]

[1]The Affiliated Brain Hospital, Guangzhou Medical University, [2]School of Public Health, Central South University, [3]Xiangya School of Public Health, Central South University, [4]School of Public Health, Shandong University, [5]Guangxi Medical University

Individual Abstract: Objectives: Physical diseases and pain are well-established risk factors for suicide, particularly among older adults. However, little is known about the underlying mechanism of the association. This study aimed to describe the prevalence of physical diseases and severe pain and their influences on the elderly in rural China and to examine the underlying mechanisms of the relationship between physical diseases, pain and suicide.
Methods: This matched case–control psychological autopsy study was conducted from June 2014 to September 2015. Consecutive suicide cases (242) among people aged 60 years or above were identified in three Chinese provinces. The suicide cases were 1:1 matched with living comparisons based on age, gender and residential area. Two informants for each participant were interviewed to collect data on their demographic characteristics, the severity index of physical diseases, pain, depressive symptoms, feelings of hopelessness, mental disorders and social support.

A significant difference was found between suicide cases and living comparisons regarding the prevalence of physical diseases (83.5% vs 66.5%, $p < 0.001$) and their severity (11.3 ± 6.2 vs

6.7 ± 5.3, p < 0.001), and severe pain (37.19% vs. 11.16%, p<0.001). Both physical disease and severe pain were independent risks of suicide. Structural equation model indicated that the relationship between the severity index of physical diseases and suicide was mediated by depressive symptoms, feelings of hopelessness and mental disorders. Depressive symptoms, hopelessness, and perceived burden significantly mediated 43.71% of the pain-suicide association (P = 0.020).

The severity and number of physical diseases and pain were found to be correlated with suicide among the elderly in rural China, after controlling for demographic characteristics. Physical diseases elevate one's suicide risk by increasing depressive symptoms, feelings of hopelessness and mental disorders. Efforts for suicide prevention should be integrated with strategies to treat physical diseases and alleviate pain along with psychological interventions.

13.4 LIFESPAN EFFECTS ON THE NEUROCOGNITIVE CORRELATES OF SUICIDAL BEHAVIOR

Katalin Szanto*[1], Morgan Buerke[1], John Keilp[2], Swathi Gujral[1], Jeff Bridge[3], Ariel Stefhall[3]

[1]University of Pittsburgh, [2]Columbia University, [3]Ohio State University

Individual Abstract: Early descriptions of the suicidal crisis emphasized the role of problem-solving deficits in the emergence of a suicidal crisis, and population studies have linked poor cognitive abilities to suicidal behavior. Indeed, poor cognitive abilities could contribute to the accumulation of stressors and the inability to solve them or find alternative solutions than suicide. Limited cognitive capacity (low cognitive reserve) may increase the likelihood of dementia, and likewise persistent executive dysfunction (cognitive control deficits) may be a harbinger of dementia. Deficits in cognitive control represent the most consistent finding in both middle-aged and older suicide attempters. Impairments in interference control and cognitive flexibility appear to be a particularly sensitive index. Regarding decision making, disadvantageous decisions in complex and/or changing environment and inconsistent choices appear to be the most replicated findings. Cognitive control and attention deficits in turn impair decision-making. However, among individuals who attempt suicide there is considerable heterogeneity. Rather than search for a common clinical and biologic substrate of all suicidal behavior, it may be more beneficial to identify distinct pathways to suicide, of which cognitive deficits may one of particular importance in late life.

One promising/possible dimension of heterogeneity could be the age of onset of suicidal behavior. Our studies from the Pittsburgh Longitudinal Study of Late-Life Suicide have highlighted differential personality characteristics, family histories of suicidal behavior, and patterns of real-life decision-making in early vs late-onset suicidal behavior, illuminating this heterogeneity. The presentation will provide data on neurocognitive performance in suicide attempters, and on developmental effects on risk factors for suicidal behavior across the adult lifespan. The first study, (N=278) used a comprehensive neuropsychological approach to probe differences in cognitive profiles between late-onset (defined by having an initial suicidal attempt at or after age 55, mean-age at first attempt: 64(SD:7)) and early-onset suicide attempters (mean age at first attempt: 33(SD:16)). Linear regression models regressed scores for individual cognitive measures onto dummy-coded variables for study groups, adjusting for

age, sex, education, depression severity, and lifetime history of anxiety and substance use disorders. Both late- and early-onset attempters demonstrated cognitive control impairments relative to non-suicidal depressed older adults. However, late-onset attempters additionally exhibited global cognitive and memory deficits, possibly reflective of a dementia prodrome. The second study we discuss demonstrates how chronological age of the suicide attempter influences clinical and neuropsychological risk factors (AFSP-funded multisite Lifespan Study, N=309, ages 16 to 80). Generalized linear models predicted attempter status based on each variable of interest by age. The presentation will detail how clinical (borderline traits, aggression, rumination) and neurocognitive risk factors (memory, executive dysfunction) change across the adult life, and whether age modifies their associations with suicide attempt.

Evidence suggests that there are cognitive deficits and decision processes associated with suicidal behavior that may hinder mobilization of mental resources during a crisis. Some of these vulnerability factors are life-long, and some are age-specific. When taken into consideration with other risk factors, these may help identify and develop individualized treatment plans for those most at risk for suicide.

14. MEDIA, SOCIAL MEDIA, AND SUICIDE

Chair: Helen Christensen, Black Dog Institute

Overall Session Description: Web interventions for suicide prevention represent a relatively new area of investigation in public health psychiatry. Early investigations, including a recent meta-analysis, showed that web interventions and apps are effective suicidal ideation and suicidal behaviour (Torok, 2019). In this paper, we discuss insights about these interventions acquired over the last half-decade. Insights reflect that interventions (1) need to target suicidal thinking, not depression to be effective; (2) should consider targeting sleep as a mechanism to lower suicide ideation; (3) show mixed efficacy and effectiveness for reasons that include the choice of the treatment intervention; the target audience and the experimental design; (4) are in need of methodological review and require an overhaul of method and interpretations across the spectrum of efficacy, effectiveness, and translation into public use. We conclude that suicide apps and interventions are potentially game changing in suicide prevention, given the increasing use of the internet by those in distress, the need to reach the 50% who do not seek help; and the potential for these interventions to bridge the gap between internet engagement and face-to-face help. However, they also require clinicians and the public to understand and value them, and to have further knowledge of their efficacy and effectiveness.

Ref: https://www.thelancet.com/journals/landig/article/PIIS2589-7500(19)30199-2/fulltext

14.1 USING THE MEDIA AS A FORCE FOR GOOD IN SUICIDE PREVENTION

Jane Pirkis*[1]

[1]University of Melbourne

Individual Abstract: Much has been written about the harms associated with certain media presentations of suicide, but far less consideration has been given to how the media might be used as a force for good in suicide prevention. There is increasing interest in this area however,

and various studies are now being done to explore how the power of traditional and newer media might be harnessed to prevent suicides. The presentation will provide examples of different types of media-based interventions, including media campaigns, documentaries, and social media guidelines. It will discuss how principles of co-design have been incorporated into their development, as well as other ways stakeholders have been involved in their creation and roll-out. It will also discuss where the evidence base is at with respect to their effectiveness, offering examples of where gold-standard randomized controlled trials have been employed as the evaluation design of choice. Finally, the presentation will consider where the field might go to next, providing suggestions for alternative ways that the media might be used in suicide prevention.

14.2 MEDIA AND SUICIDE: BUILDING THE EVIDENCE BASE

Thomas Niederkrotenthaler*[1], Benedikt Till[2]

[1]Medical University of Vienna, Center for Public Health, Institute for Social Medicine, Suicide Research Unit, [2]Medical University of Vienna, Center for Public Health, Unit Suicide Research and Mental Health Promotion

Individual Abstract: Research in the area of media reporting of suicide has a long tradition, but most emphasis until recently has been put exclusively on harmful media potentials (the Werther effect). In recent years, first evidence for positive roles of portrayals of stories of hope and recovery have emerged (the Papageno effect). This presentation will give an overview of recent developments in the field of media and suicide research. A particular focus will be on new evidence from trials and meta-analyses on the roles of harmful and protective media potentials, and specifically, the roles of lived experience in narratives of hope and recovery for suicide prevention.

14.3 YOUTH BULLYING AND SUICIDE: RISK AND PROTECTIVE FACTOR PROFILES FOR BULLIES, VICTIMS, BULLY-VICTIMS AND THE UNINVOLVED

Paul Yip*[1]

[1]The University of Hong Kong

Individual Abstract: As individuals with any bullying involvement are at heightened risks for suicide, this study aims to compare those involved (bullies, victims, and bully-victims) and uninvolved in bullying to identify their risk and protective factor profiles. A sample of 2,004 Hong Kong adolescents and young adults completed the Hong Kong Online Survey on Youth Mental Health and Internet Usage. Compared to those uninvolved in bullying, results found support for all involved groups for bullying at increased risks for suicide risk behaviours. Bullies, victims, bully-victims, and the uninvolved groups demonstrated distinct levels and preferences for most factors, including sources of distress, psychiatric morbidity, stigma of suicide, and help-seeking sources and barriers. Despite the identification of group-specific risk and protective factor profiles, all groups shared common predictors of suicidal thoughts and behaviours.
Keywords: Suicide, bullying, risk factors, protective factors, youth

14.4 DIGITAL WEBSITES FOR SUICIDE PREVENTION

Helen Christensen*[1], Michelle Torok[1], Sarah Holland[1], Fiona Shand[1], Phil Batterham[2]

[1]Black Dog Institute, [2]The Australian National University

Individual Abstract: Web interventions for suicide prevention represent a relatively new area of investigation in public health psychiatry. Early investigations, including a recent meta-analysis, showed that web interventions and apps are effective suicidal ideation and suicidal behaviour (Torok, 2019). In this paper, we discuss insights about these interventions acquired over the last half-decade. Insights reflect that interventions (1) need to target suicidal thinking, not depression to be effective; (2) should consider targeting sleep as a mechanism to lower suicide ideation; (3) show mixed efficacy and effectiveness for reasons that include the choice of the treatment intervention; the target audience and the experimental design; (4) are in need of methodological review and require an overhaul of method and interpretations across the spectrum of efficacy, effectiveness, and translation into public use. We conclude that suicide apps and interventions are potentially game changing in suicide prevention, given the increasing use of the internet by those in distress, the need to reach the 50% who do not seek help; and the potential for these interventions to bridge the gap between internet engagement and face-to-face help. However, they also require clinicians and the public to understand and value them, and to have further knowledge of their efficacy and effectiveness.

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15. BEREAVEMENT AND IMPACT OF SUICIDE ON OTHERS

Chair: Julie Cerel, University of Kentucky

Overall Session Description: This invited symposium brings together four researchers from three countries examining unique outcomes of suicide bereavement.
Julie Cerel will describe results from multiple studies about the range of people exposed to each suicide and how suicide impacts a diverse group of people. She will examine data on suicide exposure in communities and workplaces including GLBT+ communities, veterans, national guard, chaplains, law enforcement, first responders, crisis workers and mental health clinicians.

Noam Schneck will present results from work investigating a potential mechanism of unconscious cognitive control over thoughts of the loss utilizing functional magnetic resonance imaging (fMRI). Self-generated unconscious loss processing (SUL) was measured in a sample of participants 2-6 months post suicide loss and followed up clinically 1 year later. Results suggest that those who engage SUL may in part rely on an unconscious type of cognitive control to reduce conscious painful thoughts of loss and thereby facilitate grief recovery.

Yossi Levi-Belz will highlight the psychological mechanisms and dynamics underlying the healing and growth processes among suicide-loss survivors as well as complicated grief characteristics. Using data from worldwide research and from the Israeli project (both cross-sectional and longitudinal) will show that the deleterious effect of a loved one's suicide on that person's surroundings—including family and friends—such as shame, guilt, and

stigmatization. This presentation will also l discuss the possibility of posttraumatic growth (PTD) among suicide survivors and highlight factors that may facilitate PTG after suicide bereavement.

Kairi Kolves will examine data from a longitudinal prospective study comparing suicide and sudden death bereaved close relatives in Queensland, Australia. Significant differences in rejection, stigmatisation, shame and responsibility between the suicide and sudden death bereaved over the two-year period were found after adjusting for potential confounding factors. Rejection, stigmatisation, search for explanation, somatic reactions, and mental health variables (DASS 21) declined significantly over time. Rejection and somatic reactions showed group and time interaction effects with a decrease in the suicide-bereaved and no change in the sudden death bereaved. This study shows that there are several common dimensions to sudden death in the family, there are a number of differences for those who are suicide bereaved.

15.1 COMPLICATED GRIEF AND POSTTRAUMATIC GROWTH AMONG SUICIDE SURVIVORS

Yossi Levi-Belz*[1]

[1]Ruppin Academic Center

Individual Abstract: Although suicide survivors are an at-risk population struggling with feelings of depression, guilt, and shame, little is known about ways to help them toward recovery from the personal trauma of losing a beloved family member to suicide. The goal of this presentation is to highlight the psychological mechanisms and dynamics underlying the healing and growth processes among suicide-loss survivors as well as complicated grief characteristics.

In this talk, we will address the major issues of suicide bereavement: the continuum of survivorship and the negative consequences of bereavement after suicide, with a focus on suicide ideation and behavior, depression, and complicated grief. We will present data derived from research endeavors worldwide and from the Israeli project (both cross-sectional and longitudinal) that stress the deleterious effect of a loved one's suicide on that person's surroundings—including family and friends—such as shame, guilt, and stigmatization.

Moreover, we will discuss the possibility of posttraumatic growth among suicide survivors and highlight the various factors and dimensions that may facilitate PTG after suicide bereavement. We will show data from research projects in this field worldwide with a focus on the novel Israeli project, which is one of the first to address PTG among suicide-loss survivors which contain mixed-method studies, both quantitative and qualitative, and both cross-sectional and longitudinal. we will discuss an integrative model of PTG among suicide-loss survivors and emphasize the major psychological facilitators of PTG among this particular group (e.g., self-disclosure, self-forgiveness, belongingness, social support). Together, this data can shed a light on recommended postvention strategies and future research directions.

15.2 SUICIDE EXPOSURE ACROSS GROUPS

Julie Cerel*[1]

[1]University of Kentucky

Individual Abstract: This presentation will describe the range of people exposed to each suicide and how suicide impacts a diverse group of people. It will examine data on suicide exposure in communities and workplaces. This includes GLBT+ communities, veterans, national guard, chaplains, law enforcement, first responders, crisis workers and mental health clinicians. It will look at how suicide exposure is related to personal suicide risk and how it impacts work. In addition, the presentation will describe research examining how disclosure and openness might be useful for suicide loss survivors healing.

15.3 UNCONSCIOUS PROCESSES OF GRIEVING IN SUICIDE LOSS

Noam Schneck*[1], Paul Sajda[2], John Mann[3]

[1]College of Physicians and Surgeons, Columbia University, [2]Columbia University, [3]Columbia University, New York State Psychiatric Institute

Individual Abstract: People who have lost a loved one to suicide face an increased risk of prolonged grief disorder (PGD) and other psychiatric morbidities. One of the primary challenges early in the grief process is managing the balance between intrusive thoughts of loss and efforts to control these thoughts. The conscious effort to control thoughts of loss, known as avoidance, often has cyclical and paradoxical effects of making the thoughts more common. In PGD, this cycle of avoidance and intrusive thinking becomes so overwhelming that it impairs engagement in daily life. One way to address the loss without interfering in daily life activities is to do so outside of conscious awareness. When cognitive control processes occur outside of conscious awareness, they can modulate painful thoughts of loss without interfering in day-to-day engagement.

This talk will present results from our work investigating a potential mechanism of unconscious cognitive control over thoughts of the loss. Self-generated unconscious loss processing (SUL) is a self-driven form of cognitive control that may modulate ruminations of the loss unconsciously without interfering in daily life. We have developed a functional magnetic resonance imaging (fMRI) based approach to observe SUL in those bereaved by suicide. This technique applies multivariate pattern analysis to a modified fMRI Stroop task to train a neural pattern representing attentional control over thoughts of the deceased. The neural pattern is used to "decode" data obtained during a mind wandering fMRI task in which subjects are probed about whether or not they have been thinking of their loss. The output of the neural decoder in the absence of thoughts of loss indicates engagement of grief-related cognitive control outside of conscious awareness during mind wandering, thus serving as a measure of self-generated unconscious loss processing.

We measured SUL in a sample of participants 2-6 months post suicide loss and followed up clinically 1 year later. Higher SUL during the 2-6 month encounter, correlated with decreased feelings of shame and avoidance and a faster trajectory of grief recovery over the course of the year. These data suggest that those who engage SUL may in part rely on an unconscious type

of cognitive control to reduce conscious painful thoughts of loss and thereby facilitate grief recovery.

15.4 SUICIDE AND SUDDEN DEATH BEREAVEMENT IN AUSTRALIA

Kairi Kolves*[1]

[1]Australian Institute for Suicide Research and Prevention, Griffith University

Individual Abstract: Adverse reactions have been reported more frequently by people bereaved by suicide, even when compared to those bereaved by sudden death. Nevertheless, empirical evidence is still rather limited, with only a small number of longitudinal studies of people bereaved by suicide. Furthermore, there is need to better understand the impact of persons coping styles, receiving formal help and social support is crucial for designing postvention services. The aim of the current presentation is to analyse experiences of people bereaved by suicide 6, 12 and 24 months after their loss.

A longitudinal prospective study comparing suicide and sudden death bereaved close relatives was conducted in Queensland, Australia. The study included three assessments: first assessment was at 6-months (T0), and two follow-up assessments were carried out at 12- and 24-months (T1 and T2) after the critical event. At T0, 142 people bereaved by suicide and 63 bereaved by sudden death were interviewed by trained clinical interviewers. Interviews were conducted in a semi-structured format including validated scales and questions about receiving formal help and their benefits.

Significant differences in rejection, stigmatisation, shame and responsibility between the suicide and sudden death bereaved over the two-year period were found after adjusting for potential confounding factors. Rejection, stigmatisation, search for explanation, somatic reactions, and mental health variables (DASS 21) declined significantly over time. Rejection and somatic reactions showed group and time interaction effects with a decrease in the suicide-bereaved and no change in the sudden death bereaved. Although our findings confirm that there are several common dimensions to experiencing a 'sudden' type of death in family, a number of differences were found. Further results of coping styles and receiving formal help and social support will be presented and implications discussed.

16. BRAIN FUNCTION, BEHAVIOR AND DECISION-MAKING

Chair: Gin Malhi, The University of Sydney

Overall Session Description: Suicidal thinking is a complex thought process that sometimes culminates in a suicide attempt. Cognitive neuroscience has only recently had tools at its disposal to investigate brain function and examine the neural mechanisms associated with suicide.

In this session, titled brain function, behaviour and decision-making, experts provide a range of thought-provoking perspectives on thoughts concerning suicide.

Using a global network approach Professor Fabrice Jollant, from the University of Paris, France, will ask "where are we up to?" in terms of the Cognitive Neuroscience of Suicidal Behavior - and provide an update of research and our contemporary thinking. This will be

followed by a new theoretical framework, which will be outlined by Associate Professor Alexandre Dombrovski from the University of Pittsburgh, USA. Professor Hilary Blumberg, from Yale University, USA will then discuss MRI studies of suicidal behaviour and mood disorders, which will lay the foundation for Professor Gin Malhi from The University of Sydney, Australia, to present insights from fMRI studies in patients with suicidal thinking and link this to a model of suicide in mood disorders.

Together these four complementary talks will provide a rich and fertile context for discussion of this important area of research.

16.1 THE COGNITIVE NEUROSCIENCE OF SUICIDAL BEHAVIOR: WHERE ARE WE?

Fabrice Jollant*[1]

[1]University of Paris and GHU Paris Psychiatry and Neuroscience, Paris, France, Universitätsklinikum Jena, , CHU Nîmes, France, McGill University, Montreal

Individual Abstract: In this presentation, I will give a brief overview of 20 years of research on the cognitive neuroscience of suicidal behavior. I will review the main neurocognitive findings for the understanding of the suicidal crisis and the vulnerability mechanisms, and for the identification of treatment targets. I will also discuss their limitations. Research directions will be discussed including the effect of specific anti-suicidal drugs.

16.2 DECISION-MAKING AND SUICIDE: A NEURAL COMPUTATION PERSPECTIVE

Alexandre Dombrovski*[1], Michael Hallquist[2]

[1]University of Pittsburgh School of Medicine, [2]Penn State University

Individual Abstract: Suicide may be viewed as an unfortunate outcome of failures in decision processes. Such failures occur when the demands of a crisis exceed a person's capacity to (i) search for options, (ii) learn and simulate possible futures, and (iii) make good value-based choices. Can individual-level decision deficits and biases drive the progression of the suicidal crisis? Our overview of the evidence on this question is informed by clinical theory and grounded in reinforcement learning and behavioral economics. Cohort and case-control studies provide strong evidence that limited cognitive capacity and particularly impaired cognitive control are associated with suicidal behavior, imposing cognitive constraints on decision-making. (i) We conceptualize suicidal ideation as an element of impoverished consideration sets resulting from a search for solutions under cognitive constraints; presently this view is supported by mostly indirect evidence. (ii) More compelling is the evidence of impaired learning in people with a history of suicidal behavior. We speculate that an inability to simulate alternative futures using one's model of the world may undermine alternative solutions in a suicidal crisis. (iii) The hypothesis supported by the strongest evidence is that the selection of suicide over alternatives is facilitated by a choice process undermined by randomness. Case-control studies using gambling tasks, armed bandits and delay discounting support this claim. Future experimental studies will need to uncover real-time dynamics of choice processes in

suicidal people. In summary, the decision process framework sheds light on neurocognitive mechanisms that facilitate the progression of the suicidal crisis.

16.3 MULTIMODAL MAGNETIC RESONANCE IMAGING OF SUICIDE THOUGHTS AND BEHAVIOR IN MOOD DISORDERS

Danielle Goldman[1], Anjali Sankar[1], Luca Villa[1], Lejla Colic[1], Priyanka Panchal[1], Jihoon Kim[1], Laura van Velzen[2], Lianne Schmaal[2], Anne-Laura van Harmelen[3], Hilary Blumberg*[1]

[1]Yale School of Medicine, [2]Centre for Youth Mental Health, The University of Melbourne, [3]Education and Child Studies, Leiden University

Individual Abstract: This talk will present multimodality magnetic resonance imaging (MRI) data supporting the involvement of frontal system structure and function in suicide thoughts and behaviors (STBs). It will focus on STBs as studied in mood disorders, e.g. bipolar disorder (BD) and major depressive disorder (MDD), including potential STB-related distinctions between BD and MDD and transdiagnostic features that may also extend across other disorders. While impulsivity has been one of the behavioral domains most studied to date transdiagnostically in association with frontal system STB-related abnormalities, this presentation will provide discussion of increasing evidence for involvement of disruptions in other behavioral domains including the processing and regulation of emotionally- and motivationally-valenced stimuli and their contributions to impairments in decision-making that can be key factors in suicide behavior. Recent evidence also suggests involvement of paralimbic and limbic cortical and subcortical regions, relevant for these behavioral domains, with strong connections to frontal cortex, and increasing data support structural and functional abnormalities in the connections themselves. Still relatively more elusive to neuroimaging research has been the study of suicide risk in its earliest stages, both in terms of earliest ages in the emergence of STBs and particularly when suicidal thoughts are initially being generated (e.g. through symptoms associated with STBs like hopelessness). This work further implicates regions such as the insula known to be involved in interoceptive processes, including pain, which can also modify decision-making. Data on the involvement of these brain areas and their connections will be presented from studies across the lifespan, including longitudinal studies performed by our team at Yale and in collaborations with national/international neuroimaging consortiums. These include data analyzed from the Help Overcome and Prevent the Emergence of Suicide (HOPES) and Enhancing Neuro Imaging Genetics through Meta-Analysis Suicide Thoughts and Behaviors (ENIGMA-STB) consortia, comprised of scans and multidimensional STB assessments, as well analytic methods that include connectomics and state-of-the-art machine learning predictive modeling. A lifespan approach will be highlighted including discussion of how implicated regions and connections are affected by developmental and aging brain processes. Finally, implications for interventions will be presented which will include discussion of findings from psychotherapeutic interventions targeting frontal systems, and related behavioral constructs, to decrease suicide propensity.

16.4 FMRI STUDIES OF SUICIDAL ACTIVITIES IN MOOD DISORDERS

Gin Malhi*[1]

[1]The University of Sydney

Individual Abstract: Drawing on a model of suicide that frames it as a process this talk will briefly present findings from fMRI studies that show that suicide attempt alters brain function and that key networks are likely responsible for different stages of suicidal thinking.
Professor Gin Malhi from the University of Sydney will present original data and discuss the implications of these findings for modelling suicide and for suicide prevention.

CONCURRENT SYMPOSIUM SESSIONS

12:15 PM - 1:45 PM

17. EXPOSOME AND GENOME IN SUICIDE RESEARCH: LEVERAGING LARGE DATASETS AND BIG DATA ANALYTICS TO INFORM SUICIDE PREVENTION

Chair: Ran Barzilay, University of Pennsylvania

Overall Abstract Details: Suicidal behavior is complex, with genetic and environmental effects driving suicidality throughout the lifespan to affect suicide risk. The genetics of suicide is still poorly understood, with scarce data on suicide polygenic risk. While multiple environmental exposures are established suicide risk factors, it is now increasingly realized that environment should be studied comprehensively in the context of multiple co-linear environmental exposure (i.e., exposome). To generate insight from findings on genome and exposome effects on suicide risk, there is a need to study large datasets of genotyped individuals with extensive phenotyping of their environment and with clinical assessment of suicidal outcomes. In this symposium, we will attempt to provide four examples of genome and exposome analyses that leverage such large datasets and enable the disentanglement of genomic and environmental factors that can inform suicide prevention. We will present data from four cohorts allowing a lifespan perspective: (1) Adolescent Brain Cognitive Development (ABCD) Study® (N=11,878, age 9-11 years); (2) Philadelphia Neurodevelopmental Cohort (N=9,498, age range 8-21), where we will focus on ~1,000 preadolescent children with data from the electronic health record with suicidal behavior recorded at age 16;(3) TwinssCan: adolescent and young adult twin cohort (N=830) ; and (4) UK-Biobank and other cohorts (N (maximum)= 185,413 from adults and children). The presentations will provide converging evidence for the potential of using big data analytic approaches advance suicide research. Specifically, Dr. Barzilay will describe the contribution of the experiences of racial/ethnic discrimination among multiple environmental exposures to suicidal ideation and attempts in preadolescent children from the ABCD Study®, and the contribution of genetic stress susceptibility to suicidality in that sample. Mrs. Visoki will present a proof-of-concept analysis of how multiple type of data combining individual-level exposures, clinical and neurocognitive variables, family-level and neighborhood-level data can contribute to prediction algorithms relying on the use of preadolescent data to predict mid-adolescent suicide attempt. Dr. Guloksuz will leverage the TwinssCan genotyped dataset with deep exposome phenotyping to address G X E and E x E contributions to suicide risk in a population of adolescent and young adult twins. Dr. Warrier will present converging data from UK-Biobank and other cohorts of how studying the genetics of risk factors for suicide such as childhood maltreatment and psychiatric conditions can contribute to understanding of variability in self-harm and suicidal behavior and ideation.

Collectively, this symposium shows that integration of genotyped data with deep phenotyping of the environment holds the key to advance our understanding of the complex pathways leading to suicidal behavior across the lifespan. Findings will be discussed in their translational context to inform suicide prevention strategies globally.

17.1 COMMON AND UNIQUE GENOMIC AND ENVIRONMENTAL CONTRIBUTIONS TO SUICIDALITY IN BLACK AMERICAN PREADOLESCENTS

Ran Barzilay*[1]

[1]University of Pennsylvania

Individual Abstract: Background: Rates of preadolescent suicidal ideation and suicide attempts (i.e., suicidality) are rising in the US, especially in Black Americans. Suicidality is driven by genetic (G) and environmental (E) factors. However, specific gaps exist in research addressing G and E effects in Black American youth suicide: (1) most psychiatric genetics studies exclude non-European ancestry individuals; and (2) studies examining effects of stressors that uniquely affect Black Americans' suicidality are lacking. Here we leveraged a large, diverse, genotyped sample of preadolescents to address these gaps. From the G aspect, we calculated ancestry-specific polygenic risk scores (PRS) for African and European ancestry youths; from the E aspect, we analyzed exposures of discrimination, which disproportionately affect Black Americans.

We analyzed data from the Adolescent Brain Cognitive Development (ABCD) Study® (N=11,235, mean age 10.9 years, 20.2% Black). In G analyses, we studied effects of genetic stress susceptibility, estimated by PRS for PTSD, on preadolescent suicidality. We further evaluated PTSD-PRS effects on suicidality in the presence of stressors that are established suicide risk factors. In separate analyses of E adversities, we aimed to disentangle the unique contribution of racial/ethnic discrimination from other adversities associated with childhood suicidality across races. Multivariate regression models tested the association of self-reported racial/ethnic discrimination with suicidality, co-varying for multiple confounders including other discrimination types.

In European ancestry participants (N=4,619, n=378 suicidal), PTSD-PRS was associated with preadolescent suicidality (odds ratio [OR]=1.12, 95%CI 1-1.25, p=0.038). Results in African ancestry participants (N=1,334, n=130 suicidal) showed a similar direction but were not statistically significant (OR=1.21, 95%CI 0.93-1.57, p=0.153). Sensitivity analyses using non-psychiatric polygenic score for height and using cross-ancestry PTSD-PRS did not reveal any association with suicidality, supporting the specificity of the association of ancestry-specific PTSD-PRS with suicidality. When combined with E adversities, PTSD-PRS showed marginal additive effects in explaining variability in suicidality, with no evidence for G X E interaction. In analyses evaluating discrimination's effect on suicidality, across races, racial/ethnic discrimination was robustly associated with suicidality, accounting for other discrimination types (odds ratio (OR)=2.6, 95%CI=2.1-3.2). Black youths reported 3-fold more discrimination and higher suicidality rates. Once experienced, racial/ethnic discrimination was similarly associated with suicidality in White, Black, and Hispanic youths. Findings remained robust when accounting for multiple established suicidality risk factors.

Both (1) ancestry-specific genomic analyses and (2) unique exposures that disproportionately affect racial minorities explain variance in preadolescence suicidality. Our findings support inclusion of diversity in suicide research to address the growing concern regarding the steep rise in Black youth suicidality.

17.2 THE ASSOCIATION BETWEEN CHILDHOOD TRAUMA DISCORDANCE AND SUICIDE IDEATION AMONG MONOZYGOTIC AND DIZYGOTIC TWINS

Nerea Moreno[1], Lotta-Katrin Pries[2], Thanavadee Prachason[3], Bart Rutten[2], Jim van Os[4], Sinan Guloksuz*[2]

[1]Faculty of Biology, University of Barcelona, Ecology and Environmental Sciences, Barcelona, , [2]School for Mental Health and Neuroscience, Maastricht University Medical Center, Maastricht, [3]Faculty of Medicine Ramathibodi Hospital, Mahidol University, [4]UMC Utrecht Brain Center, University Medical Center Utrecht, Utrecht University,

Individual Abstract: Background: Suicide is a global public health concern associated with multiple risk factors, including genetic vulnerability and childhood trauma. However, it is still not fully understood to what extent childhood trauma contributes to suicidal ideation when gene-environment correlation is taken into account. A twin study is one potential approach to answer this important question.

Data were derived from a general population adolescent and young adult twin survey. The sample included 131 monozygotic (MZ) and 229 dizygotic (DZ) twin pairs with complete data on suicidal ideation and total childhood trauma scores. Total mean childhood trauma and subdomains (physical, sexual, and emotional abuse; physical and emotional neglect) were assessed using the Childhood Trauma Questionnaire. Suicidal ideation was captured by taking the mean of two items from the Symptom Checklist-90-R assessing “thoughts of ending life” and “thoughts of death and dying” on a 5-point scale from 0 (not at all) to 4 (very much). Multilevel regression analyses, taking into account of family relatedness, were used to analyze the association between childhood trauma and suicidal ideation in the total sample. To test within-pair associations, absolute difference scores of suicidal ideation and childhood trauma were calculated and regression analyses were applied in the MZ and DZ twins separately. All analyses were adjusted for age and sex.

Total childhood trauma was associated with increased suicidal ideation in the total sample (B=0.45; [95%CI 0.35;0.56]). Analyses of the subdomains showed similar results (emotional abuse: B=0.04; [95%CI 0.03;0.05]; physical abuse: B=0.09; [95%CI 0.06;0.11]; sexual abuse: B=0.05; [95%CI 0.03;0.08]; emotional neglect: (B = 0.03; [95%CI 0.02;0.04]); physical neglect (B=0.06; [95%CI 0.04;0.09]). The analysis of within-pair differences showed a significant association between childhood trauma and suicidal ideation in the MZ twins (B=0.49; [95%CI 0.14;0.84]). Subdomain analyses converged with this result (physical abuse: B=0.08; [95%CI 0.01;0.15]; emotional neglect: B=0.06; [95%CI 0.03;0.09]; physical neglect: B=0.10; [95%CI 0.04;0.17]), with the exception of the association with emotional (B=0.00; [95%CI -0.03;0.04]) and sexual abuse (B=0.03; [95%CI -0.01;0.08]), which were not statistically significant. The analyses in DZ twins converged with the results in MZ twins, with

the exception of two of the subdomains: emotional abuse (B=0.05; [95%CI 0.02;0.08]) was associated with suicidal ideation, emotional neglect (B=-0.00; [95%CI -0.03;0.03]) was not statistically significantly associated with suicidal ideation.

This study provides evidence for associations between overall as well as subdomains of childhood trauma and suicidal ideation. Furthermore, within-pair differences of childhood trauma were associated with within-pair differences of suicidal ideation in DZ and MZ twin pairs. As MZ twins share identical DNA, the association between within-pair differences in childhood trauma and suicidal ideation among MZ twins suggests that at least part of the association is not attributable to genetic predisposition.

17.3 LEVERAGING MULTILEVEL DATA COLLECTED AT PRE/EARLY-ADOLESCENCE TO PREDICT SUICIDE ATTEMPT BY MID-LATE ADOLESCENCE: A PROOF-OF-CONCEPT STUDY

Elina Visoki*[1], Tyler Moore[2], Ruben Gur[2], Raquel Gur[2], Ran Barzilay[2]

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Individual Abstract: Adolescent suicide is a major health problem with rising rates in the US. Application of machine learning (ML) based prediction of suicide attempt (SA) is a major step forward in suicide prevention. While preliminary data on SA prediction in adults is mounting, data in adolescents is lacking. We sought to leverage data collected as part of a research protocol on pre- and early adolescent youths (T1, N=922, mean age 10.3 years) from the Philadelphia Neurodevelopmental Cohort, and predict endorsement of SA documented in the electronic health record ~6 years later (T2, n=55 who endorsed SA). We aimed to (1) assess the potential utility of SA prediction in adolescents; (2) investigate which types of data are used to enable prediction; and (3) whether algorithms relying on a subset of features outperform those relying on all available data.

We included N=193 baseline features from the six following domains: (1) Demographics (n=7); (2) Clinical symptoms (n=131); (3) Trauma exposure (n=8); (4) Neurocognitive (n=26); (5) Family-level (n=7); and (6) Neighborhood-level (n=14) characteristics. We applied a step-wise analytic approach. Step 1: we used features from each domain separately, or all 193 features, to predict T2 SA using two different ML algorithms (Random Forrest (RF) and Ridge Regression), and compared the algorithm performance using Area under the ROC Curve (AUC). Step-2: we used three algorithms that allow identification of feature importance (i.e., Non-black box algorithms) and created a ranked list of features used by all three algorithms to make an SA prediction. Step-3: we compared prediction capacity using different subsets of high ranking features from Step-2 using AUC, sensitivity, and specificity as performance metrics.

Inclusion of all features showed superior prediction (higher AUC) than models relying on specific data domains, with AUCs>0.7 for RF and Ridge. Comparison across data domains indicated that the “clinical” domain yielded the highest precision. Application of algorithms that allow identification of feature importance revealed that different ML algorithms use

different types of data domains to generate a prediction, relying on multiple combinations of data domains including demographic, clinical, neurocognitive and neighborhood features. The top ranking feature across algorithms was endorsing suicidal ideation at T1- validating interpretability of our findings. Lastly, comparison of algorithms that rely on top ranking features (from 13-25 features) resulted in superior prediction than obtained using the entire list of 193 features, with AUC>0.8, sensitivity and specificity ~0.78. Sensitivity analyses using cross validation, or omitting baseline suicidal ideation from the dataset, did not substantially change the results.

Data collected as early as pre/early adolescence can help achieve clinically meaningful predictive capacity of mid/late adolescence SA. Findings suggest that multiple types of data can inform the algorithm and optimize its performance, and that relatively few features can allow a solid prediction, suggesting the clinical feasibility of such approach.

17.4 USING GENETICS TO INVESTIGATE THE AETIOLOGY AND MECHANISMS OF SUICIDAL BEHAVIOUR AND IDEATION

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Individual Abstract: Suicidal behaviour and ideation (henceforth, suicide) is a socio-biologically complex phenomenon with several antecedents. Childhood maltreatment and mental health conditions are significant risk factors for suicide. Understanding the aetiology of childhood maltreatment, and the mechanisms through which both risk factors contribute to suicide is pivotal and developing scientifically informed policies to reduce suicide, and safeguard and support individuals who are at risk of suicide. Here, we leverage large-scale genetic data to study this, focusing on the mechanistic links between autism, childhood maltreatment, and suicide.

We analysed data from the several cohorts (N = 105,222 to 185,414). Using polygenic scores (PGS) for autism, we first investigated the links between autism, childhood maltreatment, and suicide in the UK Biobank. We investigated if sex and the presence of childhood maltreatment significantly moderated the association between polygenic scores for autism and suicide. We also investigated if depressive symptoms, quality and frequency of social interactions, and educational attainment were significant mediators of the effect of autism polygenic scores on suicide. To better understand the mechanistic link between autism, childhood maltreatment and suicide, we investigated if childhood maltreatment is causal for mental and physical health problems using Mendelian Randomization. We conducted several within-family analyses to delineate the mechanisms of gene-environment correlations in childhood maltreatment.

AutismPGS were significantly associated with childhood maltreatment (max $R2 = 0.096\%$, $P < 2 \times 10{-}16$), and suicide (max $R2 = 0.13\%$, $P < 2 \times 10{-}16$). Supporting this, we identified significant genetic correlations between autism and childhood trauma ($rg = 0.36 \pm 0.05$, $P = 8.13 \times 10{-}11$), suicide ($rg = 0.49 \pm 0.05$, $P = 4.17 \times 10{-}21$), and an over-transmission of PGS got suicide and childhood maltreatment from parents to autistic probands in two cohorts. Childhood trauma positively moderated the effect of autism polygenic scores on suicide.

Depressive symptoms, quality and frequency of social interactions, and educational attainment were significant mediators of the effect of autism polygenic scores on suicide with the proportion of effect mediated ranging from 0.23 (95% CI: 0.09–0.32) for depression to 0.008 (95% CI: 0.004–0.01) for educational attainment. To better understand the role of childhood maltreatment in this, we conducted a genome-wide meta-analysis of childhood maltreatment. We identified 14 independent loci associated with childhood maltreatment (13 novel). We identified high genetic overlap (genetic correlations 0·24–1·00) among different maltreatment operationalisations, subtypes, and reporting methods. Within-family analyses provided some support for active and reactive gene–environment correlation but did not show the absence of passive gene–environment correlation. Robust Mendelian randomisation suggested a potential causal role of childhood maltreatment in depression (unidirectional), as well as both schizophrenia and ADHD (bidirectional), but not in autism or suicide, though both these phenotypes were underpowered.

Genetics help elucidate the mechanisms that link autism to suicide through childhood maltreatment. We identify several mediating variables that may help develop policies to prevent suicide. Whilst we do not find causal evidence that links childhood maltreatment to autism to suicide, follow-up with better powered genetic analyses is warranted.

18. COMMUNITY CONNECTEDNESS AND NATIVE AMERICAN YOUTH SUICIDE PREVENTION: FROM RESEARCH TO IMPLEMENTATION

Chair: Andrea Wiglesworth, University of Minnesota

Overall Abstract Details: Many Native American tribes hold values that youth are sacred, vital to community wellbeing, and are future community leaders. Therefore, it is urgent to address the crisis of Native youth experiencing higher suicide mortality rates than that of their age-mates from all other ethnoracial backgrounds in the U.S. The extant research on Native youth suicide is primarily focused on individual-level factors of risk, which may be insufficient for youth suicide prevention. Burgeoning research demonstrates that addressing protective factors with Native youth may be more important than focusing on suicide risk factors. Indeed, multisystem approaches, which engage individual, familial, and community systems may be both more appropriate and necessary for a holistic understanding of suicide prevention for Native youth. Connectedness has been identified as a concept that is integral to wellbeing for Native American youth. This includes connectedness to one's family, community, and culture. In previous research with Native youth, both family and community connectedness have been shown to buffer suicide risk and be associated with reasons for living. The proposed symposium centers community connectedness and strengths-based approaches to Native youth suicide prevention research, community-driven intervention, and psychoeducation.

First, we will present an integrative literature review of land-based and Indigenous approaches to Indigenous mental health, which describe the ways in which Indigenous knowledge is taken up to address suicidality and substance use. We offer suggestions for mental health practitioners to consider when working with Indigenous communities.

Second, we will present data from a sample of Native American adolescents from the state of Minnesota, showing how connectedness with community adults interacts with the broader

context of community makeup (e.g., living in or outside of a Native American community) to promote resilience against suicidal thoughts and behaviors. We further detail the impact of stress within the home, furthering our understanding of the interplay between community and family factors of connectedness and dysfunction.

Third, we will present the first known systematic data analysis from the implementation of an upstream intervention delivered by Elders to Native youth and designed to strengthen cultural knowledge, traditions and language as a means to promote youth mental health and well-being. We will describe the role of cultural identity, connectedness, and hopefulness as targeted intervention outcomes and the performance of quantitative measures.

Finally, we present on the development of a new national resource guide titled "CULTURE FORWARD: A Strengths and Culture Based Tool to Protect our Native Youth from Suicide." CULTURE FORWARD empowers Native communities by weaving together knowledge, stories, and practical resources highlighting communities' strengths to protect against Native youth suicide. Developed through a community-engaged process, CULTURE FORWARD is free online and print copies are being distributed nationally to tribal leaders, health departments, Native advocacy organizations, tribal epidemiology centers, and congressional members.

Together our symposium will demonstrate how the concept of connectedness for Native youth can be translated from preliminary research to upstream community-driven suicide prevention interventions and national outreach and psychoeducation.

18.1 ADDRESSING SUICIDALITY AND SUBSTANCE USE AMONG INDIGENOUS PEOPLES: A COMPREHENSIVE, INTEGRATIVE LITERATURE REVIEW OF LAND-BASED APPROACHES

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Individual Abstract: To explore current trends in Indigenous mental health, we examined literature at the intersection of suicide and substance use among American Indians and Alaska Natives in the United States and First Nations and Inuit peoples in Canada. Our primary interest was in identifying land-based and Indigenous approaches to addressing suicide and substance use among Indigenous peoples; we included all other community-based and culturally-sustaining approaches (Community-based Participatory Research (CBPR).

Indigenous peoples in both the United States and Canada have diverse and unique experiences, including a common history of colonial imposition in relation to the federal government. This review considered cultural, historical, political, and social factors in relation to Indigenous mental health.

Research Question: What are some components of Indigenous and land-based approaches to addressing suicide and substance use among Indigenous peoples? What are some

characteristics of culturally-sustaining research and practice that address Indigenous mental health?

All papers in PsycINFO, PubMed, and the University of Washington Library were considered. Our initial search included the following search terms, "Indigenous" or "American Indian" or "Alaska Native" or "First Nations" and "suicide; we used similar search terms to identify studies associated with "substance use" or "alcohol use." We identified over 100 articles to review. In our first round of analysis, we categorized each study based on the methodological approach and identified 15 studies that engaged community-based, Indigenous, and/or land-based approaches to research. Four researchers with diverse cultural backgrounds (Lakota, Cowichan, and White) analyzed each abstract using grounded theory (Brenner, 2006) and subsequently through a deductive approach based on Indigenous epistemologies, ontologies, and axiologies.

We highlight each study and demonstrate commonalities across. Emergent themes suggested that although there were many studies aimed at addressing Indigenous suicide and substance use, there were relatively few that take up Indigenous knowledge systems, and their related ethical and relational commitments, in their approach to addressing predicaments. We provide research strategies and approaches to working with Indigenous peoples, with the recognition that the solutions that the community faces are already built within local knowledge systems.

18.2 COMMUNITY FACTORS THAT PROTECT NATIVE AMERICAN YOUTH AGAINST SUICIDAL THOUGHTS AND BEHAVIORS

Andrea Wiglesworth*[1], Lauren Eales[2], Kathryn Cullen[3], Bonnie Klimes-Dougan[1]

[1]University of Minnesota, [2]University of Minnesota Twin Cities, Institute of Child Development, [3]University of Minnesota Medical School

Individual Abstract: In 2018, Native American (NA) adolescents were 2.2 times more likely to die by suicide than adolescents from the general population (CDC NCHS, 2020). Researchers, clinicians, and Tribal leaders are seeking ways to improve the wellbeing of NA youth. Historically, NA suicidology has focused on within-individual risk factors for suicide ideation (SI) and suicide attempts (SA). Factors that might promote resilience, particularly those that incorporate youths' environments, have been less thoroughly examined. Connectedness to the community is potentially protective against SI/SA for some NA youth, and as such, fostering positive relationships with community members has been implemented into suicide prevention programming. However, research has yet to consider how the community makeup of these youth (e.g., living in communities with many or few other NA people) may impact the protective nature of such relationships.

Participants included 4,367 NA adolescents ages 12 to 19 (M = 14.96 years; 51.6% female sex assigned) from the state of Minnesota. Participants completed self-report surveys administered by the Minnesota Department of Health, which assessed demographics, past year suicide ideation (SI) and attempts (SA), perceptions of adult caring (e.g., parents, adult relatives, community members, and teachers), and instances of stress within the home (e.g., living with anyone who uses drugs, drinks too much, is verbally or physically abusive). Using census data,

we characterized individuals based on the percentage of NA people residing in their county to understand the makeup of their communities. Path analysis was run in M-plus to understand the interaction between community makeup and adult caring in buffering reports of SI and SA. These analyses were then re-run in a subsample (n = 2,601) that endorsed at least one stressor in the home to understand if the impact of community remained the same for youth with stressful home environments.

For the whole analytic sample, there were no differences in youth reports of SI or SA based on community makeup. Results revealed that parent (OR = 0.65, $p < .001$), relative (OR = 0.75, $p < .001$), and community adult (OR = 0.87, $p = .004$) caring were protective against SI, regardless of community makeup (interactions p's > .05). Similarly, parent (OR = 0.66, $p < .001$) and adult relative (OR = 0.75, $p < .001$) caring were associated with lower reports of SA. Further, results revealed that perceptions of caring from community adults buffered risk of SA in the context of communities with lower percentages of NA people (OR = 1.10, p = 0.04). In other words, youth who were not surrounded by many other NA people benefited more from feeling that an adult in their community cares about them. Results within the subsample of NA youth who endorsed stressful home environments were largely similar.

These results offer important insights into our understanding of community-level resilience factors for NA youth, including those at increased risk for suicide due to stressful home environments. Our findings emphasize the importance support from family and other adults in suicide prevention efforts. Further, having connections in the community may be particularly protective for suicidal NA youth who are not growing up among others who share their cultural background. These findings will help to inform future suicide prevention programs, which might aim to increase family harmony and connectedness. Limitations include the cross-sectional design and the separation of students by county as opposed to another, more meaningful separation (e.g., reservation vs urban). However, high NA counties overlap substantially with reservations in Minnesota, thus findings may generalize to reservation based NA youth.

18.3 "CULTURE FORWARD": DEVELOPMENT AND DISSEMINATION OF A STRENGTHS AND CULTURE BASED NATIVE AMERICAN YOUTH SUICIDE PREVENTION RESOURCE GUIDE

Victoria O'Keefe*[1], Emma Waugh[2], Fiona Grubin[1], Mary Cwik[1], Rachel Chambers[1], Jerreed Ivanich[3], Allison Barlow[1]

[1]Johns Hopkins Bloomberg School of Public Health, [2]United South and Eastern Tribes, [3]Colorado School of Public Health

Individual Abstract:

Indigenous knowledges and practices promote American Indian/Alaska Native (AI/AN; Native) health and wellness. Focusing on cultural strengths is foundational to Native youth suicide prevention and imperative given that AI/AN youth suicide rates are three times higher than U.S. same-aged peers. The purpose of this presentation is to describe the community-engaged process of developing a national Native youth suicide prevention resource guide for

tribal leaders and other community stakeholders titled “CULTURE FORWARD: A Strengths and Culture Based Tool to Protect our Native Youth from Suicide.” CULTURE FORWARD aims to elevate Indigenous knowledges and practices and put forth accessible state-of-the-science strengths- and culture-based approaches proven effective with AI/AN communities to reduce and prevent youth suicide.

The CULTURE FORWARD guide was developed with a six-month and tribally-driven qualitative process. Seventeen listening sessions were conducted, including nine roundtable discussions and eight individual interviews with Native youth, tribal leaders, grassroots and community leaders, Two Spirit leaders, Elders, traditional healers, military service members, Veterans, and service providers representing 36 tribal communities and diverse geographic regions. Roundtable and interview guides included questions about understanding tribal and community leaders’ actions to prevent youth suicide, describing programs and activities that have been successful, and gathering input on what content should be included and how best to disseminate the resource guide. In addition, a literature review of academic and grey literature was conducted to complement qualitative findings and include content recommended by listening session participants. Finally, a diverse and representative national advisory editorial board was convened to ensure AI/AN and allied voices with expertise about Native youth suicide prevention continued to guide content and design.

Qualitative data were analyzed iteratively and thematically. Across all listening sessions, culture was discussed as an important protective factor against AI/AN youth suicide, and thus became an overarching theme for the entire guide and inspired the guide’s title. Ten initial themes were condensed into five themes to form chapters in the guide. Each chapter includes an introduction; how the theme helps prevent Native youth suicide; a review of academic literature, community stories, and programs that demonstrate the theme; action steps communities can take related to the theme; and a section with additional resources and information.

CULTURE FORWARD honors and empowers communities by maintaining a strengths focus, incorporating traditional ways of sharing knowledge in the form of stories, and integrating powerful imagery that makes the guide visually appealing and approachable for AI/AN community members and leaders. The guide is freely available online and print copies have been distributed to tribal leaders, tribal departments, national Native advocacy organizations, tribal epidemiology centers, and congressional members. The strands of knowledge, stories, and practical resources within the guide are woven together to create an uplifting narrative that demonstrates that Native communities carry inherent strengths to help protect Native youth from suicide. CULTURE FORWARD has broad implications to promote cultural strengths-based approaches to Native youth suicide prevention intervention research and programming, as well as build a national movement to advance Indigenous strengths to promote Native youth well-being.

18.4 EVALUATION OF A CULTURALLY GROUNDED UPSTREAM SUICIDE PREVENTION INTERVENTION: THE ELDERS' CURRICULUM

Mary Cwik*[1], Victoria O'Keefe[1], Novalene Goklish[2], Fiona Grubin[1], Angelita Lee[2], Rosemarie Suttle[2], Cindy Kaytaoggy[2], Shea Littlepage[1], Kristin Masten[1], Allison Barlow[1]

[1]Johns Hopkins, [2]Johns Hopkins, White Mountain Apache

Individual Abstract: Involvement in cultural traditions and activities (Cwik et al. 2015; Pharris, Resnick, and Blum 1997), tribal spirituality (Garroutte et al. 2003) and community relationships and connectedness (Allen et al. 2014; Mohatt et al. 2011) have been found to potentially protect against suicide for Indigenous youth. A promising approach to increase these and other protective factors is through developing culturally based interventions from the ground up (Okamoto et al. 2013), which ensures that Indigenous knowledge is at the forefront of intervention design, implementation, and evaluation (Walters et al. 2018). In many Indigenous communities, Elders serve as a bridge for intergenerational transmission of knowledge, traditions, and strengths that convey meaning and purpose to life to youth. The White Mountain Apache Tribe (WMAT) in collaboration with Johns Hopkins University (JHU) have created an Elder-based youth suicide prevention intervention called Nowhi nalze' dayúwéh bee goldoh doleeł ("Let our Apache heritage and culture live on forever and teach the young ones"), or "The Elders' Curriculum" for short. The Elders' Curriculum is centered on ethnic and cultural identity, hopefulness, connectedness, and spirituality demonstrated in prior research with WMAT and other AI/AN communities to protect youth against suicide. The Elders believed that strengthening these culturally based factors would promote youths' well-being, and, in turn, prevent suicide. The purpose of this presentation is to report on the first known systematic data collection and analysis regarding the implementation of the Elders' Curriculum. AI youth ages 11-15 attending schools located on the Fort Apache Indian Reservation participating in the Elders' Curriculum were recruited for this study. Data was collected at two time points—baseline and post-intervention—through anonymous surveys administered by teachers and Apache community mental health specialists who assist with the Elders' Curriculum (~ 1 hour). Questions came from the following measures: The Apache Hopefulness Scale; The Problem Oriented Screening Instrument for Teenagers; The Awareness of Connectedness Scale; The Hemingway Measure of Adolescent Connectedness (HMAC); and The Multigroup Ethnic Identity Measure (MEIM). We will report on pre- and post-intervention data using t-tests and M/ANOVA as appropriate to assess the relative impact of the culture-centered curriculum using a repeated cross-sectional design. Other tribal communities have expressed interest in adapting the Elders' Curriculum. Future research should consider which intervention elements can be adapted to other tribes while maintaining fidelity to any proven effects.

19. ASSESSMENT AND INTERVENTION FOR SUICIDE CRISIS SYNDROME IN YOUTH

Chair: Alan Apter, Schneiders Childrens Medical Center of Israel

Overall Abstract Details: There has been an alarming increase in the rates of children and adolescents presenting with all forms of suicidal behavior. Emotion dysregulation has been proposed as a key target for assessment and treatment for the risk of repeated self-harm in youth. Suicide Crisis syndrome is a novel concept based on pioneer work by Galynker, supported in adults. The Suicide Crisis syndrome proposes a pre-suicidal dysregulated cognitive and emotional state experienced by individuals at high risk for imminent suicidal behaviors. Recently, there have been attempts to evaluate this concept in youth. The first part of the symposium will therefore be devoted to the assessment of suicidal youth and how this is

influenced by the concept of the suicide crisis syndrome. This has been examined in two different settings and countries, allowing for the evaluation of cultural differences in the way suicidal behaviors among youth are conceptualized and how suicide crisis syndrome and emotion dysregulation manifests in suicidal children and adolescents. The first speaker will present findings of suicide risk assessment measures among adolescents in psychiatric hospitals in Slovenia. The second speaker from Schneider Children's Medical Center of Israel will discuss suicide crisis assessment and associations with near-term risk among Israeli youth presenting to the emergency department with suicidal ideation or behavior. The second half of the symposium will be devoted to interventions focusing on emotion regulation to reduce the likelihood of repeated suicide crises and self-harm. The third speaker from UCLA will discuss suicidal behavior in adolescents from the perspective of Dialectical Behavior Therapy (DBT) and emotion regulation and will focus on a multi-site randomized controlled trial indicating the use of DBT in the prevention of recurrent suicidal crisis. Finally, the last speaker from Columbia University will present the feasibility and acceptability of Safety Planning Intervention among prepubertal children presenting with suicidal ideation, threats, and behaviors. Overall, the session will provide a comprehensive cross-cultural look at the concept of suicidal crisis and the role of emotion dysregulation, and potential assessment and intervention strategies in children and adolescents.

19.1 USEFULNESS OF SUICIDE RISK ASSESSMENT INSTRUMENTS AMONG YOUTH: PRELIMINARY FINDINGS

Vita Postuvan*[1], Tina Podlogar[2], Maja Drobnič Radobuljac[3], Hojka Gregorič Kumperščak[4], Diego De Leo[2]

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Individual Abstract: Assessment of suicide risk in a clinical situation is largely focused on the patient's warning signs, like precipitating events, changes in behaviour, and intense emotional states. These signs are often difficult to recognize, as the patient may mask or minimize them, while the professional may not notice or misinterpret them. The use of well-designed risk assessment instruments can significantly improve the accuracy of clinician's assessments, and there are newly developed suicide risk assessment instruments that have shown promising results in this area. Our study aimed to initiate the implementation of these instruments in the psychiatric care of youth in mental distress in Slovenia and evaluate their usefulness. We recruited Slovenian psychiatric hospitals patients aged 12-21 who presented with potential suicidal ideation and/or behaviour. We used the Modular Assessment of Risk for Imminent Suicide – adolescent adaptation (Y-MARIS), which is composed of two client modules (focused on client's pre-suicidal state and attitudes toward suicide) and two clinician modules (focused on clinician's emotional response and explicit suicide risk factors). We also used the Screening Tool for Assessing Risk of Suicide (STARS), which is a structured interview that serves as a guideline for clinicians to gather information about an individual's experience of a suicidal state. It focuses on risk and protective factors as well as warning signs contributing to overall suicide risk. This presentation is based on the preliminary results of the study, providing first insights into the utility of these instruments among young psychiatric patients in Slovenia.

19.2 MULTIMODAL SUICIDE CRISIS ASSESSMENT FOR SUICIDAL YOUTH FOLLOWING EMERGENCY DEPARTMENT ADMISSION

Shira Barzilay*[1], Liat Haruvi-Katalan[1], Alan Apter[1]

[1]Schneider Children's Medical Center of Israel

Individual Abstract: There is an alarming increase in youth visits to the emergency department who are presenting with suicidal ideation/behaviors. This underscore the urgent need for innovative short-term suicide risk assessment to direct appropriate treatment following emergency department visit. To address this problem, we pilot-tested a suicide risk assessment battery, composed of multidimensional, multi-informant (i.e., clinician, patient, and parent) measures, which do not rely on self-report of suicidal ideation. The talk will describe the need for imminent measures of risk for suicidal behavior among children adolescents and the concept of suicidal crisis state among youth. We will present the methodology and preliminary results of the pilot study validating the suicide risk assessment instrument among youth. The sample included adolescents presenting with suicide-related complaints to the emergency department of a large general children's medical center in Israel. Suicide-risk assessment instruments predictive of post-discharge suicidal outcomes in adult populations were adapted and tested: a) Suicide Crisis Syndrome Inventory (SCI), as part of the Youth Modular Assessment of Risk for Imminent Suicide (Y-MARIS). b) Suicide Crisis Syndrome -Clinician Inventory (SCI-C). Suicidal outcomes were assessed at one-month follow-ups. Preliminary results among 90 children and adolescents aged 6-18 years demonstrated that self-report and clinician SCI scores prospectively predicted suicidal thoughts and behaviors within one month (SCI-child, B=.132 [CI .063, .20], beta=.555, t=3.99, p=.001; SCI-clinician, B=.216 [CI .016, 4.16], beta=.304, t=2.25, p=.036; R2=.65), controlling for baseline SI and measures of psychopathology. Further research validating the proposed comprehensive risk assessment battery in a large sample of adolescents may have the potential of demonstrating clinical utility in identifying youth at high risk for suicidal behaviors post-discharge and targeting appropriate interventions.

19.3 DIALECTICAL BEHAVIOR THERAPY FOR SUICIDAL AND SELF-HARMING YOUTHS: TREATMENT MECHANISMS AND MEDIATION IN A RANDOMIZED CONTROLLED TRIAL

Joan Asarnow*[1], Michele Berk[2], Robert Gallop[3], Jamie Bedics[4], Molly Adrian[5], Jennifer Hughes[6], Claudia Avina[7], Elizabeth McCauley[5]

[1]David Geffen School of Medicine at UCLA, [2]Stanford University, [3]West Chester University of Pennsylvania, [4]California Lutheran University, [5]University of Washington, [6]University of Texas Southwestern, [7]University of California Los Angeles

Individual Abstract: This presentation expands on our prior report that among adolescents at high-risk for suicide/suicide attempts, youth randomized to dialectical behavior therapy (DBT) versus Individual and Group Supportive Therapy (IGST) showed less overall self-harm, suicide attempts, and nonsuicidal self-injurious behavior at the end of a 6-month active treatment period, and greater self-harm remission at the end of active-treatment and during a 6 to 12-month follow-up period. We test the hypothesis that emotion regulation is a key mechanistic DBT target and therapeutic change mechanism for reducing self-harm, report on other mechanistic outcomes, and mediation effects.

Methods: Multi-site randomized controlled trial of 173 adolescents with prior suicide attempts, repeat self-harm episodes, and suicidal ideation. Youth were randomized to DBT or IGST, with outcomes monitored during the 6-month treatment-period and through 12-months of follow-up.

DBT youth showed significantly greater improvement on emotion regulation through the treatment-period ($t(498) = 2.36$, $p = 0.019$) and 12-month study-period ($t(498) = 2.93$, $p = .004$). DBT parents reported more DBT skill use during the treatment-period ($t(497) = 4.12$, $p < 0.001$) and through 12-months ($t(497) = 3.71$, $p < 0.001$). Improvements in youth emotion regulation during treatment significantly mediated the association between receiving DBT and self-harm remission during the follow-up period (Months 6-12, Estimate 1.53, CI 1.01, 2.31, $p = 0.044$). Other mechanistic outcomes explored included individual and environmental risk and protective factors (e.g. stress, sleep).

Results support the significance of adolescent emotion regulation as a mechanistic target for reducing self-harm and indicate that the post-treatment DBT advantage extended beyond self-harm to hypothesized mechanistic targets.

19.4 SAFETY PLANNING INTERVENTION FOR PREPUBERTAL CHILDREN: FEASIBILITY AND ACCEPTABILITY STUDY

Liat Itzhaky*[1], Barbara Stanley[2]

[1]Geha Mental Health Canter, [2]College of Physicians and Surgeons, Columbia University

Individual Abstract: Suicidal ideation and behavior are estimated to be as high as 4-16% and 1.5%, respectively, in the general 6-12-year-old population. While strides have been made in addressing suicidal behavior in adults and adolescents, suicidal behavior in prepubertal youth has been poorly addressed. Currently, as a result, there are no validated suicide prevention interventions specifically developed for this population. The Safety Planning Intervention (SPI) is a brief, protocol-driven and individually tailored tool that uses evidence-based practices for suicide prevention (Stanley and Brown, 2012). The SPI aims to provide the individual with quick distractions and coping tools to overcome a suicidal crisis without acting upon the suicidal thoughts. However, for effective suicide prevention in the prepubertal age, specific developmentally appropriate interventions must be developed in consideration of the cognitive and emotional development at this critical life-stage. In this presentation we will present our adapted version of the Safety Planning Intervention for prepubertal children (C-SPI). We will also discuss the data regarding its feasibility and acceptability in outpatient children (ages 6-12) who have made a suicide threat, demonstrated suicidal behavior, or reported suicidal ideation, and their parents.
Discussant: Igor Galynker, Mount Sinai Beth Israel

20. PREADOLESCENT SUICIDAL AND NON-SUICIDAL SELF-INJURY: EMERGING INSIGHTS ON PREVALENCE AND MARKERS OF RISK

Chair: Richard Liu, Harvard Medical School, Massachusetts General Hospital

Overall Abstract Details: Accumulating evidence indicates that rates of preadolescent suicidal and nonsuicidal self-injury are on the rise. Unfortunately, there is a dearth of empirical literature on the epidemiology, characteristics and risk correlates of these outcomes among children and preteens. This growing public health concern has recently spurred the National Institute of Mental Health to convene a series of research round tables with experts with direct and relevant expertise in this area to shed light on the prevalence and assessment of risk for these outcomes in preadolescents, as well as to call for future research in this area. This symposium presents a set of novel studies answering this call through illuminating the prevalence and predictors of suicidal and nonsuicidal self-injury among preadolescent children.

Dr. Richard Liu will first present findings from a systematic review and meta-analysis of 74 studies on the prevalence of suicidal and nonsuicidal self-injury in preadolescents. Findings indicate that although death by suicide and suicide attempts are rare in the general community, the prevalence of suicidal ideation and nonsuicidal self-injury is relatively high. Together with elevated rates of suicidal thoughts and behaviors in clinical samples, these findings contrast with the still-common view that young children are incapable of having suicidal thoughts. Collectively, these findings also indicate that additional research clarifying characteristics and risk factors associated with suicidal and nonsuicidal self-injury in young children is warranted.

Dr. Hannah Lawrence will next present new data on sociodemographic and diagnostic predictors of suicidal ideation and attempts in preadolescents in the Adolescent Brain Cognitive Development (ABCD) Study. Results suggest that sexual minority status and psychiatric comorbidity are significant predictors of suicidal ideation and suicide attempts. Results also highlight that suicidal preadolescent youth receive less mental health treatment relative to estimates previously documented in adolescents, with treatment use being particularly low for female, Black, and Hispanic youth.

The third paper, by Dr. Taylor Burke, presents data from the ABCD study reporting on the prevalence and predictors of nonsuicidal self-injury (NSSI) history and onset. Results reveal that preadolescents who are male, White, identify as a sexual minority, have unmarried parents and low family income had increased odds of lifetime NSSI. Although major depression was most predictive of NSSI, NSSI was also associated with a range of internalizing and externalizing disorders, greater diagnostic comorbidity, and suicidal ideation.

Dr. Arielle Sheftall will then present a study examining early emotion regulation/reactivity and neurocognitive vulnerability factors in children with and without a parental history of suicidal behavior. Results suggest no neurocognitive differences in youth with and without a parental history of suicide history. However, findings reveal that youth with a parental history of suicidal behavior have lower effortful control and higher negative affect, suggesting emotion regulation/reactivity deficits in youth at high risk for suicidal behavior may be detectable at as young as six years.

Dr. David Klonsky, an international expert in the etiology of suicidal and nonsuicidal self-injury, will serve as discussant and will highlight future directions in this nascent field of research.

20.1 SUICIDE AND NON-SUICIDAL SELF-INJURY IN PREADOLESCENT CHILDREN: A SYSTEMATIC REVIEW AND META-ANALYSIS

Richard Liu*[1], Rachel Walsh[2], Ana Sheehan[3], Shayna Cheek[4], Christina Sanzari[5]

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Individual Abstract: Since 2008, suicide has increased from being the 10th leading cause of death to the 5th leading cause of death among preadolescent children in the United States. The NIMH convened expert workgroups in 2019 and again this year directly to address the need to understand this growing public health concern and to develop strategies to address it. This concern is all the more pressing considering that suicide in preadolescence is poorly characterized compared to in adolescence and adulthood. As an important preliminary step toward addressing this issue, the current study presents a systematic review and meta-analysis aimed at estimating the prevalence of self-injurious thoughts and behaviors in preadolescent children, thereby to characterize the scope of this issue. A search of PsycINFO and Medline yielded 74 eligible studies. In community samples, (i) the rate of suicide among preadolescent children in the general population was .94/1 million (95% CI = .45 – 1.93), with higher rates observed for boys (1.92/million, 95% CI = 1.68 – 2.20) than for girls (0.38/million, 95% CI = .28 – .51; $p < .001$); (ii) for suicide attempts, prevalence rates were 2.11% (95% CI = 2.02 – 2.21) for one year and 2.56% (95% CI = 1.86 – 3.53) for lifetime; (iii) prevalence of suicidal ideation was 7.98% (95% CI = 7.06 – 9.00) for one year and 10.18% (95% CI = 7.99 – 12.89) for lifetime; and (iv) lifetime prevalence rate of non-suicidal self-injury (NSSI) was 6.25% (95% CI = 3.82 – 10.06). In at-risk and clinical samples, only lifetime prevalence data were available for suicide attempts (11.55%, 95% CI = 6.86 –18.81) and suicidal ideation (21.86%, 95% CI = 14.39 – 31.79). Although suicidal behavior among preadolescent children in the general community is rare, the relatively high prevalence of suicidal ideation is concerning, as is the prevalence of NSSI. When taken together with findings of elevated rates of suicidal ideation and suicide attempts in at-risk and clinical samples, these findings provide a striking contrast with the common view that young children are not capable of having suicidal thoughts or intentions. These relatively high prevalence rates provide support for the need for future research accurately characterizing markers of risk for suicidal thoughts and behaviors in this age group.

20.2 SOCIODEMOGRAPHIC AND DIAGNOSTIC PREDICTORS OF SUICIDAL IDEATION, SUICIDE ATTEMPTS, AND TREATMENT UTILIZATION AMONG PREADOLESCENT CHILDREN

Hannah Lawrence*[1], Taylor Burke[2], Ana Sheehan[3], Brianna Pastro[1], Rachel Levin[4], Rachel Walsh[5], Alexandra Bettis[6], Richard Liu[4]

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Individual Abstract: Emerging research suggests that rates of suicide attempts and deaths in children may be on the rise, but relatively little research has evaluated correlates of risk for suicide in preadolescent youth. Nationally representative studies of suicide have largely been conducted with adolescent samples or when they have evaluated suicide risk in preadolescents,

focus solely on suicide deaths. Given that suicidal ideation and attempts are associated with morbidity and that earlier onset of suicidal ideation and behavior may be associated with increased risk for poor outcomes, data on predictors of suicidal ideation and attempts in preadolescent children are critically needed. In addition, research focused on treatment utilization among suicidal youth have largely been confined to adolescent samples, finding that many suicidal adolescents do not receive mental health services. Again, however, little is known regarding predictors of treatment utilization among preadolescent children who have experienced suicidal ideation or behavior.

This presentation will describe findings from the Adolescent Brain Cognitive Development (ABCD) Study regarding sociodemographic and diagnostic predictors of suicidal ideation, suicide attempts among youth with suicidal ideation, and treatment utilization among preadolescent children. Participants were 11,875 9- and 10-year-old youth residing in the United States. Children and their parents/guardians reported on youths' sociodemographic characteristics, lifetime history of suicidal ideation, suicide attempts, and psychiatric disorders, and identified whether the child had received mental health services.

14.33% of youth experienced lifetime suicidal ideation and 1.26% had a lifetime history of suicide attempts. Multivariate logistic regression analyses were used to examine predictors of suicidal ideation, suicide attempts among youth with suicidal ideation, and treatment utilization among youth with suicidal ideation and suicide attempts. Identifying as a sexual minority (OR = 3.81, 95% CI 2.49-5.83) or multiracial (OR = 1.39, 95% CI 1.13-1.70) was associated with greater odds of suicidal ideation, whereas female sex was associated with lower odds of suicidal ideation (OR = 0.71, 95% CI 0.63-0.81). Identifying as a sexual minority (OR = 2.55, 95% CI 1.02-6.38) and having low family income (first quintile: OR = 2.86, 95% CI 1.31-6.26; second quintile: OR = 3.08, 95% CI 1.62-5.86) was associated with greater odds of suicide attempts among youth with suicidal ideation. Meeting diagnostic criteria for more than one mental health disorder was associated with higher odds of both suicidal ideation (OR = 3.79, 95% CI 3.24-4.43) and suicide attempts (OR = 2.17, 95% CI 1.26-3.72). Many youth with suicidal ideation (65.41%) and who had attempted suicide (45.18%) had not received mental health treatment. Identifying as female (OR = 0.63, 95% CI 0.48-0.83), Black (OR = 0.57, 95% CI 0.37-0.89), or Hispanic (OR = 0.65, 95% CI 0.43-0.97) was associated with lower treatment utilization.

Rates of suicidal ideation and suicide attempts are concerning among preadolescent children. The present study adds vitally needed information regarding predictors of suicidal ideation and behavior in these preadolescent youth. Targeted assessment and preventative efforts may be especially fruitful when targeted towards males, racial, ethnic, and sexual minority youth, and those youth diagnosed with more than one mental health disorder. Additional research is needed to further clarify predictors of suicide risk among preadolescent youth to ultimately improve prevention efforts in this age group.

20.3 SOCIODEMOGRAPHIC, DIAGNOSTIC AND SUICIDE-RELATED ASSOCIATIONS WITH NONSUICIDAL SELF-INJURY ONSET AND HISTORY IN A U.S. NATIONALLY REPRESENTATIVE STUDY OF PREADOLESCENTS

Taylor Burke*[1], Alexandra Bettis[2], Rachel Walsh[3], Rachel Levin[4], Hannah Lawrence[5], Ana Sheehan[6], Richard Liu[4]

[1]Brown University, [2]Vanderbilt University Medical Center, [3]Temple University, [4]Harvard Medical School Massachusetts General Hospital, [5]Harvard Medical School McLean Hospital, [6]University of Delaware

Individual Abstract: Background. There is a dearth of literature on the prevalence and predictors of nonsuicidal self-injury (NSSI) history and onset among preadolescent youth. This gap in the literature is significant given evidence suggesting that NSSI is a robust predictor of negative mental health outcomes, and that early onset NSSI may be associated with a more severe course of self-injurious thoughts and behaviors. This study aimed to evaluate sociodemographic characteristics, psychiatric disorders, and suicidal ideation in relation to NSSI onset and history in preadolescents. Methods. Data were drawn from the Adolescent Brain and Cognitive Development (ABCD) study, which recruited a nationally representative sample of 11,875 youth ages 9-10. The primary outcome measures were lifetime history and recent onset of NSSI. Measures included sociodemographics and the K-SADS diagnostic interview assessing psychopathology and suicidal ideation. Results. Female sex and identifying as Black were associated with lower odds of lifetime NSSI. Identifying as a sexual minority, having unmarried parents, and a low family income were associated with higher odds of lifetime NSSI. Although depression was most predictive of NSSI history and onset, a range of internalizing and externalizing disorders, greater comorbidity, and suicidal ideation also were predictive. Conclusions. Given that nonsuicidal self-injury was associated with a range of mental health disorders and comorbidity, it may be best conceptualized as a transdiagnostic phenomenon. Findings highlight key sociodemographic and diagnostic factors that may help to direct screening efforts in preadolescents, particularly sexual minority status and depression. Although the present study benefitted from the ability to examine predictors of nonsuicidal self-injury onset via retrospective report, prospective research is a necessary next step to confirm and extend findings.

20.4 PREADOLESCENT SUICIDE RISK: AN EXPLORATION OF EARLY VULNERABILITY FACTORS IN YOUTH WITH AND WITHOUT A PARENTAL HISTORY OF SUICIDAL BEHAVIOR

Arielle Sheftall*[1], Boston Shields[2], Amaya Rakes[2], Dawn Ottobre[2], Jeffrey Bridge[2]

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Individual Abstract: Background. Limited research has been conducted concerning the risk and protective factors associated with preadolescent suicidal behavior (SB). This has created a gap in field and limits our ability to prevent suicide in this population of youth. A significant risk factor for the early onset of a first suicide attempt (SA) is a parental history of SB. Although the familial transmission of SB is well documented, research examining the specific mechanisms associated with familial risk is limited. This study examines early vulnerabilities in youth, 6-9 years, with (PH+) and without (PH-) a parental history of SB. Methods. The sample included 151 parent-child dyads: 67 in the PH+ group and 85 in the PH- group. The vulnerabilities examined for this specific study were emotion regulation/reactivity (ERR) and

neurocognition. Parents and children completed interviews about suicidal thoughts and behaviors, self-report measures about common risk factors (e.g., depression, anxiety) and ERR, and computer tasks measuring neurocognition. Results. For ERR, group differences between PH+ and PH- youth were found. PH+ youth had lower effortful control and higher negative affect compared to PH- youth. Within the effortful control subscale, PH+ youth had lower levels of attention/focusing. Within the negative affect subscale, PH+ youth had more anger, sadness, and less soothability. When examining correlations between parental ERR and youth ERR, youth effortful control was negatively associated with parental emotion dysregulation and youth negative affect was positively associated with parental emotion dysregulation. When examining neurocognition, no differences were found between PH+ and PH- youth. Conclusions. These findings suggest ERR deficits in youth at high risk for SB may be present as young as six years. In order to prevent SB in this group of youth, interventions focused on both parent and child ERR could be beneficial.
Discussant: E. David Klonsky, University of British Columbia

21. NEUROBIOLOGY OF SUICIDE AND TECHNOLOGY-ASSISTED PREVENTION
Chair: Ramiro Salas, Baylor College of Medicine, The Menninger Clinic

Overall Abstract Details: There are currently many interdisciplinary efforts underway to expand our understanding of suicide and factors of risk and resilience. We believe that a deep understanding of the biological bases of suicide ideation and attempt is a pre-requisite to rationally develop improved prevention therapies. In this symposium, we will discuss novel methods and results to study the genetics and brain function associated with suicide ideation and attempt, possible pharmacotherapies and their likely mechanisms of action, clinically relevant predictors, and technology-driven novel prevention strategies.

First, Dr. Lynnette Averill will discuss findings from a double-blind, cross-over trial that examined the effect of pretreatment with the mechanistic target of rapamycin complex 1 (mTORC1) on ketamine's antisuicidal effects. While these analyses are pilot in nature, the findings suggest the rapid-acting antisuicidal and antidepressant effects of ketamine may be mechanistically distinct and the trajectories of response, recovery, and relapse may be independent. These findings provide additional evidence of ketamine's antisuicidal effects and highlight the importance of future studies that continue to examine potential differences in mechanisms and trajectory of outcomes.

Next, Dr. Ramiro Salas will present a novel strategy to conjointly study genetics and human brain imaging in patients with past suicide attempt. Our results point to specific gene variant/brain region function interactions that may be altered in these patients, which offers both a new biomarker and possible individualized targets for prevention.

Third, Dr. Katrina Rufino will present a study examining the progression of suicidal ideation throughout the course of treatment to predict outcomes, including death by suicide. More specifically, she will examine self-reported suicidal ideation trajectories through treatment to determine if there is an association between treatment progression and clinical outcomes or psychiatric medications at admission or discharge, length of hospital stay, as well as post treatment attempts and death by suicide.

Finally, Dr. Michelle Patriquin will discuss new results that demonstrate the relationship between wearable-based metrics and decreased suicide risk in adults admitted to an inpatient psychiatric hospital. Specifically, she will review objective (i.e., wrist-worn actigraph) and subjective sleep data that indicates increased total sleep time measured via actigraphy is associated with improvements in suicide risk. She will highlight more broadly the clinical importance of objective monitoring (e.g., via actigraph and other wearable sensors) in understanding both subjective (e.g., self-report) and objective (e.g., heart rate, heart rate variability, sleep disturbance) mental health outcomes.

In conclusion, we will present novel techniques and data showing preclinical advances in our general understanding of suicide ideation and attempt, including results from genetics, resting state functional MRI connectivity, sleep architecture, psychophysiology, and pharmacology. Next, we will link what is known about neurobiology of suicide ideation and attempt to the clinical setting, and how this can help drive a new wave of personalized prevention strategies.

21.1 MTORC1 INHIBITOR EFFECTS ON RAPID KETAMINE-INDUCED REDUCTIONS IN SUICIDAL IDEATION IN PATIENTS WITH TREATMENT-RESISTANT DEPRESSION

Lynnette Averill*[1], Christopher Averill[2], Ralitza Gueorguieva[3], Samar Fouda[4], Mohamed Sherif[5], Kueng-Huep Ahn[6], Mohini Ranganathan[6], Deepak D'Souza[6], Gerard Sanacora[3], John Krystal[4], Chadi Abdallah[1]

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Individual Abstract: Suicide is a public health crisis with limited treatment options. Ketamine has demonstrated rapid and robust improvements in suicidal ideation (SI). The parent study for the secondary pilot analyses presented here was a double-blind, cross-over trial that found pretreatment with the mechanistic target of rapamycin complex 1 (mTORC1) prolonged the antidepressant effects of ketamine. Here we examined the effect of mTORC1 inhibition on ketamine's antisuicidal effects. Twenty patients in a major depressive episode were randomized to pretreatment with oral rapamycin (6 mg) or placebo prior to IV ketamine (0.5 mg/kg). Severity of suicidal thoughts and behaviors were assessed by item 10 of the Mongomery-Asberg Depression Rating Scale (MADRS-i10), item 12 of the Quick Inventory of Depressive Symptoms Self-Report (QIDS-i12), and Beck Scale for Suicide (BSS). We found ketamine administration resulted in significant improvements across all outcome measures: MADRS-i10 ($F(3,112) = 8.9$, $p < 0.0001$), QIDS-i12 ($F(3,91) = 4.6$, $p = 0.005$) and BSS ($F(3,102) = 5.5$, $p = 0.002$) with the largest effect at 24 hrs ($t(112)=4.8$, $p<.0001$ for MADRS-i10, $t(91)=3.4$, $p=0.001$ for QIDS-i12 and $t(102)=4.0$, $p=0.0001$ for BSS Total) . Only the BSS remained significant at the two-week follow-up. There were no significant main effects of pretreatment. While these analyses are pilot in nature and overall severity of SI was relatively low, the antisuicidal findings (no effect of rapamycin) being in contrast to the antidepressant effects (prolonged effect with rapamycin), suggest the rapid-acting antisuicidal and antidepressant effects of ketamine may be mechanistically distinct and the trajectories of response, recovery, and relapse may be independent. These findings provide additional

evidence of ketamine's antisuicidal effects and highlight the importance of future studies that continue to examine potential differences in mechanisms and trajectory of outcomes.

21.2 A NOVEL METHOD LINKING GENETICS AND BRAIN IMAGING IDENTIFIES ALTERED AKAP7-DEPENDENT SUBICULAR/DORSOLATERAL PREFRONTAL FUNCTIONAL CONNECTIVITY IN PAST SUICIDE ATTEMPT

Ramiro Salas*[1], Guillermo Poblete[2], Tien Nguyen[3], Savannah Gosnell[4], Olutayo Sofela[4]

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Individual Abstract: Brain imaging and genetics are fields acquiring data at increasing speed, but more information does not always result in a better understanding of the underlying biology. We developed the ProcessGeneLists (PGL) approach to use genetics and mRNA gene expression data to generate regions of interest for imaging studies. We applied PGL to suicide: We averaged the mRNA expression levels of genes (n=130) possibly associated with past suicide attempt (p<10-3 in a published GWAS) in each brain region studied in the Human Allen Brain Atlas (6 brains, 158 to 946 regions/brain) and compared that to the averaged mRNA expression levels of all other genes in each region in each brain in the atlas. This revealed 8 regions where "suicide-related genes" were differentially expressed (Wilcoxon test with Bonferroni correction 8.88-11=<p<=0.046). Using resting state functional connectivity (RSFC) in a 3T MRI, we studied those regions in psychiatric in-patients at The Menninger Clinic (132 with (ATT), 291 without (NAT) past suicide attempt). Patients had a variety of diagnoses. Those diagnoses that were significantly more represented in ATT or NAT were used as covariates, along with sex and age. PGL identified 8 regions (cerebellum 7b, medial geniculate nucleus, subiculum, temporal superior cortex, putamen, Cerebellum crus 2, globus pallidus, and corpus callosum) where "suicide-related" genes were significantly more expressed in average, than all other genes studied in the atlas. These 8 regions were studied using RSFC between each region (seed) and every other region in the brain. We used two strategies: Region-of-interest (ROI) to ROI using anatomically defined regions (brain was parcellated using the AAL atlas and adding additional small regions that are not t=in the atlas but can be inportant fos suicide attempt, such as the dorsal and medial raphe, the ventral tegmental area, substantia nigra compacta and reticulata, the locus coeruleus, and the habenula), and seed-to voxel, where each of the eight regions was used as seed (a 3 mm radious sphere located on the Human Allen Atlas coordinates for that region) in a whole-brain study comparing RSFC of ATT and NAT. After performing RSFC analysis, the subiculum showed higher RSFC with habenula (ROI-to-ROI, p<10-6) and dorsolateral prefrontal cortex (seed-to-voxel, pFWE<0.05) in ATT. To study possible gene variant/brain function interactions in suicide attempt we genotyped one SNP in each of the five genes (within the list of 130) with highest subicular expression. AKAP7 (A-Kinase Anchoring Protein 7, important in hippocampal memory processes) showed an interaction between genotype and ATT when subiculum/dlPFC RSFC was studied. Thus, PGL uncovered a brain function/genotype interaction in suicidality by using published GWAS data to inform imaging studies. In the future, ATT patients may be clustered in groups according to genotype/brain imaging interactions, which could inform individualized therapies. In conclusion, is genetics studies typically ask the question "which genes are associated with a disorder symptom" and human brain imaging typically asks "which brain region is associated with a disorder or function", PGL asks "which gene variants, by affecting activity in which brain region, are associated with a disorder or phenotype".

21.3 A FALSE SENSE OF SECURITY: RAPID IMPROVEMENT AS A RED FLAG FOR DEATH BY SUICIDE

Katrina Rufino*[1], Hayate Beyene[2], Michelle Patriquin[2]

[1]University of Houston - Downtown, [2]The Menninger Clinic

Individual Abstract: Despite evidence which suggests an increased risk for death by suicide after inpatient hospitalization, a dearth of literature exists examining the underlying mechanisms. A study conducted by Qin and Nordentoft (2005) examined the suicide risk of patients with a history of psychiatric hospital admissions in relation to diagnosis, length of treatment, number of previous hospitalizations, and time since admission. Their results showed there is an increased suicide risk for patients with mental disorders, and even sharper increases in the week immediately after admission and after discharge from psychiatric hospitalization. Qin and Nordentoft (2005) also reported that those who received a shorter than average length of treatment had a significantly higher suicide risk and that risk rose with the number of psychiatric hospitalizations. Ultimately, results showed that more than one-third of the men and more than half of the women who died by suicide had prior history of psychiatric hospitalizations.

Additional studies (Belsher et al., 2019; Jobes et al. 1997) have tried to further classify risk and predict who will die by suicide, but what ultimately has been gleaned from this research is that suicide risk does not end after treatment, which highlights the need for the development of effective treatment that can outlast inpatient treatment and predict any potential future outcome of death by suicide. Using a sample of 2,970 psychiatric inpatients, the present study will examine progress throughout treatment to predict death by suicide. In order to better understand the relationship between suicide ideation, clinical outcomes for inpatient psychiatry, and death by suicide, this study has four specific objectives: (1) to examine the trajectories of self-reported suicide ideation in adults over the course of long-term inpatient psychiatric treatment, (2) to determine if self-reported suicide ideation trajectories are associated with clinical outcomes including depression, anxiety, emotion dysregulation, disability, and length of stay, (3) determine if self-reported suicide ideation trajectories are associated with psychiatric medication, and (4) determine the relationship between self-reported suicide ideation across treatment and death by suicide.

Preliminary results using group-based trajectory modeling indicated that a four group model was the best fit for self-reported suicidal ideation from admission over the course of eight weeks of inpatient treatment. The group proportions estimated by the group-based trajectory model determined that 37.9% were assigned to the No Suicide group, 17.3% to the Responder group, 32.2% to the Resolver group and 12.6% to the Non-Responder group. Next, analyses utilized MANCOVAs controlling for age and gender to determine if the suicide trajectory groups differed on clinical outcomes at admission and discharge on clinical outcomes measures: anxiety, depression, emotion regulation, and disability. Results revealed significant differences between suicide trajectory groups on these clinical outcomes measures at admission [Wilks' Lambda = .77, $F(12, 7765) = 66.68$, $p < .001$, partial eta squared=.08] and discharge [Wilks' Lambda = .80, $F(12, 7014) = 52.88$, $p < .001$, partial eta squared=.07]. Because of the

significant MANCOVAs, follow up ANCOVAs were conducted, which revealed significant differences for all four measures at both admission and discharge.

The remainder of the study will further elucidate these findings, as well as examine differences in self-reported suicide ideation trajectories in length of stay, psychiatric medication at both admission and discharge, and suicide behavior including both attempts and death by suicide.

21.4 OBJECTIVE MONITORING VIA WEARABLES: UNCOVERING AN OPPORTUNITY TO IMPROVE SUICIDE OUTCOMES FOR INPATIENT PSYCHIATRY

Michelle Patriquin*[1]

[1]The Menninger Clinic

Individual Abstract: The initial 90-days post-discharge from an inpatient psychiatric hospital is the highest risk period for suicide (Chung et al., 2017). We have theorized that inpatient safety precautions may be contributing to this high-risk period and generate an iatrogenic effect, the Safety-Sleep-Suicide Spiral (Gazor et al., 2020; Johnson et al., 2021). We have hypothesized that since Q-15 checks and 1:1 observation frequently disturb or interrupt sleep, and we have empirically demonstrated that sustained sleep disturbances are associated with increased suicidal ideation for patients admitted inpatient (Hartwig et al., 2019), our inpatient psychiatry safety procedures maybe creating a positive feedback loop that further contributes to suicidal ideation and post-discharge being a high-risk period for suicide. Given the critical role that sleep plays in the mitigation of suicide risk, reducing the nighttime sleep disturbances caused by safety precautions, using alternative methods could interrupt the compounding effect of the Safety-Sleep-Suicide Spiral. In this presentation, I will discuss one highly promising alternative method: continuous monitoring via wearable technology. Data will be presented from an ongoing study (N = 12 at present) examining objective and subjective sleep measures and their relationship with suicide risk (measured via the Suicide Behaviors Questionnaire-Revised, SBQ-R). Objective sleep is measured via actigraphy (ActiGraph wGT3X-BT) continuously for a patient's entire length of stay (4-6 weeks) in an inpatient psychiatric hospital. Subjective sleep is measured through weekly self-report of nighttime sleep disturbance on the Pittsburgh Sleep Quality Index (PSQI) and daytime sleepiness on the Epworth Sleepiness Scale (ESS). Initial results demonstrate that increased suicide risk on the SBQ-R is associated with shorter objective total sleep time (TST) measured via the actigraph. Results will be expanded to include using time-lagged Bayesian modeling to quantify the compounding effect of Q15 checks on increased sleep problems and suicide risk hypothesized by the Safety-Sleep-Suicide Spiral. I will discuss the promise of translating wearables data in order to improve inpatient outcomes monitoring and provide a less invasive real-time safety assessment. Prior to this clinical translation, significant research is needed to improve the predictive power of wearable-based metrics as they relate to suicide risk and safety, as well as the development of clinically actionable visualization of these data. These challenges will also be discussed. Considering that current inpatient techniques are resource intensive and often disturb sleep; however, wearable-based technology could revolutionize the way we ensure the safety and generate the best outcomes for our patients.

22. SOCIAL MEDIA AND SUICIDAL THOUGHTS AND BEHAVIORS (STBS): EXPLORING UNDERLYING VULNERABILITY FOR INCREASED RISK

Chair: Jamie Zelazny, University of Pittsburgh

Overall Abstract Details: This symposium will address a commonly asked question: What is the relationship between social media use and suicidal thoughts and behaviors (STBs) in youth and young adults? Digital media is frequently used by teens and young adults, with 90% teens reporting that they go online multiple times a day. Youth who face mental health challenges report higher volumes and more negative consequences to their use. Social comparison and cyberbullying have been associated with depression, anxiety, and suicidal ideation in adolescents. However, many at-risk youth and young adults utilize social media as a source of social support and a means to connect with others when they would be otherwise isolated from a peer community.

In this session, we will investigate the relationship between social media use and risk for STBs from several different perspectives. We will first present findings from an online longitudinal study that examined whether objective measures of digital technological use (total screen time, total time spent on social media, total number of pickups) were associated with increased risk for suicidality among young adults. Next, we will share findings from a longitudinal sample of adolescent girls investigating whether time with peers (online and in person) and non-interactive technology use prospectively predicted suicidal ideation in a sample at risk for anxiety and depression. We then shift to discussion of a qualitative study of adolescents vulnerable to suicide and their parents to gain their perspective towards social media use and monitoring. Finally, we conclude with results of a pilot study that examined differences between youth suicide attempters and controls with regards to their social media experiences according to self-report questionnaires and preliminary results of natural language processing analysis of social media posts (text and emojis) in the year prior to assessment.

The results of these studies highlight the need for further exploration of the underlying vulnerability to negative effects of social media in adolescents and young adults who are at-risk for suicide. Further studies are needed to better identify youth who are vulnerable to negative effects of social media and to develop interventions specifically targeted at decreasing risk and optimizing protective factors associated with social media use.

Co-Chair: Candice Biernesser, University of Pittsburgh

22.1 OBJECTIVELY-MEASURED DIGITAL TECHNOLOGY USE IS NOT POSITIVELY ASSOCIATED WITH PSYCHOSOCIAL RISK FACTORS FOR SUICIDE AT THE WITHIN- OR BETWEEN-PERSON LEVELS AMONG YOUNG ADULTS

Craig Sewall*[1]

[1]University of Pittsburgh School of Medicine

Individual Abstract: Suicidal ideation (SI), anxiety, depression, and social isolation are significant psychosocial risk factors for suicide (Turecki et al., 2019) and are prevalent among young adults in the U.S., especially during the COVID-19 pandemic (Czeisler et al., 2021). Some research has indicated that time spent on digital technology (e.g., smartphones, social media) is associated with increased risk of any or all of these risk factors (e.g., Coyne et al., 2021; Twenge et al., 2018). The disruptions caused by the pandemic have caused many people,

especially young adults, to drastically increase their time spent on digital technology (Samet, 2020), thus intensifying pre-pandemic concerns about the impact this may have on psychological well-being and possible downstream effects on suicidality. However, the overwhelming majority of research in this area relies on self-report measures of digital technology, which are inaccurate (Parry et al., 2020) and systematically biased (Sewall et al., 2020). To understand if digital technology use is associated with increased risk for suicidality among young adults, it is crucial to examine the longitudinal relationships between objectively-measured digital technology use and these common risk factors for suicide.

We conducted a four-wave panel study from August-November 2020. Participants (N=384; Mage = 24.5 ± 5.1; 57% female; 54% white) were recruited via Prolific. At each wave, participants uploaded screenshots of their Apple "Screen Time" application—which automatically tracks various usage metrics and comes pre-installed on all iPhones—and completed self-report measures of depression, anxiety, SI, social isolation, and COVID-19-related distress as a control. We manually extracted three elements from the "Screen Time" screenshots: (1) total screen time, (2) total time spent on social media, and (3) total number of pickups. We used Bayesian multilevel structural equation modeling to investigate within- and between-person effects and examine how much outcome variance the digital technology variables accounted for at the within- and between-person levels.

Results revealed that none of the objective measures of digital technology (screen time, social media, pickups) were positively associated with any of the psychosocial risk factors, either at the within- or between-person level. Within-person effects were very small, as evidenced by Bayesian 95% credibility intervals tightly bound around zero. The only statistically significant effects were at the between-person level, and they indicated that those with more pickups, on average, had LOWER depression, social isolation, and SI. Together, the digital technology variables explained ≤ 2% of the within-person variance and ≤ 4% of the between-person variance in the psychosocial risk factors.

Utilizing a novel and feasible technique to obtain objective digital technology use data, this study represents one of the first analyses of the longitudinal relationship between objective digital technology use and several common psychosocial risk factors for suicide. Findings suggest that concerns about the putative harms about time spent on digital technology are misguided and underscore the importance of using robust methods and accurate, reliable measures to study this topic of vital public import.

22.2 THE PROSPECTIVE ASSOCIATION BETWEEN PEER INTERACTIONS (ONLINE AND IN-PERSON), TECHNOLOGY USE, AND SUICIDAL IDEATION AMONG U.S. ADOLESCENT GIRLS

Caroline Oppenheimer*[1], Emily Hutchinson[2], Jessica Hamilton[3], Jessica Mak[2], Jennifer Silk[2]

[1]University of Pittsburgh Medical Center, [2]University of Pittsburgh, [3]Rutgers University

Individual Abstract: Suicidal ideation (SI) is a proximal risk factor of suicide, with 40% of adolescent girls who report SI attempting suicide during their lifetime (Nock et al., 2013). Leading theories of suicide emphasize the role of social difficulties (i.e. negative peer interactions, social isolation; Joiner, 2007). Recent technological advancements and global

events (e.g. COVID-19) have transformed adolescent social experiences, with adolescents spending much of their time using interactive technologies to communicate with their peers (Nesi et al., 2018). Previous research demonstrates mixed support for the effect of technology (interactive and non-interactive) on adolescent SI.

The present study examined if time interacting with peers (online and in-person) and using non-interactive technology prospectively predicts SI in a longitudinal sample of U.S. adolescent girls (n=114, Mage=12.24). We hypothesized that girls who spend a greater proportion of time interacting with peers online and using non-interactive technology would be more likely to report SI, whereas girls who spend a greater proportion of time interacting with peers in-person would be less likely to report SI.

A two-week ecological momentary assessment (EMA) protocol was used to measure the primary independent variables of this study (online and offline peer interaction, and non-interactive technology use). Proportions were operationalized as follows: online peer time (on the phone with friend, texting/messaging with friends, on a social media site, using interactive video technology), in-person peer time (hanging out with friends, at a party, at an after-school activity with friends, online video gaming with friends), and non-interactive technology use (television, listening to music, solo internet surfing, solo video gaming). The proportion of time girls spent on each activity was created by dividing the total number of assessments girls endorsed doing each activity by the total number of calls. Proportions were created separately for weekdays and weekends. Prospective SI was assessed every six months after EMA protocol had ended for two years using the Mood and Feelings Questionnaire–Suicidal Ideation Composite (Angold et al., 1987). We calculated a dichotomous dependent variable reflecting SI at any timepoint (n=40) and no SI at any timepoint (n=74). All data included in this study was collected prior to the COVID-19 pandemic. The prospective association of time spent interacting with peers (online and in-person) and non-interactive technology were estimated in separate logistic regression models, with depressive symptoms included as a covariate.

A greater proportion of weekend non-interactive technology was associated with an increased likelihood of SI, controlling for baseline depressive symptoms (OR=7.70, p=.041). Weekday non-interactive technology use and weekday or weekend time spent with peers (in-person and online) did not prospectively predict SI.

Findings suggest that girls who spent a greater proportion of their time using non-interactive technology on the weekend may be at an increased risk for prospective SI. However, future research is needed to identify factors driving the association between non-interactive technology use and SI (e.g. social isolation, exposure to negative content, sedentary behavior). Contrary to our hypotheses, interacting with peers online was not associated with risk of SI. Next steps and our group's progress on development of a new social media neuroimaging task designed to assess variability in responses to more specific aspects of social media (e.g., dynamic, quantifiable indicators of peer status) will be discussed.

22.3 SOCIAL MEDIA USE IN YOUTH SUICIDE ATTEMPTERS COMPARED TO CONTROLS

Jamie Zelazny*[1], Candice Biernesser[2], David Brent[3]

[1]University of Pittsburgh, [2]University of Pittsburgh Medical Center, Western Psychiatric Institute and Clinic, [3]University of Pittsburgh, Western Psychiatric Institute and Clinic

Individual Abstract: Suicide is the 2nd leading cause of death among youth ages 10-24. Social media is nearly universally used by teens, with 90% of teens reporting that they go online multiple times a day. During the developmental periods of late childhood and adolescence, when individuals become acutely attuned to social status and feedback from peers, social media (SM) use may transform interpersonal experiences in both positive and negative ways, including more frequent opportunities for social support as well as peer victimization and social comparison. Negative upward social comparison and cyber victimization have been associated with depression, anxiety, and suicidal ideation in adolescents. Given rising suicide rates in youth and corresponding trends in SM usage, there is an urgent need to understand the role that digital experiences play as potential proximal antecedents of suicidal behavior in this age group.

We examined differences in subjective social media experiences of youth suicide attempters compared to controls. We also explored objective differences in social media use between attempters and controls by applying a natural language processing algorithm to social media posts (text and emojis) leading up to suicide attempt.

15 recent suicide attempters and 15 controls with no history of psychiatric illness or suicidal behavior underwent a clinical research assessment and completed questionnaires assessing multiple social media related domains. The groups were compared on demographic and clinical characteristics as well as problematic internet use, nighttime social media use, and negative upwards social comparison. Additionally, we collected their social media data for the year prior to study assessment, which included the period of time precisely proximal to suicide attempt.

The suicide attempter group scored significantly higher than controls on the Problematic and Risky Internet Use Screening Scale (PRIUSS) total score (33.33 vs. 12.67, $p<.001$) and its subscales for social impairment (8.8 vs. 4.13, $p =.003$), emotional impairment (6.8 vs. 2.6, $p=.007$), and risky/impulsive internet use (14.73 vs. 5.93, $p<.001$) as well as negative upward social comparison score on the Iowa-Netherlands Comparison Orientation Scale (INCOM) (42.1 vs. 23.5, $p=.01$). Nighttime social media use did not differ significantly between groups. However, more than twice as many youth in the attempter group than controls reported moderate to severe impairment with sleep associated with social media use (53% vs 20%) but these results did not reach statistical significance. Natural language processing analyses are currently in progress.

We found significant differences in subjective reports of social media experiences between youth suicide attempters and controls. Our findings suggest that youth suicide attempters may be more vulnerable to negative experiences on social media, including peer rejection and negative social comparison. Larger studies are needed to validate these findings and to investigate the impact of social media on vulnerable youth.

22.4 PERSPECTIVES TOWARD SOCIAL MEDIA USE AND MONITORING AMONG ADOLESCENTS VULNERABLE TO SUICIDE AND THEIR PARENTS

Candice Biernesser*[1], Jamie Zelazny[1], Ana Radovic[1], Gerald Montano[1], David Brent[2]

[1]University of Pittsburgh, [2]University of Pittsburgh, Western Psychiatric Institute and Clinic

Individual Abstract: Adolescents who are vulnerable to suicide have unique experiences with social media. These experiences may be positive—such as personal expression and pursuit of social support—to negative, such as exposure to harmful content and cyberbullying. This mix of positive and negative experiences may contribute to fluctuations in suicidal risk. Parents can serve a key protective role by engaging in social media monitoring. However, this may can come into conflict with adolescents' need for autonomy.

We harnessed data from two qualitative studies to (1) describe acutely suicidal adolescents unique experiences with social media use in their daily lives and the perceived impact on their mental health, and (2) compare depressed adolescents' perceptions of social media monitoring with those of their parents.

In study 1, we completed focus groups with adolescents (n=15), ages 13-18, who were patients of an intensive outpatient program for youth with recent suicidal thoughts and behaviors. Focus group findings were conceptualized using Berkman's Social Network Theory, which offers a context for how social networks impact health. In study 2, we completed qualitative interviews with adolescents, ages 13-20, with a depression diagnosis (n=23) and one of their parents (n=23). Data were recorded, transcribed, and analyzed using thematic analysis for adolescent data, as well as dyadic analysis for adolescent and parent data. Themes across studies were triangulated to develop a robust understanding of social media use and monitoring experiences among adolescents vulnerable to suicide.

Acutely suicidal adolescents described how the provision of social support and beneficial social engagement positively impacted their mental health, primarily through enhancing their sense of belongingness with peers. However, they also reported social influences that negatively impacted their mental health, including pressures to communicate inauthentically, social comparison and exclusion, reinforcement to engage in self-harm, and cyberbullying. Despite recognizing a need for protection, suicidal adolescents described a need to express themselves freely and privately within their online spaces. Dyadic analyses of depressed adolescents and their parents revealed disagreement among parents and their children on social media use in their daily lives. Furthermore, parents reported using a wide range of strategies to gain knowledge of their child's social media use to monitor their online safety. While some strategies facilitated adolescents' voluntary disclosure of their social media experiences, others contributed to adolescent secrecy.

The findings highlight the challenges adolescents vulnerable to suicide face in balancing the protective aspects of social media use with aspects that negatively influence their mental health. Parents can offer protection by choosing an approach to monitoring that respects adolescents need for autonomy and facilitates adolescents' voluntary disclosure of their social media experiences.

Wednesday, October 27, 2021

CONCURRENT SYMPOSIUM SESSIONS

9:00 AM - 10:30 AM

23. SUICIDE TRENDS, SURVEILLANCE AND EPIDEMIOLOGY DURING COVID-19 – THE INTERNATIONAL COVID-19 SUICIDE PREVENTION AND RESEARCH COLLABORATION

Chair: David Gunnell, University of Bristol

Overall Abstract Details: In response to widespread concerns about the impact of the COVID-19 pandemic on suicide and suicidal behaviour a group of over 100 suicide prevention researchers from around 40 countries have formed the International COVID-19 Suicide Prevention Research Collaboration (ICSPRC).

The limited existing evidence from previous pandemics indicates that they may be associated with rises in suicide. So one the key tasks ICSPRC has been working on is sharing knowledge about the impact of the pandemic on suicide in different parts of the world and identifying high risk groups. Two of the group's biggest concerns relate to i) the lack of high quality surveillance data from low and middle income countries and ii) the longer term impact of the pandemic on economies, and the well-recognised adverse impact of periods of recession on suicide rates.

This symposium will bring together a series of talks with the most up to date information on trends in suicide and approaches to monitoring the impact of the pandemic on suicide and implemented actions both in an individual country (Ecuador, Pablo Analuisa Aguilar) and around the world (Jane Pirkis). Keeping up to date with findings from the rapidly increasing research literature on the impact of COVID-19 on suicidal behaviour is challenging. Ann John will describe how a "Living Review" has been established to monitor the literature in real-time. Lastly, there has been considerable interest in the use of Google Trends data for surveillance; David Gunnell will describe a validation of this approach.

The collaboration currently includes members from Australia; Austria; Belgium; Brazil; Canada; China; Czech Republic; Denmark; Ecuador; England; France; Ghana; Germany; Hong Kong; India; Iran; Ireland; Israel; Japan; Kenya; Malaysia; Mexico; Netherlands; Nigeria; Northern Ireland; Norway; Pakistan; Peru; Russia; Scotland; Slovenia; South Africa; Spain; Sri Lanka; Sweden; Taiwan; Wales; Uganda; and the USA. New members are welcome, particularly from countries not currently represented in the group.

23.1 INTERNATIONAL SUICIDE TRENDS IN THE EARLY MONTHS OF THE COVID-19 PANDEMIC

Jane Pirkis*[1]

[1]University of Melbourne

Individual Abstract:
The COVID-19 pandemic is having profound mental health consequences for many people. Concerns have been expressed that at its most extreme, this may manifest itself in increased suicide rates.

We sourced real-time suicide data from around the world via a systematic internet search and recourse to our networks and the published literature. We used interrupted time series analysis to model the trend in monthly suicides prior to COVID-19 in each country/area-within-country, comparing the expected number of suicides derived from the model with the observed number of suicides in the early months of the pandemic. Countries/areas-within countries contributed data from at least 1 January 2019 to 31 July 2020 and potentially from as far back as 1 January 2016 until as recently as 31 October 2020. We conducted a primary analysis in which we treated 1 April to 31 July 2020 as the COVID-19 period, and two sensitivity analyses in which we varied its start and end dates (for those countries/areas-within-countries with data beyond July 2020).

We sourced data from 21 countries (high income [n=16], upper-middle income [n=5]; whole country [n=10], area(s)-within-the-country [n=11]). In general, there does not appear to have been a significant increase in suicides since the pandemic began in the countries for which we had data. In fact, in a number of countries/areas-within-countries there appears to have been a decrease.

This study offers a consistent picture, albeit from high- and upper-middle income countries, of suicide numbers largely remaining unchanged or declining in the early months of the pandemic. We need to remain vigilant and be poised to respond if the situation changes as the longer-term mental health and economic impacts of the pandemic unfold.

23.2 THE IMPACT OF THE COVID-19 PANDEMIC ON SELF-HARM AND SUICIDAL BEHAVIOUR: A LIVING SYSTEMATIC REVIEW

Ann John*[1], Emily Eyles[2], Roger Webb[3], Dana Dekel[1], Lena Schmidt[2], Dee Knipe[2], Ella Arensman[4], Keith Hawton[5], Rory O'Connor[6], Nav Kapur[7], Paul Moran[2], Siobhan O'Neill[8], Luke McGuiness[2], Vincent Cheng[2], Catherine Hall[2], Julian Higgins[2], David Gunnell[2]

[1]Swansea University Medical School, [2] University of Bristol, [3]Manchester University, [4]National Suicide Research Foundation, School of Public Health, [5]Centre for Suicide Research, University of Oxford, [6]University of Glasgow, [7]The University of Manchester, [8]Ulster University

Individual Abstract: The COVID-19 pandemic has caused considerable morbidity, mortality and disruption to people's lives around the world. There were concerns that rates of suicide and suicidal behaviour would rise during and in its aftermath. Our living systematic review synthesises findings from emerging literature on incidence and prevalence of suicidal behaviour as well as suicide prevention efforts in relation to COVID-19.

Automated daily searches feed into a web-based database with screening and data extraction functionalities. Eligibility criteria include incidence/prevalence of suicidal behaviour, exposure-outcome relationships and effects of interventions in relation to the COVID-19 pandemic. Outcomes of interest are suicide, self-harm or attempted suicide and suicidal

thoughts. No restrictions are placed on language or study type, except for single-person case reports. We exclude one-off cross-sectional studies without either pre-pandemic measures or comparisons of COVID-19 positive vs. unaffected individuals.

Up to October 2020 searches identified 6,226 articles. Seventy-eight articles met our inclusion criteria. We identified a further 64 relevant cross-sectional studies that did not meet our revised inclusion criteria. Thirty-four articles were not peer-reviewed (e.g. research letters, pre-prints). All articles were based on observational studies.

Up to October 2020 there was no consistent evidence of a rise in suicide but many studies noted adverse economic effects were evolving. There was evidence of a rise in community distress, fall in hospital presentation for suicidal behaviour and early evidence of an increased frequency of suicidal thoughts in those who had become infected with COVID-19.

Research evidence of the impact of COVID-19 on suicidal behaviour is accumulating rapidly. This living review provides a regular synthesis of the most up-to-date research evidence to guide public health and clinical policy to mitigate the impact of COVID-19 on suicide risk as the longer term impacts of the pandemic on suicide risk are researched. I will present updated current findings of the review in this symposium.

23.3 COVID-19 AND SUICIDE IN ECUADOR: TRENDS AND PREVENTION

Pablo Analuisa Aguilar*[1], Rebekka Gerstner[1]

[1]Ministerio de Salud Pública del Ecuador.

Individual Abstract:

Evidence in relation to the effects of the COVID-19 pandemic on suicide rates remains inconclusive. Amongst Low-and-Middle-Income-Countries (LMICs), limited evidence exists on the effects of COVID-19 on suicide rates. Ecuador is the second country with highest excess mortality rates worldwide during the COVID-19 pandemic and one of the countries with highest suicide rates in children and young adolescents during the last decade.

The presentation will present suicide reports from national police records during initial phases of the COVID-19 pandemic (March 2020-January 2021) compared to 2017-2019 to assess effects of the pandemic in Ecuador and interpret data within the cultural and socioeconomic context. As well as a series of strategies and trainings carried out to different groups with the objective of providing community tools for local leaders in suicide prevention.

We will present data from police national records of suicide deaths, using an interrupted time-series design. National police records show suicide deaths through interviews with family members or neighbors, and legalist reports. Data show interesting insights in motives of suicides, methods used, places where suicide occurred, as well as sociodemographic variables.

We will give a short introduction in the country profile, suicide trends between 1990 and 2019 by age group and sex, as well as the social and socioeconomic impact of COVID-19 in 2020 and 2021, governmental control and COVID cases and deaths by COVID-19 vs excess deaths.

After the introduction, we will present monthly numbers and suicide rates by age group and sex during the pandemic in comparison with earlier years. We will address possible association between excess death and suicide in different highly affected regions, as well as relationships between mobility data and suicide.

Probably the Police will send us the complete database of suicides between 2015-2021, so we will be able to get better predictions about expected suicides, as well as reports of later month in 2021.

Finally, we will present the general results of the training process in the suicide prevention community caregivers manual and the process of construction of the national suicide prevention strategy for Ecuador. The two processes have considered the participation and contribution of different actors both at the level of local actors, such as public institutions, academics and civil society organizations.

23.4 IS GOOGLE TRENDS A USEFUL TOOL FOR TRACKING MENTAL AND SOCIAL DISTRESS DURING A PUBLIC HEALTH EMERGENCY?: A TIME-SERIES ANALYSIS

Duleeka Knipe[1], David Gunnell*[1], Hannah Evans[2], Ann John[3], Daisy Fancourt[4]

[1]Bristol University, [2]University of Swansea, [3]Swansea University Medical School, [4]University College London (UCL)

Individual Abstract: Google Trends data are increasingly used by researchers as an indicator of population mental health, but few studies have investigated the validity of this approach and existing studies only validate Google trend data against suicide rates

Relative search volumes for the topics depression, anxiety, self-harm, suicide, suicidal ideation, loneliness, and abuse were obtained from Google Trends. We used graphical and time series approaches to compare daily trends in searches for these terms against population measures of these outcomes recorded using validated scales (PHQ-9; GAD-7; UCLA-3) in a weekly survey (n=~70,000) of the impact COVID-19 on psychological and social experiences in the UK population (21 March 2020 to 21 August 2020).

Self-reported levels of depression, anxiety, suicidal ideation, self-harm, loneliness and abuse decreased during the pandemic period. There was no evidence of an association between self-reported anxiety, self-harm, abuse and relative search volumes on Google Trends for these topics. Trends in reported depression symptoms and suicidal ideation declined over the study period, whereas relative search volumes for depression and suicide in Google Trends increased ($p=0.03$ and $p=0.04$ respectively); there was also some evidence that suicidal ideation searches preceded reported self-harm ($p=0.05$), with graphical evidence of an inverse association. There was statistical and graphical evidence that self-report and Google searches for loneliness ($p<0.001$) tracked one another.

No age / sex breakdown of Google Trends data are available. Survey respondents were not representative of the UK population and no pre-pandemic survey data were available.

Google Trend data do not appear to be a useful indicator of changing levels of population mental health, but they may have some value as an indicator of loneliness.

24. INTEGRATION OF FIREARM SUICIDE PREVENTION TOOLS IN HEALTH CARE SETTINGS: PATIENT-REPORTED ACCESS TO FIREARMS and DECISION AID FOR SECURING FIREARMS

Chair: Julie Richards, Kaiser Permanente Washington Health Research Institute

Overall Abstract Details: Firearms are the most common method of suicide death in the U.S., largely due to high lethality (85%) and widespread availability (~44% of US adults live in a home with a firearm). Access to firearms is linked to increased suicide risk and healthcare providers may have important opportunities to intervene with patients at high risk of suicide, because most (80%) seek care in the year prior to death. However, standardized questions about firearm access are uncommon and there are currently no clinical guidelines or best practices providing national recommendations on this topic.

Nonetheless, collaborative patient-provider discussions about lethal means safety (e.g., firearms and medications) are a standard component of safety planning interventions for patients identified as high-risk of suicide. Moreover, evidence suggests that clinical practices designed to promote safe storage of firearms and ammunition can be effective for helping patients change storage practices and prevent suicide deaths. Therefore, this symposium will describe integration of firearm suicide prevention tools designed to promote patient-centered practices for identifying and addressing firearm access with patients at risk of suicide.

The first two presentations will focus on standardized collection of patient-reported access to firearms. The first presentation describes a project which capitalized on a rare opportunity to evaluate whether and how adult patients (N= 128,802) answered a standardized question about firearm access, after the question was implemented by a large regional healthcare system in Washington State. The second presentation focuses on how patients experienced the firearm question after implementation. The presentation describes qualitative interviews with purposefully sampled adults (N=36) who had recently received the firearm access question, including firearm owners and individuals experiencing suicidal thoughts.

The third presentation shifts focus to LocktoLive, a promising new web-based decision aid that helps adults at risk of suicide make informed decisions about safe firearm storage. This presentation describes LocktoLive's development, acceptability and feasibility in emergency departments (EDs). Following international guidelines, it was developed through stakeholder interviews and iterative refinement. Sections include education, engagement, clarifying values, comparing options, and encouraging next steps, with modules for firearms and medications. In a pilot randomized trial among 49 suicidal adults in three EDs, the tool had very high patient acceptability. In qualitative interviews, ED providers felt the tool had numerous potential

benefits, but that its uptake and effectiveness would depend on clinicians' perceptions of utility, time constraints, and workflow integration.

The fourth presentation describes a pilot study of population-based outreach to encourage patients identified with suicide risk to visit LocktoLive. Patient engagement is a major barrier for most web-based strategies, so researchers in a Colorado health system sought to identify population outreach approaches that produces highest visit rates. This presentation describes results of six outreach approaches among patients recently reporting suicidal thoughts (N=2873) and results from a survey evaluating patient satisfaction with LocktoLive and safe storage behavior.

Together these four innovative projects describe valuable tools designed to identify and intervene with patients at risk of firearm suicide. This work builds a critical foundation for future work focused on evaluating the effectiveness of these tools for preventing suicide.

24.1 ASKING PATIENTS, "DO YOU HAVE ACCESS TO GUNS?" YES OR NO

Julie Richards*[1], Elena Kuo[1], Christine Stewart[1], Jennifer Bobb[1], Kayne Mettert[1], Ali Rowhani-Rahbar[2], Marian Betz[3], Rebecca Parrish[4], Ursula Whiteside[5], Jennifer Boggs[6], Gregory Simon[1]

[1]Kaiser Permanente Washington Health Research Institute, [2]University of Washington, [3]University of Colorado School of Medicine, [4]Kaiser Permanente Washington, [5]NowMattersNow.org, [6]Kaiser Permanente Colorado Institute for Health Research

Individual Abstract: Routine standardized questions about firearm access are uncommon, particularly among adult populations, who are more often asked at the discretion of healthcare providers. Because standard questions are rare, knowledge as to whether and how patients might answer them is very limited. Advancing our understanding of how patients answer standardized questions about firearm access is critical for informing suicide prevention practices in health care settings, like collaborative discussions about lethal means safety. Therefore, the primary goal of this study was to understand whether and how adult patients responded to a single question about firearm access after it was added to a standardized self-reported mental health monitoring questionnaire used in primary care and outpatient mental health specialty clinics. Additionally, we evaluated sociodemographic and clinical characteristics associated with patient reported firearm access and explored response consistency among patients with two or more visits over the 4-year observation period.

Data were collected from Kaiser Permanente Washington, an integrated health insurance provider and care delivery system serving over 700,000 enrollees that routinely collects and records patient-reported firearm access in electronic medical records [EHRs]. EHRs were used to identify patients who completed a standardized self-reported mental health monitoring questionnaire after a single question about firearm access was added (1/1/2016-12/31/2019). Primary analyses were stratified by visit setting (primary care versus mental health specialty) using data from the first visit in the study period. A staged approach evaluated patient characteristics associated with: 1) response to the firearm access question (not answered versus answered) and 2) reported access (answered yes vs no) among those who answered.

Exploratory analyses of response consistency were limited to patients who answered the firearm access question at least twice during the study period; these analyses used data from the first visit and a composite measure of all subsequent visits to describe the proportions of patients who always, sometimes, or never reported access to firearms.

Among patients (N=128,802) who completed a mental health monitoring questionnaire during the study period, 74.4% (N=95,875) saw a primary care provider and 39.3% (N=50,631) saw a mental health specialty provider (13.7%, N=17,704 patients saw both). In primary care, 83.4% of patients answered the question about firearm access, and 20.9% of those who answered reported having access. In mental health specialty, 91.8% of patients answered the question and 15.3% of those reported having access. In both settings, reported access was highest among those living in rural areas and lowest for those with a prior-year suicide attempt diagnosis. Of patients in this sample who answered the question at least twice (N=54,915) in either setting, 9.0% always reported firearm access, 14.2% sometimes reported firearm access and 76.8% never reported access.

Findings from this novel study demonstrated that most patients will respond to a standard question about firearm access on a mental health monitoring questionnaire and how they responded (who reported access) was consistent with known patterns of firearm ownership in the U.S. Standardized questions may improve efforts to identify and engage patients at risk of suicide in collaborative safety planning, including options for limiting their access to firearms when experiencing suicidal thoughts.

24.2 "IT SEEMS PRETTY STRAIGHTFORWARD:" HOW ADULT PATIENTS EXPERIENCED A QUESTION ABOUT FIREARM ACCESS ON A MENTAL HEALTH QUESTIONNAIRE

Elena Kuo*[1], Julie Richards[2], Lisa Shulman[2], Ursula Whiteside[3], Marian Betz[4], Rebecca Parrish[5], Jennifer Boggs[6], Ali Rowhani-Rahbar[7], Gregory Simon[2]

[1] Kaiser Permanente Colorado [2] Kaiser Permanente Colorado [3]NowMattersNow.org, [4]University of Colorado School of Medicine, [5]Kaiser Permanente Washington, [6]Kaiser Permanente Colorado, [7]University of Washington

Individual Abstract: Collaborative patient-provider discussions about lethal means safety (e.g., reducing access to firearms and medications) are a standard component of evidence-based interventions for patients identified as at risk for suicide. However, considerable national controversy remains in the U.S. about whether healthcare providers should routinely assess access to firearms. Moreover, there are no national clinical guidelines for how routine firearm access questions should be implemented, representing a critical opportunity to optimize this suicide prevention practice. Therefore, the purpose of this project was to learn from adult patients in one large regional health system that implemented a standardized firearm access question on a mental health monitoring questionnaire. Specifically, this study sought understand how patients experienced the firearm access question and elicit their suggestions about how to improve the practice.

Electronic health record data was used to identify adult patients at Kaiser Permanente Washington who had received a mental health monitoring questionnaire within the two weeks prior to sampling. The monitoring questionnaire included the Patient Health Questionnaire [PHQ-9] to assess depressive symptoms (including suicidal thoughts), anxiety symptoms, substance use frequency, and firearm access ("Do you have access to firearms?" Yes/No). A stratified sampling distribution selected 30% who answered "yes" (firearm access), 30% who answered "no," and 40% who left the question blank, and patients in each response group who reported suicidal thoughts (via PHQ-9 question 9). Sampled patients were invited to complete a semi-structured telephone interview (recorded and transcribed), which focused broadly on the experience answering the firearm access question and included probes to elicit suggestions about how to improve firearm access assessment. Interview transcripts were double-coded and analyzed using a combination of inductive and deductive thematic analysis.

Thirty-six individuals were interviewed (of 76 sampled) between 11/18/19 – 2/10/20, including 17 women and 19 men, age 19-87. Sixteen participants reported firearm access, 9 reported no access and 11 did not answer the question. Additionally, 15 participants had reported suicidal thoughts on the PHQ-9 ninth question (score 1-3). Key organizing themes highlighted: 1) how participants viewed the practice of assessing firearm access, particularly in the context of suicide prevention; 2) participants' nuanced understanding of challenges associated with this practice due to national controversy surrounding "gun control," experiences with expressions of firearm owner stereotypes/assumptions, and fears of mandated firearm removal; and 3) participants suggestions for destigmatizing/normalizing the practice of assessing firearm access via expressions of caring and non-judgement, transparency about the purpose of the question, and dialogue about patients' reasons for firearm access.

Interview respondents, including those reporting firearm access and/or suicidal thoughts, described their understanding of the rationale for asking standardized questions about firearm access and were largely positive about it. Respondents also perceived how addressing firearm access could be difficult for healthcare providers and patients and offered suggestions about how to normalize and destigmatize the topic. Nonjudgmental dialogue about patients' reasons for firearm access may help facilitate firearm access disclosure and collaborative discussions about how to limit access to lethal means to reduce suicide risk.

24.3 A PILOT STUDY OF POPULATION BASED OUTREACH TO LOCK TO LIVE – A WEB-BASED DECISION AID FOR SAFE STORAGE OF LETHAL MEANS IN PATIENTS WITH SUICIDE RISK

Jennifer Boggs*[1], LeeAnn Quintana[1], Arne Beck[1], Julie Richards[2], Samuel Clinch[3], Amy Conley[3], Laura Richardson[3], Marian Betz[4]

[1] Kaiser Permanente Colorado [2]Kaiser Permanente Washington Health Research Institute, [3]Kaiser Permanente Colorado [4]University of Colorado School of Medicine

Individual Abstract: Reducing access to lethal means is a highly recommended suicide prevention practice. However, many patients with suicide risk are not counseled on this topic across both medical and mental health settings. Lock to Live (L2L) is an anonymously

delivered web-based decision aid, designed with input from over 60 stakeholders, that incorporates patients' values and preferences into recommendations for safe storage of lethal means, including firearms and medications. Since achieving adequate patient engagement is a major barrier for most web-based prevention strategies, we sought to identify population outreach approaches producing the highest visit rates. Patient satisfaction and safe storage behavior were evaluated with an anonymous survey.

In this descriptive pilot study, invitation messages to visit L2L were sent to patients with suicide risk that emphasized anonymity. Messages were co-designed with input from clinicians, public health researchers, and members of the Colorado Firearm Safety Coalition. Six combinations of initial + reminder messages (ex. email + text; email + mail) were tested with four direct delivery methods: mail, text, email, and patient medical record electronic message. Two weeks after receiving an invitation, all patients received a survey to evaluate satisfaction with L2L and safe storage behavior (regardless of visitation to maintain anonymity).

Adult members of a large integrated health care system (Kaiser Permanente Colorado) who reported suicide risk on the PHQ-9 depression screener, administered during mental health and medical visits, were invited to visit L2L.

Direct invitations were sent to 2873 adults with suicide risk from October 2019 - April 2020. The sample was predominantly female (65%) with age breakdown: 18-24 (21%); 25–44 (44%); 45-64 (46%); 65+ (9%). Moderate to severe depression (Total PHQ9 score >15) was reported by 56% of patients. An electronic message sent through the EMR patient portal plus direct email reminders resulted in the highest L2L visitation rate (52/491; 11%), compared to the worst method of mailed letter plus text reminder (4/480), <1%). Only 16% of the 286 patients who completed part/full survey indicated that a medical or mental health provider had discussed firearm safety during a recent visit. Among the 231 who answered the question, 35% (n=82/231) reported access to a firearm; of these, 50% (n=41) indicated the firearm was accessible to the person at risk for suicide. Of those with access to a firearm, 44% (n=18/41) said they were thinking about firearm storage changes and 31% (n=14/41) said they were planning changes. A later version of the survey asked if L2L was influential to storage change considerations and 50% of those with firearm accessible indicated it was (n=5/10).

This pilot study laid the groundwork for a randomized trial that will evaluate the impact of L2L on storage behavior.

Efficient population outreach for patients at risk for suicide to provide lethal means safe storage education using the L2L tool reached a substantial number who were not previously counseled about lethal means safety by their medical or mental health providers.

24.4 "LOCK TO LIVE": DEVELOPMENT AND PILOT TESTING OF A DECISION AID FOR REDUCING FIREARM ACCESS

Marian Betz*[1], Bonnie Siry[2], Christopher Knoepke[1], Rachel Johnson[3], Deborah Azrael[4], Daniel Matlock[1]

[1]University of Colorado School of Medicine, [2]University of Colorado Anschutz Medical Campus, [3]Colorado School of Public Health, [4]Harvard Injury Control Research Center

Individual Abstract: Lethal means counseling (healthcare provider counseling at-risk patients about reducing access to firearms and other lethal means of suicide) is an evidence-based suicide prevention approach and recommended practice. Yet multiple studies have shown that many suicidal patients have no documentation of LMC, though at least one third of US adults live with a firearm. Barriers to LMC include time demands, clinician unfamiliarity with firearms, and concern about alienating patients. Decision aids might facilitate or augment counseling and subsequent behavior to reduce home firearm access.

Following international patient decision aid standards, we used interviews with stakeholders (n=64) to iteratively develop the “Lock to Live” online decision aid for the decision, 'what option(s) to choose to reduce home access to firearms for an adult at risk of suicide'. Participants were adults with personal (n=14) or family (n=25) lived experience in suicide; firearm owners/enthusiasts (n=18) or range/retailer employees (n=5); suicide prevention professionals (n=37); healthcare providers (n=22); law enforcement officers (n=4); and veterans or VA service providers (n=8). The breadth of stakeholder insights enabled development of a tool that supported decisions while also encouraging behavior change (safer storage) and included hopeful and validating messages. The tool also respected firearm ownership and personal rights and addressed privacy concerns.

We conducted a pilot randomized controlled trial of Lock to Live in three emergency departments (EDs). Among potentially eligible patients (community-dwelling, suicidal adults who spoke English and were cognitively able to participate), 57% reported medications at home and 9% firearms (range 2-40% firearm prevalence across the participating EDs). Among eligible patients, 67% participated. Lock to Live had very high patient acceptability; (e.g., 100% respectful of values on firearms; 100% would recommend to others). In qualitative interviews, ED providers noted that the tool had numerous potential benefits but that its uptake and effectiveness would depend on clinicians’ perceptions on its utility, time constraints, and integration into workflow.

Stakeholder engagement facilitated study success: an advisory panel with firearm retailers informed recruitment language that led to robust participation. The study design also reflected ED workflow and provider needs to optimize patient recruitment and provider support, and provider surveys and interviews will facilitate a future hybrid effectiveness-implementation trial. Questions around implementation and dissemination include addressable logistics of patient-facing tablets or computers (e.g., cleaning requirements and wireless printing).

25. IMMINENT SUICIDE RISK: PERSPECTIVES FROM THREE MODELS OF SUICIDAL BEHAVIOR

Chair: Igor Galynker, Mount Sinai Beth Israel

Overall Abstract Details: Despite intensifying efforts on the part of clinicians, researchers, and public health officials to curb the suicide epidemic, over the past 20 years there has been a

remarkable 35% increase in the suicides across the United States. Moreover, the rate of the increase is accelerating. The young seems to be the most affected than any other age group, with 60% increase in suicides over the past 10 years, underscoring the scope and the threat of the US suicide epidemic to its future and the need for new and innovative approaches to suicide prevention. In response to this mental health crisis the National Action Alliance for Suicide Prevention has developed "the National Strategy for Suicide Prevention, which represents a comprehensive long-term approach to suicide prevention." Having a unified theoretical approach to guide suicide prevention may help enhance the effectiveness of this strategy, particularly in developing programs for prevention of near-term suicidal behaviors. Several theoretical models have been proposed to explain the biological and mental processes, which make suicide possible offering different perspectives on the exceedingly complex phenomenon of suicide. The purpose of the present symposium is to review three of these extant models with the emphasis on prediction and prevention of imminent suicidal behavior. The first speaker will describe how the Three-Step Theory (3ST) of Suicide can improve our understanding of imminent suicide risk, including the conditions under which suicide risk emerges, the warning signs that are potentially indicative of imminent risk, the targets of intervention that are most important for someone at imminent risk, and the reasons why periods of imminent risk occur, end, and re-occur. The next speaker will explore the breadth of reach of the Interpersonal Theory of Suicide and the impact of the extensive research work resulting from this theory on many divergent areas of suicide research and prevention. The third speaker will present the latest research in support of the Narrative Crisis Model of suicide and will discuss its potential use as a framework for suicide prevention by means of targeted treatment of its three components. The fourth speaker will review the results of the US arm of the International Suicide Prevention Assessment Research for COVID (I-SPARC) through the lens of two proposed characterizations of acute suicidal crises: the Suicide Crisis Syndrome of the Narrative Crisis Model and Acute Suicidal Affective Disturbance. Finally, the discussant will reflect on the significance of presented research and the potential of the 3ST, the Interpersonal Theory, and the NCM to form an organizing framework (or frameworks) for prevention of imminent suicide. Overall, the session will provide a comprehensive review of the latest research in support of the three presented models of suicidal behavior and their respective approaches to suicide prevention.

25.1 TWO SIDES OF THE SAME COIN? EMPIRICAL EXAMINATION OF TWO PROPOSED CHARACTERIZATIONS OF ACUTE SUICIDAL CRISES: SUICIDE CRISIS SYNDROME AND ACUTE SUICIDAL AFFECTIVE DISTURBANCE

Megan Rogers*[1]

[1]Mount Sinai Beth Israel

Individual Abstract: Two acute suicide-specific constructs have been proposed as potential diagnoses: Suicide Crisis Syndrome (SCS) and Acute Suicidal Affective Disturbance (ASAD). SCS is characterized by persistent and intense feelings of entrapment, affective disturbances, loss of cognitive control, hyperarousal, and social withdrawal. ASAD is defined by a drastic and rapid increase in suicidal intent, alongside accompanying symptoms of social- and/or self-alienation, feelings of intractability/hopelessness, and overarousal symptoms. Although developed separately, the two conditions share several overlapping features (e.g., intense affective states, heightened physiological arousal, social withdrawal); however, whereas ASAD emphasizes drastic and rapid increases in suicidal intent, SCS does not require explicit suicidal ideation/intent. Some theorize that SCS and ASAD may reflect distinct stages of the

same syndrome; alternatively, they could be two distinct syndromes. However, these possibilities have not yet been empirically tested. The present study tested this hypothesis using network analysis.

Participants included 1,970 community-based adults from the United States who were recruited and completed a battery of online self-report measures anonymously. Network analyses were conducted to examine the interrelatedness and mutual influences of the variance and network structure of current SCS and ASAD symptoms. Specifically, we first conducted non-paranormal transformation of the data to address highly skewed distributions, and then estimated Gaussian graphical models (GGMs) to compute Spearman correlation matrices with weighted partial correlation coefficients. GGMs were estimated using EBICglasso, which consists of graphical least absolute shrinkage operator regularization by minimizing the Extended Bayesian Information Criterion for model selection. The presence of an edge (partial correlation) between nodes (variables) indicates that the partial correlation of the connected nodes is meaningful (conditional dependence), whereas the absence of an edge indicates that such a relationship is non-significant given the variance of other nodes in the network (conditional independence). We also included metrics of node predictability (ranging from 0 to 100% and comparable to R2) to quantify how much of a variable's variance is accounted for by its neighboring variables and to provide an absolute measure of interconnectedness.

When modeled separately, both SCS and ASAD comprised sparse networks with a total of 39 non-zero and positive edges between 12 nodes (SCS), and 33 non-zero and positive edges between 9 nodes (ASAD), respectively. Mean predictability of nodes was 59.0% for SCS and 79.5% for ASAD. In the full model, 80 edges emerged as significant and positive. Most edges among SCS and ASAD symptoms remained robust even after the inclusion of both models jointly. Hyperarousal symptoms—particularly irritability, insomnia, and agitation—bridged SCS symptoms (i.e., feelings of entrapment, affective disturbances, loss of cognitive control) and ASAD symptoms (i.e., acute self-hatred and increases in suicidal intent). Overall, these findings indicate that SCS and ASAD may be manifestations of a similar syndrome. Clinical implications, limitations, and future research directions will be discussed in depth.

25.2 THE EXPLANATORY REACH OF THE INTERPERSONAL THEORY OF SUICIDE

Thomas Joiner*[1]

[1]Florida State University

Individual Abstract: In a series of papers in Psychological Review (Van Orden et al., 2010; Joiner et al., 2016; Olson et al., in press), my collaborators and I have articulated and elaborated the interpersonal theory of suicide. The theory was the original of a group of theories known as ideation-to-action models; it is the most empirically scrutinized of these; and it is an exemplar of them. The theory organizes suicide risk into two overarching processes, suicidal desire and suicidal capability. Regarding desire, three psychological processes are involved: 1) the perception that one is a burden on others and on self; 2) the perception that one is alienated; and 3) the belief that feelings of burdensomeness and alienation are hopelessly intractable. When these three states coalesce, the model predicts dangerous levels of desire for suicide. An

insight of the theory, however, is that even very desperate suicidal desire rather rarely translates into serious suicidal behavior. The process at play in driving suicidal desire into suicidal action involves capability for suicide, the constituents of which are fearlessness of death and of physical ordeal generally, physical pain tolerance, and pragmatics (e.g., knowledge regarding how to operate a firearm). The convergence of the higher-order processes of desire and capability produces potentially lethal suicidal behavior, according to the theory.

The evidence base scrutinizing the model is fairly extensive (i.e., approaching 200 studies to date) and shows support for the theory (e.g., Chu et al., 2017), but the support is far from total—an unsurprising state of affairs regarding a theory in development of a low base-rate phenomenon. There have been studies (e.g., Ribeiro et al., in press) showing low predictive power for the model. A key consideration, however, is that high explanatory reach does not depend on predictive accuracy. A disastrous example of this principle involved the U.S. space shuttle program in the 1980's. Engineers at NASA's subcontractors developed a theory that low launch temperatures would harden a crucial seal, the upshot of which would be flame meeting fuel. This theory was repeatedly refuted by successful launches, and then was supported by the catastrophe of Challenger's mid-air destruction. Predictive accuracy was highly imperfect, that is, whereas explanatory reach was considerable.

A similar situation may pertain with regard to the interpersonal theory. If so, the theory should show high explanatory reach even regarding facts that are antecedently improbable. For example, many believe that suicide decedents often were intoxicated at the time of death. However, intoxication by alcohol or other substances is incapacitating; the interpersonal theory predicts that high levels of capacity are needed to die by suicide, and thus would predict that it is rare for decedents to be intoxicated. In fact, the empirical findings support the interpersonal theory in this regard (Anestis et al., 2014). In a very different example, we explored themes of physical violence in children's narrative responses to ambiguous story prompts (e.g., a child finishes a story that begins "a cup of juice is spilled on the table"); such story narratives can be reliably rated for various themes, including those involving violence and suicide, as well as relatively more normative themes (e.g., aggression in the form of hitting). In a study of 228 children with mood disorders (mean age = 5.0 years), we found that children with marked suicidality were more likely than other children to refer to themes of violence in their stories but no more likely to depict scenes of more normative aggression (Hennefield et al., 2021), consistent with the interpersonal theory's logic involving suicidal capacity.

25.3 UNDERSTANDING IMMINENT RISK USING THE THREE-STEP THEORY OF SUICIDE

E. David Klonsky*[1]

[1]University of British Columbia

Individual Abstract: The Three-Step Theory (3ST) of suicide is a concise and actionable theory that explains suicide in terms of four factors: pain, hopelessness, connection, and capability for suicide. To date the theory's premises have been supported by studies on correlates, risk factors, warning signs, means safety interventions, and motivations for suicide. Since its publication in 2015 there has been considerable uptake of the 3ST. For example, the

3ST has been cited in hundreds of scientific papers, and incorporated into continuing education programs, gatekeeper training, and self-help resources. The present presentation will apply the 3ST to improve understanding of imminent suicide risk. Specifically, the 3ST can help us specify: a) the conditions under which suicide risk emerges, b) the warning signs that are potentially indicative of imminent risk, c) the targets of intervention that are most important for someone at imminent risk, and d) the reasons why periods of imminent risk occur, end, and re-occur.

25.4 NARRATIVE CRISIS MODEL FOR SUICIDE AS A FRAMEWORK FOR SUICIDE PREVENTION

Igor Galynker*[1], Lisa Cohen[2], Megan Rogers[2], Sarah Bloch-Elkouby[2], Jenelle Richards[2]

[1]Mount Sinai Beth Israel, [2]Icahn School of Medicine at Mount Sinai

Individual Abstract: Multiple models of suicidal behaviors were proposed in the past, so why then the need to propose yet another model? The formulation and research into the Narrative-Crisis Model (NCM) was brought on by the urgent need to develop a framework for comprehensive suicide prevention treatment (Bloch-Elcouby et al, 2020). The core feature of the model is the Suicide Crisis Syndrome (SCS) – an acute pre-suicidal mental state, which may or may not include suicidal ideation and which is associated with near-term suicide attempts (Galynker et al, 2017). The SCS is shorter in its duration than state anxiety (Galynker et al, 2017) but longer than the suicidal urge that may appear within minutes before suicide (Diesenhammer et al, 2009), when it is too late to intervene. Because NCM is data-driven, it includes several elements of other models that have had some experimental support. Specifically, the NCM has a diathesis-stress framework, not unlike the Beck's and Mann's stress diathesis models (Wenzel and Beck, 2008; Mann et al, 2005). NCM includes, for instance, thwarted belongingness and perceived burdensomeness of the Interpersonal Theory of Suicide (Van Orden and Joiner, 2010), as well the concepts of psychache and emotional pain proposed by Schneidman, Hendin, and O'Connor (Schneidman, 1983; O'Connor et al, 2012).

There are two critical features that distinguish the NCM from other models. First, the NCM does not include suicidal ideation as a risk factor; self-reported suicidal ideation is included in the Suicide Risk assessment but is not essential for the assessment of risk and for clinical decision-making. Second, the NCM distinguishes between three components of suicide risk that make suicide possible. The chronic long-term risk component is associated with many genetic and environmental factors, the examples being perfectionism and childhood trauma, respectively. The second component is the subacute Suicidal Narrative, which emerges in those with life-time risk, when they experience life stressors. The duration of the Suicidal Narrative is days and weeks. Finally, the third component is the acute SCS, which lasts hours and days, which may lead to imminent suicide.

The NCM was supported experimentally in two prospective studies with n=223 (Bloch-Elcouby et al, 2020) and n=739 (Cohen et al, in press) and proved to be a good fit for the data explaining 13% of the variance in suicidal ideation and behaviors (when assessed conjointly) and 10.8% for suicidal ideation and 40.7% for suicidal attempts (when assessed separately). In the Web-based anonymous International Suicide Prevention Assessment Research for COVID (I-SPARC Study) in 10 countries using the NCM assessment framework, 404 of 2179 US participants met criteria for the SCS while denying suicidal ideation. In this group, 50.3% chose

to be linked to suicide prevention resources showing that the use of NCM may identify and refer for treatment those high risk individuals who would not disclose their suicide intent.

Each of the three NCM components contributes differentially to the risk of suicide, and each requires specific differentiated treatments. The most urgent treatments must target the most acute component, the SCS, followed by those for restructuring the Suicidal Narrative, and finally those addressing the chronic risk. The effectiveness of this differentiated and comprehensive suicide prevention treatment framework remains to be examined in future research.

26. TRANSLATING PREDICTIVE MODELING INTO PRACTICE

Chair: Geoffrey Kahn, Johns Hopkins Bloomberg SPH

Overall Abstract Details: In the past few years there has been a sharp increase in the use of machine learning (ML) methods to attempt to predict suicide and suicide attempts. Numerous papers have been published, some even presented at last year's conference, showing promising results in terms of classification accuracy of ML models compared to traditional regression in a variety of populations. While there has been optimism at the potential of ML risk algorithms to improve screening and ultimately delivery of care, and to improve our understanding of the etiology of suicidal behavior, most studies to date have been retrospective and there is a paucity of information about how the implementation of ML models will play out in real-world settings. In this symposium we propose to move beyond the performance of the models themselves in a vacuum and discuss issues and results related to the application of ML predictive modeling in real-world settings.

The first presentation will serve as an orientation to machine learning, predictive models for audience members who may not be familiar, including introducing the audience to best practices for such important topics as variable selection and validating model performance, with a motivating example using clinical and patient-generated data. The second presentation will describe patient acceptability towards automated suicide risk identification models and preferences for the use of such models. This discussion will be informed by a mix of qualitative and quantitative data, derived from focus groups and a large survey of healthcare patients. The third presentation will take the perspective of those sitting opposite the patients: the healthcare providers. Lessons learned from the implementation of a risk identification tool within a Native American community will be shared. The final presentation will be a departure from ML risk algorithms to discuss the other role predictive models can play, contributing to the identification of targets for preventive intervention. The audience will learn how ML algorithms can identify significant predictors from high dimensional data, and how methods from the field of causal inference can then be used to distinguish causal risk factors from non-causal predictors, including a motivating example using data from adolescents in the Child Welfare system, a random forest prediction model, and propensity score weighted causal analysis.

The proposed symposium will leave the audience with a better understanding of the issues that must be considered when seeking to implement predictive models into clinical practice. They will also understand the additional analytic steps that must be taken to identify targets for

intervention from the results of a predictive model. The audience will be exposed to the most current, concrete examples of the implementation of predictive modeling in real communities.

Co-Chair: Hadi Kharrazi, Johns Hopkins Bloomberg School of Public Health

26.1 USING WEAKLY SUPERVISED MACHINE LEARNING TO DETECT SUICIDAL IDEATION IN CLINICAL NOTES

Jyotishman Pathak*[1], Marika Cusick[1], Prakash Adekkanattu[1], Thomas Campion[1], George Alexopoulos[1]

[1]Cornell University

Individual Abstract: Suicide is one of the leading causes of death in the U.S. However, predicting suicide has been challenging using data from electronic health records (EHRs). While Natural Language Processing (NLP) on clinical text derived from EHRs has successfully extracted health information using supervised learning methods (1), for conditions like suicidal ideation (SI), such an approach proves difficult due to lack of structured data (2). Instead, weakly supervised methods that use imperfect labels, created by rule-based NLP using pre-defined patterns, can be a viable alternative (3).

This study evaluates the use of a weakly supervised machine learning model for detecting SI in clinical notes.

To develop rule-based NLP that weakly labels notes for training, we created a corpus of clinical notes (n=568) coded for SI (ICD-9:V62.84 and ICD-10:R45.851) for positive and negative mentions of SI. We then randomly selected 11,869 notes with a primary mental health diagnosis (ICD-9:290-319, ICD-10:F01-F99). After removing 200 notes for manual review, we applied rule-based NLP to detect 1,099 SI and 9,022 non-SI notes, and removed notes without SI mentions. Using these 11,001 notes , we trained a bi-gram logistic classifier and compared the results with the rule-based NLP approach.

The test notes comprised of 12 SI and 188 non-SI notes. Although rule-based NLP had better overall performance (AUCROC 0.97), the bi-gram logistic classifier had higher recall (0.92).

Weakly supervised machine learning models are viable for detecting SI, as our model's flexibility improved recall.

26.2 PATIENT PERSPECTIVES ON ACCEPTABILITY OF, AND IMPLEMENTATION PREFERENCES FOR, USE OF ELECTRONIC HEALTH RECORDS AND MACHINE LEARNING TO IDENTIFY SUICIDE RISK

Bobbi Jo Yarborough*[1], Scott Stumbo[1], Gregory Simon[1]

[1]Kaiser Permanente Northwest Center for Health Research

Individual Abstract: Assess patient understanding of, potential concerns with, and implementation preferences related to automated suicide risk identification using electronic health record data and machine learning.

Developmental focus groups (n = 23 participants) informed a web-based survey sent to 11,486 adults with and without previous history of suicide ideation or suicide attempt in April 2020. Survey items assessed patient preferences using Likert and visual analog scales. Descriptive statistics summarized findings.

1,357 (12%) participants responded to the web-based survey. Most (84%) found machine learning-derived suicide risk identification an acceptable use of electronic health record data; however, 67% objected to use of externally sourced data. Participants felt consent (or opt-out) should be required (mean = -14). The majority (69%) supported outreach to at-risk individuals by a trusted clinician through care messages (57%) or telephone calls (47-54%). Highest endorsements were for psychiatrists/therapists (99%) or a primary care clinician (75-96%); less than half (42%) supported outreach by any clinician and participants generally felt only trusted clinicians should have access to risk information (mean = -16).

Patients generally support use of electronic health record data (not externally sourced risk information) to inform automated suicide risk identification models but prefer to consent or opt-out; trusted clinicians should outreach by care message or telephone to at risk individuals.

26.3 COMMUNITY-BASED SUICIDE SURVEILLANCE AND CASE MANAGEMENT PROGRAM

Emily Haroz*[1], Novalene Goklish[2], Colin Walsh[3], Mary Cwik[1], Allison Barlow[1]

[1]Johns Hopkins Bloomberg School of Public Health, [2]Johns Hopkins University, [3]Vanderbilt University Medical Center

Individual Abstract: Our study aimed to 1) Understand provider perspectives to inform the implementation of a suicide risk identification model, and 2) evaluate the implementation of this model in a community-based suicide surveillance and case management program in a Native American community.

In-depth interviews with Native Case Managers (n = 9) were used to inform the implementation of machine-learning suicide risk models through the design of a high-risk protocol. We used three years of surveillance data with N=5429 individuals representing N=7027 events to evaluate the implementation of models. Using a time-series approach, we compare the number of people identified as high risk, their subsequent high-risk behaviors, and percent of high-risk individuals who received follow-up care, comparing pre- to post-implementation of the protocol.

Case managers thought of risk as dichotomous, emphasized the importance of clinical judgment and observation in evaluating for risk, and expressed a desire to trust an automated risk identification model. This information informed the implementation of a high-risk protocol that leverages a dichotomous indicator for the predicted probabilities generated by the

predictive model. Across the three years, a total of 636 risk statuses were generated with n=549 flagged as low-risk and n=87 flagged as high risk. In the two years prior to the implementation of the high-risk protocol, 27% of high-risk cases had three or more subsequent suicide-related events compared to 10% with 3 or more subsequent events in the low-risk group. Severity of subsequent events did not differ between those classified as high-risk vs. low-risk. In the year after implementation of the high-risk protocol, only 3% of high-risk cases had three or more subsequent suicide-related events, and 27% of high-risk cases received at least one follow-up wellness check as mandated by the protocol, compared to 1.3% before implementation.

Case managers supported the use of an automated risk identification strategy and co-designed a protocol around its implementation. Once implemented, the high-risk protocol contributed to a reduction in subsequent high-risk events and an increase in follow-up care for those classified as high-risk by the statistical model.

26.4 IDENTIFYING CAUSAL RISK FACTORS FOR SELF-HARM AMONG ADOLESCENTS IN THE CHILD WELFARE SYSTEM FROM A LARGE POOL OF CANDIDATE VARIABLES USING SEQUENTIAL RANDOM FOREST AND PROPENSITY SCORE WEIGHTED ANALYSES

Geoffrey Kahn*[1], Holly Wilcox[1]

[1] Johns Hopkins School of Public Health and Medicine

Individual Abstract: This study aimed to identify causal risk factors for self-harm among adolescents who have had contact with Child Protective Services (CPS) that might be targets for preventive interventions.

Data came from the National Survey of Child and Adolescent Well-being (NSCAW) cohort II, a nationally representative, longitudinal survey of children and their families who had been the subject of an investigation by Child Protective Services (CPS). The NSCAW contains information from a broad array of domains, including: demographics, SES, and family structure; child's and caregiver's physical and mental health history; relationship between child and caregiver; child's cognitive and scholastic performance; child's mental, emotional, and social development; child's peer relationships; child's engagement in problem behaviors, risky, and prosocial activities; details of the CPS investigation; and child- and caregiver-reported self-harm among children aged 11 years and older. A two-stage analytic strategy was used to identify possible causal risk factors for self-harm. First, 1,521 variables were included in a hold-out random forest as described by Janitza and colleagues (2018), which quantified each variable's contribution to accurately predicting future self-harm in the sample and used an efficient method to calculate p-values for evaluating statistical significance. Variables that were significantly predictive and considered to be both modifiable and feasible targets for intervention within the CPS system were then evaluated in the second stage of the analysis. Propensity score weighting as described by Austin and Stuart (2015) was used to estimate causal effects. Three variables were evaluated: child-reported feelings of worthlessness, the presence/absence of supportive adults in the child's life, and quantity of parental physical and psychological violence.

Eighty-six variables were statistically significant predictors in the random forest model, with three quarters (66/86) coming from just three survey instruments: the Youth Self Report and Child Behavior Checklist (child and caregiver reports, respectively, of child's internalizing and externalizing behavior problems) and the Children's Depression Inventory. Prior self-harm was the strongest predictor, followed by total internalizing problems and suicidal ideation, then trauma symptoms, mental health diagnoses and medication. Measures of parental support, monitoring, and discipline and maltreatment were also significant. No single risk factor had a statistically significant causal effect on self-harm. However, having a supportive adult(s) in child's life cut the risk of self-harm almost in half (odds ratio 0.52, 95% CI 0.25-1.08, p = 0.084; ATE and ATT estimands virtually identical).

There is a paucity of research on causal risk and protective factors for self-harm/suicide, but analytic methods exist to allow causal inferences to be made from sufficiently rich observational data. We outline here a method for such analyses. Our null findings with regards to causal risk factors evaluated individually underscore what theoretical models suggest: that suicide is the result of multiple, complex pathways so that there is no single "magic bullet" for prevention. Multifaceted approaches are likely key. Within the CPS population, intervention efforts should include connecting children with adults who are supportive, trustworthy, and encouraging; such relationships showed a strong, albeit not statistically significant, protective effect.

27. GENETICS AND EPIGENETICS

Chair: Gustavo Turecki, McGill University

Overall Session Description: This is an invited session.

27.1 INSIGHTS INTO THE GENETIC ETIOLOGY OF SUICIDE ATTEMPT FROM THE INTERNATIONAL SUICIDE GENETICS CONSORTIUM

Niamh Muillins*[1], International Suicide Genetics Consortium[2], Million Veteran Program[3]

[1]Icahn School of Medicine at Mount Sinai, [2]International Suicide Genetics Consortium, [3]Million Veteran Program

Individual Abstract:

Suicide accounts for over 800,000 deaths per year worldwide and non-fatal suicide attempts, which occur over 20 times more frequently, are a major source of disability and social and economic burden. The heritability of suicide attempt (SA) is well-established and only partially overlaps with the genetic etiology of related psychiatric disorders. The International Suicide Genetics Consortium (ISGC) was established to conduct large-scale genetic association studies of suicide outcomes. Here, I will present the results of the first GWAS of SA by the ISGC, and the results of an ongoing meta-analysis of SA between the ISGC and Million Veteran Program (MVP) cohorts, including >40,000 SA cases.

The ISGC cohort included 29,782 individuals who made a lifetime SA and 519,961 controls from 18 studies worldwide. Information on SA was ascertained via psychiatric interviews for

10 studies, self-report for 4 studies and 2 studies each used hospital records, or coroners' reports. We conducted a genome-wide association study (GWAS) of SA, and conditioned the results on psychiatric disorders using GWAS summary statistics via mtCOJO, to remove genetic effects on SA mediated by psychiatric disorders. We investigated the shared and divergent genetic architectures of SA, psychiatric disorders and other known risk factors. The MVP cohort included 14,089 veterans who had made a SA and 395,359 controls. SA assignment was based on ICD codes, mental health surveys and data from the Suicide Prevention Application Network database. We conducted a meta-analysis of SA between the ISGC and MVP cohorts, including 43,871 SA cases and 915,320 controls. Among SA cases, 81% were of European ancestry, with 11% of African American, 5% Asian and 3% Latinx ancestry.

Two loci reached genome-wide significance (P<5x10-8) for SA in the ISGC GWAS: the major histocompatibility complex and an intergenic locus on chromosome 7, which remained associated with SA after conditioning on psychiatric disorders and replicated in the independent MVP cohort. This locus has previously been implicated in risk-taking, smoking, and insomnia. SA showed strong genetic correlation with psychiatric disorders, particularly major depression, and also with smoking, pain, risk-taking, sleep disturbances, lower educational attainment, reproductive traits, lower socioeconomic status and poorer general health. After conditioning on psychiatric disorders, the genetic correlations between SA and psychiatric disorders decreased, whereas those with non-psychiatric traits remained largely unchanged. The genetic correlation of SA between the ISGC and MVP cohorts was 0.86 (se 0.09) which was not significantly different from 1. Preliminary results of a meta-analysis between these cohorts found 8 loci reaching genome-wide significance for SA. Among these were the intergenic chromosome 7 locus previously discovered by the ISGC, as well as loci including the SLC6A9, NLGN1, ESR1, DRD2 and FURIN genes.

This GWAS of SA by the ISGC identified a risk locus that contributes more strongly to SA than other phenotypes, and suggests a shared underlying biology between SA and known risk factors that is not mediated by psychiatric disorders. Ongoing work by the ISGC and MVP includes GWAS meta-analyses of SA in African American, Asian and Latinx ancestries separately, dissection of the effects of genome-wide significant loci on SA versus related psychiatric disorders, integration of GWAS results with 'omics data from brain tissues, and pathway, tissue and drug target enrichment analyses. These analyses are expected to provide further novel insights into the biological etiology of SA.

27.2 STUDYING THE SUICIDAL BRAIN ONE CELL AT A TIME

Gustavo Turecki*[1]

[1]McGill University

Individual Abstract: The last few years have since tremendous technological progress in our capacity to investigate individual cells at the molecular level using high throughput techniques. These techniques, which are collectively called "single-cell genomics" have been providing unprecedented insight into the cellular and molecular organization of the brain. They include

techniques such as spatial genomics, single-cell/single-nucleus transcriptomics and single-cell/single-nucleus chromatin accessibility using ATAC-seq (Assay for Transposase-Accessible Chromatin) and have provided exciting new data on the cellular spatial organization and function of the normal brain. Their application to understand psychopathology has just begun, and will certainly generate important data on molecular and cellular processes that change in the suicidal brain. In this presentation, I will summarize key advances in single-cell technology and provide examples of their application to understand suicide and related psychopathology.

Data will be presented to illustrate different methodologies, including low-throughput and high-throughput single-cell genomic approaches exploring transcriptomics, methylomics and chromatin conformation. Specifically, laser-capture microdissection (LCM-seq), single-nucleus RNA-seq and single-cell ATAC-seq. The methods will be presented as they were used in studies using postmortem prefrontal cortical samples from individuals who died by suicide with major depressive disorder, individuals who died by suicide and had histories of early-life adversity and neurotypical controls.

Our transcriptomic results implicate 96 genes differentially expressed in 16 cells types, particularly lower layer excitatory neurons and immature oligodendrocytes. The addition of a modality—chromatin accessibility, improved and refined the transcript-only based clustering. We were able to identify a consistent relationship between chromatin profiles and transcript levels providing further insight into the involvement and relationship of individual cell types. Our data showed an enrichment of open chromatin at functional non-coding regions, while enhancer regions showed the most cell specific patterning. Differential open chromatin regions between cases and controls showed enrichment for gene regulatory regions and transcription factor binding motifs associated with disease-related biological pathways. We also identified gene regulators with cell-type specificity, and disease-specific epigenetic signatures of differential gene expression patterns. In overlapping GWAS associated SNPs with differential regions of open chromatin, we found disease and sex specific patterns in specific cortical cell-types.

Single-cell genomics are a collection of powerful to uncover functional genomic changes at cellular resolution that may be implicated in the pathogenesis of suicide and associated psychopathology. The combination of multiple modalities, both spatial and temporal, in conjunction with the exploration of different brain regions will be required to uncover the complex changes occurring in the suicidal brain.

27.3 WHAT CAN GENETICS TELL US ABOUT THE AETIOLOGY OF SELF-HARM?

Jean Baptiste Pingault*[1], Kai Lim[2]

[1]University College London, [2]King's College London

Individual Abstract: Genome-wide association studies (GWAS) do not only capture direct genetic effects on a phenotype. GWAS also tag indirect signals from risk factors for the phenotype. Genetically informed methods can capitalise on this feature to better understand

the aetiology of phenotypes of interest. Here, we present studies where we implemented such genetically informed methods – including polygenic scores and Mendelian randomisation - to investigate individual risk factors that can lead to self-harm. Both polygenic scores and Mendelian randomisation analyses confirmed the role of key psychiatric vulnerabilities predisposing to self-harm, including depression, schizophrenia and Attention-Deficit Hyperactivity Disorder. Polygenic scores for psychiatric traits were prominent whereas polygenic scores cognitive, physical and personality traits were not associated with increased risk for self-harm. These findings were confirmed even when excluding medicated and unmedicated cases of the corresponding psychiatric disorders. A detailed analysis of findings for depression suggests potential measurement issues as depression measures sometimes include indicators of suicidality that overlap with self-harm. A follow-up study combining polygenic scores with twin data broadly confirmed early findings. Taken together, our findings suggest that genetic effects on self-harm are partially mediated by genetic vulnerabilities to key psychiatric symptoms.

27.4 AGGRESSION AND SUICIDE: NEW DATA ON GENETICS FROM SPAIN

Enrique Baca-Garcia*[1], Concepcion Vaquero[2]

[1]Fundacion Jimenez Diaz, [2]UAM

Individual Abstract: Aggression is one of the classic components of suicidal behavior. It is a concept with a very broad definition and is often intertwined with impulsivity.
In this presentation we will discuss the phenotypes of planned aggression, reactive aggression and violent suicidal behavior. We will also discuss the relationship between aggression and environment in suicidal behavior.

We will present data on ways to define aggressive behavior in terms of digital phenotype.

We will provide results on the relationship between genetic markers and planned aggression, reactive aggression and violent suicidal behavior.

ORAL PAPER SESSIONS

Sunday, October 24, 2021

12:00 PM - 1:30 PM

SUICIDE PREDICTION USING BIG DATA

Chair: Robert Penfold

1. PREDICTING SUICIDE ATTEMPTS AND SUICIDE DEATHS AMONG ADOLESCENTS FOLLOWING OUTPATIENT VISITS

Robert Penfold*[1], Eric Johnson[1], Susan Shortreed[1], Rebecca Ziebell[1], Frances Lynch[1], Greg Clarke[1], Karen Coleman[1], Beth Waitzfelder[2], Arne Beck[3], Rebecca Rossom[4], Brian Ahmedani[5], Gregory Simon[1]

[1]Kaiser Permanente Washington Health Research Institute, [2]Kaiser Permanente Hawaii Center for Health Research, [3]Kaiser Permanente Colorado Institute for Health Research, [4]HealthPartners Institute, [5]Henry Ford Health System

Background: Few studies report on machine learning models for suicide risk prediction in adolescents and their utility in identifying those in need of further evaluation. This study examined whether a model trained and validated using data from all age groups works as well for adolescents or whether it could be improved.
Methods: We used healthcare data for 1.4 million specialty mental health and primary care outpatient visits among 256,823 adolescents across 7 health systems. The prediction target was 90-day risk of suicide attempt following a visit. We used logistic regression with least absolute shrinkage and selection operator (LASSO) and generalized estimating equations (GEE) to predict risk. We compared performance of three models: an existing model, a recalibrated version of that model, and a newly-learned model. Models were compared using area under the receiver operating curve (AUC), sensitivity, specificity, positive predictive value and negative predictive value.
Results: The AUC produced by the existing model for specialty mental health visits estimated in adolescents alone (0.796; [0.789, 0.802]) was not significantly different than the AUC of the recalibrated existing model (0.794; [0.787, 0.80]) or the newly-learned model (0.795; [0.789, 0.801]). Predicted risk following primary care visits was also similar: existing (0.855; [0.844, 0.866]), recalibrated (0.85 [0.839, 0.862]), newly-learned (0.842, [0.829, 0.854]).
Discussion: Prediction models already in operational use by health systems can be reliably employed for identifying adolescents in need of further evaluation.

2. THE IMPACT OF A YOUTH-FRIENDLY INTERNET-BASED INTERVENTION (#CHATSAFE INTERVENTION) ON CLUSTERS OF SUICIDE AND SUICIDE ATTEMPTS USING AGENT-BASED SIMULATION MODELLING

Rifat Zahan*[1], Lea Lamp[1], Nicole Hill[2], Jo-An Occhipinti[3], Jane Pirkis[4], Ante Prodan[5], Jo Robinson[2], Tiffany Too[4], Nathaniel Osgood[1]

[1]University of Saskatchewan, [2]Orygen, [3]University of Sydney, [4]University of Melbourne, [5]Western Sydney University

Background: Suicide is one of the main causes of death for young people worldwide. Despite different intervention strategies in place, the youth suicide rate is increasing in Australia. Several interventions have been implemented to reduce suicide, and suicide attempts, but there is still a need for youth-specific suicide intervention, particularly in the context of social media platforms. Suicide is a complex public health concern, which needs a systems science approach to understand and analyze the dynamics among different interacting components of the suicide system, which is difficult to capture through the use of traditional analytic approaches. This study aimed to assess the impact of a co-designed social media intervention known as #chatsafe on clusters of youth suicides and suicide attempts using an agent-based modelling approach grounded in systems science.
Methods: An agent-based simulation model was developed to examine the dynamic interaction of young people aged 15-24 years within social networks and their impact on suicidal behaviour in New South Wales (NSW), Australia. Each individual's changing suicidal behaviour status (no suicide ideation, suicidal ideation, planning, attempt, surviving, and deaths) was examined based on the interrelationship between age, sex, childhood adversity, and exposure to suicide and suicide attempt among their network. Any suicide or suicide attempt contributes to the discussion on social media. The dynamic model was parameterized using published literature, empirical data, and experts' knowledge. Parameter values that could not be derived directly from available data or published research were estimated via constrained optimization, minimizing the root-mean-squared error (RMSE). Model validation was achieved by comparing model outputs with historic time series data of suicide attempts and suicide.
Results: The results from calibration experiment suggests that the simulated results of suicide attempt and death rates per 100,000 population matches closely to the empirical rates with the lowest value of RMSE (= 7.49).
Discussion: This study is one of the very few studies in the public health domain that uses systems science based modelling and simulation approaches in the context of suicidal behaviour to prospectively evaluate interventions before scaling them up in the real world. The validated baseline model is available for further use. Assessment of implementation of parameters needed to optimize the impact of #chatsafe guidelines on clusters of youth suicide and suicide attempts in NSW. Therefore, the next steps are identifying clusters of suicide and suicide attempts based on the validated agent-based model and examining the effect of exposure to #chatsafe guidelines under different scenarios in the model.

3. STRIVING FOR ZERO- USING BUSINESS INTELLIGENCE TO IMPROVE SUICIDE SCREENING RATES

Amy Van Berkum*[1], Jennifer Sussex[1], Nelson Rivera Walteros[1]

[1]St. Joseph's Health Care London

Background: In 2016, St. Joseph's Health Care London, a five-site tertiary care facility, implemented the Zero Suicide framework as a quality patient safety priority. A key preventative element of the framework is to identify those at risk of suicide by way of a validated screening tool and clinician risk formulation. Corporate policy and departmental procedures outline the required time points for suicide screening in the electronic health record

(EHR). As measurement is fundamental to quality and process improvement, Business Intelligence was leveraged to support performance indicator monitoring. Business Intelligence (BI) is the aggregation, analysis, and use of data to report, analyze, and directly inform decision-making to positively impact patient care delivery, health outcomes, and business operations. The Quality Measurement and Clinical Decision Support (QM and CDS) team, in collaboration with key stakeholders, developed BI interactive reports that inform leaders and suicide prevention champions in near real-time of inpatient suicide screening compliance rates. Additionally, auto-generated email notifications alert leaders and suicide prevention champions when clinician follow up is required. Having previously used manual data collection for suicide screening, the BI reporting system reduces staff workload and aligns with principles of human factor theory: enhancing the design and organization of systems as well as standardizing how information is transferred.

Methods: Alongside key stakeholders, the QM and CDS team developed the BI reports utilizing Plan-Do-Study-Act (PDSA) cycles of research and requirements, design, development, and testing. Key features of the BI reports include the ability to drill down to an actionable level (program, unit, and case level) and drill down to case level attributes that support interpretability and follow up. Multiple online education sessions were hosted with leaders and suicide prevention champions, outlining how to use the reports and expectations for follow up with staff to drive suicide screening compliance rates. A report navigation guide was developed as a resource for sustainability, and there remains ongoing surveillance and PDSA of the BI report to ensure accuracy.

Results: Before the BI report implementation, quarterly inpatient suicide screening compliance results ranged from 45.8% to 47.1% during the 2019-2020 fiscal year. After the BI reports were implemented for fiscal year 2020-2021, quarterly results demonstrated improvement in inpatient suicide screening compliance each quarter: 60.0%, 75.7%, 84.7%, to 88.0% respectively. The near-real time suicide screening BI reports supported leaders and suicide prevention champions successfully in improving patient care and safety.

Discussion: The near-real time suicide screening BI reports, along with auto-generated e-mails support early identification of opportunities for improvement and identification of successes. The advantages of near real-time reporting, timely clinician follow up by suicide prevention champions, and leadership accountability are what we believe are the main drivers of this quality improvement. A limitation of BI reporting is dependence on suicide screening within the EHR. Overall, the BI reports create a sustainable solution to long term project evaluation by baking in ongoing surveillance of key patient safety indicators and maximizing principles of human factor theory to reduce patient risk.

4. A MACHINE LEARNING APPROACH FOR PREDICTING SUICIDAL THOUGHTS AND BEHAVIORS AMONG COLLEGE STUDENTS

Mélissa Macalli*[1], Marie Navarro[2], Massimiliano Orri[1], Marie Tournier[4], Rodolphe Thiébaut[4], Sylvana M. Côté[5], Christophe Tzourio[6]

[1]Bordeaux population Health Research Center, INSERM , University of Bordeaux, [2]Bordeaux Population Health Research Center, [3]Bordeaux Population Health Research Center, University of Bordeaux, Charles Perrens Hospital, [4]Bordeaux Population Health Research Center, University of Bordeaux, INRIA,CHU of Bordeaux, [5]Bordeaux Population Health Research Centre, University of Montreal, [6]Bordeaux Population Health Research Center, University of Bordeaux

Background: College students are vulnerable to mental health problems and suicidal thoughts and behaviours (STB). Identifying students with STB is challenging due to limited resources on campus, and because college students may be reluctant to share information about their mental health. Yet little is known about screening tools to identify students at higher risk. As pointed out in a recent paper summarizing 50 years of research on suicidal behaviours, further research should shift from identification of risk factors to focus on developing predictive algorithms using machine learning methods. Such methods enable the inclusion of several risk and protective factors, while accounting for their potential interactions, which is consistent with the shared concept that STB result from complex interactions between social, psychiatric, psychological, and environmental factors. In this study we applied a machine learning method to develop an algorithm to predict STB in the next 12 months after baseline assessment using a large longitudinal cohort of French university students.
Methods: We used data collected in 2013–2019 from the French i-Share cohort, a longitudinal population-based study including 5066 volunteer students. To predict STB at follow-up, we used random forests models with 70 potential predictors measured at baseline, including sociodemographic and familial characteristics, mental health and substance use. Then, we re-estimated our models in a subsample of participants who did not report STB at baseline to better identify new cases. Model performance was measured using the area under the receiver operating curve (AUC), sensitivity, and positive predictive value.
Results: At follow-up, 17.4% of girls and 16.8% of boys reported STB. The models achieved good predictive performance: AUC, 0.8; sensitivity, 79% for girls, 81% for boys; and positive predictive value, 40% for girls and 36% for boys. Among the 70 potential predictors, four showed the highest predictive power: 12-month suicidal thoughts, trait anxiety, depression symptoms, and self-esteem. In a subsample excluding participants who reported STB at baseline, the main predicting variables were depressive symptoms, self-esteem, and academic stress for girls and mainly self-esteem for boys. These predictors differ according to gender only among participants who did not report STB at baseline.
Discussion: We identified a small number of major predictors that ensured high accuracy in STB prediction. Pending replication of these results in other studies, these predictors, derived from short and commonly used questionnaires, may help developing a large-scale screening tool for university students. For example, they could be integrated into a short online screening administered upon college entrance. An online questionnaire may prove acceptable to students, and would provide an alternative to mental health assessment by a physician for students who are often reluctant to disclose sensitive personal information in face-to-face interviews.

5. POTENTIAL CLASSIFIERS FOR SUICIDE RISK BY MACHINE LEARNING IN CONCORDANT BRAIN-BLOOD DIFFERENTIALLY METHYLATED SITES

Brenda Cabrera Mendoza*[1], José Jaime Martínez-Magaña[2], Alma Genis-Mendoza[2], Nancy Monroy-Jaramillo[3], Consuelo Walss-Bass[4], Gabriel Fries[4], Mauro López-Armenta[5], Fernando García- Dolores[5], Fernanda Real[5], Carlos Alfonso Tovilla-Zarate[6], Isela Juárez-Rojop[6], Rubén Vázquez-Roque[7], Gonzalo Flores[7], Humberto Nicolini[2]

[1]Yale, [2]National Institute of Genomic Medicine (INMEGEN), [3]National Institute of Neurology and Neurosurgery, [4]University of Texas Health Science Center at Houston, [5]Institute of Forensic Sciences (INCIFO), [6]Juárez Autonomous University of Tabasco, [7]Institute of Physiology, Meritorious Autonomous University of Puebla

Background: Suicide is one of the leading causes of death worldwide and is often preventable. However, the lack of a reliable suicidal behaviour classifier, hampers the opportune identification and treatment of individuals at high risk for suicide. The convergence of genomic information with the use of machine learning (ML) algorithms might be helpful in the detection of markers that allow the correct classification of individuals with an increased suicide risk and those without this risk. We aimed to find the more relevant differentially methylated sites concordant in both brain and blood using ML algorithms, which could be used as classifiers for suicidal risk.
Methods: We performed a differential methylation analysis on brain samples from 34 individuals who died by suicide and 10 controls. In parallel, we performed a differential methylation analysis on peripheral blood samples from 53 individuals at high suicide risk (32 with suicide attempts and 21 with suicidal ideation) compared with 41 individuals without suicidal behaviour. The differentially methylated sites concordant in both tissues were used for training three ML algorithms (random forest, support vector machine and gaussian mixture modelling) followed by the ranking of the CpG sites by feature selection. Then, these ranked lists were combined into a single one by rank aggregation.
Results: We identified 25 brain-blood concordant differentially methylated sites, in genes like LYRM, THBS2 and RAB32. Ranked lists of such sites ordered by their relevance for the classification of individuals with and without suicidal behaviour according to each ML algorithm were obtained. Ranked lists were aggregated in a single list, from which we selected the top ten CpG sites that could better separate individuals with and without suicidal behaviour based on the three algorithms.
Discussion: In this study, we identified a group of blood-brain concordant CpG sites that could act as a possible classifier in suicidal behaviour by feature selection and ranking aggregation algorithms. DNA methylation changes, along with other epigenetic changes, have shown to be particularly relevant in suicidal behaviour due to its mediating role in the complex interaction between genotype and environment. Besides their implication in suicide neurobiology, DNA methylation changes constitute an ideal suicide classifier due to their non-invasive collection and temporal stability.
The identification of CpG sites that could classify individuals with and without suicidal behaviour may be considered a translational application of the evidence demonstrating the involvement of DNA methylation alterations in suicide. ML algorithms may facilitate this translational application by condensing a considerable data volume, as that obtained from genome-wide DNA methylation profiles, in a classifier comprising a reduced number of CpG sites. Reaching a more compact and simpler classifier is an advantage provided by the use of feature selection algorithms. A classifier with a reduced number of features, CpG sites in this case, might be more easily interpreted and this could facilitate its use in a clinical context. In conclusion, we identified a novel potential suicide classifier that resulted from the ranking and integration of multiple ML algorithms. This classifier comprised a group of ten brain-blood concordant differentially methylated sites. The performance of this classifier should be further evaluated in future studies.

6. TESTING THE AFFECT REGULATION HYPOTHESIS OF SELF-INJURIOUS THOUGHTS AND BEHAVIORS IN DAILYLIFE: A SYSTEMATIC REVIEW AND META-ANALYSIS

Kevin Kuehn*[1], Melanie Harned[2], Katherine Foster[1], Frank Song[1], Michele Smith[1], Kevin King[1]

[1]University of Washington, [2]VA Puget Sound Health Care System

Background: Self-injurious thoughts and behaviors (SITBs) are common worldwide. One prevailing paradigm, the affect regulation hypothesis, suggests that SITBs are negatively reinforced by decreased negative affect. The present systematic review and meta-analysis catalogs the cumulative findings of intensive longitudinal studies that measured both negative affect and SITBs.
Methods: A search of online databases produced 57 studies meeting inclusion criteria with N = 5,037 participants (74% female; 69% white). Effects were calculated from 37 of these 57 studies (64.91%; 24 unique datasets; N = 1,684). In pooled random-effects meta-analyses, within-subject standardized mean gain effect sizes revealed changes in negative affect before and after SITBs.
Results: Results supported increased negative affect prior to non-suicidal self-injurious (NSSI) thoughts (effect size = .60), NSSI behavior (effect size = .72), and suicidal thoughts (effect size = .67) relative to the timepoints prior to a non-SITB report. Negative affect was reduced following NSSI thoughts (effect size = -.45), NSSI behaviors (effect size = -.32) and suicidal thoughts (effect size = -.31) relative to prior observations. The number of prompts per day, duration between prompts, survey compliance, and sample characteristics were tested as moderators. In antecedent analyses of suicidal thoughts, but not NSSI behaviors, studies including participants
with borderline personality disorder reported larger effects, while more frequent observations of suicidal thoughts, but not NSSI behaviors, was associated with larger effects in consequence models

Discussion: These findings support the affect regulation function of SITBs. Methods incorporating subject-level heterogeneity, such as idiographic longitudinal analyses, are particularly promising as a future direction.

UNDERSTANDING MORE ABOUT ADOLESCENT SUICIDAL BEHAVIOR

Chair: Anita Tørmoen

7. EXAMINING THE CONTENT AND PROCESS OF ADOLESCENT SUICIDE IDEATION

Ana Ortin Peralta*[1], Natalia Macrynikola[2], Jhovelis Mañanà[3], Christina Rombola[3], Evan Gilmer[3], Sandra Runes[4], Muhammad Waseem[4], Regina Miranda[3]

[1]Ferkauf Graduate School of Psychology, Yeshiva University, [2]The Graduate Center, City University of New York, [3]Hunter College, City University of New York, [4]New York City Health + Hospitals/Lincoln

Background: Suicide ideation arises and peaks in adolescence, but current self-report measures of suicide ideation (SI) tend to overlook the specific nature of SI that might be indicative of risk of engaging in suicidal behavior. Recent studies suggest that the form of SI and suicide-related imagery may help identify which individuals will transition from thinking about to attempting suicide. This study examines differences in the content of SI among adolescents with recent SI, with or without a past suicide attempt history, and a recent suicide attempt.

Methods: One hundred and eight adolescents (75% female, 75% Hispanic/Latinx), ages 12-19, from racially/ethnically diverse backgrounds were recruited from an emergency and outpatient departments and one outpatient clinic in the Bronx, NY. Adolescents completed a semi-structured interview assessing the content and process of their recent SI. Adolescents were divided into three groups, based on whether they presented with a suicide attempt (SA) or suicide ideation with (SI/Past SA) or without (SI/No SA) a past history of an attempt.
Results: One-third of adolescents reported that their SI lasted an hour or less, 45% reported that it lasted >1 hour to 4 hours, and 19% reported that it lasted 5 hours or more. The SA group and the SI/Past SA groups more often had SI for 5 hours or more (27% and 24%, respectively) than the SI/No SA group (6%), whereas the SI/No SA group more often had Si lasting >1 – 4 hours (59%) compared to the SA group (27%) but did not differ significantly from the SI/Past SA group (49%), $\chi 2= 9.77$, $p < .05$. Over three-fourths of adolescents reported imagery during their SI, with no group differences emerging.
About 65% of adolescents thought about a method of attempt, 39% of adolescent thought about the physical process of dying, 29% thought about what would happen to their body, 39% thought about someone finding them after their attempt/death, 65% thought about how others would react after finding out about their attempt, 43% thought about whether others would think differently about them after their attempt, and 38% thought about the long-term effect of their death on others. There were significant group differences in method considered, $\chi 2(6) = 13.46$, $p < .05$ and in SI about their bodies, $\chi 2 = 8.17$, $p < .05$. The SA group more often thought about ingestion (41%) than in the SI/No SA group (15%) and about what would happen to their bodies after the SA (47%) than in both SI groups (20-21%). Wish to die was stronger among adolescents in the SA ($M = 7.8$, $SD = 2.9$) and SI/Past SA ($M = 7.5$, $SD = 2.0$) groups than the SI/No SA group ($M = 5.9$, $SD = 2.7$). There were no other group differences in SI content.

Discussion: Our findings suggest that the content of adolescent SI that most differentiates adolescents with either a recent suicide attempt or SI with a past SA from those with SI is consideration of a method, thinking about what will happen to their bodies after their attempt, and wish to die, while the process of SI that distinguishes these groups is length of the SI. These characteristics indicative of the content and process of SI should be further examined in adolescent suicide risk assessments.

8. DOES COPING REDUCE SUICIDAL URGES IN EVERYDAY LIFE? EVIDENCE FROM A DAILY DIARY STUDY OF ADOLESCENT INPATIENTS

Nadia Al-Dajani*[1], Adam Horwitz[1], Ewa Czyz[1]

[1]University of Michigan

Background: Youth suicide has been increasing at an alarming rate. Identifying how youth at risk for suicide cope with distress and suicidal thoughts on a daily basis could inform prevention and intervention efforts. Most research to date has examined the longitudinal effects of coping over large windows of time. Given that suicidal thoughts have been found to fluctuate across short-windows of time (i.e., hours to days), it is important to identify the relationship between proximal coping behaviors and suicidal thoughts. In the first study of this kind involving adolescents at risk for suicide, we investigated the association between previous-day coping and next-day suicidal urge intensity over four weeks following psychiatric hospitalization. We also investigated the influence of adolescents' average coping levels, across the four-week period, on daily severity of suicidal urges. Together, we are able to

identify the extent to which adolescents' typical levels of coping, as well more proximally occurring changes in coping, influence daily suicidal urge intensity.
Methods: Seventy-eight adolescents completed daily diaries for four weeks after psychiatric hospitalization (n=1621 observations). Each day, adolescents reported on their use of different coping strategies, overall coping helpfulness, and intensity of suicidal urges. Specific coping strategies were grouped into four categories: personal support (e.g., friends, family), professional support (e.g., therapist, crisis line), cognitive strategies (e.g., tell self something positive, reasons for living), and non-cognitive strategies (e.g., relaxation, distraction). A series of multilevel models were conducted to examine if previous-day coping (within-person level) predicted next-day suicidal urge intensity and if average coping level across the 28-day period (between-person level) predicted daily suicidal urge intensity.
Results: Greater previous-day professional support seeking (B=-0.25, p=.000) and greater perception of coping being helpful (B=-0.14, p=.003), relative to adolescents' typical levels, were associated with lower next-day suicidal urges. Adolescents who tended to have greater average use cognitive strategies (B=-0.28, p=.036) and personal support (B=-0.42, p=.014), relative to others, had lower daily suicidal urges, as did those with higher average perception of coping helpfulness (B=-1.11, p=.000). Non-cognitive strategies were not related to daily suicidal urge intensity.
Discussion: Findings point to the benefit of intervention efforts focusing on strengthening personal and professional supportive relationships and assisting youth with developing a broader coping repertoire. Importantly, perceptions of coping helpfulness had the strongest protective effects for both next-day suicidal urges and overall severity of suicidal urges throughout the four-week period, suggesting that working closely with adolescents to identify strategies they perceive to be helpful is critical.

9. ELEVATED SOCIAL STRESS AND MALADAPTIVE PSYCHOLOGICAL RESPONSES TO STRESS CHARACTERIZE ADOLESCENTS AT RISK FOR FUTURE ONSET OF SUICIDAL IDEATION AND NON-SUICIDAL SELF-INJURIOUS BEHAVIORS

Olivia Pollak*[1], Eva H. Telzer[1], Kristen A. Lindquist[1], Mitchell J. Prinstein[1]

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Background: Self-injurious thoughts and behaviors (STBs), including suicidal ideation (SI) and nonsuicidal self-injury (NSSI), are pressing public health concerns among adolescents. Recent theories have posited that increases in social stress in adolescence, in conjunction with normative changes in psychological and physiological stress responses, may render adolescents particularly vulnerable to acute social stressors, thereby heightening risk for STBs (Miller and Prinstein, 2019). Social stress and, importantly, maladaptive responses to social stress may therefore be developmentally-salient STB risk factors, yet few longitudinal studies have jointly examined these as predictors of adolescents' future STBs. Building on the suicide risk factor literature—which has frequently examined "social factors" but has infrequently examined such factors in exclusively adolescent samples (Franklin et al., 2017)—we first examined whether elevated social stress and maladaptive stress responses characterized adolescents who later developed STBs. Second, we tested whether social stress and stress responses differentially predicted future SI vs. NSSI, o better understand whether these distinct STB outcomes might share common, socially-relevant risk factors.

Methods: A racially diverse (40% White, 36% Latinx, 19% Black, 5% other) sample of 415 adolescents completed measures of SI, NSSI, friendship stress (FS), and friendship-related psychological stress response (SR) at baseline and across three, one-year follow-ups. Analyses were conducted among adolescents with no history of STBs (i.e., SI or NSSI) at baseline.
Results: At baseline, adolescents who went on to develop at least one type of STB (i.e., SI and/or NSSI) over the next three years showed elevated levels of FS, $t(413)=3.52$, $p<.001$, and SR, $t(405)=3.56$, $p<.001$, compared to those who did not develop STBs over follow-up. Examining specific STB outcomes, baseline severity of FS did not distinguish those who later developed SI vs. NSSI ($p=1.00$). However, baseline severity of SR was significantly elevated in adolescents who developed SI but not NSSI, compared to those who developed NSSI but not SI ($p=.04$). In prospective linear regression analyses, severity of both FS and SR predicted SI frequency one year later (ß=.14-.10, p=.00-.04), but only SR was associated with NSSI frequency one year later (ß=.11, $p=.03$). While SR also predicted NSSI frequency two years later (ß=.41, $p<.01$), neither FS nor SR predicted SI or NSSI frequency across more distal follow-up points.
Discussion: Results suggest that greater friendship stress and maladaptive psychological responses to social stress characterize those at risk for future onset of STBs. This pattern held when comparing baseline FS and SR among adolescents who did vs. did not go on to develop STBs, as well as in regression analyses predicting SI and NSSI frequencies one year later. Compared to FS, SR was more robustly related to STBs across analyses, suggesting that maladaptive psychological responses to social stress, beyond the mere presence of social stress, may characterize those at greatest risk for STBs. Results provide longitudinal support for recent theoretical models implicating social stress and stress response as important, developmentally salient risk factors for understanding emergence of STBs during the adolescent transition.

10. THE PROSPECTIVE ASSOCIATION BETWEEN CHILDHOOD EMOTION DYSREGULATION AND SELF-HARM AND DISORDERED EATING IN ADOLESCENCE AND YOUNG ADULTHOOD: A UK POPULATION-BASED COHORT STUDY

Naomi Warne*[1], Jon Heron[1], Becky Mars[1], Francesca Solmi[2], Paul Moran[1], Anne Stewart[3], Marcus Munafo[1], Ian Penton-Voak[1], Lucy Biddle[1], Andy Skinner[1], David Gunnell[1], Helen Bould[1]

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Background: Self-harm and disordered eating behaviours commonly co-occur in clinical and general population samples. Nevertheless, little is known about their shared aetiology. Cross-sectional and prospective studies have indicated that emotional dysregulation may be a risk factor for self-harm or disordered eating. However, to our knowledge, no studies have assessed the prospective associations over longer follow-ups (>2 years) or considered associations with self-harm and disordered eating behaviours within the same study population.
Methods: We examined the relationship between emotion dysregulation and self-harm and disordered eating behaviours in a large sample of young people from a UK population cohort: the Avon Longitudinal Study of Parents and Children (ALSPAC). Emotion dysregulation was reported by participants' mothers at age 7 years. Participants reported on their own self-harm, regardless of suicidal intent, and disordered eating behaviours (fasting, purging, binge-eating and excessive exercise) in the last year via questionnaire at 16 and 24 years. We used logistic regression to examine associations between emotion dysregulation and self-harm or any

disordered eating in unadjusted models and models adjusting for key confounders (gender, socioeconomic disadvantage, maternal mental health, and IQ). Emotion dysregulation by sex interaction terms tested whether associations were moderated by sex.
Results: Emotion dysregulation at 7 years was associated with self-harm and disordered eating at age 16 in unadjusted and fully adjusted models. Emotion dysregulation at 7 years was associated with self-harm and disordered eating at 24 years but associations attenuated once adjusting for IQ. There was no evidence of sex moderating these relationships.
Discussion: Childhood emotion dysregulation had similar prospective associations with self-harm and disordered eating in adolescence and young adulthood. Our findings suggest emotion dysregulation may be a common risk factor for both self-harm and eating disorders in males and females.

11. RISK FACTORS FOR DELIBERATE SELF-HARM AND MORTALITY AMONG ADOLESCENTS AND YOUNG ADULTS WITH FIRST EPISODE PSYCHOSIS

Aubrey Moe[1], Elyse Llamocca*[1], Heather Wastler[1], Danielle Steelesmith[1], Guy Brock[2], Jeffrey Bridge[3], Cynthia Fontanella[1]

[1]The Ohio State University Wexner Medical Center, [2]Center for Biostatistics, The Ohio State University College of Medicine, [3]Abigail Wexner Research Institute, Nationwide Children's Hospital

Background: Individuals with psychotic disorders are at increased risk for deliberate self-harm (DSH), a strong risk factor for suicide, death by suicide, and premature mortality. To better inform suicide prevention efforts, we investigated risk factors for DSH in a population-based cohort of adolescents and young adults with first-episode psychosis (FEP) and compared suicide and all-cause mortality rates following FEP to general population rates.
Methods: A retrospective longitudinal cohort analysis using Ohio Medicaid claims data was conducted of all adolescents and young adults aged 15 to 24 with FEP between January 1, 2010 and December 31, 2017 (n=19,422). Youth were followed until age 25, end of enrollment, study outcome (DSH or death), or the end of the follow-up period. Cox proportional hazard analysis was used to examine associations between demographic, clinical, and service use patterns and DSH. Suicide and all-cause mortality rates for adolescents and young adults with FEP were compared with the general Ohio population by calculating corresponding rates matched by age, gender, and calendar year.
Results: During follow-up, 11.1% (n=2,148) had at least one DSH event, 0.1% (n=22) died by suicide, and 0.6% (n=124) died from any cause. In the adjusted model, female compared to male (HR=1.7; 95% CI: 1.6-1.9), foster care eligibility compared to poverty (HR=1.5 [1.3-1.8]), ADHD (HR=1.6 [1.4-1.7]), anxiety (HR=2.5 [2.2-2.7]), disruptive behavior (HR=1.8 [1.7-2.0]), personality (HR=2.5 [2.3-2.8]), substance use (HR=1.9 [1.7-2.0]), and other mental health disorders (HR=2.1 [1.9-2.3]), presence of a complex chronic (HR=1.7 [1.5-2.0]) or non-complex chronic medical condition (HR=2.2 [1.9-2.5]) compared to no chronic medical condition, history of child abuse and neglect (HR=2.5 [2.1-3.1]), DSH (HR=8.9 [8.0-9.8]), and suicidal ideation (HR=2.9 [2.7-3.2]), prior psychiatric hospitalization (HR=2.4 [2.2-2.7]), prior ER mental health care (HR=1.9 [1.8-2.1]), and prior outpatient mental health care (HR=1.4 [1.3-1.6]) were associated with increased hazards of DSH. Older age (20-24 vs. 15-19 years: HR=0.6 [0.5-0.6]), non-Hispanic Black participants compared to non-Hispanic white (HR=0.6 [0.5-0.7]), and disabled (HR=0.8 [0.7-0.9]) or other eligibility types (HR=0.5 [0.3-0.9]) compared to poverty were associated with decreased hazards of DSH. Among those with at

least one DSH event during follow-up, the median follow-up time before first DSH was 171.0 days (SD: 490.5 days). Suicide (SMR=4.5 [2.9-6.8]) and all-cause mortality (SMR=3.8 [3.2-4.5]) rates were elevated compared to the general Ohio population.
Discussion: In this population-based study, approximately one in ten adolescents and young adults with FEP engaged in DSH. Early identification of patients with FEP at highest risk for DSH may guide early clinical recognition and intervention. Findings from the present study indicate that patients with FEP at highest risk for DSH include those who are younger, female, and had more severe, complex illness, marked by psychiatric and medical comorbidities and past utilization of mental healthcare services, and a history of child abuse and neglect. Additionally, our findings suggest an acute risk period for DSH in the first six months following FEP, underscoring the need for early intervention in this population. More research is also needed to better understand the increased risk of suicide and all-cause mortality among youth with first-episode psychosis.

12. TIME SPENT ON SOCIAL MEDIA: A RISK FACTOR FOR SELF-HARM IN ADOLESCENCE? A NATIONWIDE CROSS-SECTIONAL STUDY

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Background: Since the millennium turn, an increase in self-harm among young people is observed, as evident from hospital admissions, as well as self-reports in school surveys in several countries. Few studies have examined possible explanations for this increase, and one candidate explanation is the radical change in young people's ways of socializing, and their use of social media. In this study, we examined the relationship between self-harm and time spent on social media. Our hypothesis was that time spent on social media would be associated with self-harm, also when controlling for well-known risk-factors for self-harm in adolescents.
Methods: We used a dataset from a large nationwide, cross-sectional school based anonymous survey among adolescents, conducted in 2017/2018 in Norway. The analytical sample comprised 37 268 adolescents attending 8th-11th grade with valid answers on self-harm in the past year and time spent on social media. In the first step, logistic regression analysis was used to explore the bi-variate association between social media use and past year self-harm. Then, we adjusted for identified important confounders (i.e. covariates with a relative difference over 20 % for both self-harm and social media use; - depressive symptoms and alcohol use). In further analyses, we stratified on gender, age group and depressive symptoms and checked for interactions by multivariate modeling. The analysis was preregistered in Open Science Framework.
Results: A total of 16,1% of the respondents reported self-harm in the past year, the proportion being higher among girls than boys. The prevalence of self-harm varied with time spent on social media, and was particularly elevated among those spending more than 3 hours daily on social media (unadjusted OR=2.74 (CI 2.58.-2.90)). When adjusted for depressive symptoms and alcohol use OR was reduced to 1.63 (CI 1.52-1.74). The adjusted OR did not differ my gender or age (girls adjusted OR 1.56 (CI 1.44-1.69), boys 1.51 (CI 1.33-1.73, 8.th and 9.th grade (1.69 (CI 1.53-1.87), 10.th and 11.th grade 1.54 (CI 1.40-1.69)). The association between exposure to social media and self-harm was stronger among adolescents with depressive symptoms (adjusted OR = 2.19 (CI 2.04-2.36), than among those with little or no such symptoms (adjusted OR 1.61; CI 1.40-1.85)).

Discussion: Self-harm and time spent on social media were strongly related, after controlling for other well-known risk factors. The strength of the association did not vary by gender or age, but the findings suggested that adolescents with depressive symptoms are more vulnerable to intensive social media exposure with regard to self-harm risk. To this end, little is known about how and why use of social media is associated with self-harm. As most young people use social media on a daily basis, there is a need for studies to explore this issue in depth, including studies with more diverse and fine-grained measures on social media exposure. Further research may for instance explore whether some groups are particularly vulnerable to negative social media content. Furthermore, we need to know more about causation in this association; - does certain social media use lead to or facilitate self-harm among young people, or is it the other way around? Strengthening the research evidence in this area will help informing development of adequate measures to prevent self-harm in young people.

EPIDEMIOLOGY AND BRAIN ASPECTS OF SUICIDAL BEHAVIOR

Chair: Austin Gallyer

13. SUICIDE AND NON-SUICIDE MORTALITY AND ASSOCIATED RISK FACTORS AMONG SUICIDE ATTEMPTERS: A 10-YEAR FOLLOW-UP OF A LARGE COHORT IN RURAL CHINA

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Background: Suicide attempt is a strong risk factor for subsequent suicide and other cause mortality, but evidence from China is sparse. This study aims to document the rate and associated risk factors of suicide and non-suicide death and construct predictive death models in a large cohort of suicide attempters in rural China.
Methods: 1151 suicide attempters were followed with questionnaire for these individuals or their informants and linked to local cause-of-death censoring database to ascertain cause of death. Kaplan-Meier method was used to plot the survival curve and thereby obtain the cumulative rate of overall death over the corresponding period. Cumulative Incidences Function (CIF) was used to document the suicide and non-suicide mortality. Cox proportional hazard regression model was used to ascertain significant risk factors of overall death; competitive risk model was used to assess risk for suicide and non-suicide death. Predictive nomograms were constructed to predict the probability of suicide, non-suicide, and overall death. The predictive abilities of the constructed models were evaluated by the concordance indexes (C-indexes) and calibration curves.
Results: Of the 1151 suicide attempters, 1103 were successfully followed up with an average time of 7.48 years (7.38-7.57). The cumulative rates of suicide at 1, 2, 3, 5 and 10 years were 0.27%, 0.63%, 0.91%, 1.56% and 1.83%, respectively. The cumulative rates of non-suicide death at 1, 2, 3, 5, and 10 years were 0, 0.09%, 0.82%, 1.38%, and 4.43%, respectively. The cumulative rates of overall death at 1, 2, 3, 5 and 10 years were 0.27%, 0.73%, 1.72%, 2.94% and 6.25%, respectively. Factors significantly associated with subsequent suicide were elder age, history of suicide attempt and mental disorders. Significant risk factors for non-suicide death included elder age, being male and physical illness. Overall death during the follow-up period was associated with old age, male gender, physical illness, and mental disorders.

Predictive models showed good ability with satisfied C-index (between 0.77 and 0.86) and excellent calibration.
Discussion: The rate of suicide, non-suicide and overall death following suicide attempt is lower than previous studies. Male gender, elder age, physical illness, mental disorders, and history of suicide attempt have good predictive ability for specific causes of subsequent death among suicide attempter in rural China.

14. COMORBIDITY SUBTYPES IN A POPULATION-ASCERTAINED SAMPLE OF SUICIDE DEATHS

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Background: The etiology of suicide is complex. Unravelling the biological and physiological complexities contributing to suicide has been hindered by heterogeneity among cases included in epidemiologic and genetic studies. Robust and consistent associations with specific environmental and genetic risk factors may be more evident within data-driven, carefully delineated phenotypic subsets of suicide cases. Here, we access data captured in comprehensive electronic health records to 1) investigate patterns of co-occurring medical and psychiatric diagnoses, and 2) identify empirical subtypes in a population-ascertained sample of suicide deaths in Utah.
Methods: A total of 11,090 Utah suicide deaths were identified from 1996-2020 by the Utah Suicide Genetic Risk Study through collaboration with the Utah Office of the Medical Examiner. Suicide deaths were linked to the Utah Population Database, an electronic medical record repository, and International Classification of Diseases, Ninth and Tenth Revision codes (ICD9 and 10) were acquired from the electronic health records of Utah's two major healthcare systems-the University of Utah and Intermountain Healthcare. ICD9 and 10 codes were also obtained from the Utah Department of Health's Healthcare Facilities and Ambulatory Care databases. Codes were hierarchically aggregated into categories (referred to as Phecodes) based on the phenotype-wide association approach. Phecodes with ≥5% prevalence were retained and hierarchically grouped further into 22 common categories. For each suicide case, counts of the occurrence of each category were placed into three 10-year windows from first diagnosis to death creating a multi-dimensional vector. An unsupervised hierarchical clustering algorithm using Euclidean distances and Ward's method was applied to the multi-dimensional vectors to identify subtypes.
Results: A total of 9,493 suicide cases had at least one ICD9 or 10 code, and their ICD9 and 10 codes were hierarchically clustered into 1796 Phecodes. One hundred and thirty of the Phecodes had a prevalence ≥5% among decedents and were retained and collapsed into 22 different Phecode categories. The unsupervised hierarchical clustering resulted in the identification of three subtypes. The first subtype (N=7402) was characterized by a majority of male decedents (78%) with a relatively low number of overall Phecodes per suicide case (mean = 17.5, SD = 15.8) and a moderate prevalence of mental disorders (69%) with decedents exhibiting a range of physical conditions with low to moderate prevalence (e.g. 37%-49% with a digestive, respiratory, or endocrine condition). In contrast, the second subtype (N=355) had a relatively high representation of females (41%), a high average number of overall Phecodes per suicide case (mean =121.8, SD = 49), and a high prevalence of mental disorders (100%) and physical conditions (e.g. >96% with a digestive, respiratory, or endocrine condition). The

third subtype (N=1736) reflected a solution in-between subtypes 1 and 2, with 37% of the sample comprised of females exhibiting a moderate average number of overall Phecodes per decedent (mean = 59, SD = 30), and a high prevalence of mental disorders (98%) and a moderately high prevalence of physical conditions (~85% with a digestive, respiratory, or endocrine condition).
Discussion: Unsupervised hierarchical clustering identified three comorbidity suicide subtypes. Each subtype reflects reduced heterogeneity in the number and pattern of co-occurring medical and psychiatric conditions. Further genetic and epidemiologic investigations of the decedents included in each subtype may yield additional insight into unique etiological trajectories for suicide death.

15. TRAUMATIC BRAIN INJURY AND RISK OF SUBSEQUENT SUICIDE ATTEMPT

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Background: Traumatic brain injury (TBI) may cause long lasting sequelae, including psychiatric illness, and is the leading cause of disability in people under the age of 40 years. Little is known about the association between TBI and suicide attempt, and the aim was to examine this association.
Methods: In a retrospective cohort study, we used nationwide register data that covered all individuals aged 10+ living in Denmark during 1980-2016 (n=7,706,043). Of these, 587,522 individuals had a medical contact for TBI. Incidence rate ratios (IRR) for each sex were calculated by Poisson regression analyses while adjusted for relevant covariates including fractures not involving the skull, epilepsy, and psychiatric diagnoses.
Results: During follow-up 124,764 individuals had at least one suicide attempt, of which 16% were preceded by a TBI. Individuals with TBI had higher rates of suicide attempt (females IRR, 2.58; 95% CI, 2.52-2.65; males IRR, 2.79; 95% CI, 2.73-2.86) compared to individuals with no TBI in adjusted analyses. Repeated TBI was associated with higher rates of suicide attempt compared to no TBI; IRR's after ≥5 TBI contacts for females and males were 4.79 (95% CI, 3.67-6.24) and 5.74 (95% CI,5.00-6.59), respectively, compared to individuals without TBI. The first 6 month interval after last TBI diagnosis was associated with the highest rates of suicide attempt (females IRR, 4.71; 95% CI, 4.36-5.09; males IRR, 5.61; 95% CI, 5.25-5.99).
Discussion: This nationwide retrospective cohort study found higher rates of suicide attempt among individuals with hospital contact for TBI, compared with individuals without TBI. The findings suggest that preventive efforts at the time of or soon after TBI diagnosis may help mitigate a trajectory towards suicidal behaviour.

16. DELAY DISCOUNTING IN SUICIDAL BEHAVIOR: MYOPIC PREFERENCE OR INCONSISTENT VALUATION?

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Background: Prior research has sought to explain the predisposition to suicidal behavior in terms of a myopic preference for immediate over delayed rewards (increased delay discounting), generating mixed evidence. This ambiguity may be due to the fact that studies of delay discounting assume that a true consistent preference for immediate reinforcers constitutes a stable pathological trait. However, empirical evidence from studies of value-based choice using gambling and bandit paradigms suggests that individuals prone to suicidal behavior may engage in suboptimal decision-making due to a failure to consistently estimate the value of available choice options. An additional reason for inconsistent findings in prior studies of delay discounting may be statistical, which stems from relying on the approaches for estimating individual discount rates that do not propagate uncertainty from the within-subject level to the between-subject level and fail to regularize individual estimates by data from the group, yielding unrealistically extreme values in inconsistent subjects. The present study introduced a multi-level modeling method intended to overcome these limitations to examine whether predisposition to suicidal behavior is better explained by 1) an excessive focus on short-term outcomes or by 2) a general failure to consistently estimate the value of available options.
Methods: These two competing hypotheses were tested using a delay discounting task in 622 adults (suicide attempters with depression, suicide ideators with depression, nonsuicidal participants with depression, and healthy controls) recruited across three sites through inpatient psychiatric units, mood disorders clinics, primary care, and advertisements.
Results: Multi-level models revealed group differences in valuation consistencies in all three samples, with high-lethality suicide attempters exhibiting less consistent valuation than all other groups in Samples 1, 3 and less consistent valuation than the healthy controls or participants with depression in Sample 2. In contrast, group differences in preference for immediate versus delayed rewards were observed only in Sample 1 and were due to the high-lethality suicide attempters displaying a weaker preference for immediate rewards than low-lethality suicide attempters. The findings were robust to confounds such as cognitive functioning and comorbidities.
Discussion: Our findings suggest that inconsistent valuation rather than a true preference for immediate gratification is part of vulnerability to suicidal behavior. These results have implications for the understanding of real-life decision-making during a suicidal crisis suggesting that it is the noisy (rather than strategic) decision-making that undermines the consideration of deterrents, such as the effects of one's suicide attempt on family members, and the benefits of alternative solutions. Clinically, these findings suggest that interventions that take place during the moments of suicidal ambivalence (i.e., when the values of suicide versus alternative options are close to each other and the individuals drift toward or away from these competing options in order to make a decision) and focus specifically on enhancing deterrents, reinforcing alternative solutions, and deferring the final decision can be particularly effective for suicide prevention.

17. EXAMINING BLUNTED INITIAL RESPONSE TO REWARD AND RECENT SUICIDAL IDEATION IN CHILDREN AND ADOLESCENTS USING EVENT-RELATED POTENTIALS: FAILURE TO CONCEPTUALLY REPLICATE ACROSS TWO INDEPENDENT SAMPLES

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Background: Suicide is a growing problem among children and adolescents, as it is the second leading cause of death for children and adolescents between 10 and 19 years of age (National Center for Health Statistics, 2018). Suicide is thought to be partially the result of differences in neural functioning (Mann and Rizk, 2020). Specifically, recent work has indicated that reward processing may be implicated in suicidal ideation (SI) in children. A recent study by Tsypes and colleagues (2019) found that an event-related potential (ERP), called the reward positivity (RewP), was reduced in children who had recent SI compared to controls. However, a recent meta-analysis of the relationship between suicidal thoughts and behaviors and ERPs found that the majority of this literature is severely underpowered (Gallyer et al., 2020). Moreover, given evidence for developmental changes in the RewP (Burani et al., 2019), it is important to determine whether Tsypes and colleagues findings can be replicated in slightly older samples. In the present study we collected two samples of children and adolescents to determine whether children with recent SI had blunted reward processing as measured by the RewP, compared to controls.
Methods: Our methods mirrored, as closely as possible, those by Tsypes and colleagues. Our first sample consisted of 275 children and adolescents, who ranged from 11 to 14 years old. Our second sample consisted of 325 child and adolescent females who ranged from 8 to 15 years old. In this second sample, a second wave of data was collected two years later, with 235 participants completing the second wave. Participants completed the doors reward task while undergoing EEG recording to measure the RewP. We used item 9 of the CDI and the K-SADS-PL interview to assess recent SI, and participants who endorsed SI on one or both of the measures were categorized as having recent SI. Across our first sample and both waves of our second sample, we conducted 2x2 mixed measures ANOVA, with Wins vs. Loss (trial type) and recent SI vs. no recent SI (group) as factors. We also conducted equivalence tests, to determine whether there was evidence for no effects.
Results: In our first sample, there was no independent effect of group ($F[1, 262] = 1.66$, $p = .200$) or interaction between group and trial type ($F[1, 262] = 0.08$, $p = .773$). Our equivalence test in the first sample did not find evidence that the effect is effectively zero ($p > .05$). Wave 1 of our second sample we did not find evidence of a main effect of group ($F[1, 309] = 1.11$, $p = .293$), or an interaction between group and trial type ($F[1, 309] = 1.11$, $p = .294$). In wave 2, there was again no evidence of a main effect or an interaction between group and trial type. Equivalence tests for both waves did not find evidence that the effect is effectively zero ($p > .05$).
Discussion: Our results did not conceptually replicate the study by Tsypes and colleagues. Our results suggest that while we did not find an effect in our two samples, there may be an effect that is even smaller than our larger samples were able to detect. The implications and future directions of this research will also be presented.

18. TEENS FEASIBILITY TRIAL: INTERNET-BASED INTERVENTION FOR SELF-INJURY

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Background: Non-suicidal self-injury (NSSI) prevalence and incidence are difficult to estimate due to highly heterogeneous studies, populations and assessment tools. However, the phenomena have gained increased research attention since this behavior has disseminated dramatically especially in young persons. The definition of non-suicidal self-injury excludes self-injury with
suicidal intent, but though there is a difference in ethology, non-suicidal self-injury is among the most important predictors for later suicidal behavior. There is evidence of dialectical behavioral therapy (DBT) to NSSI engaging patients; however, this a resource demanding treatment often provided selected groups of self-harming adolescents. Specific treatment for non-suicidal self-injury is needed and short-term programs online for adolescents have been suggested. Patients with stigmatizing illness such as non-suicidal self-injury may find internet-based interventions more acceptable. Aim: To assess the feasibility of methods, procedures, and safety of internet-based Emotion Regulation Individual Therapy for Adolescents (ERITA) added to treatment as usual (TAU) compared to TAU alone in 13-17-year-old patients with non-suicidal self-injury referred to psychiatric services.

Methods: A feasibility trial including a randomization procedure in a parallel group design. During May to October 2020, patients were recruited from Child- and Adolescent Mental Health Outpatient Services (age 13 to 17 years) and assessed eligible if they had had > 5 episodes of non-suicidal self-injury the past year and one episode the past month. The experimental intervention was internet-based, and therapist guided; ERITA consists of online ERITA as an 11-week program as add-on to treatment as usual. The program consists of manualized online therapy based on the methods of acceptance and behavioral therapy with elements from cognitive behavioral therapy (CBT) and DBT. Modules are ranging in content from psychoeducation, through awareness training, control and regulation of impulses and emotions by acceptance and validation. The intervention also provides six modules for the parents' involvement focusing on information about non-suicidal self-injury and other risk-taking behaviors, emotional awareness, effective communication skills (e.g. validation). Treatment as usual was provided by multidisciplinary teams in nine outpatient clinics within Child and Adolescent Mental Health Services in the Capital Region of Denmark.

Results: The trial (n=30) was assessed feasible with 53% of the referred patients proceeding to randomization. The trial obtained a follow-up rate of 90% at end of intervention (12 weeks) and 87% of the participants completed more than six of eleven ERITA modules; results of the explorative clinical outcomes will be available to present by October 2021, at the conference. A Qualitative TEENS study exploring the participants experiences with online therapy is conducted during spring 2021; for which results will also be available by October 2021.

Discussion: Internet-based intervention for self-injurious behaviour is a new treatment initiative in Child and Adolescent Mental Health Services in Denmark. Based on findings in this feasibility study we find it safe and feasible to conduct a definitive large-scale trial in a muliti-site design.

PATHWAYS TO SUICIDE

Chair: Steven Stack

19. EARLY PREDICTORS OF SUICIDALITY IN A LONGITUDINAL STUDY OF YOUTH IN FOSTER CARE

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Background: Youth in foster care are significantly more likely than their same-age peers to engage in suicidal behaviors, likely due to the fact that these youth are at the center of a constellation of empirically-supported risk factors, including experiences of maltreatment, caregiver and school instability, and high rates of mental illness. Although concurrent correlates of suicidality among this population have been examined, no known studies have conducted a longitudinal examination of early risk and protective factors. This study sought to identify factors at entry to care during preadolescence that were associated with a lifetime history of suicidality as reported in young adulthood.

Methods: The Fostering Healthy Futures (FHF) study enrolled racially and ethnically diverse children, ages 9-11, who had recently entered foster care. For the current study, 215 were re-interviewed (88% retention rate) when they were between the ages of 18 and 22. At baseline, youth and their caregivers were interviewed about children's psychosocial functioning and their child welfare records were abstracted and coded. In young adulthood, participants were asked about their lifetime history of non-suicidal self-injury (NSSI), suicidal ideation, plans and attempts. Baseline demographic characteristics, child welfare/family factors, and school and mental health factors were then examined as possible bivariate predictors of suicidality. Multivariate models examined the association of modifiable factors over and above baseline reports of suicidality, demographic and child welfare/family factors.

Results: A quarter of the sample endorsed one or more indicators of suicidality, with a higher proportion of females (33.3%) than males (20.2%) reporting lifetime prevalence. Bivariate associations indicated that being American Indian, having experienced sexual abuse or moral-legal maltreatment and having more caregiver instability were associated with greater suicidality. Mental health problems, as reported both by youth and their caregivers, bivariately predicted greater suicidality, but higher self-esteem, school attachment and life satisfaction appeared to lower the risk. In multivariate models, somatic complaints, school attachment and life satisfaction predicted lifetime suicidality over and above baseline suicidality, demographic factors, and child welfare/family factors.

Discussion: Given the higher risk of suicidality among youth with foster care experience, it is important to identify early risk and protective factors, especially modifiable ones. This study demonstrated that key variables, measured an average of 10 years prior, predicted young adult reports of suicidality over and above the control variables. These included caregiver reports of children's somatic symptoms (i.e., excessive thoughts, feelings and behaviors related to physical symptoms) and child self-report of being attached to one's school and having greater life satisfaction. Interestingly, depression or anxiety did not predict suicidality above the control variables. The implications for identification of children at risk, as well as opportunities for intervention, will be discussed.

20. FINANCIAL STRAIN AS A PATHWAY TO SUICIDE AMONG DIVORCED MALES

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Background: Persons undergoing a divorce are typically 2 to 4 times more apt to die by suicide than their married counterparts (e.g., Kyung-Sook, et al., 2018; Stack and Scourfield, 2015; Yip et al., 2015). However, essentially no rigorous work has been done on what distinguishes the suicides of the divorced from the suicides of the married. This paper assesses the extent to which 32 socio-psychiatric predictors of suicide are able to differentiate between the suicides of divorced and married persons. The focus is on financial strain. Divorce often has serious financial consequences and often involves supporting two households on about the same pre divorce income (Chiappori et al., 2018; De Regt, et al., 2012; Mortelmans, et al., 2018). The present study tests the hypothesis that financial strain may be more of a driver of suicide among the divorced than suicide among the married.
Methods: Data are from the National Violent Death Reporting System (NVDRS). They refer to the years 2003-2006 (Centers for Disease Control, 2008). Data are from a variety of sources including county coroner and medical examiner reports, death certificates, police reports, hospital reports, child fatality reviews, police reports, and abstractor reports. The analysis is restricted to non-Hispanic White males. Complete data were available for 12,019 male suicides. The dependent variable is a dichotomy where 1=suicide of a divorced person and 0=suicide of a married person. Eight binary variables (0,1) measured the presence of stressful life events wherein the respondent was reportedly distressed over financial strain (e.g., bankruptcy), intimate partner problem, other relationship problem, legal problem (e.g., child support payments), death of a significant other, job problems, and a physical health issue, and a recent crisis of any kind in the last two weeks of life. Twelve dichotomous psychiatric controls were included including reported substance abuse, depression, suicide ideation, and suicide of a significant other. Demographic controls includes age and urban vs. non-urban resident. Additional controls were entered into the analysis for type of suicide method. For further details on measures, see CDC, (2008) and Stack and Rockett (2018). Given that the dependent variable is a dichotomy, logistic regression analysis is appropriate (Pampel, 2000).
Results: The results of a multivariate logistic regression analysis confirmed the hypothesis. The results show that adjusting for the possible social strain, psychiatric constructs, and demographics, divorced males were 1.31 (CI: 1.16, 1.48) times more apt than married males to report financial strain. Other than the two substance abuse measures, the psychiatric variables, as well as all variables measuring method of suicide, did not distinguish between the divorced and married males' suicides. However, divorced males were more apt to report legal problems than married males. The model explained 8.1% of the variance in male suicides.
Discussion: While both divorce and financial strain have been linked to risk of suicidality, no study has explored if financial strain may be linked more strongly to some marital status groups than others. The present study fills this gap. After adjusting for a wide variety of social and psychiatric covariates of suicide, financial strain successfully differentiated suicides of the divorced from those of the married. Future research is needed to further explore other factors that distinguished suicides of divorced from the married (e.g., legal strain, intimate partner problems). The results can inform risk assessment protocols for suicide prevention in divorced populations.

21. TRAJECTORIES OF SUICIDAL THOUGHTS AND BEHAVIORS IN EARLY PSYCHOSIS: A FIVE-YEAR PROSPECTIVE STUDY OF A CANADIAN COHORT

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Background: People with psychotic disorders are at high risk of suicide, especially in the early stages of illness. The 10-year suicide rate of patients with first-episode psychosis (FEP) is 2.6%, more than 18 times higher than that of the general population. A Danish study identified three trajectories of suicidal ideation in persons with first-episode schizophrenia-spectrum psychosis (low, decreasing; frequent, persistent and frequent, increasing), thus highlighting heterogeneity in the evolution of suicidal risk in persons with FEP. No study has identified the trajectories of suicide attempts in persons with FEP. This study aims to describe prevalence and trajectories of suicidal ideation and suicide attempts in a Canadian sample of patients with FEP.
Methods: A five-year prospective study of 567 people with FEP admitted between 2005 and 2013 to two early intervention for psychosis programs in Montreal (Quebec, Canada). At admission and annually, suicidal ideation and suicide attempts were assessed through interviews and chart audit. Latent Growth Mixture Modeling analysis was used to identify five-year trajectories of suicidal ideation and suicide attempts.
Results: Prior to entering the early intervention for psychosis programs, 35% of persons with FEP previously had suicidal ideation and 8.3% had made a previous suicide attempt. At the time of admission, 14% reported having suicidal ideation and 1.5% had attempted suicide. More than 80% of patients with FEP experienced a decrease in suicidal ideation and suicide attempts over the five-year follow-up. A small minority of patients have persistent or increased suicidal ideation during follow-up.
Discussion: Although the majority of patients experience a decrease in suicidal ideation and suicide attempts during follow-up, a small proportion of patients with FEP show persistent suicidal ideation and behaviors. As suicidal ideation and suicide attempts are the most important risk factors for suicide, it is of clinical importance to target and intervene early with these patients to prevent death by suicide. Further studies should focus on factors that are associated with different trajectories of suicidal thoughts and behaviors.

22. SUICIDE IN REFUGEES IN SWEDEN AND NORWAY: DOES COUNTRY OF RESETTLEMENT INFLUENCE SUICIDE RISK IN REFUGEES?

Ridwanul Amin*[1], Ellenor Mittendorfer-Rutz[2], Lars Mehlum[3], Bo Runeson[2], Magnus Helgesson[2], Petter Tinghög[4], Emma Bjorkenstam[2], Emily Holmes[5], Ping Qin[3]

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Background: Little is known regarding the risk of suicide in refugees according to their country of birth, and how this relates to their host country. Specifically, to what extent, inter-country differences in structural factors between the host countries may explain the association between refugee status and subsequent suicide is lacking in previous literature. We aimed to investigate 1) the risk of suicide in refugees resident in Sweden and Norway, in general over a 20 year period, and according to their sex, age, region/country of birth and duration of residence, compared with the risk of suicide in the majority population in the respective host country; 2) if factors related to socio-demographics, labour market marginalisation (LMM) and healthcare use might explain the risk of suicide in refugees differently in host countries (Sweden and Norway).
Methods: Using a nested case-control design, each case who died by suicide between the age of 18-64 years during 1998 and 2018 (17,572 and 9,443 cases in Sweden and Norway,

respectively) was matched with up to 20 controls from the general population, by sex and age. Multivariate adjusted conditional logistic regression models yielding adjusted odds ratios (aORs) with 95% confidence intervals (95% CI) were used to test the association between refugee status and suicide. Separate models were controlled for factors related to socio-demographics, previous LMM and healthcare use. Analyses were also stratified by sex and age groups, by refugees' region/country of birth and duration of residence in the host country.
Results: The aORs for suicide in refugees in Sweden and Norway were 0.5 (95% CI: 0.5-0.6) and 0.3 (95% CI: 0.3-0.4), compared with the Swedish-born and Norwegian-born individuals, respectively. Stratification by region/country of birth showed similar statistically significant lower odds for most refugee groups in both host countries except for refugees from Eritrea (aOR 1.0, 95% CI: 0.7-1.6) in Sweden. The risk of suicide did not vary much across refugee groups by their duration of residence, sex and age except for younger refugees aged 18-24 who did not have a statistically significant relative difference in suicide risk than their respective host country peers. Factors related to socio-demographics, LMM and healthcare use had only a marginal influence on the studied associations in both countries.
Discussion: Compared with the majority host populations in Sweden and Norway, refugees in both countries had almost similar suicide mortality advantages. Although, on the aggregate levels, refugees in Norway appeared to have a mortality advantage regarding the risk of suicide over refugees in Sweden, such differences were not detectable for specific countries of birth in Sweden and the same group in Norway. These findings may suggest that resiliency and culture/religion-bound attitudes towards suicidal behaviour in refugees could be more influential for their suicide risk after resettlement than other post-migration environmental and structural factors in the host country.

23. SUICIDE AS AN INCIDENT OF SEVERE PATIENT HARM – A RETROSPECTIVE COHORT STUDY OF INVESTIGATIONS AFTER SUICIDE IN SWEDISH HEALTHCARE IN A 13-YEAR PERSPECTIVE

Elin Fröding*[1], Åsa Westrin[2], Boel Andersson Gäre[1], Axel Ros[1]
[1]Jönköping University, [2]Lund University Hospital

Background: A large proportion of the individuals who die from suicide have contact with healthcare close in time before their deaths. This suggests that healthcare professionals could play an important role in suicide prevention.
In an effort to understand whether failures in any area of the healthcare system have contributed to suicide, and in an attempt to improve suicide-prevention, all suicides that occurred among patients who were receiving healthcare or were in contact with healthcare services within the four weeks preceding the event, were mandatory to be investigated and reported to the supervisory authority by the healthcare provider in Sweden in 2006-2017.

The objective of this study was to explore how mandatory reporting of suicide cases as incidents of potential patient harm has influenced the investigations of healthcare systems. To perform this, a 13-year perspective was adopted, and the lessons and possible improvements for patient safety regarding suicide prevention were examined.

Methods: This was a retrospective study of reports from Swedish primary and secondary healthcare to the supervisory authority after suicide. Three cohorts of reported suicide cases, each from a different time period (2006-2007, 2015 and 2017-2019), were chosen for analysis, n=1031.Demographic data and received treatment in the months preceding suicide were

registered. Reported deficiencies in healthcare and actions were categorized by using a coding scheme, analyzed per individual and aggregated per cohort. Separate notes were made when a deficiency or action was related to a healthcare-service routine.
Results: Demographic data for the suicide cases showed similarities across the cohorts, with a dominance of men and a majority of cases reported by psychiatric care. One-fourth of the cases died from suicide within one day of their last contact with a healthcare professional; half of the cases died from suicide within 2-4 days of their last contact. The investigations largely adopted a microsystem perspective, focusing on final patient contact, throughout the overall study period. Updating existing or developing new routines as well as educational actions were increasingly proposed over time, while sharing conclusions across departments rarely was recommended.
Discussion: The similarity of investigation outcomes over the years, suggests that the investigations were adapted to suit the structure of the authority report rather than specific incidents, and imply that no new service improvements or lessons are being identified.
The suicide rate in Sweden has not shown any obvious decline since the reporting of all suicide cases became mandatory, and the healthcare-service deficiencies highlighted in these reports as being of significance continue to occur. In other words, despite several thousand investigations into healthcare performance prior to suicides over the last few decades, aimed at identifying actions to improve healthcare for patients with suicidal tendencies, the same contributing factors remain. This suggests that the actions taken to date have not been sufficient.

The mandatory reporting of suicides as potential cases of patient harm was shown to be restricted to information transfer between healthcare providers and the supervisory authority, rather than fostering participative improvement of patient safety for suicidal patients. To develop more sophisticated infrastructures for investigation, learning, and information-sharing, it is necessary to learn more about preconditions and complexity in the analysis of suicides and the suicidal process.

A shift in investigations' recommendations and reports should be encouraged, to also include learning from successfully treated and resolved suicide-related crises.

24. ASSOCIATION OF HOSPITAL-DIAGNOSED SLEEP DISORDERS WITH SUICIDE: A NATIONWIDE COHORT STUDY

Nikolaj Høier*[1], Trine Madsen[2], Adam Spira[3], Keith Hawton[4], Michael Eriksen Benros[2], Merete Nordentoft[5], Annette Erlangsen[1]

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Background: Sleep disorders and psychiatric disease are closely related, and psychiatric diseases are associated with elevated suicide risks. Yet, the association between sleep disorders and suicide remains to be assessed using a consistent measure of sleep disorders, such as physician diagnoses. The aim of this study was to examine whether people with a hospital-diagnosis of sleep disorders had higher suicide rates than people with no diagnosis while adjusting for a variety of confounders.

Methods: Using a retrospective cohort design, national data on all persons aged 15 years and over who lived in Denmark during 1980-2016 (males: 3,674,563, females: 3,688,164) were obtained. People with sleep disorders were identified using ICD-8 and ICD-10 diagnoses given during admission to or ambulant care at somatic hospital. Suicide deaths were identified in the Danish Cause of Death register. Incidence Rate Ratios were obtained using Poisson regressions while adjusting for an extended range of covariates, including socio-economic status and previous self-harm.
Results: Out of 23,927 male and 11,556 female suicide deaths, 299 and 117 had been diagnosed with a sleep disorder, respectively. Males with sleep disorders had a suicide rate of 47.4 (95% CI, 42.0-52.7) per 100,000 person-years compared to 29.9 (95% CI, 29.5-30.3) among those with no sleep disorders. For females the respective rates were 42.3 (95% CI, 34.7-50.0) versus 13.9 (95% CI, 13.6-14.1). An adjusted IRR of 1.6 (95% CI, 1.4-1.7) and 2.2 (95% CI, 1.8-2.6) was noted among males and females with sleep disorders, respectively, when compared to those with no disorders. Excess rates were noted with respect to insomnia, narcolepsy and, in males, sleep apnea. A difference with respect to age and sex was observed ($p<0.001$). Furthermore, IRRs of 4.1(95% CI, 3.1-5.5) and 7.0 (95% CI, 4.8-10.1) were noted for males and females, respectively, during the first 6 months of diagnosis when compared to those not diagnosed. The association between sleep disorders and suicide remained significant when adjusting for psychiatric disorders and previous suicide attempts, although those with psychiatric disorders also had elevated rates, particularly amongst females.
Discussion: In this study, individuals with sleep disorders had an increased suicide rate when compared to those with no sleep disorders. Higher suicide rates were found for individuals suffering from narcolepsy, insomnia, and sleep apnea. More attention towards risks of suicide among people with sleep disorders might be needed and early detection and treatment of sleep disorders such as CBT for insomnia may facilitate suicide prevention in this population.

Monday, October 25, 2021

10:45 AM - 12:15 PM

CORRELATES OF SUICIDAL BEHAVIOR AT DIFFERENT AGES

Chair: Margda Waern

25. ATTENTION CONTROL AND ITS ASSOCIATION TO SUICIDAL BEHAVIOR ACROSS THE LIFESPAN

John Keilp*[1], Sean Madden[2], Jacki Tissue[2], Hanga Galfalvy[3], Jeffrey Bridge[2], Ainsley Burke[1], John Mann[1], Katalin Szanto[4]

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Background: Objective: Measures of attention control using Stroop tasks reliably discriminate depressed suicide attempters. Mild deficits on these tasks may run in families. Different formats of this paradigm have been used across studies, including standard cognitive versions

as well as those using emotional words as distractors. It is unclear which are most effective or best for clinical translation

Methods: Methods: The AFSP Lifespan Study examined neurocognitive performance in healthy volunteers (HC), depressed past suicide attempters (ATT), and depressed non-attempters (NA) across an age range from 16-80. A Blocked-trial version of the standard cognitive Stroop (with different conditions in different runs), a Mixed-trial version (conditions mixed in a single run), and an Emotional-stimulus version (mixture of neutral, positive, negative, and suicide-related words) were administered to ATT (n=102), NA (n=94), and HC (n=93). Reaction times for all conditions were recorded, and interference scores computed for all tasks.

Results: Results: Normatively adjusted reaction times reliably discriminated ATT from other groups on the Blocked ($F[2,272]=8.56$, $p<.001$), Mixed ($F[2,274]=8.70$, $p<.001$), and Emotional ($F[2,276]=15.64$, $p<.001$) tasks. Differences were independent of depression severity. Normatively adjusted interference measures did not discriminate suicide attempters across the entire lifespan, due to age effects on group differences that diminished in old age. Interference measures discriminated best in higher lethality past attempters under age 55 for the Blocked-trial standard version ($F[3,191]=4.84$, $p=.003$).

Discussion: Conclusions: Slowed response times on these Stroop tasks discriminated past suicide attempters across the lifespan. Interference measures did not work well at older ages, when both overall response times and variability increase. Below age 55, standard Blocked trial administration discriminated high lethality attempters, as in past studies. Straightforward measures of complex reaction time, even in the absence of specific interference conditions, may function as screening measures of reduced cognitive control. Strengths and limitations of paradigms relying on response time difference scores in clinical settings will be discussed.

26. A NATIONAL REGISTER-BASED STUDY ON SUICIDE IN ADULTS AGED 75+ LIVING IN LONG-TERM CARE FACILITIES: ASSOCIATIONS WITH USE OF PSYCHOACTIVE MEDICATIONS AND HOSPITAL CARE

Khedidja Hedna[1], Johan Fastbom[2], Mattias Jonsson[3], Ingmar Skoog[3], Katarina Wilhelmson[3], Margda Waern*[3]

[1]Statistikkonsulterna AB, [2]Karolinska Institute, [3]The Sahlgrenska Academy at University of Gothenburg

Background: The literature on use of psychoactive medication and suicide in long term care facilities (LTCF) is sparse. The aim was to investigate psychoactive medication use and risk of suicide in LTCF residents aged 75 and above. A second aim was to investigate associations with hospital/specialist care for a) psychiatric conditions and b) medical conditions and suicide in LTCF residents.

Methods: A Swedish national register-based cohort study of LTFC residents aged ≥75 years between 1 January 2008 and 31 December 2015, and followed until 31 December 2016 (N=288 305). Fine and Gray regression models were used to analyse associations with suicide.

Results: The study identified 110 suicides (64 men and 46 women, corresponding to an incidence rate of 32 per 100,000 person-years in men, and 9.3 per 100,000 person-years in women). Overall, 54% of those who died by suicide were on hypnotics and 45% were on antidepressants. The adjusted sub-hazard ratio (aSHR) for suicide was elevated more than two-fold in those who were on hypnotics (2.20, 1.46 - 3.31). Suicide risk was decreased in those who were on antidepressants, even after the exclusion of residents who had healthcare contacts

for dementia or were on anti-dementia drugs (aSHR 0.64, 95% confidence interval 0.42 - 0.97). While hospital care or specialized outpatient care for depression was associated with increased risk (aSHR 2.65, 95% confidence interval 1.53 - 4.58), such care for medical morbidity was not (aSHR 0.69, 95% confidence interval 0.47 - 1.01). Suicide risk was particularly elevated in those with an episode of self-harm up to 5 years before LTCF admittance (15.78, 10.01 - 24.87).
Discussion: Given the rarity of suicides, the register approach provides a useful context to examine clinical factors associated with suicide in LTCF. However, it is likely that some persons living in the LTCF setting were misclassified as living in the community, as the quality of LTCF data was not optimal during the beginning of the observation period. Medical morbidity was not associated with suicide in the LTCF setting but use of hypnotics was. Use of antidepressants was associated with decreased risk of suicide. More can be done to improve mental health and decrease suicide risk in LTCF residents.

27. SUICIDE IN OLDER ADULTS IN RURAL CHINA: DIFFERENCES BETWEEN THE YOUNG-OLD AND OLD-OLD

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[1]Xiangya School of Public Health, Central South University, [2]Guangxi Medical University, [3]School of Public Health, Shandong University, [4]Shenzhen Kangning Hospital, [5]The Affiliated Brain Hospital, Guangzhou Medical University

Background: Late-life suicide in rural China is vital mental health and public health problem. While suicide rates have decreased dramatically in China, older people increasingly contribute to the overall burden of suicide. Suicide rates varied across age groups among older adults in rural China. Despite different age-specific risk patterns, most studies investigating risk factors for late-life suicide considered old adults aged 60 over as a homogeneous group. Studies exploring age-specific characteristics or risk factors of suicide and suicidal behaviors in older adults were scarce. Therefore, the study's objective was to describe and compare the characteristics between young-old (<75) and old-old (≥75) suicide cases and explore risk factors of suicide in these two age groups using a case-control psychological autopsy study in rural China.
Methods: The study was conducted in four rural areas from Shandong, Hunan, and Guangxi province in China from June 2014 to September 2015. A total of 242 (108 young-old and 134 old-old) suicides of individuals aged 60 and above were included. 242 living controls matched in age (±3 years), gender, and living location were randomly selected with a 1:1 matched case-control design. Trained fieldworkers conducted psychological autopsy interviews and psychological assessments with two informants for each suicide and living control. We collected data on suicide methods, time, location, previous suicide attempts, family history of suicide, and suicide intent among suicide cases. In addition, we collected information on social demographics and living arrangements, psychological factors, life events, physical health, and mental disorders for both suicides and living comparisons.
Results: Young-old suicides had more pesticide storage than old-old suicides (63.89% vs. 43.28%). More old-old suicides were non-currently married (66.42% vs. 28.70%), living alone (32.84% vs. 18.52%), but fewer being left behind (11.94% vs. 23.15%) than young-old suicides. Old-old suicides had severer disabilities in daily living function than the young-old. There were no significant differences in suicide time, location, previous attempt, family history, or suicide intent between young-old and old-old suicides.

In univariate analysis, non-currently married, living alone, depressive symptoms, higher levels of hopelessness, loneliness, impulsivity, lack of social support, more inferior quality of life, worse family function, severer disability of daily living function, more stressful life events, more physical diseases, severer effects of physical illnesses, and mental disorders associated with completed suicide among both young-old and old-old adults. Unemployment, being left-behind, and conflicts with their spouse were only associated with a higher risk of suicide among young-old adults, but not for the old-old adults. While for old-old adults, spouse death and conflicts with adult children affected more. Variables that remained in the multivariable model for both young-old and old-old adults were depressive symptoms and hopelessness. Mental disorders remained the risk factors of suicide only for old-old adults.

Discussion: Although the suicide rate in old-old adults was much higher than in young-old adults, most risk factors of suicide among these two age subgroups in rural China were similar. Depressive symptoms and hopelessness remained the two main risk factors of suicide among both young-old and old-old adults. Comprehensive preventions based on screening and management of depressive symptoms and hopelessness are urgently needed. Age-specific risk factors should also be noted to identify high-risk individuals and develop age-tailored prevention strategies.

28. ASSOCIATIONS OF AGE AT MENARCHE WITH SUICIDE ATTEMPTS AND NON-SUICIDAL SELF-INJURY: THE MODERATING ROLE OF IMPULSIVITY

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Background: Although suicide is the second leading cause of death for adolescents, suicidal behaviors are rare prior to age 10 (Nock et al., 2013). Causes for the abrupt increase in suicide risk from childhood to adolescence remain unclear. In order to reduce adolescent mortality rates, it is critical to understand how the developmental transitions of adolescence might increase risk for suicide and nonsuicidal self-injury (NSSI) and identify those most vulnerable to these effects.

Age at menarche is one key developmental factor that may have unique relevance to suicide risk. Several studies indicate that adolescents who reach menarche earlier are more likely to engage in self-injurious behavior (e.g. Roberts et al., 2019). Some theoretical models conceptualize early menarche as a stressor within a diathesis-stress framework (for review, see Ge and Natsuaki, 2009) and suggest that early menarche may amplify the relationship between trait-level risk factors and the development of psychopathology. In accord with these hypotheses, we examined whether age at menarche would moderate the relationship between one well-established risk factor, impulsivity, and suicidal behavior and NSSI. We predict that impulsivity will be associated with the greatest risk for suicide attempts and NSSI only among those adolescents who experienced early menarche.

Methods: Recruited participants were 165 female adolescents (age M = 14.59) who experienced at least one mental health concern in the two years prior to study recruitment. Semi-structured clinical interviews were used to assess lifetime history of suicide attempts and

NSSI (SITBI; Nock et al., 2007). Impulsivity was assessed using items from the UPPS Impulsive Behavior Scale (Whiteside and Lynam, 2001). For age at menarche, parent report (year and month) was prioritized to ensure greatest precision, consistent with prior studies (Biro et al., 2018). Two binomial logistic regression analyses were conducted to measure the interactive effects of age at menarche and impulsivity on the likelihood of lifetime suicide attempts and engagement in NSSI, controlling for abuse history, age, race, and maternal education.

Results: Consistent with hypotheses, there was a significant two-way interaction between age at menarche and lack of premeditation. At early age at menarche, impulsivity was positively associated with suicidal behavior; at average or late ages at menarche, the association was not significant. In contrast, the interaction between impulsivity and age at menarche was not significantly associated with engagement in NSSI or suicidal ideation, suggesting that early menarche may uniquely amplify the relationship between impulsivity and suicide attempts.

Discussion: In response to to recent reviews calling for multivariate, developmentally-informed models of risk, this study advances the literature by examining the impact of an understudied developmental factor, age at menarche, on the relationship between impulsivity and suicide attempts in high-risk adolescents. This study improves upon existing research of the effects of age at menarche on broad measures of self-harm by utilizing a gold-standard semi-structured clinical interview to uniquely assess suicidal behavior and NSSI and clarify unique risk factors for each. Given that this interaction effect appears to be uniquely associated with risk for suicide attempts, these results may have promising implications for the targeted assessment of suicide risk in adolescence. These results suggest that brief self-report measures of age at menarche and impulsivity may provide clinicians with vital information about an adolescent's suicide risk to help them identify those most in need of intervention.

29. ASSOCIATION OF FRAILTY AND SUICIDE IN ADULTS 65 YEARS AND OLDER

Randall Kuffel*[1], Ruth Morin[2], Kenneth Covinsky[3], W. John Boscardin[4], Yixia Li[1], Amy Byers[4]

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Background: Late life medical and psychiatric comorbidity is associated with increased risk of suicide attempt. Approximately 170,000 adults aged 65 years and older died by suicide in 2016 globally. In the United States alone, nearly 10,000 adults aged 65+ die by suicide every year. Although prior studies have linked individual diagnostic factors to late-life suicide risk, none have examined how an accumulation of health burden over a lifetime affects suicide risk. Given 70% of US older adults have comorbid chronic conditions, a life course approach capturing an accumulation of deficits could integrate a wide range of health factors related to quality of life. This concept could be implemented using a metric such as frailty, a measure of accumulated physical and mental health burden. Our primary objective was to determine the relationship of frailty to risk of suicide attempt in a large US national cohort of patients aged 65+.

Methods: We conducted a longitudinal cohort study with all US veterans aged 65+ who used Veterans Affairs (VA) healthcare services during FY 2012-2013 (study baseline) with follow-up through 12/31/2017 (N=2,858,876). We linked national databases for VA and Medicare

inpatient and outpatient services and suicide data, including non-fatal suicide attempts and suicide death information and dates.

To study the role of frailty in late-life suicide, we used a cumulative deficit method and frailty index (FI) developed by Orkaby et al. (2019). This index integrates 31 variables (deficits) from healthcare administrative data. Deficits relate to morbidity (e.g., diabetes), functional status (e.g., falls), cognition/mood (e.g., dementia), sensory loss (e.g., blindness), and other geriatric conditions (e.g., chronic pain). FI scores were calculated by summing the number of accrued deficits then dividing by 31, producing scores from 0 to 1. We defined non-frail as $FI \leq 0.1$, pre-frail as $0.1 < FI \leq 0.2$, mildly frail as $0.2 < FI \leq 0.3$, moderately frail as $0.3 < FI \leq 0.4$, and severely frail as $FI > 0.4$.

Cumulative incidence of any suicide attempt based on age of attempt was plotted by severity of frailty. We examined the relationship of frailty and risk of suicide attempt (fatal and non-fatal) over time in multivariable models. Fine-Gray proportional hazards regression was used to examine time to outcome, accounting for risk of other death. Models were adjusted in steps for socio-demographics and socio-demographics + substance use disorders (SUDs) and posttraumatic stress disorder (PTSD).

Results: Our sample's average age was 75 (SD 8), 88% White, 9% Black, and 98% male. Thirty-seven percent of veterans were non-frail, 30% pre-frail, 17% mildly frail, 9% moderately frail, and 7% severely frail. Over the course of the study, 9,043 veterans had a documented suicide attempt with >60% dying by suicide. After full model adjustments, risk of suicide attempt increased with severity of frailty: Hazard ratios rose from 1.37 (95%CI: 1.30-1.45) for pre-frail to 1.57 (1.43-1.72) for severely frail individuals. The frailty domains of cognition, mood, chronic pain, weight loss, and functional status had the largest impact on risk. We will further present findings on a modified FI-index to improve assessment of late-life suicide risk.

Discussion: This is the first study to examine frailty as a risk factor for suicide on a national level. We found frailty may be a valuable prognostic marker. Our study highlights the importance of capturing a full spectrum of morbidity at the intersection of physical and mental health in older adults at risk of suicide.

30. UNDERSTANDING THE REASONS FOR SUICIDE AMONG OLDER ADULTS IN RURAL CHINA USING IN-DEPTH INTERVIEWS

Xinyu Bai*[1], Qiqing Mo[1], Cunxian Jia[2], Liang Zhou[3], Zhenyu Ma[1]

[1]Guangxi Medical University, [2]School of Public Health, Shandong University, [3]The Affiliated Brain Hospital, Guangzhou Medical University

Background: Suicide is an important global public health issue. China is an aging society, suicide rates are higher in rural areas than in urban areas and among older adults than any other age group. Therefore, the issue of suicide among older adults in rural China warrants greater attention. To better understand suicidal behavior and provide additional insights for suicide-prevention work, we used an in-depth interview method based on psychological autopsy to explore the reasons for suicide among Chinese rural older adults.

Methods: A total of 12 counties in Shandong, Hunan and Guangxi provinces were selected as the survey sites. In each county, people aged ≥60 years who had died by suicide were consecutively collected based on the death certification system. Psychological autopsy method was used, two informants of each older adult who had died were selected for in-depth interviews. Mental disorders were assessed using the Chinese version of the DSM-IV by psychiatrists. The content was analyzed in accordance with the phases of thematic analysis. We used both proportion and weighting algorithm methods to assess the relative importance of each reason for suicide: 1) proportional method: the proportion of older adults' informants report each of the categories of reasons for suicide in all in-depth interview (sum of proportion is over 100%); 2) weighting algorithm method: weights for each older adult' reasons for suicide are computed using an algorithm based on the informants rank order of the reasons, and the average value is computed for all informants (sum of weights = 100).
Results: Data were available for 242 people who died by suicide. The relative importance of the nine main categories of reasons based on the proportional method and the weighting method were as follow: physical illness (proportional method:83.5%, weighting method:40.1); psychological distress (54.5%, 18.4); interpersonal conflicts (33.5%, 13.6); other personal reasons (28.5%, 8.0); financial difficulties (22.7%, 7.5); problems related to family or friends (14.0%, 6.6); mental disorders (12.4%, 4.1); superstition (1.7%, 0.4); unknown (1.2%). Informants identified two or more reasons for suicide among most people who had died. The most common type of interpersonal conflict was conflicts with children. The rate of mental disorders as diagnosed by psychiatrists was higher than that reported by the informants.
Discussion: Our qualitative exploration revealed that suicide is a complex problem for multiple reasons. Physical illness, psychological distress, and interpersonal conflicts were the most common reasons for both male and female older adults who had died by suicide in rural China. Therefore, continuous efforts must be made to expand access to and quality of health services in rural China. Psychological distress often work in conjunction with other reasons for suicide. Psychological approaches to suicide prevention could be beneficial, and there must be a focus on providing psychosocial support among older adults living in rural areas. In China, children's conflicts with older adults may be considered unfilial behavior. So, conflicts with children have a greater impact than any other source. The rate of mental disorders as diagnosed by psychiatrists was higher than that reported by the informants. This may be due to widespread stigmatizing attitudes, poor recognition, and limited knowledge of available mental health care in rural China.
In general, the reasons for suicide are complex and diverse, and research on suicide should focus more on the mechanisms of interaction between reasons. Greater attention should be paid to physical and mental health as well as improving interpersonal and problem-solving skills for older adults in China.

SCREENING AND ASSESSMENT OF SUICIDE RISK

Chair: Cheryl King

31. ELECTRONIC BRIDGE TO MENTAL HEALTH FOR COLLEGE STUDENTS AT RISK FOR SUICIDE: A RANDOMIZED CONTROLLED INTERVENTION TRIAL

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Background: Suicide is second only to unintentional injuries as a cause of death among college students, ages 18 to 24, in the United States (US); moreover, the suicide rate increased 40% in this student group during the past decade (CDC, 2020). This disturbing statistic is closely paralleled with an increase in suicidal ideation among college students. Based on population surveys of over 155,000 students from 196 campuses, suicidal ideation among students increased from 5.8% in 2007 to 10.8% in 2016-2017 (Lipson et al., 2019), and national survey data indicate that approximately 13% of college students have seriously considered suicide and 2% have attempted suicide in the past 12 months (American College Health Association, 2019). Nevertheless, many students at risk for suicide do not seek professional help (Becker et al., 2018, Eisenberg et al., 2011). This large-scale, randomized controlled trial examined the efficacy of an online intervention, Electronic Bridge to Mental Health for College Students (eBridge), for increasing the linkage of students at risk for suicide to mental health services. eBridge is based on motivational interviewing (MI) principles and consists of two components: 1) suicide risk screening with personalized feedback (PF) and 2) optional and confidential counseling using a secure online platform.

Methods: Students from four universities in midwestern and western regions of the US were recruited via email (with IRB approval). A total of 40,347 (22.6%) students consented to participate and completed the online suicide risk screen. Among this group, 5,790 (14.4%) screened positive for risk, defined as any two of the following: positive screen for depression (Patient Health Questionnaire-2), positive screen for heavy alcohol use (Alcohol Use Disorders Identification Test), lifetime history of one or more suicide attempts, and suicidal ideation during the past 12 months. The 3,363 students (8.3% of initial screen sample) who screened positive and were not currently receiving any mental health services were randomized to eBridge (n = 1,673) or the control condition of automated PF (n = 1,690). The randomized sample had the following demographic characteristics: 62.2% female, 35.0% male, 2.8% transgender/non-binary; 73.2% white, 7.0% Black, 19.9% Asian, 11.7% other; 12.4% Hispanic, and 76.2% undergraduate. Students in both conditions received mental health resource information. The primary study outcome was linkage to mental health services prior to 6-month follow-up.

Results: Among students randomly assigned to eBridge, 355 students (21.0%) engaged with the optional online counseling component with > 1 posted message and exchange. 168 (10.0%) posted > 2 messages to the counselor. White students and the youngest student participants (18-years of age) were significantly less likely to post a message. Those who posted messages had significantly higher baseline scores on depression, past year suicidal ideation, and readiness to seek help from a mental health professional. Intent-to-treat analyses indicated no overall effect of eBridge on linkage with mental health services; however, within the eBridge group, students who posted one message were 47% more likely ($p < .05$) to receive MH services and those who posted two or more messages were 57% more likely ($p < .05$) to receive MH services than students in the control group.

Discussion: Students at elevated risk for suicide who made use of the eBridge confidential counseling platform were more likely to link to mental health services than other students. However, overall usage of the platform was low. Future work is recommended to develop and

examine the effectiveness of innovative strategies for engaging college students at risk for suicide in online interventions.

32. INNATE IMMUNITY IS IMPAIRED IN PERSONS WHO HAVE HAD A RECENT SUICIDE ATTEMPT

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Background: Suicide attempts and death by suicide have been associated with alterations in the immune system. Of particular interest is innate immunity which has found to be altered in a range of neurological and neuropsychiatric disorder but has not been extensively studied in terms of suicide behaviors. Innate immunity is a crucial part of the immune system and the body's first line of defense against infection and a major contributor to the brain-immune-gut axis. Components of the innate immune system are also potential targets for therapeutic interventions.

Methods: The study sample consisted of 65 individuals: 24 patients with major depression admitted to the psychiatric hospital with a recent suicide attempt, 8 patients with major depression admitted to the hospital without any recent or past suicide attempt, and 33 persons without any history of a psychiatric disorder. All individuals were evaluated between January 16, 2020 and May 6, 2021 as part of an ongoing study.

Participants had a blood sample drawn at time of enrollment from which were measured the levels of 20 chemokines and cytokines by means of a multiplex chemiluminescent immunoassay. The panel included IL-17a, the major component of the innate immune system, as well as other chemokines and cytokines including IL-2, IL-6, TNF-alpha, and Interferon-gamma. At the time of interim analysis, 20 participants also had a blood sample drawn at 1 or 2 follow-up time points. Mixed effects models were used to analyze the results of chemokine and cytokine levels using a history of suicide attempt and the timing of blood draw as random effects and employing Wald tests for between-group significance. All models included age, gender, and race as fixed effects.

Results: Within the psychiatric group, IL-17a was the cytokine or chemokine which showed the strongest association with time (baseline vs. follow up), with levels of IL-17a increasing from the time of the acute admission to the follow-up ($chi2(2) = 10.15$, $p > chi2 = 0.006$). There was also a significant difference in IL-17a levels between the hospitalized patients with a recent suicide attempt and those without any suicide attempt history ($chi2(1) = 3.83$, $p > chi2 = 0.050$). Compared with the non-psychiatric control group, the levels of IL-17a were significantly decreased in patients who had a recent suicide attempt (coefficient = -2.23, 95% CI -3.46, -1.00, p=0.001) and to a lesser extent in patients who did not have a recent suicide attempt (coefficient = -1.99, 95% CI -3.70, -0.28, p=.022). Levels of IL-17a did not change significantly over time in the individuals in the non-psychiatric comparison group.
Results represent an interim analysis as enrollment into the study and testing are ongoing.

Discussion: Our initial findings indicate that individuals who have had a recent suicide attempt have decreased levels of IL-17a, a cytokine central to innate immunity and to the brain-immune-gut axis. There is interest in using IL-17a as a modulator in pharmacotherapy for immune-based disorders. This pathway may thus provide a new method for the prevention of suicide behaviors.

This study is supported by the American Foundation for Suicide Prevention, SRG-2-039-18, The Gut-Brain Axis and Suicide Attempts: New Markers for Assessment and Prevention.

33. SUICIDE RISK ASSESSMENT AMONG CHILDREN AND ADOLESCENTS- PREDICTIVE UTILITY OF THE DEATH/SUICIDE IMPLICIT ASSOCIATION TEST AND CLINICIAN'S EVALUATION

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Background: Suicide is a continuum comprising multifaceted phenomena, ranging from Suicide Ideation (SI), Suicide Plan (SP), Suicide Behavior (SB) and Suicide Attempts (SA). Comprehensive suicide risk assessment soon after discharge from the ER is critical due to heightened risk for suicide during this period. Explicit self-report of SI, SP and SB might be especially challenging in children and adolescents, due to their limited insight on their own affective and cognitive states, and their tendency to conceal SI and SB. This might set a serious difficulty for clinicians to assess and predict suicide among children and adolescents. The Death/Suicide-Implicit Association Test (D/S-IAT) is an implicit, objective behavioral marker developed to assess and predict acute suicide states, regardless of explicit self-reported SI, SP and SB. D/S-IAT measures implicit identification with death. Our previous study has indicated that among children and adolescents, the D/S-IAT distinguished between low and high suicide risk, both concurrently and prospectively, and predicted short-term SI and SB. A study among adults found that clinicians' evaluation, rather than D/S-IAT, predicted prospective suicide risk. Comparing clinician evaluation and D/S-IAT on predicting short-term suicide risk has rarely been examined among children and adolescents. This study aims to: 1. Examine whether clinician evaluation on near-term suicide risk is related to children and adolescents' implicit identification with death 2. Examine the utility of implicit identification with death on predicting short-term suicide risk relative to clinician evaluation of near-term suicide risk.
Methods: Children and adolescents were recruited during an intake session at their first referral to the Adolescent Depression and Suicidal Behavior Clinic, usually soon after discharge from ER. The intake was conducted by senior psychiatrists and psychologists. Inclusion criteria were ages 10-18 years and a history of SI, SB or SA. The sample included 62 participants; 10-18 years old (M=14.04, SD=2.23), 75.8% were females. At intake, participants completed the D/S IAT and a battery of self-report measures used to evaluate their own subjective suicide risk (using the Columbia Severity Rating Scale) and levels of depression and anxiety. Using clinician prediction scale (CPS), clinicians rated the participants' near-term suicide risk. After one month, participants completed a follow-up assessment including self-report measures used to assess current suicide risk.
Results: Both D/S-IAT and CPS were associated with SI and SB severity at intake and follow up. D/S-IAT was associated with CPS ($r(56)=0.410$, $p<0.01$), indicating that the highest the clinician predicted the participants near-term suicide risk, the greater the participants implicitly identify with death. Linear regression analysis revealed that D/S-IAT, and not CPS, predicted SI and SB severity at one-month follow up ($\beta=0.376$ $p=0.007$, CI 0.472- 2.556 for SI and $\beta=0.499$, $p=0.003$, CI 0.861- 3.707 for SB respectively) and explained an additional 10.1% and

17% of the variance for SI and SB respectively, above and beyond SI and SB severity at intake, depression and anxiety.
Discussion: D/S-IAT might have a unique contribution to identify and predict suicide risk among children and adolescents, in conjunction with clinicians' evaluation and conventional subjective self-report measures. D/S-IAT might be especially useful for current and prospective suicide risk assessment among children and adolescents and might overcome the difficulties clinicians' face on heavily relying on subjective self-report.

34. DEVELOPMENT AND VALIDATION OF THE DURHAM RISK SCORE FOR ESTIMATING SUICIDE ATTEMPT RISK: A PROSPECTIVE COHORT ANALYSIS

Nathan Kimbrel*[1], Jean Beckham[1], Patrick Calhoun[1], Bryann DeBeer[2], Terence Keane[3], Daniel Lee[3], Brian Marx[3], Eric Meyer[4], Sandra Morissette[5], Eric Elbogen[1]

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Background: Worldwide, nearly 800,000 individuals die by suicide each year; however, longitudinal prediction of suicide attempts remains a major challenge within the field of psychiatry. The objective of the present research was to develop and evaluate an evidence-based suicide attempt risk checklist [i.e., the Durham Risk Score (DRS)] to aid clinicians in the identification of individuals at risk for attempting suicide in the future.
Methods: Three prospective cohort studies, including a large general population study and two smaller veteran cohorts, were used to develop and validate the DRS. From a total sample size of 35,654 participants, 17,630 participants were selected to develop the checklist, whereas the remaining participants (N=18,024) were used to validate it. The main outcome measure was future suicide attempts (i.e., actual suicide attempts that occurred after the baseline assessment during the 1-3 year follow-up period). Measure development began with a review of the extant literature to identify potential variables that had substantial empirical support as longitudinal predictors of suicide attempts and deaths. Next, receiver operating characteristic (ROC) curve analysis was utilized to identify variables from the literature search that uniquely contributed to the longitudinal prediction of suicide attempts in the development cohorts.
Results: As hoped, the DRS was a robust prospective predictor of future suicide attempts in both the combined development (AUC=0.91) and validation (AUC=0.92) cohorts. A concentration of risk analysis found that across all 35,654 participants, 82% of prospective suicide attempts occurred among individuals in the top 15% of DRS scores, whereas 27% occurred in the top 1%. The DRS also performed well among important subgroups, including women (AUC=0.91), men (AUC=0.93), Blacks (AUC=0.92), Whites (AUC=0.93), Hispanics (AUC=0.89), veterans (AUC=0.91), lower income individuals (AUC=.90), younger adults (AUC=0.88), and lesbian-gay-bisexual-transgendered-questioning individuals (AUC=0.88). The primary limitation of the present study was its its reliance on secondary data analyses to develop and validate the risk score.
Discussion: While more work is needed to independently validate the DRS in prospective studies and to identify the optimal methods to assess the constructs used to calculate the score, our findings suggest that the DRS is a promising new tool that has the potential to significantly enhance clinicians' ability to identify individuals at risk for attempting suicide in the future.

35. A RISK CALCULATOR TO PREDICT SUICIDE ATTEMPTS AMONG INDIVIDUALS WITH EARLY-ONSET BIPOLAR DISORDER

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Background: The overwhelming majority of young people who die by suicide meet criteria for at least one psychiatric disorder; of these, bipolar disorder (BP) confers substantial risk. Nearly one-third of youth with BP have attempted suicide at least once by mid-adolescence, 60% will attempt suicide at least once in their lifetimes, and up to 20% will die by suicide. A substantial body of literature identifies specific factors associated with elevated risk for suicidal behavior among individuals with BP, one of the most potent of which is early age of BP onset. Given that suicidal behavior results from a complex interaction of factors, suicide prevention efforts among high-risk groups like individuals with early-onset BP could be further enhanced by the capacity to predict an individual's risk for suicidal behavior over a specified time period. A risk calculator is a clinical tool that uses an optimally identified set of risk factors to compute the probability of a specified event in an individual patient. Risk calculators are widely used by physicians to enhance clinical decision-making across several health conditions, but less commonly used in psychiatry.
Methods: We used longitudinal data from the multi-site, longitudinal Course and Outcome of Bipolar Youth (COBY) study of 446 youth with BP to build a risk calculator (RC) to predict one-year risk of suicide attempt. To maximize clinical utility of the RC, we selected predictors from the literature on risk factors for suicidal behavior in BP that are readily assessed in standard clinical practice. The RC was trained via boosted multinomial classification trees; predictions were calibrated via Platt scaling. To avoid overfitting, half of the sample was used to train the RC, and the other half to independently test it. We assessed discrimination via the area under the receiver operating characteristic curve (AUC) on the testing sample, evaluating the predicted one-year risk of suicide attempt.
Results: Over a median follow-up of 12.9 years, we observed 249 suicide attempts among 106 individuals. Ten predictors accounted for >90% of the cross-validated relative influence in the model, with AUC=0.82: 1) age of mood disorder onset; 2) history of non-suicidal self-injurious behavior; 3) current age; 4) history of psychosis; 5) socioeconomic status; 6) most severe depressive symptoms (i.e. past 6 months none/subthreshold/threshold); 7) history of suicide attempt; 8) family history of suicide attempt; 9) history of substance use; 10) history of physical/sexual abuse.
Discussion: If externally validated, this RC holds promise as a clinical and research tool for prospective identification of high-risk periods in early-onset BP. Such a tool for reliable prediction of near-term risk for suicidal behavior among youth with BP could meaningfully inform prevention strategies.

36. "WASN'T OFFERED ONE, TOO POORLY ASK FOR ONE"– REASONS WHY SOME PATIENTS DO NOT RECEIVE A PSYCHOSOCIAL ASSESSMENT FOLLOWING SELF-HARM: QUALITATIVE PATIENT AND CAREER SURVEY

Leah Quinlivan*[1], Louise Gorman[1], Donna Littlewood[1], Stephen Barlow[2], Elizabeth Monaghan[2], Stephen Campbell[1], Roger Webb[1], Nav Kapur[3]

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Background: Psychosocial assessment following self-harm presentations to hospital are an important aspect of care. However, only around half of those attending hospital receive an assessment. We sought to explore reasons why some patients do not receive a psychosocial assessment following self-harm from the perspective of patients and carers.
Methods: Between March and November 2019, we recruited 88 patients and 14 carers aged 18 or over from 16 mental health trusts and community organisations in the United Kingdom, and via social media, to a co-designed qualitative survey. Thematic analyses were used to interpret the data.
Results: Patient reasons for refusing an assessment included long waiting-times, previous problematic interactions with staff and feeling unsafe when in the emergency department. Two people refused an assessment because they wanted to harm themselves again. Participants reported organisational reasons for non-assessment including clinicians not offering assessments and exclusion due to alcohol intoxication. Other patients felt they did not reach clinically determined thresholds because of misconceptions over perceived heightened fatality risk with certain self-harm methods (e.g. self-poisoning versus self-cutting).
Discussion: Our results provide important insights into some of the reasons why some people may not receive a psychosocial assessment following self-harm. Parallel assessments, compassionate care, and specialist alcohol services in acute hospitals may help reduce the number of people that leave before an assessment. Education may help address erroneous beliefs that self-injury and self-harm repetition are not associated with greatly raised suicide risk.

GENOMICS OF SUICIDAL BEHAVIOR IN DIFFERENT POPULATIONS

Chair: Hilary Coon

37. ASSOCIATION OF IL-6 WITH SUICIDE RISK AND SEVERITY FROM A LONGITUDINAL PERSPECTIVE

Shengnan Sun*[1], Caroline Wilson[1], Sharon Alter[2], Rachel Harris[2], Jennifer Blaze[3], Yongchao Ge[3], Aaron Hazlet[1], Marianne Goodman[1], Rachel Yehuda[1], Hanga Galfalvy[4], Fatemeh Haghighi[1]

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Background: Converging evidence shows associations between neuro and peripheral inflammation in suicide. Cross-sectional studies in human postmortem brain from suicide completers and bloods of suicide attempters, both reveal changes in cytokine levels. Expanding upon these findings, we investigate how cytokine levels track dynamically with depression severity (BDI) and suicidal ideation (SSI) longitudinally.

Methods: We recruited three groups of U.S. Veterans including: (1) Subjects with Diagnosis of MDD and a lifetime history of suicide attempt (MDD/SA, n=38); (2) subjects with Diagnosis of MDD and no history of suicide attempt (MDD, n =41); (3) Psychiatrically healthy controls (NPC, n=33). MDD/SA and NPC groups were followed longitudinally over 6-months, wherein depression severity (BDI, Beck Depression Inventory version II), suicidal ideation (SSI, Beck Scale for Suicidal Ideation) were assessed at baseline, 3months, and 6months. Blood plasma was collected at each time and processed using Luminex Immunology Multiplex Assay. The log transformed median fluorescence intensity (MFI) was used to represent the cytokine level in the analysis. Linear mixed effect models with random intercept for each subject were fitted for the longitudinal cytokine analysis.
Results: Cytokines IL-4, TNF-α, IFN-γ, and IL-6 levels were examined longitudinally. At the baseline, mostly moderate-sized positive correlations were observed between ideation severity and cytokine levels in high ideation attempters (with baseline SSI≥5). Significant differences in changes over time in IL-6 (Chisq = 5.58, df =1, p = 0.0182) and TNF-α (Chisq = 4.69, df =1, p = 0.0304) levels were observed in depressed attempters vs. controls. Namely only depressed attempters showed a significant change in IL-6 and TNF-α levels, decreasing over time (IL-6:b=-0.04, p=0.0245, 95%CI=[-0.08, -0.01] and TNF-α:b=-0.02, p=0.0196, 95%CI=[-0.04, -0.01]). Although the decrease in IL-6 and TNF-α levels in MDD/SAs were not associated with change in depression (BDI) and ideation (SSI), amongst high ideation attempters, IL-6 levels were correlated with ideation severity (b = 4.49, p = 0.0080, 95% CI = [1.61, 7.77]).
Discussion: We show that at baseline, IL 6 levels tracked with SSI severity in MDD/SA subjects with high suicidal ideation scores. Interestingly, IL 6 levels and suicidal ideation severity were correlated and declined in depressed suicide attemptors, whereas in controls IL 6 levels did not vary longitudinally. Although levels of TNF-α decline over time, it did not track with either depression or ideation severity. Findings from this study suggest that IL-6 maybe of utility in clinical practice, as an objective marker of heightened suicide risk.

38. CLINICAL AND GENETIC EVALUATION OF SUICIDE DEATH AMONG YOUNG INDIVIDUALS EXPOSED TO TRAUMA

Eric Monson*[1], Andrey A. Shabalin[2], Emily DiBlasi[2], Anna Docherty[1], Qingqin S. Li[3], Amanda Bakian[1], Hilary Coon[2], Brooks Keeshin[2]

[1]University of Utah, [2]University of Utah School of Medicine, [3]Janssen Research and Development

Background: : Suicide is the second leading cause of death in the United States for individuals aged 10-24 and remains difficult to predict despite being inherently preventable. Exposure to trauma is known to be a risk factor for suicidal behavior and to worsen mental health clinical trajectories. This study leverages a unique collection of individuals who have died from suicide as part of the Utah Population Database (UPDB) to evaluate clinical and genetic risk factors for death by suicide in young individuals (aged 12-25) who have a history of exposure to trauma.
Methods: A total of 9,052 UPDB deidentified individuals who died from suicide and had linked medical records were evaluated. Individuals aged 12-25 with a diagnosis of post-traumatic stress disorder (PTSD) or medically documented trauma were selected (N=156; "YTS"). YTS were compared with remaining individuals who died by suicide (N=8,869; "AS") by common comorbid diagnoses (found in ≥5% of all subjects). Significant findings were used to direct polygenic risk score assessment of a subset of genotyped European individuals (YTS

N=85; AS N = 3,766). All statistics utilized logistic regression and were adjusted for critical covariates and multiple tests.
Results: Clinical analyses yielded several diagnoses that were overrepresented within the YTS group as compared with AS. These included major depressive disorder (OR = 4.7, 95%CI = 3.1-7.2), generalized anxiety disorder (OR = 3.4, 95%CI = 2.0-5.6), bipolar disorder (OR = 3.0, 95%CI = 1.8-5.0), tobacco use disorder (OR = 2.9, 95%CI = 1.8-4.4), and unspecified psychosis (OR = 2.6, 95%CI = 1.4-4.7). Polygenic risk scores were calculated based on large studies of anxiety, PTSD, major depressive disorder, bipolar disorder, and smoking, but none survived correction, noting nominal significance of PTSD PRS.
Discussion: These results identify several comorbid diagnoses that may serve as combined risk factors for suicide death in the setting of young, trauma-exposed individuals, as compared with other suicide deaths. A particular enrichment of major psychiatric diagnoses and substance use were observed. These findings may be helpful in directing future screening and research efforts targeted toward identifying unique risk features of specific suicide phenotypes.

39. USING AGGREGATE GENETIC RISK TO EVALUATE DIFFERENCES BETWEEN DEATHS OF UNDETERMINED INTENT AND UNAMBIGUOUS SUICIDE DEATHS

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Background: Many research studies that rely on ICD codes to identify suicide deaths must decide whether to include deaths "of undetermined intent". These codes reflect incidents in which there was insufficient information to determine if the death was intentional versus, for example, due to an unintentional poisoning. Empirical evidence regarding the degree to which the inclusion or exclusion of these events in official estimates of suicide rates would represent a substantial misclassification error is inconsistent. Comparison of individuals whose deaths are of undetermined intent versus unambiguously intentional may inform classification decisions in research studies. In the current study, we evaluate differences across groups with respect to measures of genetic liability toward suicidality, substance use disorders, and criminal behavior. We selected these predictors due to previous research indicating that rates of undetermined intent deaths are disproportionately high among individuals with a history of externalizing behavior.
Methods: We used the Multi-Generation Register to link 1st-5th degree relatives and construct Family Genetic Risk Scores (FGRS) for non-fatal suicide attempt (SA), alcohol use disorder (AUD), drug use disorder (DUD), and criminal behavior (CB) for native Swedes born 1932-1995. FGRS reflect the density of affected family members, genetic resemblance, age at first registration (of SA, AUD, DUD, or CB), and age at end of follow-up. Scores are standardized by year of birth and sex. We used Swedish national registries (medical, pharmacy, and crime) to identify registrations for AUD, DUD, and CB. We used the Swedish Mortality Register to identify deaths classified as suicides or events of undetermined intent (N=39,376; 28.2% female; 25.3% undetermined intent) between 1969-2015. We used logistic regression to determine whether FGRS for AUD, DUD, CB, or SA differed among individuals whose deaths were unambiguous suicides versus of undetermined intent.

Results: FGRS for SA, AUD, DUD, and CB were higher among individuals whose deaths were of undetermined intent relative to unambiguous suicide deaths (t = -18.69 to -7.71, all p<1.3e-14). We did not observe differences across groups in age at death or number of suicide attempts (p>0.05). In multivariate models testing, the association between all four FGRS and suicide death status, AUD, DUD, and CB FGRS were positively associated with undetermined intent events (beta = 0.02 to 0.15, p = 2.2e-16 to 0.02), whereas SA FGRS were slightly lower among those with undetermined intent deaths (beta = -0.02, p = 0.03).
Discussion: These findings provide preliminary evidence that individuals whose deaths are of undetermined intent have higher genetic liabilities toward suicide attempt and externalizing behaviors than known suicides. In multivariate models, FGRS for AUD and DUD emerged as prominent predictors of undetermined intent deaths, while differences in FGRS for SA and CB across groups were quite modest and unlikely to be clinically meaningful. These Results: raise the possibility that individuals predisposed to substance use disorders may exhibit behaviors that make it difficult to make post-mortem determinations about the nature of their deaths. This could include method of death: Those at high risk for substance use disorders may be more likely to die by poisoning/overdose. Importantly, the barely detectable differences in SA FGRS across groups, and non-significant differences in SA history or age at death, suggest that undetermined intent deaths are similar to unambiguous suicide deaths in important ways and warrant further consideration for inclusion as suicide deaths in research studies.

40. ASSOCIATION OF TWO TNF-ALPHA SNPS WITH SUICIDE IN INDIAN POPULATION

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Background: Role of cytokines have been extensively studied in the depression and suicide. Only a few studies have considered the role of single nucleotide polymorphism of pro and anti-inflammatory cytokines in the suicidal behavior. This study aims to analyze the effect of two single nucleotide polymorphisms of TNF-α present in the promoter region among the suicidal deaths and non-suicidal deaths which are previously associated with elevated risk of suicide in MDD patients.
Methods: A total of 444 subjected were enrolled (218 suicidal deaths and 226 non-suicidal deaths) after taking informed consent from their next kin. The genotyping of the TNF- α -308 G/A (rs1800750) an TNF- α -850 C/T (rs1799724) was done using PCR RFLP method. Chi square test was used for identifying the possible risk genotypes for suicide. A multivariate logistic regression analyses was also performed to examine / identify risks of TNF- α genotype of each SNP after adjusting for socio-demographic variables such as employment status, gender and marital status.
Results: TNF-α -308 G/G genotype and TNF- α -850 T/T genotypes was found to be significantly higher in suicidal group i.e. p< 0.01, OR= 2.28 and p < 0.00001, OR= 2.814 respectively at 95% CI. For both the SNPs regression coefficient for unemployment have positive association with suicidal group.
Discussion: The two genotypes GG of TNF-α -308 G/A and TT of TNF- α -850 C/T appears to be an independent risk factor for suicide. However, the role of these genotypes on the activity of the TNF- α is still unclear. TNF-α has two mechanisms by which it can increase the risk for

suicide; 1) Neurodegenerative role where it boosts the proliferation of adult neural stem cells in certain physiological environments and activated microglia derived TNF-α increases the death of hippocampal progenitor cells, and 2) influence to serotonergic neurotransmissions which are previously closely related to depression and suicide. Further analyses for downstream effect on the neural pathways by these risk alleles will help to understand their impact more precisely.

41. LONG-TERM RISK FACTORS FOR SUICIDE IN SUICIDE ATTEMPTERS EXAMINED AT A MEDICAL EMERGENCY IN-PATIENT UNIT: RESULTS FROM A 32-YEAR FOLLOW-UP STUDY

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Background: The overall aim of this study is to gain greater knowledge about the risk of suicide among suicide attempters in a very long-term perspective. Specifically, to investigate possible differences in clinical risk factors at short (5 years) versus long-term (> 5 years), with the hypothesis that risk factors differ in the shorter and longer perspective.
Methods: Design: Prospective study with register-based follow-up for 21-32 years.
Setting: Medical emergency in-patient unit in the south of Sweden.

Participants: 1044 individuals assessed by psychiatric consultation when admitted to medical in-patient care for attempted suicide during 1987-1998.

Outcome measures: Suicide and all-cause mortality.

Results: At follow-up, 37.6% of the participants had died, 7.2% by suicide and 53% of these within 5 years of the suicide attempt. A diagnosis of psychosis at baseline represented the risk factor with the highest hazard ratio at long-term follow-up, i.e. > 5 years, followed by major depression and a history of attempted suicide before the index attempt. The severity of a suicide attempt as measured by SIS (Suicide Intent Scale) showed a non-proportional association with the hazard for suicide over time and was a relevant risk factor for suicide only within the first 5 years after an attempted suicide.
Discussion: The risk of suicide after a suicide attempt persists for up to 32 years after the index attempt. A baseline diagnosis of psychosis or major depression or earlier suicide attempts continued to be relevant risk factors in the very long term. The SIS score is a better predictor of suicide risk at short term, i.e. within 5 years than at long term. This should be considered in the assessment of suicide risk and the implementation of care for these individuals.

42. WHOLE GENOME SEQUENCING IMPLICATES GENES LEADING TO RISK OF SUICIDE DEATH

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Background: While development of effective suicide preventions remains an urgent public health crisis, the task is daunting due to the complexity of suicide risk. In particular, more work is required to understand specific risks associated with suicide death, where risk prediction remains challenging. Suicide attempts, which occur at 10-25 times the rate of suicide deaths, are currently the strongest predictor of suicide death, but attempts are a highly imperfect predictor. Fewer than 8% of individuals with a prior attempt go on to die by suicide, and more than 50% of suicide deaths occur without a documented prior attempt. Dramatic epidemiological differences in suicide outcomes also suggest underlying risk differences: 2-4 times the number of suicide attempts occur in women, but 3.6 times more men die by suicide. Recent work in large multi-national samples has revealed genetic variance specific to suicide death, and differing patterns of polygenic associations across suicide outcomes. Our work on a large population-ascertained, genetically informative cohort of suicide deaths has identified demographic, clinical, and genetic risks specific to suicide death, and allows ongoing comparisons to risks associated with studies of suicide attempts. Better understanding of risks associated with suicide death is required to further the development of targeted preventions for those at highest risk.

Methods: Suicide deaths who linked to multi-generation, extended, high-risk families in our data resource defined a subset of 1,634 suicides. Compared to 1,865 other Utah suicides without high familial risk, these suicides showed markedly younger age at death ($p<0.0001$), more documented suicide attempts ($p=0.03$), and more documented exposure to trauma ($p=0.03$). In addition, compared to other suicide deaths in our cohort, this high-familial-risk subgroup had significantly increased polygenic risk of suicide death (OR=3.10, $p<0.0001$), suicide attempt (OR=1.13, $p=0.01$), PTSD (OR=1.20, $p=0.004$), and risk-taking (OR=1.10, $p=0.02$). We prioritized suicides from this high-familial-risk group for whole genome sequencing (WGS). WGS from 669 selected suicides was jointly processed with WGS from 420 non-psychiatric Utah controls; frequencies were also compared to publicly-available data in the Genome Aggregation Database.

Results: Analyses included a genome-wide screen and gene burden test of variants within coding regions with annotations implicating functional effects on genes, and genome-wide burden tests including variants with regulatory annotation, including publicly-available gene expression results from post-mortem brain tissue. Results revealed high-impact variants in genes and gene pathways associated with mitochondrial function, anxiety, and risk-taking, in addition to excitatory neurotransmission, brain development, and neurodegeneration (OR's=2.22 to 11.61; p-values=1.30E-06 to 1.67E-13). . Interaction of the presence of WGS variants with demographics, clinical data, and background polygenic risks will be discussed.

Discussion: A strong genetic contribution to suicide risk has been well documented, and genome-wide association studies have begun to reveal polygenic associations. Our analyses of sequence data in suicide deaths selected for high genetic risk provides complementary evidence of the additional contribution of rare genetic variation. Variants with potential functional consequences increase our understanding of biological risk mechanisms, and may lead to the development of future personalized treatments.

SUICIDAL BEHAVIOUR IN SPECIFIC POPULATIONS

Chair: Rhiannon Evans

43. MENTAL HEALTH SYMPTOMS AND SUICIDE RISK AMONG LESBIAN, GAY, BISEXUAL, TRANSGENDER, AND QUESTIONING YOUTH PRESENTING IN RESIDENTIAL CARE

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Background: Suicide is the second leading cause of death for youth ages 15-24. Lesbian, gay, bisexual, transgender, and questioning (LGBTQ) youth report higher rates of suicidal ideation than heterosexual and cisgender peers. There is evidence that LGBTQ youth may experience unique stressors compared with their peers (e.g., bullying, peer victimization, discrimination, marginalization, internalized homophobia and transphobia). Recognizing that LGBTQ youth are underserved, many psychiatric organizations are working to address the needs of youth in their settings. Intensive settings, such as inpatient and residential, may be further behind in these inquiries. This study examines mental health symptoms across LGBTQ youth in residential care. We also examined which subgroups were most at risk for suicide and sought to explain these findings by examining the social, distal stressors associated with LGBTQ suicidality.

Methods: Nine hundred and thirty-nine adolescents and young adults, ages 10 to 23, completed the Behavioral Health Screen (BHS) at 26 adolescent psychiatric residential treatment centers across the country. The BHS was administered to all patients at collaborating centers. Data were collected from 2019 to 2020 and analyzed from March through April 2021. Analysis of variance (ANOVA) was conducted to examine differences among subgroups in mental health symptoms. Mediation analyses were conducted to assess whether suicide risk factors could explain differences between subgroups.

Results: After testing the BHS scales for invariance between LGBTQ and non-lesbian, gay, bisexual, and questioning(LGBQ) subgroups, the ANOVA analysis revealed significant differences in anxiety and current suicide risk among cisgender bisexual and transgender youth compared with their cisgender heterosexual peers. There was a statistically significant effect of gender (male- or female-identified) and a Gender x LGBTQ Subgroup interaction for depression ($F(1, 928)= 53.02$, $p< .001$; $F(4, 928)= 3.01$, $p= .02$) and current suicide ($H(1)= 53.02$, $p < .001$; $H(4)= 3.01$, $p= .02$). Findings indicated elevated depression (compared to cisgender, heterosexual male youth) for cisgender heterosexual, lesbian, bisexual, and questioning female youth as well as transgender male youth, and elevated current suicide risk (compared to cisgender heterosexual male youth) for cisgender heterosexual, lesbian, and questioning female youth and cisgender bisexual and transgender male youth. Mediation analyses partially explained the group differences in current suicide.

Discussion: Cisgender bisexual and transgender youth may have greater current suicide risk due to artificial social conventions arguing against fluidity in gender identity and expression, and the gender of those to whom one is emotionally and physically attracted. Social distal stressors, family criticism, and verbal bullying partially explained suicide risk among cisgender bisexual youth, whereas verbal bullying explained the association for transgender youth. Our findings suggest the value of using validated, brief screening tools to assess mental health in an underserved population presenting in intensive settings.

44. RACIAL DIFFERENCES IN EXCESS INJURY MORTALITY DURING THE COVID-19 PANDEMIC IN MARYLAND

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Background: COVID-19 may have resulted in excess injury deaths in the U.S., especially among racial-ethnic minorities. In the U.S., trends in suicide and in other injury deaths were diverging by race in the years immediately prior to the start of the COVID-19 pandemic. While the overall rate of suicide decreased from 2018 to 2019, the rate among Black Americans continued to increase. Between 2017 and 2019, accidental overdose deaths decreased among White Americans and increased in all other racial-ethnic groups. During the COVID-19 pandemic, all-cause and accident-specific mortality increased, while available evidence suggests suicide rates may have further diverged by race. This study estimated excess injury mortality in Maryland during the COVID-19 era for different racial-ethnic groups by comparing expected deaths for suicide, accidents, and unexplained causes to actual trends.
Methods: Data for all 64,376 Maryland injury deaths that occurred between January 1, 2003 and February 28, 2021 were obtained from the State of Maryland Office of the Chief Medical Examiner (OCME), including 9,791 deaths by suicide, 34,523 accidents, and 20,052 injury deaths due to undetermined causes. The relatively large number of undetermined deaths in Maryland is a result of the high burden of proof required to rule a death an accident or suicide. Homicide deaths were not included, as they are not released by the OCME. We constructed a time-series containing total deaths by month (N=206), overall and within racial-ethnic subgroups. Pre-COVID mortality trends through February 2020 were estimated using a seasonally adjusted Exponential Smoothing model and then projected forward through March 2021. These forecasted deaths (i.e., the expected trends) were then compared to the observed COVID-era trends to test the hypothesis that the COVID era was associated with excess injury deaths, overall and within Black, White, and Latinx Marylanders.
Results: Deaths by accidental causes exceeded expected deaths by accidents across all pandemic timepoints until February 2021 when there were fewer deaths than forecasted. Among Black Marylanders, accidental deaths exceeded expected deaths at all timepoints except April 2020. However, there were no excess deaths by suicide among Black Marylanders except in October 2020. Among Latinx Marylanders, suicidal deaths exceeded expected deaths in June and November 2020. Accidental deaths exceeded expected deaths in June 2020 among Latinx Marylanders. There was also an excess of undetermined deaths among Latinx Marylanders in May 2020. Among White Marylanders, there was an excess of accidental deaths in 7 of the 12 COVID months studied.
Discussion: The COVID era in Maryland was associated with excess accidental deaths compared to pre-COVID trends but was not generally associated with excess deaths by suicide. Some racial-ethnic minoritized groups were disproportionately affected by excess injury mortality. Further research is needed to clarify the generalizability of these trends to other U.S. states and the factors that may explain them.

45. THE FEASIBILITY AND ACCEPTABILITY OF USING SMARTPHONES TO ASSESS SUICIDE RISK AMONG SPANISH-SPEAKING ADULT OUTPATIENTS

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[1]University of Rochester School of Medicine

Background: Hispanic/Latino adults, particularly Spanish-speakers, are underserved in mental health care. Smartphones have the potential to overcome geographical and linguistic barriers to mental health assessment and intervention. The purpose of the current study was to examine (a) the feasibility/acceptability of ecological momentary assessment (EMA) to assess suicide ideation and suicide risk factors (e.g., thwarted belonging) among high-risk Hispanic/Latino adult outpatients, and (b) the degree of within-person variation of suicide ideation and suicide risk in this population.

Methods: Participants were 16 adult psychiatric outpatients (81.3% female; age M = 43.75 years, SD = 10.76 years) who identified as primary Spanish-speakers and reported hopelessness or suicide ideation in the past month. All participants identified as Hispanic/Latino (93.8% Puerto Rican); none identified as Latinx. On average, participants had lived in the United States (mainland) for 12.50 years (SD = 12.88 years). A majority identified their race as White/Caucasian (50%) or Other (43.8%) (i.e., Indio, Taino, Trigueña). Most participants met criteria for current Major Depressive Episode (68.8%) or Dysthymia (12.5%).

Participants completed in-person baseline interviews and were provided smartphones for the duration of the study. Participants received 4 semi-random EMA prompts (occurring every 3 hours between 10:00am and 10:00pm) daily for 14-days. Participants were also able to consent to additional passive monitoring of GPS and ambient audio recordings. After the EMA period, participants completed an in-person follow-up interview. All study procedures/assessments were completed in Spanish.

Results: One participant withdrew after baseline and did not complete the EMA portion of the study. A majority (87.5%) of participants consented to all passive data collection (GPS tracking and ambient sound recording), and reported acceptability of study procedures. Adherence to EMA was good (74%) and comparable to EMA adherence rates in English speaking populations. Severity of depression, anxiety, and suicide ideation at baseline did not impact EMA adherence, and percent of EMA instances completed was not associated with symptom severity at follow-up, controlling for baseline symptom severity.

Results: indicated that suicide ideation and suicide risk factors varied dramatically on a daily basis during the study period. Average point-to-point variability was moderate (RMSSD = 0.44) for suicide ideation. Among participants with ideation, 85% had at least one instance of ideation changing from one response to the next by one within-person standard deviation or more. Suicide risk factors showed even greater short-term variability than suicide ideation. For example, average point-to-point variability was high (RMSSD = 2.18) for thwarted belonging. Nearly all participants (93.33%) had at least one instance of thwarted belonging changing by at least one within-person standard deviation or more from one response to the next.

EMA captured more dramatic changes than standard in-person baseline and follow-up assessments. For suicide ideation, 20% of participants reported an EMA change greater than their in-person baseline and follow-up difference score at least once. For thwarted belonging, 73.33% of participants reported an EMA change greater than their in-person baseline and follow-up difference score at least once.

Discussion: The ubiquity of smartphones makes them a potentially low-cost option for both assessing and intervening on mental health conditions. Results support the feasibility and acceptability of using smartphones to assess suicide risk in real time and real world setting among psychiatric outpatients Spanish-speaking adults.

46. EFFECTS OF 'IT GETS BETTER AUSTRIA' SUICIDE PREVENTION VIDEOS ON LGBTQ+ YOUTH: RANDOMIZED CONTROLLED TRIAL

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[1]Medical University of Vienna, [2]Paracelsus Medical University

Background: The 'It Gets Better' suicide prevention project (IGBP) features video narratives of LGBTQ+ persons telling their stories of overcoming difficulties during coming-out. Experimental research on the effects of the videos is lacking. In this study, we aimed to test effects of selected IGBP videos on LGBTQ+ adolescents on suicide-related variables, and assess differences between gender identities, presence/absence of depressive symptoms, sexual orientations, and the role of identification with videos.
Methods: We conducted a double-blind randomised controlled trial with LGBTQ+ youth aged 14-22 years (n=483), randomized to an IGBP (n=242) or a matched video with neutral content (n=241). Suicidal ideation (primary outcome), depressive symptoms, help-seeking intentions, hopelessness, mood and sexual identity were assessed at baseline (T1), post-exposure (T2) and at four-week follow-up (T3). Data were analysed with linear mixed models. Mediation analysis was used to assess effects of identification.
Results: There was no statistically significant difference in suicidal ideation between the experimental and control condition at T2 (mean change from baseline [MC]=-0.02 (95% CI -0.07 to 0.03), P=1.00; mean difference [MD] compared with control group MD=-0.13 (95% CI -0.31 to 0.05), P=0.16, d=-0.06) or T3 (MC=0.05 (95% CI -0.05 to 0.14), P=0.67; MD=-0.08 (95% CI -0.26 to 0.10), P=0.36, d=-0.04). In subgroup analyses, nonbinary/transgender individuals experienced a short-term improvement in suicidal ideation (T2: MC=-0.20 (95% CI -0.39 to -0.02), P=0.01; MD=-0.54 (95% CI -1.01 to -0.08), P=0.02, d=-0.10). The effect appeared most pronounced among nonbinary/transgender individuals with depressive symptoms. Effects on suicidal ideation were mediated through identification. Help-seeking intentions from private contacts improved briefly in the intervention group (T2: MC=0.25 (95% CI 0.15 to 0.35), P<0.001; MD=0.28 (95% CI 0.01 to 0.54), P<0.05, d=0.09).
Discussion: Overall, videos with narratives of how to overcome difficulties during coming out did not have significant effects on suicidal ideation across LGBTQ+ youth, but they appeared to have some potential to decrease suicidal ideation and encourage help-seeking intentions particularly among youth with increased vulnerability to suicide. Videos are more effective when audiences' identification with the protagonist is high.
This project is funded by the FWF (Austrian Science Fund, project number: P30918-B27, PI: Thomas Niederkrotenthaler).

47. CARE-EXPERIENCED CHILDREN AND YOUNG PEOPLE'S INTERVENTIONS TO IMPROVE MENTAL HEALTH AND WELL-BEING OUTCOMES: SYSTEMATIC REVIEW (CHIMES)

Rhiannon Evans*[1], Maria Boffey[2], Sarah MacDonald[1], Jane Noyes[3], G.J. Melendez-Torres Melendez-Torres[4], Helen Morgan[1], Mike Robling[1], Rob Trubey[1], Simone Willis[1], Charlotte Wooders[2]

[1]Cardiff University, [2]The Fostering Network in Wales, [3]Bangor University, [4]University of Exeter

Background: The mental health and well-being of children and young people who have been in care (foster care, kinship care, residential care) are a priority, in addition to the prevention of self-harm and suicide. There are a range of interventions aimed at addressing these outcomes, but the international evidence-base remains ambiguous. There is a paucity of methodologically robust systematic reviews of intervention effectiveness, with few considering the contextual conditions under which evaluations were conducted. This is important in understanding the potential transferability of the evidence-base across contexts. Our systematic review adopts a complex systems perspective to synthesise evidence, reporting evaluations of mental health and well-being, self-harm and suicide interventions for children and young people who have been in care. It addresses impact, equity, cost-effectiveness, context, implementation and acceptability. This presentation will map the data from the initial scoping of the evidence base and present findings on context, implementation and acceptability.

Methods: We searched 16 bibliographic databases from 1990 to June 2020. Supplementary searching included citation tracking, author recommendation, and identification of evidence clusters relevant to included evaluations. The eligible population is children and young people (aged ≤25 years) with experience of being in care. Outcomes are (1) mental, behavioural or neurodevelopmental disorders; (2) subjective well-being; (3) self-harm; suicidal ideation; suicide. Study quality was appraised with methodologically appropriate tools. We constructed a taxonomy of programme theories and intervention types. Thematic synthesis was used for qualitative data reporting context, implementation and acceptability. Meta-analysis, which is in progress, will be conducted with outcome data. Convergent synthesis is being used to integrate syntheses of qualitative and quantitative data.

Results: Searches retrieved 116 eligible studies for inclusion. This included 17 studies reporting intervention theory of change; 90 reporting outcome evaluations; 26 process evaluations; and two economic evaluations. The majority of studies have been conducted in the USA (n=75). All studies include a measure of child mental health and wellbeing. One addresses self-harm. None focus on suicide. Most interventions (n=91) are parenting interventions that enhance the parenting skills of carers. There is a lack of approaches focused on structural change at the organisational, community and organisational level. Process evaluation data indicates key context, implementation and acceptability factors: 1) The potential overburdening of carers with intensive interventions to support children and young people's mental health; 2) Challenges in retaining participants in interventions; and 3) The absence of children and young people's voices in evaluating intervention acceptability.

Discussion: The emergent findings are being consulted with a range of stakeholder groups, including social care professionals, carers, and children and young people with experience of care. Central reflections on the evidence-base to date, in addition to recommendations moving forward, include: 1) A need for interventions that focus more explicitly on wellbeing, self-harm and suicide; 2) A need for higher level, structural interventions that operate at the community and policy level; and 3) A need to develop more interventions locally, rather than relying on the transfer of evaluated approaches from other contexts.

Wednesday, October 27, 2021

10:45 AM - 12:15 PM

SUBSTANCE USE AND SUICIDE: DOES POPULATION MATTER?

Chair: Alan Swann

48. PRELIMINARY ANALYSIS OF LOW-LEVEL ALCOHOL USE AND SUICIDALITY WITH CHILDREN IN THE ADOLESCENT BRAIN AND COGNITIVE DEVELOPMENT (ABCD) BASELINE COHORT

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Background: Evidence indicates that alcohol use is associated with increased suicidality, but it not clear when this association begins. We examined whether lifetime low-level alcohol use was associated with an increased likelihood of suicidal ideation and/or suicide attempts among children in the Adolescent Brain and Cognitive Development baseline cohort.

Methods: Data was drawn from (N=11,875) children (ages 9-10) in the ABCD study baseline cohort across 21 United States data collection sites. Of the 11,875 participants enrolled in the baseline cohort, 10,773 had complete and valid data on the lifetime low-level alcohol use, suicidal ideation, and suicide attempt variables. Cross-sectional, multilevel (2-level, participant within-study site) multinomial logistic regression analyses were conducted to determine if lifetime low-level alcohol use increased the likelihood of membership to three groups: 1) lifetime suicidal ideation, 2) lifetime suicide attempt and 3) healthy controls, while controlling for demographics (sex, race, parental education, parental marital status) and other covariates of interest (internalizing and externalizing behaviors, sleep duration, sleep problems, behavioral inhibition/activation, and family history of alcohol use disorder).

Results: In our study, 2,535 (23.5%) children reported lifetime low-level alcohol use; 817 (7.6%) participants reported lifetime suicide ideation and 138 (1.3%) reported lifetime suicide attempt. Within the lifetime suicide ideation group, 37.7% reported lifetime low-level alcohol use whereas in the lifetime suicide attempt group, 36.2% reported lifetime low-level alcohol use. In the healthy control group, 22.2% reported lifetime low-level alcohol use. Lifetime low-level alcohol use increased the likelihood of self-reported lifetime suicide ideation (adjusted odds ratio 2.09, 95%CI 1.82-2.40, p=<0.001) and lifetime suicide attempt (adjusted odds ratio 2.25, 95%CI 1.35-3.76, p=0.034) relative to healthy controls, controlling for demographics and all other potential confounders.

Discussion: The relationship between alcohol use and suicidality in young adults is well established. Here, we provide evidence that children as young as 9-10 years, a group underrepresented in the alcohol-suicide literature, are experimenting with alcohol and experiencing suicidality, and that associations between alcohol use and suicidality can be detected in this age group. Future prospective research in this diverse cohort is needed to better

understand biological and behavioral mechanisms that may be underlying any alcohol-suicidality relationships observed as these youth get older and alcohol use increases. Emotional functioning, avoidance and approach sensitivity linked to negative affect and impulsivity, and sleep problems were accounted for in our statistical modeling and did not eliminate the relationship between alcohol use and suicidality, yet they warrant further examination of the influence they have on suicidality and psychopathology during adolescence since they were associated with increased odds of suicidality in this large sample of children.

49. TRANSDIAGNOSTIC SUICIDE RISK IN A NATIONAL VA SAMPLE: ROLES OF PSYCHIATRIC DIAGNOSIS, BEHAVIOR REGULATION, SUBSTANCE-USE DISORDERS, AND SMOKING

Alan Swann*[1], David Graham[2], Anna Wilkinson[3], Thomas Kosten[1]

[1]Baylor College of Medicine, Michael E. DeBakey VA Medical Center, [2]Michael E. DeBakey VA Medical Center, [3]University of Texas School of Public Health

Background: Suicide is associated with impaired behavior regulation, which can have an unpredictable time course. Most suicides are first attempts, and people who survive medically severe attempts go on to have increased mortality related to suicide and to other consequences of impulsivity and behavior dysregulation. Further, it is becoming increasingly evident that much, even most, severe suicidal behavior may occur outside of conventional psychiatric diagnoses. We compared relative risks (RR) of severe suicidal behavior to RR for ideation in impulsive-aggressive behavior, addictions, and recurrent affective or psychotic disorders, using a nationwide Veteran sample.
Methods: Subjects included over 350,000 Veterans and their de-identified electronic records in the Million Veterans Program (MVP), a nationwide, general medical study. Data, including aggregate phenotype counts and relevant ICD and clinic codes, were provided by VA Information and Computing Infrastructure (VINCI) Data Navigators. Investigators did not have access to identifying information or original data. Results are given as Risk Ratio (RR) with 95% confidence limits.
Results: We compared three suicide risk groups: 1,269 high-risk Veterans with previous serious attempts or plans requiring hospitalization; 109,876 with suicidal ideation only, and 242,872 without previous suicidality. Three-fourths of high-risk veterans had neither schizophrenia nor recurrent affective disorders. Veterans with impulsive-aggressive behavior, for example, borderline personality disorder, antisocial personality disorder, or intermittent explosive disorder, had the highest RRs for high-risk suicidal behavior (25.4; CI 22.1-29.1). Substance-related disorders had higher RR (13.9; 12.3-15.7) than schizophrenia (7.4; 5.5-9.0) or bipolar disorder (7.8; 6.5-9.2). High-risk RR for current smoking was greater than for major depressive disorder (5.1 (4.5-5.6) vs 3.5 (3.0-4.1).
Discussion: Impulse control and substance-use disorders were more strongly associated than affective or psychotic disorders with high risk for suicidal behavior. Strong relationships between suicide risk and addictions or impulsive behavior occur across and beyond major psychiatric disorders. Primary care and emergency settings need to recognize high-risk characteristics including impulsive-aggression and smoking, which are readily available in electronic health records and routine clinical encounters.

50. RISK OF SELF-HARM OR SUICIDE ASSOCIATED WITH SPECIFIC DRUG USE DISORDERS, 2004-2016: A POPULATION-BASED COHORT STUDY

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[1]The University of Hong Kong, [2]University College London

Background: Drug use disorders are associated with increased risk of self-harm or suicide. Risk differences associated with specific types of drug use disorders are yet to be comprehensively reported. This paper aims to examine and compare the incidence and risk of self-harm or suicide associated with specific drug use disorders in Hong Kong.
Methods: For this population-based cohort study, electronic medical records were retrieved from the Hong Kong Clinical Data Analysis and Reporting System (CDARS). Cases were people aged 10 years or older who visited a hospital Accident and Emergency department between January 1, 2004, and December 31, 2016 with any one of 10 specific drug use disorders (comprising opioid, ketamine, methamphetamine, sedative, hypnotic, or anxiolytic, amphetamine or related stimulant, cocaine, cannabis, hallucinogen, unspecified or other drug, and multidrug). Each case was matched with two controls, selected from a subset of people in CDARS with the same gender, age, and psychiatric profile. Incidence and adjusted hazard ratio (aHR) of subsequent self-harm or suicide for each specific drug use disorder were estimated.
Results: A total of 8,270 cases and 16,540 matched controls were included. The most prevalent drug use disorder was opioid use disorder (2,523; 30.51%) and the least prevalent was hallucinogen use disorder (77; 0.93%). The crude incidence of self-harm or suicide ranged from 26.57 (95% CI, 14.23-44.55) per 1000 person-years for cannabis use disorder to 91.97 (77.32-108.37) for multidrug use disorders. The highest risk of self-harm or suicide was observed in ketamine (aHR, 16.36; 11.03-24.29) and opioid (15.97; 10.73-23.23) use disorders.
Discussion: All types of drug use disorders were significantly associated with increased risk of self-harm or suicide, however risk levels varied. This highlights the importance of considering drug use disorders in assessing self-harm or suicide risk, and the importance of developing suicide prevention strategies specific to drug use disorders.

51. THE RISE IN U.S. SUICIDE RATES AND OPIOID USE IN SUICIDE DECEDENTS: APPLICATION OF A MODERATED NETWORK MODEL

Min Eun Jeon*[1], Megan Rogers[2], Rochelle Stewart[1], Roshni Janakiraman[1], Alexander Kallen[1], Thomas Joiner[1]

[1]Florida State University, [2]Mount Sinai Beth Israel

Background: Suicide is a severe public health problem in the U.S., as the 10th leading cause of death for all ages. Prevention efforts are warranted as suicide rates in the U.S. have continued to rise at an accelerated pace since 2006, while rates decreased or remained steady in other economically developed countries. Opiate use may partially explain the trend in U.S. suicide rates, both directly through increasing overdose deaths and indirectly by interacting with and exacerbating life circumstances that contribute to suicide. A network analysis approach may optimally model this complexity, as it enables the examination of conditional dependence and independence relationships among various suicide risk factors, and consequently, can identify potential causal pathways. Further, moderation effects and predictability of risk factors can be examined in networks, as well as stability to increase the reliability of the findings.

Methods: The present study estimated a mixed graphical model in a large sample of U.S. suicide decedents (N = 82,725). The data was collected as part of the Center for Disease Control's National Violent Death Reporting System and include decedents who died by suicide between 2003 and 2017. The network included four suicide-related variables (suicidal ideation history, suicide attempt history, disclosure of suicide intent prior to death, and leaving a suicide note), history of problematic alcohol and substance use, five life circumstance variables related to opiate use (depressed mood, history of childhood abuse, difficulties with employment, finances, and physical health), and the moderator variables of year of death and opiate use, as measured by the presence of opiates in the toxicology exam following suicide. All variables but year were binary. Parameters were conservatively estimated with the Extended Bayesian Information Criterion (gamma =.25), and conditional dependence relationships were calculated as the mean of parameter estimates only when both estimates were nonzero. For accurate interpretations, predictability was calculated, and an edge-weights difference test was conducted. Stability was examined using nonparametric bootstrapping sampling with 1,000 samples.
Results: Results: indicated that opiate presence was conditionally dependent on year but shared relationships of greater magnitude with life circumstances that formed an indirect pathway to suicidal behaviors prior to suicide death. Year had a strong conditional dependence relationship with suicidal ideation history, implying an increase in the suicide decedents known to have experienced suicidal ideation over time. Twelve three-way interactions emerged, but none involved both year and opiate presence. The predictability of year was limited to 15% and the predictability of binary variables minimally benefited from the variance of all other variables in the network. Stability results indicated that parameter estimates were very stable, and their weight could be reliably compared.
Discussion: To summarize, more decedents tested positive for opiates and had a history of suicidal ideation every year in our sample. Three-way interactions that included either year or opiates were identified but none included both opiate presence and year, further evidencing the complexity of suicide.

52. THE ROLES OF ALCOHOL USE DISORDER AND RESILIENCE IN RISK OF SUICIDE ATTEMPT IN MEN: A SWEDISH POPULATION-BASED COHORT

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Background: Alcohol Use Disorder (AUD) is a major public health concern, leading to both direct and indirect deaths. Suicidal behaviors are among important AUD-related burdens, while AUD and suicidality may be characterized by shared genetic and environmental liability. A potential way to prevent suicidal behaviors in at-risk populations is to focus on protective factors. Resilience, defined as the ability to cope with adversity, has been identified as protective for both AUD and suicidality. This study aimed to prospectively evaluate how AUD and resilience were related to non-fatal suicide attempts in men, and how these associations were explained by familial factors.
Methods: We used Swedish data registries. Resilience was evaluated in Swedish men (N=903,333, born 1960-1980) at the time of their conscription (19 years old) to inform about their ability to cope with stressful events (higher scores reflected better resilience). Information regarding AUD status and suicide attempts were available through ICD codes, as well as

criminal and pharmacy records for the former. First, we used Cox proportional hazards models to test the association between AUD (time-varying covariate), resilience, and first suicide attempt while controlling for birth year and educational level. We also evaluated the interaction between AUD and resilience in the prediction of suicide attempt on a multiplicative scale. Second, using a co-relative design, we assessed the degree to which the observed associations were attributable to familial risk factors (genetic and/or environmental) . Co-relative analyses also inform about causality, when the association between a risk factor and an outcome remains significant after accounting for familial factors.
Results: During the observation period, 2.7% of men attempted suicide at least once and 6.1% were registered for AUD. Results showed that AUD was strongly associated with increased risk of suicide attempts, especially at the end of adolescence (19-20 years old; hazard ratio [HR]=29.23, 95% confidence intervals [CI]: 25.67; 33.28). AUD-based HRs declined with age (HR=10.70 (CI=10.29; 11.13) at age 30 and later). Resilience was associated with a reduction in the overall likelihood of suicide attempts (HR=0.73, CI=0.71; 0.74). Multiplicative interaction terms differed significantly from 1 for all age groups (HR=1.20-1.42), supporting the potentially protective effect of resilience but also showing that, in the context of AUD, the effect of resilience was attenuated. Finally, co-relative analysis supported both familial-genetic liability and a possible causal pathway between AUD, resilience, and suicide attempt.
Discussion: AUD is a strong predictor of suicide attempts in men, while resilience has protective effects. In the context of AUD, the effect of resilience on SA risk is lower than expected based on main effects. Co-relative analyses indicate that, when accounting for familial and genetic factors, AUD and resilience appear causally related to suicide attempts. Prevention actions should focus on increasing resilience in high-risk populations.

53. ALCOHOL USE AND SUICIDALITY AMONG AMERICAN COLLEGE STUDENTS: FINDINGS FROM THE EBRIDGE PROJECT

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Background: Heavy alcohol use has been clearly linked to risk for suicidal behaviors and is also prevalent on college campuses. Little is known of the relationship between alcohol use and suicidal behavior in this setting.
Methods: An internet-based screening and intervention program, the Electronic Bridge to Mental Health (eBridge) recruited 41,597 students from four universities early in the fall terms across four years. Of 40,375 who completed all baseline assessments, 2296 met criteria for an increased risk for suicidal behavior and were reassessed after intervals of one and/or 6 months. Measures included the Alcohol Use Disorders Identification Test (AUDIT) with subscales measuring alcohol intake (Consumption) and alcohol-related problems (Dependence). The PHQ-2 and PHQ-9 measured depressive symptoms for the screening population and the high-risk students, respectively. Assessments also included those for suicidal ideation and suicide attempts in the previous month and year as well as lifetime suicide attempts.
Results: Baseline assessments showed strong and consistent relationships between suicidality measures and alcohol dependence but not alcohol consumption. Logistic regression analyses revealed that female sex and the AUDIT Dependence and PHQ-2 measures were independently associated with both suicide ideation and suicide attempts in the previous month. Thirty-five (1.5%) of the high-risk students attempted suicide during follow up. As with the analysis of

past attempts in the screening sample, logistic regression showed that the alcohol dependence, but not alcohol consumption, measure predicted attempted suicide during follow up. The PHQ-8 measure of depressive symptoms (excluding the suicide item) was not predictive though that of global impairment was. Those with a suicide attempt in the year prior to screening had a six-fold higher risk for a prospectively observed suicide attempt.
Discussion: For both past and future suicide attempts problems associated with alcohol use, but not the quantity consumed, add significantly to the risks for suicidal behavior that result from depressive symptoms and measures of suicidality for in college students. This has implications for the choice which alcohol use measures to best use in determining risk for suicidal behavior in this population.

CLINICAL INTERVENTIONS: THE THIRTY THOUSAND FOOT VIEW

Chair: Katrina Witt

54. SAFETY PLANNING-TYPE INTERVENTIONS FOR SUICIDE PREVENTION: META-ANALYSIS

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Background: Safety planning-type interventions (SPTIs) for patients at risk of suicide are often used in clinical practice, but it is unclear whether these interventions are effective. This presentation reports on a meta-analysis of studies that have evaluated the effectiveness of SPTIs in reducing suicidal behaviour and ideation.
Methods: We searched Medline, EMBASE, PsycINFO, Web of Science and Scopus from their inception to 9 December 2019, for studies that compared an SPTI with a control condition and had suicidal behaviour or ideation as outcomes. Two researchers independently extracted the data. To assess suicidal behaviour, we used a random-effects model of relative risk based on a pooled measure of suicidal behaviour. For suicidal ideation, we calculated effect sizes with Hedges' g.
Results: Of 1816 unique abstracts screened, 6 studies with 3536 participants were eligible for analysis. The relative risk of suicidal behaviour among patients who received an SPTI compared with control was 0.570 (95% CI 0.408–0.795, P = 0.001; number needed to treat, 16). No significant effect was found for suicidal ideation.
Discussion: To our knowledge, this is the first study to report a meta-analysis on SPTIs for suicide prevention. Results support the use of SPTIs to help preventing suicidal behaviour and the inclusion of SPTIs in clinical guidelines for suicide prevention. We found no evidence for an effect of SPTIs on suicidal ideation, and other interventions may be needed for this purpose.

55. PATIENT-INITIATED BRIEF ADMISSION (PIBA) - A CRISIS INTERVENTION TO PREVENT SUICIDE: AN EVALUATION OF PSYCHIATRIC SYMPTOMS AND HEALTH-RELATED QUALITY OF LIFE

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Background: Borderline personality disorder (BPD) is characterized by high rates of suicidal behaviours, and individuals with BPD frequently use health care services. The novel crisis intervention patient-initiated brief admission (PIBA) was developed for patients with BPD to enable them to better cope with serious crises and to increase their autonomy. It is the patient who initiates PIBA, and the duration of inpatient care is 1-3 days. The purpose of this study was to explore how psychiatric symptoms of anxiety, depression, and health-related quality of life (HRQoL) change after the intervention. Additionally, we evaluated whether patients found PIBA to be a constructive crisis intervention.
Methods: This was an open pilot study of one hundred thirteen patients recruited from a psychiatric clinic in Stockholm, Sweden, during a four-year period (2016-2020). Upon arrival at the inpatient ward and in connection with discharge, the patients completed two self-rating scales: The Hospital Anxiety and Depression Scale (HADS) and EuroQoL-5 Dimension Questionnaire (EQ-5D). Prior to discharge, the patients evaluated PIBA, including whether it fulfilled its intended purpose, the approach taken by staff and their overall satisfaction. Paired sample T-tests were performed to analyse how symptoms of anxiety, depression and HRQoL changed after PIBA.
Results: In total, 64 participants initiated PIBA on at least one occasion during the study period. There was a significant and substantial decrease in symptoms of anxiety (M=15.0, SD=4.05 vs. M=12.9, SD=4.81, d=0.70) and a significant and moderate decrease in symptoms of depression (M=11.2, SD=4.28 vs. M=9.45, SD=4.68, d=0.58). HRQoL increased significantly, with a substantial effect as assessed with the EQ-5D VAS (visual analogue scale) (d=0.86, M=32.3, SD=17.0 vs. M=49.2, SD=22.0) and a moderate effect as assessed with the EQ-5D Index (d=0.62, M=0.38, SD=0.26 vs. M=0.55, SD=0.31). The evaluation form showed that 95.2% of the participants found to be a constructive intervention.
Discussion: PIBA shows promising results with regard to decreasing psychiatric symptoms and increasing HRQoL. This crisis intervention may contribute to the development of inpatient care for patients with BPD. Future studies are needed to evaluate the effects of PIBA in other patient populations.

56. ASSOCIATION OF ELECTROCONVULSIVE THERAPY WITH RISKS OF ALL-CAUSE MORTALITY AND SUICIDE IN OLDER MEDICARE PATIENTS

Samuel Wilkinson*[1]
[1]Yale

Background: This observational study examined the effects of electroconvulsive therapy (ECT) on suicide and all-cause mortality risk.
Methods: Participants were Medicare-insured psychiatric inpatients aged 65 years and over. Patients receiving ECT were exact matched to controls (1:3 ratio) on age, gender, principal hospital diagnosis, past year psychiatric hospitalizations, past year suicide attempts, and Elixhauser Comorbidity Index. Cox proportional hazard models were risk-adjusted for race, year of hospitalization, rural-urban continuum code, year of index hospitalization, median income of zip code, and all matched covariates to estimate hazard ratios (HR) with 95% confidence intervals (CI). Analyses were conducted between March 2019 and March 2021.

Results: A total of 41,620 patients were included in the analysis (65.4% female, mean age 74.7 [SD 7.09]) including 10,460 in the ECT group and 31,160 in the control group. Compared to the control group, patients receiving ECT had lower all-cause mortality for up to 1 year following hospital discharge (adjusted hazard ratio [HR]=0.61, 95% CI:0.56-0.66). For death by suicide, one-year survival analysis showed no group difference. A significant association was observed in the first months following ECT, but this pattern waned over time (1 month: HR=0.44, 95% CI:0.21-0.91; 2 months: HR=0.52, 95% CI:0.29-0.92; 3 months: HR=0.56, 95% CI:0.37-0.92; 6 months: 0.87, 95% CI:0.59-1.28; 12 months: 0.92, 95% CI:0.68-1.25).
Discussion: In this observational study, ECT was associated with lower one-year all-cause mortality and short-lived protective effects on suicide risk. These findings support greater consideration of ECT for inpatients with mood disorders at short-term risk of suicide.

57. DECREASES IN SUICIDALITY FOLLOWING PSYCHEDELIC THERAPY: A META-ANALYSIS OF INDIVIDUAL PATIENT DATA ACROSS CLINICAL TRIALS

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Background: Suicide is a global health concern and innovative interventions that target suicidality are needed. Psychedelic therapy is showing promise for a range of mental health concerns and recent research has provided preliminary evidence that psychedelic therapy may lead to decreases in suicidality. However, only a limited number of clinical trials have evaluated the effect of psychedelic therapy on suicidality and, to date, no meta-analysis has been published on the topic.
Methods: We identified all psychedelic therapy clinical trials that included a measure or measure-item that assesses suicidality, requested these data from study authors, and conducted a meta-analysis on the effect of psychedelic therapy on suicidality across clinical trials. Acute and post-acute elevations in suicidality associated with psychedelic therapy were also examined. We identified eight relevant trials and successfully collected suicidality data from seven trials. These trials evaluated ayahuasca and psilocybin therapy as interventions for individuals with treatment-resistant depression, major depressive disorder, HIV-related demoralization, and cancer-related distress.
Results: Analysis of standardized mean differences (SMD) indicated that psychedelic therapy was associated with large acute (80-240 min. post-administration) decreases in suicidality (SMD = -1.48-1.72; 95% CI range: -2.93, -0.51), as well as at 1 day (SMD = -2.18; 95% CI -2.77, -1.59), 1 week (SMD = -1.61; 95% CI -2.03, -1.20), 2 weeks (SMD = -1.64; 95% CI -2.22, -1.06), 3 weeks (SMD = -1.58; 95% CI -2.79, -0.38), 4-5 weeks (SMD = -1.50; 95% CI -1.97, -1.03), 2 months (SMD = -1.62; 95% CI -3.47, 0.23), and 3 months (SMD = -2.36; 95% CI -4.30, -0.43) posttreatment. At 6 months post-treatment, decreases in suicidality were significant and the effect size was medium (SMD = -0.65, 95% CI -1.14, -0.16). Acute and post-acute elevations in suicidality following the administration of a psychedelic were rare (6.5% and 3.0%, respectively) and there were no instances that met conservative thresholds for elevated suicidality.
Discussion: Limitations with the present analyses include heterogeneous samples and interventions, as well as the limited sample size and number of studies. Overall, these results provide preliminary support for the safety of psychedelic therapy and its positive effect on suicidality. These findings suggest that controlled trials aiming to specifically evaluate the effect of psychedelic therapy on suicidality may be warranted.

58. MANAGEMENT OF SELF-HARM: UPDATED GUIDANCE FROM THREE COCHRANE SYSTEMATIC REVIEWS AND META-ANALYSES

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Background: Self-harm (SH), which includes all non-fatal intentional acts of self-poisoning (such as intentional drug overdoses) or self-injury (such as self-cutting), regardless of degree of suicidal intent or other types of motivation is a growing problem in most countries. SH is a major social and healthcare problem. It represents significant morbidity, is often repeated, and is linked with suicide. In 2021, the guidance contained in the 2011 NICE guidelines for the longer-term management of SH will be due for updating. Therefore, we have updated our Cochrane systematic reviews, previously published in 2015-16, to provide contemporary evidence to guide clinical policy and practice.
Methods: We considered all randomized controlled trials (RCTs) of specific psychosocial and pharmacological interventions versus treatment as usual, routine psychiatric care, enhanced usual care, active comparator, or a combination of these, in the treatment of adults (over 18 years) and also children and adolescents (up to 18 years of age) with a recent (within six months of trial entry) presentation for self-harm (SH). All RCTs (including cluster-RCTs [cRCTs] and cross-over trials) were eligible for inclusion regardless of publication type or language. An information specialist searched six discipline appropriate databases (to 4 July 2020), using relevant subject headings (controlled vocabularies) and search syntax as appropriate for each.
Results: The present update located 28 new trials of psychosocial interventions for SH in adults (76 independent trials in total with 21,414 participants), 9 new trials of psychosocial interventions for children and adolescents (17 independent trials in total with 2,280 participants), but no new trials of pharmacological interventions for SH in adults (7 independent trials in total with 574 participants). Across these reviews, participants were predominately female, reflecting the typical pattern for hospital-presenting SH.
Discussion: Overall, there were significant methodological limitations across the trials included in these three reviews, therefore, here the moderate or very low quality of the available evidence. For adults, psychosocial therapy based on CBT approaches (21 trials) is associated with fewer individuals repeating SH at longer follow-up time points (although no such effect was found at the post-intervention assessment based on data from just 4 of these trials). From findings in single trials, or trials by the same author group, both MBT and group-based emotion regulation therapy should be further developed and evaluated in adults. DBT is associated with a reduction in frequency of SH. For children and adolescents, available evidence suggests that further evaluation of DBT for adolescents (DBT-A) is warranted. There is no evidence to support the use of pharmacological interventions for the sole indication of SH in either adults or children and adolescents.

59. A PILOT RANDOMIZED CONTROL TRIAL OF A SAFETY PLANNING INTERVENTION DYAD TREATMENT: SAFE ACTIONS FOR FAMILIES TO ENCOURAGE RECOVERY (SAFER)

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Background: Suicide is the 10th leading cause of death in the United States (US), with a global rate of 10.5 per 100,000 (WHO, 2019). Compared to the general US population, Veterans are at especially high risk for suicide (Kang, Bullman, Smolenski, Skopp, Gahm, and Reger, 2015). While the SPI has been implemented in multiple different contexts (e.g., individual and group settings; Goodman et al., 2020), there are no present guidelines specifying the involvement of family members in this intervention. Despite family members' critical role in protecting against suicide (Frey and Cerel, 2015), they lack education on how their behavior can help avert, or unwittingly aggravate suicidal thoughts and behavior. Even though they worry about their supportive partners they receive few resources on how they can help them (Grant, Ballard, and Olson-Madden, 2015). In addition to the lack of implementation guidelines, there is no real nuanced or detailed information on how to involve family in safety planning. The Safe Actions for Families to Encourage Recovery (SAFER) intervention is a novel, manualized, 4-session, 90-minute family-based treatment. SAFER provides the tools and structure to support family involvement in Safety Planning Intervention (SPI) for Veterans at moderate risk for suicide.

Methods: The SAFER intervention includes the use of psychoeducation, communication skills training, and revision and development of both the Veteran and a complementary supporting partner SPI. This Stage II (2aii) randomized clinical trial (RCT) evaluated the preliminary efficacy of this innovative and much-needed approach. Thirty-nine Veterans and an associated supporting partner were randomized to receive either SAFER or currently mandated (i.e., standard) individual Safety Planning Intervention (I-SPI).

Results: Veterans in the SAFER condition as compared to I-SPI exhibited significant monthly decrements in suicide ideation (measured by the Columbia Suicide Severity Rating Scale) (B=-0.37; p=.032). Moreover, a treatment-by-time interaction emerged when predicting improvements in Veteran suicide-related coping (B=0.08; p=.028) and supporting partner support of Veteran's coping efforts (B=0.17; p=.032). However, the treatment effect for Veteran coping was not significant in dyadic analyses (B=0.07; p=.151) after controlling for the partner's support (B=0.16; p=.009). Self-reported appraisals of relational factors and self-efficacy were not impacted by condition for either Veterans or supporting partners.

Discussion: This initial efficacy pilot trial suggest that a brief dyad-based Safety Planning Intervention has the potential to improve Veteran suicide symptoms and help family members support the Veteran's coping efforts. However more intensive family work may be required for changes in self-perceptions of burdensomeness, belongingness, and caregiver perceptions of the veteran as a burden. Nonetheless, SAFER's discussion and disclosure about suicide symptoms facilitated more robust development of Veteran and accompanying supporting partner SPI.

PUBLIC HEALTH FACTORS IN SUICIDAL BEHAVIOR

Chair: Vladimir Carli

60. SUICIDE-RELATED CALLS TO A NATIONAL CRISIS CHAT HOTLINE SERVICE DURING THE COVID-19 PANDEMIC AND LOCKDOWN

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Background: A COVID-19 pandemic-related rise in suicide rates has been predicted due to social isolation, fear,
uncertainty, economic turndown and grief. Detecting an increase in suicide rates is difficult in the absence of real-time data. Alternative data sources for such trends in psychopathology and suicidal behavior must be sought.

Methods: Data from a national chat-based crisis hotline for the first half of 2019 (pre-COVID-19), were compared to data from the first half of 2020 (during COVID-19). Chat sessions were classified by content and demographics and the data compared between the two time periods.
Results: Total chats (n = 6756) were 48% higher during COVID-19 ($p < .05$). Suicide-related chat (SRC) number was also higher, although the proportion relative to all chats was slightly lower during COVID-19, compared to pre-COVID-19 ($p < .05$). SRCs increased during the COVID-19 lockdown. The number of severe SRCs resulting in urgent police intervention, increased during the lockdown (April–May 2020) compared with the same period in 2019 ($p = .04$). Issues of anxiety were higher in 2020 (19.4%) vs. 2019 (16.5%) ($p < .00001$) while issues of depression were lower (22.4% vs 33%, respectively) ($p < .00001$). The overall use of chats among adults aged >50 yrs increased during COVID-19 and likewise, the rate of SRCs in this age-group increased 30-fold in this period when compared to pre-COVID-19 ($p < .00001$). SRCs included more women than men ($p < .0001$) in both pre-COVID-19 and during the COVID-19 period, when the proportion of women increased from 62% in 2019 to
73% during COVID-19 ($p < .0001$).

Discussion: The rise in total chats, SRCs and SRCs resulting in police action, commenced during lockdown and
was ameliorated by end of the lockdown, indicating that distress created by the lockdown was more impactful than mourning deaths of loved ones, fear and uncertainty, because all these factors persisted beyond the end of the lockdown. Older populations were probably more distressed due to greater risk and less adaptability to isolation, social media and staying home. More calls by women may reflect women's better help-seeking capacity. The increase in SRCs indicates the potential for more suicides and the need for bolstering mental health services and reach-out to older people during pandemic lock-downs.

61. FIREARM ACCESS AMONG PEDIATRIC PATIENTS AT RISK FOR SUICIDE

Nathan Lowry*[1], Ian Stanley[2], Annabelle Mournet[1], Elizabeth Wharff[3], Shayla Sullivant[4], Stephen Teach[5], Maryland Pao[1], Lisa Horowitz[1], Jeffrey Bridge[6]

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Background: In 2019, approximately 2,900 youth aged 10 to 24 years in the United States (US) died by an intentional, self-inflicted gunshot wound, accounting for nearly half of all suicide deaths in this age group. Notably, when a firearm is used in a suicide attempt, nearly 90% of youth attempters die. The lethality of other means, such as self-poisoning, is markedly lower. While many parents do not believe that their child has access to a firearm, a large portion of children report having knowledge of and access to firearms stored in their home. Moreover, many youths report being able to access a loaded firearm in a short amount of time. Providing pediatric patients and their parents with counseling on safe storage has been identified as a best practice. This study aims to describe the rate of self-reported access to firearms in the home among youth who screen positive for suicide risk in medical settings, in order to underscore the importance of lethal means safety counseling efforts.
Methods: This study is a secondary analysis of cross-sectional data collected from three multisite instrument validation studies. Participants were youths ages 10 to 21 years, inclusive, who presented to either the emergency department, inpatient medical/surgical units, or outpatient specialty and primary care clinics of four pediatric medical centers located in the US. Patients who presented to these medical centers lived in surrounding urban and suburban areas. Participants completed the Ask Suicide-Screening Questions (ASQ), a four-item tool to assess suicide risk. Structured interviews were conducted with participants that included a question about firearms in the home ("Are any guns kept in or around your home?"). Follow-up questions for patients who answered "yes" assessed knowledge of gun storage ("Do you know how to access these guns?") and storage of bullets ("Are the bullets kept in or around your home locked and separate from the guns?"). Descriptive statistics and chi-square were used to describe and compare youth firearm access by suicide risk status.
Results: This sample consisted of 1453 youth (56.2% female; 52.3% white, 23.4% black; M[SD] age = 15.5[2.7] years). Overall, 22.2% (323/1453) reported a firearm kept in their home. A third (31.2%, 100/321) of youth reporting guns kept in the home knew how to access the firearm and 80.7% (242/300) reported that the bullets were stored separately. Of the total sample, 11% (160/1453) screened positive on the ASQ and were considered "at risk" for suicide. Among youth at risk for suicide, 24.4% (39/160) reported guns kept in their home; 43.6% of these participants (17/39) knew how to access the guns and 81.1% (30/37) reported that the bullets were stored separately from the firearm. In univariate analysis, comparing youth with and without risk for suicide, there were no significant differences for firearms stored in the house ($p = .49$), firearm access ($p = .07$), or safe storage of bullets ($p = .98$).
Discussion: Nearly a quarter of youth in pediatric medical settings reported having firearms in their home. Likewise, nearly a quarter of participants who self-reported being at risk for suicide also reported that guns were kept in or around their homes, representing a major safety concern. Increased prevention efforts are needed to ensure that clinicians are adequately trained to talk to youth and their families about safely storing lethal means.

62. THE CATALONIA SUICIDE RISK CODE (CSRC) PROGRAMME: INCIDENCE OF SUICIDE ATTEMPTS, 2014-2021

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Background: Suicide attempts (SA) represent a significant public health burden. The Catalonia Suicide Risk Code (CSRC) program is an indicated suicide prevention intervention, implemented in the Catalan public healthcare system since 2014 (full ~7.5M population coverage since 2016). It consists of a SA surveillance protocol with post-crisis outpatient mental health visits and phone calls as follow-up interventions for individuals deemed at high risk for repeat SA or suicide. Using data from the CSRC program, we estimated the incidence of SA in Catalonia during the period 2014-2021.

Methods: Observational study representative for the entire ≥10-year-old Catalan population during January 2014- April 2021 period. The first public healthcare contact for SA registered in the CSRS program within the study period was considered the index episode for each individual. Suicide attempt is defined as an act of intentional self-injury or self-poisoning with at least some intent to die. The sources of data were the CSRC case register and population-representative administrative lists of Catalan residents from the Catalan Health Department. We estimated crude and age-standardized annual incidence rates (using the direct method), overall and stratified by age, gender, and healthcare region.

Results: A total of 13,169 individuals with a SA were registered during the study period. One-third (66.8%) of SA were made by females, and females also had higher SA incidence rates than men in all age groups, except for those aged 80 years old or more. The highest rate was observed in females aged 10-19 years old, with 121.9 SA (95% CI 103.3-140.5) per 100,000 person-years in 2021. In males, the highest rates were observed in those aged 40-49 years old until 2019, with 31.2 SA (95% CI 27.0-74.1) per 100,000 person-years in that year. In 2020

and 2021, males aged 20-29 years old had the highest rates of SA, with 30.3 SA (95% CI 25.1-35.5) and 28.6 SA (95% CI 19.8-37.3) per 100,000 person-years, respectively. We observed an increase in the incidence of SA until 2019, with age-standardized rates (Spanish reference population 2014), ranging from 29.6 in 2016 to 35.3 per 100,000 person-years in 2019. A lower age-standardized rate was observed in 2020, with 30.6 SA per 100,000 person-years. Females had 71-99% higher age-standardized rates than males throughout the study period. Barcelona was the healthcare region with the highest number of SA, i.e., 9,264 throughout the study period. Camp de Tarragona healthcare region had the highest SA rates in the period, reaching 41.7 SA (95% CI 36.5-47.0) per 100,000 person-years in 2017; and Catalunya Central had the lowest, with 12.1 SA (95% CI 9.1-15.1) per 100,000 person-years in 2017.
Discussion: In Catalonia, the incidence of SA is higher in female and older age groups, in line with suicide attempt patterns in other southern European countries. The high incidence among adolescents and young adults, especially females, is noteworthy. The progressive implementation of the CSRC program, including familiarisation with CSRC program reporting and recording procedures among professionals, could explain the incidence increase of SA over the study period. The covid-19 pandemic may have affected case registration. Nevertheless, those trends need further close monitoring.

63. PERSONALIZING NUDGES: TOWARDS PRECISION MESSAGING IN SUICIDE PREVENTION

Brian Bauer*[1], Fagan Patrick[2], Aleks Karnick[1], Alexis Bailey[1], Shawn Gilroy[3], Raymond Tucker[3], N. Bradley Schmidt[4], Daniel Capron[1]

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Background: Crisis resources (e.g., crisis lines) are widely available, yet underutilized. Messaging interventions that account for cognitive biases and use personalization strategies have been effective in increasing engagement with resources in other areas of healthcare (e.g., vaccines) and could be helpful for mental health messaging. Across two studies, we examined whether using nudges – interventions that leverage cognitive biases to systematically influence behavior – with a personalization technique (derived from latent class analysis) would increase engagement with crisis resources. The primary aim of these studies was to determine if personalized nudges could reliably influence people to enter a crisis line into their phone.
Methods: Study 1: We recruited 400 individuals from Amazon's Mechanical Turk. Participants answered questions about their demographics, personality, and preferences for persuasion strategies (e.g., liking/consensus, authority) and were also asked to enter a crisis line into their phone. To assess the effectiveness of personalized nudges, we randomized participants into three conditions: 1) Receiving an authority nudge ("Suicide prevention organizations and clinicians suggest people have a crisis line number in their phone."); 2) Receiving a social norms nudge ("Most participants put the crisis line number into their phone and believe others should do this too."); and 3) A control group ("If interested, please put the crisis line number into your phone."). We verified the target behavior (i.e., entering a crisis line into their phone) by having participants select a crisis line from their state of choice and then re-entering the phone number later in the survey.

Study 2: In an ongoing follow-up study with undergraduate students (N = 192), we placed participants into three groups. Study 1 latent class information showed that females who scored

high on neuroticism were more likely to respond to a social norms nudge; thus, if participants scored 1SD above the mean on neuroticism and were female, they were placed into a social norms nudge condition (n = 68). If participants did not meet these requirements, they were randomized into a control group (n = 56) or a separate social norms group (n = 64) to allow for comparison between randomized and targeted conditions.

Results: Study 1: Both the authority nudge ($\chi 2[1]=30.27$, p = <.001) and the social norms nudge ($\chi 2[1]=33.72$, p = <.001) significantly increased the likelihood of individuals entering a crisis line phone number into their phone by 14.42% and 13.20%, respectively.

We created latent classes using personality variables, demographics, and preference ratings for different nudges. Next, we examined the proportion of individuals who performed a target behavior based on their latent class. Segmenting groups by latent classes, we found that personalized nudges would have been 42.52% more effective than a one-size-fits-all nudge ($\chi 2[1]=67.81$, p = <.001) and 56.33% more effective than a control message with no nudge ($\chi 2[1]=71.74$, p = <.001).

Study 2: Data collection is ongoing and inferential analyses will be performed after collection is completed (July 2021). After validation checks, 29.6% (n = 20) of the personalized group, 17.9% (n = 10) of the randomized social norms group, and 10.7% (n = 6) of the control group entered a crisis line number into their phones.

Discussion: In line with previous findings, preliminary results suggest that a one-size-fits-all nudge is better than not using a nudge. Moreover, personalizing nudges further increased messaging potency. Using latent class analysis with nudges to personalize messages may be a highly scalable strategy for increasing engagement with mental health resources, though further research is needed.

64. CHILDHOOD FACTORS ASSOCIATED WITH SUICIDAL IDEATION AMONG SOUTH AFRICAN YOUTH: A 28-YEAR POPULATION-BASED LONGITUDINAL STUDY

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Background: Though early-life factors are associated with increased suicide risk in youth, there is a dearth of research on these associations for children growing up in disadvantaged socioeconomic contexts, particularly in low- and middle-income countries (LMICs). We documented the contribution of childhood individual, familial, and environmental factors to suicidal ideation among South African youth

Methods: We used data from 2,020 participants in the Birth to Twenty Plus (Bt20+) study, a South African cohort following children born in Soweto-Johannesburg (a socioeconomically disadvantaged context with widespread violence) from birth (1990) to age 28 years (2018). Suicidal ideation was self-reported at ages 14, 17, 22, and 28 years. We assessed individual, familial, and socioeconomic characteristics at childbirth, adverse childhood experiences (ACEs) between ages 5 and 13 years, and behavioral and emotional problems between 5 and 10 years. We estimated odds ratios (OR) of suicidal ideation for individuals exposed to selected early-life factors using logistic regression

Results: Lifetime suicidal ideation was reported by 469 (22.3%) participants, with 1.7:1 female/male ratio. Suicidal ideation rates peaked at age 17 and decreased thereafter. Socioeconomic adversity, low birth weight, high birth order, ACEs, and childhood behavioral problems were associated with suicidal ideation, differently patterned among males and females. Socioeconomic adversity (OR 1.13, CI 1.02-1.25) was associated with suicidal ideation among males only, while low birth weight (OR 1.33, CI 1.05-1.68), ACEs (OR 1.11, CI 1.01-1.21), and high birth order (OR 1.14, CI 1.06-1.23) were associated with suicidal ideation among females only. Externalizing problems in childhood were associated with suicidal ideation among both males (OR 1.22, 1.08-1.39) and females (OR 1.16, CI 1.03-1.31).
Discussion: Addressing widespread social and environmental adversities as well as childhood behavioral problems at the population level have a role to play in suicide prevention in LMICs. Sex differences must be considered to optimize prevention efforts

65. HEALTH CARE UTILISATION PRIOR TO DEATH BY SUICIDE IN 2015 – A RETROSPECTIVE EXPLORATIVE STUDY BASED ON MEDICAL RECORDS IN SWEDEN

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Background: The Swedish government passed a "Zero Suicide Vision" public health bill in 2008. Yet about 1200 individuals (approximately 12/100 000 inhabitants) die by confirmed suicide each year. Despite the high prevalence of psychiatric disorders among those who die by suicide, international research shows that many suicidal individuals are in treatment at primary health care or specialised somatic health care before death. The knowledge about care utilisation in Sweden prior to suicide is still deficient. The overall aim of this population-based study is to map health care utilisation among all individuals who died by suicide in Sweden during 2015 and to examine age and gender differences.
Methods: This is a retrospective explorative study based on data collected from medical records of people who died by suicide during 2015 in Sweden (data from Region Stockholm is not yet available). Suicide was defined as death due to intentional self-harm using the International Classification of Diseases (ICD), 10th revision (ICD-10: X60-X84). Cases were identified using the Swedish Cause of Death Register. The study population comprised of 948 individuals (691 male, 257 female), aged 13–96 years (median 52 years). Medical records were screened by investigators employed by the local health care after establishing a confidentiality agreement based on the Swedish Act on Patient Confidentiality. The investigators used a structured protocol to collect data regarding health care utilisation (psychiatric services, primary health care and specialised somatic health care) during the last two years of life. Descriptive statistics were used to outline the distribution of health care utilization stratified by age groups (≤24, 25–44, 45–64, ≥65) and sex.
Results: Overall, 90% of those who died by suicide had been in contact with health care within 24 months before suicide, and approximately 60% had contact with health care within four weeks.
Preliminary results show that women had a significantly higher prevalence of health care contacts with specialist psychiatric services within four weeks before death than men (women:

47,0% vs. men: 27,5%), but there were no significant gender differences in contacts with primary health care or specialised somatic health care. The overall health care utilisation four weeks before suicide did not differ significantly between age groups. However, analyses stratified by type of health care service showed that a higher proportion of younger individuals (<45 years) were in contact with psychiatric services and a higher proportion of older individuals (≥45 years) were in contact with primary health care and specialised somatic health care during the month preceding suicide.

Discussion: Most of the individuals who die by suicide in Sweden have been in contact with health care services two years before death and a majority as close to death as within four weeks. This highlights the importance of maintaining and improving suicide prevention work in health care. The present study also reveals gender and age differences in health care utilisation prior to death by suicide, which is essential knowledge to health care providers in developing suicide prevention programs and guidelines. The study will be followed by further research with more detailed analysis of different aspects of health care utilisation before death by suicide.

ROLES FOR TECHNOLOGY IN SUICIDE PREVENTION

Chair: Mark Sinyor

66. DIFFERENCES IN SUICIDE-RELATED TWITTER CONTENT ACCORDING TO USER INFLUENCE

Mark Sinyor*[1], Maya Hartman[2], Rabia Zaheer[3], Marissa Williams[4], Marnin Heisel[5], Ayal Schaffer[6], Donald Redelmeier[7], Amy Cheung[1], Alex Kiss[8], Thomas Niederkrotenthaler[9]

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Background: Research demonstrates associations between suicide-specific social media posts and suicide rates, but content may differ according to the influence of the posts' authors. This study sought to characterize how suicide-related Twitter content differs according to user influence.

Methods: Suicide-related tweets from July 1, 2015-June 1, 2016 geolocated to Toronto, Canada were collected, and randomly selected for coding across low, medium, or high user influence levels. Logistic regression was used to identify differences by user influence for each variable.

Results: Low and medium influence users typically tweeted about personal experiences with suicide, associations between mental health and suicide, and shared humourous/flippant tweets. High influence users, such as news media, celebrities and/or prominent organizations, tended to tweet about suicide clusters, suicide in youth, older adults and indigenous people, suicide attempts, and specific methods. Tweets across influence levels focused on suicide deaths, and few described suicide ideation or included helpful content.

Discussion: This study demonstrated characteristics of greater concern for suicide in tweets by high-influence users, and a paucity of protective content across all users. These results highlight the need for further research and potential intervention.

67. UTILIZING DAILY MOOD DIARIES AND WEARABLE SENSOR DATA TO PREDICT SUICIDAL IDEATION AMONG MEDICAL INTERNS

Adam Horwitz*[1], Ewa Czyz[1], Nadia Al-Dajani[1], Walter Dempsey[2], Zhuo Zhao[1], Inbal Nahum-Shani[2], Srijan Sen[1]

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Background: Historically, static and single measures have been used to predict suicidal ideation (SI) and behaviors over long and unspecified periods of time, restricting the accuracy and clinical utility of our predictions. Fortunately, advances in mobile and wearable technologies provide promising new avenues for risk prediction, such as intensive longitudinal methods (ILMs; e.g., daily diaries and EMA) and passively collected objective data from smartphones and smartwatches. While studies have conducted research in predicting SI with these methods, the majority have utilized small inpatient or clinical samples, with high participant burden (e.g., multiple assessments per day) and monetary incentives for each survey. Less is known regarding ILMs and their integration with passive sensor data for non-clinical populations in real-world, naturalistic settings. The present study utilized a large sample of medical interns, who often experience sharp increases in depressive symptoms during internship, to examine the incremental predictive validity of SI with uncompensated daily diary assessments and sensor data. Findings have significant implications for understanding the added value of ILMs and sensor data to baseline predictors of SI.
Methods: Participants were 2,881 medical interns (57% female; 58% White; mean age: 27.6 years) enrolled in study cohorts beginning in 2017 and 2018 of the Intern Health Study. Participants completed a baseline assessment survey prior to internship, were provided with a Fitbit smartwatch to track their sleep and step counts, and were asked to rate their mood (scale: 1-10) on a daily basis. Participants completed the PHQ-9 depression scale at the end of each quarter. Daily mood ratings as well as sleep and step data derived from Fitbits were aggregated over a two-month period prior to the completion of the quarter #1 follow-up survey to form various features (e.g., means, standard deviations, completion percentages, slope). Our analytic sample (n = 2,238; 77.7% of initial sample) is restricted to those who had sufficient adherence to their Fitbit and daily diaries to form the features. A three-step hierarchical logistic regression was used to examine prediction of SI (non-zero response to PHQ-9 item #9) utilizing baseline predictors in step 1, daily diary mood features in step 2, and passively collected sleep/step features in step 3.
Results: At the conclusion of quarter #1, 7.7% of interns reported SI in the past two weeks. In the hierarchical logistic regression predicting SI, step 1 included demographic and baseline clinical variables (sex, neuroticism, PHQ-9 total score, SI, history of depression; $\chi 2$ (5) = 219.4, p <.001; Nagelkerke R2 = .217; AUC = .785). In step 2, lower means [AOR (95% CI) = 0.58 (0.49, 0.68), p <.001] and greater standard deviations [AOR (95% CI) = 1.50 (1.03, 2.18), p = .034] of mood scores were significant independent predictors of SI, and significantly improved model fit (step $\chi 2$ (2) = 66.0, p <.001; overall Nagelkerke R2 = .278; AUC = .818). Sleep and step features did not improve model fit in step 3, and did not have any significant associations with SI.

Discussion: Average levels and variability in mood scores derived from daily assessments over a two-month period provided a modest improvement in the prediction of SI among medical interns, over and above baseline predictors (including baseline SI). Passively assessed features related to sleep and step data did not meaningfully contribute to the prediction of SI, however future studies may wish to examine more fine grained sleep and activity features from passive data collection as predictors. Intervention studies utilizing ILMs and sensor data will need to consider balancing participant burden with modest gains in prediction accuracy.

68. INTENSIVE LONGITUDINAL ASSESSMENT OF YOUTH AND THEIR PARENTS: INFORMING MHEALTH FOR SUICIDE PREVENTION

Sunhye Bai*[1], Chase Venables[2], Joan Asarnow[2]

[1]The Pennsylvania State University, [2]David Geffen School of Medicine at UCLA

Background: Recent research in adolescent suicide prevention has focused on the identification of proximal predictors of suicidal risk and yielded promising ecological momentary mobile health (mhealth) interventions (EMIs). Improving EMIs to respond to real-time indicators of risk is an important next step. While prior research using intensive longitudinal methods has emphasized the youth, interventions with strong family components (e.g., DBT) have demonstrated efficacy. Prior research further supports family conflict as a risk factor, and conversely, family connectedness and support as protective.

The overall aim of this study is to inform efforts to develop EMIs to augment other treatment. Specific aims are: (1) examine parent reports of daily work overload and distress as potential correlates of suicide risk in youth, and (2) present use and outcome data from a quasi-experiment evaluating the added benefit of providing youths the option of viewing their personalized safety plans contingent on their responses to daily surveys.

Methods: Participants were youth with elevated suicide attempt and self-harm risk recruited via an outpatient clinic serving youth with self-injurious thoughts or behaviors (SITBs) and from the community. Eligibility criteria were: past 12-mo presence of SITBs or PHQ-9 $\geq$ 10; a parent willing and able to participate; no characteristics that would impede the ability to participate. Youth and parents completed assessments at baseline followed by 14 days of daily surveys (youth 2/day, parents 1/day), with a follow-up assessment at the end of the daily surveys. On each survey day, youth reported momentary distress (1= calm and content, 10 = very distressed) and the previous night's SITBs. Parents reported daily overload (e.g., "I felt like I barely had a chance to breathe", 0 = completely inaccurate to 3 = completely accurate) and momentary distress. Of 27 participants, 15 were enrolled in the safety plan viewing condition wherein a distress rating > 5 or morning reports of SITBs prompted the use of their personal safety plan, with 12 receiving standard care (safety plan developed but use not automatically prompted).

Results: Analysis of parent overload (M = 1.39, Range = 0.2-3, ICC = 0.36) and momentary distress ratings (M = 2.84, Range = 0-10, ICC = 0.38) indicate that parents' experiences varied considerably from one day to the next. Youth who reported any SI at the follow-up assessment had parents who reported greater levels of distress during the daily survey period ($t = -3.12$, $p = .004$).

The safety plan was triggered on 72 out of 352 (20.5%) daily surveys completed, resulting in 14 out of 15 youths in this condition being offered to view their safety plans at least once. Only three out of the 14 youth elected to view their safety plans, a total of 14 times (19.4%; i.e., 2 to 8 times per person). Depressive symptoms, SI and SH at the follow-up assessment did not differ between the two conditions.

Discussion: Results underscore the connections between distress in parents and youth suicidal and self-harm tendencies, with parents' average levels of momentary distress predicting youth SI. Developing EMIs for parents as well as youth has potential value. Moreover, when given the option of viewing their safety plans during times of reported distress, a relatively small subgroup elected this option. These youth may have needed reminders of their safety plans, whereas the others may not have benefited from this additional support – perhaps because they knew their safety plans, didn't perceive them as useful, or felt their distress level did not require additional support. These data underscore the need for additional research to inform the development of EMI approaches.

69. PREPPED AND READY: VIRTUAL WEBINARS ADDRESSING SAFE STORAGE

Shayla Sullivant*[1], Mark Connelly[2], Hung-wen Yeh[2], Alexandra Hartwig[2]

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Background: The National Strategy for Suicide Prevention 2012 goals include means restriction for at-risk individuals as a critical component to addressing suicide in the U.S., but implementation of means restriction for youth is lacking. Pairing education with tools to enact safe storage has shown to be effective to improve safe storage. This naturalistic study tested if a brief webinar for caregivers could lead to adopting safe storage practices.

Methods: Nine 90-minute webinars about parenting teens, with an emphasis on the rationale and recommended approach for safe storage of medications and firearms, were held over a period of eight months. As part of the webinar, participants received a toolkit by mail that included the following: a lockable medication storage box, four weekly medication organizers, a medication disposal bag, an educational pamphlet, and a gun lock if desired (total value: $50). Of those attending the webinar, one English-speaking adult per household raising children was eligible to participate in a study evaluating impact of the webinars. Participants completed an online consent form and surveys evaluating means restriction knowledge and practices at baseline (T1), post-presentation (T2), and 2-week follow-up (T3).

An Intention-to-treat (ITT) analyses without and with worst-case imputation were conducted using generalized linear mixed-effects models (GLMM) to evaluate the impact of the webinars on firearm storage.

Results: A total of 328 eligible participants completed the T1 survey; 299 (91.2%) and 257 (78.4%) of them filled the T2 and T3 surveys. The majority of the 328 participants were female (255, 77.7%), college-educated (307, 93.6%) and white (307, 93.6%). Participants lived in urban (41, 12.5%), suburban (176, 53.7%), and rural (111, 33.8%) areas.

At baseline, 161 (49.1%) of participants reported at least one firearm in the home. Among the firearm owners, 22 (13.7%) reported using cable gun locks and 34 (21.1%) reported storing firearms in the safest manner possible (locked up, unloaded, with the ammunition locked separately). Among the 257 participants who filled the T3 survey, 132 or 51.4% reported having guns at home. Among firearm owners at T3, 91 (68.9%) received a cable gun lock, 34 (25.8%) were using cable gun locks, and 37 (28%) reported guns stored in the safest manner.

In addition, 53 (40.2%) reported learning more about storage in their home since the presentation. GLMM suggested that from baseline to T3, the odds of participants using a cable gun lock increased 2.88 times (95% CI 1.36 – 6.14, $p < 0.006$) without imputation vs. increased 2.09 times (95% CI 1.02 – 4.29, $p = 0.02$) in the worst-case imputation. Other firearm storage behaviors did not show statistically significant changes between baseline and T3. Of the 247 participants who at baseline had unlocked medications at home and who completed the T3 survey: 115 (46.6%) reported having disposed of old medications, 109 (44.1%) reported locking up bottles of medication, and 87 (35.2%) reported using weekly medication organizers.

Discussion: This study shows preliminary evidence that a webinar for parents emphasizing means restriction for suicide prevention may improve safe storage practices among caregivers of youth. Future studies with greater diversity represented in the sample and longer follow-up are needed to determine generalizability and sustained impact.

70. PRACTICES FOR MONITORING AND RESPONDING TO INCOMING DATA ON SELF-INJURIOUS THOUGHTS AND BEHAVIORS IN INTENSIVE LONGITUDINAL STUDIES: A SYSTEMATIC REVIEW

Joseph Maimone*[1], Kate Bentley[2], Erin Kilbury[3], Marshall Tate[3], Hannah Wisniewski[4], Meghan Levine[1], Regina Roberg[1], John Torous[4], Matthew Nock[3], Evan Kleiman[5]

[1]Massachusetts General Hospital, [2]Massachusetts General Hospital, Harvard Medical School, [3]Harvard University, [4]Beth Israel Deaconess Medical Center, Harvard Medical School, [5]Rutgers University

Background: Advancements in the understanding and prevention of self-injurious thoughts and behaviors (SITBs) are urgently needed. Intensive longitudinal data collection methods—such as ecological momentary assessment—capture fine-grained, "real-world" information about SITBs as they occur and thus have the potential to narrow this gap. However, using ecological momentary assessment to collect real-time data on SITBs presents complex ethical and practical considerations, including about whether and how to monitor or respond to incoming information about SITBs (henceforth, "risk data") from suicidal or self-injuring individuals. These considerations may serve as barriers to researchers to include suicidal participants in real-time monitoring studies or to ask explicitly about SITBs in such studies. Increased consensus (e.g., Nock et al., 2020) and guidance on how to monitor and respond to risk data has the potential to facilitate more research in this promising area and therefore advance our understanding of these life-threatening phenomena.

Methods: To address this need, we conducted a systematic review of previous (publications) and ongoing (grant-funded) intensive longitudinal studies of SITBs to extract and summarize protocols for monitoring and responding to real-time risk data. We included all studies that (1) assessed at least one SITB variable (e.g., nonsuicidal self-injury, suicidal ideation, suicide attempt, etc.) (2) on at least a daily basis and (3) used some form of technology for real-time assessment. In the end, 59 studies were included in our analysis.

Results: There were three main findings across the 59 included studies. First, the number of intensive longitudinal studies of SITBs has recently proliferated: well over half of all included studies were published or funded within the past four years. Second, there was no single most common approach to handling incoming real-time data on SITBs. Across all studies, just over half (55.9%) monitored incoming data and made an active attempt to contact the participant in response to risk data. It was most common for studies to either make an active attempt to

contact participants or use an automated pop-up in response to incoming risk data but not both (37.5% of studies did one or the other), whereas 33.9% of studies both actively contacted participants in response to incoming high-risk data and used an automated pop-up, and 28.6% of studies did neither. When considering only the studies that actively contacted participants in response to incoming high-risk data, 94.1% reached out to the participant for a risk assessment. Finally, we observed that study factors (e.g., study recency, population, duration) may be related to the safety practices used.

Discussion: This review demonstrates a few major points. Despite increasing interest and activity in conducting intensive longitudinal studies of SITBs, there is a marked lack of standardization across the field in terms of protocols for managing real-time suicide and self-injury risk data (and whether and how those protocols should vary by study characteristics) in this research. Thus, more research is needed that systematically evaluates the optimal (and ideally, scalable) strategies for maximizing participant safety, and how such protocols may adapt to different research contexts (e.g., studies of adolescents v. studies of adults). This review underscores the need for a broader understanding of how to manage the ethical and practical complexities of conducting real-time monitoring studies of SITBs, which would encourage more large-scale research leveraging mobile technologies to advance our understanding of suicide and self-injury.

POSTER SESSIONS

Monday, October 25, 2021

1:00 PM – 2:00 PM

M1. IMPACT OF US GEOGRAPHICAL REGIONS ON RISK FACTORS FOR SUICIDAL IDEATION AND SUICIDE ATTEMPT

Wenna Xi*[1], Samprit Banerjee[1], George Alexopoulos[1], Jyotishman Pathak[1]

[1]Weill Cornell Medical College

Background: To study the variations of the effect of risk factors for suicidal ideation (SI) and suicide attempt (SA) by geographical regions among commercially insured youth and young adults in the US.

Methods: A national level retrospective cohort study was conducted using health insurance claims data from four major insurance companies in the US. The cohort was defined as patients having a mental health (MH) or substance use disorder related outpatient encounter (index event). We used survival analysis to evaluate the geographical variation of the effect of risk factors on patients' future SI and SA after . Risk factors considered in the models consist of a mix of long-, mid-, and short-term prior comorbidities (i.e., depression, drug abuse) and/or prescriptions (i.e., Benzodiazepine, antidepressant) that are identified as important factors for predicting SA by Simon et al. 2018. Patients' geographical regions were assigned to one of the nine divisions defined by the US Census Bureau: East North Central (Illinois, Indiana, Michigan, Ohio, and Wisconsin), East South Central (Alabama, Kentucky, Mississippi, and Tennessee), Mid-Atlantic (New Jersey, New York, and Pennsylvania), Mountain (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming), New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), Pacific (Alaska, California, Hawaii, Oregon, and Washington), South Atlantic (Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, District of Columbia, and West Virginia), West North Central (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota), and West South Central (Arkansas, Louisiana, Oklahoma, and Texas). Patients were censored if they did not have an SI or SA diagnosis before 9/30/2015 (ICD-9 to ICD-10 switch date) or the last day of the insurance plan enrollment, whichever came first.

Results: Between 2014-2015, we identified 317,383 commercially insured patients with mental health coverage of age <65 years old with an index encounter. The prevalence of SI was the highest in the Mountain region (6.98%; N=1657) and the lowest in the East South Central region (3.56%; N=608). The prevalence of SA was the highest in the Mountain region (1.89%; N=448) and the lowest in the Mid-Atlantic region (0.87%; N=398). Results of Cox proportional hazards models showed significant geographic variations of the effect of risk factors on both SI and SA ($p<0.001$ for both SI and SA).

For SI, there was regional variation of effects of rurality, alcohol use disorder diagnosis in the past 3 years, eating disorder diagnosis in the past 3 years, anxiety disorder diagnosis in the past 3 years, and MH inpatient stay in the past year. For individuals from the Mountain and West South Central regions, living in rural areas was a protective factor of having SI (HRs=0.72 and 0.66, respectively). For individuals from the Mid-Atlantic and Mountain regions, having an eating disorder diagnosis in the past 3 years was a protective factor of having SI (HRs=0.70 and 0.74, respectively). Having anxiety disorder diagnosis in the past 3 years was positively

associated with having SI, except for patients in East South Central and North West Central regions.

For SA, there was regional variation of effects of age and having SA in the past year. In general, younger patients were more likely to have SA as compared to older patients. The effects of SA in the past year on future SA varied by geographical region, however none of them were statistically significant.

Discussion: Among commercially insured patients in the US, residents of the Mountain region had the highest prevalences of both SI and SA. The effects of important risk factors on SI and SA varied by geographical region.

M2. BOOTSTRAPPING TO ADDRESS INEQUITIES IN PREDICTIVE MODELING OF SUICIDE DEATHS

Majerle Reeves*[1], Harish Bhat[1], Sidra Goldman-Mellor[1]

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Background: Recently there has been a critical examination of machine learning algorithms and how they may perpetuate inequality. In suicide prediction, racial/ethnic identity is a commonly used predictor; however, most work does not critically examine how different distributions of racial/ethnic identity in the data affect model performance. In this work, we show that different preprocessing techniques are key to accurately and equitably predicting suicide death for each racial and/or ethnic group.

Methods: We study four modeling techniques: logistic regression (LR), naive Bayes (NB), random forest (RF), and extreme gradient boosting (XGB) paired with three preprocessing techniques while monitoring both accuracy and equitability. We examine simple bootstrapping, building separate models for each racial/ethnic group, and performing equity-directed bootstrapping (a form of stratified bootstrapping) based on racial/ethnic groups.

Because, comparatively, so few patients die from suicide, models that predict no patients will die from suicide will obtain 99% accuracy. To combat this fact, we must utilize some form of bootstrapping. We start with simple bootstrapping, where we undersample the majority class and oversample the minority class to create a balanced training set. We contrast this with building separate models for each racial/ethnic group with the idea that any inequity faced in the medical world will be encoded in the model and therefore not impact classification. We also perform equity-directed bootstrapping (oversampling that balances the minority and majority class within each racial/ethnic group), allowing for learning across racial/ethnic groups for suicide prediction.

Results: We measure the fairness of our models using two criteria: equal opportunity and equal odds. With equal opportunity, every patient file where the patient dies of suicide has the same probability of being predicted to die of suicide regardless of racial/ethnic identity. In terms of machine learning metrics, this equates to low variance in sensitivity across racial/ethnic groups. Equal odds fulfills the equal opportunity criteria while also ensuring that patient files where the patient does not die of suicide have the same probability of being predicted to die of suicide regardless of racial/ethnic identity. In machine learning metrics, this equates to having low variance in sensitivity and specificity across racial/ethnic groups.

For simple bootstrapping, the standard deviation of the sensitivities and specificities are 0.16 / 0.22 (LR), 0.13 / 0.18 (NB), 0.15 / 0.20 (XGB), and 0.30 / 0.31 (RF). By building separate

models we are able to reduce the standard deviation of the sensitivities and specificities to 0.03 / 0.00 (LR), 0.03 / 0.00 (NB), 0.01 / 0.02 (XGB), and 0.03 / 0.01 (RF). Using equity focused bootstrapping we are able to reduce the variance of the sensitivities and specificities to 0.01 / 0.04 (LR), 0.04 / 0.04 (NB), 0.02 / 0.03 (XGB), and 0.03 / 0.02 (RF). With these preprocessing methods we are able to significantly reduce the variance in performance between the racial/ethnic groups.

Discussion: The preprocessing methods we propose (building separate models and equity-focused bootstrapping) can easily be used to help improve racial equity in suicide death prediction, regardless of the model type. We posit that these methods can also be applied to sensitive variables outside of race, such as economic status or insurance type.

M3. A STAKEHOLDER-INFORMED ETHICAL FRAMEWORK TO GUIDE IMPLEMENTATION OF SUICIDE RISK PREDICTION MODELS DERIVED FROM ELECTRONIC HEALTH RECORDS

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Background: Given the escalating suicide rate in the U.S., there has been a focus on suicide risk detection using novel methods including risk prediction models derived from electronic health records (EHR). Relative to clinical assessment, these models have demonstrated superior accuracy in identifying patients at-risk for suicide. Consequently, interest in their use in health care has expanded. Suicide risk model implementation and increasing interest in broader deployment has created an urgent need for a practical resource focused on the ethical application of suicide risk models. Ethical considerations of suicide risk prediction may be distinct from other realms of risk prediction, given the potentially serious consequences (e.g., death, inappropriate treatment, stigma) that could result from misclassification or even from well-intended intervention. A stakeholder-informed ethical framework could reduce the potential for harms from automated risk identification, keeping the safety and welfare of patients and their trust at the center of health care decision making.

Methods: In this multi-method study, patients and family members participating in formative focus groups (n = 4 focus groups, 23 participants), patient advisors, and a bioethics consultant collectively informed the development of a web-based survey; survey Results: (n = 1,357 respondents) and themes from interviews with key informants (patients, health system administrators, clinicians, suicide risk model developers, and a bioethicist) were used to draft the ethical framework.

Results: Clinical, ethical, operational, and technical issues reiterated by multiple stakeholder groups and corresponding questions for risk identification model adopters to consider prior to and during suicide risk identification model implementation are organized within six ethical principles in the resulting stakeholder-informed framework. Key themes include: patients' rights to informed consent and choice to conceal or reveal risk (autonomy); appropriate application of risk models, data and model limitations and consequences including ambiguous risk predictors in opaque models (explainability); selecting actionable risk thresholds (beneficence, distributive justice); access to risk information and stigma (privacy); unanticipated harms (non-maleficence); and planning for expertise and resources to continuously audit models, monitor harms, and redress grievances (stewardship).

Discussion: EHR-derived risk prediction is a relatively new innovation in suicide prevention. Informed by stakeholder feedback, this ethical framework serves as a practical resource to help

adopters discipline themselves to consider how to ethically implement suicide risk identification models. The framework questions should be considered by adopters before and throughout implementation in a recursive manner. Enthusiasm for automated risk prediction in the context of suicide is understandable given the high personal and social costs of suicide, but the costs of proceeding with implementation without careful ethical consideration are also high, particularly if mistakes outweigh the benefits of success, reduce adoption of risk models for suicide prevention, or result in the severance of public trust.

M4. MACHINE LEARNING ASSESSMENT OF EARLY LIFE FACTORS PREDICTING SUICIDE ATTEMPT IN ADOLESCENCE OR YOUNG ADULTHOOD

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Background: Although longitudinal studies have reported associations between early life factors
(ie, in-utero/perinatal/infancy) and long-term suicidal behavior, they have concentrated on 1 or fewselected factors, and established associations. However, no study investigated if early-life factors predict suicidal behavior. The objective of this study was to identify and evaluate the ability of early-life factors to predict suicide attempt in adolescents and young adults from the general population.

Methods: This prognostic study used data from the Québec Longitudinal Study of Child Development, a population-based longitudinal study from Québec province, Canada. Participants were followed-up from birth to age 20 years. Random forest classification algorithms were developed to predict suicide attempt self-reported by the adolescent at 13, 15, 17 and 20 years. Predictors considered in the analysis included 150 variables, spanning virtually all early life domains, including pregnancy and birth information; child, parents, and neighborhood characteristics; parenting and family functioning; parents' mental health; and child temperament, as assessed by mothers, fathers, and hospital birth records.

Results: Among 1623 included youths aged 20 years, 845 (52.1%) were female and 778 (47.9%) were male. Models show moderate prediction performance. The areas under the curve for the prediction of suicide attempt were 0.72 (95%CI, 0.71-0.73) for females and 0.62 (95%CI, 0.60-0.62) for males. The models showed low sensitivity (females, 0.50; males, 0.32), moderate positive predictive values (females, 0.60; males, 0.62), and good specificity (females, 0.76; males, 0.82) and negative predicted values (females, 0.75; males, 0.71). The most important factors contributing to the prediction included socioeconomic and demographic characteristics of the family (eg, mother and father education and age, socioeconomic status, neighborhood characteristics), parents' psychological state (specifically parents' antisocial behaviors) and parenting practices. Birth-related variables also contributed to the prediction of suicidal behavior (e.g., prematurity). Sex differences were also identified, with family-related socioeconomic and demographic characteristics being the top factors for females and parents' antisocial behavior being the top factor for males.

Discussion: These findings suggest that early life factors contributed modestly to the prediction of suicidal behavior in adolescence and young adulthood. Although these factors may inform the understanding of the etiological processes of suicide, their utility in the long-term prediction of suicide attempt was limited.

M5. SELF-HARM PRESENTATION ACROSS HEALTHCARE SETTINGS BY SEX IN YOUNG PEOPLE: AN E-COHORT STUDY USING ROUTINELY COLLECTED LINKED HEALTHCARE DATA IN WALES, UK

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Background: This study used individual-level linked data across general practice, emergency departments (EDs), outpatients and hospital admissions to examine contacts across settings and time by sex for self-harm in individuals aged 10–24 years old in Wales, UK.
Methods: A whole population-based e-cohort study of routinely collected healthcare data was conducted. Rates of self-harm across settings over time by sex were examined. Individuals were categorised based on the service(s) to which they presented.
Results: A total of 937 697 individuals aged 10–24 years contributed 5 369 794 person years of data from 1 January 2003 to 30 September 2015. Self-harm incidence was highest in primary care but remained stable over time (incident rate ratio (IRR)=1.0; 95% CI 0.9 to 1.1). Incidence of ED attendance increased over time (IRR=1.3; 95% CI 1.2 to 1.5) as did hospital admissions (IRR=1.4; 95% CI 1.1 to 1.6). Incidence in the 15–19 years age group was the highest across all settings. The largest increases were seen in the youngest age group. There were increases in ED attendances for both sexes; however, females are more likely than males to be admitted following this. This was most evident in individuals 10–15 years old, where 76% of females were admitted compared with just 49% of males. The majority of associated outpatient appointments were under a mental health specialty
Discussion: This is the first study to compare self-harm in people aged 10–24 years across primary care, EDs and hospital settings in the UK. The high rates of self-harm in primary care and for young men in EDs highlight these as important settings for intervention

M6. EXPRESSIVE FLEXIBILITY AND SELF-INJURY AMONG ADOLESCENTS

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Background: Self-injurious behaviors that are suicidal and non-suicidal in nature are prevalent among adolescents. In particular, adolescence is marked with an increased risk for both suicide attempts (SA) and deliberate self-injury without the intention to die (i.e., non-suicidal self-injury; NSSI). Both empirical and theoretical work has identified emotional dysregulation as a risk factor for and predictor of SA and NSSI. Relatedly, while research has traditionally classified emotion regulation strategies as either adaptive (e.g., reappraisal) or maladaptive (e.g., suppression), emerging research on emotion regulation flexibility suggests that having a diverse range of strategies and the ability to flexibly use one in line with situational demands is most adaptive. Expressive flexibility (EF) is a subconstruct and refers to one's ability to flexibly switch between the enhancement and suppression of emotional expression based on situational demands. Recent research has consistently demonstrated that greater EF is associated with positive mental health outcomes across a range of populations and circumstances. To date, no studies have examined the link between EF and self-injurious behavior. If having a diverse set of strategies and the ability to flexibly deploy them is adaptive, classifying certain strategies as maladaptive is costly and has implications for self-injurious youth. The current study assesses emotion regulation flexibility in relation to self-injurious behaviors that are non-suicidal (i.e., NSSI) and suicidal (i.e., SA) in nature. Preliminary

analyses, reported here, have been conducted with NSSI. Analyses with SA history will be run prior to October 2021.
Methods: We assessed associations between self-reported EF and self-injury among community adolescents recruited in New York State (n = 145, ages 15-19). To evaluate history of self-injury, lifetime presence, frequency and severity of NSSI was assessed using the Self-Injurious Thoughts and Behaviors Interview-Revised (Gratch et al., 2021). To capture EF, a youth-adapted version of the Flexible Regulation of Emotional Expression Scale was used (Burton and Bonanno, 2015), which assessed perceived ability to enhance and suppress positive and negative emotional expression (i.e., flexibility). We also assessed associations between EF subscales of enhancement and suppression abilities and NSSI outcomes.
Results: Contrary to the hypothesis, adolescents with and without a lifetime history of NSSI did not significantly differ in overall flexibility, $t(86) = -1.02$, $p = .31$, $d = .23$, or their enhancement ability, $t(86) = -0.33$, $p = .74$, $d = .08$. The largest effect, although still small and nonsignificant, emerged for suppression ability, $t(86) = 1.44$, $p = .15$, $d = .32$, such that adolescents with lifetime history of NSSI reported greater suppression ability than those who did not. Among the subset of adolescents with NSSI history (n = 29), greater suppression ability was significantly associated with an increase in lifetime frequency of NSSI (OR = 1.06, 95% CI = 1.02 - 1.10). For NSSI severity, overall flexibility ($t = -1.17$, $p = .25$), enhancement ability ($t = -0.72$, $p = .48$), and suppression ability ($t = -0.72$, $p = .48$) did not significantly predict lifetime severity of NSSI.
Discussion: Expressive flexibility is a nuanced and distinct emotion regulation construct that has not previously been examined among self-injurious youth. Suppression ability was associated with frequency, but not overall history, of NSSI among adolescents. Overall flexibility or enhancement ability did not characterize self-injurious adolescents. These findings provide valuable insight on emotion expression in self-injurious youth.

M7. THE CESSATION OF NONSUICIDAL SELF-INJURY: COMPARISON BETWEEN CURRENT AND LIFETIME NSSI

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Background: The burgeoning concern with the increasing prevalence and clinical relevance of nonsuicidal self-injury (NSSI) led to the body of work investigating risk factors associated with NSSI. However, the data is relatively lacking regarding the discontinuation of NSSI. In this study, we aimed to investigate the factors associated with cessation of NSSI by comparing the individual factors between those with current NSSI episodes and those with a history of NSSI but not currently engaged in NSSI. Specifically, we hypothesized that (1) demographic data would be different regarding the current NSSI acts; (2) more intrapersonal and interpersonal functions would contribute to maintaining NSSI; (3) the current NSSI group would report more clinical symptoms and (4) less psychological resources.
Methods: A total of 490 adults with NSSI history (359 females, mean age 22.6 ± 2.74 years) participated in an anonymous online survey. Regarding the date of the most recent episode of NSSI, the participants were assigned into two groups: NSSI engagement within the last 12 months or 'Current NSSI' (n = 402) vs. no episode of NSSI in the previous 12 months or 'Lifetime NSSI' (n = 88). To compare the reported features of the two groups, Chi-square analysis, univariate analysis of covariance, and multivariate analysis of covariance were employed, with the duration of NSSI engagement as a covariate.
Results: Regarding sociodemographic features, there were no significant differences in sex and socioeconomic status, while the participants with current NSSI episodes were slightly

younger than those who have stopped engaging in NSSI. Individuals who are currently engaged in NSSI endorsed more intrapersonal functions than those who have a history of NSSI, whereas there was no difference in interpersonal functions. In addition, the lifetime NSSI group reported significantly less suicide ideation, dysfunctional attitudes, perceived stress, alexithymia, and emotion reactivity, as well as greater resilience, self-esteem, and distress tolerance.
Discussion: The present study investigated sociodemographic and clinical variables that may be related to the discontinuation of NSSI. We found that cessation of NSSI was associated with younger age, endorsement of less intrapersonal functions of NSSI, less psychological distress, and more psychological resources. With further replication, these findings may be helpful to understand about maintenance and cessation of NSSI and add nuance to the research regarding the assessment and intervention for NSSI.

M8. NEGATIVE URGENCY MEDIATES THE RELATIONSHIP BETWEEN DISTRESS INTOLERANCE AND SUICIDAL BEHAVIORS

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Background: Distress intolerance, characterized by the inability to endure negative emotional experiences, is a trait-like individual difference that has been previously linked to negative psychological outcomes, including suicidal behavior. Although evidence suggests a relationship between distress intolerance and suicidal behavior, few studies have tested potential mechanisms underlying how distress intolerance might result in suicidal thoughts and behaviors (STB), specifically suicide attempts.
Methods: The current study focused on a second trait-like pathway to maladaptive affect regulation, negative urgency, characterized by the tendency to act rashly to relieve aversive affective states. Participants (n=133) completed self-report measures on negative urgency (UPPS), distress intolerance (DII) and lifetime suicidal thoughts and behaviors including whether they have ever engaged in a suicide attempt. We hypothesized negative urgency would mediate the relationship between distress intolerance and STB and between distress intolerance and suicide attempts.
Results: Results suggest that negative urgency mediated the relationship between distress intolerance and suicide attempts and partially mediated the relationship between distress intolerance and STB.
Discussion: Findings highlight the important role of negative urgency as an underlying mechanism in the relationship between distress intolerance and suicide attempts. Results also suggest that negative urgency plays a similar role in partially explaining the relationship between distress intolerance and STB, except that additional variables are required to fully explain this relationship.

M9. AGE OF ONSET OF FIRST SUICIDAL BEHAVIOR DETERMINES RISK FACTOR PROFILES IN OLDER SUICIDE ATTEMPTERS – FOCUS ON CHILDHOOD TRAUMA EXPERIENCES

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Background: It is well established that stressful early life experiences can adversely impact long-term psychopathology, including depression and suicidal behaviors, in adolescence and adulthood. In addition, past studies have suggested that childhood trauma experiences are predictors of the onset of suicidal behaviors, however, none of these studies included older adults. The present study examined the relationship between childhood traumatic experiences and late-life suicide, and whether or not a difference exists between early-onset (first suicide attempt occurs early in life) and late-onset (first suicide attempt occurs in late life) attempters.
Methods: Participants included 234 adults aged 50 years and older (range: 50-81; M = 62.5, SD = 7.4) who reported on their experiences of childhood trauma such as emotional abuse, physical abuse, emotional neglect, physical neglect, and sexual abuse using the Childhood Trauma Questionnaire. Using Gaussian mixture modeling, we found that in our attempter sample the observed distribution of age of first attempt was best explained with two groups – early-onset (first attempt <= 30 years of age, range: 7-29, M = 17.5, SD = 6.4) and late-onset attempters (first attempt >30 years of age, range: 31-81, M = 57.2, SD = 12.4). The study examined group differences by comparing early-onset attempters and late-onset attempters to suicide ideators (no history of suicide attempt), non-suicidal depressed controls (no history of suicide attempt or contemplation of suicide), and non-psychiatric healthy controls. Structured clinical interviews were used to collect data on lifetime history of suicidal ideation, the severity of the suicide attempt(s), suicide planning, depressive symptoms, and history of clinical diagnosis, including substance abuse, anxiety, and PTSD. Separate one-way ANOVA models were conducted to compare the groups on each measure.
Results: We found significant group differences in emotional abuse ($F(4, 219)=11.720$, $p<0.001$), physical abuse ($F(4, 219)= 7.614$, $p<0.001$), emotional neglect ($F(4, 219)= 9.886$, $p<0.001$), and physical neglect ($F(4, 219)= 6.396$, $p<0.001$) in all subjects, and sexual abuse in females, ($F(4, 123)=2.522$, $p=0.045$) but not in males ($p>0.05$). As expected, healthy controls overall reported less abuse than the depressed groups. More importantly, early-onset attempters experienced more emotional abuse ($p=0.004$) and emotional neglect ($p=0.005$) during childhood compared to all other groups, while late-onset attempters were similar to all other clinical groups. Early-onset attempters also experienced more physical neglect than all other groups, except for suicide ideators. Additionally, early-onset attempters experienced more physical abuse than ideators and depressed controls.
Discussion: Our results indicate that childhood trauma experiences are strongly associated with the onset of suicide attempts, with early-onset attempters experiencing more severe childhood trauma in multiple categories, including emotional neglect, emotional abuse, and physical neglect. In contrast, late-onset attempters had similar levels of these adverse experiences as compared to other depressed groups. This study extends our earlier findings on how age at first suicide attempt is a marker of distinct pathways to suicidal behavior, regarding clinical profiles, family history, cognition and decision-making. Childhood abuse likely alters HPA stress responses and neuroplasticity, leading to long-lasting emotional and behavioral consequences, including suicide attempts. Addressing the lifetime emotional consequences of childhood early in life could prevent the development of psychopathology, including the onset of suicidal behavior.

M10. FAMILY ATTACHMENT MODERATION EFFECTS ON THE RELATIONSHIP BETWEEN TRAUMA AND SUICIDE RISK

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Background: Suicide is the second leading cause of death among youth ages 15-24 (Centers for Disease Control and Prevention, 2015). In their lifetime, an estimated 12.1% of adolescents contemplate suicide, 4.0% make a plan, and 4.1% make an attempt. Given the heavy burden of suicide and suicide risk to both society and individuals, identification of risk factors, effective prevention, and interventions for this population is critical. One significant risk factor is childhood trauma. Childhood neglect and physical/sexual abuse are consistently associated with increased suicide risk (Ryan et al., 2020). In addition, family processes such as parent-child conflict and low perceived attachment also have been linked to suicide risk (Janiri et al., 2020). Despite this, family relationships can also be a protective factor (Diamond et al., 2010). Therefore, we explored if healthy family relationships might reduce the impact of trauma on suicide risk.
Methods: The sample (N=1160) data was collected from a multi-site mental health treatment facility in 2020 for adolescents and young adults (M age = 15.88, SD = 1.52). The sample was 97% white, 39% female, 34% male, and <2% non-binary/transgender. Participants completed the suicide subscale of the Behavioral Health Screen (BHS; Diamond et al., 2010), the Adverse Childhood Experiences scale (ACEs; Felitti, et al., 1998), and the Experience in Close Relationships scale (ECR; Marci et al., 2018). Moderation analysis using the SPSS macro PROCESS Version 3.5 was used to examine whether perceived attachment to parents moderates the relationship between trauma and suicide risk, controlling for age.
Results: There was a significant positive effect of trauma on lifetime suicide risk (c' = .169, SE = .05, [.075, .263]), indicating that people who reported being sexually or physically abused by someone in their home show higher risk of lifetime suicide. The interaction between attachment and abuse was also significant (b2 = -.02, SE = .008, [-.039, -.006]) and explained an increase in lifetime suicide risk variance, $\Delta R2 = .006$, $p < .001$. Specifically, at low (b2 = .2894, SE = .0798, [.1328, .4460]) and average levels of perceived attachment (b2 = .1673, SE = .0476, [.0738, .2607]), the effect was significant. When an individual reports average or better than average attachment to their parents, their risk of lifetime suicide is lower.

Results also showed attachment moderated the relationship between living with someone who abuses alcohol/drugs and current suicide risk. There was a significant positive effect of trauma on suicide risk, c' = .154, SE = .065, [.027, .281]. The interaction was also significant (b2 = -.027, SE = .013, [.002, .052]) and explained an increase in current suicide risk variance, $\Delta R2 = .004$, $p < .001$. Specifically, at average (b2 = .1568, SE = .0646, [.0301, .2835]) and high (b2 = .2987, SE = .0887, [.1246, .4728]) levels of attachment, the relationship was significant. When an individual reported average or poor attachment to family, their risk of current suicide was higher.

Discussion: Our results indicated that the relationship between childhood trauma and suicide risk can be moderated by family attachment. This relationship, however, is significant for specific types of trauma. Future research can investigate specific types of trauma, individual items that effect suicide risk, and each parent individually. If, after further investigation, we find that perceived attachment is, in fact, a protective factor, then intervention that can improve attachment would be warranted.

M11. COGNITIVE COPING STYLES IMPACT MEDIATIONAL EFFECTS OF BELONGING AND BURDENSOMENESS ON PAST YEAR SUICIDAL IDEATION

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Background: Researchers have demonstrated that perceptions of burdensomeness (PB) and thwarted belongingness (TB) related to increased risk of suicidal thinking due to their mediational role of common risk factors such as depression (Espinosa-Salido et al., 2020). Yet, there is little research into factors that may impact the strength of PB and TB's mediational effects. Cognitive theories of suicide (Wenzel et al., 2009, 2014) suggest that cognitive coping styles affect suicide risk because of their influence on other risk factors. The purpose of the current study was to evaluate whether cognitive coping styles moderated the mediational effects of PB and TB on the relationship between depressive symptoms and past-year suicidal ideation.
Methods: The current study used archival data collected from 2,204 university students (Mage = 21.07, SD = 2.9yrs; 91.7% White) recruited through email invitations sent to a random sample of 4,000 enrolled students. Participants completed a series of self-report questionnaires assessing cognitive coping styles, depressive symptoms, burdensomeness, belongingness, and suicidal thoughts and behaviors. A series of moderated mediational regression models were run using the PROCESS macro (Hayes, 2012) for SPSS with 5,000 bootstrapped samples. In each model, the cognitive coping style was specified to moderate the relationship between depressive symptoms and PB, TB, and past year ideation, with PB and TB specified as mediators of the depression to ideation relationship. A p-value of .01 was chosen to represent significance due to the number of analyses conducted.
Results: The mediational effects of PB and TB were tested first. Individually, both PB (b = 0.143; CI: 0.099 to 0.187) and TB (b =0 .074; CI: 0.039 to 0.110) significantly mediated the effects of depressive symptoms on past year ideation. With both included in the model, only PB was a significant mediator (b = 0.139; CI: 0.094 to 0.186). Results from the moderated mediational analyses showed that only self-blame (effect = 0.184, CI: 0.022 to 0.056), catastrophizing (effect = 0.028, CI: 0.015 to 0.043), and reappraisal (effect = -0.021, CI: -0.038 to -0.008) significantly moderated the mediational effect of PB on past year suicidal ideation. Their unique interactions with depressive symptoms were also significantly associated with PB and ideation. In addition, blaming others (b = 0.08, t = 3.72, p < .001; CI: 0.038 to 0.122), rumination (b = 0.078, t = 3.73, p < .001; CI: 0.037 to 0.119), and catastrophizing (b = 0.051, t = 2.83, p < .05; CI: 0.016 to 0.087) significantly interacted with depressive symptoms to influence levels of TB.
Discussion: These findings indicate that cognitive coping styles differentially affect the level of PB and TB experienced and influences the strength of the mediational effect PB plays in the relationship between depressive symptoms and past year ideation. These data can guide cognitive therapies for suicide, potentially reducing risk for suicidal thinking by targeting self-blaming and catastrophizing cognitions while increasing the use of positive reappraisal. Limitations and additional therapeutic implications will be discussed.

M12. THE MEDIATING ROLE OF HARMFUL BEHAVIORS IN THE IDEATION-TO-ACTION FRAMEWORK

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Background: The ideation-to-action framework emphasizes understanding the factors that are associated with moving from having suicidal ideation (SI) to making a suicide attempt (SA; Klonsky and May, 2014). One prominent theory highlighting such factors is the Interpersonal Psychological Theory of Suicide (IPTS), according to which an individual must develop an acquired capability for suicide (ACS)—through repeated painful, fear-inducing, or otherwise provocative experiences—in order to act on suicidal desire (Joiner, 2005; Joiner et al., 2009).

Most support for the role of repeated painful or provocative experiences in suicidal ideation-to-action comes from the robust relationship between non-suicidal self-injury (NSSI) and suicidal behavior (e.g., Hamza et al., 2012). However, ACS may also develop via other provocative and potentially harmful behaviors (e.g., substance use and disordered eating), including those that expose a person to others' pain (e.g., aggressive behavior; Joiner et al., 2009). The present study investigated whether, among individuals with SI, the relationships between these other harmful behaviors and SAs is facilitated by ACS.
Methods: Participants (N=2776) with a history of suicidal ideation completed self-report measures of substance use (alcohol, illicit substances), disordered eating (binge, purge), aggression (physical, verbal), ACS, and suicidal behavior as part of a larger study on emotion dysregulation among young adults. Six mediational models were conducted using R and the mediation package (Tingley et al., 2019) using non-parametric bootstrap for predicting binary outcomes; in each model, one harmful behavior was entered as the independent variable, SA history (yes/no) was entered as the dependent variable, and ACS was entered as the mediator.
Results: Examination of the indirect effects showed that the relationship between each harmful behavior and history of SAs was mediated by ACS. All direct effects were significant at $p<.001$. Both the direct paths and indirect paths through ACS between illicit substance use (ACME=.001, p=.02; ADE =.006, $p<.001$), physical aggression (ACME=.001, $p<.001$; ADE=.004, $p<.001$), and verbal aggression (ACME=.001, $p<.001$; ADE=.004, $p<.001$) to SA history were significant. Notably, the direct paths from alcohol use (ACME=.001, $p<.001$; ADE=.002, p=.16), binging (ACME=.004, $p<.001$; ADE=.024, p=.36, and purging (ACME=.004, $p<.001$; ADE=.028, p=.38) to SA history were no longer significant when mediated by ACS, suggesting that the transition from ideation-to-action through ACS may be particularly relevant among those who engage in frequent alcohol use and/or binge-purge behaviors.
Discussion: The present study contributes to the growing body of suicide research inspired by the ideation-to-action framework. Our results also lend support to the relationship, theorized by the IPTS, between painful or provocative behavior, ACS, and SAs, extending the focus beyond NSSI to other harmful behaviors that appear to confer risk for suicide. Alcohol use and disordered eating, which commonly cooccur and which may signal underlying difficulties with emotion regulation and/or distress tolerance (Kozak and Fought, 2011; Pompeii and Laghi, 2018), may be particularly salient in the development of ACS and suicidal behavior, highlighting the importance of affective variables in the ideation-to-action framework. These results emphasize the importance of identifying and targeting behavioral dysregulation, in the multiple forms it may present, in suicide risk assessment and intervention. This study is limited by its use of cross-sectional, self-report measures; future studies should investigate the present relationships using longitudinal and behavioral methods.

M13. SUICIDE TIME COURSE, SENSITIZATION, AND DSM5

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Background: Suicidal behavior results from interactions between long-term and short-term regulation of action. This also characterizes behavioral sensitization, where, in a susceptible individual, exposure to a salient stimulus can result in exaggerated stress-related responses upon re-exposure to the stimulus, even in milder forms. Examples are sensitization to addictive

or traumatic stimuli. Sensitization has two phases. Initial stimulus exposure produces development of sensitization, resulting in a prolonged, latent state with the potential for expression of sensitization, with rapid emergence of sensitized behavior upon repeat of an analog of the original sensitizing stimulus. The time course of sensitization expression is rapidly fluctuating and difficult to predict. Sensitization to addictive or traumatic stimuli results in behavior combining impulsivity and anhedonia. The time course of suicidal behavior is similar. According to DSM-5, Suicidal Behavior Disorder (SBD) is a relatively persistent state with latent suicidal behavior. Suicide Crisis Syndrome (SCS) is a transient state of rapidly fluctuating risk for suicide. We propose that the relationship between SBD and SCS is analogous to that between development and expression of behavioral sensitization. Identifying SBD can strengthen diagnostic and preventive treatment measures for suicide risk.

Methods: We have compared adults (mean age (SD) =36.9 (13.6)) with history of recovery from a medically severe suicide attempt in the previous 6-12 months, corresponding to SBD with a survived episode of SCS, to diagnostically and demographically similar people without history of suicidal behavior. We required a recovery period to reduce potential confounding by acute stress associated with the suicide attempt itself. We compared characteristics of the two groups that were related to impulsivity and stress-sensitization. We present data on trait impulsivity (Barratt Impulsiveness Scale, BIS-11), action-impulsivity (Immediate Memory Task, IMT), affective arousal-related impulsivity (Urgency-(lack of) premeditation-(lack of) persistence-sensation-seeking (UPPS)), stress-related hyperarousal (Clinician Administered PTSD Scale (CAPS-5)), especially the hyperarousal cluster, and early trauma (Childhood Trauma Questionnaire, CTQ).

Results: The groups had similarly elevated BIS-11 scores and IMT performance, consistent with our previous reports. However, SBD was associated with increased stress-related arousal: strongly increased CAPS-5 hyperarousal cluster score with smaller increases in cognitive and intrusive clusters and no difference in avoidance; increased UPPS positive and negative urgency, and increased CTQ scores for abuse-related trauma but not neglect.

Discussion: These data show that, while survivors of apparent SCS had impulsivity similar to their underlying psychiatric disorders, they had clinical arousal and historic characteristics consistent with stress-sensitization. These characteristics may identify people at risk for rapid development of suicidal behavior when exposed to stress-related stimuli in the context of increased arousal. Treatment of SCS is difficult or impossible once it has started because suicidal behavior can develop in minutes after the initial ideation. Therefore, it is important to develop clinically practical measures to identify SBD (latent SCS), in order to 1) identify and develop treatments preventing the emergence of SCS and 2) identify candidates for preventive treatment without waiting for latent SCS to become active.

M14. DOES AGE MODIFY THE ASSOCIATION BETWEEN CLINICAL AND NEUROCOGNITIVE RISK FACTORS AND SUICIDE ATTEMPT— FINDINGS FROM THE AFSP LIFESPAN STUDY

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Background: Clinical and neurocognitive risk factors for suicidal behavior have often been assessed in samples with restricted age ranges. Nonetheless, broad conclusions about suicide

risk have often been drawn that do not take the contribution of aging into account. We assessed clinical (depressive rumination, borderline personality traits, and aggression) and neurocognitive (memory and category and verbal fluency) risk factors thought to be sensitive to age effects. Borderline traits and aggression have been consistently related to suicidal behavior, and previous evidence suggests this relationship may become weaker at older ages (McGirr et al., 2008; Qin, 2011). Depressive rumination has been related to suicidal ideation and evidence suggests that ruminative thinking decreases across the lifespan in healthy individuals (De France and Hollenstein, 2019; Emery et al., 2020), however, the relationship between depressive rumination and suicidal behavior has been less consistent. Neuropsychological functioning, assessed via memory and verbal fluency tasks, has been linked to both suicidal behaviors and dementia (Keilp et al., 2013; Richard-Devantoy et al., 2014; Rönnlund et al., 2005). Therefore, normative age-related changes in these measures may cause them to play a more prominent role in their risk for suicidal behavior in older adults.
Methods: Our multisite sample (N=309) from ages 16 to 80 included depressed patients with a history of suicide attempt in the past 5 years, with no history of attempt, and a demographically similar non-psychiatric comparison group. We assessed borderline traits, aggression, depressive rumination, memory, and verbal fluency measures. Analyses compared attempters and depressed non-attempter groups. Correlations of each variable with age were computed and logistic regression models were fit using each variable and their interaction with age to predict attempter status. A final model was run with each significant classifier from the individual models to determine which risk factors were most influential in their prediction of past suicidal behavior.
Results: Borderline traits, aggression, and depressive rumination all improved with age ($r=-0.35$, $r=-0.25$, $r=-0.35$, respectively, all $p<0.001$). Memory and category fluency worsened across the lifespan ($r=-0.66$, $r=-0.26$, respectively, both $p< 0.001$) while letter fluency was not significantly correlated with age ($r=-0.08$, $p=0.273$). Borderline traits, aggression, memory, and category fluency were all significant classifiers of attempter status (all $p<0.05$), with no differences in their classification odds across the lifespan (all interaction $p > 0.05$). Depressive rumination, however, was a stronger discriminator of past attempt status at older ages, such that a 20-point higher than average score at age 25 was associated with a 10% greater likelihood of being classified as an attempter (OR=1.10, 95%CI: 0.6-2.0), at the sample mean age of 41.7 years, it almost doubled the odds of being an attempter (OR=1.89, 95%CI: 1.2-3.0), and at age 65, the odds of being an attempter almost quadrupled (OR=3.95, 95%CI: 1.7-9.0). In the final classification model, only borderline traits and depressive rumination were significant classifiers of attempt status.
Discussion: Despite age-related improvements in clinical traits and decline in neurocognitive performance, borderline traits, aggression, memory, and verbal fluency continued to distinguish past attempters throughout the lifespan. However, rumination was more related to suicide attempt status in later life, therefore it may be a particularly salient intervention target for this high-risk population.

M15. THEMES ASSOCIATED WITH SUICIDALITY AMONG NON-OFFENDING ADULTS ATTRACTED TO CHILDREN

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Background: Suicide represents a significant public health problem, with around 800,000 deaths per year worldwide and up to 20 times as many episodes of self-harm and suicide

attempts. Members of socially stigmatized groups may experience increased risk of suicide due to stigma-related factors, such as expectations of rejection, internalization of stigmatizing views, or potential for greater social isolation. Research suggests that adults attracted to children, even those who do not offend against children, face extreme stigma due to their attraction and experience increased risk for suicidal ideation and behavior.
Methods: I conducted semi-structured interviews with 15 adults who self-reported attraction to children and who also self-reported some form of suicidal ideation or behavior in their lifetime. Using interpretative phenomenological analysis, I explored and interpreted interview data to generate themes driven by participants' characterizations of their suicidal ideation and behavior.
Results: Superordinate themes related to suicidality in this sample included low self-esteem or self-worth, cumulative impacts of the attraction and other stressors, and concerns about the ability to have a positive future due to the attraction.
Discussion: Results underscore the importance of addressing internalized stigma and instilling hope for the future to prevent suicidal ideation and behavior among adults attracted to children.

M16. GREATER PARENT-CHILD DISCREPANCY IN FAMILIAL DYSFUNCTION RATINGS IS ASSOCIATED WITH ELEVATED DEPRESSION AND SUICIDE IDEATION

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Background: Parents and children are often discrepant in how they rate child psychosocial factors, and these discrepancies may be explored to predict fluctuations in the child's mental health. Suicide ideation (SI) and depression in children are both well-established risk factors for suicide attempts, and a current lack of reliability in predicting future attempts in youth highlights the importance of identifying predicters to inform clinical outcomes. Few studies have addressed discrepancies in subjective ratings between parent and child on measures of familial dysfunction, and none have addressed the impact this may have on the depression and SI of children who are already at risk for attempt. This study explored whether parent-child discrepancies in baseline and discharge familial dysfunction ratings are related to concurrent and longitudinal severity of depression and SI.
Methods: Adolescents (n = 315; ages 12-18; 77% girls) receiving intensive outpatient treatment for severe suicidal ideation or a recent attempt were assessed at treatment baseline and discharge for familial dysfunction (Family Assessment Device), suicide ideation (Concise Health Risk Tracking scale), and depression (Quick Inventory of Depression Symptomatology). Parents received a parallel familial dysfunction assessment at each timepoint. Parent-child discrepancy in familial dysfunction was calculated according to the standardized discrepancy score model recommended by De Los Reyes and Kazdin (2004).
Results: Linear regressions revealed that greater discrepancies between parents and children in perception of familial dysfunction were associated with more severe baseline depression when controlling for child age and gender ($b = 1.46$, $SE = .28$, $p<.001$). Greater discrepancies in perception of familial dysfunction were also significantly associated with more severe SI at baseline when controlling for age and gender ($b = .67$, $SE = .17$, $p<.001$). Familial dysfunction discrepancies at treatment discharge were also significantly associated with concurrent depression ($b = 1.37$, $SE = .28$, $p<.001$) and SI ($b = .45$, $SE = .15$, $p=.004$). Longitudinal

analyses revealed that baseline familial dysfunction discrepancies predict greater SI and depression at discharge when controlling for age and sex (b = .47, SE = .15, p=.002) (b = 1.07, SE = .27, p<.001), but loses significance once baseline SI and depression are controlled.
Discussion: Our results propose that a notable parent-child rating discrepancy in familial dysfunction is an important risk factor for severe depression and suicide ideation. These findings may help inform risk assessment and clinical practice, perhaps suggesting a need for further exploration of suicidal youth in dysfunctional families and the challenges presented to their care.

M17. INVESTIGATING THE ROLE OF SUBSTANCE USE AND DEPENDENCE IN PLANNED VERSUS UNPLANNED SUICIDE ATTEMPT

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Background: Suicide attempts may be unplanned, involving little premeditation or preparation, or characterized by extensive forethought and planning. The present study examined associations of substance use and dependence with risk for planned versus unplanned suicide attempt.
Methods: Participants were 43,026 individuals aged 18 years and older (52.7% female) from the National Survey on Drug Use and Health (NSDUH). Use and dependence were evaluated for alcohol, cigarettes, marijuana, and any illicit drug or prescription medication. Four multivariate logistic regression models were constructed. Models 1 and 2 examined measures of substance use and dependence, respectively, as predictors of past-year suicide attempt. Models 3 and 4 were limited to individuals who reported a suicide attempt within the past year; the binary outcome indicated whether the participant endorsed both a suicide attempt and a suicide plan ("planned attempt," coded as 0) or endorsed a suicide attempt only ("unplanned attempt," coded as 1). Past-year major depressive episode, sex, and age were included as covariates. Analyses were conducted using the {survey} R package.
Results: In Model 1, cigarette use (OR = 1.006, 95% CI = 1.004, 1.010), marijuana use (OR = 1.036, 95% CI = 1.002, 1.070), and any use of illicit drugs or misuse of prescription medications (OR = 2.206, 95% CI = 1.593, 3.055) were associated with elevated risk for suicide attempt, though substance use measures were not related to risk for an unplanned attempt (Model 3). In Models 2 and 4, symptoms of alcohol (OR = 1.283, 95% CI = 1.152, 1.429) and drug dependence (OR = 1.237, 95% CI = 1.010, 1.395) were associated with increased risk for suicide attempt, and symptoms of marijuana (OR = 1.599, 95% CI = 1.094, 2.339) and drug dependence (OR = 1.271, 95% CI = 1.019, 1.586) were related to risk for an unplanned attempt.
Discussion: Substance dependence symptoms, but not levels of substance use, are associated with risk for suicide attempt in the absence of a plan, highlighting individuals with drug dependence as a target population for prevention efforts.

M18. SEX DIFFERENCES IN CLINICAL CORRELATES OF ADOLESCENTS WITH NON-SUICIDAL SELF-INJURY: A REVIEW

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Background: Non-suicidal self-injury (NSSI) is common in adolescents globally, with prevalence estimates between 18 and 23%. Although NSSI is an established risk factor for suicide, there is a paucity of research focused on treatment approaches for adolescents who engage in NSSI. NSSI is more common in adolescent females; however, few studies have compared differences between adolescent males and females with NSSI. A more precise understanding of the differences in phenomenology and characteristics of adolescent females and males with NSSI is essential to developing treatment approaches that consider the unique needs of this population based on sex. This review will summarize the existing literature on sex-specific clinical correlates of adolescents with NSSI.
Methods: MEDLINE and PsycINFO were searched using the keywords "adolescents", "self-injury", and "sex factors" and synonyms for articles published between January 1, 2000 and May 1, 2021. Inclusion criteria were as follows: original research (any study design) AND including adolescents ages 10-19 AND reporting findings on sex differences AND specifying a focus on self-injury without suicidal intent. Prevalence data were extracted and quantitively pooled when available. The remaining data were summarized by sex and synthesized narratively according to the following categories: 1) descriptive characteristics of NSSI, 2) clinical correlates of NSSI, and 3) consequences of NSSI, including suicide.
Results: 52 articles met inclusion criteria (35 cross-sectional, 13 cohort, 4 chart review) containing 49 unique samples, representing a total of 276 685 participants. Of these, 9 were clinical samples and 40 were community samples. The prevalence of NSSI across all unique samples was 18.2% (21.5% for females and 13.7% for males). Some regional differences were noted, with near equivalent prevalence of NSSI in males and females in Asia but higher prevalence of NSSI in females in most other regions. NSSI was more prevalent, more repetitive, and peaked at an older age in females vs males. Females reported more psychological precipitants, and the use of NSSI to regulate emotions, compared to males. Negative life events were associated with NSSI in both males and females, but this relationship was stronger in females and moderated by social support. Bullying was associated with NSSI in both sexes, however, bullying perpetration and physical fighting were also associated with NSSI in males. Low social support and negative coping strategies were associated with NSSI in both males and females, but were found to be more significantly associated with NSSI in females. NSSI was an independent predictor of suicide and risk of suicide was proportional to the frequency of NSSI in female but not male adolescents.
Discussion: There are important sex differences among adolescents with NSSI, and some evidence that adolescent females with NSSI are at an increased risk of future suicide when compared with adolescent males with NSSI. Future work is needed to determine the role of sex-specific interventions for NSSI. Limitations of this review include: 1) the majority of studies included were cross-sectional design therefore limiting our ability to comment on temporal relationships; 2) most studies had participants' self-reported sex and may not have accounted for cis- vs. trans-gender identity, limiting our ability to make any conclusions regarding the effect of gender identity vs. sex assigned at birth.

M19. THE RELATIONSHIP BETWEEN DISSOCIATION, PAIN TOLERANCE, AND SUICIDALITY IN INDIVIDUALS WITH POSTTRAUMATIC STRESS AND DISSOCIATIVE IDENTITY DISORDER

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Background: Suicidality is associated with pain tolerance, posttraumatic stress disorder (PTSD) symptoms, and pathological dissociation. However, it is unclear whether these

variables are independent predictors of suicidality when accounting for the severity of experiences like childhood maltreatment. The aim of this study was to examine the association between childhood maltreatment, dissociation, pain tolerance, suicidal ideation, and suicide attempts. We hypothesized that greater frequency and severity of dissociation, and a higher pain tolerance would both be associated with increased severity of suicidal ideation and more suicide attempts, but that accounting for childhood maltreatment would attenuate this relationship.

Methods: Participants were 83 treatment seeking adult women with reported childhood trauma exposure, current posttraumatic stress disorder (PTSD), and various levels of dissociation, including some with a dissociative identity disorder (DID) diagnosis. Participants completed a battery of self-report measures, including the PTSD Checklist for DSM-5 (PCL-5), Childhood Trauma Questionnaire (CTQ), Multidimensional Inventory of Dissociation (MID), Dissociative Experiences Scale (DES), Beck Depression Inventory (BDI-II), and a suicide attempt questionnaire. An item from the MID was used to approximate physical pain tolerance, and an item from the BDI-II was used to assess suicidal thoughts and wishes.

Results: A series of multiple regression analyses revealed that only the severity of childhood maltreatment significantly predicted the number of suicide attempts ($b=.29$, $t=2.49$, $p=.015$), not pain tolerance, PTSD or dissociative symptoms. Furthermore, the number of attempts was predicted by the constellation of all childhood maltreatment types, rather than by any single type of maltreatment. In contrast, physical pain tolerance significantly predicted suicidal thoughts and wishes ($b=.36$, $t=3.22$, $p=.002$), whereas the severity of childhood maltreatment, PTSD symptom severity and dissociation did not predict suicidal thoughts and wishes.

Discussion: Our results suggest childhood trauma load is associated with more suicide attempts, and a higher level of pain tolerance is associated with greater suicidal ideation. This study supports the need to assess for childhood trauma and pain tolerance as risk factors for suicidal ideation and suicide attempts in clinical practice.

M20. PROFILES OF PSYCHIATRIC AND MEDICAL COMORBIDITY AMONG OLDER VETERANS LAST SEEN IN MENTAL HEALTH PRIOR TO A SUICIDE ATTEMPT

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Background: Suicide among older adults in general and older veterans in particular is a growing public health concern, despite their frequent engagement with the healthcare system for a multiplicity of medical and psychiatric issues endemic to older age. Data suggest that 70% of older adults who attempt suicide saw their primary care provider within one month of that attempt, but little is known about those whose last healthcare engagement prior to a late life suicide attempt is for mental health services. Given the complexity of comorbidity common to aging, the association of individual psychiatric and medical diagnoses with suicide risk, and the high attempt to lethality ratio in later life, identifying profiles of psychiatric and medical comorbidities in those who attempt suicide may assist with vital efforts at suicide prevention in this high-risk population. Our primary objective was to identify those comorbidity profiles and explore their association with fatality and means of attempt in a national sample of older veterans receiving case through the United States Veterans Health Administration (VHA) who attempted suicide.

Methods: Our sample consisted of 585 veterans aged 65 and older who attempted suicide between FY 2012 and 2014, and whose last healthcare contact was in VHA mental health services. Psychiatric and medical diagnoses (e.g. depression, PTSD, substance use disorder, chronic pain, COPD) were obtained from VHA medical records and CMS Medicare databases. Data on suicide attempt were obtained from the VA Suicide Prevention Applications Network (SPAN) for non-fatal attempts, and the VA National Suicide Data Repository for fatal attempts and means. Latent class analysis was conducted to identify profiles of psychiatric and medical comorbidity across commonly diagnosed disorders in older veteran populations. Once the best-fitting model comprising profiles of psychiatric and medical diagnoses was identified, the sample as a whole and the individual classes were described by attempt- and healthcare-utilization factors, using bivariate analyses across classes.
Results: Veterans last seen in VHA mental health prior to a suicide attempt were clustered into 4 comorbidity profiles based on the best-fitting model in the data. Overall, the sample was 70.4 years old on average, 91% Caucasian, and 96% male, with 22.9% of all veterans in the sample fatally attempting, and 65% of those fatal attempts utilizing a firearm. Further, nearly 80% of those who attempted saw a mental health provider within 30 days of attempt. The 4 profiles of medical and psychiatric comorbidity among these veterans included those characterized by Depression with Minimal Comorbidity (27.9% of sample), Depression with Pain and PTSD (36.9%), High Depression with Medical Comorbidity (19.7%), and High Overall Comorbidity (15.6%). The Depression – Minimal Comorbidity class had higher proportion of fatal attempts compared to all other classes, and the High Overall Comorbidity class was characterized by highest proportion of overdose deaths. Other findings will be discussed.
Discussion: Older veterans last seen in VHA mental health service prior to a suicide attempt were characterized by high healthcare utilization in the month prior to suicide attempt and prevalence of depression diagnoses overall, as well as distinct comorbidity profiles of psychiatric and medical diagnoses associated with specific attempt and fatality outcomes in particular. These findings have implication for suicide prevention efforts in geriatric integrated care settings such as VHA, including early identification of those at particular risk in mental health services, and targeted safety planning and lethal means counseling approaches based on diagnostic comorbidity.

M21. FIRST RESPONDERS AND SUICIDALITY: CAN RELATIONSHIP STATUS BE A PROTECTIVE FACTOR?

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Background: The incidence of suicide among first responders (firefighters, police officers, EMTs), is higher than in their civilian counterparts. Relationship status can either be a risk or protective factor for suicidal behavior in this population. The literature has shown that stressors related to being separated or divorced lead to an increased risk for suicidal ideation. In police, the combination of marital problems and history of suicidal behaviors increased the risk of suicidal behavior up to five times. Additionally, firefighters who were married were shown to endorse less suicidal ideation than their single, divorced, or separate counterparts. Bereavement due to widowhood has also shown to be a risk factor in suicidal ideation. Conversely, being in a committed healthy relationship has been shown to lead to more resilience and resistance to stressors.
Methods: We examined the relationship between scores on measures of suicidality among single, engaged, partnered, married, divorced, and widowed first responders. We hypothesized that the widowed first responders will score highest on measures of suicidality, while married,

partnered, and engaged first responders will score lower on measures of suicidality than all other counterparts. Statistical methods utilized included an ANOVA.
Results: No significant difference was found between scores on measures of suicidality in partnered responders versus unpartnered responders. Additionally, single first responders appeared to score highest on measures of suicidality.
Discussion: Limitations to the study, including sample size and population surveyed (mostly male, White, and in heterosexual relationships) are discussed. Additionally, clinical and policy implications and recommendations including couples and relationship-focused therapy are considered.

M22. SCREENING FOR SUICIDE RISK WORKS: JPS SUICIDE OUTCOMES BEFORE AND AFTER IMPLEMENTATION OF UNIVERSAL SCREENING

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Background: Suicide risk screening is mandated for Behavioral Health settings by The Joint Commission (TJC); and is highly recommended as a universal healthcare practice by many suicide researchers (King CA, Horwitz A, et. al. 2017). JPS implemented a TJC-approved suicide risk screen in 2018 consisting of a brief screen and a follow-up screen that classify patients as being at minimal, moderate, or high risk of near-term suicidal acts. To date, the effectiveness of suicide risk screens as a deterrent to suicidal acts has not been well understood. In this study, we examine suicide outcomes within 30 to 90 days of a visit to any JPS setting before and after implementation of the JPS suicide risk screen.
Methods: Data from the Tarrant County Medical Examiner's (ME's) publicly available website were linked to data from the JPS electronic medical record (EMR) for these analyses. Linking variables included names (first, last, akas) and birthdates. Address at the time of death was used as a secondary matching variable where necessary.
The annual rates of suicide per 100,000 JPS patients before and after implementation of the JPS suicide risk screen were compared to assess the impact of the risk screening protocol on suicide fatalities within the JPS population. The differential effectiveness of the screen by demographic group was also examined. Trends in annual rates of suicide across Tarrant County during study years were used as a benchmark against which to compare JPS patient population outcomes.

Results: In the 24 months after implementation, the JPS suicide risk screening protocol reduced the number of JPS patients dying by suicide within 30 days of contact with JPS by 50%. Among the patients who died by suicide within 30 days of the screen, 31% scored high and were further assessed.
Discussion: The JPS suicide risk screening protocol appears to have contributed to a reduction in the number of suicides occurring within 90 days after last visit to any JPS setting. This finding is limited by the fact that ME data used for this study consists only of Tarrant County data and may not capture events among JPS patients that have occurred outside the area served by the Tarrant County ME. Although additional research is needed, these preliminary results do suggest that a standardized method for detecting suicide risk can impact suicide rates among a safety net healthcare system's patient population

M23. LGBT AND NON-LGBT YOUTH AND INFORMANT DISCREPANCIES ON DEPRESSION RATING SCALES

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Background: Previous research suggests LGBT youth are more likely to have depressive symptoms and more severe adverse mental health outcomes than their heteronormative, cisgender peers. Incongruent parent and child perceptions are associated with psychopathology. The Quick Inventory of Depressive Symptomatology (QIDS-A) is a validated measure of depressive symptoms in youth. There is conflicting research on informant discrepancies, suggesting parents tend to over and underreport their child's depressive symptoms. However, little is known regarding the relationship between youth sexual orientation and parent and child depression scale ratings. In this study, we explore differences between: (1) LGBT and non-LGBT youth and parents of youth and (2) LGBT youth and parents and non-LGBT youth and parents at entry and exit of an intensive outpatient program (IOP) for suicidal youth.

Methods: The study included 280 participants (ages 12-18, 75% girls) enrolled in a suicide prevention IOP. Of the 280 youth, 24.7% (70) identified as LGBT and 75.3% (210) identified as non-LGBT. 35 youth identified as "NA," "declined to answer," or "don't know," and were not included in this study. Participants' depressive symptoms were assessed at entry and exit using the QIDS-A. Parents also completed the QIDS parent version at entry and exit. Analyses included Mann-Whitney U tests to examine differences in depressive symptoms between LGBT and Non-LGBT. In addition, paired samples t-test were used at entry and exit to examine differences between child and parent ratings in LGBT youth and non-LGBT youth and their parents.

Results: There were no significant differences between parent ratings of LGBT and non-LGBT youth depressive symptoms at entry and exit. However, the LGBT youth (mean rank = 172.60) and non-LGBT youth (mean rank = 129.80) entry ratings were significant ($U = 9597$, $Z = -3.835$, $p = 0.000$) (>0.05). Additionally, Mann-Whitney U Test revealed LGBT youth (mean rank = 163.59) and non-LGBT youth (mean rank = 131.39) exit ratings were significant ($U = 8966.5$, $Z = 2.904$, $p = .004$). LGBT youth reported higher levels of depressive symptoms at entry and exit.

Non-LGBT youth and their parents were not meaningfully different in their QIDS entry ratings but were significant, with youth rating more depressive symptoms, ($M = 1.297$, $SD = 5.100$, $t(171) = 3.334$, $p= .001$) at exit. LGBT youth endorsed significantly more depressive symptoms than their parents at entry ($M = 2.585$, $SD = 6.039$, $t(64) = 3.451$, $p=0.001$) and exit ($M = 2.305$, $SD = 4.879$, $t(58) = 3.629$, $p=0.001$), suggesting parents underreported their child's symptoms.

Discussion: This study explored the relationship between depressive symptom ratings at entry and exit of (1) LGBT and non-LGBT youth and parents of youth and (2) LGBT youth and parents and non-LGBT youth and parents. In the current study, LGBT youth rated more depressive symptoms than non-LGBT youth at entry and exit. LGBT youth endorsed more depressive symptoms than their parents at entry and exit, and non-LGBT youth rated more depressive symptoms than their parents at exit. Prior research suggests LGBT youth report more depressive symptoms than non-LGBT youth. While parent and child discrepant perceptions are not uncommon on self and parent report measures, it is unclear whether sexual orientation contributes to these differences. Our study suggests the importance of working with parents on increasing awareness of their child's depressive symptoms during treatment.

Findings suggest LGBT youth entering and exiting treatment experience more depressive symptoms, stressing the vulnerabilities this population faces. Future clinical research is needed to determine factors impacting informant differences and how these discrepancies may impact treatment outcomes.

M24. ASSESSMENT OF SUICIDE RISKS DURING THE FIRST WEEK IMMEDIATELY AFTER DISCHARGE FROM PSYCHIATRIC INPATIENT FACILITY

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Background: The suicide rate in first week after psychiatric discharge is alarmingly high. Although a risk assessment prior to discharge is standard praxis, it can be difficult to take into consideration the obstacles that patient will meet once discharged. A follow-up-visit during the first week after discharge is an opportunity to reevaluate whether a person may be at risk of suicide. We aimed to determine how many patients, of those who were assessed, were evaluated to be at elevated risk of suicide during the first week after psychiatric discharge and secondarily to identify predictors of this and predictors for receiving a follow-up visit during first week after discharge.

Methods: All patients discharged between March 1st 2018 to January 17th 2019 were offered a home visit including a systematic risk assessment. Socio-demographics and clinical variables were obtained from medical records and logistic regression analyses were used to identify predictors of a higher suicide risk assessment as well as receiving a follow-up visit.

Results: Information from 1905 discharges were included. Of these, 1,052 were seen in follow-up meetings. Risk assessments was conducted in a total of 567 discharge procedures, of which 28 (5%) had an elevated risk of suicide. A history of suicide attempt, suicide risk having been the reason for admission, a first diagnosis of a psychiatric disorder was associated with an elevated risk of suicide after discharge.

Discussion: Follow-up visits could serve as an important tool to identify people whose suicidal risk were overlooked at discharge or exposed to severe stressors after discharge.

M25. SCREENING PRETEENS FOR SUICIDE RISK IN OUTPATIENT AND INPATIENT MEDICAL SETTINGS

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Background: Youth aged 10-14 have seen the largest increase in suicide rates from 1999 to 2017 when compared to young adults and older adults. Notably, 38% of youth who die by suicide had contact with a healthcare setting within a month of their death, positioning pediatric

medical settings as an ideal environment to screen and identify individuals who are at risk for suicide. To address the rising rates of youth suicide, previous research has highlighted the importance of screening preteens, youth aged 10-12, for suicide risk in the emergency department (ED). In a sample of preteens presenting to the ED with a medical chief complaint, a 7% suicide risk screen positive rate was detected. However, limited research exists on the rate at which preteens screen positive for suicide risk in inpatient and outpatient medical settings. This study aims to examine the prevalence of preteens who screen positive for suicide risk in pediatric inpatient and outpatient medical settings.

Methods: This study is a secondary analysis of cross-sectional data collected from two multisite instrument validation studies. Participants from this study were youth ages 10 to 21 years, who presented to either an inpatient medical/surgical unit or outpatient specialty and primary care clinics from one of four pediatric medical centers. For the purposes of this study, data for youth aged 10-12, inclusive, were examined. Suicide risk was determined by the Ask Suicide-Screening Questions (ASQ), a brief 4-item tool administered by nursing staff. Descriptive statistics were calculated to describe the prevalence of preteens who screened positive for suicide risk.

Results: Out of the 1114 youth from the two larger validation studies, 17.8% (198/1114) were aged 10-12 (51.3% female; 53.7% white, 21.1% black; M[SD] age = 11.2[0.7]). Among these preteens, 3.5% (7/198) screened positive on the ASQ for suicide risk. The majority of preteens identified at risk for suicide were 12 years of age (85.7%, 6/7), and female (57.1%, 4/7). Participants were 42.9% Black 3/7) and 42.9% White (3/7). When stratifying suicide risk by medical setting, both inpatient and outpatient settings had a screen positive rate of 3.5% for suicide risk among preteens (4/109 and 3/82). Of note, three preteens indicated they had previously attempted suicide, and two participants endorsed the ASQ's 5th acuity question, "Are you having thoughts of killing yourself right now?"

Discussion: A considerable percentage of preteens screened positive for suicide risk on the ASQ, providing initial evidence that screening preteens for suicide risk in inpatient and outpatient settings is warranted. Additionally, the 3.5% positive rate among preteens indicates that the addition of this age group in suicide risk screening programs will not overburden already busy healthcare settings. Importantly, the suicide risk screen positive rate among preteens with medical chief complaints was lower in the inpatient and outpatient settings compared to the ED. Future research should seek to understand the difference in these rates. Notably, two preteens in this sample screened acute positive on the ASQ with imminent thoughts of suicide, further highlighting the importance of screening medical patients in this age group. To address the rising rates of child suicide, early identification and linkage to mental health care resources have the potential to save lives.

M26. IDENTIFICATION OF SUICIDE RISK AMONG PATIENTS WITH SPECIALIST CARE CONTACTS FOR PHYSICAL CONDITIONS PRIOR TO SUICIDE - A RETROSPECTIVE REVIEW OF MEDICAL RECORDS IN SWEDEN

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Background: A number of physical conditions have been shown to increase the risk of suicide. A key to prevent suicide among these patients is being alert to warning signs and to identify

the elevated suicide risk. This study aimed to examine whether suicide risk was identified in patients with physical conditions during their care contact in somatic specialist care. A further aim was to investigate clinical and sociodemographic factors associated with the identification of suicide risk before suicide.

Methods: The catchment area included 20 out of 21 counties in Sweden. Suicide cases were obtained from the Swedish National Cause of Death Registry (i.e. causes of death coded as X60-X84, ICD-10). We used a 24-month retrospective design, reviewing medical record data recorded prior to suicides that occurred during 2015. A total of 468 suicide cases, (71% males) with at least one diagnosis of a physical disease according to ICD-10 and treated in somatic specialist care were included in the study. Suicide cases only treated in somatic specialist care due to suicide attempts, injuries or diffuse symptoms, but without fulfilling any ICD-10 diagnosis of a physical diseases, were not included in the study. Age at death ranged between 13 to 95, with a mean age of 58.3 (SD:17.9). The dichotomous dependent variable suicide risk identified (yes/no) was used in binary logistic regression models. This variable was defined as patients having any documentation in their medical records of death wishes, suicidal thoughts, suicide plans, known suicidality or elevated suicide risk identified during somatic care or information about previous suicide attempts documented during psychiatric medical records, no matter of when the attempt happened. We calculated Odd Ratios (ORs) and 95% confidence intervals (CI) to address the association between independent clinical variables (e.g. physical illness, multiple physical illnesses, psychiatric comorbidity, contact with a psychiatric setting, and sociodemographic factors) and the identification of suicide risk up to 24 months before suicide.

Results: A number of physical conditions have been shown to increase the risk of suicide. A key to prevent suicide among these patients is being alert to warning signs and to identify the elevated suicide risk. This study aimed to examine whether suicide risk was identified in patients with physical conditions during their care contact in somatic specialist care. A further aim was to investigate clinical and sociodemographic factors associated with the identification of suicide risk before suicide.

Discussion: Suicide risk was often undetected in patients with healthcare contact for a physical disease but without psychiatric comorbidity or care contact. Females were more often judged to be at risk of suicide than males. These results emphasize the need for health care professionals to raise awareness of warning signs such as death wishes, suicidal ideation, suicide plans or previous suicide attempts among all physically ill patients, regardless of gender or whether psychiatric comorbidity has been identified and regardless if patients have a care contact in psychiatric services.

M27. DIVERSITY ISSUES IN RISK ASSESSMENT: ARE BUDDING CLINICIANS BEING TRAINED?

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Background: Prior research indicates that suicide behaviors and risk and protective factors are influenced by culture. However, much of the existing suicide literature is based upon European American culture, thereby ignoring the culture-specific factors for suicide in individuals with different identities. It is therefore imperative that diversity issues are addressed in suicide risk assessment (SRA) in order for clinicians to effectively identify the cultural factors that can impact their client's risk for suicide. This poster explores the frequency in training of diversity issues in SRA in doctoral-level psychology programs and internship sites.

Methods: This study utilizes survey data collected by Palo Alto University (PAU) in conjunction with the Boston Veteran Affairs (VA) Healthcare System. The surveys, Standardization Among United States Clinical Training Programs and Standardization Among Internship Programs, were used in this study. Both surveys were not formally validated; however, they were developed under the guidance of Dr. Bruce Bongar and approved by PAU's Institutional Review Board (IRB). A total of 77 out of 304 APA-accredited doctoral psychology programs responded to the survey. Out of 704 APA-accredited internship programs, 150 responded to the program.
Results: Surprisingly, a t-test revealed that internships provided training associated with diversity issues in SRA more frequently than doctoral-level programs. In line with our second hypothesis, a logistic regression analysis indicated that community mental health centers, as well as counseling centers, Veteran Affairs medical centers, and forensic/correctional centers taught diversity training in SRA more frequently than other types of internship sites.
Discussion: These results indicate that diversity issues in SRA are not taught with the same frequency in different stages of graduate training. Future research can explore the factors that increase the likelihood of receiving education related to diversity issues in SRA in doctoral-level programs and internships. Despite these interesting results, it is important to note that the data was collected during the COVID-19 pandemic, and as such, response rates may have been negatively impacted by the public health crisis. Another limitation to this study includes the potential impact of social desirability bias on the survey responses.

M28. A NETWORK ANALYSIS OF THE COGNITIVE-AFFECTIVE SYMPTOMS OF SUICIDALITY

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Background: Earlier literature focused on identifying long-term risk factors of suicidal behaviors, such as mental health conditions (e.g., depression, bipolar disorders), family history of suicide and past suicide attempts. As a result, there is a dearth of reliable short-term risk assessments that can capture the dynamic cognitive-affective states of a suicidal individual. The Suicide Crisis Inventory-2 (SCI-2; Bloch-Elkouby et al., under review) assesses the severity of the Suicide Crisis Syndrome (SCS), which is an acute suicidal mental state that incorporates five major cognitive-affective symptoms: Entrapment, Affective disturbance (emotional pain, rapid spikes of emotions, extreme anxiety, acute anhedonia), Loss of cognitive control (rumination, cognitive rigidity, ruminative flooding, thought suppression), Hyperarousal (agitation, hypervigilance, irritability, insomnia), and Social Withdrawal. The purpose of the study is to examine whether SCS symptoms are associated with each other.
Methods: 1061 South Korean participants were recruited to complete an online Qualtrics survey. We assessed the Korean translated version of the SCI-2. Glasso network analysis from the bootnet package in R was used to compute a partial correlation network examining the cognitive-affective symptoms of suicidality drawn from the SCS. Centrality was assessed through strength centrality.
Results: Cognitive-affective symptoms of the SCS were interconnected with each other, indicating a unidimensional model. Specifically, entrapment and emotional pain, acute anhedonia and cognitive rigidity, rumination and ruminative flooding were three pairs of symptoms that were especially closely related to each other. Emotional pain (S = 1.68), entrapment (S = 1.63) and agitation (S = 1.04) were the most central symptoms of the inventory, whereas acute anhedonia (S = -1.46) and cognitive rigidity (S = -0.16) were the least central.

Discussion: The network analysis suggests that SCS symptoms co-occur and are strongly interrelated. Entrapment and emotional pain are especially red-flag symptoms of the SCS, alongside agitation to a slightly lesser degree. These must be closely examined during clinical assessment to implement necessary intervention measures in advance. Future research should replicate this study to examine differences in central symptoms across diverse cultures to compare and contrast them, as well as examine the nature of these networks over time.

M29. OLDER ADULTS WHO EXPERIENCE THEIR LIVES TO BE COMPLETED AND NO LONGER WORTH LIVING: A SYSTEMATIC REVIEW INTO USED TERMINOLOGY, DEFINITIONS AND INTERPRETATIONS

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Background: In the Netherlands and in Belgium, a political debate emerged regarding the possibility of euthanasia or assisted suicide (EAS) for older adults who experience their lives as completed and no longer worth living, despite being relatively healthy. While a variety of opinion papers exist on the topic, empirical research on this phenomenon is still an emerging area. Moreover, the different terms used to denote the phenomenon (e.g., completed life, tiredness/weariness of life, life fatigue) lack agreed-upon definitions and an integration with other research areas, hindering the advancement of knowledge.
The current systematic review therefore had three aims: first, to present an overview of the general use and definition/description of the terms employed to describe the phenomenon that older adults experience their lives as completed and no longer worth living in the empirical literature. We sought to present both definitions of these terms and the contexts and populations they are associated with, thus not restricting our search to their use in late life populations. Second, to explore how the underlying experiences are interpreted (e.g., a normative experience, a pathological condition, an existential problem). Lastly, to briefly summarize the current state of knowledge on the phenomenon.

Methods: A systematic search was performed in Web of Science core collections, MEDLINE, PsycINFO, and CINAHL (from inception to March 2021). We selected English-language articles with an empirical study design published in peer-reviewed journals. Participants had to have a personal experience of the phenomenon or be assessed for it, or have an indirect experience of the phenomenon (e.g., by being caregivers).
Results: The search yielded 299 unique publications. Thirty-five articles met the selection criteria. Studies were conducted in 14 different countries and investigated mostly the general population, older adults, or healthcare professionals. Concerning terminology and definitions, analyses showed that tiredness and weariness of life were used the most, in samples ranging from young people to older adults. Other terms were hardly mentioned. While many studies lacked a clear (theoretical) definition of the phenomenon, it was often regarded as suicidal ideation with low intent and described or measured as “the thought/ feeling that life is not worth living”. Interestingly, studies unrelated to the political debate surrounding EAS frequently regarded death wishes as a more severe form of suicidal ideation in the suicidal process, though not always making a clear distinction and not consistently finding evidence for this continuum. Studies conducted within the EAS debate, in contrast, used a different description which often incorporated death wishes and additionally specified the cause for the experience as not being due to severe mental or physical health problems. Concerning the interpretation of the

phenomenon, the majority of studies adopted a psychopathological perspective. A number of studies also took an existential perspective, an interpretation more prevalent in studies related to the EAS debate.

Discussion: Although the terminology in studies conducted inside and outside the EAS debate overlaps, the descriptions and interpretations of the phenomenon differ. We discuss potential reasons for and consequences of these differences. Moreover, we outline routes for future research, such as the need to clarify the definition and personal experience of tiredness/weariness of life and death wishes across the lifespan as well as the use of more varied study designs. Eventually, this should improve assessment of and appropriate care for individuals with these experiences.

M30. SUICIDE SEVERITY IN THE EMERGENCY DEPARTMENT: THE USE OF A COMPUTER-ADAPTIVE TEST SCREEN

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Background: National initiatives (e.g., Zero Suicide) have highlighted the role of the healthcare system, including emergency departments (EDs) in identifying suicide risk and facilitating mental health care (Labouliere et al., 2018). One screening tool that offers a significant advantage in an ED setting is the Computer Adaptive Test-Mental Health (CAT-MH). The CAT-MH is an assessment tool grounded in multidimensional item response theory; questions are derived from a large bank of items and are administered in a manner that measures the accuracy of an underlying construct, continually updates, and selects questions to improve precision (Gibbons et al., 2016). The current study aimed to investigate the: 1) feasibility of the CAT-MH in an ED, 2) the concordance between standard of care suicide screening and the CAT-MH suicide screen, and 3) the association between suicide severity indicated by the CAT-MH and prior and subsequent emergency department visits.

Methods: Data were prospectively collected from a randomly selected sample of patients (n=1,854) presenting at a Midwestern ED over the course of 10 consecutive months from May 2019 through March 2020. Of the subjects approached for study enrollment, 828 (44.66%) consented for the CAT-MH and of those who consented, 97.34% (n=806) completed the CAT-MH via tablet. Individual were administered subscales indexing suicide, depression, anxiety, PTSD, and substance use. We dichotomized suicide severity into low risk (0) and intermediate to high risk (1). All participants received standard of care suicide screening per ED protocols. The patients' providers were asked to quantify their concern for a suicide attempt by the subject within the next 30 days using a 100-point visual analog scale. Enrolled subjects also consented to access of their electronic medical records to collect data regarding ED utilization in the 12 months before and 30 days after enrollment. We conducted three sets of analyses: 1) Pearson correlation between the CAT-MH suicide and clinician-rated suspicion of suicide, 2) logistic regression to determine association between 12-month prior ED use and suicide severity, and 3) logistic regression to determine the association between suicide severity and future ED use.

Results: Participants completed the CAT-MH in, on average, 10.80 minutes (Standard Deviation, 5.48 minutes). The suicide subscale was only weakly correlated with the clinician rating of suspected suicide ($r=0.11$, $p<0.01$). Eleven individuals screened positive on the CAT-MH suicide screen but only three of these screened positive by the standard of care ED screen. Individuals who had two or more ED visits in the prior year had a 51% increased odds (95% Confidence Interval [CI], 1.03-2.23) of screening as intermediate-high suicide risk compared to those with zero prior ED visits. Individuals who scored in the intermediate-high suicide risk

group were at 71% increased odds (95% CI, 1.16-2.53) of an ED visit within 30 days after their enrollment compared to those scored as low risk.
Discussion: The use of the CAT-MH assessment tool is feasible in ED settings given its ability to screen a wide range of domains in a short period of time (approximately 2 minutes per subscale). The CAT-MH is also able to capture individuals who were missed by the ED standard of care screening; eight individuals were not identified. Additionally, prior ED utilization predicts greater severity as captured by the suicide subscale, and greater severity also predicts future ED utilization in the month after ED enrollment. The ability to screen individuals quickly that do not rely on clinician-rated suspicion is key to the detection of suicide risk and coordinate individuals with mental health care.

M31. PHYSICAL AGGRESSION HISTORY DISCRIMINATES SUICIDE ATTEMPTERS WITH MDD

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Background: We previously found that a history of aggressive behavior was a more effective discriminator of past suicidal behavior than impulsiveness, even after considering the role of Borderline Personality Disorder in risk (Keilp et al., 2006). However, whether aggression is a general trait disposition of suicide attempters or if there are specific types of aggressive behavior associated with past suicidal behavior is not clear.
Methods: A sample of 193 currently depressed patients, ages 16 to 80, was recruited across three sites in the AFSP Lifespan Study, designed to assess adult lifespan developmental effects on risk factors for suicidal behavior. Depressed patients with no history of suicidal behavior (N=93) were compared to depressed suicide attempters (N=100) on the Buss Perry Aggression Questionnaire (BPAQ), which provides a total score as well as subscales assessing Anger, Hostility, Verbal Aggression and Physical Aggression.
Results: In simple univariate comparisons with no covariates, past attempters differed on both the BPAQ Total score (p=.003) as well as on the Anger (p=.010) and Physical Aggression subscales (p<.001). However, after controlling for age, study site, depression severity, and severity of Borderline Personality traits (which was robustly correlated with all components of the BPAQ, with all five covariate p-values <.001), groups only differed on the Physical Aggression subscale (p=.018). While there was a sex effect on BPAQ subscale scores (p=.050), there was no interaction of patient group by sex (p=.228) nor by subscale condition (p=.750).
Discussion: The propensity towards physical aggression discriminated past suicide attempters and appears to be a particularly salient component of aggressive behavior associated with suicide risk. A careful history of past physical altercations may provide important supplementary information about suicidal behavior risk beyond traditional clinical risk factors.

M32. A PHASE 2 OPEN LABEL STUDY OF EFFICACY, SAFETY, AND TOLERABILITY OF SLS-002 (INTRANASAL RACEMIC KETAMINE) IN ADULTS WITH MAJOR DEPRESSIVE DISORDER AT IMMINENT RISK OF SUICIDE

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Background: Depression is the largest contributor to disability worldwide, and the global lifetime prevalence of Major Depressive Disorder is more than 10%. It is estimated that as many as 15% of patients with MDD will eventually die by suicide. Despite this burden, there is currently no therapeutic approved specifically for the treatment of suicidal ideation and behavior in individuals with depression. Conventional antidepressants may reduce symptoms over a period of weeks, but do not act rapidly enough to benefit individuals with imminent risk of suicide. The N-methyl-D-aspartate (NMDA) receptor antagonist ketamine has been investigated for the treatment of depression, especially in individuals who do not respond to conventional antidepressants, and esketamine was recently approved for use in depression and treatment-resistant depression. However, some evidence suggests that the racemic formulation of ketamine may hold even more potential for the rapid reduction of suicidal thoughts. SLS-002 is an intranasal racemic ketamine under development for the treatment of suicidal ideation and behavior in patients with MDD. The objectives of part one of this phase 2 study were to explore the efficacy of SLS-002 on symptoms of depression and suicidality, as well as to explore its safety and tolerability in an open-label setting.

Methods: In part one of a two-part phase 2 clinical trial, 17 patients diagnosed with MDD and requiring hospitalization due to significant risk of suicide were enrolled. For inclusion, patients were required to have a baseline total Montgomery-Åsberg Depression Rating Scale (MADRS) score of ≥28 points, score of 5 or 6 on MADRS item 10, total score of ≥15 points on the Sheehan-Suicidality Tracking Scale (S-STS), and a history of previous suicide attempt(s), as confirmed by the Columbia Suicide Severity Rating Scale (C-SSRS). The 16-day treatment period was initiated in the hospital and continued in an outpatient setting once the patient was stabilized. Patients were administered 90 mg intranasal racemic ketamine (SLS-002) in an open label manner twice per week, receiving five total doses. In addition to the investigational intervention, patients received standard of care (SOC) therapy for the duration of the study.

Results: The primary endpoint was change in the MADRS total score from baseline to 24 hours following the initial dose of SLS-002. Secondary endpoints included the change from baseline to Day 16 in MADRS total score and change from baseline to 24 hours in the Clinical Global Impression Scale – Suicidal Ideation/ Behavior (CGIS-SI/B), the S-STS total score and the Patient Global Impression Scale – Suicidal Ideation/ Behavior (PGIS-SI/B) total scores. Safety endpoints and additional efficacy endpoints were also measured. The use of SLS-002 was associated with clinical improvement across all four scales: the mean (SD) change from baseline on the MADRS was -24.9 (8.34) at 24 hours post-dose and -31.6 (7.31) at Day 16, on the CGIS-SI/B was -2.2 (0.90) at 24 hours, on the PGIS-SI/B was -1.9 (0.86) at 24 hours, and on the S-STS was -20.6 (6.34) at 24 hours. At the final follow-up on Day 29/30, the mean MADRS score was 6.3 (6.60) and the mean S-STS score was 0.0 (0.00). SLS-002 was well tolerated; while 47% of subjects had at least one treatment-emergent adverse effect (TEAE), all were mild to moderate and most were transient in nature. There were no serious adverse events (SAEs).

Discussion: SLS-002 generated rapid and sustained efficacy across all measures of depression and suicidality. Its use was found to be well tolerated. The results of this open label study support the continuation of SLS-002 development with the double-blind placebo-controlled part 2 of this phase 2 trial.

M33. SERVICE USER PERSPECTIVES ON SERVICES RECEIVED AFTER A SUICIDE ATTEMPT: THE ATTEMPTED SUICIDE SHORT INTERVENTION PROGRAM AND FINNISH MENTAL HEALTH CARE AS USUAL

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Background: Attempted suicide is the main risk factor for re-attempts and suicide death. Tertiary prevention efforts include the development of and effectiveness studies on novel interventions, as well as educating existing services on the needs of suicide attempt survivors. Qualitative understanding of service user experiences is required to inform further development and successful implementation of novel interventions within service systems. The current study investigates service user experiences of and perspectives on the Attempted Suicide Short Intervention Program (ASSIP), a promising novel approach first developed in Switzerland, in addition to mental health care as usual. This is the first qualitative investigation into suicide attempt survivors' experiences of both 21st century Finnish mental health care and ASSIP.

Methods: This is an exploratory qualitative research design. Twelve service users with experience of both ASSIP and mental health care as usual (in relation to the same recent suicide attempt) participated in semi-structured in-depth interviews focusing on these experiences. A thematic analysis of service user accounts is presented.

Results: Seven main themes emerged in service user accounts concerning health care as usual: 1) appreciation for professionals' good intentions, 2) a wish for deeper connection and exploration, 3) a wish for an engaged partner in navigating recovery, 4) a wish for predictability and continuity, 5) suicide as taboo in mental health services, 6) hopes and frustrations around psychotropic medication and 7) a call for attention to participants' relationship context. Three main themes emerged in service user accounts concerning ASSIP: 1) meaningful gains despite intervention brevity, 2) appreciation for ASSIP 'key ingredients' and 3) ASSIP as an acceptable adjunct to and primer for other treatments.

Discussion: An engaged professional collaborator, opportunity for therapeutic exploration and adequate focus on the suicide attempt were key elements of positive service user experience. Meaningful recovery gains were possible in brief intervention. Service user perception of treatment paths' continuity and predictability may be key in retaining gains as much as achieving them.

M34. THE DIFFERENCES OF EFFECTIVENESS OF A GROUP BASED SUICIDE PREVENTION TREATMENT IN PARTICIPANTS WITH TRAUMA HISTORY VERSUS PARTICIPANTS WITHOUT TRAUMA HISTORY

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Background: Suicidality is increasing in adolescents and it is the second leading cause of death in this age group (Curtin et al., 2016). An intensive outpatient program (IOP) has been developed to reduce risk for suicidal behaviors in adolescents in an academic medical center (Kennard, et al, 2018). This program was adapted to a community mental health setting to better assist the needs of that community. The purpose of this study is to verify the differences in treatment response in participants reporting trauma history versus participants without trauma history.

Methods: A total of 70 adolescents, aged 12 to 17 (Mage=14.7 ± 1.57), were enrolled in an 8 week Cognitive Behavioral Therapy skills group treatment (with DBT components) targeting reducing risk for suicidal behaviors and ideation for 1.5 hours per week. Parents/guardians

were involved, participating in 4 sessions which included psychoeducation and communication skills, along with two multifamily group sessions. Youth were predominately Hispanic (63.3%) and female (76.7%).
Depressive symptoms and suicidality were assessed at baseline and discharge using the Quick Inventory of Depressive Symptomatology – Adolescents (QIDS-A), Concise Health Risk Tracking (CHRT: risk and propensity subscales), and Columbia-Suicide Severity Rating Scale (C-SSRS). The Child and Adolescent Needs and Strengths Assessment (CANS) was used to measure the incidence of trauma.

One-way ANOVAs and chi-square tests were used to compare participants with and without a trauma history on entry and exit measures. Paired sample t tests were used to assess changes in depressive symptoms and suicidal ideation among participants with a trauma history.

Results: Twenty-seven participants out of 70 reported a trauma history (38.6%). Participants with a trauma history reported higher entry depressive symptoms and entry active suicidal ideation (risk) compared to those without trauma, although these differences were not statistically different. Participants with a trauma history improved from entry to exit; they had a decrease in active suicidal ideation (entry M = 4.81 ± 2.96 vs. exit M = 2.59 ± 2.91), t(26) = 3.81), p =.001 and depressive symptoms (entry M = 14.37 ±.5.05 vs. exit M = 9.96 ± 5.35), t(26) = 3.60), p =.001. At exit, although those with a trauma history experienced a reduction in suicidal ideation, they continued to report higher levels of ideation than those without trauma, (Mwith trauma=2.59 ± 2.91, Mwithout trauma= 1.72 ± 2.49) p = .05 . At exit, there were no differences in suicide attempt rates. However, at exit, participants with a trauma history engaged in higher rates of non-suicidal self-injury over the course of treatment (34.6% versus 14.6%, p = .05).
Discussion: Our results indicate that participants with a trauma history respond well to the adaptation of a suicide prevention treatment, as evidenced by significant reductions in depressive symptoms and active suicidal ideation. Participants with a trauma history did have higher rates of non-suicidal self-injury during treatment and higher levels of suicidal ideation at exit, which may require additional treatment. Limitations include the small sample size, a predominately female sample, and a lack of follow-up data.

M35. EFFICACY OF URIDINE TO REDUCE SUICIDAL IDEATION IN VETERANS: PRELIMINARY FINDINGS

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Background: Veteran Suicides, attempts, and suicidal ideation (SI) remain of urgent concern to the Veterans Health Administration (VHA). While intravenous ketamine is shown to rapidly reduce SI in some patients, its potential for long-term side effects, temporary action, and abuse liability underscore the need for safe, rapid-acting oral treatments.
Uridine, a naturally occurring chemical in the human body involved in energy metabolism and protein synthesis, has the potential to fill this need. Indeed, there is a broad overlap in the brain mechanisms and neural effects shared by uridine, ketamine, and lithium. Previous studies have demonstrated the safety and efficacy of Uridine in adolescents with bipolar disorder, and its ability to increase brain GABA, an amino acid implicated in SI.

Methods: The current study is a four-week, double-blind, placebo-controlled clinical trial of Uridine for Veterans with SI. Veterans undergo proton magnetic resonance spectroscopy (1H-MRS) imaging at baseline, and again after week 1 of treatment, in pursuit of a neurochemical

biosignature of rapid SI reduction. The aims of this study are to demonstrate that Uridine decreases SI in Veterans and to measure rapid changes in brain GABA in Uridine-treated Veterans.
Results: Our preliminary analyses demonstrate greater reductions in the Beck Scale for Suicide Ideation (SSI) in veterans randomized to Uridine vs. Placebo. Moreover, our neuroimaging data demonstrate alterations in GABA following one week of treatment(p=0.06).
Discussion: A recent study collected serial measurements of Glx and GABA, while ketamine was administered I.V. to the participants in the MRI scanner (Milak MS et al. JAMA Network Open 2020 Aug; 3(8): e2013211). The investigators wrote, "We also observed that ketamine produced a dose-dependent decrease in mPFC Glx level and that a lower mean Glx level was associated with better antidepressant response." After reading Milak et al.'s report, we performed an unadjusted visual inspection of our raw Glx baseline (BL) and post-treatment (TX) group data. Although Milak and colleagues acknowledge that prior work, including their own, suggests that ketamine increases – rather than decreases – Glx levels in brain, we believe this ketamine study from Drs. Milak and J. John Mann at Columbia, together with our current VA uridine project, serve to validate magnetic resonance spectroscopy as a translational imaging tool for interrogating the glutamatergic neurotransmitter system in psychiatric disorders, identifying brain-based treatment targets, and evaluating the "target engagement" achieved by novel interventions. We interpret these findings in greater detail and explore clinical implications for the treatment of SI in Veterans.

M36. A RANDOMIZED CLINICAL TRIAL OF THE ASSIP VS. CRISIS COUNSELLING IN PREVENTING SUICIDE ATTEMPT REPETITION: A TWO-YEAR FOLLOW-UP STUDY

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Background: ASSIP (Attempted Suicide Short Intervention Program) is a brief psychotherapeutic intervention found remarkably effective in reducing rate of suicide attempt repetition in the pivotal study in Bern, Switzerland. We compared effectiveness of the ASSIP to usual crisis counselling (CC) in a Zelen randomized trial (ISRCTN13464512).
Methods: Adult patients receiving somatic treatment for a suicide attempt at the Helsinki City general hospital emergency rooms in 2016-2017 were requested to participate. Psychotic or likely nonadherent substance abusing or dependent patients were excluded. Eligible patients (N=239) were randomly allocated to two interventions. (a) The ASSIP comprised three visits, including a videotaped first visit, a case formulation, individualized safety plan, plus letters from their therapist every three months for one year and then every six months for the next year. (b) The CC involved on average four face-to-face individual sessions. In addition, participants received treatments as usual. One and two years after the baseline, the participants' suicidal thoughts and attempts and psychiatric treatments received during the follow-up were investigated by telephone and from psychiatric records.
Results: Of patients randomized, two thirds initiated either ASSIP (n=89) or CC (n=72), with 73 (82%) completing the ASSIP and 58 (81%) the CC. There was no significant difference

between the ASSIP vs. the CC patients having at least one suicide attempt during the two-year follow-up (29.2% [26/89] vs. 35.2% [25/71], OR 0.755 [95% Cl 0.379-1.504]).
Discussion: We found no evidence for a difference in effectiveness of the two active interventions in preventing repetition of suicide attempts.

M37. DELIVERY OF BRIEF COGNITIVE-BEHAVIORAL THERAPY FOR SUICIDE PREVENTION (BCBT-SP) VIA VIDEO TELEHEALTH

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Background: There are currently 5,565 mental health-designated health professional shortage areas in the United States (Health Resources and Services Administration Data Warehouse, 2018). The shortage of evidence-based treatments is even more significant (Harvey and Gumport, 2016). Although veterans living in remote/rural areas are at elevated risk for suicide, there is very little research specific to treating suicidal veterans who present with barriers to in-person care. The current study aims to examine the delivery of brief cognitive-behavioral therapy for suicide prevention (BCBT-SP) via Clinical Video Telehealth (CVT) to the home of a veteran discharged from the psychiatric inpatient unit after a recent suicide attempt.
Methods: The study was originally designed to recruit multiple veterans as part of a multiple case study design prior to recruitment being halted following COVID-19; only one veteran was included in the study. Client satisfaction was measured via the Helping Alliance Questionnaire–II (HAQ-II; Luborsky et al., 1996), Patient version. Modality feasibility was indexed by interruption by technical failures. The Telehealth Usability Questionnaire (TUQ; Parmanto, Lewis, Graham, and Bertolet, 2016) was used to index acceptance of CVT modality. The Columbia–Suicide Severity Rating Scale (C-SSRS; Posner et al., 2011) Baseline version was used to assess lifetime history and last-month suicidal thoughts and behaviors at baseline. The Suicide Cognitions Scale (SCS; Bryan et al., 2014) was used to measure suicide-specific beliefs. An analogue scale, based on a Suicide Visual Analog Scale (S-VAS; Bryan, 2018), was used to measure the veteran's current urge to kill self on a scale ranging from 0 to 100. The Depression, Anxiety and Stress Scale (DASS-21; Antony et al., 1998) was used to measure depression, anxiety, and stress. Finally, the Self-Stigma of Seeking Help (SSOSH; Vogel et al., 2006) scale was used to assess self-stigma with seeking psychological help. All study procedures were approved by the Institutional Review Board (IRB) of the VA health care system where the veteran was hospitalized.
Results: The veteran's scores on the HAQ-II (M = 5.9) indicated high perceived therapeutic alliance. TUQ scores indicated high acceptability of CVT (usefulness M = 6.7, ease to use M = 6.5, effectiveness M = 7.0, reliability M = 6.7, satisfaction M = 7.0, total M = 6.7). There was one technical failure that occurred during the course of treatment. At baseline, the veteran reported active suicidal ideation with a plan and intent in the last month, a score of 15 on the Intensity subscale on the C-SSRS, a suicide attempt in the last month, and nine suicide attempts in his lifetime. However, the veteran did not engage in any suicidal behavior or endorse suicidal intent to act on suicidal thoughts during the course of treatment. The veteran reported a 0 for the urge to kill himself right now at all assessments. Suicidal beliefs captured by the SCS remained similar and were slightly lower at the end of treatment. His scores on the DASS-21 indicated depression reduced from extremely severe to mild, anxiety reduced from moderate to normal, and stress reduced from mild to normal. Self-stigma about seeking psychological help remained low on the SSOSH.

Discussion: The current case example serves as the first examination of BCBT-SP delivered via CVT to the home. Consistent with previous findings suggesting therapeutic alliance is comparable between CVT and in-person care (Jenkins-Guarnieri et al., 2015), the veteran expressed high perceived therapeutic alliance. This case example demonstrates that the delivery of a structured treatment that exceeds the standard of care for suicide risk was feasible and safe for this high-risk veteran.

M38. "ROOFING": A COMMUNITY-BASED APPROACH TO THE MANAGEMENT OF ACTIVE SUICIDE CRISIS

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Background: Past and recent findings as to the complex nature of acute suicidal crisis, particularly among individuals suffering from affective disorders, call for innovative approaches to crisis management and suicide prevention. We present the work of MOSHE, a non-profit organization aimed at activating community members for the purpose of preventing suicidality during an acute crisis. MOSHE's integration draws from Joiner's Interpersonal-Psychological Theory of Suicide, as well as from extant research on self-criticism and findings as to the role of families and communities in suicide prevention.
Methods: We conducted a qualitative analysis of > 140 suicidal crises managed by MOSHE, and which were documented by community volunteers managing the crisis.
Results: In all crises, suicide was prevented. Community volunteers were able to mobilize support from significant others in the suicidal person's natural environment -- primarily family members and friends -- who readily committed to taking the target person out of suicidal intent. Target persons reported a decrease in self-hate and an increase in perceived social support, which arguably served as mechanisms of the intervention's effect. Problems were identified in referring target persons to professional treatment throughout the crisis.
Discussion: Community volunteers may alleviate suicidality by mobilizing close people in the target person's natural environment, in turn reducing thwarted belongingness and self-criticism/self-hate. We title this effect "Roofing", taken from discussions as to "how to bring down a person on the roof". Future developments in the interventions need to address issues of continuity of care.

M39. IDENTIFYING SOCIAL DETERMINANT OF HEALTH FACTORS IN VULNERABLE SUICIDAL PREVENTION SUPPORT GROUP AMONG REDDIT USERS DURING THE COVID-19: A NATURAL LANGUAGE PROCESSING APPROACH

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Background: Although there has been discussion on the emerging mental health crisis online, there hasn't been a data-driven approach that systematically documents the trends and unobserved topics that emerged in the social media platform (eg, r/SuicideWatch, r/Depression). This study aims to fill the gap and informs the next online surveillance agenda for effective suicide prevention.
Methods: Data were derived from posts in 826,961 unique Reddit users from 2018 (pre-pandemic) to 2020 in the curated Reddit Mental Health Dataset. Trends analysis was conducted

to profile the sentiment and sematic trajectories before during the course of COVID-19. Unsupervised methods of natural language processing (NLP), including the topic modeling and clustering were applied to identify the patterns of suicidal concerns in the COVID-19, in comparison to the pre-pandemic levels. This study further extends the previous examination through the application of high likelihood of clinical diagnoses beyond the self-report claims. Another innovation is the control of time differences by disaggregating the period to more fine-toned pre-pandemic, midepandemic, and near-reopening periods among users who had stable posts in the online platform to avoid selection bias.
Results: During the COVID-19, topics in the r/SuicideWatch have emerged dramatically during early January 2020. Feature topics, including 'isolation", "economic stress" have increased significantly. On the contrary, there has been a decrease in traditionally linked psychological features, such as "motion". There have been further disparities were observed across different stages of the pandemic, especially among the users who had stable posts during the study periods. Specifically, the network density and associations between suicidality, self-harm, and posttraumatic stress disorder were significantly stronger over time, despite the initial low-level nearest distance ($p<001$)
Discussion: More online surveillance shall practice a public health approach in promoting social connectedness online. Specifically, screening tools for stable users who continuously seek help online shall be tailored to address social determinants of health screeners, as the pandemic-like crises may bring more socially relevant 'despair of death' over time.

M40. ACTIVE SUICIDAL IDEATION ONE YEAR AFTER THE BEGINNING OF THE COVID-19 PANDEMIC IN PATIENTS WITH MENTAL DISORDERS: RISK AND PROTECTIVE FACTORS

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Background: The relationship established between the global pandemic of Coronavirus disease (COVID-19) and mental health, including suicide attempts, is widely described [1]. One year since the start of pandemic, protective and risk factors related to active suicidal ideation (ASI) can be identified. The knowledge of these factors can help to implement specific strategies on patients with mental disorders [2].
The objective of this study is to evaluate the risk and protective factors associated with ASI in patients with current mental disorders (CMD).

Methods: Cross-sectional study based on an anonymous self-report online survey in all over Spanish territory. The survey was conducted between March 16 and 31, 2021. It was completed by 5,646 participants, of which 704 (12.5%) reported having a CMD, aged 18-73.

The Spanish versions of Depression, Anxiety and Stress Scale (DASS-21), the Dep5 and Anx5, and the Paykel Suicidal Ideation Scale (PSS) were used to assess psychological impact and suicidal ideation. Active suicidal ideation (ASI) was defined as positive answer to PSS questions 3 and/or 4.

Logistic regression models (forward stepwise selection) were estimated to determine the independent factors associated with ASI. Due to multiple comparisons the level of statistical significance was set at $\alpha \leq 0.01$ (two-tailed).

Results: The analyzed sample included 704 patients with at least one CMD [mean age (SD)=38.54 (11.83); females: n=632 (89.8%)]: anxiety disorder (n=583), depression (n=362), eating disorder (n=38), bipolar disorder (n=10), schizophrenia (n=9). Of these, 19.3% (n=136) presented ASI during the last month, and 8.9% (n=63) had lifetime history of suicide attempts. A logistic regression model, including all significant variables from bivariate analyses, was run to assess variables associated with ASI.
Risk factors for ASI: insomnia (OR [IC 95%] = 2.176 [1.420-3.334], $p < 0.001$) and having a maladaptive reaction to stress (DASS-21 subscale) (OR [IC 95%] = 1.758 [1.183-2.612], p=0.005).

Protective factors against ASI: older age (OR [IC 95%] = 0.979 [0.961-0.998], p=0.031),

living with one or more than one other person (OR [IC 95%] = 0.421 [0.241-0.734], p=0.002; OR [IC 95%] = 0.384 (0.223-0.660], p<0.001, respectively) and self-employed worker or employed (OR [IC 95%] = 0.304 [0.110-0.839], p = 0.021; OR [IC 95%] = 0.330 [0.185-0.587], $p < 0.001$, respectively).

Discussion: The prevalence of ASI in the population with current mental disorders, after one year of pandemic, almost reached 20%. Risk factors associated with ASI included being younger, suffer from insomnia or a maladaptative reaction to stress, living alone and being unemployed. The results from this study highlight the importance of assessing not only clinical but psychosocial aspects in patients with mental disorders in order to establish more tailored preventive strategies.

M41. A PSYCHOSOCIAL TRAJECTORY BETWEEN ALONENESS DURING THE COVID-19 PANDEMIC IN INDIA AND SUICIDE RISK

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Background: The COVID-19 pandemic has introduced unsurpassable degrees of psychological distress and despair in people's lives (Twenge et al., 2020). Findings suggest that social distancing and stay-at-home orders imposed by the pandemic (Galea et. al., 2020; Thunström et al., 2020) have increased feelings of loneliness (Luchetti et al., 2020) and thwarted belongingness (TB) (Gratz et al., 2020)— a co-predictor of imminent suicide, alongside perceived burdensomeness (PB) (Van Orden et al., 2010). While increased PB during the pandemic has been associated with financial distress (Reger et al., 2020), the present study proposes that it may be an outcome of pandemic-driven loneliness and lack of belongingness. We investigate for a directional pathway between aloneness and suicidal ideation (SI) (Calati et al., 2019), as mediated by TB followed by PB.
Methods: An online anonymous survey was administered to an Indian adult community sample (N = 227) during COVID-19, through Qualtrics. Aloneness was measured on a 5-point

Likert scale using the item— How much do you feel alone or isolated under the influence of COVID-19? (1=Not at all to 5=Extremely). Validated items from the Suicide Narrative Inventory (SNI; Cohen et al., 2018) were used to assess past month TB and PB. The Mini-International Neuropsychiatric Interview (MINI; Shaheen et al., 1998) measured individuals' maximum SI intensity in the past month. A double mediation analysis was conducted using Hayes PROCESS Model 6 (Hayes et al., 2013), with TB followed by PB functioning as the two mediator variables in the relationship between COVID-related Aloneness and SI Intensity.
Results: COVID-related Aloneness was a significant predictor of TB ($b = 0.847$, $p = 0.002$), while both were significant predictors of PB: Aloneness ($b = 0.356$, $p = 0.043$); TB ($b = 0.124$, $p = 0.033$). Amongst these three variables, only PB was a significant predictor of SI Intensity ($b = 0.187$, $p < 0.001$). While the direct effect of Aloneness on SI was insignificant, its indirect effect on SI through the double mediation of both TB and PB was significant ($b = 0.020$, 95% CI [0.0037, 0.0466]). Further, although the indirect effects of Aloneness on SI Intensity through the single mediations of either TB or PB were both insignificant, the total indirect effect of Aloneness on SI Intensity ($b = 0.0952$, 95% CI [0.0260, 0.1816]) remained significant. The total effect of Aloneness on SI Intensity (sum of direct and indirect) was also significant ($b = 0.174$, $p = 0.001$).
Discussion: Contrasting to previous literature describing TB and PB as outcomes of distinct psychosocial mental states (Van Orden et al., 2012), the current findings propose PB as an outcome of TB, and promote the inclusion of the psychological trajectory between lack of belongingness, feelings of burdensomeness, and suicidal ideation intensity in suicide risk assessment procedures, especially when constructs of social isolation such as loneliness are prominent risk factors. Given that aloneness had an insignificant effect on SI Intensity when solely mediated by either TB or PB, as well as directly, the significance of effects via a double mediation strengthen the models case for clinical utilization. A theoretical explanation for this sequence might be that the greater lack of reciprocal care arising from pandemic-related isolation (Gratz et al., 2020) may activate feelings of lower perceived self-worth and liability on others, thus increasing intensity of suicidal thoughts and behaviors (Ma et al., 2016). Future research investigating the complex relationships between trigger factors such as aloneness, and measures of social connectedness and social worth can help further clarify the psychosocial pathways leading to pre-suicidal mental states.

M42. PROVIDER PERSPECTIVES ON COVID-19 IMPACT ON CLIENTS, SERVICE DELIVERY, AND SUICIDE ASSESSMENT

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Background: The COVID-19 pandemic has led to substantial psychological impact worldwide and It is well established that epidemics and widespread outbreaks of disease are significantly associated with development and exacerbation of mental illness, increased psychological distress, and need for psychiatric and mental health care. While literature is increasingly reporting on the pandemic and its impacts on mental health, provider perspectives are needed on the impact of COVID-19 on clients, service delivery, and suicide assessment. The current study explored provider perspectives of mental health services and delivery in the 2020 COVID-19 context.
Methods: Mixed-method data were collected as part of a National Institute of Mental Health (NIMH)-funded pilot effectiveness clinical trial (R34) aiming to modify and preliminarily test a cognitive-behavioral suicide prevention treatment for adults with psychosis. Adult providers

(n=12) in community mental health were recruited through informational presentations given in virtual staff meetings. Quantitative and qualitative COVID-19 pandemic-related questions were included in a brief electronic survey completed by participants between November and December of 2020. Quantitative data were analyzed using SPSS27 and qualitative data using Dedoose.

Results: Providers (n=12) were on average 35.67 years of age (SD=6.387), most often identified as female (n= 8, 66.7%), and all (n=12) identified as White and non-Hispanic/Latino. Providers either had a social work license (LMSW or LCSW; n=9, 75%), limited social work license (LLMSW; n=2, 16.67%), or were a Master of Social Work Student in training (MSW student; n=1. 8.33%). All providers (n=12) endorsed having direct contact with clients with the majority in a mental health therapist, clinician, or case manager role (n=10, 83.3%). The average duration of work experience providing services in the mental health field was 5 years and 10 months (SD= 4 years and 1 month) with a range from 6 months to 14 years. Many providers noted increased workload (58%) and the majority shared challenges in remote engagement with clients (77.7%), and suicide assessment (77.7%). The following 3 themes of engagement challenges emerged: 1) logistic (e.g., technology barriers), 2) health concerns (e.g., not wanting to be in-person due to health risk), and 3) ability to deliver services (e.g., engagement via phone or video is challenging). The following 2 themes of suicide assessment challenges emerged: 1) assessment challenges (e.g., hard to assess affect without seeing facial expressions) and 2) rapport challenges (e.g., hard to build rapport remotely).

Discussion: It is essential to consider the COVID-19 pandemic's impact on mental health service delivery to inform acceptable and feasible approaches to virtual engagement and care. Mixed-method findings lead to recommendations for troubleshooting client access to technology, providing additional training for providers related to virtual engagement and service delivery skills, and increasing support for provider workload increases with a focus on burnout prevention.

M43. USING CARING CONTACTS TO REDUCE PSYCHIATRIC MORBIDITY FOLLOWING HOSPITALIZATION DURING THE COVID-19 PANDEMIC

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Background: The time following discharge from a psychiatric admission has been associated with worsening mental health symptoms and increased risk for suicide. This can be further exacerbated by social and economic stressors of a pandemic including isolation during lockdowns. Caring Contacts is one intervention that has been shown to reduce post-hospitalization suicidal ideation and suicide attempts compared to usual care, as well as reduce loneliness, increase hopefulness, and make patients feel more connected to the health care system.

Methods: We conducted an 8-week RCT of a Caring Contact intervention verses a neutral, control communication following psychiatric inpatient discharge during the COVID-19 pandemic. Participants were recruited from the Inpatient Psychiatry Unit at Sunnybrook Health Sciences Centre from August 2020 to May 2021. Recruited subjects received Caring Contact or control emails on days 4, 21, and 56 post-discharge. Mental health symptoms were self-reported using the Hopkins Symptom Checklist-25 (HSCL-25, total score range from 25-100)

questionnaire at discharge (baseline measure) and at each email time point. A subset of participants received a follow-up questionnaire and participated in a qualitative interview to provide feedback about their experience in the study. We hypothesized that there would be a greater reduction in mental health symptoms and suicidal ideation among participants in the Caring Contact group compared to the Control group.

Results: A total of 100 participants were enrolled in the study out of 190 screened. Of those, 65% completed the day 4 HSCL-25 measure. To date, 53% and 52% of participants have completed the day 21 and 56 measures respectively. Participant age ranged from 18-77, sex was 50% female, 47% male, 3% other, and race/ethnicity included 48% White, 19% Asian, 8% Black, 25% other. Primary psychiatric diagnoses included a mood disorder (57%), psychotic disorder (24%), substance use disorder (7%), personality disorder (6%), anxiety disorder (3%), and stressor-related disorder (3%). Preliminary data analysis of the HSCL-25 scores revealed that both groups experienced a significant worsening of total symptom severity ($p<0.01$) and non-significant worsening of suicidal ideation at day 4 post-discharge compared to baseline (Caring Contact $p=0.42$, Control $p=0.09$). The Caring Contact group had a mean baseline total symptom severity score of 45.3 which increased to 48.5 at day 4 (Δ + 3.20 points) and the Control group had a mean baseline total symptom severity score of 44.0 which increased to 48.20 at day 4 (Δ + 4.20). Similarly, the Caring Contact group had a mean baseline suicidal ideation score of 1.33 which increased to 1.37 at day 4 (Δ + 0.04) and the Control group had a mean baseline suicidal ideation score of 1.41 which increased to 1.55 at day 4 (Δ + 0.14). This translates to a non-significant but notable 25% and 71% lesser deterioration in the Caring Contact group for total symptom severity and suicidal ideation respectively. Full data will be available at the time of presentation.

Discussion: Our results suggest that delivering Caring Contacts by email during a pandemic is a feasible intervention in a psychiatric inpatient setting. While preliminary results showing some potential benefit in the Caring Contact group did not reach statistical significance, numerically Caring Contacts were associated with a lesser deterioration in overall symptom severity and suicidal ideation. The large magnitude of difference would result in significance if it is maintained in a larger sample. Initial data from qualitative interviews suggest that participants in both groups may have benefited from reflecting on their emotional state when completing the HSCL-25.

M44. SUICIDE AND RESILIENCE-RELATED GOOGLE SEARCHES DURING THE FIRST 12 MONTHS OF THE COVID-19 PANDEMIC

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Background: Online search data may provide a useful early indication of actual health outcomes such as suicide deaths during large world events. Previous research found decreased online searches related to suicide and increased resilience-related searches during the first month of the COVID-19 pandemic both worldwide and in the United States. These findings accurately predicted stable or decreased suicide deaths in the initial phase of the pandemic. The current study aimed to characterize whether online search trends have changed in the longer term (one year) and whether that may suggest a change in suicide rates.

Methods: Publicly available Internet search data were obtained from Google Trends (http://google.com/trends) for the word "suicide", a list of potentially related terms, and resilience related terms. To investigate whether search volumes had changed between the "Pre-COVID-19" (March 6, 2016-February 29, 2020) and "COVID-19" period (March 1, 2020-February 28,2021) an interrupted time series regression was conducted using separate models for each search term.
Results: This study demonstrates no significant change in searches for the word "suicide" worldwide (-1%; 95% CI, -12%-11%) or in the US (-7%; 95% CI, -15%-2%). There was also a worldwide decrease in searches for "suicide methods" but an increase in searches for "how to kill yourself". Worldwide and US searches for survival increased by 40% and 41%, "how to survive" by 19% and 16%, "resilience" by 40% and 29% and "hope" by 12% and 6% respectively.
Discussion: This study demonstrated no clear pattern of increase in online searches for suicide with increases in those related to resilience. If searches continue to reflect change in actual suicide rates, this provides some initial evidence supporting the notion that suicide rates may remain stable worldwide and in the US for the first year of the pandemic. That hypothesis requires further study and confirmation.

M45. RELATIONSHIP BETWEEN SELF-EFFICACY AND CONCERNS ABOUT TREATING SUICIDAL PATIENTS AND PERCEIVED BURNOUT IN MENTAL HEALTH PROFESSIONALS ATTENDING A DBT INTENSIVE TRAINING

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Background: Inadequate training in the assessment and management of suicide risk are major threats to the ability of mental health professionals to intervene effectively in this population, which may boost the professional's level of anxiety and burnout. Dialectical Behavior Therapy (DBT) intensive training, which aims to help professionals to successfully implement a DBT program at their clinical setting, includes specific training in the assessment and management of suicide risk which may occur in patients with severe emotion dysregulation. Recent research has found that receiving DBT training reduces therapist burnout. However, the potential mechanisms by which this may occur are unclear. Based on the literature, we argue that perceived self-efficacy and concerns about treating suicidal clients will be protective and risk factors, respectively, related to burnout in professionals interested in the management of suicide risk.
Methods: The study sample was composed of 127 mental health professionals (M = 36.03; SD = 8.99) of 12 different Spanish speaking nationalities (73.3 % women). The measures included the Efficacy in Assessing and Managing Suicide Risk scale, the Concerns about Treating Suicidal Clients scale, and the Copenhagen Burnout Inventory. These were evaluated before the professionals started a DBT intensive training, which means that all of them were interested in suicide risk training. Partial correlations among the study variables were carried out controlling by age, work experience (in months), and the number of clients treated. Differences in the study variables according to gender were also calculated using a Student t-test.
Results: We found statistically significant positive correlations between burnout and total score of the concerns about treating suicidal clients scale, as well as with its clinical error

subscale (i.e., concerns about intervening with suicidal clients in ineffective ways). Self-efficacy in assessing and managing suicide risk was also significantly, but negatively related to burnout. Correlations were significant after controlling by the covariates. Gender differences were non-significant.
Discussion: Perceived self-efficacy and concerns regarding treating suicidal patients may be important targets when attempting to reduce burnout of clinicians interested in the management of suicide risk. Importantly, these findings were independent of the clinician´s gender, age, work experience, and number of clients treated. Understanding and being aware of the mechanisms that may underlie mental health of the professionals interested in treating suicidal clients is important to inform and develop training programs. Future studies should investigate whether DBT intensive trainings indeed improve self-efficacy in managing suicide risk and reduce concerns about its treatment or whether they reduce burnout via other unexplored mechanisms.

M46. SCREENING FOR SUICIDE RISK IN NOVEL SETTINGS: PODIATRISTS AS PARTNERS IN PREVENTION

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Background: Despite prevention efforts, suicide rates continue to rise, prompting the need for novel, evidence-based approaches to suicide prevention. Patients presenting with foot and ankle disorders in an outpatient podiatric medical and surgical practice often experience chronic pain, debilitating sports injuries or chronic illness (e.g. diabetes) and may therefore represent a population at risk for suicide. Outpatient specialty clinics have the potential to serve as a venue for identifying occult suicide risk that would otherwise go undetected. In particular, podiatric physicians often function on the front line in our medical system, encountering patients with diabetes, lower extremity pain, structural deformities, injuries, or infections, bypassing their primary care physician. These specialized physicians may be a patient's only medical contact over the course of years, making them an essential bridge to connect a patient to a mental health professional.
Methods: Dr. Adam Spector will describe the process of implementing suicide risk screening in a Foot and Ankle Specialists of the Mid-Atlantic (FASMA) outpatient podiatry clinic using a quality improvement Plan-Do-Study-Act framework. A recorded training webinar to acclimate office staff to screening procedures preceded an in-person training for all staff. After all staff were trained, patients ages 18 years and older were screened for suicide risk with the Ask Suicide-Screening Questions (ASQ) tool as standard of care. Any positive screen was assessed by the podiatrist administering the ASQ Brief Suicide Safety Assessment (BSSA). Clinic staff were surveyed about their experiences and opinions of screening procedures.
Results: Screening was implemented for three months between January and March 2020. The majority of patients, 442 adults, completed the suicide risk screening tool (94%). Nine patients (2%; 9/442) screened positive for any suicide risk. All positive screens were "non-acute" positives. Of the nine patients that screened positive, six were already receiving mental health care, and three were referred to local clinicians for further mental health evaluation. Podiatrists reported that BSSAs for the positive screens took approximately five minutes or less to complete. The majority of clinic staff reported that they found screening acceptable, felt comfortable working with patients who have suicidal thoughts, and believed screening for suicide risk should continue in their office.

Discussion: Suicide risk screening was successfully implemented in an outpatient podiatry clinic, with a screen positive rate that was high enough to warrant screening and low enough not to overburden a busy outpatient specialty practice. The process of implementing suicide risk screening using the PDSA framework was practical and effective. It has long been recognized that poor mental health exacerbates physical ailments, increases the risk of surgical complications, results in prolonged resolution of injuries, and prevents adherence with medical recommendations. In this study, the successful implementation of suicide risk screening with the ASQ provided additional important clinical information that would not have otherwise been detected and led to improved overall patient care. In this way, outpatient clinics, such as podiatric medical and surgical practices, can be leveraged to be valuable partners in suicide prevention.

M47. OPEN BOARD

M48. 'DUTY TO CONSULT': BRINGING LIGHT TO DARKNESS IN NORTHERN CANADIAN INDIGENOUS COMMUNITIES

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Background: Canada is grieving over the discovery of nearly one thousand unmarked graves at or near former residential schools in British Columbia and Saskatchewan. Among many issues rooted in the impact of colonialism, Indigenous communities are also grappling with death by suicide among their youth within rural Northern regions. In working towards building community capacity within this area of care, it is crucial to bring forward community-based knowledge in helping to provide upstream strategies. The reality of death by suicide amidst Indigenous youth is an alarming concern for Northern communities and community stakeholders.

Methods: 'Duty to Consult,' as part of Section 35 of the Canadian Constitution, can be applied in helping to connect with Indigenous communities in a meaningful way. In the spirit of meaningful consultation and 'Duty to Consult,' a series of public engagement events were conducted in Northern Ontario. The purpose of these activities was to meet with Elders and key stakeholders in various roles throughout the community in effort to help gain a better understanding of the mental health needs of youth.

Results: Knowledge development was gained about some of the vital issues that youth are struggling with daily, and ways to help youth feel connected within their communities. Although there are various programs for youth to be involved in throughout their community, it is important for there to be a connection between resources. There also needs to be an opportunity for youth to develop a sense of belonging. Local programming needs to help youth learn more about themselves and help foster a sense of self.

Discussion: In honoring the Call for Truth and Reconciliation, we need to be committed in helping to bring forward community-based knowledge in working towards healing. Communities have a wealth of knowledge and insights, and we must help to bring forward their understandings and knowledge to light. For, youth need to have the opportunity to strengthen their sense of self and resiliency; and we need to respond to the call for upstream action with respect and dignity.

M49. DEPRESSION AND ANXIETY MEDIATE THE ASSOCIATION BETWEEN MENTAL HEALTH KNOWLEDGE LEVEL AND SUICIDAL IDEATION AMONG CHINESE COLLEGE STUDENTS

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Background: Mental health literacy has been defined as knowledge of understanding, recognizing, preventing, coping with mental disorders, and mastering skills to help others. Research has shown that people who with less knowledge about mental disorders are more likely to experience depressive symptoms as well as anxious symptoms. Depression and anxiety is also associated with suicidality. Few studies have examined the relationship between mental health knowledge level (MHKL) and suicidal ideation (SI), and fewer studies have explored what the role of depression or anxiety might play in the association between mental health knowledge level and suicidal ideation. The purpose of this study was to explore the association between mental health knowledge level and suicide ideation among Chinese college students, and also to analyze the mediating role of depression and anxiety between mental health knowledge level and suicide ideation.

Methods: A cross-sectional study was conducted among 5578 students from five universities of Shandong province, China. Each student completed an online anonymous survey on demographic variables, Mental Health Knowledge Questionnaire, Depression, Anxiety and Stress Scale (DASS-21). Suicidal ideation was assessed by "Have you ever seriously thought about suicide in the last year?", Participants with suicidal ideation in the last year were divided into the suicidal ideation group, and those without suicidal ideation were assigned to the control group. Multivariate Logistic regression analysis was conducted to examine the association between MHKL and suicidal ideation, as well as a path model to test the mediating effect of depression and anxiety.

Results: The incidence of SI was 18.8% in this study. There was no statistical difference in age, BMI, nationality, single or not between SI group and the control group. Females accounted for 67.1% and 62.2% in SI group and control group, respectively. SI group has higher scores on depression, anxiety and stress subscale, respectively. In terms of physical health status, mental health status, academic performance, economic status and sleep quality, control group were more likely to be a good or excellent status. Multivariate Logistic regression model shown that MHKL was significantly associated with suicidal ideation after adjusting for factors such as age, gender, major, grade, community, single child households or not, participate in school activities or not, exercise times, physical health status, mental health status, academic performance, economic status, and sleep quality. In a controlled path model, all direct paths from MHKL to each mediator were negative and significant, each mediator to suicidal ideation were positive and significant, the direct path from MHKL to suicidal ideation were negative and nonsignificant. Those who with lower MHKL were more likely to develop depressive symptoms and anxious symptoms. Similarly, depression and anxiety were significantly associated with suicidal ideation. Finally, a significant indirect effect of MHKL on suicidal ideation through depression and anxiety, and a nonsignificant direct effect of MHKL on suicidal ideation provide support for a fully mediated model.

Discussion: Our major findings are (1)more than 18.8% of college students had suicidal ideation in 2020, (2)MHKL was associated with suicidal ideation, (3)this result indicates that depressive symptoms and anxious symptoms fully mediated the relationship between MHKL and suicidal ideation. The potential theoretical interpretation is people who with high MHKL would have higher ability or more skills to solve emotional issues when they encounter

problems. These findings highlight the importance of mental health education among college students.

M50. MAIS CONTIGO: A DECADE OF PROMOTING MENTAL HEALTH AND SUICIDE PREVENTION

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Background: Suicidal behavior in adolescents is a complex, multifaceted phenomenon, and one of the leading potentially preventable causes of death. School Health intervention has a new paradigm that aims to contribute to obtaining health gains through the creation of healthpromoting school environments (DGS, 2015). The Mais Contigo Program is a longitudinal research project based on a multilevel network intervention aimed at promoting mental health and well-being and preventing suicidal behaviors. Students participate in social skills training sessions on the stigma of mental disorders, adolescence, self-esteem, problem-solving skills, and wellbeing. It involves all the school community (parents and tutors/guardians, education agents, and students) and health professionals of the reference area.
Methods: This quasi-experimental study is part of the Mais Contigo Program. This program is a multilevel program that seeks to enhance the knowledge about mental health, suicidal behaviours, and specific skills to identify and refer risk situations. It involves the school community (parents and tutors/guardians, education agents, and students) and health professionals of the reference area.
This is a quasi-experimental study, with a control group assessed at the beginning and end of the intervention during the academic year. The intervention directed at adolescents consists of 7 sessions in the classroom, addressing stigma, adolescence, self-concept, problem solving, depression, and well-being. The data collection tool (a questionnaire) is composed of several measurement instruments with the Portuguese version, such as the WHO-Five Well-Being Index (WHO, 1998), the Beck Depression Inventory (BDI-II, Beck and Steer, 1987); Piers-Harris Children's Self-Concept Scale 2,(Piers and Hertzberg, 2002) and Coping (Esparbés et al., 1993. The questionnaire was applied to 39069 adolescents from Portuguese schools involved in the Mais Contigo program since 2011. This intervention was founded by Portuguese Mental Health Programme.

Results: The sample since 2011, are more from 7th and 9th grade (almost 95%); about 13 years old, and about 50% of each sex. The experimental group and control group are similar concerning age, sex and academic year. The results are consistent with a medium well being, high percentage of depression (with an increase in the last years), medium self-concept and low coping strategies.
Discussion: During the past ten years of the program, 7th grade students have more protective factors for suicidal behaviours than others from 8th, 9th and 10th grade. They showed higher well-being, coping and self-concept scores and less depressive symptomatology. When we compare girls and boys, girls showed more vulnerabilities with lower well-being and self-concept and higher level of depressive symptomatology. No statistically significant differences were found in the coping domain.

Girls have less protective factors (e.g., well-being, coping and self-concept) and more risk factors (e.g., depressive symptomatology). Interventions aimed at improving adolescent mental health at schools should address these age and gender issues. This study highlights the importance of increasing the number of mental health professionals in schools.

M51. PREDICTION OF RECURRENT SUICIDAL BEHAVIOR AMONG SUICIDE ATTEMPTERS WITH COX REGRESSION AND MACHINE LEARNING: A POPULATION-BASED LONGITUDINAL STUDY

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[1]Shandong University, [2]Shandong University School of Public Health **Background:** Suicide attempt is vulnerable to recurrence, while researches from China is lacking. Accurate risk prediction is of great significance for target suicide prevention. The study aimed to identify risk factors and develop prediction models for recurrent suicidal behavior among suicide attempters using Cox proportional hazard (CPH) and machine learning methods.

Methods: The prospective cohort study included 1103 suicide attempters with a maximum follow-up of 10 years from rural China. Numerous baseline characteristics, collected by face-to-face interviews within 1-2 months after index suicide attempt, were used to predict recurrent suicidal behavior (repeat suicide attempt or suicide). CPH and 3 machine learning algorithms, namely, the least absolute shrinkage and selection operator, random survival forest, and gradient boosting decision tree, were used to construct prediction models. Model performances were accessed by concordance index (C-index) and the time-dependent area under the receiver operating characteristic curve (AUC) value for discrimination, and time-dependent calibration curve along with Brier score for calibration.

Results: The median follow-up time was 7.79 years, and 49 participants had recurrent suicidal behavior during the study period. Four models achieved comparably good discrimination and calibration performance, with all C-index larger than 0.70, AUC values larger than 0.65, and Brier scores smaller than 0.06. Mental disorder was emerged as the most important predictor across all four models. Suicide attempters with mental disorders had 3 times higher risk of recurrence than those without. History of suicide attempt, unstable marital status, and elder age were also identified as independent predictors of recurrent suicidal behavior by CPH model.

Discussion: We developed four models to predict recurrent suicidal behavior with comparable good prediction performance. Our findings potentially provided benefits in screening vulnerable individuals on a more precise scale.

M52. LIFE-WEARINESS, DEATH WISHES, SUICIDAL IDEATION, AND ALL-CAUSE MORTALITY IN OLDER ADULTS

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Background: Passive and active suicidal ideation has been associated with increased mortality from all causes. However, research comparing different levels of such ideation regarding

associations with mortality is scarce. We aimed to investigate this in a population-based sample of older adults.

Methods: The sample consisted of participants in the Gothenburg H70 Birth Cohort Studies and the Prospective Population Study of Women between 1986 and 2015 (n=4144). A total of 3973 participants (2637 women and 1336 men; mean age 76, range 70-95) had data on the Paykel questions on passive/active suicidal ideation. Responses were categorized based on the most intense level of passive/active suicidal ideation (life-weariness, death wishes, or suicidal ideation/attempt) reported during the month prior to baseline examination. We retrieved death dates from The Swedish Tax Agency on 2021-04-20. At that time 62% of the sample (n=2549) was deceased. Mean duration of follow up was 17 years (range 4-34). Survival times were calculated with Kaplan-Meier estimators. Hazard Ratios (HR) were modelled using Cox regression.

Results: Two hundred and fifty-eight participants (6.5%) reported any level of passive/active suicidal ideation during the past month (life-weariness: 79 (2.0%); death wishes: 129 (3.2%); suicide ideation/attempt 50 (1.3%)). Participants who reported any level of passive/active suicidal ideation lived on average 4.7 years shorter than participants with no such ideation ($p<0.001$). Survival was reduced by 4.0 years ($p<0.001$) in those reporting life-weariness. Corresponding figures were 5.9 years for death wishes ($p<0.001$) and 3.2 years for suicide ideation/attempt ($p=0.002$). Differences in mortality between death wishes and life-weariness ($p=0.030$) as well as between death wishes and suicide ideation/attempt ($p=0.013$) were significant. After adjusting for age at baseline, reporting any level of passive/active suicidal ideation during the past month was associated with a 44% increase in risk of mortality from all causes (HR: 1.44; 95% CI: 1.26-1.66; $p<0.001$). Differences in mortality between levels of passive/active suicidal ideation were no longer significant in the age-adjusted model: Death wishes versus life-weariness (HR: 1.17; 95% CI: 0.86-1.59; $p=0.333$), death wishes versus suicide ideation/attempt (HR: 1.37; 95% CI: 0.94-1.99; $p=0.101$).

Discussion: In line with previous research, we found that passive/active suicidal ideation was associated with increased risk of mortality from all causes. Mortality risk was particularly elevated in the group with death wishes, but this appears to be related to an age effect.

Our results underline the clinical importance of life-weariness and death wishes, as they do not mark lower risk of premature death in older adults compared to active suicide ideation.

M53. OPEN BOARD

M54. VIOLENCE EXPOSURE AND SUICIDE RISK: FINDINGS FROM A NATIONAL SURVEY OF EMERGING ADULTS

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Background: Research has shown that youth exposed to child maltreatment, bullying, and dating violence are at increased risk for suicidal thoughts, suicidal behaviors, and self-injury. Studies in adulthood demonstrate similar patterns, particularly for intimate partner violence victimization, as well as emerging evidence linking police violence exposures to suicidal behaviors; which suggests that state-sanctioned forms of violence, which has garnered significant national attention this past year, also increases suicide risk among adults in the US. However, studies have largely measured only single forms of violence, which can

underestimate of the full burden of victimization or overestimate of the effects of a particular type of violence.
Methods: A cross-sectional, online survey was administered in January 2021 to a U.S. census-representative sample of adults ages 18-29, with oversampling of racial/ethnic groups (Black, Latinx, Indigenous) and LGBTQ groups (N = 1584). Outcome measures included past-year suicidal ideation, suicide planning, suicide attempt, and non-suicidal self-injury (NSSI) behaviors. Retrospective measures for childhood victimization included physical, sexual, or emotional abuse by a caregiver, teen dating/sexual violence, and youth bullying. Measures for adult victimization included physical, sexual, or psychological abuse by a romantic or intimate partner (IPV) since the age of 18 and lifetime physical, sexual, and psychological victimization by a police officer. Each form of violence was examined separately and as composite variable. Control variables included relevant demographics as well as frequency of alcohol, drug use, and delinquent behaviors.
Results: In the model predicting suicidal ideation, participants with histories of caregiver abuse, youth bullying, and IPV in adulthood had increased odds of suicidal thoughts in the past year. In the model predicting suicide planning, there were fewer significant variables, with exceptions of IPV, such that those who experienced IPV in the past year were more likely to engage in suicide planning. Youth bullying approached significance in this model. In the model predicting suicide attempts, IPV and police violence were both significantly associated with increased odds for a suicide attempt in the past year. Similarly, those who experienced IPV and police violence were more likely to have engaged in NSSI in the past year. Violence exposure had a cumulative or additive effect on all 4 suicide-related outcomes.
Discussion: Violence exposure has distinct and cumulative effects on risk for suicidal thoughts, planning, attempts, and NSSI among emerging adults. Practitioners should routinely screen for suicidal thoughts and planning behaviors among emerging adults who present with histories of caregiver abuse and youth bullying, and who may have histories of or are currently experiencing IPV in their romantic relationships. Findings also suggest the need for practitioners to consider the impacts of physical, sexual, and psychological victimization by police officers on suicide risk, as it appears that this form of violence has distinct impacts on mental health. Public health policies that address these forms of violence should target shared risk and protective factors against violence and suicide across the life span. Approaches that combine resources and prevention efforts across family, school, and community contexts can simultaneously prevent multiple forms of violence and suicide among high-risk groups.

M55. SPATIOTEMPORAL SELF-HARM AND SUICIDE CLUSTERS IN TAIPEI CITY AND NEW TAIPEI CITY, TAIWAN

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Background: Suicidal behavior may occur closely together in time and space; this may cause a concern about further suicidal behaviors in the community. Although suicide clusters have been researched in previous studies, less is known about self-harm clusters. Furthermore, most

previous studies of suicidal behavior clusters used crude spatial information, i.e., area of residence, to generate aggregate space-time data for cluster detection analysis. This study aimed to identify spatio-temporal clusters of self-harm and suicide using detailed address information and event-level data in two cities in Taiwan.
Methods: Data for self-harm emergency room presentations and suicide deaths in Taipei City (2004-2006) and New Taipei City (2012-2016), including the address information, were used in this study. Using both age-specific and all-age-group data, spatio-temporal analyses were conducted to identify self-harm and suicide clusters using space-time permutation scan statistics. A cut-off of 0.10 for p value was used to identify all possible clusters.
Results: Two self-harm clusters (one in the age group 10-19 years [n=4, p=0.025], 1.08% of all self-harm events in this age group; and another in the age group 20-29 years [n=8, p=0.052], 0.46% of self-harm events in this age group), one suicide cluster (age group 50-59 years [n=3, p=0.067], 1.16% of suicides in this age group), one combined self-harm and suicide cluster in the age group 60+ years (n=4, p=0.080; 0.50% of all self-harm and suicide events in this age group), and one suicide pact (3 suicides that occurred together) were identified in Taipei City. Three suicide clusters, with one in the age group 20-29 years (n=4, p=0.028; 1.6% of suicides in this group) and two in the age group 40-49 years (n=11 and 4, p=0.056 and 0.077, respectively; 3.0% of all suicides in this age group), one combined self-harm and suicide cluster in the age group 20-29 years (n=8, p=0.038; 0.2% of all self-harm and suicide events in this age group), and two suicide pacts (4 and 2 suicides that occurred together, respectively) were identified in New Taipei City.
Discussion: Spatio-temporal clusters of self-harm, suicide, and self-harm and suicide combined were identified, but were rare. Previous analyses using aggregate space-time data may produce inflated incidence of suicidal behavior clusters. Future research should also consider combining self-harm and suicide data to identify the most likely occurring clusters.

M56. PSYCHOMETRICS OF A MODIFIED VERSION OF THE ASIQ IN A COMMUNITY-BASED SAMPLE OF BLACKS IN THE US: A GENERALIZED MULTIPLE GROUPS SEM APPROACH TO COMMUNITY-LEVEL RISK DETECTION

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Background: Community-based approaches to suicide risk detection, monitoring, and intervention benefit from robust population-based measures of suicide risk with high logical and concurrent validity, reliability, dimensionality, and measurement invariance across intersecting social identities. Yet there are few measures meet these criteria and few studies examine psychometric properties of suicide risk measures in community-based samples of Black or other minority power populations. This study examines structural female and male gender differences in the psychometric properties and socioeconomic covariates of a version of the Adult Suicidal Ideation Questionnaire (ASIQ) modified for use in a community-based sample of Blacks living in Baltimore, MD, USA.
Methods: Data for this research came from 584 participants (44% female) from the longitudinal Self Help in Eliminating Life-threatening Diseases (SHIELD) study- a community-based social-network study conducted in Baltimore City, MD USA. Multiple groups factor analyses and generalized non-linear structural equation modeling was used to examine factor structure, measurement models, concurrent validity, and paths. Sensitivity analyses were conducted against linear and ordered logit model assumptions.

Results: A 2-factor (high-low severity) 10-item generalized log-link model demonstrated metric invariance with significant scalar and latent factor variance. The model demonstrated concurrent validity against AR-1 depressive symptoms (CES-D). Multivariate models found monthly income, education, employment, relationship status, living with an intimate partner; and injection substance use, positive HIV status, experiences with homeless and imprisonment; and religious preference and church attendance all contributed to rates of suicide ideation. However, many covariates were differentially associated with high-low severity and exhibited significant structural differences between females and males.
Discussion: This study revealed the ASIQ could be simplified into a parsimonious generalized 2-factor model of concurrent suicide ideation with configural and metric invariance between female and male genders. The model was robust in detection of covariate risk, differentiating covariate risk according to high and low severity, and demonstrating structural differences between female and male genders. Results suggest that specific socioeconomic risk and protective factors, such as income, education, intimate relationships, and religiosity, are structurally different between female and male genders within this community. The methods presented provide an alternative community-based approach to suicide risk detection, monitoring, and intervention that complements the challenges that suicide as a widespread public health issue poses for individual-level research and prevention. They leverage novel non-linear methods and structural equation modeling to provide robust and in-depth evaluation of socioeconomic and multilevel covariate risk by female and male gender. These methods can help inform tailored community-based suicide research and prevention that addresses fundamental social causes within high-risk communities.

M57. SUICIDAL IDEATION AND SUICIDE ATTEMPT TRAJECTORIES AMONG US PRETEEN CHILDREN: A POPULATION-BASED COHORT STUDY ACROSS SEX, RACE/ETHNIC AND SOCIOECONOMIC DISPARITIES

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Background: Although suicide is the second leading cause of death for children 10 years and older in the United States (US), and the rate of suicide death among preteen children has steadily increased in recent years, little is known about the developmental trajectories of suicidal ideation and attempts in children. It is imperative to identify at-risk children and develop tailored prevention interventions at the most critical periods for the most at-risk child subgroups across the suicidal trajectories. This study identifies group-based trajectories of suicidal ideation and suicide attempts in preteen children starting at ages 9-10 years. We also examine sex, racial/ethnic, socioeconomic (SES) disparities in preteen suicidal trajectories.
Methods: We combined data from three waves of the Adolescent Brain Cognitive Development (ABCD) Study, a large, longitudinal study of brain development and child health recruited from 21 study sites in the US using stratified random sampling. The sample included children aged 9 to 10 years and their caregivers (baseline), who were followed up annually since 2016. Lifetime suicidal ideation and suicide attempts were constructed based on child-report and caregiver-report in a computerized version of the Kiddie Schedule for Affective Disorders and Schizophrenia. Socioeconomic covariates include sex, race/ethnicity, parental education, parental marital status, and household income. Latent class growth analyses were conducted to examine the trajectories of suicidal ideation and suicide attempts. Final trajectories were selected using model fit index and empirical bases. Effects of socioeconomic differences in suicidal trajectories were modeled with a generalized logistic function.

Results: Two suicidal ideation trajectories (low stable [86.2%], decreasing-increasing [13.8%]) and two suicide attempt trajectories (low stable [95.6%], medium-increasing [4.4%]) were identified. Males (OR=1.42 [95%CI 1.20-1.69]) and children from other racial/ethnic groups (OR=1.30 [95%CI 1.01-1.68]) were more likely to have ideation decrease from baseline (ages 9-10) to 1-year follow-up (ages 10-11) but increase in the later stage (ages 11-12). No sex and race/ethnic differences were observed in suicide attempt trajectories. Children living with divorced families were more likely to also have decreasing-increasing suicidal ideation trajectories (OR=1.62 [95%CI 1.24-2.12]) and medium-increasing suicide attempt trajectories (OR=2.13 [95%CI 1.38-3.27]). Greater risks in decreasing-increasing suicidal ideation and medium-increasing attempts trajectories were also found in children from families with an annual income of less than $50,000 (OR=1.34 [95%CI 1.05-1.73]; OR=1.25 [95%CI 0.81-1.94]), and between $50,000-$100,000 (OR=1.36 [95%CI 1.11-1.66]; OR=1.67 [95%CI 1.14-2.46]) respectively, compared with children from families with an annual income of $100,000 and above.
Discussion: We identified distinct trajectories for suicidal ideation and suicide attempt trajectories among preteen children from 9-10 years to 11-12 years. Sex, racial/ethnic, and SES disparities in suicidal trajectories of ideation and attempt were uncovered. Male, children from other racial/ethnic groups (e.g., American Indians/Native American), divorced, and low-income families showed greater risks for decreasing-increasing suicidal ideation trajectories and medium-increasing suicide attempt trajectories. Future research should examine the underlying risks and protective factors for engaging in different trajectories across sociodemographic subpopulations and design developmentally sensitive and tailored interventions to screen and prevent risks of suicidal behavior engagement over time.

M58. OPEN BOARD

M59. HOME AS THE FIRST SITE FOR SUICIDE PREVENTION

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Background: Suicide is preventable. It is important to understand the suicide profile of people who killed themselves including the site of suicide. Limited research investigated the difference between people who killed themselves at home and those did not, and previous studies focused mainly on firearm related suicide which is extremely rare in Asian settings. The objective of this study is to compare the characteristics of people who killed themselves at home with those did not in Hong Kong.
Methods: Suicide cases between 2013 and 2017 were identified from the Hong Kong Coroner's Court records. Information including age, sex, marital status, type of housing, whether the person was living alone, residential and incidence addresses, site of suicide, primary suicide method, and history of physical and mental illnesses was extracted.
Suicide cases were classified as "inside home suicide" if their sites of suicide were coded as "inside home" and the residential addresses were identical to the incidence addresses. Suicide cases were classified as "outside home suicide" if their sites of suicide were not coded as "inside home" and the residential addresses were different from the incidence addresses.

Bivariate analysis (Wilcoxon signed-rank and Chi-square tests) was performed to compare the characteristics between the inside home suicide cases and outside home suicide cases. Further

multivariable analysis (logistic regression) was conducted with suicide at home as the reference to control the covariates with one another.

Results: A total of 4,343 cases were available for analysis with nearly 60% (n=2,527) of them died at home. Bivariate and multivariable analyses showed similar results. People who killed themselves at home were older (OR=1.01, 95% CI=1.01-1.02), less likely to be male (OR=0.63, 95% CI=0.55-0.74), more likely to be widowed (OR=1.48, 95% CI=1.12-1.95), and living alone (OR=1.83, 95% CI=1.50-2.23). Although people who killed themselves at home were more likely to adopt hanging (OR=2.19, 95% CI=1.84-2.61) and charcoal burning (OR=5.65, 95% CI=4.37-7.32) with reference to jumping compared to those killing themselves outside home, nearly half of at-home suicide cases adopted jumping, making it the most common suicide method at home.

Discussion: Over 80% of the people in Hong Kong lived in high-rise making jumping a readily accessible method of suicide. Despite the difficulties, it is crucial to start suicide prevention from home as about 60% of people killed themselves inside their own place. With reference to the profile of the suicide methods, means restriction should be employed particularly on charcoal burning and jumping. Padlocks on windows and carbon monoxide detectors in the house should be advocated and freely installed especially for single elderly household. It is also essential for the community to pay more attention to people who are living alone and with spouses passed away.

M60. FIREARM ACCESS AMONG ADULT MEDICAL PATIENTS AT RISK FOR SUICIDE

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Background: Firearms are one of the most common methods for suicide in the United States (US); in 2019, approximately 22,400 adults aged 18 years or older died by an intentional, self-inflicted gunshot wound, accounting for half of all suicide deaths in this age group. Of note, when a firearm is used in a suicide attempt, nearly 95% of adult attempters die. Due to the high lethality of firearms, asking individuals at risk for suicide about access to firearms and providing lethal means safety counseling has been identified as a best practice in suicide prevention. Taking steps to safely store firearms, such as storing the gun unloaded, locked, and separate from its ammunition has the potential to save lives. This study aims to describe the rate of self-reported access to firearms in the home among adult medical patients who screen positive for suicide risk.

Methods: This study is a secondary analysis of cross-sectional data collected from an instrument validation study that developed the Ask Suicide-Screening Questions (ASQ), a four-item tool to assess suicide risk. Participants were adults aged 18 or older who were admitted to an inpatient medical/surgical unit at one of four medical centers in the US. As part of this study, participants completed the ASQ items and a structured interview that included a question about firearms in the home ("Are any guns kept in or around your home?"). Follow-up questions for patients who answered "yes" assessed knowledge of gun storage ("Do you know how to access these guns?"), storage of bullets ("Are the bullets kept in or around your home locked and separate from the guns?") and access to bullets ("Do you know how to access these bullets?"). Descriptive statistics were calculated to describe adult firearm access overall and by suicide risk status.

Results: This sample consisted of 715 adults (53.1% male; 67.6% white. 21.3% black; M[SD] age = 50.1[16.2] years). Overall, 28.7% (205/715) reported a firearm kept in their home, with a majority (83.3%, 169/203) reporting that they knew how to access the firearm. Among those with a firearm in the house, 67.7% (132/195) reported that bullets were stored separately, and 77.4% (151/195) knew how to access the bullets. Of the entire sample, 15.8% of adults (113/715) screened positive on the ASQ and were considered "at risk" for suicide. Among adults at risk for suicide, 18.6% (21/113) reported guns kept in their home. Of those who reported guns at home and screened positive, 71.4% (15/21) knew how to access the guns, 57.1% (12/21) reported that the bullets were stored separate from the firearm, and 71.4% (15/21) knew how to access the bullets.
Discussion: Eighteen percent of adult medical patients at risk for suicide reported that guns were kept in or around their home. Moreover, over half of those at risk for suicide with a gun in the home reported that bullets were not stored separately from the firearm, representing a major safety concern. Given the disproportionate lethality of suicide attempts by firearms, increased efforts are needed to ensure that clinicians are adequately trained to talk with individuals about safely storing firearms.

M61. ASSOCIATION BETWEEN YOUTH SUICIDE ATTEMPT AND ADULT ECONOMIC AND SOCIAL OUTCOMES

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Background: Youth who attempt suicide are more at risk for later suicide and other mental health problems. However, little is known about the long-term economic and social outcomes of youth suicide attempt. The objective of this study was to investigate the association between youth suicide attempts and adult economic and social outcomes.
Methods: Participants were drawn from the Quebec Longitudinal Study of Kindergarten Children (n=2080) and followed up from age 6 to 37 years. Lifetime suicide attempt was assessed at ages 15 and 21 years. Economic and social outcomes were assessed through a data linkage with government tax return records obtained from age 22 to 37 years (2002-2017). Generalized linear models were used to test the association between youth suicide attempt and outcomes with adjustment for background family and individual characteristics, parental history of mental disorders and suicide, and youth concurrent mental disorders and substance use. Coefficients for our regression models were then used to estimate the economic loss over a 40-year work career.
Results: By age 21, 210 youths (8.9%) had attempted suicide. In fully adjusted models, youth who attempted suicide, compared to those who did not, had lower annual earnings (US$-5,459, CI -9,228 to -1,690), household income (-12,579 CI, -20,859 to -42989), retirement savings (-1,054 CI, -1,957 to -150) and greater risk of receiving welfare support (RR 2.32, CI 1.55 to 3.45). Additionally, youth who attempted suicide were less likely to be married/cohabiting (RR 0.81 CI, 0.71 to 0.91) and to have children living in the household (RR 0.84, CI 0.74-0.98), compared with those who did not attempt suicide. Over a 40-year career, the loss of individual earnings was estimated at US$ 129,926 in terms of individual earnings, US$ 299,385 in terms of family income, and US$ 25,082 in terms of retirement saving.

Discussion: Youth who attempt suicide are at risk of poor socioeconomic outcomes in adulthood that are not fully explained by concurrent mental health problems, substance use, or family background characteristics. These findings underscore the importance of psychosocial interventions for young people who have attempted suicide to prevent long-term social and economic disadvantage.

M62. TRAJECTORIES OF SUICIDE ATTEMPTS FROM EARLY ADOLESCENCE TO EMERGING ADULTHOOD: PROSPECTIVE 11-YEAR FOLLOW-UP OF A CANADIAN COHORT

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Background: Suicide is a leading cause of mortality in youth, yet the course of suicide attempts is poorly documented. We explored the vulnerable transition from adolescence to emerging adulthood to identify group trajectories and risk factors.
Methods: The National Longitudinal Survey of Children and Youth is a prospective representative cohort of Canadian children. We followed participants aged 7–11 years in 1994–95 to age 23 (2008–09). We modelled self-reported past-year suicide attempts (ages 12 to 23 years) using growth mixture models. We analysed risk factors from self- and parent-report questionnaires at pre-adolescence (ages 10–11) and early adolescence (ages 12–13) using multinomial logistic regressions. Analyses were adjusted for sample non-response and attrition.
Results: In 2233 participants answering questions on teen and adult suicide attempts, we identified three trajectories: never attempted (96.0%), adolescence-limited (2.0%) and persisting into adulthood (2.0%). Adolescent girls aged 12–13 with depression/anxiety symptoms, and with mothers experiencing depression had higher risks of adolescence-limited than never-attempted [relative risk RR 9.27 (95% confidence interval: 1.73–49.82); 2.03 (1.02–3.32), for each standard deviation increase; 1.07 (1.00–1.15); respectively]. Preteen ADHD symptoms increased the risk of attempts persisting into adulthood as compared to never-attempted [RR 2.05 (1.29–3.28) for each standard deviation increase]. Suicide death of schoolmate/acquaintance increased risks of an adulthood trajectory as compared to never-attempted and adolescence-limited [RR 8.41 (3.04–23.27) and 6.63 (1.29–34.06), respectively].
Discussion: In half the participants attempting suicide, attempts continued into adulthood. We stress the need for preventive strategies in early adolescence and differential clinical/educational interventions as identified for each trajectory.

M63. PSYCHOLOGICAL AND EMOTIONAL TRIGGERS FOR SUICIDE AMONG HONG KONG YOUTHS AGED 15-19: A MIXED-METHODS STUDY

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Background: Suicide is a major public health concern worldwide. Previous studies revealed the association between an increased risk of suicide and psychological factors, such as hopelessness and loss of support, yet little is known about the emotional triggers for suicide among Hong Kong youngsters. This study aimed to investigate psychological and emotional triggers for suicide among Hong Kong youths aged 15-19.

Methods: A mixed-methods approach was adopted with a combination of two phases. Phase One qualitative interview was conducted with youths aged 15-19. Purposive sampling was employed to ensure the diversity of social/clinical backgrounds in participants. All the interviews were audio-recorded and transcribed verbatim. Major themes were identified by content analysis for the questionnaire design in Phase Two quantitative study. The cross-sectional survey was carried out subsequently during the 2019 fall semester. In total, 1,704 Year 10-12 students were invited from 9 Hong Kong secondary schools to complete a self-administered questionnaire. Survey items included their sociodemographic, suicide-related experiences, and 5 perceived psychological and emotional triggers based on previous literature and preceding qualitative interviews. Descriptive statistics and Pearson's Chi-square tests were performed for quantitative data analysis.

Results: For qualitative interviews, a total of 43 participants, including 16 males and 27 females, were recruited to 6 focus groups and 12 individual interviews. The major psychological and emotional triggers mentioned in the interviews comprised the sense of "failure", "having no future", and "confusion and lost", feeling "not being understood" and "life is meaningless", "hopelessness", and "negative self-understanding".

For the survey, out of 1,676 valid questionnaires, 822 (49.1%) were males and 836 (49.9%) were females. In the past 12 months, 415 respondents had thought about suicide (25.3%) and 61 had made suicide attempts (3.7%). "Hopelessness" was perceived as the most significant emotional trigger for suicide (74.1%), followed by the senses of "meaninglessness" (57.6%), "not being understood" (52.0%), "out of impulse" (47.6%), and "feeling of being unwanted" (47.5%). Females had a higher likelihood of being affected by the triggers including "hopelessness", "life is meaningless", "not being understood", and "feeling of being unwanted", while males' suicidal intention were more likely to be triggered by "impulsivity". A larger proportion of those with suicidal ideation perceived "life is meaningless" as the major emotional trigger for suicide, while more of those who had made suicide attempts reported "not being understood" as the main emotional trigger for suicide. Compared to those not reporting suicidal ideation, respondents with suicidal ideation were more likely to be triggered by the "feeling of being unwanted".

Discussion: Youths might undergo a complicated psychological mechanism and be influenced by different emotional triggers when they demonstrated suicidal behaviors. Future studies should pay more attention to the process of how these emotions are generated, the association between these psychological and emotional triggers with other sources of distress, and how to help youths with suicidal ideation cope with negative emotions.

M64. A SYSTEMATIC REVIEW AND META-ANALYSIS ON CASE FATALITY RATES IN SUICIDE

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Background: Suicide is a serious public health problem. Suicide mortality varies widely across age, sex and geography. Although suicides are closely related to retrospectively diagnosable mental health disorders, such psychiatric factors appear to explain little of the remarkable and systematic variation in suicide mortality observed across populations. An implication of this is that the proportion of suicide acts that prove fatal, that is, the case fatality rate, should be taken into account in understanding the variation of suicide mortality.

Therefore, the current systematic review and meta-analysis aimed to estimate case fatality rates in suicide globally, as well as by region, sex, age group and suicide method.
Methods: We searched Scopus, Web of Science, PubMed, ProQuest and Embase for studies reporting sufficient data to compute suicide case fatality rates, published from database inception to 31 December, 2020. Two reviewers independently screened, selected and assessed the articles. A random-effect model meta-analysis with Freeman-Tukey double arcsine transformation estimated pooled case fatality rates in suicide globally, and by subgroups of region, sex, age, and suicide method.
Results: Of 12406 studies screened, 48 moderate-good quality studies were included in meta-analysis. The pooled suicide case fatality rate for all suicide methods was 13.6% (95% CI, 10.5-17.0) globally, 12.5 (95% CI, 9.2-16.3) in Western countries and 16.0% (95% CI, 9.6-23.8) in Eastern countries. For males, 21.4% (95% CI, 17.0-26.2) of suicide acts resulted in death, whilst for females, it was 7.8% (95% CI, 5.4-10.6). Older adults had the highest case fatality compared with other age groups, with 32.4% (95% CI, 25.9-39.4) of their suicide acts being fatal. The case fatality rates associated with different methods ranged from 86.4% (95% CI, 82.3-90.0) from firearm to 4.6% (95% CI, 2.6-7.2) from drug/liquid poisoning.
Discussion: Globally, approximately 1 in 8 reported suicide acts were fatal. The case fatality rate was higher in males than females, and tended to increase with age. The large variation of case fatality rates by different suicide methods suggested that the choice of method was an important determinant in whether a suicide act would result in death. Finding from this study highlighted the value of case fatality rate statistics in understanding population-level differences in suicide mortality as well as in suicide prevention. Better monitoring of suicide case fatality rates is required, and prevention efforts should focus on at-risk population sub-groups and the methods commonly associated with lethal suicide acts.

M65. DO TENANTS SUFFER FROM STATUS SYNDROME? HOMEOWNERSHIP, NORMS AND SUICIDE IN BELGIUM

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Background: For the last decades, suicide has been one of the leading causes of death in the young and middle-aged European population. Among all socioeconomic determinants that affect suicide risk, housing conditions and living environment are poorly studied due to a lack of good quality data. Homeownership is considered the most desired tenure status and relates to feelings of security, control and success. It also presents a social norm: being a tenant at a certain age and living arrangement can be perceived as a failure. This study examines the varying effect of housing tenure on suicide risks across gender, adult ages and household composition
Methods: We used Belgian National Register data linked to 2001 Census and Death certificates to study suicide rates in the population aged 20 to 69 during the year 2002 separately by sex.
Results: We find a negative association of homeownership on suicide risk for both men and women, before and after controlling for age, housing quality, demographic and socioeconomic characteristics. Interacting age and housing tenure, we find that renting increases the risk of suicide among adults in their 40s and 50s, but not among younger and older adults. Looking closer on marital and parental status, foremost married fathers and single childless women face a suicide peak in mid-life when renting.

Discussion: Our findings indicate that the impact of housing tenure on suicide risk depends on people's age, gender, and household composition. Two elements limit our interpretation and ask for caution. First, the number of suicides in our observation period is low especially as we distinguish the population according to multiple characteristics: gender, age and household categories. Second, our analyses are cross-sectional. Future research might take a longitudinal approach which should allow a better understanding of how the residential life course, next to professional, family, social trajectories, can affect the suicide risks. With this study, we contribute to previous research with our focus on the poorly studied case of the age- and family status related homeownership norm. Our research allows a better understanding of gender-specific inequalities and determinants in suicide risk, by underlying the importance of social norms and expectations.

M66. DOES GENDER PREDICT RECEIPT OF RESEARCH AWARDS IN SUICIDOLOGY?

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Background: Scholarly awards publicly validate the recipient's accomplishments. and confer prestige to both individuals and their organizations (e.g., Bucchi, 2018; Borgas and Doran, 2013; Coupe, 2013; Lincoln et al, 2019; Stack, 2020). Professionally, research awards should be based on scholarly merit. A review of 31 studies found that merit based on research productivity is sometimes gendered, with males higher than females, e.g., in surgery (Mueller, 2017), medicine (Raj et al., 2016), and Nano science (Sotudeh, et al., 2014). Females are often thought to be at a disadvantage in research for reasons including a higher burden of duties at home, discrimination, and fewer resources than males. A study on awards conferred by 13 STEM disciplinary societies found that female scientists were eight times less likely to win a scholarly award (Lincoln, et al., 2012). Research has also demonstrated that women are strongly under-represented among Nobel Prize recipients (Lunnemann et al., 2019).
However, in the case of suicidology, previous work has demonstrated that there is not a gender disparity in most measures of research achievement (Stack and Lester, 2021). Given no apparent disparity in merit, the present study hypothesizes that, among the prolific, gender will be unrelated to the receipt of research awards in suicidology.

Methods: The sample of prolific potential award candidates consists of 116 (30 females, 86 males) researchers with 70 or more published works on suicide cited in Web of Science (WoS, accessed 11/2020). In suicidology, a researcher needed at least 34 works to make the world's top 500 suicide researchers. Three binary variables correspond to 3 research-oriented awards: AAS Dublin, IASP Stengel, and IASR Morselli. Award data were taken from the respective associations' web pages. The central independent variable is gender (0, 1=male). Additional predictive variables from the literature include (a) research productivity as measured by the h-index (Hunt, et al., 2010) where if h=30, there are 30 articles with 30 or more citations, (b) work experience: the number of years since publishing the first paper on suicide, (c) membership in a research cluster (Wagner, et al., 2015): residing at a location with four or more other prolific suicide researchers (0,1), and (d)region of the world: Europe, North America, and other with N. America serving as the reference category. Since the 3 dependent variables are dichotomies, logistic regression techniques are appropriate.
Results: Adjusting for the other predictors, gender (male) was unrelated to receipt of the Dublin (b=1.54, se=1.22, p=.20). Second, gender was also unrelated to the receipt of the Stengel (b= -.02, se=.87, p=.98). Finally, gender did not predict receiving the Morselli (b=-

.30, se=1.2, p=.79). As anticipated, in all 3 regressions, the greater the number of years publishing, the greater the odds of receiving an award, e.g., for the Dublin, each year increased the odds by 19% (OR=1.19, CI: 1.05,1.34). In all three analyses, the greater the h-index, the greater the odds of receiving an award. In all 3 analyses, membership in a local research cluster, was unrelated to awards. Location in other regions increased the odds of receiving the Stengel and the Morselli awards. Model fit: the models correctly classified between 87 to 92% of cases and explained between 39 to 57% of the variance.

Discussion: The study provides the first analysis of the relationship between gender and scholarly awards in suicidology. The results support the notion that among the prolific, suicidology awards are based on merit and, as such, show no evidence of gender disparities. Future work might explore the link between gender, productivity among the prolific, and receipt of awards in related fields.

M67. ACCELERATED EPIGENETIC AGING IN SUICIDAL BEHAVIOR

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Background: Prior studies have applied "epigenetic clocks" to assess biological aging in healthy individuals, as well as individuals with neuropsychiatric disorders, comorbid with risk of suicide.

DNA methylation patterns across the genome can be trained to predict age, or clinical outcomes. In this study, we investigate epigenetic aging in suicidal subjects and controls using AgeAccelGrim, a DNA methylation clock, with both cross-sectional and longitudinal data to determine whether Veterans with suicidal ideation or behavior exhibit accelerated aging

Methods: Veterans were recruited across three diagnostic groups (N=111) including, (1) participants with diagnosis of major depressive disorder (MDD, n=42), (2) MDD and lifetime history of suicide attempt (MDD/SA, n=34), (3) psychiatrically healthy controls (Control, n=35). Depression severity (BDI), and suicidal ideation severity (SSI) were assessed. MDD/SA and Control groups were then followed up for 6 months. Venous blood samples were collected for genome-scale DNA methylation profiling using the Illunina EPIC BeadChip. Following QC and normalization using minfi package in R, DNAm GrimAge and AgeAccelGrim, which is a measure of epigenetic age acceleration, were estimated. We used ANOVA to test group difference in AgeAccelGrim at baseline, post hoc pair-wise group comparison. We then fitted an ordered logistic model to test the change in AgeAccelGrim ordered by group i.e., control, MDD and MDD/SA.

To assess epigenetic aging longitudinally we fitted a linear mixed model with subject as random effect, and time, group, and interaction as fixed effects, and tested coefficients. We also tested associations between age acceleration and clinical measurements (SSI and BDI) using similar linear mixed models with SSI/BDI replacing group without interaction, on only MDD/SA samples.

Results: No significant age difference found between groups (One-way ANOVA p= .448). One-way ANOVA shows significant group difference in AgeAccelGrim (p= 0.037). Pair-wise comparison shows no significant difference between Control vs. MDD (p= .145), or MDD vs.

MDD/SA (p= .743), but significant difference between Control vs. MDD/SA (p=. 035) with MDD/SA aging faster. Ordered logistic model shows a significantly positive trend (p= .013). Coefficient estimates and tests from linear mixed model suggest: (1) MDD/SA have significantly higher AgeAccelGrim than Control (coef= 2.45, p= .039); (2) significant AgeAccelGrim increases from baseline to 3m and 6m (p= .039 and .030); (3) interaction effects between group and time points (3m and 6m) are both significant (p= .001 and .029), with coefs being negative with greater magnitude than the time coefficients of 3mo and 6mo respectively. This indicates that compared to the control there appears to be a decrease in age acceleration in the MDD/SA overtime.

Association between AgeAccelGrim and BDI/SSI are not significant, likely due to low power as there were only 16 MDD/SA subjects whose samples for all three points were available. However linear mixed models with SSI/BDI as dependent variable show (1) depression level is not significantly different between baseline and 3m (p=0.065), but significantly lower at 6m (p=0.003); (2) suicide ideation is significantly lower at 3m and 6m (p=.011 and .003) compared to baseline.

Discussion: We show that veterans with MDD and history of lifetime suicide attempt have higher epigenetic age acceleration compared to psychiatrically healthy controls, which potentially corresponds to higher estimated mortality and shorter life span. However, we also observed that the depressed suicidal subjects group exhibit a decrease in age acceleration longitudinally over 6-months that track with decline in suicidal ideation and depression severity

M68. DIFFERENTIAL GENE EXPRESSION IN RAT CORTICAL NEURONS EXPOSED TO THERAPEUTIC LEVELS OF LITHIUM

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Background: Lithium is one of the leading treatments for patients suffering from bipolar disorder and has been demonstrated to decrease the rate of suicidal behavior. It is unclear how lithium exerts its effect on bipolar disorder and suicide. With the introduction of RNA sequencing technology, lithium-induced genome-wide differential expression can be characterized for coding genes, long non-coding genes, and alternative transcripts.
Methods: In this study, we investigated the change in gene expression following treatment with LiCl at therapeutic levels (1 mM) in rat cortical neurons using RNA sequencing at three time points: 24 hours, 1 week, and 3 weeks. We were most interested in the 3-week time point, as lithium has a greater therapeutic effect the further along in treatment.
Results: Our differential expression analysis found at the 3-week time point 159 differentially expressed genes (DEGs) with a log2 fold change ≥1 and an FDR < 0.1. Pathway analysis using iPathwayGuide was performed using this set of 159 DEGs and resulted in 38 biological process, 8 molecular function, and 5 cellular component GO terms that were significant after FDR correction. The top term for each category, respectively, was response to glucocorticoid (adjusted p-value = 0.005), L-amino acid transmembrane transporter activity (adjusted p-value = 0.008), and extra cellular region part (adjusted p-value = 1.13 x 10-6).
Discussion: We found an overlap between the 12 DEGs in the response to glucocorticoids gene set and the hypothalamic-pituitary-adrenal (HPA) axis pathway and an overlap between the 6 DEGs in the L-amino acid transmembrane transporter activity gene set and glutamine transport. The HPA axis hypothesis and glutamatergic hypothesis are two of the most intriguing and

investigated hypotheses in suicide and bipolar disorder research. This study improves our understanding of how lithium may work and how it may help to alleviate suicidal behavior and bipolar disorder, and it potentially provides insights for the development of treatments with fewer side effects in these phenotypes.

M69. THE RESTING-STATE NEURAL PREDICTORS OF CAPABILITY FOR SUICIDE: A FOCUS ON PHYSICAL PAIN SENSITIVITY AND TOLERANCE

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Background: Despite high levels of suicidal ideation in Major Depressive Disorder (MDD), the mechanisms that moderate whether a person will ultimately make a suicide attempt remain unclear. This limits the ability to direct targeted interventions to people at high risk of suicide. Acquired capability for suicide (ACS), which reflects fearlessness of death and increased tolerance to pain, has been shown to predict suicide attempts. Pain processing, importantly, has a shared underlying neural circuitry with suicide attempts. Therefore, the underlying neural basis of ACS and its interaction with physical pain processing may be an important biomarker for predicting suicide attempt risk. This study aims to identify the resting-state neural correlates of ACS and its association with pain sensitivity and tolerance, with a focus on regions within the shared neurocircuitry of suicide attempts and pain processing, including the insula and the cingulate cortices.

Methods: MDD patients with suicide risk (defined by current ideation or recent/past attempt, n=20) and healthy controls (n=21) were recruited. Capability for suicide was measured using a self-reported ACS scale. Pain threshold and tolerance were measured with the cold pressor task, defined by when participants started to feel pain and when they could no longer endure the pain, respectively. Pain intensity ratings at these two timings were also recorded on a scale from 1 to 10. Ability to endure pain (pain endurance) was calculated as the time between threshold and tolerance. In addition, participants completed resting-state brain scans with functional magnetic resonance imaging (fMRI). A seed-based functional connectivity analysis was performed using the following regions of interest: anterior insula (aIC), posterior insula (pIC), anterior midcingulate (aMCC), and subgenual anterior cingulate (sgACC).

Results: In MDD, the ACS score had a significant positive correlation with pain endurance ($r=.640$, $p=.002$) and a significant negative correlation with the intensity at pain threshold ($r=-.614$, $p=.004$). Neuroimaging results showed that ACS score positively correlated with aIC connectivity to the left supramarginal gyrus ($z=4.22$, $p<.001$), aMCC connectivity to the right paracingulate gyrus ($z=4.00$, $p=.036$), sgACC connectivity to the right dorsomedial prefrontal cortex ($z=4.81$, $p=.022$), and negatively correlated with pIC connectivity to the paracingulate gyrus ($z=-.4.42$, $p=.018$). The correlations of ACS with pain variables and resting-state functional connectivity levels were significantly larger in MDD patients compared to healthy controls. A mediation analysis showed that pain threshold intensity significantly mediated the effect of ACS on pIC (ab=-0.037, BCa CI [-0.070, -0.006]) and sgACC (ab=-0.033, BCa CI [0.002, 0.087]) resting-state functional connectivity. Pain endurance did not significantly mediate the effect of ACS on its resting-state functional connectivity correlates.

Discussion: Mostly consistent with the hypotheses, these findings suggest that capability for suicide is associated with higher pain tolerance and lower pain sensitivity, and that it has a resting-state neural basis within the functional brain networks involved in pain processing,

especially pain sensitivity. The results furthered the understanding of the neural processes underlying suicide attempt risk, and they have implications for the clinical utility of physical pain as a potential biomarker or a treatment avenue for suicide attempt risk.

M70. RESTING STATE PORTABLE EEG DATA ASSOCIATIONS BETWEEN PAIN MEASURES IN ACUTELY SUICIDAL PATIENTS

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Background: Decreased experimental pain sensitivity has been observed in patients with depression and more commonly in those following a suicide attempt. Negative correlations between pain sensitivity and brain activity have been observed in depressed and suicidal subjects. Lower values have been reported in both delta and alpha powers in suicidal subjects, while beta and theta powers in electroencephalogram (EEG) data are underreported in terms of pain measures in depressed and suicidal demographics. We aimed to examine brain activity in acutely suicidal patients and its relationship with physical and psychological pain measures.
Methods: Physical and psychological pain (physical and psychological pain scale), experimental pain sensitivity to pressure, heat and pain, and depression severity (Beck Depression Inventory) were measured and resting state EEG data was collected using the portable Muse 2 headband system from 23 adult depressed patients of both genders: depressed patients after a suicide attempt in the past 72 hours (n= 12) and patients currently endorsing suicidal ideation (n=11). The portable Muse 2 headband system examines the AF7, AF8, TP9 and TP10 leads. The average frequency values throughout a 5-minute portable EEG recording were extracted for delta (1-4Hz), theta (4-8Hz), alpha (8-13Hz), and beta (13-30Hz) waves.
Results: There were no differences in either alpha, beta, theta or delta powers between the patients with suicidal ideation and those following a suicide attempt. Alpha power was positively correlated with heat pain tolerance (□=0.135, p= 0.023), and negatively with depression severity (□=-0.027, p= 0.047), and age (□=-0.015, p= 0.047). Beta power negatively correlated with current psychological pain (□=-0.023, p= 0.044). Delta power positively correlated with cold pain threshold (□=0.347, p= 0.043). Analysis did not find significant correlations between theta powers and the pain measures.
Discussion: Frontal resting-state brain activity was correlated with distinct physical and psychological pain measures in suicidal patients.

M71. ARE THERE NEURAL DIFFERENCES BETWEEN THOSE WITH SUICIDAL THOUGHTS AND BEHAVIORS AND NON-SUICIDAL CONTROLS? AN EXAMINATION OF THE REWP, LPP, ERN, AND P300 IN DEPRESSION

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Background: Suicide has been theorized to be the result of differences in neural functioning. However, both the fMRI and event-related potential (ERP) literature is highly mixed. Regarding ERPs, we recently conducted a meta-analysis that largely found no differences in any ERPs between those experiencing suicidal thoughts and behaviors (STBs) and controls. This meta-analysis provided unclear evidence of whether there are differences in ERPs, and

we called for analytic approaches that not only allow inferences for if there are differences, but also that allow inferences for no differences. Building on this, in a new sample of clinically depressed adults, we used Bayesian analyses to infer whether those with STBs differ from controls in four different ERPs: the reward positivity (RewP), late positive potential (LPP), error-related negativity (ERN), and the P300. These ERPs represent distinct neural processes, and thus provide a broad coverage of possible neural functions to test whether those experiencing STBs neural functioning differs from depressed controls.
Methods: A sample of 123 community adults with a current depressive disorder was collected. Clinical interviews using the SCID-RV determined that each participant had at least one current depressive disorder (major depressive disorder and/or persistent depressive disorder). We also used the SCID-RV and determined that 45 endorsed current suicidal ideation (SI) and 78 denied current SI. Participants completed the flankers task, doors task, and a passive picture-viewing task to measure the RewP, LPP, ERN, and P300. Using our effect sizes from our meta-analysis as our priors, we conducted four Bayesian t-tests (one for each ERP) comparing SI and no-SI groups. We also reran these analyses grouping participants with any STBs (e.g., SI, suicide plan) versus those without any STBs.
Results: Our analyses revealed that for every ERP and STB group combinations, that there was about three times more evidence that there is no effect than that there is an effect. In other words, our analyses found more evidence for the null hypothesis than the alternative hypothesis (i.e., BF10 = .259 - .400). Based on accepted cutoffs, this means that there is weak-to-moderate evidence supporting that there is no differences, compared to that there are differences.
Discussion: Our results suggest that within the methodological limits of this study, that there are no functional neural differences in ERPs in those experiencing STBs. In the context of recent failed replications and our meta-analytic, our results call into question whether there are effects, but more research is needed. Potential ways to improve this literature and implications of these findings will also be presented.

M72. SELF-INJURIOUS BEHAVIOR AND ASSOCIATIONS WITH THE DEVELOPMENT OF NEUROCOGNITION AND IMPULSIVE TEMPERAMENT IN 9 TO 12 YEAR-OLD CHILDREN IN THE ADOLESCENT BRAIN AND COGNITIVE DEVELOPMENT (ABCD) STUDY

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Background: Self-injurious behavior (SIB) is linked to poorer neurocognition and impulsive temperament. However, it is unclear if this association exists in children and if self-injurious behavior impacts the development of cognition and temperament over the course of development. Therefore, this study aims to examine the cross-sectional and longitudinal associations between neurocognition, facets of impulsive temperament (impulsivity, reward sensitivity), and SIBs (non-suicidal self-injury, suicide attempt) from baseline enrollment (ages 9-10) to year two follow-up (ages 11-12) in children enrolled in the ongoing ABCD Study.
Methods: Data were drawn from two timepoints; baseline enrollment (n=11,414, ages 9-10), and year 2 follow-up (n=6,355, 11-12) from the ABCD Study cohort (N=11,878). Cross-sectional multivariable regression analyses investigated the association between SIBs (NSSI, SA, both NSSI+SA), and attention, working memory, response inhibition, and trait impulsivity at baseline enrollment (ages 9-10). Prospective analysis then examined if new onset of SIBs is related to changes in executive functioning and temperament from baseline enrollment to year 2 follow-up (ages 9-12).

Results: Children who reported lifetime SIB by age 9-10 showed poorer performance on neurocognitive tests of verbal learning and elevated dispositional traits of impulsivity, inhibition, and reward sensitivity at baseline enrollment. The children who reported no new onset of SIB from baseline enrollment to year two follow-up (ages 9-12) showed improvements in neurocognitive performance, and a reduction on dispositional traits of impulsivity, inhibition, and reward sensitivity temperament from baseline enrollment to year two follow-up, whereas children who self-reported new onset of SIB from baseline enrollment to year two follow-up showed slightly better performance in neurocognitive tests of response inhibition coupled with increasingly elevated scores on personality characteristics reflecting greater impulsivity, behavioral inhibition, and yet greater willingness to approach novel and rewarding stimuli from baseline to year two follow-up.
Discussion: Children who self-injure by ages 9-10 show evidence of poorer neurocognition and impulsive temperament, which may have important clinical implications for neurobiological models of SIBs that can guide better behavioral interventions. Impaired neurocognition and temperament (even in early stages) could become an identifiable marker in clinical and neurobiological studies of SIBs, and even completed suicides. Thus, it may be appropriate to include cognition and temperament measures in clinical risk assessments with children as young as 9 who present with mental health distress and/or engage in SIBs. Additionally, while neurocognition and impulsive temperament are relatively stable, emerging evidence suggests that certain types of interventions can improve neurocognition and impulsive temperament, which are important therapeutic targets.

M73. DECISION MAKING IN SUICIDAL INDIVIDUALS: PERFORMANCE ON A DELAYED DISCOUNTING TASK

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Background: Suicide is a major cause of death in the United States, with over 48,000 lives lost annually. Decision making is one construct that has been associated with suicidal behavior. Recent studies have suggested that subcategories of suicide attempters may be more prone to undervalue an anticipated future reward as the time delay prior to obtaining the reward increases. The present study examines whether discounting rate, as assessed by the Monetary Choice Questionnaire (MCQ), is related to suicidal behavior and suicidal subtypes.
Methods: This study examined MCQ scores in a sample of healthy controls (N=35), depressed suicide attempters (N=52), and depressed non-attempters (N=98). MCQ scores were compared between clinical groups and in relation to measures of depression severity, impulsivity, and aggression. For attempters, the relationship between discounting rate and lethality of attempt, choice of violent means, number of prior attempts, and amount of planning associated with the suicide attempt was also examined.
Results: MCQ performance correlated positively with the Barratt Impulsivity Scale (BIS) for attempters ($p=.029$) and non-attempters ($p=.031$). Delay discounting rates did not differ across diagnoses or between attempters and non-attempters. Neither MCQ scores nor BIS was related to the lethality of the suicide attempt, the choice of violent means, the number of previous suicide attempts, or the amount of planning associated with the suicide attempt.
Discussion: These findings contribute to the literature on delay discounting and suicidal thinking and provide more substantial evidence for the relationship between self-reported impulsivity and discounting rates in depressed suicide attempters and non-attempters.

M74. UNIVERSITY STUDENTS' MENTAL HEALTH: DESIGN AND IMPLEMENTATION OF AN INTERNET-BASED INTERVENTION (MINDBLOOMING) AND A RANDOMIZED CONTROLLED TRIAL

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Background: In EU, one out of six people, or more than 84 million people, were affected by a mental health issue in 2016. Consequently, the promotion of mental health and the improvement of access to treatment should be a priority. Internet-Based Interventions (IBIs) are a promising way to improve treatment accessibility and availability. Moreover, IBIs may help overcoming the mental health related stigma.
The primary aim of this project, named MindBlooming, is (1) the design and implementation of a new IB Cognitive-Behavioral Treatment (IB-CBT) for university students targeting a wide variety of mental health issues according to the individual need: 1) self-disruptive thoughts, 2) anxiety, and 3) sleep symptoms, 4) depression, 5) emotional exhaustion, job/study-related stress and burnout, 6) chronic pain problems, 7) relational problems and empathy deficits.

Secondary aims are: (2) the evaluation of the feasibility of this IB-CBT; (3) the evaluation of its efficacy through a pilot randomized controlled trial (RCT) comparing IB-CBT versus access to websites with information about problems affecting the participants (control condition); (4) the analysis of the large amount of collected data using Machine Learning techniques.

Methods: This study is a collaboration between the Department of Psychology and the Department of Informatics, Systems and Communication of the University of Milan-Bicocca. The IB-CBT is currently being designed (the project has already been approved by the IRB). In the second phase, we will recruit: a) 30 students with the aim of a first evaluation of the feasibility of the IB-CBT (acceptability and satisfaction, usability, and uptake); b) 200 students that will be randomized into the IB-CBT intervention (n=100) or the control condition (n=100).
Results: The IB-CBT has been developed as a mobile app, so that it can be used by a large number of users due to the widespread diffusion of mobile devices. The app is differentiated on the basis of treatment assignment and includes guides (videos and notes), questionnaires and exercises, which enable the researchers to collect useful information. The app will foster participation by sending reminders and nudges. Finally, the app will provide access to e-Coaches through an online forum. Concerning the personalized IB-CBT treatment, 7-session IB-CBT will target different symptoms, according to the needs (assessed during the initial screening) and preferences of each student.
Discussion: The innovation potentiality of MindBlooming is promising. MindBlooming will contribute to: a) the design and implementation of an IBI for mental health; b) the development of more adequate treatments for low intensity mental health symptomatology, tailored to individual needs and targeting specific symptoms; c) the improvement of the quality of life of university students; d) the consistent reduction of mental health care system costs. MindBlooming is easily scalable, allowing to implement it also in different contexts and populations (e.g., university workers, people with mental disorder, adolescents, immigrants, women in the period after pregnancy, elderly, and those individuals who are or will be experiencing mental disorders due to the current pandemic);
To the best of our knowledge, this is the first study in Italy with these objectives. Similar studies have been carried out or are planned to be performed all over the world and became even more essential after COVID-19 pandemic.

M75. ACTIONABLE DATA FOR POLICY IMPLEMENTATION IN SCHOOLS

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Background: Policy evaluation for suicide prevention in schools is Although AFSP has reported in October 2020 that 23 states plus the District of Columbia in the United States, have enacted legislation requiring school suicide prevention, intervention, and postvention policies and/or suicide prevention programming statewide, the legislation in Georgia did not mandate any tracking, reporting or evaluation. This left school districts at a loss as to what strategies worked or didn't work for preventing suicide of their students and legislators and the general public at a loss as to what to ask of the schools to address the increase in youth suicides.
Methods: Fortunately, the State of Georgia has supported the yearly collection of two data sets that can be used to track suicide ideation, attempts, and ideation and in ages 5-17, and made these data sets publicly available online. OASIS, Georgia Department of Health's Online Analytical Statistical Information System was used to compare deaths of 5-17 year-olds in the five year period before HB198, the Jason Flatt Act was passed with the five year period after the Jason Flatt Act was passed in order to document changes in deaths per county. The Georgia Student Health Survey II (GSHSII), kept yearly by the Georgia Department of Education was used to document student reported ideation and attempts. Data was entered into a data set each year from 2014/15 (base) through 19/20 for the state and 189 individual school districts and analyzed.
Results: Suicide deaths of young people in Georgia have increased in the five year period since the Jason Flatt Act was enacted (July, 2015 - June 2020) when compared to the previous five years. The number of suicides increased 51% between 2014 and 2019. Changes in the number of county suicide deaths were distributed unevenly among the 189 school districts reporting, ranging from zero suicides across ten years (over 60 school districts) to an increase of six or over (18 school districts).
Likewise, the number of students reporting suicide ideation has increased during the five year period of the school suicide prevention policy. Statewide the number of students reporting ideation increased 75% and the number of students reporting at least one attempt increased 81%. All school systems reported a percentage of students having ideation and attempts. Percentage of ideation ranged from 5% to 25% and percentage of ideation ranged from 3% to 14% each year. There were differences between percentages of ideation and attempts between school districts.

A theory of change was developed for schools with decreased suicide ideation, attempts, and deaths of 5-17 year old children/youth as outcomes. The theory of change was guided by a research review of what programs provided evidence of reducing suicide in the long term. Key findings were that using skill-building, specifically social emotional learning programs that taught emotional regulation and self-control, and relationship building with peers and adults were promising for long term suicide prevention. A skill-building/learning theory approach was linked with the public health approach to guide policy implementation strategies.

Specific evidence-based programs that teach the specific promising skills were linked to prevention, intervention, and postvention (attempts and deaths) to provide real-world grounding for planning and implementation strategies.

Discussion: Strategies for policy evaluation for school suicide prevention policies are in their infancy. This study shows that already existing data sets can be a valuable asset when tracking and evaluation has not been mandated in legislation. Likewise, developing a theory of change where the outcomes relate to student behaviors is key to preventing suicide.

M76. EFFECTIVENESS OF AN INTERNET-BASED SELF-HELP THERAPY PROGRAM FOR SUICIDAL IDEATION: A RANDOMIZED CONTROLLED TRIAL

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Background: Internet-based self-help therapy has the potential of being scalable and cost-effective and appealing for individuals who want to handle their suicidal ideation on their own. The aim of the SOS-trial was to examine the effectiveness of a semi-guided internet-based self-help program in reducing suicidal ideation.

Methods: In a randomized controlled trial, 402 individuals with suicidal ideation were randomized to an internet-based self-help program or a wait-list control group. The primary outcome was suicidal ideation measured with the Beck Scale for Suicide Ideation at post-intervention (six weeks after baseline).

Results: Participants assigned to the intervention group experienced a significant reduction in suicidal ideation at post-intervention compared to the control group (mean difference: 2.91, 95% CI 1.28 to 4.54; p=0.0005). There were at post-intervention also a significant difference between the groups on level of hopelessness and worrying. At follow-up (six months later), the difference between the groups remained significant for suicidal ideation, hopelessness, and worrying. A total of 28 (17%) of the participants reported negative effects from the intervention program and 27 (7%) attempted suicide within the first six weeks.

Discussion: The results from the randomized controlled trial, found the internet-based self-help therapy intervention to be superior to a wait-list control group in reducing suicidal ideation, hopelessness, and worrying over six months. As some participants experienced negative effects from the program and 7% attempted suicide, we recommend that internet-based self-help therapy is offered in a format where online support and counseling is available.

M77. EFFECTIVENESS OF INTERNET- AND MOBILE-BASED COGNITIVE BEHAVIORAL THERAPY TO REDUCE SUICIDAL IDEATION AND BEHAVIORS: A SYSTEMATIC REVIEW AND META-ANALYSIS OF INDIVIDUAL PARTICIPANT DATA

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Background: Internet- and mobile-based cognitive behavioral therapy (iCBT) might reduce suicidal ideation. However, recent meta-analyses found small effect sizes and it remains unclear whether specific subgroups of participants experience beneficial or harmful effects. Therefore, we examined the effectiveness of iCBT on suicidal ideation and examined moderators by conducting an individual participant data meta-analysis (IPD-MA).

Methods: We systematically searched the databases CENTRAL, PsycINFO, Embase, and Pubmed for randomized controlled trials examining guided or self-guided iCBT for suicidality. All types of control conditions were eligible. Participants experiencing suicidal ideation were included irrespective of age, diagnoses or co-interventions. We will conduct a one-stage IPD-MA with suicidal ideation as the primary outcome, using a continuous measure, reliable improvement and deterioration, and response rate. Moderator analyses will be performed on participant-, study- and intervention-level. In addition, we will explore treatment adherence as defined as the proportion of completed modules, as well as the effectiveness on suicide attempts.
Results: We identified N=9 eligible trials, and were able to include the individual participant data from n=8 trials. Analyses are currently ongoing. Results will be revealed first time at the conference venue.
Discussion: The IPD-MA will provide effect estimates while considering covariates and will offer novel insights into differential effects on a participant level. This will help to develop more effective, safe and tailored digital treatment options for suicidal individuals.

M78. HEART RATE VARIABILITY AND ITS ABILITY TO DETECT WORSENING SUICIDALITY IN ADOLESCENTS: A PILOT TRIAL OF WEARABLE TECHNOLOGY

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Background: Suicide is the 2nd leading cause of death in adolescence, and acute pediatric mental health emergency department (ED) visits have doubled in the past decade. The objective of this study was to evaluate physiologic parameters relationship to suicide severity.
Methods: This was a prospective, observational study from April 2018 thru November 2019 in a tertiary care pediatric emergency department (ED) and inpatient pediatric psychiatric unit enrolling acutely suicidal adolescent patients. Patients wore a wrist device that used photoplethysmography for 7 days during their acute hospitalization to measure heart rate variability (HRV). During that time, Columbia Suicide Severity Scores (CSSRS) were assessed at 3 time points.
Results: There was complete device data and follow-up for 51 patients. There was an increase in the high frequency (HF) component of HRV in patients that had a 25% or greater decrease in their CSSRS (mean difference 11.89 ms/√Hz; p-value 0.005). Patients with a CSSRS>15 on day of enrollment had a lower, although not statistically significant, HF component (mean difference -8.34 ms/√Hz; p-value 0.071).
Discussion: We found an inverse correlation between parasympathetic activity measured through the HF component and suicidality in an acutely suicidal population of adolescents. Wearable technology may have the ability to improve outpatient monitoring for earlier detection and intervention.

M79. RESPONSE LATENCY AND LATENCY VARIABILITY: VALUABLE META-DATA FROM DIGITAL ASSESSMENTS

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Background: As suicide rates continue to increase not only in the United States, but across the globe, finding effective techniques to assess an individual's mental status is increasingly important - early interventions are key to preventing suicide attempts. While smartphone-based assessments, such as administration of the Patient Health Questionnaire (PHQ-9), can provide valuable insight into a patient's mental status, the meta-data captured by the device can also help. In particular, response latency to specific questions and response latency variability across an entire survey, both measures which cannot be captured by traditional pen-and-paper tests, could shed light into a patient's mental status - previous research has shown that scores on the PHQ-9 self-harm question (item 9) is correlated with latency in patients with schizophrenia, but not for healthy controls.
Methods: Approximately 300 otherwise healthy participants who had previously scored highly on the Perceived Stress Scale (PSS) were administered a PHQ-9 survey through our lab's open source smartphone app, mindLAMP, as part of an ongoing study begun in 2021. Over the course of the study, participants were told to take the PHQ-9 survey up to two times over the course of four weeks. A total of 405 surveys were completed across all participants.
Results: We found that scores on item 9 were negatively correlated with total survey duration, and thus also average item latency (Spearman's $\rho = -.16$, $p < .001$). Item 9 scores were also negatively correlated with reaction time variability (Spearman's $\rho = -.13$, $p = .003$). Item 9 scores were slightly negatively correlated with latency on item 9, but this correlation was not significant (Spearman's $\rho = -.06$, $p = .17$). Upon filtering for item 9 scores greater than 1, selected participants showed a positive correlation between item 9 score and latency as well as item 9 score and latency variability, but this correlation was also not significant (Latency Spearman's $\rho = .06$, $p = .717$, Variability Spearman's $\rho = .08$, $p = .616$).
Discussion: We found no significant correlation between PHQ-9 item 9 latency and item 9 score for healthy participants, and negative correlation between latency variability and item 9 score. For participants who scored highly on item 9, we found a slight positive correlation between both latency and score and latency variability and score, but were unable to conclude it was significant, possibly in part due to the much smaller size of the subgroup, only 10% of our total sample. Given that previous research has found positive correlation between item 9 latency and score in patients with schizophrenia, our findings indicate that both latency and latency variability have potential value as a precision measure of risk for self-harm.

M80. INFLAMMATORY CORRELATES OF SUICIDAL IDEATION and DISTURBED SLEEP SEVERITY

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Background: A confluence of factors can influence suicide risk. Stressful environmental events such as childhood adversity or chronic exposure to life-threatening situations typical in war and active combat have been reported to contribute to increased risk of suicide. We show in a veteran cohort that adverse childhood experiences are known to be associated with increased risk for lifetime depressive disorders, impulsivity, and aggression contributing to sleep disturbances and risk of suicide in adulthood. In the present study, we investigated how current ideation and sleep quality by group and by severity are associated with inflammatory

state since these clinical variables along with expression of inflammatory markers are highly dynamic and proximal to suicide risk and behavior.
Methods: This cohort of Veterans were recruited based on depression diagnosis with/out suicide attempt history. We collected data on suicidal ideation and sleep quality using the Beck Scale for Suicidal Ideation (SSI) and Pittsburgh Sleep Quality Index, (PSQI), as well as blood samples for assessments of inflammatory markers using Luminex Immunology Multiplex Assay (41-Plex) for all participants.
Results: Although amongst the depressed group those with high ideation (SSI≥8, n=25) vs. low ideation (SSI≤3, n=42) show no significant difference in sleep quality, the high suicide ideator (SI) group on the average reported poorer sleep quality (high SI: PSQI=12.84 vs low SI: PSQI=11.76). In the high vs. low ideation groups we found significant differences in levels of cytokines: RANTES, PDGF and flt3l ($p<0.05$). Additionally, in veterans with both high ideation and clinically significant sleep disturbances (PSQI≥10, n=23), we found a moderate association between ideation severity with disturbed sleep ($r=0.56$, $p=0.0058$). In this subset, we found moderate sized associations between suicidal ideation severity and 16 cytokines including eotaxin, INFgamma, IL10, MCP3, IL12p40, IL13, IL15, IL17a, IL1a, IL9, IL6, IL8, MIP1a, RANTES, TNF-alpha, and TNF-beta (with |rs| ranging from 0.62 to 0.35). Also, moderate sized associations between cytokine levels and disturbed sleep were observed for INFgamma, GRO and RANTES (with rs = 0.33, -0.33 and -0.33 respectively). To determine whether these associations are driven by depression severity, we tested the depression severity (measured via the Beck depression Inventory) adjusted association between sleep and cytokine levels in the depressed veterans with clinically significant sleep disterbance(n=61) and found that even after adjusting for depression severity, 18 cytokines, including EGF, FGF2, eotaxin, G-CSF, flt3l, GM-CSF, fractalkine, INF-a2, INF-gamma, IL12p40, IL17a, IL2, IL3, IL7, MIP 1a, MIP1b, TNF-alpha, VEGF were still associated with disturbed sleep ($p <0.05$). To explore the possible trans-diagnostic nature of these inflammation biomarkers, we tested the association between sleep disturbance and these specific cytokines in our control population and found moderate sized correlations between sleep disterbance severity and 12 of these cytokines (e.g., INFgamma, VEGF with |rs| ranging from 0.54 to 0.33), in those with clinically significant sleep disturbances (n =11).
Discussion: Notably, cytokines that were both significantly associated with suicidal ideation and disturbed sleep severity including INFgamma and RANTES may reflect overlapping dysregulated inflammatory processes of sleep disturbance and ideation severity. In sum, these molecular markers can be used as objective measures in future insomnia and suicide prevention treatment interventions to track improvements in sleep quality and attenuation of suicidal ideation in high-risk patients.

M81. A CONTENT ANALYSIS COMPARING INSTAGRAM POSTS OF TEENAGERS WHO DIED BY SUICIDE AND LIVING CONTROLS

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Background: Instagram has grown over the past decade to house over 1 billion users at the end of 2020. Some estimates show that Instagram users tend to skew younger, as 71% of the monthly active users on the platform are under the age of 35. There is a multitude of public data available on the platform. In 2017, it was estimated 70% of users under the age of 18 had a public account. Instagram offers a unique opportunity to identify markers of suicide risk in a

naturalistic setting. The study aimed to determine whether photo content was related to suicide in teenagers and to determine whether photo caption content predicted suicide in teenagers.
Methods: Subjects who were between the ages of 13 to 19, had died by suicide within the last five years, and had a public Instagram account were included in this study. Subjects were identified searching the terms "teen suicide" and "teen obituary". Death by suicide was confirmed using online obituaries. After finding the public Instagram account of a deceased teen, the photo content, captions of their last three posts, and the subject's age, sex, and race were recorded. To identify healthy controls, the researcher looked through the deceased's friends list to find a matched control of the same sex, race, and approximate age. To assess whether photo caption content was related to suicide in teenagers, qualitative captions on Instagram were analyzed using LIWC software. Data were analyzed using SPSS v.24.
Results: Of the N = 65 suicide subjects (SS), N = 34 were female. SS were on average 16.3 years old while healthy controls (HC) were on average 18.03. For both groups, N = 55 were white, N = 8 were black, and N = 2 were Asian.
Suicide decedents used less emojis (N = 41) and hashtags (N = 14) than controls (emoji N = 53, hashtag N = 20). However, suicide decedents used a black and white filter (N = 6) more often than controls (N = 3). Similarly, suicide decedents used less all upper-case text (N = 2) and exclamation points (N = 10) than controls (all upper case = 16, exclamation N =13). On average, controls had fewer days between the last post and day of collection ($\bar{X}$ = 43.7) than between the days of post and death for those who completed suicide ($\bar{X}$ = 131.1). Independent t-tests revealed that age ($p<.001$) and use of emojis ($p=.019$) were significantly lower, and days since post ($p=.014$) were significantly higher for the suicide group.

To analyze differences between the type of photos posted among both groups the author ran a chi-square test for independence. A significant association was found between the rates of photos of friends (SS = 44, HC = 27, $p=.035$), family (SS = 14, HC = 3, $p=.011$), and activities (SS = 11, HC = 26, $p=.010$) in the two groups. Similarly, the author ran a binary logistic regression using suicide status as the dependent variable and photo category as the independent variable, labeled as categorical covariates. Out of 16 categories that went into the model only photos with family was significant ($p = .034$).

The final model included the variables age, emotional tone, and social processes, explained 92.4% (Nagelkerke R2) of the variance in suicide, and correctly classified 93.8% of cases. Age was not independently significant but emotional tone and social processes were found to be independently significant.

Discussion: The current study found that it could be possible to identify individuals who may be at risk for suicide based on the emotional tone of their photo captions. Machine learning algorithms trained on larger social media datasets might identify those struggling with suicidal thoughts for proactive outreach.

M82. ZOOMING INTO REAL LIFE - MOOD NETWORKS IN ADOLESCENTS AND YOUNG ADULTS WITH LIFETIME SUICIDAL THOUGHTS, ACTIONS AND NO SUICIDAL BEHAVIOR

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Background: In regard of missing reliable predictors for suicidal behavior and in particular for the transition from wish to die to ideation to plan and attempt, identification of varying patterns of real life moment-to-moment dynamics in mood could be essential. Integrating established theories on suicidal behavior, the dynamic system theory and network theory, the goal of the present study was to explore the contemporaneous and temporal networks of mood states (perceived stress, anhedonia, depression, hopelessness, anxiety and irritability) in real life. In particular, the goal was to compare individuals with lifetime suicidal thoughts only (wish to die or suicidal ideation), suicidal actions (suicide plan or attempt) and no suicidal behavior. Overall, a higher density was expected in the mood networks in both groups with suicidal behavior compared to the no suicidal behavior group because a higher density indicates stronger associations between the mood states. Regarding the difference between the suicidal thought group and action group, a difference in the role of irritability is expected showing a higher persistence of irritability over time as well as higher association with perceived stress in the action group indicating a higher arousal which might increase the risk for behavioral engagement.
Methods: Baseline data of the Behavior and Mind Health (BeMIND) study, a random community-based sample of individuals aged 14 to 21 years from Dresden, Germany (N=1180, response rate 21.7%), were used. Lifetime suicidal behavior (wish to die, ideation, plan, attempt) were assessed face-to-face using a standardized interview resulting in the three groups: suicidal thought group: n = 94; suicidal action group: n = 76; no suicidal behavior group: n = 902. Mood states were examined using smartphone-based Ecological Momentary Assessment (EMA) on four subsequent days eight times a day. At each EMA, participants particularly rated the items on a scale from 0 to 100. Using vector-autoregression analyses (R package mlVAR), the contemporaneous and temporal networks (time-1 association) were determined. Differences in the networks were described and group difference in significant ($p < .05$) edges were tested again in the whole sample using multi-level modelling with group as the moderator adjusting for sex, age, lifetime depressive and anxiety disorders.
Results: Descriptive results revealed quite similar contemporaneous networks in all groups, except for a positive association between irritability and hopelessness in the action group only. However, temporal networks differed indicating that in both suicidal behavior groups depression, hopelessness and anxiety showed stronger vicious cycles than in the no suicidal behavior group. Also, irritability was significantly predicted by hopelessness from the previous time point in the suicidal behavior groups instead of anxiety predicting irritability in the no suicidal behavior group. In the suicidal action group, irritability was significantly positively associated with perceived stress but also with anhedonia, but not in the suicidal thought group.
Discussion: The dynamic system theory and network theory as approaches to understand underlying cognitive, affective and behavioral patterns in an emerging psychopathology like suicidal behavior allow new insights into moment-to-moment processes in daily life. In this mostly explorative analysis, mood dynamics in everyday life in individuals with past suicidal thoughts and actions differed from each other as well as from individuals without suicidal behavior. Future research should consider these patterns in trying to explain why some people act on their suicidal thoughts and others don't.

M83. SUICIDE MORTALITY IN THE UNITED STATES FOLLOWING THE SUICIDES OF KATE SPADE AND ANTHONY BOURDAIN

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Background: The suicides of Kate Spade and Anthony Bourdain, two major American icons, in a span of days in June 2018 represent a unique and tragic natural experiment to characterize associations with actual suicides in the aftermath of celebrity suicides. The aim of this study was to identify changes in suicide counts after their deaths.
Methods: Suicide data were obtained from the United States' Centers for Disease Control and Prevention's public-use mortality file. A time-series analysis was performed, examining monthly suicide data by age group (⩽19, 20–44, 45–64 and ⩾65 years), for both men and women, for all suicide methods and for hanging versus non-hanging Methods:, from January 1999 to December 2018. Seasonal autoregressive integrated moving-average models were fitted to the pre-June 2018 period, estimating suicides in subsequent months and identifying deviations from expected values. The volume of Twitter posts about Kate Spade and Anthony Bourdain was used as a proxy of societal attention.
Results: Tweets about the celebrities were mainly concentrated in June 2018 and faded quickly in July. Total suicides exceeded the 95% confidence interval for June and approximated the upper limit of the 95% confidence interval in July. Over this 2-month span, there were 418 (95% confidence interval = [184, 652]) more suicides than expected, including 275 (95% confidence interval = [79, 471]) excess suicides in men and 182 (95% confidence interval = [93, 271]) in women. These equate to 4.8%, 4.1% and 9.1% increases above expected counts. There were 392 (95% confidence interval = [271, 514]) excess suicides by hanging, a 14.5% increase, with no significant increase in all other methods combined.
Discussion: These findings demonstrate that mortality following celebrity suicides can occur at a similar magnitude to that observed for other public health emergencies. They underscore the urgency for interventions to mitigate imitation effects after celebrity suicide reporting.

M84. THE LAST VISIT IN PRIMARY HEALTH CARE WITHIN 30 DAYS OF DEATH BY SUICIDE

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Background: Persons who die by suicide often consult their General Practitioners (GP's) during their final weeks of life. The aim of this study was to examine clinical characteristics in persons with GP consultations during the last month of life, and to compare characteristics in primary care patients with and without contact with psychiatric services.
Methods: As a part of a nationwide project, medical records for the last two years of life for all individuals who died by suicide in Sweden during 2015 were evaluated, (n=949), except Stockholm (data not yet available). In this study we investigated the last contact with a GP within 30 days before death (n=197) concerning background factors, symptoms, clinical diagnoses and planned treatment. We compared the group of individuals with primary health care contacts only (n=103) to the group of individuals with additional previous contacts within psychiatric services (n=94) during the last two years, but before the last contact with a GP.
Results: Preliminary results showed that the individuals with only primary care contacts were significantly older (63 years ± 18 years) than the individuals with both primary and psychiatric

contacts (53 years ±17 years). There was no significant gender difference between the two groups of individuals with and without additional psychiatric contact. More than half of the individuals in both groups sought help for physical symptoms during the last month before death, and approximately a third of all reported physical pain. Cardiovascular symptoms (CVS) and respiratory symptoms (RS) were significantly more common in individuals with only primary care contacts, CVS: 14% versus 2%, p< .005, RS: 11% versus 1%, p= .005. The proportion of individuals presenting psychiatric symptoms was considerably larger in the group with additional contacts with psychiatric services, 75% in the group with both primary care and psychiatric contacts vs 53% in the only primary care group (p< .005). Depression and anxiety were the most common symptoms presented in both groups, but symptoms of anxiety differed significantly (53% in individuals with both primary care and psychiatric contact vs 34% of individuals with only primary care, p< .05).

Discussion: It is notable that just half of the individuals with only primary care presented with any psychiatric symptoms during the last month before death by suicide. A large proportion of both groups presented with physical symptoms. Some symptoms (CVS and RS) were more prominent in the group without psychiatric contacts. Primary care patients might benefit from broader screening for depression and assessment for suicidality. Another observation was that the subgroup of individuals with only primary care contacts, especially older individuals, may seek primary health care for somatic symptoms such as CVS, f ex palpitations, or RS such as difficulty breathing that might be expressions of psychiatric symptoms as anxiety.

M85. INTEGRATIVE DATA ANALYSIS FROM RANDOMIZED SCHOOL-BASED PREVENTION TRIALS WITH LONGITUDINAL OUTCOME DATA: THE EFFECTS OF EARLY PREVENTION ON SUICIDAL BEHAVIORS

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Background: Suicide was the second leading cause of death in 2019 among youth in the US, accounting for 6,488 deaths among 10- to 24-year olds. This is particularly of concern among Black youth, as recent work has suggested that Black youth under age 13 are twice as likely to die by suicide than their White peers. Early school-based prevention programming targeting aggressive and disruptive behavior in the classroom has demonstrated significant positive impacts on later suicidal behaviors. Much of this prior work has utilized person-centered approaches such as latent class analysis. These analyses have tried to identify distinct subtypes (i.e., latent classes) of aggressive and disruptive behavior and determine whether prevention program impacts vary across those subtypes. Although generally well-powered to extract these subtypes, there are within-study limitations when trying to empirically examine the intersections of baseline behaviors and negative long-term outcomes which occur relatively infrequently (e.g., suicidal behaviors). The use of integrative data analysis (IDA) to harmonize extant school-based cluster randomized prevention trials with longitudinal follow up allows the opportunity to overcome these limitations.

Methods: Six school-based prevention trial datasets with longitudinal follow-up will be harmonized utilizing IDA methodology. Data are utilized from the Fast Track Project (Bierman et al., 2004), the Good Behavior Game trials (Kellam et al., 2008; Ialongo et al., 1999; Ialongo et al., 2019), the SAFEChildren Trial (Tolan et al., 2004), and the Linking the Interests of

Families and Teachers Study (LIFT; Eddy et al., 2000; Reid et al., 1999). IDA provides a framework for pooled data analysis that could maintain the person-centered orientation of individual studies by utilizing raw data from individual participants. Pooling at the person-level could increase precision of between-class comparisons, particularly with regards to rarer outcomes, and improve the external validity of the latent classes themselves. However, as with all IDA, there are central challenges in how to appropriately harmonize and link measures of key constructs across independent studies. In this presentation, we adapt the emerging techniques related to measurement invariance and differential item functioning for latent class measurement models to develop an approach to IDA with mixture models.
Results: We used baseline externalizing behavior data from 6 prevention intervention trials with nested data. Implementing prevention programming in early childhood, these trials collected teacher-reported classroom behavior along with suicidal behaviors across adolescence and adulthood, which has been harmonized. The pooled dataset contains just over 10,000 participants from mostly urban school districts with a high proportion of Black individuals. National Death Index searches identified suicide decedents. Those with higher early childhood 'aggressive behavior' factor scores were significantly more likely to have attempted suicide ($p < .001$). We will present intervention effects across trials using IDA.
Discussion: Developments and enhancements of existing IDA methodology are needed for person-centered approaches, particularly in the case of cluster-randomized preventive interventions with hypothesized moderated treatment effects across separately conducted trials. These methodological extensions include harmonizing measures on multiple levels as well as harmonizing the data structures themselves across studies. Results will allow researchers to fully capitalize on the advantages of IDA in using pooled data from cluster-randomized preventive interventions to investigate effects on suicide-related outcomes.

M86. DEVELOPMENT OF A SCALE MEASURING IPTS VARIABLES IN A CLINICAL ADOLESCENT SAMPLE

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Background: Joiner's Interpersonal Psychological Theory of Suicide (IPTS; Joiner, 2005) explains the pathways by which suicide ideation and suicide attempts occur. Within the IPTS model, two constructs exist to comprise suicidal ideation: perceived burdensomeness (PB) and thwarted belongingness (TB). PB consists of two important components, self-hatred and the subjective feeling of being a liability to or burden on others. TB refers to a cognitive-affective state in which an individual has the desire to belong but lacks reciprocally caring relationships. Measurement of these constructs is currently via the Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2012), which was designed for and validated on adults. While the INQ shows reliability and validity in adolescents, using an adult scale on adolescents is problematic. The scale developed uses developmentally appropriate language and scenario-based items, which are concrete experiences during which PB and TB are likely experienced. Using scenarios also helps decrease dependence on abstraction for this age group. This study reports on the development and validation of a new scale to measure perceived burdensomeness and thwarted belongingness in adolescents.
Methods: The scale was developed via qualitative interviews with adolescents until saturation was obtained. Items were created from these interviews and from review of the literature to ensure sufficient domain coverage of the PB construct (Hill et al., 2019). The items were then reviewed by expert clinicians prior to being included in the final scale. Participants for this

study were 200 adolescents (ages 12-17). They were recruited from an inpatient psychiatric unit and an intensive outpatient program, both affiliated with Children's Health – Dallas. Scores from the new scale were compared to participant scores on the INQ, QIDS-A-SR, CHRT, and ACSS-FAD collected at intake.

Results: A principal axis exploratory factor analysis was run on all 38 items with an oblimin rotation. The scale performed best when two factors were forced, lending to clear PB-A and TB-A subscales. To test the scale's reliability, Cronbach's alpha was run on all 38 items of the scale ($\alpha = 0.96$). PB-A and TB-A were highly reliable ($\alpha = 0.93$ and 0.94 respectively). For construct validity, PB-A was moderately correlated ($r = 0.61$) with the PB subscale from the INQ. TB-A was also moderately correlated ($r = 0.45$) with the TB subscale from the INQ. The correlation between PB-A and the QIDS-A-SR ($r = .61$) indicated a moderate relationship between the two constructs, offering additional evidence of construct validity. TB-A was also moderately correlated with depression ($r = 0.45$). The relationship between suicidal ideation and PB-A was significant ($r = 0.36$). TB-A was similarly significantly correlated with suicidal ideation ($r = 0.35$). Discriminant validity was evident in that as expected, PB-A and TB-A were weakly correlated with ACSS-FAD ($r = 0.20$ and .06 respectively).

Discussion: This study developed a new scale to assess PB and TB. This scale is developmentally appropriate and reflects two factors of PB and TB using real life scenarios from the adolescent perspective. The scale is reliable and valid when compared to other measures of PB, TB, depression, and suicidal ideation. While previous research has explored domains in which PB is experienced (Hill et al., 2019), this scale improves the field's understanding of TB. Specifically, TB occurs in the context of friends and family. The new scale shows some redundancy, providing an opportunity to reduce the scale using item response theory. Future research could decrease the length of this scale and investigate its validity in a non-depressed adolescent population.

M87. TRACKING EMOTION INTENSITY AND LABILITY AFTER HOSPITAL DISCHARGE: A DAILY DIARY STUDY OF SUICIDAL TEENS

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Background: Suicidal thoughts and behaviors (STBs) are important public health concerns and suicide is the second leading cause of death among adolescents in the United States (CDC, 2019). The months following hospital discharge mark an increased period of risk for STB recurrence, with studies estimating that among suicidal adolescents approximately 7–18% will make a suicide attempt within the first six months after discharge. During this elevated risk period, the first month following discharge is a particularly high-risk period for suicide death (Meehan et al., 2006). Despite this known high-risk period, the processes that place an individual at increased risk during this time are not well understood. Emotion intensity and lability are known risk factors for suicidal ideation and are demographically salient risk factors among adolescents. Historic methodologies for assessing emotion intensity and lability rely on long-term retrospective self-report questionnaires and interviews which fail to capture the variability of these risk factors that are known to fluctuate on a daily to hourly basis. The present study implemented ecological momentary assessment (EMA; a methodology for repeatedly assessing variables in real-time), to study both positive and negative emotion intensity and lability among adolescents during the first month following discharge from psychiatric hospitalization. The current study seeks to compare the predictive power of traditional baseline assessments of emotions to that of EMA.

Methods: Forty-five adolescents (12-18 years; M= 15.85; SD= 1.58) psychiatrically hospitalized due to a suicide related event (i.e., suicide attempt or suicide ideation) were recruited from an inpatient unit located in the northeastern United States to participate in a larger treatment development study to enhance positive affect in adolescents with STBs. Adolescents were consented on the inpatient unit and completed interviews and self-reports to assess demographic variables, baseline emotion characteristics, and history of STBs at baseline. Following discharge, participants completed one month of daily EMA surveys sent via an online HIPAA compliant platform to the adolescent's mobile device. In the EMA survey, adolescents were asked to rate the extent to which they felt positive (i.e., happiness, joy) and negative (e.g., anger, sadness) emotions in the moment. Adolescents then completed a follow-up survey at 1-month and 4-months post discharge to assess recurrence and intensity of suicidal ideation.
Results: Baseline ratings of positive and negative emotions did not significantly predict suicidal ideation recurrence or intensity at either of the study follow-ups. High intensity of negative emotions as assessed via EMA was significantly associated with more intense suicidal ideation severity at both 1- and 4- months post-discharge, even after controlling for baseline suicidal ideation intensity and depressive symptoms.
Discussion: Assessing emotions on a daily basis provided stronger prediction models of suicidal ideation intensity in the months following hospital discharge compared to traditional methods of assessment.

M88. EVALUATING THE IMPACT OF TEEN-TO-TEEN CRISIS LINES ON YOUTH VOLUNTEERS DURING COVID-19

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Background: Crisis hotlines are one of the oldest downstream approaches in the U.S.—viewed as a national "safety net", providing essential support and resources during a suicidal crisis. During the COVID-19 pandemic, there has been a significant increase in mental distress coupled with reduced access to in-person mental health services—making crisis lines even more essential. Nearly two decades of research have supported the effectiveness of adult-run crisis hotlines for adults. Teen-to-teen (t2t) crisis lines are a specific type of crisis service in which youth volunteers help their similarly aged peers (through texts, chats, calls, and emails). T2t lines have the potential to offer a unique experience both for the youth who utilize the lines and the youth volunteers who staff them. However, little research has examined the impact of these t2t lines on the youth volunteers. To first address this crucial gap, this pilot study, which occurred during COVID-19, examined the impact of t2t lines for youth volunteers. Specifically, we investigated: (1) the types of contacts (texts, chats, calls, emails) attended by the volunteers, (2) the positive impact of the t2t volunteer experience on youth volunteers, and (3) the negative impact of the t2t experience on youth.
Methods: This pilot project collaborated with two of the largest t2t youth crisis lines in the U.S. Teen Line (21,000 contacts/year) and Youth Line (19,000 contacts/year). Twenty volunteers (14-20 years-old) were assessed, starting in August 2020, at 4 timepoints: baseline and every 3 months for 1 year. Volunteers completed a brief (15-minute) online survey at each timepoint, including questions about the types of contacts attended, the positive impact (Scale: 1=not at all to 5=extremely) of the t2t line experience, and the negative impact (same scale).

Results: Youth volunteers reported that t2t contacts were most often related to: Depression/Anxiety or Related Mental Health Concerns (reported by 94% of volunteers), Relationship Difficulties (94%), Suicide or Self-Injury (89%), Academic Stress (83%), Abuse/Assault/Violence (85%), Covid-19/Quarantine Stress (79%), Negative Body/Self-Image (77%), Grief/Mourning Loss of Loved One (72%), Bullying/Harassment (68%), and Gender Identity/Sexual Orientation Stressors (64%).
Volunteers reported high positive experiences (M =4.70, SD =0.47) on the crisis line. Commonly reported positive aspects were Skills Learned (i.e., knowing "what to do" in a crisis, improved communication skills; 100% of volunteers), Good Match with Their Skills and Values (100%), Helping Others (95%), Gaining Useful Perspective of Their Own Experiences (70%), and Friendships with Other Volunteers (70%). Volunteers reported low negative experiences (M =1.55, SD =.51) on the line. Negative aspects reported were Stressful Work (55% of volunteers), Negative Impact on Their Own Mental Health (10%), and High Expectations of Volunteer Position (5%). It is important to note that 100% of volunteers reported to experiencing their own COVID-related stressors during this time.

Discussion: This project is the first to examine the impact of t2t crisis lines for youth volunteers. The pilot study was implemented during COVID and, as such, elucidates the experience of t2t youth volunteers during this challenging time. Results indicate that the support youth volunteers gave their peers related to a range of topics including mental health concerns, relationship difficulties, self-injury/suicide, and COVID/quarantine stress. Results also suggest that volunteers' experience is overall positive, with the most significant benefits related to the skills learned and ability to help others.

M89. INTEROCEPTIVE SENSIBILITY AND SUICIDALITY AMONG ASIAN-AMERICANS

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Background: Interoception is a complicated interplay of bodily systems that process stimuli to allow individuals to sense and interpret bodily signals (Garfinkel et al., 2015; Khalsa et al., 2018). A growing literature base has established interoceptive deficits as related to risk for self-directed violence, and are tied more strongly to NSSI and a history of suicide attempts than suicidal ideation (Hagan et al., 2019, Smith et al., 2017). This presentation seeks to fill a gap in the paucity of cross-cultural research on interoception, especially as it relates to suicide and mental health outcomes. This is the first known study to assess the role of interoception in mental health between Asian and White Americans.
Methods: Two samples, both an undergraduate (n = 1,371) and Amazon MTurk sample (n = 303), with large proportions of Asian-American participants (>50% in both studies) are included. These participants completed a series of online questionnaires assessing interoception, depression, NSSI versatility (i.e., the number of methods an individual has used to engage in NSSI), and suicidal thoughts and behaviors.
Results: Study 1 revealed that among undergraduates, Asian-Americans reported weaker interoceptive sensibility compared to White respondents [t (897) = -2.75, p = .006]. However, the magnitude of this difference was small (d = .20). When assessing suicidal ideation, there was no significant interaction of race and interoceptive abilities (β = 1.22, SE = .26, p =.44), nor was there a main effect for race (β = 1.49, SE = .22, p =.08), but there was a significant main effect for interoception (β = 1.68, SE = .11, p < .001). When assessing suicide attempt

history, there was no interaction of race and interoception (B = .39, SE = .47, p =.41), nor were there any significant main effects.
In Study 2, MANOVA analyses revealed that Asian-Americans reported significantly weaker interoceptive awareness on the Eating Disorder Inventory (EDI; Interoception subscale) compared to White respondents [F (1, 271) = 4.46, p = .04; η2 = .02], although the effect was small. On the Multidimensional Assessment of Interoceptive Awareness (MAIA), a significant, but small, difference was found only for the Not-Worrying subscale on which Asian-American participants reported more worry about bodily signals (F (1, 271) = 10.11, p = .002; η2 = .04). Only the EDI, and three MAIA subscales (i.e., Not-Distracting, Not Worrying, and Trusting) were correlated with suicidal ideation. The interaction between race and Not-Distracting was the only significant interaction (B = .35, SE = .17, p =.047), however, the interaction was no longer significant after the inclusion of the depression and NSSI versatility covariates (B = .18, SE = .19, p =.32). There were significant main effects for race and each of the four interoceptive scales. Only the MAIA Trusting scale was correlated with suicide attempt history. There was no significant interaction, however there were significant main effects for race and the MAIA Trusting subscale.

Discussion: Asian-American participants reported statistically significant, but small differences on some measures of interoceptive sensibility, and no difference on most measures. Additionally, race did not moderate the relationship between interoceptive sensibility and either suicidal ideation nor suicide attempts, when including relevant covariate. Future studies should investigate indirect effects of interoception on suicide as well as potential cultural differences on additional measures of interoception, especially interoceptive accuracy and awareness. Differences other than those between Asian-Americans and White Americans should also be investigated.

M90. SUICIDE AMONG HOLOCAUST SURVIVORS- A NATIONAL REGISTRY STUDY

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Background: Holocaust survivors (HS) underwent extreme prolonged traumatic exposures, which may be expected to increase suicide risk. Previous studies have indicated conflicting findings regarding HS's suicide risk. The aim of this study was to determine the suicide risk among European and North African HS based on national Israeli registry and census data.
Methods: The study was based on the Israeli population of 1972, followed up until 2015 for suicides. European HS were identified by country of origin and immigration year and compared to survivors of European pre-Holocaust persecution (early HS) and a comparison group of similar ethnic origin who immigrated before persecution.
North African survivors were grouped into those from Algeria, Libya and Tunisia who were likely to have suffered more severe persecution and those from Morocco who probably suffered lesser persecution compared to a group from North African countries not under Nazi control.

Age standardized suicide rates were calculated for each group and Standard Mortality Ratios (SMR) with the comparison groups. Cox regression analysis was used to assess the suicide risk of the survivor groups vs comparisons, adjusting for age and sex, last marital status, and education in a sub-group.

Results: Over the study period, the distribution of suicide deaths among Europeans was: 1,647 for HS (0.44%, n=372,961), 247 for early HS (0,73%, n=34,012), and 516 for the comparison group (0.46%, n=111,417). The suicide deaths among North Africans: 116 for the severe persecution group (0.19%, n=60,132), 159 for lesser persecution (0.14%, n=110,485) and 56 for the comparison group (0.25%, n=22,480). The age adjusted suicide rates (per 100,000 person-years) among Europeans were: HS 17.8 (95% CI 16.9-18.6), early HS 28.6 (95% CI 24.9-32.2), significantly higher than the comparison group 20.3 (95% CI 18.5-22.1). Among the North Africans, the rate for the more severe persecution group was 6.9 (95% CI 5.6-8.2), for the lesser persecution group 4.8 (95% CI 4.0-5.5), and for the comparison group 8.5 (95% CI 6.4-11.0). The SMRs with European comparisons were 0.88 (95% CI 0.84-0.92) for HS and 1.41 (95% CI 1.20-1.65) for early HS while those with North African comparisons were 0.81 (0.67-0.97) for severe persecution and 0.57 (0.48-0.66) for lesser persecution.
The Cox regression models adjusted for age and sex showed significantly higher risk for the early HS versus comparisons Hazard Ratio (HR) =1.31,(95% CI 1.12-1.52), and lower risk for HS (HR = 0.89 ,0.80-0.99), while only the North African lesser persecution group had significantly lower HR (0.58, 0.43-0.79).

Discussion: These results support previous findings regarding higher resilience among European survivors of maximal adversity compared to survivors exposed to lesser persecution, survivors of early pre-Holocaust persecution who had higher suicide rates. No elevated risk was found among North Africans exposed to persecution compared to others not exposed.

M91. DIFFICULTIES WITH EMOTION REGULATION WITHIN PTSD CLUSTERS AND MORAL INJURY FACETS

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Background: Research on trauma-related disorders has largely focused on Posttraumatic Stress Disorder (PTSD); however, moral injury (MI) is another important mental health concern requiring research. MI occurs when an individual feels as though their deeply held moral beliefs have been violated. There is a consistent association between PTSD and suicide behavior while research on MI and suicide is emerging. The extant literature has indicated that increased exposure to potentially morally injurious events is associated with increased suicidal ideation and attempts. Similarly, it has been found that the presence of MI increases the association between PTSD and suicidal ideation. Recent literature found differences between PTSD and MI, highlighting a need to examine these variables independently.
Emotion regulation (ER) has been described as the individual's ability to monitor, evaluate, and modulate their emotional reactions. ER has been identified as an underlying mechanism across numerous psychiatric disorders and a crucial factor to address when examining suicide risk. Few studies have examined the role of difficulties with ER within PTSD and no research has examined difficulties with ER within MI facets. This study sought to examine how each PTSD cluster and facet of MI is uniquely associated with difficulties in ER. We hypothesized that difficulties in ER would be associated with Cluster D of PTSD (negative alterations in cognitions) and the self and others-transgressions facets of MI.

Methods: Participants (N=253) were military personnel recruited online. Participants completed a rigorous screener ensuring past deployment, military background, and trauma-

related difficulties prior to being accepted into the survey. Participants who passed the screener questionnaire and met or exceeded the suggested clinical cutoff for PTSD and/or MI were allowed to participate. A hierarchical linear regression was conducted to examine the association between MI facets, PTSD symptom clusters, and overall difficulties in ER.
Results: Results indicated that Cluster E (i.e., alterations in arousal and reactivity) was the only symptom cluster associated with difficulties in ER ($p=.002$, $\beta=.331$) beyond the effects of religiosity. Regarding MI, results indicated that self-transgressions was the only subscale significantly associated with overall difficulties in ER ($p=.031$, $\beta=.371$) beyond the effects of religiosity.
Discussion: This is the first study, to our knowledge, to examine the association between difficulties with ER, PTSD clusters, and MI. Results of the current investigation are inconsistent with previous findings of emotion regulation difficulties being associated with PTSD Cluster D, alterations in cognitions and mood. Instead, we found that individuals who experience elevated alterations in arousal and reactivity (Cluster E) may have difficulties with ER. One explanation is that this may be due to the significant physiological concerns that are within Cluster E. Specifically, Cluster E symptoms include irritable outbursts, which may be directly related to difficulties with ER. Self-transgressions within MI are when an individual acts against their moral code. Previous research has found that killing and failing to prevent a death of a friend are two specific combat experiences that are frequently reported within MI. These experiences have been found to have stronger relationships with self-injurious thoughts and behaviors than other combat experiences, which may be a result of difficulties with ER. The current investigation provides additional empirical support to the idea that moral injury and PTSD are distinct, yet overlapping, constructs which warrant independent study.

M92. TRAJECTORIES OF ANTIDEPRESSANT USE BEFORE AND AFTER A SUICIDE ATTEMPT AMONG REFUGEES AND SWEDISH-BORN INDIVIDUALS

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Background: To identify key information regarding potential treatment differences in refugees and the host population, we aimed to investigate patterns (trajectories) of antidepressant use during three years before and after a suicide attempt in refugees, compared with Swedish-born. Associations of the identified trajectory groups with individual characteristics were also investigated.
Methods: All 20-64-years-old refugees and Swedish-born individuals having specialised healthcare for suicide attempt 2009-2015 (n=62,442, 5.6% refugees) were followed three years before and after the index attempt. Trajectories of annual defined daily doses (DDDs) of antidepressants were analysed using group-based trajectory models. Associations between the identified trajectory groups and different covariates were estimated by chi2-tests and multinomial logistic regression.
Results: Among the four identified trajectory groups, antidepressant use was constantly low (≤15 DDDs) for 64.9% of refugees. A 'low increasing' group comprised 5.9% of refugees (60-260 annual DDDs before and 510-685 DDDs after index attempt). Two other trajectory groups had constant use at medium (110-190 DDDs) and high (630-765 DDDs) levels (22.5% and 6.6% of refugees, respectively). Method of suicide attempt and any use of psychotropic drugs during the year before attempt discriminated between refugees' trajectory groups. The patterns

and composition of the trajectory groups and their association discriminated with different covariates were fairly similar among refugees and Swedish-born, with the exception of previous hypnotic and sedative drug use being more important in refugees.
Discussion: The diagnostic profile related to depressive and anxiety disorders typically treated with antidepressants did not considerably differ in refugee and Swedish-born suicide attempters. In general, patterns and characteristics of antidepressant drug use in these two groups were comparable, but somewhat fewer refugees than Swedish-born were prescribed antidepressants. This was also the case for anxiolytics, hypnotics and sedatives. Despite previous reports on refugees in the general population being considerably undertreated regarding psychiatric care, this study revealed some but not major differences in antidepressant treatment between refugees and Swedish-born individuals, three years before and after a suicide attempt.

M93. EXPOSURE TO SUICIDAL BEHAVIOUR AND ATTITUDES TOWARD SUICIDE IN LITHUANIAN MILITARY IN 2003 VS. 2020: PRELIMINARY RESULTS

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Background: The suicide problem is very acute in Lithuania, where the suicide rates are among the highest in the world. Men are at particularly high risk of suicidal behaviour, as their suicide rates in Lithuania are four to five times higher than those of women. Thus, the military, where the vast majority of soldiers are men, must pay serious attention to suicide prevention. In order to ensure the effectiveness of suicide prevention, it is essential to consider sociocultural context of a population. Understanding the attitudes toward suicide can inform suicide prevention research, practice, and policy. The aim of this study was to evaluate the exposure to suicidal behaviour and the attitudes towards suicide in the Lithuanian Armed Forces, and to assess the changes over time by comparing two samples of active duty soldiers surveyed in 2003 and 2020.
Methods: The total sample consisted of 719 active duty soldiers from the Lithuanian Armed Forces, of those 432, aged between 18-50 (M = 22.35, SD = 4.24), 98.64% male, were surveyed in 2003 and 277 soldiers, aged between 18-49 (M = 26.32, SD = 6.76), 90.97% male, surveyed in 2020. They all answered the questionnaire on Attitudes Toward Suicide ATTS (Renberg and Jacobsson, 2003), which also included questions about their own suicidal behaviour and the experience of suicidal behaviour among significant others (family members, other relatives, friends, colleagues). This project has received funding from European Social Fund (project No 09.3. 3-LMT-K-712-19-0163) under grant agreement with the Research Council of Lithuania (LMTLT).
Results: There were no significant differences in proportions of soldiers thinking of and/or planning suicide among study samples, but a significantly lower number of soldiers from the 2020 sample had at least one suicide attempt in their lifetime, compared to those from the 2003 sample (0.01% and 0.04% respectively). However, significantly more soldiers from the 2020 sample indicated at least some suicidal ideation (39.71% and 30.32% respectively), more suicidal attempts (45.48% and 37,78% respectively) and more suicides (43,57% and 35,76% respectively) among their social circle than soldiers from the 2003 sample. More suicidal ideation and suicidal attempts were indicated among family circles, but more suicides among friends, colleagues or more distant relatives. No gender effect was found. Soldiers from the 2020 sample indicated the possibility of taking their own lives as less likely, and they were significantly more in favour that all suicides should be prevented, yet saw suicide as less

acceptable, and showed significantly higher incomprehensibility/condemnation towards suicidal behaviour than soldiers from the 2003 sample. There were no differences in soldiers' preparedness to prevent suicidal behaviour. Again, no gender effect was found.
Discussion: Although suicide rates in Lithuania have significantly decreased over the two decades, the results of the study showed that nowadays soldiers are exposed to more suicidal behaviour among their social circle. Yet, it is possible that due to suicide prevention measures implemented in the military and nationally, soldiers are simply more alert to suicidal behaviour. Although soldiers today are more in favour that all suicides should be prevented, less accepting and more condemning attitudes toward suicide raises some concerns, as this might further stigmatize individuals considering suicide, limiting their perceived options for assistance and increasing suicide incidents. It was a preliminary study and more in-depth analysis is needed to fully understand the relationship between the attitudes toward suicide and suicidal behaviour in the Lithuanian military.

M94. ASSOCIATIONS BETWEEN SUICIDE RISK, PERCEIVED BURDEN, LIABILITY, AND SELF-HATE AMONG ADULT MEDICAL INPATIENTS

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Background: The interpersonal theory of suicide (ITS) has led to numerous studies testing the theory's propositions. The ITS posits that perceived burden, when co-occurring with thwarted belonging and a capability for suicide, leads to an ability to die by suicide. The theory characterizes perceived burden as feelings of liability ("I make things worse for the people in my life") and self-hate ("I hate myself" or "I am useless"). However, there is a lack of empirical support for this characterization. Previous research has shown that medically ill adults are at heightened risk for suicide and experience increased levels of perceived burden. Researching medically ill adults may shed light on the construct of perceived burden in relation to suicide risk, liability, and self-hate. This study aims to describe associations between suicide risk, perceived burden, liability, and self-hate.
Methods: This study is a sub-analysis of data from an instrument validation study of adult medical inpatients at four hospitals in the US. Participants completed 20 suicide risk screening candidate items, including the four items of the Ask Suicide-Screening Questions (ASQ). Additional candidate items included a modified item from the Interpersonal Needs Questionnaire (INQ) to assess perceived burden ("In the past few weeks, have you felt like a burden on others?") and items assessing feelings of liability and self-hate. A binary logistic regression model controlling for sociodemographic variables tested associations between the suicide risk screen outcome (operationalized as a binary positive or negative, as determined by responses to the ASQ items), perceived burden, liability, and self-hate. Pearson correlations were calculated for the associations between perceived burden and liability and self-hate.
Results: The sample consisted of 727 adult medical inpatients (53.4% male, 61.8% White, M[SD] age = 50.1[16.3] years). Fifteen percent (113/727) of patients screened positive for suicide risk on the ASQ and 33.0% (240/727) reported recent perceived burden. Increased perceived burden was significantly associated with screening positive on the ASQ (adjOR = 1.80, 95% CI = 1.06-3.06, p = .031). Increased feelings of being a liability (adjOR =2.54, 95% CI = 1.53-4.22, $p < .001$) and an increase in self-hate (adjOR = 6.16, 95% CI = 3.73-10.15, $p < .001$) were significantly associated with increased perceived burden, over and above ASQ

screening outcome (Nagelkerke r^2 = 0.254). In bivariate analyses, self-hate (r = 0.40, p < .01) and liability (r = 0.29, p < .01) were each significantly correlated with perceived burden.
Discussion: A third of medical patients in this sample reported recent feelings of perceived burden which was significantly associated with suicide risk. Of theoretical significance, perceptions of liability and self-hate were significantly associated with perceived burden while controlling for ASQ screening outcome, providing empirical support for the ITS's characterization of perceived burden. The use of dichotomous measurement and single items to assess several variables suggests that future research should replicate these findings. Based on the elevated rates of perceived burden in this sample of medically ill adults, perceived burden may be an important intervention target to test as a conduit to decrease suicide risk among this population. With greater numbers of individuals experiencing severe medical illnesses during the COVID-19 pandemic, there is likely to be an increased dependence on caregivers, which may lead to increased perceived burden. Given the strong associations between perceived burden and suicide risk, all medical patients should be screened for risk of suicide.

M95. ESTIMATED PREVALENCE AND RISK FACTORS ASSOCIATED WITH SUICIDAL IDEATION IN A SAMPLE OF SPANISH COLLEGE STUDENTS

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Background: Suicidal ideation is a phenomenon with a high prevalence among college students. Furthermore, evidence has shown a direct relationship between suicidal ideation and certain personality traits. The objective of this work is, first, to analyze the estimated prevalence of suicidal ideation in the Spanish university population and identify the psychological and personality variables that differentiate students who present suicidal ideation from those who do not and, second, to identify the most robust predictors of suicidal ideation in a sample of college students.
Methods: A total of 737 college students ranging from 18 to 30 years old (M age = 22.51, SD = 4.06)completed the evaluation using a cross-sectional design. A total of 405 were women (55%), and the rest (332) were men (45%).The items were administered through a mobile phone App called "MeMind". The psychological variables inof the present study were: suicidal ideation (PHQ-9), personality traits (BFI-10), cognitive reappraisal and emotional suppression (ERQ), positive and negative affect (PANAS), thwarted belongingness and perceived burdensomeness (INQ), hopelessness (BHS),and NSSI (ISAS).
Results: We found a 7.2% prevalence of suicide ideation in Spanish college students. Participants with suicidal ideation showed higher levels of neuroticism, emotional suppression, perceived burdensomeness, thwarted belongingness, negative affect, and intrapersonal NSSI, on the one hand, and, on the other hand, lower levels of extraversion, agreeableness, conscientiousness, openness, and positive affect. Of these variables, perceived burdensomeness, neuroticism, extraversion, conscientiousness, openness, emotional suppression, and intrapersonal NSSI were the factors most strongly associated with suicidal ideation.
Discussion: Our findings suggest the need to develop prevention and psychotherapeutic interventions for college students because we found differences in personality traits and psychopathological variables in students with suicide ideation compared to those without it.

Therefore, it is important to pay attention to the risk factors associated with suicidal ideation in order to prevent its occurrence and improve students' subjective well-being.

M96. SUICIDE PREVENTION: SAFETY PLANNING INTERVENTION FOR CHILDREN AND YOUNG PEOPLE: A SCOPING REVIEW OF EFFECTIVENESS

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Background: Safety Planning Interventions (SPI) is an important part of suicide prevention care in children and young people (CYP) within NHS Lothian CAMHS, however little evidence exists for SPI content or effectiveness. The aim of this literature review was to identify evidence to optimise SPIs used CAMHS suicide prevention work and to highlight evidence gaps for future research.
Methods: A systematic scoping review of the literature to map the extent, range and nature of the relevant literature, following the Joanna Briggs Institute methodology.
The literature search yielded 8793 publications; 6372 title and 357 abstract screening, leaving 72 for full text review. After applying exclusion criteria, 15 publications were available for data extraction.

Results: Family/career role is essential for SPI for CYP. There is limited evidence of effectiveness for CYP SPIs, with a complete evidence gap for some CYP sub-groups. Clinicians need to deliver a SPI that is collaborative, developmentally appropriate, and make enhanced considerations of parent/ carer roles. Bespoke training on SPI should be rolled out for relatively inexperienced clinicians.
Discussion: This review highlighted:
•the need for dedicated training for inexperienced clinicians;

•the parent/carer role is crucial;

•the SPI needs to be part of a care package, proportionate to CYP needs.

•The review informed the next research, which is to develop a training package and additional resources for parents/ carers to support them in looking after CYP.

•More research is required around SPI and CYP, particularly those from diverse, non-affluent or care-experienced backgrounds.

M97. MINORITY STRESS MODEL: INNOVATIVE THEORETICAL ADAPTATIONS TO ADVANCE RESEARCH ON SUICIDE DISPARITIES IN MINORITY GROUPS

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Background: A critical barrier to progress in the fields of suicide research and minority mental health disparities is the lack of appropriate conceptualization of at-risk groups. Past research fails to address the pitfalls of social identity classifications, posing challenges to the fidelity of research and intervention approaches to suicidality, predominantly among minorities.
Methods: There is a severe dearth of evidence-based research initiatives targeting suicide through an identity-based approach from which racial/ethnic minority groups may benefit, especially those who are stigmatized. Past evidence from minority stress theory suggests strong

associations between identity-based stigma and suicide. However, minority stress theory lacks an intersectional stigma perspective incorporating multiple minority identities. Adapting this theory to include intersectional stigma enhances its applicability to racial/ethnic minorities, many of whom identify with multiple stigmatized subgroups (e.g., sexual orientation, immigrant, faith). Moreover, merging the interpersonal theory of suicide to minority stress allows scientists to investigate the pathway of belongingness to suicide from an intersectional stigma perspective.
Results: This signifies a pressing research opportunity to uncover new insights on understanding suicide through an innovative theoretical framework with the purpose of better understanding belongingness as it relates to suicide from the complex perspective of intersectional stigma.
Discussion: The framework seeks to advance scientific knowledge on how individuals who identify with multiple subgroups experience stigmatization and negotiate belongingness such that it produces transferable insights to suicide-related outcomes across minority groups. Implications for shaping how researchers think about suicide disparities in minority groups, especially through a community-based social justice perspective, will be discussed.

M98. IMPROVING SURVEILLANCE AND UNCOVERING DISPARITIES IN MISCLASSIFICATION OF INTENTIONAL DRUG OVERDOSE: A NOVEL APPLICATION OF THE CASE-CASE STUDY DESIGN

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Background: The U.S. Surgeon General estimates that up to a third of unintentional or undetermined drug overdose deaths should actually be classified as suicide. Such misclassification may be more likely to occur in black, indigenous, and people of color (BIPOC) groups. BIPOC receive fewer mood diagnoses as white peers for the same symptoms. It is unknown whether coroners and examiners may have similar bias. However, without a gold standard, data correction cannot be easily validated because the true prevalence and distribution is unknown. Our study concentrates on the fact that misclassifications are invariably counted as unintentional or undetermined. Without other sources, the true number of overdose suicides cannot exceed the total of all classifications (intentional, unintentional, and undetermined). Our study objective is to estimate two measures of potential misclassified suicides for BIPOC relative to their white peers: First, the relative odds of overdose classification as nonintentional versus suicidal. Second, the relative odds of overdose sub-classification as unintentional versus undetermined.
Methods: Data came from a pre-existing linkage cohort that included 244,686 Veterans, where over 50,000 had transitioned from incarceration to the community between 2006-2018. We modeled a causal process by which variables might influence coroner/examiner determinations in overdose classification. These variables include age, sex, race, income, education, and incarceration history. Because our study is concerned with the estimation of differential classification for the same outcome, overdose death, we do not estimate predictors of overdose itself. Therefore, we used a variant of the case-control design that compares exposures across subtypes of the same outcome (known as a case-case design). We provide adjusted odds ratios with logistic regression. Moreover, in case-case designs, the derived population attributable fraction estimates the predictor ceiling effect size—in our study, this equals a group's max possible misclassification.
Results: Between 2006-2018, 1,888 overdose deaths were observed (Unintentional = 1631; Suicide = 159; Undetermined = 98). The odds of having an overdose death classified as

nonintentional versus suicide was 2.74 times greater for BIPOC compared to whites irrespective of incarceration history (OR: 2.74; 95%CI: 1.67-4.49). Among nonintentional classifications, the odds of subclassification as unintentional versus undetermined was 2.24 times greater for BIPOC with an incarceration history compared with never incarcerated whites (OR: 2.24; 90%CI: 1.01-5.01). We estimate a disparity of up to 17% greater burden of overdose misclassification for minorities (PAF: 0.17; 95% CI: 0.12-0.23). Other variables had no effect.
Discussion: Greater odds of non-suicidal versus suicidal classification among BIPOC, as well as greater odds of unintentional versus undetermined subclassification among formerly incarcerated BIPOC are both potentially consistent with a greater reluctance of coroners and examiners to 'diagnose' suicide in these groups. This idea is corroborated further by the fact these associations are not explained by demographic or socioeconomic factors in our model. Therefore, even if the true prevalence of overdose suicides is not known, the absolute ceiling figure is. This upper bound can inform surveillance by constraining variation in models, making estimates more accurate and precise.

M99. RACIAL IDENTITY PROFILES AS MODERATORS OF THE ASSOCIATION BETWEEN PERCEIVED RACIAL DISCRIMINATION AND SUICIDALITY AMONG BLACK YOUTH

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Background: Suicide is the third leading cause of death among Black adolescents. Indeed, between 2007-2017, suicide rates among Black youth have increased by nearly 90%, signaling an alarming public health problem in the U.S. In recognition of this troubling trend, scholars have taken effort to understand culturally relevant factors that may influence the severity of suicidal behaviors among Black youth. Racial discrimination and racial identity have been implicated as two specific cultural factors that may be related to suicidal behaviors. Despite this literature, these two cultural factors have yet to be considered in tandem, making it difficult to ascertain how they may conjointly influence suicidal behavior. Further, although racial identity represents a multidimensional construct, scholarship has yet to consider how different combinations of racial identity uniquely influence suicidal behavior. Anchored within Rutter's (1987) risk and resilience framework, the current study examines the associations among racial discrimination, racial identity, and suicidal behavior in a sample of Black youth. We hypothesized that (1) racial discrimination will be positively associated with suicidal behavior; (2) profiles of racial identity will be differentially associated with suicidal behavior; and (3) the link between racial discrimination and suicidal behavior will be moderated by racial identity profiles.
Methods: Data for the current study (n=1,170) were drawn from the National Survey of American Life Adolescent Supplement, a cross-sectional nationally representative survey of African American and Caribbean Black youth collected between 2001-2003. Key measures of racial identity, everyday racial discrimination, and lifetime suicidal ideation were assessed. We used latent profile analysis to (1) identify subgroups (e.g., profiles) of Black youth defined by characteristics of racial identity and (2) test whether the association between everyday discrimination and lifetime suicidal ideation is moderated by latent profiles. Descriptive statistics and latent analyses were performed using Stata v.15 and Mplus v.8, respectively.
Results: The mean age was 15 (SD = 1.42), and the age groups were categorized as follows: early (aged 13-14; N=477, 40%), middle (aged 15-16; N=441, 41%), and late (aged 17; N=252, 19%). Approximately, 96% of the sample was still enrolled in high school and 9th grade was

the average. Of our total sample, 8.3% (n=91) of Black adolescents in our sample reported suicidal ideation. Of this proportion, 22% (n=20) reported planning for suicide while 34.1% (n=31) reported an attempt. Latent profile analysis supported a 4-class solution. The second latent class (n=368, 31.6%) had significantly higher proportions of ideators (n=35, 38.5%), compared to the remaining three classes (22%, 13.2%, and 26.4% in profiles 1, 3, and 4 respectively). In unadjusted models, Black youth experiencing more frequent everyday racial discrimination have 1.12 higher odds of reporting suicidal ideation than those reporting fewer instances (95%CI: 1.06-1.18). Additional analysis will incorporate key covariates into an adjusted model and determine the moderating effect of racial identity profiles derived from this sample on the association between racial discrimination and lifetime ideation.
Discussion: Results from this study will build on existing knowledge exploring the influence of racial discrimination and suicide outcomes. We extend this evidence by clarifying the moderating role of identity formation among Black adolescents in this association. Findings will disentangle potential cultural pathways related to strengthening positive ethnic identity for future targeted interventions with Black American youth.

M100. A LONGITUDINAL ANALYSIS OF THE IMPACT OF DISCRIMINATION, INTERNALIZED HOMOPHOBIA, AND DEVELOPMENTAL TRAUMA ON TRAJECTORIES OF SUICIDALITY AMONG LGB ADULTS

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Background: Suicide disproportionately impacts sexual minorities, such as individuals identifying as lesbian, gay or bisexual (LGB). Research into LGB suicide disparities suggests that experiences of discrimination and internalized homophobia are often associated with suicidality in this group. However, there also exists strong evidence for the relationship between suicidality and developmental trauma, to which LGB populations are also disproportionately exposed. Sexual minorities are also more vulnerable to developing symptoms of traumatic stress following exposure to traumatic events, which is itself associated with increased risk of suicidality. Finally, little research has taken a longitudinal approach to exploring risk factors for suicidality among LGB populations. Therefore, the goal of this study was to examine the impact of various risk factors on trajectories of suicidality among LGB adults.
Methods: The Generations dataset (N=975), which involved collecting self-report survey data from LGB identifying adults in the US, was used in this study. Cumulative scores for lifetime and past-year suicidality were created by combining items for suicidal ideation, making a plan for suicide, and attempting suicide. A latent class growth analysis was then used to explore trajectories of suicidality, and scores for adverse childhood experiences (ACES), internalized homophobia, and external experiences of discrimination were included as predictors of class membership.
Results: A 3-class model was found to be the most parsimonious with good entropy (0.84) and was the most theoretically sound model. Results of mean intercept and slope for each class demonstrated three distinct trajectories of suicidality among participants: medium risk and decreasing (29.64%), medium risk and increasing (7.08%), lower risk and decreasing (63.28%). Higher total number of ACEs was significantly associated with increased odds of membership in Class 2 than Class 1 or Class 3. Internalized homophobia was associated with higher odds of membership in Class 1 or 2 than Class 3, but no significant difference was found between Classes 1 or 2. Discrimination was not significantly associated with increased odds of membership in any class.

Discussion: Consistent with existing literature, group membership was highest among the lowest risk group, which was characterized by experiencing lifetime (prior to wave 1) suicidal ideation and quickly decreasing suicidality. Individuals with higher ACES had were more likely to have a higher baseline and experience increased suicidality over time, indicating that developmental trauma may have a lasting impact on suicidality. By contrast, internalized homophobia was associated with a higher baseline, but did not significantly predict a decrease or increase in suicidality, indicating that internalized homophobia may have a short-term impact and other factors may influence suicidality over time. These findings may have important implications for addressing and preventing suicidality among LGB individuals and indicate that developmental trauma may more often have a lasting impact on suicidality than discrimination or internalized homophobia, factors that are often associated with suicidality among LGB individuals. Limitations and implications for future research will be discussed.

M101. WHY IS SUICIDE IDEATION MORE COMMON IN NON-HETEROSEXUAL ORIENTATIONS? THE POTENTIAL ROLES OF PSYCHOLOGICAL PAIN, HOPELESSNESS, AND CONNECTEDNESS

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Background: Suicide is a major public health concern and a leading cause of death worldwide, especially in young people. Sexual minorities are at an increased risk of suicide, with LGBTQ youth 5 to 6 times more likely to report suicide ideation and attempts relative to their heterosexual peers (Hirsch et al., 2017). Individuals who identify as sexual minorities experience higher rates of hopelessness and depression, which may in turn increase suicide risk (Fulginiti et al., 2021; Mustanski and Liu, 2013). Sexual minorities have also been found to report lower levels of social connectedness, which is a protective factor against suicide (Taliaferro and Muehlenkamp, 2017). Both research (O'Connor and Nock, 2014), and theory (Klonsky and May, 2015) suggest that pain, hopelessness, and connectedness play key roles in the development and intensity of suicide ideation (Klonsky and May, 2015). Because psychological pain, hopelessness, and disconnection are potentially elevated among those with minority sexual orientations, the present study examines whether these variables might help explain the relationship of sexual orientation to elevated suicide ideation.

Methods: Participants were 864 undergraduate students at the University of British Columbia (Age, M = 20.9, SD = 3.0; 48.3% East Asian; 77.5% female) oversampled for histories of suicide ideation and suicide attempts. Sexual orientation was dichotomized into heterosexual (n = 711) and non-heterosexual (n = 153; including gay, lesbian, bisexual, and "other" identities). Psychological pain was measured using three items from the Psychache Scale (Holden et al., 2001) validated in a previous study for the measurement of unbearable psychological pain (Pachkowski et al., 2019); hopelessness was measured using the Beck Hopelessness Scale (BHS; Beck et al., 1974); and disconnection was measured using the thwarted belongingness scale from the Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2012). Suicide ideation was assessed using the first five items of the Beck Scale for Suicide Ideation (BSI; Beck and Steer, 1991). Bootstrapping mediation analyses were done using Process in R (Model 4; Hayes, 2012).

Results: Sexual minority identity was positively correlated with suicide ideation ($r = .18$, $p < .01$), pain ($r = .08$, $p = .03$), hopelessness ($r = .11$, $p < .01$), and disconnection ($r = .10$, $p < .01$). Additionally, suicide ideation was associated with pain ($r = .55$, $p < .01$), hopelessness ($r = .54$, $p < .01$), and disconnection ($r = .50$, $p < .01$). We next examined the extent to which pain, hopelessness, and connectedness mediated the relationship between sexual orientation and

suicide ideation. Pain, hopelessness, and disconnection each partially mediated the association between sexual orientation and suicide ideation; specifically, pain accounted for 23.0% of the association, hopelessness 32.8%, and disconnection 28.8%. In parallel mediation, pain, hopelessness, and connectedness together partially mediated the association between sexual orientation and suicide ideation, accounting for 41.7% of the association.
Discussion: Resultssuggest that the relationship of sexual minority identity to suicide ideation might be most strongly explained by elevated hopelessness, followed by disconnection and psychological pain. Future research is needed to better understand the experiences that increase suicide risk in this vulnerable population, and to determine ways to reduce hopelessness, pain, and disconnection in this population. Additionally, research could improve diversity and inclusion by measuring sexual minority identity more precisely (i.e. distinguishing gay, lesbian, bisexual, pansexual, etc.), as well as including measurement of other aspects of sex and gender.

M102. DISENTANGLING THE LONGITUDINAL INFLUENCE OF RACIST EXPERIENCES ON SUICIDAL OUTCOMES AMONG BLACK YOUTH

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Background: Black youth experience increasingly higher rates of suicidal thoughts and behaviors. Rates of suicide death among Black youth have dramatically increased, particularly among adolescent and young adult Black males. A growing body of research on Black suicidal behavior has confirmed that many of the known suicide risk factors of their White counterparts are also important risk factors for Black youth, including mental disorders such as depression and substance abuse. Yet, emerging research has shown that racialized experiences, such as unfair treatment due to race, may be a critical, but understudied, mechanism through which suicidal thoughts and behaviors (STBs) are exacerbated among Black youth as they transition throughout the lifecourse. Moreover, the intermediary influence of motivational systems, such as behavioral inhibition and activation, is an important yet unexplored construct that may provide insights towards emotional reactivity associated with subsequent psychopathology. Thus, the purpose of this study is to investigate whether racialized, negative experiences occurring in the early lifecourse may longitudinally predict suicide outcomes. Moreover, due to the gendered and intersectional nature in which race-related experiences operate, we wish to determine whether there are gendered differences in observed pathways between Black boys and girls.
Methods: This study leverages a sample of predominately low-/middle-income Black participants (n=678) who were part of a randomized universal preventive trial in first grade (1993-95). Self-reported measures of perceived racism were captured beginning in adolescence through adulthood. Similarly, key measures of depressive symptoms, behavioral inhibition and activation were captured during adolescence. Suicide related outcomes include self-reported suicidal ideation and attempt and suicide death using National Death Index Data. A longitudinal structural equation model will be used to determine temporal associations between race-related experiences and subsequent suicide outcomes (ideation and death) including the indirect influence of behavioral inhibition and activation.
Results: We will demonstrate our proposed approach using longitudinal structural equation modeling. The relationship between interpersonal racism and suicidal behaviors will be

explored, along with whether behavioral inhibition and activation in 8th grade (baseline) mediate this relationship. We will present data disaggregated by gender and describe results in the context of growing rates of suicidal behavior among Black youth in recent years.
Discussion: The societal discourse surrounding racism as a public health issue is critically important for key childhood stages and subsequent psychopathology. Results from this study will clarify temporal pathways that will enhance our current understandings of suicide risk among Black youth and motivational pathways that may place them at increased risk of suicidal behavior. Moreover, findings will disentangle gendered pathways and outcomes related to suicidal behavior to potentially intervene in future targeted interventions with Black youth.

M103. BLACK WOMEN'S SUICIDE RISK FACTORS: THE INTEGRATED MOTIVATIONAL VOLITIONAL MODEL OF SUICIDE

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Background: Black women face increased risk for the development of suicide ideation due to factors such as racism (Spates, 2017; Perry et al., 2012). Data suggests that Black women's rates of suicide ideation has steadily increased over the years (Arshanapally et al., 2018; CDC, 2017; Spates, 2017). It is imperative that existing models of suicide widely used throughout suicide research are applicable to marginalized communities such as Black women. The Integrated Motivational Volitional model (IMV) was created to "synthesize and extend our knowledge of the complex nature of suicide" (O'Connor, 2011b, p. 295). The Motivational phase, the core phase, posits that the concepts of defeat/humiliation and entrapment are the driving forces of suicide ideation into suicide behavior. The Motivational phase may be beneficial to examining suicide ideation for Black women, as previous studies have identified experiences of racism, (i.e., being rejected due to one's race) may be humiliating and cause feelings of frustration and defeat (Brooms and Perry, 2016). Racially marginalized people experience a distinct form of rejection sensitivity that forms via anxious expectations of social rejection or being discriminated against based upon their race (racial rejection sensitivity). Black women may experience racial rejection sensitivity due to historical inequities, injustices, and oppression experienced by the Black community.
Methods: The aim of the current study was to examine the relationships between defeat, entrapment, race-based rejection sensitivity, and suicide ideation in Black women. In line with previous studies that have examined the IMV model, hypotheses included 1) a direct relationship between defeat and suicide ideation, 2) and a mediated relationship of defeat and suicide ideation explained through entrapment. Additionally, it was hypothesized that racial rejection sensitivity would moderate the relationship between defeat and entrapment. A moderated mediation analysis was conducted to examine the stated hypotheses. Participants consisted of a national sample of 270 Black women. Participants completed measures online including the defeat scale, entrapment scale, depressive symptom inventory-suicidality subscale, and the racial rejection sensitivity questionnaire.
Results: Results indicated a significant direct effect of defeat on suicide ideation ($\beta = .9088$, SE = .0456, 95% BC [.8191, .9985]). Results of the moderated mediation also indicated that entrapment significantly mediated the relationship between defeat and suicide ideation ($\beta = .0423$, SE = .0122, 95% BC [.0200, .0673]). However, racial rejection sensitivity did not significantly moderate the relationship between defeat and entrapment.
Discussion: This is the first study to investigate the IMV model in Black women. Collectively, the results indicated that the relationship between high feelings of defeat and thoughts of suicide ideation are explained through high feelings of entrapment for Black women. The

intersectionality of Black women's experiences may contribute to feelings of defeat and entrapment. Evidenced by sociopolitical factors such as unequal pay and gendered racism, Black women are constantly working to rise in social status while constantly being denied equity. The current study advances mental health equity and suicide research by adding to the scant research conducted on risk factors for suicide in Black women. Further theoretical and clinical implications are discussed.

M104. CUMULATIVE MINORITY STRESS AND SUICIDE RISK AMONG LGBTQ YOUTH

Amy Green*[1], Myeshia Price-Feeney[1]

[1]The Trevor Project

Background: Lesbian, gay, bisexual, transgender, queer, and questioning (LGBTQ) youth are at significantly greater risk for attempting suicide compared to their non-LGBTQ peers. LGBTQ youth are faced with navigating their sexuality and gender identities, including disclosure to others and fears of rejection and victimization based on their LGBTQ identity, in addition to the general stressors of adolescent development. The Minority Stress Model suggests processes that occur along a continuum of distal stressors (i.e., external stressful events and conditions) to proximal stressors (i.e., the internalization of negative messages and experiences) that impact the mental health and suicide risk of LGBTQ individuals. Minority stress among LGBTQ youth is most often examined in ways that prioritize the unique influence of minority stress experiences, despite a large body of research indicating that suicide risk is cumulative. This study focuses on both the unique and cumulative influence that minority stress experiences have on LGBTQ youth suicide risk.

Methods: Data were from an online quantitative cross-sectional survey conducted between December, 2019 and March, 2020. LGBTQ youth ages 13–24 who resided in the United States were recruited via targeted ads on Facebook and Instagram. The final analytic sample consisted of 39,126 LGBTQ youth. Minority stress experiences included: housing instability due to LGBTQ identity, perceived discrimination due to LGBTQ identity, physical harm or threats due to LGBTQ identity, and LGBTQ identity change attempts from caregivers. Adjusted logistic regression models were performed to determine the associations of each individual experience and a cumulative risk score with a past-year suicide attempt. Analyses also examined differences by race/ethnicity, sexual orientation, and gender identity.

Results: Overall, 30% of the sample reported zero minority stress risk factors, 29% reported one, 24% reported two, 13% reported three, and 5% reported experiencing each of the four LGBTQ-based minority stress experiences. Across identities, 14% reported attempting suicide in the past year. Each of the four minority stress experiences was associated with a significantly higher adjusted odds of a past-year suicide attempt ranging from approximately 1.3 times adjusted odds (aOR = 1.32, $p<.001$) for having a parent or caregiver attempt to convince a youth to change their sexual orientation or gender identity to more than 2.3 times adjusted odds for experiencing housing instability due to one's LGBTQ identity (aOR=2.39, $p<.001$). Youth who reported all four types of minority stress had over 11 times greater odds (aOR=11.60, $p<.001$) of attempting suicide compared to those who reported none. Transgender and nonbinary youth (aOR=2.55-aOR=4.83, $p<.001$)and American Indian/Alaskan Native youth (aOR=1.87, $p<.001$) had significantly higher odds of reporting three or more minority stress experiences.

Discussion: Exposure to a greater number of minority stress risk factors resulted in significantly greater odds of experiencing a past-year suicide attempt among LGBTQ youth. Although each individual minority stress experience was significantly associated with suicide

risk, experiencing any two minority stress experiences was more strongly associated with suicide risk than any one of the unique factors. Findings suggest the need for a comprehensive approach towards addressing suicide risk among LGBTQ youth. Minority stress must be addressed through policies that explicitly prohibit identity-based discrimination and victimization and programs that provide support to families, schools, and communities on the need to affirm the identities of LGBTQ youth to reduce suicide risk.

Tuesday, October 26, 2021

1:45 PM – 2:45 PM

T1. SUICIDAL PHENOTYPES IN USA VETERANS: LATENT PROFILE ANALYSIS OF DATA FROM THE MILLION VETERAN PROJECT DISCOVERS PROFILES ASSOCIATED WITH DYSREGULATED SLEEP

Hanga Galfalvy*[1], Shengnan Sun[2], Andrew Bean[3], Fatemeh Haghighi[4], VA Million Veteran Program[5]

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Background: Suicidal behavior and ideation are complex phenotypes, with multiple hypothesized causal pathways and risk factors, among them depression and disordered sleep. We used the Mental Health Survey from the Million Veteran Project (MVP) to phenotype a large veteran sample reporting suicidal ideation based on ideation trajectories as well as depression severity and sleep problems, deriving distinct profiles, some of them enriched in sleep related diagnoses.

Methods: Sample consisted of the subset of veterans from the MVP project who had suicide ideation score on the PHQ I9 for at one timepoints (n= 240,934). We used Latent Profile Analysis (LPA) on those with at least 2 timepoints to create 4 highly reproducible subtypes based on PHQ-measured ideation, depression and sleep/fatigue trajectories. Reproducibility of the subtypes was measured by calculating the In Group Proportion (IGP) on a test sample separately from the training sample. ICD 10 diagnoses of suicide attempt (SA), intentional self-harm (SH), and suicidal ideations (SI), as well as diagnoses of insomnia and sleep apnea, were compared among subtypes and to non-suicidal veterans using chi-square tests, followed by post-hoc pairwise comparisons. Genetic comparison of subtypes is a work in progress.

Results: In the MVP sample, 4 suicidal ideator subtypes were derived with LPA based on the self-reported PHQ9 ideation item trajectories, including a mild, moderate with sleep and mood problems, variable and high persistent ideator subtype. Reproducibility of each subtype was over 97%. All suicidal subtypes were significantly more likely to have sleep-related ICD diagnoses than veterans not reporting suicidal ideation ($p<0.0001$), with two subtypes (high persistent and moderate with mood and sleep problems) having odds ratios over 1.5 for both insomnia and apnea when compared against non-ideator veterans. Significant sleep diagnosis-related differences among the subtypes were between the mild ideators and each of the other three subtypes. While mild ideators and moderate ideators with sleep problems did not differ on rates of ICD diagnoses of suicidal ideation, or intentional self-harm (Chisq=0.75, df=2, $p=0.689$), the latter group was significantly more likely to have sleep related diagnoses (apnea: OR=1.32, 95%CI: 1.25-1.39, $p<0.0001$; insomnia: OR=1.25, 95%CI: 1.16-1.35, $p<0.0001$).

Subtypes higher in sleep disturbances also showed higher rates of inflammatory disorder diagnoses ($p<0.003$ for all).

Discussion: We found that all suicidal subtypes had higher rates of sleep disorders than non-ideators, and the rates were highest among those veterans showing higher or more frequent ideation. Furthermore, we identified distinct and reproducible subtypes, some of them with comparable rates of ideation and suicidal behavior diagnoses, but different rates of sleep disorders and overall depression levels and immune-related disorders, raising the possibility of different biological pathways to suicide risk, which may have implications for the treatment of suicidal behavior.

T2. SYSTEMIC INFLAMMATION POSITIVELY CORRELATES WITH HIGH SUICIDE IDEATION IN BLOOD AND CNS

qingkun liu[1], Shengnan Sun[2], Zhaoyu Wang[2], Yongchao Ge[1], Yungyu Huang[3], Elizabeth Sublette[3], Victoria Arango[3], Gorazd Rosoklija[3], Andrew Dwork[3], Barbara Stanley[3], Hanga Galfalvy[3], J. John Mann[3], Fatemeh Haghighi[2], Shengnan Sun*[2]

[1]Icahn School of Medicine At Mount Sinai, [2]Icahn School of Medicine At Mount Sinai, James J. Peters Veterans Affairs Medical Center, [3]Columbia University

Background: Accumulating evidence shows association between nervous system and peripheral inflammation in suicide. Using whole genome transcriptional analysis via weighted gene co-expression network analysis, we investigate the association between coordinated gene expression clusters and suicidal ideation cross-sectionally.

Methods: Participants with diagnosis of Major Depressive Disorder (MDD, n=50, 58% female), MDD with suicide attempt history (MDD/SA, n=23, 65% female), and non-psychiatric non-attempter controls (NPC, n= 27, 59% female) were recruited. Participants with high suicidal ideation (high-SI) were identified based on their scores on the Scale for Suicidal Ideation (SSI, SSI ≥5, n=46), and the non-ideators (no-SI, SSI=0, n=46), irrespective of their diagnostic status. Venous blood samples were collected in PaxGene Blood RNA tubes for genomic analyses on total RNA. Blood gene expression network analysis on RNA-seq data were conducted on all samples. To test for association of specific gene networks/modules with clinical measures, sum test or Spearman correlation was performed on the eigengene (1st principal component) for high vs no suicide ideation and ideation severity analyses with statistical significance set at $p < 0.05$. In addition to blood samples, postmortem brain samples were obtained from New York State Psychiatric Institute and Columbia University. Whole genome transcriptome data from ventral white matter of postmortem brain were used for cross comparison with peripheral blood transcriptome data. For the postmortem samples, suicide decedents had a lifetime diagnosis of MDD established by psychological autopsy, while sudden death controls had no history of psychiatric disorders. Data from both gray (dorsal prefrontal cortex) and white (ventral prefrontal cortex) were examined. The grey matter dataset included 29 sudden death controls without psychiatric diagnosis (21% females) and 21 suicide decedents (38% females), and the white matter dataset included 9 sudden death controls without psychiatric diagnosis (33% females) and 15 suicide decedents (33% females) with age ranging from 13 to 83 years old.

Results: Gene expression network analysis on blood samples revealed total 18 modules from 5 un-nested clusters associated with high suicidal ideation (SSI ≥5) vs. no ideation (SSI = 0) transdiagnostically. These modules were then examined in postmortem gray and white matter to determine the association between the modules and suicidal ideation. In white matter, small to medium effect sizes were detected for all 18 high-SI associated modules (minimum d=-

0.36), while in the gray matter, no significant group differences were detected. Gene ontology analyses on these five clusters were then performed to delineate the functional importance of these clusters using Ingenuity Pathway Analysis software (IPA, Qiagen). Of note, four of these clusters were enriched in genes involved in immune responses such as microbe infection defense, adaptive immune and autoimmune responses (e.g., Toll like receptors, NF-κB, TREM1 signaling, Th17 Activation Pathway and FAS signaling). The only metabolism-enriched cluster, although dominated by genes with metabolism functions on fatty acids, protein and lipids, is also composed of multiple genes with immune responses including antivirus responses, innate and adaptive communication and trafficking of leukocytes.
Discussion: Gene network analyses indicates that in peripheral blood, high ideators show induced inflammatory signatures of innate and adaptive immune responses such as pathogen recognition and activation of proinflammatory signals, which is also reflected in the CNS and specifically in white matter postmortem brain specimens from suicide decedents.

T3. IMPACT OF SOCIAL DISPARITIES ON RISK FACTORS FOR SUICIDAL IDEATION AND SUICIDE ATTEMPT AMONG COMMERCIALLY INSURED YOUTH AND ADULTS IN THE U.S.

Wenna Xi*[1], Samprit Banerjee[1], George Alexopoulos[1], Jyotishman Pathak[1]

[1]Weill Cornell Medical College

Background: To study the role of social disparities on the effect of risk factors on suicidal ideation (SI) and suicide attempt (SA) among commercially insured youth and adults in the US.
Methods: A national level retrospective cohort study was conducted using health insurance claims data from four major insurance companies in the US. The cohort was defined by patients having a mental health or substance use disorder (MH/SUD) related outpatient encounter (index encounter). We used Cox proportional hazards models to evaluate the impact of social disparities on the effect of risk factors on patients' future SI and SA. Risk factors considered in the models consist of a mix of long-, mid-, and short-term prior comorbidities and prescriptions that are identified as important factors for predicting SA by Simon et al. 2018. Social disparities were summarized by the social deprivation index (SDI) at patients' zip code level, and then categorized into five quintiles; higher SDI quintiles indicated higher levels of social deprivation. Patients were censored if they did not have an SI or SA diagnosis before 9/30/2015 (ICD-9 to ICD-10 switch date) or until the last day of the insurance plan enrollment, whichever came first.
Results: Between 2014-2015, we identified 317,383 patients <65 years old with an index encounter. Among them, 124,424 aged <25 (youth and young adults; hereinafter youth) and 192,959 aged between 25-64 (other adults; hereinafter adults). Prevalences of SI and SA were both higher in youth (7.09% and 1.86%, respectively, vs. 3.00% and 0.79% in adults). Survival analysis showed that SDI impacted the behaviors of SI and SA differently for youth and adults. Among youth, SDI impacted the effects of risk factors for both SI and SA after controlling for demographic variables. For SI, SDI impacted the effects of age, alcohol use disorder diagnosis in the past 3 years, SA in the past year, and MH emergency department (ED) visits in the past 3 months. Overall, the effect of age on SI decreased as SDI quintile increased. Alcohol use disorder diagnosis in the past 3 years had a positive impact on SI for patients from neighborhoods in the 2nd SDI quintile (HR=1.25). SA in the past year had a negative impact on SI for patients from neighborhoods in the 3rd SDI quintile (HR=0.55). MH ED visits in the past 3 months had a positive impact on SI for patients from neighborhoods in the 2nd and 4th SDI quintiles (HR=1.30 and 1.63, respectively). For SA, SDI impacted the effects of SA in the

past 3 years, SA and schizophrenia in the past 3 years, MH ED visits in the past year, and Benzodiazepine prescription in the past 3 months. Overall, the effect of SA in the past 3 years on SA increased as SDI increased. SA and schizophrenia in the past 3 years had a positive impact on SA for patients from neighborhoods in the 2nd SDI quintile (HR=3.09). MH ED visits in the past year had a positive impact on SA for patients from neighborhoods of 1st SDI quintile (HR=1.60). Benzodiazepine prescription in the past 3 months had a positive impact on SA for patients from neighborhoods in the 2nd SDI quintile (HR=1.91). Among adults, patients in poorer neighborhoods were positively associated with having SI (HRs=1.09, 1.13, 1.19, and 1.25 for SDI quintiles 2nd, 3rd, 4th, 5th vs. 1st), however having SA was not affected by the social deprivation level of patients' neighborhoods (p=0.21).
Discussion: Among commercially insured patients in the US, youth had higher prevalences of SI and SA when compared to adults. Neighborhood level social disparities impacted the behaviors of SI and SA differently for youth and adults. Among youth, social disparities nonlinearly impacted the effects of risk factors for both SI and SA. Among adults, social disparities were significantly associated with SI, but not with SA.

T4. CLINICAL MANAGEMENT AND MORTALITY RISK IN THOSE WITH EATING DISORDERS AND SELF-HARM: E-COHORTSTUDY USING THE SAIL DATABANK

Ann John[1], Amanda Marchant*[1], Joanne Demmler[1], Jacinta Tan[1], Marcos DelPozo-Banos[1]

[1]Swansea University Medical School

Background: Individuals with eating disorders who self-harm are a vulnerable
group characterised by greater pathology and poorer outcomes. Aims: To explore healthcare utilisation and mortality in those with a record of: self-harm only; eating disorders only; and both co-occurring.

Methods: We conducted a retrospective whole population e-cohort study
of individuals aged 10–64 years from 2003 to 2016. Individuals were divided into: record of self-harm only; eating disorders only; both self-harm and eating disorders; and no record of self-harm

or eating disorders. We used linked routinely collected healthcare data across primary care, emergency departments, hospital admissions and out-patient appointments to examine healthcare contacts and mortality

Results: We identified 82 627 individuals: n = 75 165 with self-harm only;
n = 5786 with eating disorders only; n = 1676 with both combined. Across all groups and settings significantly more individuals attended with significantly more contacts than the rest of the population. The combined group had the highest number

of contacts per person (general practitioner, incident rate ratio

IRR = 3.3, 95% CI 3.1–3.5; emergency department, IRR = 5.2, 95%

CI 4.7–5.8; hospital admission, IRR = 5.2, 95% CI 4.5–6.0; outpatients, IRR = 3.9, 95% CI 3.5–4.4). Standardised mortality ratios showed the highest excess mortality overall in the self-harm only

group (SMR = 3.2, 95% CI 3.1–3.3), particularly for unnatural

causes of death (SMR = 17.1, 95% CI 16.3–17.9). SMRs and years

of life lost showed an increased risk of mortality in younger age

groups in the combined group. Adjusted hazard ratios showed
increased mortality across all groups (self-harm only, HR = 5.3,
95% CI 5.2–5.5; eating disorders only, HR = 4.1, 95% CI 3.4–4.9;
combined group, HR = 6.8, 95% CI 5.4–8.6).

Discussion: Individuals in all groups had higher healthcare service utilisation
than the general population. The increased mortality risk in young people with a record of both eating disorders and selfharm highlights the need for early specialist intervention and enhanced support.

T5. SUICIDES AMONG PEOPLE DIAGNOSED WITH PERSONALITY DISORDERS IN CONTACT WITH MENTAL HEALTH SERVICES: A NATIONAL REGISTRY STUDY 2008 – 2018

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Background: Suicide is a rare event even in high-risk groups such as people with personality disorders. The availability of large national patient registries offers unique opportunities to study rare, but important, outcomes, but to the best of our knowledge, no previous national registry study has been conducted to explore details of what mental health care patients with personality disorders have received in the time before their suicide. The aims of this study were to: 1) describe service contact in patients diagnosed with personality disorders who died by suicide during contact with services or in the first 12 months after contact and to 2) compare suicide among people with borderline personality disorder (BPD) with suicide in people with other personality disorders (OPD).

Methods: A nationwide case series based on a registry-linkage between the Norwegian Patient Registry and the Cause of Death registry in Norway 2008-2018. All persons who died by suicide within 12 months after contact with adult mental health services, substance misuse services or psychiatrists or psychologists in private practice were included if they had received a personality disorder diagnosis (F60.0-F61) at least once last year. We gathered information on characteristics and treatment contacts, which was then compared between people with a borderline personality disorders and other personality disorders.

Results: Among 2 716 persons who were in contact with services less than 12 months before suicide between 2008 – 2018, 309 patients (11.4 %) were diagnosed with a personality disorder (PD) last year. Mean age was 39.7 years with no significant gender differences. The most common PDs were borderline (45.0%), and avoidant PD (9.7 %) with 19.4% labelled as unspecified PD. Women had more Cluster B disorders due to a high number of BPD. Men had more cluster A and C PDs as well as unspecified PD ($p>0.01$).

Compared to persons who died by suicide with OPD, those with BPD were more often female ($p < 0.001$) younger ($p < 0.001$), died by poisoning ($p < 0.001$) and had more substance use disorders and anxiety disorders as comorbid conditions ($p < 0.001$). More BPD patients had been hospitalized for deliberate self-harm in the last year ($p < 0.01$). The OPD group had more affective disorder comorbidity ($p < 0.001$). More than 95 % of subjects in both groups had been in contact with mental health services during the last year, but BPD patients had used more substance misuse services ($p < 0.01$). BPD patients also had more outpatient visits, but both groups had relatively few such contacts (median 16.5 vs. 11, $p < 0.01$). More than 80 % of

subjects in both groups had had at least one inpatient stay, but BPD had more admissions (median 3 vs 2, $p < 0.01$).

Discussion: Among persons who were in contact with mental health, substance misuse services and private practitioners before suicide, fewer than expected were diagnosed with a personality disorder in the last year before suicide. This suggests an underdiagnosis of personality disorder among persons who die by suicide after contact with services. As expected, BPD was most common among females, but the findings of high numbers of suicide in cluster C and unspecified personality disorders among males are clinically important. There were important effects of gender both on type of diagnosis and on type and amount of treatment received. The high frequency of inpatient admissions in both groups is striking, and might possibly be explained by the fact that persons with PDs who die in relation to care consist a more severe subsample of all patients with PDs. Still, the low median number of outpatient contacts is striking, and points to a possible under-treatment of this group.

T6. FACTORS ASSOCIATED WITH SUICIDE RISK IN ADOLESCENT PSYCHIATRIC INPATIENTS

Christopher McGovern*[1], James Overholser[1], Sidney Brannam[1]

[1]Case Western Reserve University

Background: Adolescence is an age of turmoil, with many factors influencing mood and suicide risk. Many adolescents are vulnerable to periods of depression that can reach suicidal levels. Symptoms of acute emotional distress commonly precede a suicidal crisis, but negative views of self may provide a more long-standing risk factor. Low levels of self-esteem have been found related to higher levels of depression (Fiorilli et al, 2019), nonsuicidal self-injury (Forrester et al, 2017), suicidal ideation (Reid-Russell et al, 2021) and suicide attempts (Wild et al, 2004). The present study was designed to examine adolescent views of self as related to measures of depression severity and suicide risk.

Methods: Participants: A total of 90 adolescent psychiatric inpatients (46 males, 44 females) were evaluated while hospitalized during a major depressive episode. Among this sample, 40 patients reported both current suicidal ideation and a prior suicide attempt. A different group of 29 depressed patients reported no current suicidal ideation and no prior suicide attempt. Another 10 who reported current suicidal ideation without any attempt, and 11 who reported a prior suicide attempt but no current suicidal ideation.

Measures: Patients completed a battery of psychiatric measures, including the Children's Depression Inventory (Kovacs, 1984), the Hopelessness Scale for Children (Kazdin, 1987), the Rutgers Alcohol Problem Index (White and Labouvie, 1989), and the Rosenberg Self-Esteem Scale (Rosenberg, 1965). Finally, participants completed a novel tool for evaluating self-esteem from the individual's perspective. The Self-Esteem Worksheet (Overholser, 1993) is an idiographic measure that allows each person to evaluate domains compatible with their personal values and priorities, identifying several key aspects of their life that influence their view of self. Patients rate each life domain for its importance (defined as the central role it plays in defining the value of a person) and their self-perceived success in each area (defined as their ability reach their own self-imposed goals in that area). Scores are calculated by multiplying importance by success in each area, summing across the various life domains.

Results: Across the entire sample, lower scores on the self-esteem worksheet were associated with higher levels of depression ($r = -.39$, $p < .001$), hopelessness ($r = -.43$, $p < .001$), and the presence of suicidal thoughts ($r = -.25$, $p < .02$). Further, scores on the Self-Esteem Worksheet

were significantly associated with the Rosenberg Self-Esteem Scale ($r = .51$, $p < .001$) but not associated with tendencies for alcohol abuse ($r = -.07$, ns).
When the sample with classified into 40 depressed suicidal teens as compared to the 29 depressed nonsuicidal adolescent inpatients, results revealed that suicidal adolescents reported significantly higher levels of depression ($t = 4.73$, $p < .001$), elevated hopelessness scores ($t = 4.24$, $p < .001$). Lower levels of self-esteem were found on the Rosenberg Self-Esteem Scale ($t = 5.14$, $p < .001$) and the Self-Esteem Worksheet ($t=1.89$, $p = .06$). Additional analyses are underway to examine specific components of self-esteem that may be relevant to suicide risk.

Discussion: Adolescence is a vulnerable period when a person's view of self becomes crystalized. It is important for health care professionals to be responsive to events that can shape a vulnerable teen's view of self. Depression and hopelessness serve as important proximal risk factors that reflect the acute distress often associated with a suicidal crisis, but it seems likely that low self-esteem may provide a more characterological risk factor that could remain present over long periods of time (Trzesniewski et al, 2003).

T7. THE CONSTRUCTION OF MEANING IN SURVIVORS OF DEATH BY SUICIDE OF A LOVED ONE

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Background: Until now, research has focused on studying the risk and protective factors surrounding the person who has attempted suicide. However, few investigations have focused on the relatives dealing with the loss of a loved one by suicide.
Methods: We conducted semi-structured personal interviews exploring the process of constructing meaning from loss after death by suicide of their loved one. This is a cross-sectional and descriptive study. A qualitative analysis of the content of the interviews was carried out through categories from both an inductive and deductive perspective. We focused on the analysis of components of the codes from the "meaning of loss codebook" for the construction of meaning after loss by suicide, following the proposal of Neimeyer (2010).
Results: The results of this study show that the survivors evoked many issues related to the negative effects of grief. These negative effects were found to be associated with the stigma surrounding this type of death, which was the reason the survivors had trouble finding a place to express their emotions, thoughts, and feelings related to their loss. This could be associated with a complicated grieving process. Likewise, participants' personal growth during the grieving process was observed, associated with greater strength, maturity, change in priorities, and responsibility. Moreover, the survivors reported feeling more altruistic, sensitive, empathetic, and willing to help others as a result of the process of loss.
Discussion: The participants' discourse indicated that associations were important in their ability to express themselves and share, as well as in reducing stigma. In addition, participation in these associations was associated with personal growth.

T8. FINE-GRAIN ANALYSES OF SUICIDE IDEATION IN YOUTH WITH BIPOLAR DISORDER VERSES MAJOR DEPRESSIVE DISORDER

Rebekah Huber*[1], Danielle Boxer[1], Perry Renshaw[1], Deborah Yurgelun-Todd[1], Douglas Kondo[1]

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Background: Bipolar disorder (BD) is associated with significant suicide risk, especially during adolescence. Rates of suicide attempts (SA) are over 50 times higher in adolescents with BD than in the general population (Tondo et al., 2021) and twice that associated with major depressive disorder (MDD). Moreover, the ratio of attempts/suicides is also lower indicating that individuals with BD attempt suicide with greater intent to die or use violent methods with greater lethality (Tondo et al., 2021). A recent study of SA in BD compared to MDD showed a higher frequency of SA in BD and the effects remained after accounting for severity of illness (Michaels et al., 2018). There is a critical need to better understand factors underlying the increased suicide risk for youth with BD in order to implement targeted prevention efforts. Fine-grained assessment of suicide ideation (SI) in adolescents has revealed that frequency of SI was related to future SA (Miranda et al., 2014). However, SI associated with SA has not been well characterized in BD. The purpose of this study was to examine whether there are differences in characteristics of SI in youth with BD compared to youth with MDD that may be associated with increased suicide risk in BD.
Methods: One-hundred fifty-one participants (92 MDD and 59 BD), ages 13 to 21, completed a diagnostic interview and clinical assessments. Lifetime symptoms of SI and SA were assessed using the Columbia Suicide Severity Rating Scale. Fifty-seven participants (34 MDD and 23 BD) had a history of SA, 77 (47 MDD and 30 BD) reported a history of SI without SA, and 17 (11 MDD and 6 BD) did not report a history of any SI or SA. To evaluate whether there were differences in SI between groups, we examined the intensity (frequency, duration, controllability, deterrents) of the most severe or most common SI using Mann-Whitney U tests.
Results: BD youth reported more severe SI than MDD youth, $p=0.037$, $r=0.17$. Participant groups also differed significantly in the frequency of the most severe SI, $p=0.001$, $r=0.28$, indicating that BD youth reported experiencing the most severe SI more frequently than MDD youth. In addition, BD participants reported having less control of the most severe SI than MDD participants, $p=0.028$, $r=0.19$. Participant groups also differed significantly in the deterrents for the most severe SI, $p=0.006$, $r=0.23$ and the most common SI, $p=0.002$, $r=0.29$. Compared to MDD youth, BD youth reported deterrents were less likely to stop them from acting on the most severe and the most common SI. There were no significant differences between MDD and BD groups for frequency, duration, controllability, or reasons for most common SI. In addition, there were no significant differences between MDD and BD groups for duration or reasons for most severe SI.
Discussion: To our knowledge, this is the first study to examine SI characteristics between youth with MDD and BD. These findings highlight the differences in the severity and intensity of SI experienced by youth with BD and suggest that youth with BD may have more difficulty in ignoring or controlling thoughts of SI which may lead to less resistance to acting on those thoughts. Given that approximately 2.9% of adolescents in the US have BD (Merikangas et al., 2010) and more than 50% do not receive treatment for depression or hypomania (Goldstein et al., 2016), these findings underscore the need for more detailed assessment of SI in youth with BD to better understand SI as proximal risk factor for future SA and a potential target for intervention.

T9. CHILDHOOD EXTERNALIZING, INTERNALIZING AND COMORBID PROBLEMS: DISTINGUISHING YOUNG ADULTS WHO THINK ABOUT SUICIDE FROM THOSE WHO ATTEMPT SUICIDE

Melissa Commisso*[1], Caroline Themcheff[1], Massimiliano Orri[1], Martine Poirier[2], Marianne Lau[1], Sylvana Côté[3], Frank Vitaro[3], Gustavo Turecki[1], Richard E Tremblay[3], Marie-Claude Geoffroy[1]

[1]McGill University, [2]University of Rimouski, [3]Université de Montréal

Background: While childhood externalizing, internalizing and comorbid problems have been associated with suicidal risk, little is known about their specific associations with suicidal ideation and attempts. We examined associations between childhood externalizing, internalizing and comorbid problems and suicidal ideation (without attempts) and attempts by early adulthood, in males and females.
Methods: Participants were from the Quebec Longitudinal Study of Kindergarten Children, a population-based study of kindergarteners in Quebec from 1986-1988 and followed-up until 2005. We captured the co-development of teacher-rated externalizing and internalizing problems at age 6-12 using multitrajectories. Using the Diagnostic Interview Schedule administered at age 15 and 22, we identified individuals (1) who never experienced suicidal ideation/attempts, (2) experienced suicidal ideation but never attempted suicide and (3) attempted suicide.
Results: The identified profiles were no/low problems (45%), externalizing (29%), internalizing (11%) and comorbid problems (13%). After adjusting for socioeconomic and familial characteristics, children with externalizing (OR=2.00, CI=1.39-2.88), internalizing (OR=2.34, CI=1.51-3.64) and comorbid (OR=3.29, CI=2.05-5.29) problems were at higher risk of attempting suicide (vs non-suicidal) by age 22 than those with low/no problems. Females with comorbid problems were at higher risk of attempting suicide than females with one problem. Childhood problems were not associated with suicidal ideation. Externalizing (OR=2.01, CI=1.29-3.12) and comorbid problems (OR=2.28, CI=1.29-4.03) distinguished individuals who attempted suicide from those who thought about suicide without attempting.
Discussion: Childhood externalizing problems alone or combined with internalizing problems were associated with suicide attempts, but not ideation (without attempts), suggesting that these problems confer a specific risk for suicide attempts. In the same line, externalizing problems alone or in co-occurrence with internalizing problems were associated with elevated risk of suicide attempts. These results provide support for the ideation to action framework suggesting that specific risk factors could distinguish individuals with suicide ideation (but who do not attempt suicide) from those who engage in suicide attempt.

T10. EXAMINATION OF RISKS FOR SUICIDAL BEHAVIOR IN CHILDREN WITH ADHD SYMPTOMS

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Background: Globally, about 1 in 100,000 children, ages 5-14 years, die by suicide per year. Yet, the research examining risk factors in this age group is limited. One risk factor found to be associated with suicidal behavior (SB) in young children is Attention Deficit Hyperactivity Disorder (ADHD). Some studies have found an association between youth with ADHD and SB, however, other research has found ADHD is associated with SB only when examining mediating factors (e.g., comorbid disorders). The aim of this study is to examine risk factors associated with SB in children with (ADHD+) and without (ADHD-) ADHD symptoms. We hypothesized the ADHD+ group will have higher reports of SB (ideation and attempts), non-suicidal self-injury (NSSI), and comorbid symptoms (e.g., depression) compared to the ADHD- group.

Methods: The sample included n=143 children ages 6-9 years. Parents reported ADHD symptoms via the Child Behavior Checklist for Ages 6-18 (CBCL/6-18), a 113-item questionnaire that assesses their child's overall functioning; n=47 for ADHD+ and n=96 for ADHD-. History of suicidal ideation, attempts, and NSSI were obtained by child self-report, parent self-report, and parent report on child using the Columbia Suicide Severity Rating Scales (C-SSRS) and The Family History-Research Diagnostic Criteria.
Results: ADHD+ youth were more likely to have a history of suicidal ideation and a history of suicide attempt compared to the ADHD- group. ADHD+ youth were also more likely to be male and have a parental history of suicide attempt (PH+ group status). In addition, ADHD+ youth had higher ratings of anxiety problems ($p < 0.001$), anxious/depressed ($p < 0.001$), withdrawn/depressed ($p = 0.03$), conduct problems ($p < 0.001$), and oppositional defiant ($p < 0.001$) symptoms. Finally, when examining suicidal ideation history, ADHD+ children were three times more likely to have a history of ideation compared to the ADHD- group (OR = 3.63). No differences were found for a history of suicide attempt or NSSI.
Discussion: After controlling for group differences, ADHD+ children were three times more likely to have a history of suicide ideation compared to ADHD- children. Suicide ideation in children with ADHD is concerning as the key features of ADHD are impulsivity, aggression, and inattention which are all associated with SB. Despite ADHD+ children having a higher likelihood of past suicide attempt compared to ADHD- children, ADHD status was not significantly associated with suicide attempt history after controlling for other covariates. This may be due to the small number of children in the sample with a history of suicide attempt (n=15). In this sample, ADHD+ children were more likely to experience comorbid symptoms, such as anxiety and depression, and have a history of suicidal ideation. This is alarming as these risks are associated with future SB in youth. Early detection and assessment of suicide risk for youth with ADHD may help with suicide prevention efforts for this population. The standard of care at primary care clinics should include screening for suicide risk for children with an ADHD diagnosis or ADHD symptoms, especially with comorbid mental health concerns to help prevent future SB.

T11. MULTIPLE PERSPECTIVES ON SCHOOL INFLUENCES OF RISK AND RESILIENCE IN ADOLESCENTS WITH SUICIDE-RELATED THOUGHTS AND BEHAVIORS

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Background: School-related risk and protective factors have been identified as an important consideration for suicide prevention (Marraccini et al., 2021). Among youth with a history of a suicide-related crisis, schools have been identified as a difficult environment to return to following psychiatric hospitalization (Preyde et al., 2017; 2018), with youth voicing concerns about the stigma related to mental health issues and the need for support from school peers and adults (Marraccini and Pittleman, 2021). Given that a growing body of literature indicates the importance of school connectedness, or a feeling of belonging to the school, as a noteworthy protective factor against suicide-related thoughts and behaviors in clinical samples of adolescents, further exploration of school experiences among teens with a history of suicide-related crises is warranted, including caregiver and professional perspectives. The current study examines perceptions of school-related influences of psychological functioning, including risk and resilience, in a sample of adolescents with a history of hospitalization for a suicide-related crisis (n=19) and their parents (n=19), as well as school (n=19) and hospital professionals (n=7) with experience supporting youth with suicide-related risk.

Methods: This study is part of a larger mixed-methods project that is developing guidelines for school reintegration following hospitalization for a suicide related crisis. Semi-structured in-depth interviews were conducted with adolescents recently hospitalized for suicide-related behaviors, their parents, secondary school professionals, and psychiatric inpatient hospital professionals. Interview questions addressed school experiences prior to hospitalization, school experiences and considerations during hospitalization, school re-entry experiences and processes, and information sharing between hospitals and schools. Applied thematic analysis was used to analyze transcriptions of interview recordings. The coding structure was developed based on the interview agenda and further refined based on emergent themes for each group of stakeholders. For the present study, only text coded as school influences of functioning was examined. Specifically, we are comparing subthemes across stakeholders to identify school-based risk and resilience factors of suicidal thoughts and behaviors.
Results: Although data is still being analyzed, findings based on adolescent perspectives have been completed and identify four primary categories of school-related experiences that may relate to risk and resilience: social experiences, academics, school structure, and emotions. Social experiences included harassment and bullying, peer and adult relationships, and discomfort with being around large groups of people more generally. Students also described difficult academic experiences as potential contributors to their psychological distress or suicide-related thoughts and behaviors. Descriptions of school structures related to discomfort included school policies, interventions, structure, and safety. Finally, emotional experiences included descriptions of how one's own emotional functioning interacted with school experiences in a negative way.
Discussion: Schools are a primary environment for adolescents and can play an important role in promoting protective factors against suicide, but they can also harbor known stressors associated with suicide-related risk. By becoming aware of the specific features associated with risk and resilience, parents and professionals can better support adolescents struggling with suicide-related thoughts and behaviors manage their school experience.

T12. RELATIONSHIPS BETWEEN BODY INVESTMENT, ACQUIRED CAPABILITY, AND SUICIDE ATTEMPTS FOR WHITE AND BIPOC YOUNG ADULTS

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Background: Acquired capability for suicide is associated with increased suicide risk, but little research has examined factors that may qualify this relationship. Body investment is proposed as one such factor, as it may engage self-preservation instincts and serve as a buffer to capability for suicide. Research is also lacking on how these relationships may differ for BIPOC individuals. It was expected that facets of body investment (body feelings, body care, comfort with touch, and body protection) would moderate the relationship between acquired capability for suicide and suicide attempts, but that it would differ by ethnic group.
Methods: The current study included a sample of 1150 undergraduate students (mean age of 19.74). The majority of the sample identified as female (71%) and White/Caucasian (78%). Participants completed self-report measures of body investment (Body Investment Scale; BIS), acquired capability (Acquired Capability for Suicide Scale; ACSS), suicide attempt history (Self-Harm Behavior Questionnaire; SHBQ), and demographic information.
Results: participants had significantly higher suicide attempt subscale scores than White and Black/African American participants. Moderation analyses were run using the PROCESS Macro; four models were run for each ethnic group to test the four BIS subscales as moderators.

For the sample of White participants (n=898), all facets of body investment except body protection significantly moderated the relationship between acquired capability and suicide attempts. For the sample of Hispanic/Latinx participants (n=36), body protection was the only significant moderator. No significant moderation was found for the samples of Black (n=135), Asian (n=43), or Multi-Ethnic participants (n=40). Simple slopes analyses for all significant moderators found that the relationship between acquired capability and suicide attempts was significant at low levels of body investment but not high.
Discussion: Body-related factors have been studied predominantly in White women, whom are also commonly the basis for the development of measures to assess related factors (Swami, 2020). Unsurprisingly, most facets of body investment were significant moderators in White adults. Body image and satisfaction is thought to be housed within cultural identities, and evidence suggests that Black women generally have more positive body image than women of other ethnicities (Grabe and Hyde, 2006; Swami, 2020). Future research must continue to investigate the role of body investment, as well as acquired capability, within ethnic minority samples to determine if and how much these factors associate with suicide risk.

T13. EMOTION REACTIVITY IN NON-SUICIDAL SELF-INJURY: TRAIT, STATE, AND PHYSIOLOGICAL DIFFERENCES

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Background: Non-suicidal self-injury (NSSI) is a significant public health concern. Prominent theories of NSSI emphasize the role of emotion dysregulation, or the inability to flexibly respond to and manage emotions. One facet of emotion dysregulation is emotion reactivity, which reflects the threshold, intensity, and duration of experienced emotions (Davidson, 1998). Research has found that emotion reactivity is related to a history of NSSI; however, this association might be due to the measurement method (i.e., trait self-report) rather than the construct. The current project aimed to clarify the relationship between emotion reactivity and NSSI by examining trait, state, and physiological reactivity in response to a computerized social stress task.
Methods: Seventy-six adults (Mage = 20.97, 73.7% female) participated in a semi-structured clinical interview to determine NSSI history and completed a measure of trait emotion reactivity. Participants then provided state emotion reactivity ratings before and after a social stress task (Cyberball), recovery period, and positive mood induction while physiological data was continuously recorded.
Results: In line with predictions, individuals with a history of NSSI rated themselves higher on trait emotion reactivity than the control group. Next, we examined whether there were any group differences on state emotion reactivity at any of the four timepoints on positive or negative affect. For positive affect, there was a significant main effect of time, ($F(3, 216) = 18.66$, $p < .001$, $\eta 2$ partial $= .206$). However, there was no significant interaction between time and NSSI group. For negative affect, the main effect of time ($F(3, 216) = 19.37$, $p < .001$, $\eta 2$ partial $= .216$) and the interaction of time by group were significant ($F(3, 216) = 7.59$, $p < .001$, $\eta 2$ partial $= .095$). Simple main effects indicated that for the non-NSSI group, negative affect after Cyberball and the positive mood induction were significantly different ($p = .004$). For the NSSI group, negative affect following the positive mood induction was significantly improved compared to the other three occasions ($p < .001$ for all).
To examine emotion reactivity in response to a social stressor, we calculated change scores by subtracting post-Cyberball affect scores from baseline scores. The groups did not significantly

differ on the change in either positive t(73) = -1.91, p = .238) or negative affect t(51.35) = .408, p = .685.

To test whether NSSI history was related to high-frequency heart rate variability/respiratory sinus arrhythmia (HF-HRV/RSA), a repeated measures ANOVA was conducted. No significant main effect of time (F(4, 204) = .507, p = .685) or interaction (F(4, 204) = 1.28, p = .277) was found. Change scores were calculated by subtracting post-Cyberball (exclusion) HF-HRV/RSA from baseline HF-HRV/RSA. Again, no significant group differences were found t(59) = -.73, p = .469).

Discussion: Individuals with a history of NSSI report experiencing their emotions as more intense and persistent than those without a history of NSSI. Our results suggest that this appraisal may not accurately reflect their lived experiences, as they did not significantly differ in how they actually responded (i.e., state or physiological reactivity) to a social stress task. This suggests that the way individuals with a history of NSSI initially react to a stressor is within normal bounds and similar to individuals without NSSI history. Implications for future research and interventions will be discussed.

T14. PERCEIVED BURDENSOMENESS AND THWARTED BELONGINGNESS IN THE CONTEXT OF FAMILY AND FRIENDS AS THEY RELATE TO SUICIDAL IDEATION

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Background: Thomas Joiner proposes perceived burdensomeness (PB) and thwarted belongingness (TB) are necessary for the development of suicidal ideation in his Interpersonal-Psychological Theory of Suicide (IPTS). The Interpersonal Needs Questionnaire (INQ) was developed and validated to measure PB and TB in adults. The INQ was not specifically designed to assess PB and TB as they occur in adolescent daily life and may miss different contexts in which PB and TB are experienced within adolescence. In 2015, Barzilay and colleagues found adolescents with a low sense of belongingness to family were at a significantly higher risk of suicidal ideation than those who experienced TB with their peers. However, no studies have investigated the effect of context-specific burdensomeness on suicidal ideation among adolescents. This study explores PB and TB within the context of friends and family as they relate to suicidal ideation within the adolescent population.

Methods: The study included 158 participants (ages 12-17) receiving inpatient or intensive outpatient treatment. Participants were assessed for suicidal ideation using the CHRT risk subscale and depression using the QIDS-Self-Report at admission. Items from a scenario-based scale assessed PB and TB in the context of family and friends. The 17 PB items include 7 PB friends questions (α=.88) and 10 PB family items (α=.87). The 13 TB items include 7 TB friends items (α=.89), and 6 TB family items (α=.89).

Results: Each of the four subscales, PB family, PB friends, TB family, TB friends, were significantly ($p<0.05$) correlated with concurrent suicidal ideation (r = 0.32 – 0.34). To examine the relative contribution of friends versus family in each construct, a linear regression analysis was run with PB friends and PB family as the predictors of suicidal ideation (F (2, 155) = 11.2, $p<0.001$; R2 = 0.13). PB in the context of family was significantly associated with concurrent suicidal ideation (ß= 0.24). A linear regression was also run with TB friends and TB family predictors of suicidal ideation (F (2, 155) = 11.1, $p<0.001$; R2 = 0.13). In this model,

the TB friends items were significantly associated with concurrent suicidal ideation (ß=0.23). A final model included all four subscales and depression as independent variables (F (5,152) =18.6, p<0.001; R2=0.38). Depression (ß=0.38) and TB friends (ß=0.25) were the two significant predictors for concurrent suicidal ideation in this model.

Discussion: This study explored the relationship between PB and TB, as they relate separately to family and friends, and suicidal ideation within a clinical adolescent sample. In the current study, thwarted belongingness, specifically in the context of friends, and depression were significantly associated with concurrent suicidal ideation. When each construct was broken down separately by family or friends, PB family and TB friends came out as the significant predictors in their models. Previous research has implied PB, as an overall construct, is a stronger predictor of suicidal ideation (Ma et al., 2016), and TB family is significant in predicting suicidal ideation in community samples. (Barizlay et al., 2015). Current findings are significant for clinical treatment and may suggest the importance of connectedness with friends in reducing suicidal ideation in adolescent populations.

T15. THE ROLE OF SOCIAL CONNECTEDNESS AND COGNITIVE HEALTH IN PREDICTING SUICIDE RISK IN DEPRESSED OLDER ADULTS

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Background: Social support is a protective factor against suicidal ideation and suicide attempts among older adults. Conversely, cognitive impairment is associated with greater incidences of ideation and attempts. There is limited research on whether objective (i.e., number of close contacts and frequency of these contacts) or subjective indicators of social support (e.g., perceived feelings of belongingness) differentially relates to suicide risk in late life and whether social support may moderate the negative impact of cognitive impairment on suicide risk. The present study investigated perceived social support and objective social connectedness, cognitive functioning, and their interaction in relation to suicide risk in a sample of middle aged and older adults.

Methods: The present study is a case controlled study consisting of four groups of participants; 110 participants with no psychiatric history (control), 124 depressed participants with no history of suicidal ideation or behavior (non-suicidal depressed), 119 participants with current suicidal ideation with a specific plan but no history of suicidal behavior (ideator), and 217 participants with a history of suicidal behavior who also have current suicidal ideation (attempter). Perceived social support was assessed with the Interpersonal Support Evaluation List (ISEL) and objective social connectedness was assessed with the number of People in Social Network subscale of the Social Network Index (SNI). Global cognition was assessed using the Mattis Dementia Rating Scale (DRS) and executive dysfunction was assessed using the Executive Interview (EXIT).

Results: Both attempter and ideator groups had lower ratings of perceived social support (F=71.91, p<.01) and lower rates of marriage and involvement in religious or volunteer groups ($\chi2$=33.52, p<.01; $\chi2$=13.62, p<.01; $\chi2$=37.09, p<.01) as compared to non-suicidal depressed or control groups. Additionally, participants with a history of suicidal behavior had fewer friends and fewer relatives they feel close to as compared to all other participants (F=18.81, p<.01; F=7.23, p<.01). They also talked with fewer friends and fewer of their children relative to non-suicidal depressed or control participants (F=8.91, p<.01; F=6.30, p<.01) and had worse global cognition and executive functioning relative to non-suicidal depressed and control participants (F=12.27, p<.01; F=11.31, p<.01, respectively). The interaction between the SNI's People in Social Network subscale and EXIT significantly predicted group status (B=.02,

SE=.01, p=.03). Participants with a suicide attempt history were more likely to have both low social contacts and low executive functioning relative to those with no psychiatric history.
Discussion: This case-control study of middle aged and older adults extends previous findings on the role of social support in informing suicide risk by highlighting the potentially protective effects of both subjective and objective indicators of support in mitigating risk for suicide. In particular, participants with a suicide attempt history had few connections and the quality these relationships was poor, as indexed by a minimal frequency of contact. This study also extended prior evidence of the deleterious effects of cognitive dysfunction on suicide risk by showing that those with a history of suicidal behavior are more likely to have both low executive dysfunction and low levels of social connectedness relative to those with no psychiatric history. Increasing social connectedness among middle aged and older adults, particularly in those with low cognitive health, may help decrease suicide risk.

T16. THE ROLE OF LOSS AVERSION AND IMPULSIVITY IN SEVERE SUICIDE ATTEMPTS

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Background: A main challenge in suicide research is detecting those who will die from suicide. Nonetheless, merely few factors associated with the severity of the suicide attempt have been studied. To assess effects on the lethality of suicide attempts, we hypothesized that impulsivity and Loss Aversion (LA) manifest differently among (a) Serious Suicide Attempt (SSA) survivors, (b) non-SSA cases, and (c) non-attempt individuals. Moreover, we hypothesized that impulsivity and LA moderate severity in the context of Suicide Intent (SI).
Methods: 133 adult psychiatric inpatients completed self-report questionnaires measuring impulsivity and SI, and a computerized task measuring LA. Data were analyzed in cross-sectional tests among study groups.
Results: SSA survivors were less aversive to losses than non-SSA cases. Conversely, impulsivity did not differ between the study groups, but did moderate the relationship between SI and suicide attempt severity. The positive relationship was significant only at mean level of impulsivity and above. LA did not moderate the SI-severity relationship.
Discussion: LA may serve as a protective factor against SSA. In addition, high levels of suicide intentions with great impulsivity, may lead to risk for SSA, as well, through habituation for fear of death.

T17. SUICIDAL BEHAVIOR IN WOMEN WITH EATING DISORDERS: THE MEDIATING ROLE OF PERCEIVED BURDENSOMENESS AND THWARTED BELONGINGNESS

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Background: Women with Eating Disorders (EDs) are at high risk for suicide. Understanding the factors underlying suicidal behavior (SB) in this population is likely a key for reducing suicidality. The aim of this study is to develop a unique mediation model of SB in women with EDs.

Methods: The study included 165 participants: 64 women with EDs, 62 women with non-ED mental disorders and 39 healthy controls. Participants completed a battery of psychological instruments assessing SB:, impulsivity, depression and interpersonal difficulties.
Results: Findings yielded three integrative mediation models for SB. Impulsivity was associated with SB only in the control group but not in the clinical groups. Depression was associated directly with SB only among participants with non-ED mental disorders, but not among participants with ED or the healthy controls. Interpersonal difficulties mediated the pathway from depression to SB in both clinical groups, while among women with ED, this relationship was significantly stronger.
Discussion: Our findings highlight the central role of interpersonal difficulties on the link between depression and SB among women with an ED. Although preliminary, these findings can potentially leading to improved preventions and interventions. These results need further replication with a larger cohort of women with EDs.

T18. A LONGITUDINAL, MULTI-INFORMANT STUDY OF THE RELATION BETWEEN FAMILY AFFECTIVE RESPONSIVENESS, SEXUAL IDENTITY, AND SUICIDAL IDEATION IN AN ADOLESCENT CLINICAL SAMPLE

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Background: Lesbian, gay, bisexual, and queer/questioning (LGBQ) youth are over twice as likely to experience severe suicidal ideation (SI) relative to their heterosexual peers. This heightened risk for suicide may be due to societal prejudice, discrimination, and bias that these youth often face as a result their sexual minority identity (i.e., minority stress). Family factors may impact the association between minority stress and psychopathology. In particular, unhealthy affective responsiveness (i.e., the extent to which family members are able to express appropriate affect) may augment the detrimental effects of minority stress among LGBQ youth, increasing their suicide risk relative to heterosexual peers. Specifically, unhealthy affective responsiveness from guardians may further socially alienate LGBQ youth, who already face broader societal rejection as a result of their minority status, and thus increase SI severity. Discrepancies between adolescent and guardian reports have also been shown to predict adolescent psychopathology. Thus, it may be possible that discrepancies in reported affective responsiveness between informants may also moderate the association between sexual identity and suicide risk. However, no studies to date have examined these questions. This study addressed these gaps in the literature using a clinical sample of adolescents enrolled in a treatment trial following psychiatric hospitalization for suicidality. The following hypotheses were offered: 1) identifying as LGBQ (vs. heterosexual) at baseline would predict SI; and 2) greater unhealthy affective responsiveness as reported by primary caregiver and youth, as well as discrepancies between informants, would moderate the relation between sexual identity and SI.
Methods: A subsample of 103 adolescents (Mage = 14.98, SD = 1.47; 78.6% female; 52.4% heterosexual) and 99 of their primary guardians with data for all variables of interest were included in the present study. Participants self-identified as 90.3% White (n = 93) and 85.4% non-Latino (n = 88). The PROCESS macro was used to assess the relation between baseline sexual identity and affective responsiveness (FAD) on 18-month SI severity (SIQ-JR). Covariates included baseline age, sex, depressive symptom severity (CDI-2), SI severity (SIQ-JR), and treatment condition.

Results: Analyses revealed that sexual identity did not predict SI 18 months later (p's > .05) in the sample as a whole. However, adolescent-reported affective responsiveness was associated with greater SI severity among LGBQ, but not heterosexual, youth (b = 8.81, p = .019, ΔR^2 = .044) at 18-months. Guardian-reported affective responsiveness and discrepancies between informants did not moderate the prospective relation between sexual identity and SI (p's > .05).
Discussion: Results suggest that unhealthy affective responsiveness as reported by youth, rather than guardian reports or informant discrepancies, may have significant clinical utility for generating treatment plans. Targeting unhealthy affective responsiveness among families with LGBQ youth in treatment may help decrease future suicide risk.

T19. SUICIDALITY IN CHRONIC PAIN: THE CENTRAL ROLE OF CATASTROPHIZING

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Background: Suicidal ideations, intent, attempts, and even completions, are highly prevalent in chronic physical pain. Previous work by our lab, as well as by other labs, implicates Pain Based Catastrophic Thinking (PBCT) as a serious risk factor for suicidal ideation in chronic pain. Nevertheless, because virtually all extant research is based on a cross-sectional design, the direction of relationships between PBCT and pain is unclear. Moreover, mechanisms/mediators of this putative effect are yet to be identified. We espoused a four-wave, prospective-longitudinal study to test the aforementioned direction of relationships, as well as to examine the potentially mediator role of perceived social support.
Methods: We are in the process of collecting data from 600 Israeli adult patients in the Pain Medicine Center of Soriasky Medical Center in Tel-Aviv. Assessments include: pain severity, PCBT and related constructs, psychopathology, suicidality, social support and interpersonal relationships, and background variables. Patients' reaction to COVID-19 is also assessed.
Results: Thus far, we have 100 participants. Analyses are carried out, utilizing complex structural equation modeling.
Discussion: Results will serve as the basis for devising a preventive intervention integrating Acceptance and Commitment Therapy (ACT) for chronic pain, with modules drawn from Interpersonal Psychotherapy for depression and suicidality (IPT).

T20. SOCIO-EDUCATIONAL FACTORS AND SUICIDE IDEATION AMONG CHILEAN ADOLESCENTS: THE MEDIATING ROLE OF SOCIAL DEFEAT AND CLINICAL SYMPTOMS

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Background: Adolescent suicide is a public health concern in Chile, as it is the leading cause of death of this age group. Reducing teens' suicidal ideation has been shown to decrease suicidal behaviors. Most teens who progress from suicidal ideation to suicidal behaviors will do so within 1–2 years after the onset of suicide ideation. Therefore, preventing the emergence of suicide ideation may be the ideal target for interventions seeking to reduce suicide among

adolescents. This study examines a theory-driven suicide ideation model, and explores how socio-educational factors interact with psychosocial and clinical factors to potentiate suicidal ideation among Chilean adolescents attending high school.

Methods: Using cross-sectional data collected from 1,376 Chilean high school students (49.2% females), we tested a mediation model that accounted for the ways in which relevant factors can increase suicidal ideation. Sociodemographic factors included sex, age, rurality, ethnicity, economic hardship and maternal education. Educational factors were, school vulnerability, school absences, and grade repetition. Psychosocial factors grouped social defeat, family functioning, use of alcohol and drugs, and life satisfaction. Clinical factors were depressive symptoms, hopelessness, and psychotic-like experiences. We examined the existence of a total indirect effect corresponding to the added effect of all putative mediating variables, and then evaluated specific indirect effects in the model.

Results: About one-third of females (31.5%) reported suicidal ideation, compared to 13.4% of their male counterparts ($x2 = 63.00$, $p < .001$). Female participants reporting significant higher suicidal ideation severity than their male counterparts ($M = 3.60$ vs. $M = 2.10$; $F (1,10798.7) = 101.16$, $p < .00$). The mediation model explained a large amount of the variance in suicidal ideation observed in the sample ($r2 = .61$). We found that being a female and experiencing economic hardship directly increased the risk of suicidal ideation, and indirectly through increased social defeat, use of alcohol and drugs, depressive symptoms, psychotic-like experiences, and lower life satisfaction.

Discussion: Conclusion. Overall, our findings show that the suicidal ideation of Chilean high school students is associated with demographic characteristics (e.g., being female, economic hardship), and that the relationship between these characteristics and suicidal ideation is mediated by psychosocial (e.g., social defeat) and clinical (depressive symptoms) factors. Findings confirm the complex relationships between individual, socio-educational, and clinical factors that increase the risk for suicidal ideation among Chilean adolescents.

The confirmed mediating role of social defeat in our model is of critical importance in Chile, a country experiencing social inequality, political repression, and violence. Our findings contribute to youth suicidal ideation research efforts in other countries experiencing social and political unrest. School-based suicide ideation prevention efforts for youth in Chile should focus on reducing economic hardship and social defeat.

T21. THE INTERPERSONAL THEORY OF SUICIDE AND THE PSYCHOLOGICAL PAIN IN UNIVERSITY STUDENTS: A NETWORK ANALYSIS

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Background: Among the most investigated theories to explain suicidal behavior there are the interpersonal-psychological theory of suicide (IPTS) by Thomas E. Joiner and the one focused on the construct of psychological pain (or psychache, or mental pain). The IPTS posits that suicidal risk emerges with the interaction of thwarted belongingness (TB), perceived burdensomeness (PB), and the acquired capability (AC). Psychache is an aversive feeling of anguish, soreness and pain.

Network analysis can clarify the interaction between these theories, identifying which components are most directly involved in the explanation of suicidal risk.

Methods: We recruited a sample of 1,586 university students in northern Italy aged 18-35, who completed a self-report questionnaire during the COVID-19 pandemic.
Sociodemographic, psychological, somatic pain and social measures, selected for their potential or reported correlation with the core constructs of IPTS, were examined. Then, we tested the differences between students with and without lifetime suicidal risk, i.e. a history of suicidal planning and/or suicide attempt (SP/SA).

We performed a network analysis to visualize and test the complex interplay between both IPTS (measured with Interpersonal Needs Questionnaire, INQ and Acquired Capability for Suicide Scale-Fearlessness About Death, ACSS-FAD), psychological pain (measured with Psychache scale) theories and history of SP/SA.

Moreover, we investigated the differences in the network structure between students with SP/SA and without SP/SA.

Results: Students with a history of SP/SA (29.26%) reported higher scores in clinical scales, including psychological pain, and social measures. Concerning the IPTS model, they reported higher TB and PB and fearlessness about death (FAD).
According to the network analysis, the history of SP/SA was most strongly associated with FAD and psychological pain, which was found to be the most central variable and with the highest expected influence related to suicide risk.

Comparing the network of students with lifetime SP/SA (N=464) to the network of those without it (N=1,122), psychological pain was most strongly associated with physical pain nodes and anxiety in students with lifetime SP/SA. Moreover, in the same group, the link between INQ and ACSS-FAD weakly emerged. Finally, the INQ was more strongly associated with depression, absence of social support and loneliness.

The onset of the COVID-19 pandemic has impacted on questionnaire responses in more than half of the sample.

Discussion: The specific features of the students with a history of SP/SA, compared to those without it, are in line with the literature on the topic. Recent studies confirmed the negative impact of the COVID-19 pandemic on college students' mental health. The network analysis showed that, among a large set of variables, psychological pain and fearlessness about death were most strongly and directly associated with history of SP/SA, suggesting for their crucial role in the explanation of the history of SP/SA. Hence, both theories explaining suicidal risk, the IPTS and the psychache ones, seem to be useful and these aspects should be targeted in the assessment and treatment for suicide prevention.

T22. IMPACT OF NUMBER OF SUICIDE ATTEMPTS IN DISABILITY

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Background: Suicidal behavior shows a high prevalence and a great impact in mortality. Besides the populational burden, this phenomenon presents important effects on an individual level in terms of functional impairment. The aim of this work is to analyze the relation between suicidal attempts and their effect on disability.
Methods: Data from 262 patients were extracted from the SmartCrisis project. Sociodemographic (age, sex, marital status, living alone/living with a partner and job status)

and clinical (mental disorder diagnoses and medical conditions, history of suicidal behavior and number of suicidal attempts) data were obtained, being the number of previous suicidal attempts and their temporality (present or lifelong) the more relevant information for our purpose. To assess the disability level, the WHODAS 2.0 scale was used.
Results: No statistically significant differences ($p<0.05$) were found between patients with present suicidal behavior and those with a suicidal attempt in the past. A positive correlation between the number of attempts and the level of disability was found, showing greater levels of disability in all the domains of WHODAS 2.0 scale those patients with more suicidal attempts, specifically significant in Domain 2 (Mobility), 6 (Participation) and the Total Score. Multiple regression analysis that included the rest of sociodemographic (age, sex, marital status, living alone/living with a partner and job status) and clinical variables (mental disorder diagnoses and medical conditions) showed that the number of suicidal attempts preserves its impact in functioning in Domain 6 (B=5,19; t=3,80; p<0,0001) and the Total Score (B=2,76; t=2,14; p=0,034).
Discussion: The functional impairment associated with suicidal attempts has to be taken into account in the management of suicidal sequalae prevention.

T23. A NEW MEASUREMENT TOOL TO DISTINGUISH ACTIVE AND PASSIVE SUICIDAL IDEATION

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Background: Currently, there is no reliable self-report measure that distinguishes between active and passive suicidal ideation. This distinction is clinically meaningful, is used to help determine risk levels (Chu et al., 2015) and has much scientific relevance for several theories of suicide. Some measures such as the Columbia Suicide Severity Rating Scale distinguish between these facets, but require a clinical interview. Other researchers have cobbled together specific items from existing measures to create an Active/Passive measure, however these have had limited use and inconsistent support (Pfeiffer et al., 2014; Hagan, 2016).
Methods: A new self-report measure was created by expert consensus; it has 12 items assessing passive ideation (e.g., "I wouldn't mind if I never woke up.") and 10 items assessing active ideation (e.g., "I actively daydream or fantasize about causing my own death").
Study 1: Three samples completed the new measure and an established measure of suicide risk, the Depressive Symptom Inventory-Suicidality Subscale (Joiner, Pfaff, and Acres, 2002). 193 undergraduates, 104 community members (no undergraduates), and 214 Amazon MTurk workers completed this study.

Study 2: Data from 303 additional Amazon MTurk workers have been collected to test a revised version of the new measure in a larger sample that was oversampled for history of suicidal ideation (67.3% reported a history of suicidal ideation and 28.1% reported a history of suicide attempts). IRB approval was granted for all data collection.

Results: Study 1: Cronbach's alpha scores for each subscale were strong (>.82)in all samples. Additionally, each measure was highly correlated with the DSI-SS ($r = .61$ - $.80$, $p<.001$) in all samples. These results indicate that each subscale is consistently measuring a construct that, as expected, is related to an established measure of suicidal ideation that includes items relevant to both passive and active ideation.
This new measure was also assessed with an Exploratory Factor Analysis. For all EFAs the goodness of fit analysis was statistically significant ($p < .001$) indicating that the models may

not provide a good fit to the data. This may have been due to the relatively small sample sizes. Factor analyses with fewer than 200 subjects are typically of only fair quality (Comrey and Lee, 1992). The factor analyses also revealed an unclear picture of the appropriate number of factors (i.e., 1, 2, or 3) to describe the Passive and Active Ideation subscales between the samples.

Study 2: Given the unclear meaning of the factor analyses from Study 1 and the low power of these samples, more data were collected using a larger sample, with one poorly performing item from the passive measure removed. Required adjustments to my teaching, clinical, and family obligations this year have prevented me from analyzing these data before this application is due, but the data have been collected and will be analyzed prior to the conference. These data will assess the appropriate factor structure and better assess the ability to distinguish individuals at higher and lower risk for suicide via established measures of suicide risk.

Discussion: Initial testing and analyses of an expert consensus designed self-report measure indicates that it may be able to distinguish clinically and empirically important aspects of suicidal ideation. While all face-valid self-report measures are limited by the respondent's candor and insight, the development of a way to assess differences between active and passive suicidal ideation without an expert clinical interview is valuable. Further analyses will refine the measure and provide the opportunity for a wider input of expert opinions on the measure prior to publication.

T24. VALIDATION OF THE ASK SUICIDE-SCREENING QUESTIONS (ASQ) FOR ADULT MEDICAL INPATIENTS

Lisa Horowitz*[1], Deborah Snyder[1], Jeffrey Bridge[2], Jian-Ping He[1], Colin Harrington[3], June Cai[4], Cynthia Claassen[5], Joan Salhany[3], Tram Dao[4], John Chaves[4], David Jobes[6], Edwin Boudreaux[7], Maryland Pao[1]

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Background: Despite a growing consensus that there is a need to systematically screen all medical patients for suicide risk, few suicide risk screening tools exist that are validated specifically for use among medically ill hospitalized adults. Instead, screening tools validated for use in psychiatric populations are often used, though it is unclear if detecting suicide risk in patients presenting with medical chief complaints requires different tools than those created for patients with primary psychiatric chief complaints.

Methods: Dr. Lisa Horowitz will describe the process of validating the Ask Suicide-Screening Questions (tool) among a convenience sample of adult medical inpatients through a multi-site study of four hospitals throughout the United States. Participants completed several questionnaires, including a 20-item list of candidate questions which included the original ASQ items, and the gold standard Adult Suicide Ideation Questionnaire (ASIQ). Logistical regression models were constructed to examine the ability of specific combinations of the candidate items to predict suicide risk, as compared to the ASIQ. The best-fitting combinations of candidate items maximized sensitivity, specificity, and the negative predictive value (NPV).

Results: The ASQ was found to have strong psychometric properties in adult medical inpatients, with a sensitivity of 100% (95% CI = 90% - %100), a specificity of 89% (95% CI = 86% - 91%), and a negative predictive value of 100% (95% CI = 99% - 100%).

Discussion: This is the first instrument specifically created for screening adult medical inpatients for suicide risk in the medical setting. In addition, the ASQ was originally validated for youth, but with this study, hospitals and medical settings can now utilize one tool for both youth and adults. This presentation will also highlight that positive screens should be managed following a 3-tiered clinical pathway. This study underscores the importance of not over-responding to patients who screen positive on a brief primary screener to ensure that screening does not unnecessarily overburden limited mental health resources in the medical setting. The majority of positive risk screens are "non-acute" and do not require full safety precautions. Instead, positive screens should be followed up with a brief suicide safety assessment (BSSA) to determine the patient's risk level, disposition, and the next steps needed to ensure patient safety. Taking the time to not only identify adults at risk, but to invest in a brief suicide safety assessment to follow up on positive screens, will spare valuable resources on inpatient medical units. Using the ASQ as part of a suicide risk screening clinical pathway can optimize the effectiveness of the screening program. Examples of hospital settings implementing this pathway will be provided and barriers to establishing a tenable suicide risk screening program will be discussed. With the ASQ, universal screening for adult medical patients can be effectively implemented, allowing for medical settings to be leveraged as valuable partners in suicide prevention.

T25. LIMITATIONS OF DEPRESSION SCREENING AS A PROXY FOR SUICIDE RISK SCREENING AMONG ADULT MEDICAL PATIENTS

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Background: Medically ill hospitalized patients are at elevated risk for suicide. Hospitals that already screen for depression often utilize depression screening as a proxy for suicide risk screening. While the association between suicide and depression is well-documented, extant research has indicated that screening for depression may not be sufficient to identify all patients at risk for suicide. In particular, item 9 of the PHQ-9 ("thoughts that you would be better off dead, or of hurting yourself in some way" during the previous two weeks) poses concerns, despite promising studies that have used this question to identify large numbers of at-risk patients. For example, the mid-sentence "or," prevents one from knowing whether the respondent is endorsing the first or second half of the question. The phrase "hurting" is also used instead of "killing;" this ambiguous wording may both over and under detect patients at risk for suicide. Consequently, depression screening may not be adequate for detecting suicide risk among adult medical patients.

Methods: Dr. Lisa Horowitz will describe an analysis in which depression screening outcomes are compared with suicide risk screening outcomes, using an inpatient medical/surgical sample from four hospitals as part of a larger multisite instrument validation study. Participants completed the PHQ-9 and two suicide risk measures: the Ask Suicide-Screening Questions (ASQ) and the Adult Suicidal Ideation Questionnaire (ASIQ).

Results: A total of 116 participants (16.0%; 116/727) screened positive for suicide risk and 175 (24.1%; 175/727) screened positive for depression. Of the patients who screened positive for suicide risk, 31.0% (36/116) screened negative for depression on the PHQ-9. Nearly 62.9%

(73/116) of the individuals who were at risk for suicide did not endorse item 9 (thoughts of harming oneself or of being better off dead) on the PHQ-9.
Discussion: This comparative analysis of depression and suicide risk screening revealed that nearly one-third of adult medical patients at risk for suicide would have passed through the healthcare system undetected if depression screening was used as the sole measure of suicide risk. In addition, this study revealed that the use of only item 9 on the PHQ-9 to detect suicide risk failed to identify over half (62.9%) of participants who were found to be at risk for suicide on the ASQ and/or ASIQ. Using depression screening tools as a proxy for suicide risk may be insufficient to detect adult medical inpatients at risk for suicide. Asking directly about suicide risk and using validated tools is necessary to effectively and efficiently screen for suicide risk in this population.

T26. NON-SUICIDAL SELF INJURY AMONG ADULT MEDICAL INPATIENTS: CHARACTERISTICS AND ASSOCIATIONS WITH SUICIDE RISK

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Background: Non-suicidal self-injury (NSSI), the act of harming oneself without intent to die, is a potent risk factor for future suicide attempts in young people, but there is limited research on the association between NSSI and suicide risk among adult medical patients. The current study aimed to address this research gap by describing the relationship between a lifetime history of NSSI and suicide risk in an adult medical inpatient population. In addition, this study aimed to characterize NSSI according to method, time since last episode, and severity of injury.
Methods: This study is a sub-analysis of cross-sectional data collected from an instrument validation study. Participants from this study were adult medical inpatients, aged 18 or older, from one of four US hospitals. To identify suicide risk, participants completed the Ask Suicide-Screening Questions (ASQ), a brief 4-item screening tool. Participants who endorsed any item on the ASQ were considered at risk for suicide. Additional study items derived from the Self-Injurious Thoughts and Behaviors Interview assessed lifetime history of NSSI ("Have you ever done anything to purposefully hurt yourself without wanting to die (for example, cutting or burning yourself?"), frequency of NSSI ("How many times in your life have you purposely hurt yourself without wanting to die?"), method of NSSI ("What method(s) have you used to hurt yourself?"), and severity of NSSI ("Have you ever received medical treatment (e.g., stitches) for harm caused by purposely hurting yourself without wanting to die?"). A binary logistic regression model was calculated to assess the association between NSSI and suicide risk. Univariate and multivariable statistics were calculated to describe NSSI sample characteristics.
Results: A total of 727 adult medical inpatients participated in this study (53.4% male; 67.9% white, 21.3% black; M[SD] age = 50.1[16.3]). NSSI was reported by 5% of adults (36/727), and 15.5% of participants (113/727) screened positive for suicide risk. Of the 113 participants who screened positive for suicide risk, 23 (20.4%) indicated a history of NSSI. Participants with a lifetime history of NSSI were 11 times more likely to screen positive for suicide risk (OR = 11.7 [95% CI, 5.7-24]), compared with participants without a history of NSSI. Of those with a lifetime history of NSSI, 31.4% (11/35) reported engagement in NSSI within the past year. Additionally, the most common NSSI method reported was cutting or burning (57.1%,

20/35), and most participants did not receive medical treatment for their injuries (73.5%, 25/34).
Discussion: Adult medical patients with a lifetime history of NSSI were 11 times more likely to screen positive for suicide risk, compared to those without a NSSI history. This lends further evidence that NSSI is a potent risk factor for suicide. Given the strong association between NSSI and suicide risk in this study, further research examining the utility of assessing NSSI among adult medical patients is especially relevant for suicide detection and prevention efforts.

T27. EVALUATION OF THE NATIONAL E-LEARNING PROGRAM IN SUICIDE PREVENTION INCL. RISK ASSESSMENT

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Background: Suicidal behavior is common in mental health settings and this emphasizes the importance of training and development of competence in suicide prevention. In autumn of 2019 the National E-learning program for mental health professionals was launched. The program was developed to fulfill the need for a continuous competence strategy for the clinical staff to maintain skills in suicide prevention including, risk assessment and intervention. Root Cause Analyses of patients' suicides have documented that assessment and documentation of suicide risk often is inadequate and nonsystematic, and intervention is insufficient. Analyses have also shown that there is a need to involve relatives to a greater extent and to ensure a safe chain of treatment. Another reason for the initiative was the need for common language among multidisciplinary teams and to strengthen the collaborative management of suicidality across disciplines, units and sectors. E-learning as a method was chosen due to its flexibility and accommodating the different work shift of the staff and the many interruptions in daily work.
Methods: First the E-learning program was evaluated in a pre-post analysis in a pilot implementation test of one mental health service centre and afterwards in a larger test where the multidisciplinary staff in mental health centre in a specific region of Denmark were included. This was done using the Kirkpatrick mode: 1) reaction and 2) learning.
Results: Analyses will be performed in the spring 2021 after implementation of the E-learning program and the results will be presented at the IASR.
Discussion: The results will describe possible benefits of E-learning as a method for increasing staff self-confidence. E-learning cannot stand alone and face-to-face learning is an important factor for maintaining skills. Identifying and managing patients at risk of suicide have to be taught and reviewed continuously in different clinical settings.

T28. FEARLESSNESS ABOUT DEATH PREDICTS LETHALITY OF SUICIDE ATTEMPT IN CLINICAL ADOLESCENTS

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Background: Suicide rates among adolescents in the United States increased 57% between 2007 and 2018. Although there are a large number of self-reported attempts, the severity of these attempts varies. Of greatest concern are attempts of higher lethality which cause physical harm or require medical attention. Recent theories of suicide behavior have proposed risk factors for suicide attempt of any lethality, including prior attempt history, history of self-harm,

depression, and suicide capability. Fearlessness about death, a component of capability recently validated in adolescents, is a promising construct in predicting the likelihood of a future attempt. This poster aims to explore if fearlessness about death also predicts the lethality of a future suicide attempt in a sample of clinical adolescents.

Methods: Participants (N=255) were a subset of patients with follow-up data evaluated for an intensive outpatient program (IOP) for suicidal adolescents with either active suicidal ideation, a recent suicide attempt, or both. As part of a larger battery of instruments to evaluate the program, lifetime suicide attempt and NSSI were measured upon IOP entry with the Columbia-Suicide Severity Rating Scale (C-SRSS), depression was measured using the Quick Inventory of Depressive Symptomology Adolescent Self-Report (QIDS-A-SR), and fearlessness about death was measured by the 7-item Fearlessness About Death Scale (FAD). Attempt between IOP entry and six-months was measured during the program by adolescent and primary caregiver reports, and following treatment by IOP personnel contacting primary caregivers at one-month and six-months after discharge to collect data using the behavior section of the C-SRSS. Lethality of the first attempt following IOP entry was measured by raters using the C-SRSS 6-point ordinal actual lethality scale. All lethality ratings for our sample ranged within the lowest three points on this scale. These ratings were mapped onto the ordinal scale used in our analyses: 0 (no attempt), 1 (no physical damage), 2 (some physical damage), and 3 (medical attention needed). Independent ordinal logistic regressions were conducted with all attempters (n=47) and non-attempters (n=208) to determine if age, sex, depression, lifetime suicide attempt, lifetime NSSI, and FAD predicted lethality on a continuum between no attempt and three levels of lethality. A subsequent ordinal regression was conducted to determine if FAD remained a significant predictor of lethality while controlling for all significant factors at the bivariate level.

Results: FAD, lifetime attempt, lifetime NSSI, and depression were significant predictors of lethality independently, while age and sex were not. After controlling for lifetime attempt, lifetime NSSI, and depression in the same model, FAD retained its significance (OR [CI] = 1.43 [1.01, 2.03], $p<.05$). Lethality's relationship with lifetime attempt (OR [CI] = 2.59 [1.26, 5.35], $p=.01$) and depression (OR [CI]= 1.10 [1.02, 1.18], $p=.01$) also persisted, while lifetime NSSI's predictive significance diminished (OR [CI]= 1.98 [0.82, 4.76], $p>.05$).

Discussion: Our findings present FAD's predictive validity in forecasting the lethality of future suicide attempts on a continuum between no attempt and higher lethality attempt. These results offer support for FAD as a key addition to clinical assessment of suicidal adolescents. Future longitudinal studies should explore FAD, suicide attempt history, and depression's relationships with lethality in a larger sample of adolescent attempters.

T29. MISSED OPPORTUNITIES: IMPLEMENTING UNIVERSAL DEPRESSION AND SUICIDE RISK SCREENING IN A PEDIATRIC HEALTHCARE SYSTEM

Laika Aguinaldo*[1], Brent Crandal[2], Chelsea Carter[2], Glenn Billman[2], Kendall Sanderson[2], Cynthia Kuelbs[2]

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Background: Adolescent depression and suicide represent a large and increasing public health concern in the United States. As the rates of depression and suicide have increased nationally, medical settings often serve as the initial point of contact for these individuals, particularly those with urgent or critical needs and few other supportive resources. Rady Children's Hospital, San Diego launched an initiative to universally screen all youth ages 12-17 for depression and suicide risk, regardless of the primary reason for their visit. We describe this screening program and present data on outcomes including prevalence rates of moderate-severe

depression symptomatology and elevated risk for suicide, across service settings (e.g. Emergency Department, Inpatient Units, Outpatient Specialty Care, Primary Care and Urgent Care, excluding behavioral health clinics) and for different patient populations (including patients presenting with and without psychiatric concerns). We also explore next steps and offer lessons learned based on the implementation of large-scale, universal depression and suicide risk screening program in a pediatric integrated delivery network.
Methods: Statistical analyses are based on retrospective medical record review of adolescent patients (12-17 years old) who had an encounter within our system from April 11, 2016 to August 31, 2020. Rady Children's Health Network (RCHN) is a Southern California based pediatric integrated delivery network comprised of pediatric primary and specialty care providers all using the same electronic medical record. RCHN is the primary provider of health care to the more than 700,000 children and youth in San Diego County as well as some children and youth living in Imperial, and Southern Riverside counties. San Diego County is ethnically and racially diverse with children and youth ages 0-18 who are Hispanic or Latinx (41.5%), White (37.1%), Asian (10.8%) Black (4.8%) as well as American Indian (0.5%), Pacific Islander (0.4%) and 2 or more races (5.0%).
Results: 95,613 adolescent patients were screened for depression and suicide risk. The mean age was 14.5 (SD 1.9) years, and approximately half (50.9%) were male. The group was racially diverse, with 45% identifying as Hispanic/Latino, 31% as White, 6% as Asian/Pacific Islander, and 4% as Black. Overall, 2.4% (2,266) of patients screened positive for risk for moderate-severe depression, and 4.1% (3,942) screened positive for elevated suicide risk. However, 51% (2,132) of patients presenting with a psychiatric concern screened positive for elevated suicide risk vs 2% (1,810) of those presenting with a primary medical concern. The majority (82.8%/3,457) of patients presenting with a primary psychiatric concern did so in the emergency department compared to only one third (30.8%/28,153) of patients presenting with a primary medical concern.
Discussion: A large-scale universal depression and suicide risk screening program was implemented in a pediatric healthcare system using the Patient Health Questionnaire and Columbia Suicide Severity Rating Scale. This screening program identified youth with moderate-severe depression and elevated risk for suicide with and without presenting psychiatric concerns across service settings, leading to increased coordination for psychiatric care.

T30. SUICIDE RISK SCREENING PRACTICES OF PRIMARY CARE PROVIDERS IN THE U.S.

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Background: In order to gather information about current suicide screening practices in U.S. primary care, a national sample of primary care providers (PCPs) were surveyed regarding the frequency, nature, and quality of their current suicide risk screening practices, attitudinal and resource barriers, and the impact of COVID-19 upon suicide risk and screening. The aims were to obtain descriptive data about PCPs' screening practices and to identify which factors predicted an increased likelihood of routine suicide risk screening.
Methods: A sample of licensed PCPs drawn from the American Medical Association (AMA) database were recruited via email and paper mailings and asked to complete a brief survey designed by the research team. The survey items asked about personal and practice-related demographics, PCPs' current suicide risk screening practices, barriers to screening, and PCPs'

perception of the impact of COVID-19 upon patients' suicide risk. Descriptive statistics, chi-square, t-tests, and regression analyses were computed using SPSS 26.
Results: Out of the 7,000 PCPs contacted, 302 completed the survey. Demographically, 78.8% of the sample identified as White, 54.2% as female, and the majority (85.7%) were Doctors of Medicine (MD's).
Only about half of the sample (54.8%) reported screening all patients routinely for suicide. Although the majority (76.0%) reported using a standardized measure to screen for suicide, most (61.0%) were using the PHQ-2, which does not routinely ask about suicide. About half reported not having a standardized protocol for risk assessment (52.0%) or disposition planning (51.0%) for suicidal patients. Disposition plans relied heavily on referral to the emergency department (69.0%) and outpatient behavioral health (55.2%). A significant proportion (21.4%) reported using safety "contracts" with suicidal patients.

A forward stepwise regression yielded the following significant predictors of routine suicide risk screening: female gender ($p < .05$), fewer years in practice ($p < .05$), access to behavioral health ($p < .01$), belief in the importance of screening ($p < .01$), and having adequate time to screen ($p < .01$). Overall prediction accuracy for the model was 72.3%.

Although many PCPs (64.6%) reported being increasingly concerned that COVID-19 was impacting patients' suicide risk, only 42.1% reported actually asking more patients about suicide since the onset of the pandemic.

Discussion: This preliminary national data indicate that significant training and implementation gaps regarding suicide prevention may exist in U.S. primary care. Only about half of PCPs were routinely screening for suicide risk, and a significant proportion did not report use of a standardized tool, nor did they report having standardized protocols for risk assessment and disposition planning. Disposition plans relied heavily on emergency and outpatient services and a significant proportion reported the use of the ineffectual and outdated "safety contract."

Although the overall response rate was low (4.3%), these preliminary data can be used to guide beginning implementation and training efforts to focus on evidence-based screening, assessment, and brief intervention methods as well as current screening guidelines. Future research should seek to extend these findings to larger, more representative samples of PCPs in the U.S.

T31. MODIFYING A COGNITIVE BEHAVIORAL SUICIDE PREVENTION TREATMENT FOR ADULTS WITH SCHIZOPHRENIA SPECTRUM DISORDERS: A COMMUNITY BASED PARTICIPATORY RESEARCH APPROACH

Lindsay A. Bornheimer*[1], Juliann Li Verdugo[1], Joshua Holzworth[1], Fonda Smith[1], Hannah Sliwa[1], Joseph A. Himle[1], Stephan Taylor[1], Cheryl A. King[1]

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Background: Suicide is among the leading causes of death for adults with schizophrenia spectrum and other psychotic disorders (SSPDs) with suicide risk estimates being over eight times greater than among the general population. There is a paucity of evidence-based interventions to reduce suicide among adults with SSPDs and our study sought to modify and evaluate the acceptability and preliminary effectiveness of Cognitive Behavioral Suicide Prevention for psychosis (CBSPp) for a community mental health (CMH) setting. This paper

presents on modification of the treatment and its delivery involving stakeholders and using community based participatory research methods prior to an effectiveness clinical trial.
Methods: This paper presents on a data and methods of a NIMH-funded pilot effectiveness clinical trial (R34) that aimed to gain input from stakeholders to inform treatment modifications prior to testing in a randomized controlled trial. A total of 26 adult stakeholders participated in Aim 1 of the study, including 6 clients with SSPDs and recent suicide ideation or attempt, 7 peer advocates, and 12 providers in CMH. Peers and providers were recruited by research staff attending virtual staff meetings and clients were recruited by providers who attended staff meetings. Interested clients were screened to confirm recent ideation or attempt and SSPD diagnosis. All stakeholders attended a 1-hour virtual qualitative in-depth interview with research staff to explore perspectives on the need for CBSPp, treatment barriers, sustainability facilitators, and areas for improvements. Qualitative interviews were transcribed, coded in Dedoose using an open-coding technique to generate themes across questions, and analyzed using grounded theory methods. After Aim 1 data were collected and analyzed, findings were presented to a panel of scholarly experts in the fields of suicide and psychosis research, intervention research, and implementation science. Input was gained from the expert panel and suggestions for modifications were synthesized with stakeholder data and recommendations. Stakeholder data was also shared with stakeholders for accuracy and additional feedback prior to modifications.
Results: Clients, peers, and providers agreed there was a need for CBSPp in CMH, clients indicated they would want the treatment, and providers expressed interest in being trained to deliver the treatment. The following 4 areas for improvement themes emerged across stakeholder groups: 1) increase self-esteem, 2) bolster social support, 3) add tailoring options in the treatment manual (e.g., for trauma and substance use; per providers), and 4) sustainability (e.g., buy-in from CMH and providers, support and ongoing training for providers delivering treatment). The expert panel agreed with stakeholder feedback and also suggested we add flexibility in the manual so providers are trained to deliver the components and deliver them in a way that is most tailored to a client.
Discussion: Study findings highlight the logistic, perceptual, and clinical challenges perceived by clients, peers, and providers in the process of adapting and introducing CBSPp in a CMH setting. Consistent with prior literature, buy-in and support for the delivery of a new treatment emerged as important factors for sustainability and scalability over time. Modifications are currently underway as we plan to conduct our clinical trial in upcoming months. Stakeholder perspectives using community based participatory research approaches are essential to problem-solve challenges and barriers of new treatment delivery with an overall goal of improving access, feasibility, and quality of suicide prevention interventions.

T32. CLINICALLY ORIENTED REGISTRY OF SUICIDE ATTEMPTERS AND SELF HARMERS - IS THAT MEANINGFUL? IS THAT FEASIBLE? SHALL I PERSEVERE?

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Background: We, clinicians in different settings, face a challenge when we have to assess a patient following a suicide attempt or an act of self harm. We have to make a decision on suicide risk management that potentially could save or lose life. Ideally before talking to the patient (if conscious and willing) and other relevant people (if reachable) , we want to review the available information. Throughout my practice, especially during my sleepless nights, I reached the conclusion that instead of searching through different sources, sometimes

incomplete, it would have been best to have one point of reference , a single reliable source to look at, a suicide attempters registry. I have dreamt to have it but have not been offered one. Again and again I have considered the information I wanted to have and I ended up having an imaginary data set in my head. I asked myself, can I use it to make that registry and offer it to others? Is it going to be meaningful or waste of my and others' time?
Methods: Literature review.
Analysis of the importance of risk and protective factors.

Analysis of other important contributors apart from risk factors.

Personal communication with teams managing suicide attempters registries.

Results: A considered proposal for a clinically oriented suicide attempters registry.
Discussion: As I said in the background section I have needed that imaginary registry. One of the motivators to move from wanting and considering it to implementing it was when the World Health Organization made recommendations for improving the data collection of suicide attempts and self-harm using surveillance systems (1). Although there are established registries around the world, their goal is to collect data for research and service delivery improvement. There is no clinically oriented registry that can be used by front line clinicians in clinical situations when they need to assess a suicide attempt or a self harm act. Apart from helping decision making that registry will also share the burden (including legal) of decision making by providing reliable and meaningful information gathered by the whole service over a period of time .
Apart from ensuring better clinical care, the proposed registry will help training emergency and front line mental health staff and will stimulate research.

Establishing and maintaining a suicide attempters and self-harm registry is a massive task beyond the capability of a single person, or a team or a Mental Health Service, it would require the support of the Health Ministry and the Government. Is that a realistic endeavour?

Reference: 1. Practice manual for establishing and maintaining surveillance systems for suicide attempts and self-harm - World Health Organization; 2016; ISBN: 978 92 4 154957 8

T33. AN OPEN TRIAL OF A SUICIDE SAFETY PLANNING GROUP TREATMENT: "PROJECT LIFE FORCE"

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Background: In 2008, the Department of Veterans Affairs mandated that clinicians oversee the construction of a Suicide Safety Plan for every patient who is identified as "high risk" for suicide. While the Suicide Safety Plan is a mandated "best practice," there are currently no recommended guidelines for its augmentation in a group setting.
Methods: To address this gap, a novel group intervention, "Project Life Force," (PLF; a 10-session manualized psychotherapy), was developed and piloted. Specifically, PLF teaches skills that target: (1) aggression and impulsivity, (2) medication and treatment adherence, (3) emotion regulation strategies to alleviate psychological distress and hopelessness, (4) reducing access to means, and (5) asking for support and help. PLF is augmented with modules about strengthening friendships, education pertaining to suicide risk, suicide means reduction, and suicide prevention mobile applications (Luxton, June, and Kinn, 2011). The group format

allows Veterans to learn from each other, offers social support, and mitigates the sense of isolation and loneliness that has been associated with suicide (Van Orden, Cukrowicz, Witte, and Joiner, 2012). Specific session content will be described during presentation.
Results: Results indicate high feasibility and acceptability. Exploratory analysis revealed statistically significant decreases in suicidal thoughts/behaviors, depression, and hopelessness. Feedback from
Veterans and PLF therapists is also discussed. Full results were published in Archives of Suicide Research - https://www.tandfonline.com/doi/abs/10.1080/13811118.2020.1746940. These results will be the bulk of this presentation.

Discussion: Despite some limitations (e.g. small sample size) exploratory results suggest that PLF may
be a promising treatment for Veterans with suicidal symptomology. A large CSRD-VA funded grant is now underway with Dr. Marianne Goodman and Dr. Gregory Brown as the two site PIs. Dr. Barbara Stanley is the treatment fidelity manager of this study - ensuring both sites follow the manual and undergo the same assessment training.

T34. CREATING A LIFE WORTH LIVING: A PILOT STUDY OF GROUP SUICIDE-FOCUSED ACCEPTANCE AND COMMITMENT THERAPY (ACT)

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Background: Acceptance and Commitment Therapy (ACT) has been shown to be efficacious. A recent systematic review demonstrated promising support for ACT in the treatment of suicidal ideation and behaviors (SI/SB) in both individual and group therapy modalities. ACT for Life, a suicide-focused version of ACT to help conceptualize and treat SI/SB directly within the ACT model, is an individual treatment with promising effectiveness. The current study aimed to build upon existing ACT approaches, such as ACT for Life, to develop a group therapy protocol titled ACT: Creating a Life Worth Living. This pilot study evaluated feasibility and acceptability of this group intervention as well as exploratory aims of recent SI/SB.
Methods: The ACT: Creating a Life Worth Living group consisted of a total of 8 weekly, 60-minute group sessions. Content of the group included mindfulness practice, gratitude, identification of values, developing individual values-based action plans, and building personal hope boxes. Further, in line with ACT for Life, this group used SI/SB as specific examples to increase psychological flexibility. The group took place entirely over video teleconferencing.
Data were drawn from a quality improvement and assurance project of Veterans at a southwestern Veterans Affairs Medical Center specialty outpatient clinic (N = 11). Veterans enrolled in the group were all diagnosed with a primary psychotic disorder.

To address feasibility and acceptability, attendance and qualitative satisfaction was collected pre-, mid-, and post-group. To address the exploratory aim, the screening version of the Columbia-Suicide Severity Rating Scale (C-SSRS) was collected pre- and post-group.

Results: This suicide-focused ACT in a group therapy modality is feasible and acceptable. Of the 11 Veterans who enrolled in the group, 10 (90.9%) attended at least one group. Of the eight sessions of material offered, the median number of sessions attended was 6 (IQR = 3-7). Overall, Veteran group members described the group as hope instilling and helpful. A Veteran

who attended less than half of the group sessions reported that attending one group was helpful in improving their mental health because one session encouraged value-based living. Another Veteran shared, "…When you're hopeful, it's easier to be more confident. You have some hope, it builds you up so you can tackle these more difficult things."
Positive feedback themes included enjoyment of building hope kits and experiential practices. Constructive feedback themes included the desire to start values work earlier in the group as well as more direct discussion and application of SI/SB in each group session. Veterans shared that while talking about suicide directly is challenging, this was a unique space that offered them the chance to apply the skills they were learning directly to their suicidal experiences.

Of the 11 Veterans who enrolled in the group, 8 (72.7%) completed the pre-group C-SSRS and 7 (63.6%) completed the post-group C-SSRS. Of those who completed the pre- C-SSRS screener (n = 8), 6 (75.0%) were negative. For those that completed the post- C-SSRS screener (n = 7), 6 (85.7%) were negative. Severity of SI did not increase over the group; for most it reduced in severity. No Veteran engaged in SB preparatory behavior during the group.

Discussion: ACT: Creating a Life Worth Living, a suicide-focused ACT group therapy, is a feasible and acceptable intervention. Veterans in a specialty outpatient clinic for psychotic disorders found this group to be hope instilling. Additional research is needed to determine if this group is feasible and acceptable in other settings and samples as well as the group's efficacy and effectiveness as a suicide prevention intervention.

T35. STRAIGHT TO THE SOURCE: NON-SUICIDAL SELF-INJURY E-COMMUNITIES AND THE EMERGING CASE FOR HARM REDUCTION IN THE TREATMENT OF NSSI

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Background: Non-suicidal self-injury (NSSI) is a prevalent phenomenon, yet no sufficiently effective treatment approach exists (Fox et al., 2020). In light of the limitations to current treatment approaches, many researchers have begun to consider how a reconceptualization of NSSI phenomenology may be necessary to optimize treatment. Multiple novel reconceptualizations seem to converge on the idea that NSSI provides certain benefits (e.g., affect regulation; Hooley and Franklin, 2018) which lead to nonlinear recovery processes where cessation is not always possible (Lewis et al., 2019). In this paper, we discuss the potential for harm reduction interventions to be used in the treatment of NSSI.
**Note: as a theoretical paper, the following sections include the most relevant sections rather than empirical methods/results.

Methods: Those with lived self-injury experience have long advocated for harm reduction interventions for NSSI, such as providing information on anatomy and physiology, first aid and wound care, advice on safer locations to self-injure (Pembroke, 2009), and more recent qualitative feasibility/acceptability studies suggest that harm reduction interventions may be acceptable to both clinicians and patients (James et al., 2017; Hosie and Dickens, 2018). However, many questions about ethical and pragmatic execution of harm reduction interventions for NSSI remain unanswered.
Results: Levering data from NSSI e-communities, (online groups, chat rooms, comment sections, hashtags, etc.) devoted to the sharing and soliciting of self-injury information and experiences (Lewis and Seko, 2016), is one way with which to identify types of harm

reduction interventions that may be most ethically acceptable to clinicians and useful to those engaging in self-injury. E- communities are tremendously popular among those who self-injure, and harm reduction content often features prominently in these communities (Lavis and Winter, 2020). A single NSSI subreddit may have upwards of 60,000 subscribers who share and interact with content hourly (Reddit, 2021), and millions of Instagram posts have hashtags linking them to NSSI (Moreno et al., 2016). These communities not only offer researchers access to the lived experience countless individuals engaged in NSSI, but they also offer researchers vast amounts of data and power hitherto impossible to attain, particularly with such a historically difficult to study population.
Discussion: Ethical considerations for harm reduction interventions will be discussed, as will the potential for future research to examine how NSSI e-communities could be further leveraged to increase engagement in both NSSI treatment and research.

T36. NEGATIVE EFFECTS OF PSYCHOTHERAPY AMONG PATIENTS WITH SUICIDAL IDEATION

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Background: Denmark is the only country in the world with specialized, out-patient Suicide Prevention Clinics. Studies have found negative effects of psychotherapy, such as dependency, stigma, unpleasant memories, stress and increased symptoms to be common among patients attending psychological treatment. This study aims to measure the occurrence of negative effects of psychotherapy in a Danish Suicide Prevention Clinic.
Methods: All patients seen at the Clinic for Suicide Prevention in Copenhagen, Denmark will be invited to participate. Patients can receive treatment at the clinic if they have severe suicidal ideation or after an episode of deliberate self-harm. Over a one-year period, we expect to include 240 patients. Data on demographic information, suicidal ideation (Beck Scale for Suicidal Ideation), and perceived negative effects from the treatment (Negative Effects Questionnaire) will be collected via self-report questionnaires. Questionnaires will be distributed at the start of treatment, midway, and at the end of treatment.
Results: The study will be initiated August, 2021 and preliminary data will be presented at the conference.
Discussion: Seemingly, occurrences of negative effects in psychotherapy have not previously been assessed for individuals with suicidal ideation. The findings of the study may create awareness and contribute to a nuanced discussion regarding negative effects. This might help improving psychotherapeutic practices for individuals with suicidal ideation.

T37. A FEASIBILITY AND ACCEPTABILITY TRIAL OF UNGUIDED INTERNET-BASED COGNITIVE BEHAVIORAL THERAPY FOR DEPRESSION IN UNITED STATES VETERANS RECEIVING VHA CARE: DEPRESSION AND SUICIDAL IDEATION OUTCOMES

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Background: Clinical depression is a common, potent, and potentially modifiable risk factor for suicide. Cognitive behavioral therapy for depression (CBT-D) is an effective depression

treatment. Internet-based CBT-D (iCBT-D) allows individuals to complete CBT-D via an interactive website interface. Recent meta-analyses have found that both clinician guided and unguided forms of iCBT-D have similar effectiveness to traditional CBT-D. To our knowledge, no previous trials of unguided iCBT-D had been conducted with Veterans, so we undertook such a feasibility and acceptability trial. In this presentation, we report on changes in depression symptoms and suicidal ideation (SI) among Veterans during this feasibility trial.

Methods: The study was approved by local IRB and R and D committees. The VA's electronic health records system was used to identify Veterans who (1) had received any medical care at a particular VA medical center between August 2017 and July 2019 and (2) had completed a Patient Health Questionnaire-9 (PHQ-9; a self-report depression measure) during that time period and received a score between 5 and 15, indicating mild to moderate depression symptoms. Identified Veterans received a mailed invitation to call for a telephone screening interview. During the screening interview, exclusion criteria that would potentially prevent effective use of the intervention (e.g., lack of internet access) were assessed and the PHQ-9 was readministered to confirm the presence of current depression symptoms. Eligible Veterans then completed an online pretreatment assessment survey, after which they received an invitation to register for the intervention. The iCBT-D intervention was "Beating the Blues", a commercially available, typically 8-week-long, self-guided iCBT-D program. Veterans had up to 12 weeks to complete the 8 content modules. Twelve weeks after completing the pretreatment assessment, if the Veteran had completed at least one treatment module, they received an emailed invitation to complete the posttreatment online survey. The PHQ-9 was administered during the pretreatment and posttreatment assessments.

Results: Forty-eight Veterans registered for the iCBT-D intervention. The median number of treatment modules completed was four, and 43 Veterans (90%) completed at least one module. Thirty-five Veterans (81%) completed at least some of the posttreatment survey and 25 (58%) had no missing items on their pretreatment and posttreatment PHQ-9s. Among Veterans with complete PHQ-9 data, a paired sample t-test found a significant difference between PHQ-9 total scores assessed at pretreatment ($M=12.5$, $SD = 5.7$) and posttreatment ($M = 8.8$, $SD = 5.9$), $t(24) = 3.35$, $p = .003$. While the sample was too small for formal statistical analysis of SI data, 4 Veterans endorsed SI at pretreatment and 4 endorsed SI at posttreatment, suggesting that use of the intervention was not necessarily associated with the cessation of SI .

Discussion: Our small feasibility trial of an unguided iCBT-D intervention suggested that a substantial proportion of Veterans enrolled in VA care were able to effectively use iCBT-D and that its use was associated with a decrease in depression symptoms over time. Future controlled trials are required to verify that unguided iCBT-D use results in a greater reduction in Veterans' depression symptoms as compared with treatment as usual and to adequately test its effect on suicide related outcomes. Our feasibility trial also yielded lessons on how we might refine our experimental procedure to improve treatment utilization and assessment completion rates in future trials (e.g., checks for missing data and prompts to Veterans to complete missing items).

T38. EMOTION DYSREGULATION INFLUENCES OUTCOMES FOR TREATMENT OF SUICIDAL YOUTH

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Background: Emotion dysregulation is associated with suicidality in adult samples, and similar associations are emerging in adolescent populations. However, research into the

mechanisms by which emotion dysregulation may contribute to suicidality are wanting. Preliminary studies have investigated how emotion dysregulation (ED) may influence suicide ideation (SI) through negative interpersonal cognitions – perceived burdensomeness (PB) and thwarted belongingness (TB) – as established by The Interpersonal Theory of Suicide (IPTS; Joiner, 2005). However, this complex relationship and its influence on treatment outcomes for suicidal youth is not yet well understood. This study examined the relationship between ED and SI for adolescents treated in a cognitive-behavior therapy based intensive outpatient program for acute suicidality. We investigated whether 1) higher ED at program entry and 2) changes in ED from treatment entry to exit were associated with treatment outcomes.

Methods: Adolescents (N = 75, 80% female, 89.3% white) completed validated questionnaires measuring PB and TB (INQ; van Orden et al., 2012), ED (DERS; Gratz and Roemer, 2004), depressive symptoms (DS), and suicide ideation (SI) at program entry and exit about 5 weeks later. 1) We used a median-split to categorize two groups: high ED (n = 39) and low ED (n = 36) at baseline, and 2) changes in ED scores were calculated by taking the difference from program entry to exit, creating two groups: those who had a decrease in ED (n = 51) and those who did not decrease in ED (n = 24).

Results: Using repeated measures MANOVA, we investigated differences between high and low ED, and entry and exit scores on PB, TB, DS, and SI. Both groups improved. The high ED group rated significantly ($p < .05$) higher on PB and TB, but not DS or SI, at both entry and exit. Moreover, analyses showed a time by group interaction, such that changes in measures from entry- to- exit for the high ED group showed steeper slopes - indicating a greater decline from treatment baseline to discharge on both TB and PB than the low ED group. Next, given the unequal ED change groups, we used the Quade (non-parametric) test to investigate the associations of change in ED with the outcome variables. We adjusted for baseline levels of all variables. Results indicated a significant difference between the ED change groups in TB and PB, such that those with a decrease in ED had a greater drop in these negative interpersonal cognitions.

Discussion: This research suggests that a change in emotion dysregulation may influence change in negative interpersonal cognitions that contribute to suicide ideation in youth. While high ED was not significantly associated with a greater change in SI, this finding is likely because the treatment is specifically aimed at suicide prevention, so all individuals improve somewhat equally on SI. Ultimately, we need longer-term data to determine whether diminished PB and TB influence lower SI over time. Moreover, findings that those who decreased in emotion dysregulation from entry to exit showed greater improvements on the negative interpersonal cognitions suggests an important target for suicide prevention in emotionally dysregulated youth.

T39. INCREASED INEQUITIES IN SCHOOL DISRUPTIONS AND SUICIDE RISKS AMONG FAMILIES WITH SCHOOL-AGED CHILDREN DURING THE COVID-19 PANDEMIC IN THE UNITED STATES

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Background: The coronavirus disease 2019 (COVID-19) pandemic has highlighted systematic inequalities in the US, particularly racial/ethnic and income disparities. With increasing rates of school closures, more families with school-aged children are experiencing the double hits of unemployment and disrupted schoolings. However, less is known about inequalities in school closures and mental health among them. Few documents whether government responses narrowed the preexisting disadvantages underlying the social structures.

This study aims to identify and quantify the association of race/ethnicity-based and income-based inequities of school disruptions with suicide risks and food security among parents and school-aged children in the US. We further explore whether three policies of Families First Coronavirus Act and the CARES Act–expansion in unemployment insurance (UI), SNAP, Economic Impact Payment (EIP stimulus)–buffer such impact across historically excluded groups. An accurate understanding of the distributional implications of public health policies for vulnerable families is critical for ensuring equitable responses to the COVID-19 pandemic and future public health threats.

Methods:
A representative population sample of 818,151 adults (44.01 [11.68] years old, 521,292 [63.72%] females) was extracted from the Census Bureau's Household Pulse Survey collected between April 23-July 21 (Weeks 1-12, Phases 1), August 19- October 26 (Weeks 13-17, Phases 2), and October 26-March 29, 2021 (Weeks 13-17, Phases 3).

Measures

School disruptions were characterized using self-reported class cancellations (defined as in-person classes at school canceled without distance learning), absence of live contact with teachers, and less time spent learning activities. We focus on two major psychological suicide risks Adult depressive and anxiety symptoms, which were measured by the Patient Health Questionnaire and Generalized Anxiety Disorder 2-item. Children well-being includes pandemic-related food insufficiency. We considered race/ethnicity and sex as exposures, and the recipience of UI, SNAP, and EIP as policy responses. Other covariates include age, sex, education, marital status, household size.

We conducted 3 sets of generalized mixed models to study (1) differences in school disruptions by race/ethnicity and income, (2) their interactions, and (3) three-way interactions with policy responses. To adjust for pandemic-related heterogeneity across states and time, we included state of residence, survey week, and weekly state-level COVID-19 case and death rates. We adjusted for survey sampling weights to render representative population estimates.

Results: Blacks, Latinos, and children from low-income families ($<35,000 in 2019) reported greater odds of class cancellations without distance learning, no learning activities, and lower time spent in schoolwork than the pre-pandemic period. Parents reported stronger depressive (AOR:1.26 [95% CI: 1.18-1.34]) and anxiety symptoms (AOR: 1.20 [95% CI: 1.13-1.28]) when children had unplanned class cancellation. Receiving EIP reduced the level of child food insufficiency among low-income and Asian families (AOR: 0.43 [95% CI: 0.22-0.80]).
Discussion: We found enormous racial/ethnic and income disparities in school disruptions, which further increased adult suicide risks in mental distress and child food insecurity. EIP stimulus significantly reduced the negative consequences of school disruptions. Our findings have important implications for future debates about short- and longer-term health policies: Tailored support for marginalized families with children can provide meaningful health benefits.

T40. CORRELATES OF SUICIDAL IDEATION DURING THE COVID-19 PANDEMIC IN ADOLESCENT GIRLS WITH A HISTORY OF NON-SUICIDAL SELF-INJURY

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[1]University of Minnesota

Background: The COVID-19 pandemic introduced novel and exacerbated existing stressors for many. Thus, the pandemic presents a new circumstance in which to study the impact of protective and risk factors for suicidality. It has been shown that teens and young adults with pre-existing mental health issues, such as history of non-suicidal self-injury (NSSI) engagement, are especially struggling in the context of the pandemic. We examined interpersonal stressors, social support systems, and mental health that could be correlates of suicidal ideation (SI) during the pandemic. It was anticipated that those participants who reported stable or greater frequency of SI during the pandemic would report higher pandemic-related stress (e.g., family income), lower support, and greater health problems (e.g., trouble sleeping) than those who reported a decrease in SI during the pandemic and those with no history of SI.

Methods: Participants from a study of youth with a history of NSSI were invited to participate in assessment about one year after the onset of the pandemic. Our sample included 55 female participants (mean age= 16.82 years, 73% Caucasian, non-Hispanic). They completed diagnostic interviews and provided demographic information prior to the pandemic. Participants completed self-report questionnaires on frequency of SI prior to and during the pandemic. They also completed Epidemic-Pandemic Impacts Inventory, Multidimensional Scale of Perceived Social Support, Pittsburgh Sleep Quality Index, and Robert's UCLA Loneliness Scale. Reported frequencies of SI were used to create three groups: Never (no SI reported), Decreased (decreased SI during COVID-19 pandemic) and Stable/Increase (stable or increased SI during pandemic.)

Results: When comparing the Decrease and Stable/Increase groups, prior to the pandemic there are no differences in rates of clinical diagnoses except for depression (Decrease was higher.) There are significant differences between the amount of pandemic related stressors experienced by all three groups ($F=10.684$, $p=0.000$). This difference remains significant when comparing the Decrease and the Stable/Increase groups ($t=-2.362$, $p=.026$). There is a significant difference in frequency of ideation prior to the pandemic between the two SI groups, with the Decrease group showing higher prior frequency of SI than the Steady/Increase group ($t=2.368$, $p=0.024$). Differences are significant between all groups in the rate of sleep problems ($F=6.272$, $p=0.005$) and loneliness ($F=4.084$, $p=0.025$). No group differences are not significant for family support and friend support (p's $> .05$).

Discussion: The experience of pandemic related stressors (i.e., parental job loss, changes in work and school, illness in the family) was the sole correlate of stable or increased SI during the COVID-19 pandemic. Other proposed interpersonal and intrapersonal factors were not related to differences between those who experienced a decrease in frequency of SI and those whose frequency of ideation remained stable or increased. This finding highlights the importance of understanding the role environmental stressors play in suicidality.

T41. HEALTHCARE PRESENTATIONS WITH SELF-HARM DURING THE COVID-19 PANDEMIC

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Background: Population level stay at home orders and strict social distancing measures have been in place globally since the COVID-19 pandemic emerged. Concerns were raised about the impact the COVID-19 pandemic and the measures taken to curb its spread may have on

people's mental health and suicidal behaviours. We aim to quantify whether self-harm contacts were disproportionally affected by the first wave of the COVID-19 pandemic, and whether this affected people differentially depending on sex, age or deprivation status.

Methods: We used population-scale individual-level routine data sources available within the Secure Anonymised Information Linkage Databank covering the population of Wales (~3.2 million people) between 2016 and August 2020. We measured weekly presentations to primary care general practice and secondary care emergency department (ED) and hospital admissions where self-harm was recorded using ICD-10 or Read codes. We compared changes in these presentations during 2020 between pre- (weeks 1 to 10) and post-COVID-19 periods to the equivalent in periods in years 2016-2019. We used generalised estimating equations to model weekly time trends of outcomes (adjusted by sex, age and deprivation). We quantified trend changes during 2020 against the equivalent in 2016-2019 using the difference in difference (DiD) approach.

Results: Between 2016-2019 and up to March 2020, we identified ~365,000 primary care weekly contacts, ~15,000 ED weekly contacts and ~16,000 weekly hospital admissions. From March 2020, the number of contacts was respectively ~5%, ~25% and ~37% lower than seen in previous years. These contacts were used as the denominator when calculating the proportion of contacts with self-harm recorded.

Across all settings, the number of self-harm contacts dropped by between ~25% and ~38% in March 2020, reversing an upward trend during the first two months of 2020; and returning to pre-COVID-19 levels by August. The proportion of primary care contacts with self-harm recorded showed a similar pattern, with a dip in March 2020. In ED, the proportion of self-harm contacts peaked in April. We found a similar peak during March-April in the proportion of hospital admissions with recorded self-harm.

Discussion: The number of presentations with self-harm across healthcare settings dropped in the month after the onset of the COVID-19 pandemic and rebounded to pre-COVID-19 levels 4 months later. Such drop, particularly in ED and hospital settings, are more likely to indicate a true reduction of the more harmful self-harming events in the population rather than changes in help seeking, as these were unlikely to be able to avoid attending to healthcare services. From the available data, we cannot unpick whether these events fully disappeared or simply became less severe.

Presentations to primary care with self-harm were disproportionately affected by the COVID-19 pandemic compared to other types of presentations and relative to previous years. Meanwhile, ED presentations and hospital admissions with self-harm where equally or less affected than presentations without self-harm. The higher-than-normal proportion of ED presentations with self-harm seen during the pandemic may explain the perception by practitioners of an increase in self-harm.

T42. TRENDS IN SUICIDE ATTEMPTS IN ISRAEL DURING COVID-19: A NATIONAL REPRESENTATIVE COHORT RETROSPECTIVE STUDY

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Background: The pandemic outbreak that included quarantines and lockdown periods, affected people's mental health negatively. The pandemic's impact on suicidal behavior is, however, unclear. The Israeli government mandated three lockdowns periods during the

pandemic: Mar. 14 to Apr. 30, 2020, Sep. 18 to Oct. 17, 2020 and Dec. 27, 2020 to Feb. 7, 2021. During the lockdowns severe restrictions were imposed: All schools and non-essential workplaces were closed, gatherings were restricted to only few participants, people were told to stay at home, internal travel was restricted and international travel was banned. The present study is a retrospective cohort study, aiming to investigate whether the pattern of suicide attempts (SAs) among Meuhedet Health Maintenance Organization (Meuhedet) members changed during the pandemic (Mar. - Dec., 2020), especially during the lockdowns and immediately after them. The period three years prior the pandemic was used as a control period for comparisons.

Methods: Data for the period from Mar. 2020 till Dec. 2020 (i.e. the COVID-19 pandemic period excluding the 3rd lockdown) was retrieved from the Meuhedet's daily SA register. The cohort consisted of all Meuhedet members between Jan. 1, 2017 and Dec. 31, 2020. In Israel, health care services are provided by four non-profit HMOs. Meuhedet is the third largest of four non-profit HMO's in Israel. It has a nationwide distribution and serves 14% (1,135,325 members) of the total Israeli population. Since all HMO's are mandated by law to accept any Israeli resident who so chooses as member, this cohort can be considered as a representative one of the general Israeli population.

Results: Meuhedet's daily SA register shows an exponentially increasing trend in SAs over the years. Still, in 2020 - the COVID-19 year - the rate of SAs did not increase. No significant differences were found in SA rates from month to month during the pandemic. Neither were any significant differences found between any of the pandemic months and equivalent periods prior to, or following the pandemic. However, during the Corona pandemic, two peaks were found in the rate of SAs: in July, the SA rate was 2.134 per 100,000 and in November it was 2.202, while the annual mean rate was 1.535 per 100,000. Both these peaks occurred during post-lockdown periods.

Discussion: : Previous studies pointed unequivocally to rising suicide rates. The current study demonstrated that during the crisis period the rate of SAs may vary. SA rates during lockdowns may be different from the rates in post-lockdown periods. A significant increase in suicide rates was found in July -three months after the first lockdown. This increase was significant even when taking into account the usual seasonal increase in SAs during the summer. After the second lockdown (November) another increase in the SA rates was observed, but this one occurred only a month after the lockdown. This finding may indicate that people living through continuous restrictions and stress may experience cumulative burnout. Research of suicidal behavior during crises should consider both long-term, permanent trends as well as seasonal trends occurring over the year. During a prolonged crisis, the rate of SAs may vary over time. It may decline in the early stages, but later increase due to cumulative stress.

T43. FINANCIAL HARDSHIPS AND MENTAL HEALTH CRISIS: AN EXAMINATION OF YOUNG ADULTS' COVID-19 PANDEMIC EXPERIENCE

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Background: The unprecedented financial instability triggered by the COVID-19 pandemic has alarmed researchers about the financial hardships and potential high suicide rates. Half of Americans have experienced loss in employment income and over a quarter of Americans are now experiencing housing insecurity as a result of the pandemic. Suicide rates have risen in recent years and oftentimes hit high marks when there are economic downturns. This study

examines multiple financial hardships during the Covid-19 and its relationship with suicidal ideation and attempts using a nationally representative sample of emerging adults.
Methods: A cross-sectional, online survey was administered in January 2021 in a nationally representative sample of emerging adults 18 to 29 recruited through Qualtrics Panels (N = 1,080). Six self-report, retrospective measures of financial hardships were included. These included financial strains since the start of Covid-19 in food security, housing security, bill payment, medical care and prescriptions, and childcare. Suicide-related outcomes included self-reported suicidal ideation and attempt in the past 12 months. Descriptive statistics and logistic regressions were used to model associations between each type of financial hardship and suicide-related outcomes, controlling for demographic and socio-economic variables.
Results: During the Covid-19 crisis, 40% of our sample had experienced at least one financial hardship out of six examined. Among all hardships, most respondents had difficulty in paying bills (29.83%, n=321), followed by paying rents or mortgage (21.94%, n=235) and affording medical care (20.67%, n=223). About 15% reported difficulty paying for prescription, while about 11% couldn't afford childcare. Bivariate analysis showed suicide ideation were significantly associated with all financial hardships except childcare hardship. Suicide attempts were associated with hardships related to bill payment, affording medical care and filing prescription. Multivariate logistic regressions controlling for demographic and socioeconomic covariates showed that cumulative financial hardships were predictive of suicide ideation (OR = 1.27, z = 4.99) as well as suicidal attempts (OR = 1.33, z = 4.58).
Discussion: This study indicates that financial hardships triggered by the Covid-19 pandemic – including difficulties in paying bills, affording food and medical care, paying mortgage or rent – has the potential to contribute to higher rates of suicide among emerging adults. The finding that cumulative financial hardships was significantly associated with increased suicide risks underscores the need to examine each financial strain for optimal assessment and specific prevention of suicide.

T44. OPEN BOARD

T45. A QUALITATIVE EXAMINATION OF MENTAL HEALTH NEEDS AND MANAGING SUICIDE RISK IN FRONTLINE MEDICAL PROFESSIONALS DURING THE COVID-19 PANDEMIC

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Background: We anticipate the psychological effects of COVID-19 will persist for months, if not years, following the pandemic (Lai et al., 2019). It is imperative to understand how to best support the mental health of frontline medical professionals and mitigate their unique risk for suicide. Medical professionals have consistently been shown to be at an elevated risk for suicide, which has been attributed to high rates of burnout and increased suicidal ideation (Tawfik et al., 2015). Additionally, they also experience an elevated capacity for enacting lethal suicidal behavior given the nature of their work (Van Orden et al., 2010). This ongoing research study aims to provide a collaborative and comprehensive understanding of a) how COVID-19 has impacted mental health and suicide risk in frontline medical professionals, b) their perceived needs, protective factors and preferences for mental health care, and c) observed barriers to accessing and benefitting from mental health services.

Methods: Participants were provided a 90-minute, semi-structured interview on their COVID-19 experiences and a Crisis Response Planning intervention. Post-interview they completed baseline questionnaires assessing various factors impacting suicide risk, mental health, and psychological resilience. The Self-Injurious Thoughts and Behaviors Interview (SITBI) was used to assess for the presence, frequency, and characteristics of suicidal ideation, suicide plans, attempts, and non-suicidal self-injury (NSSI).
Interpretive Phenomenological Analysis was conducted on the interview data; seven themes emerged during analysis: Baseline Changes, Affective/Behavioral, Interpersonal, COVID-19 related stressors, Life changes, Reasons for Living, and Suicidal/NSSI. These themes aim to inform the optimization of mental health services and increase access to such services.

Results: The most prominent affective theme reported concern elevated levels of and decreased capacity to regulate anxiety. Participants reported notable rise in anxiety and fear at work, especially when encountering patients with symptoms resembling COVID. Participants described increased attention directed at maintaining good hygiene and cautious measures to separate work from personal space (e.g., home). Participants recognized the importance of therapeutic support, however only one started therapy during the pandemic. Participants attributed a lack of time due to long work hours, and lack of childcare, as barriers to seeking mental healthcare. Many reported difficulty finding time to take breaks during long shifts and desired time to attend to mental health needs, and a return to pre-COVID rituals such as exercise and vacation time. Key occupational stressors related to the availability of PPE, financial strain, and tensions with hospital administrators. Despite increased distress, no participants endorsed current suicidal ideation, however one endorsed current NSSI.
Discussion: Past studies on global crises such as the SARS outbreak have found frontline medical workers to be at risk for developing posttraumatic stress disorder and other work-related mental health conditions (Wu et al., 2009). We must be proactive and assess the risks and needs of those working the frontline now to develop effective mental health services and programs. Similar to the increase in suicide we observe in military service members returning from combat (Kang et al., 2015), we expect to see an increase in psychiatric symptoms and suicide risk for frontline healthcare workers in the next months, particularly as the COVID-19 pandemic wanes and they begin processing their experiences.

T46. CLINICAL IMPLEMENTATION OF SUICIDE RISK PREDICTION MODELS IN HEALTHCARE

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Background: Suicide risk prediction models derived from electronic health records (EHR) are a novel innovation in suicide prevention but there is little evidence to guide their implementation.
Methods: In this qualitative study, 30 clinicians and 10 health care administrators were interviewed from one health system anticipating future implementation of automated EHR-derived suicide risk prediction models and two health systems which were piloting two different implementation approaches. Site-tailored interview guides focused on respondents' expectations for and experiences with suicide risk identification models in clinical practice, and suggestions for improving future implementations. Interview prompts and content analysis were guided by Consolidated Framework for Implementation Research (CFIR) constructs.

Results: Administrators and clinicians found use of the suicide risk identification models and the two implementation approaches acceptable. Clinicians desired opportunities for early buy-in, implementation decision-making, and feedback. They wanted to better understand how this manner of risk identification enhanced existing health care system suicide prevention efforts. They also wanted additional training to understand how the models determined risk, particularly after patients they expected to see identified by risk models were not flagged at-risk and patients they did not expect to see identified were. Clinicians were concerned about having enough suicide prevention resources for potentially increased demand and about their personal liability; they wanted clear procedures for situations when they could not reach patients or when patients remained at-risk over a sustained period. Suggestions for making risk model workflows more efficient and less burdensome included consolidating suicide risk information in a dedicated module in the EHR and populating risk assessment scores and text in clinical notes.
Discussion: Health systems considering suicide risk model implementation should engage clinicians early in the process to ensure they understand how risk models estimate risk and add value to existing workflows, clarify clinician role expectations, and summarize risk information in a convenient place in the EHR to support high-quality patient care.

T47. TIME FOR TAKE 2: RESULTS FROM A MIXED-METHOD PILOT EVALUATION OF SUICIDE RISK PREDICTION ALGORITHM IMPLEMENTATION

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Background: Healthcare systems have begun using suicide risk prediction algorithms to support suicide prevention. Leaders at a large regional U.S. healthcare system selected one outpatient mental health (MH) specialty clinic to pilot implementation of an algorithm, which uses historical data from electronic health records (EHR) and insurance claims to "flag" scheduled appointments with patients at high risk of suicide attempt. This evaluation aimed to inform quality improvement for further dissemination across all MH specialty clinics. Descriptive statistics and qualitative interviews evaluated whether the algorithm prompted intended action and elicited providers' suggestions for implementation improvements.
Methods: Suicide risk flag implementation was designed to augment the existing clinical workflow to help MH providers identify patients at high risk of suicide. The existing workflow included administration of the Patient Health Questionnaire-9 (PHQ-9) prior to patient visits. Providers were then prompted to complete the Columbia-Suicide Severity Rating Scale (C-SSRS) in the EHR for patients reporting frequent suicidal ideation (score 2–3 on PHQ-9 question 9) in the prior 2 weeks. The new schedule-based flag prompted administration of the C-SSRS to patients in the top 5% of estimated risk regardless of PHQ-9 scores. Pre-implementation (10/8/2019), pilot clinic providers received information about the suicide risk prediction flag during a routine team meeting. Post-implementation (11/7/2019), providers received directions how to display the schedule-based flag in their EHR-and example scripting to help normalize the new risk assessment process for patients.

Data was obtained from the EHR for all pilot clinic patient visits during a post-implementation observation period (12/1/2019–3/15/2020) to assess how often the C-SSRS was not completed among flagged visits. In addition, all pilot clinic providers (N=16) were invited by email to participate in a semi-structured audio-recorded telephone interview about their experiences using the visit-based suicide risk flag. Interview transcripts were analyzed using directive (deductive) and conventional (inductive) content analysis.

Results: There were 4789 visits by 1939 patients in the 3.5-month observation period, including 161 visits (3.5%) with a suicide risk flag. During 57 of the flagged visits, patients reported frequent suicidal ideation (PHQ-9 Q9=2–3) and, as per existing workflow, 54 (95%) of those patients completed a C-SSRS. With the new workflow, 75 patients were flagged and reported no or infrequent suicidal ideation (Q9=0–1), but only 10 (13%) completed a C-SSRS. Additionally, 29 visits were flagged, but there was no documented PHQ-9, and only 1 (3%) of those patients completed a C-SSRS.
Eight clinic providers participated in a qualitative interview between 5/11/2020–6/22/2020. Providers who described seeing the flag in their EHR-based schedule (N=5), reported it was "helpful" but questioned "reliability" and offered suggestions about EHR adaptations designed to prompt use of the C-SSRS for all flagged visits. Only one provider explicitly described their process for administering the C-SSRS to flagged patients who did not report suicidal ideation.

Discussion: Implementation of a schedule-based suicide risk prediction algorithm did not consistently prompt additional suicide-risk assessment as intended. To improve algorithm dissemination, MH providers suggested more frequent dialogue about the intent and meaning of the flag and EHR adaptations to prompt use of the flag to augment existing suicide prevention clinical practices.

T48. DEVELOPMENT AND PRELIMINARY IMPLEMENTATION OF AN EXERCISE PROGRAM FOR JAPANESE UNDERGRADUATE SOCIAL WORK STUDENTS TO IMPROVE COMMUNICATION SKILLS WITH SUICIDAL CLIENTS

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Background: Social workers are highly likely to encounter suicidal clients. A survey conducted in Tokyo revealed that 74% of social workers had experience dealing with a client's suicide, attempted suicide, or suicide ideation, but only 31% had participated in suicide prevention training (Kodaka et al., 2013). Suicide prevention education needs to be included in the social work curriculum. We previously reported that Japanese undergraduate social work students who attended a 90-minute suicide prevention lecture significantly improved their knowledge of and attitudes toward suicide (Kodaka et al., 2017). In the present study, we developed an exercise program that can be incorporated into the lecture to provide more comprehensive suicide prevention education aimed at improving students' communication skills with suicidal clients. In addition, we preliminarily implemented the program and obtained feedback and comments from course instructors to explore the program's feasibility.
Methods: Through repeated discussions and a literature review on suicide education for social work students and related themes, we developed an exercise program by considering what type of exercise would be suitable for undergraduate students to acquire basic communication skills

with suicidal individuals within a limited period of time. Contents of the exercise were designed with the following points in mind: 1) reduce students' resistance to the theme of suicide prevention; 2) acquisition of a sense of accomplishment and confidence through exercise; and 3) the exercise is easy to teach even for instructors not specialized in the field of suicide or mental health. The developed exercise program was implemented in three classes at two universities. If students had little knowledge about suicide prevention, the exercise was performed in conjunction with the lecture. We obtained feedback and comments from the instructors regarding the exercise program. The study was conducted in compliance with the ethical guidelines for epidemiological research.
Results: A role-play exercise was developed in which students were divided into small groups and performed the following tasks: 1) Read through the role-play scenario, which included some blank spaces to fill in with the social worker's responses; 2) Discuss the responses in small groups and fill in the blanks; 3) Perform a role-play with the completed scenario in front of the class; and 4) Discuss in class the students' experiences with the role-play exercise. Finally, class instructors commented on the exercise and accompanying discussion. The duration of the program was approximately 90 minutes. Instructors' feedback after the program indicated that some students failed to consider effective verbal and non-verbal communication skills for social workers, simply quoting phrases from lecture materials when filling in the blanks of the scenario. One of the instructors also mentioned that, after the role-play exercise, some students indicated that they had become anxious about working with suicidal clients in clinical practice.
Discussion: We developed a new exercise program for undergraduate students to acquire basic communication skills with suicidal individuals within a 90-minute class period. In order to improve the program, students will require additional instruction to consider both non-verbal and verbal professional communication skills, rather than just choosing words in an arbitrary manner, when filling in the blank dialogues. For instructors, the importance of self-care and a team approach to reduce the psychological burden that social workers may experience when working with suicidal clients should be emphasized. The modified version of the program will need to be tested for effectiveness.

T49. A COST-EFFECTIVENESS MODEL OF FIREARM MEANS SAFETY INTERVENTIONS ON MILITARY SERVICEMEMBER SUICIDES

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Background: Suicide is a leading cause of death in the US military, and personal firearms are the most common suicide method. One scalable intervention for reducing military suicide deaths is to encourage military members to store their firearms locked. Results from a recent randomized controlled trial showed that a brief motivational interviewing session focused on lethal means counseling and/or distributing cable locks increased locking behaviors in servicemembers (Anestis et al., 2020). Although these interventions are promising, it is unclear whether delivering them to all firearm-owning servicemembers would be an effective and cost-effective way to use resources to save lives. The aim of this study is to estimate costs and benefits from the DoD perspective and lives saved from scaling firearm means safety interventions to increase firearm locking in the military.

Methods: We used a deterministic state-transition model to simulate the expected number of suicides and costs to the DoD in firearm-owning US servicemembers (SMs) for three interventions from a randomized trial: providing cable locks (CBL]), lethal means counseling (LMC), and CBL combined with LMC (CMB; Anestis et al., 2020), versus no intervention. The model tracks events in a cohort of 100,000 SMs given an intervention for up to 2 years. Each cycle (3 months) begins with SMs in four possible states: firearm locked, firearm unlocked, deceased, or separated from military. Thereafter, three events can take place for SMs in the locked and unlocked groups: suicide by personal firearm, death by other causes, or separation/loss from the military. The probability of locking was based on trial results extrapolated to 2 years with 2% decay in efficacy each cycle. The probability of suicide in locked vs. unlocked states was based on military firearm suicide mortality rates and case-control studies of the effects of locking on suicide.

Intervention costs, which would include counselor pay and training, cable locks, and SM time, were estimated based on military pay values. Costs of suicides included medical treatment, death gratuity, and survivor benefits. We addressed uncertainty using scenario-based and probabilistic sensitivity analyses.

Results: Similar to trial results, the base-case model found that CBL and CMB were fairly equivalent in efficacy for reducing suicides, and LMC was slightly less effective, though still more effective than placebo/control. CBL was modeled to avert 19.8 per suicides over 2 years per 100,000 treated, versus 15.0 for LMC and 20.0 for CMB. Sensitivity analyses found substantial uncertainty regarding the relative efficacy of CBL versus CMB.
Given these efficacy estimates and the cost of suicide, the model implied that DoD could spend $60 per SM for CBL or CMB and $46 for LMC and break even. In our base case, both CBL (-$228,903 per suicide averted) and CMB (-$4,424 per suicide averted) were cost saving, but these values were highly dependent upon intervention cost estimates (such that in some sensitivity scenarios, only CBL was cost-saving, and in others, all three were cost-saving).

Discussion: Both distributing cable locks with motivational interviewing and cable lock distribution alone appear to save costs and SM lives across several scenarios. Importantly, this model may underestimate benefits (e.g., by omitting effects on, e.g., family member suicide). Full information about the model, parameter estimates, and results will be presented at the conference.

T50. THE AUSTRALIAN YOUTH SELF-HARM ATLAS: MAPPING THE REGIONAL VARIABILITY OF NON-SUICIDAL SELF-HARM AND SUICIDE ATTEMPTS IN AUSTRALIAN ADOLESCENTS TO INFORM SUICIDE PREVENTION STRATEGIES

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Background: Suicide prevention strategies in Australia have shifted in recent years, from a national approach to one that is regionally tailored and responsive to local community needs. Previous Australian studies on regional variation of suicide have supported this approach, however, most research has focused on suicide deaths which may not properly reflect prevention needs, and few studies have focused on young people. This is a priority population

where urgent action needs to be taken to prevent suicides in Australia. The study, funded by Suicide Prevention Australia, will be the first to investigate regional variability of self-injurious and suicidal behaviours, and their related risk and protective factors, in Australian adolescents.
Methods: This will be achieved by (1) analysing and mapping local-level prevalence estimates of non-suicidal and suicidal self-harm using Young Minds Matter (YMM), a nationally representative survey of Australian adolescents (12-17 years), and (2) conducting focus groups with young people (<21 years) with lived experience and other key stakeholders in several geographically distinct regions across Australia. The latter will provide rich, in-depth information about what stakeholders perceive to be the most relevant risk and protective factors for self-harm and suicide prevention in their local communities.
Results: The research project is currently underway. Half of the focus group data collection is expected to be completed by September 2021. Preliminary results will be available at the time of the conference.
Discussion: Taken together, the project findings are expected to have strong translational value as they will identify priority youth self-harm and suicide prevention targets in distinct geographic regions, and provide evidence to inform targeted, local prevention and intervention efforts across Australia.

T51. HOW OFTEN ARE SUICIDE ATTEMPTS FOLLOWED BY SUICIDE AND SUICIDE PRECEDED BY SUICIDE ATTEMPTS? NATIONAL DATA IN ISRAEL, 2006-2017

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Background: Suicide attempts are known as a significant risk factor for suicide. In Israel, the unique identity number enables merging of death records with suicide attempt records for complete national databases.
The aim of this study was to find what percentage of those who attempted suicide, had a completed suicide within 2 years or within 5 years, and what percentage of completed suicides were preceded by an attempt within 2 or 5 years, in national Israeli databases.

Methods: The database of suicides in Israel for 2008-2017 was merged with that of suicide attempts treated in emergency departments at general hospitals in 2006-2015, by encrypted identity number. Percentage of those who completed suicide within 2 or 5 years of their first attempt in the study period and of those who had a complete suicide preceded by an attempt within 2 or 5 years was calculated by 3 year periods, age and sex.
Results: We found a decreasing trend in completed suicides within 2 years of a first attempt in the study, 0.9% on average for 2006-2008 compared to 0.6% in 2013-2015. The proportion was higher for males, 1.0% in for 2013-2015 average, compared to 0.3% in females, and 0.6% and 1.7%, respectively, for suicide within 5 years of a first attempt in 2010-2012.
0.4% of males who first attempted suicide in 2006-2015 under age 24 completed suicide within 2 years, compared to 1.6% aged 25-44, 2.2% aged 45-64 , 3.8% aged 65-74 and 3.0% aged 75 and above. The percent was lower at all ages in females, 0.1%, 0.5%, 1.1%, 1.5% and 0.8%, respectively.

10% of completed suicides in 2015-2017 were preceded by an attempt within 2 years and 13% within 5 years, 15% and 22%, respectively, for females, and 8% and 11%, respectively, for males. For the total period 2008-2017, the percent of completed suicides with a preceding attempt within 2 years was higher for females than males at all ages, 18% for those aged 25-

74, 12% aged 15-24 and 6% for aged 75 and over, compared to 10% in males aged 25-44 and 7%-8% at other ages.

Discussion: The proportion of completed suicides amongst persons with a previous attempt, much higher than the suicide rate in the total population, supports the fact that suicide attempts are a strong risk factor for suicide, and the importance of follow-up treatment. We also showed the higher risk in males, in particular aged 65-74, while suicide attempts in youth were less likely to be followed by suicide. The decreasing trend in suicides after a suicide attempt could indicate an improvement in treatment after suicide attempts, or an increase in suicide attempts over time amongst those with less severe suicidal behavior.
However, we also showed that the great majority of suicides were not preceded by a suicide attempt, so suicide prevention efforts need to address the total population and not only suicide attempters. We also showed that females were more likely to have a preceding attempt, maybe because of their higher attempt rates.

T52. THE EARLY IMPACT OF PARAQUAT BAN ON SUICIDE IN TAIWAN

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Background: Pesticide ingestion is a leading method for suicide worldwide, accounting for 110,000-168,000 suicides a year globally. Paraquat is a highly lethal herbicide (weedkiller) when ingested. We assessed the impact of the first-stage ban on the import and production of paraquat (from February 2018) on suicides by pesticide poisoning in Taiwan.
Methods: Suicide data by method (pesticide vs non-pesticide), pesticide (paraquat vs non-paraquat), and area/sex/age were extracted from the national cause-of-death data files (2011-2019). Negative binomial regression was used to estimate changes in suicide rates in 2019, compared to the expected rates based on pre-ban linear trends (2011-2017).
Results: The paraquat ban was followed by an estimated 37% (rate ratio [RR] = 0.63, 95% confidence interval [CI] 0.54-0.74) reduction in pesticide suicide rate (190 [95% CI 116-277] fewer suicides) in 2019, mainly due to a 58% (RR = 0.42, 95% CI 0.33-0.54) reduction in paraquat suicides (145 [95% CI 92-213] fewer suicides). Larger absolute reductions in pesticide suicides were found in rural areas, males, and the elderly (aged 65+ years) than their counterparts. Except for a 10% (95% CI 3-18%) reduction in overall suicide rates in the elderly, there was no statistical evidence for a change in non-pesticide and overall (all-method) suicides.
Discussion: The ban on the import and production of paraquat was followed by a fall in whole-population pesticide and paraquat suicides and elderly suicides in Taiwan. Future research is needed to assess the longer-term effect of the complete paraquat ban. Restricting or banning highly hazardous pesticides has the potential to prevent hundreds of thousands of deaths from impulsive self-poisoning using pesticides.

T53. A GENETICALLY INFORMED STUDY ON THE CONTRIBUTION OF BIRTH WEIGHT TO SUICIDE RISK: TWO-SAMPLE MENDELIAN RANDOMIZATION

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Background: Low birth weight, an index of poor fetal growth, is associated with suicidal ideation, suicide attempt, and suicide mortality. However, the causal nature of these associations remains difficult to establish due to confounding. We aimed to estimate the contribution of birth weight to suicide attempt using two-sample Mendelian randomization, an instrumental variable approach strengthening causal inference.
Methods: We used 48 independent single-nucleotide polymorphisms as genetic instruments for birth weight (N of the genome-wide association study = 264,498). We consider suicide attempt as an outcome using the genome-wide association study from the iPSYCH cohort (N = 50,264). Additionally, the following mental health problems associated with suicide risk were investigated: attention-deficit hyperactivity disorder [ADHD], autism spectrum disorders, bipolar disorder, major depressive disorders, obsessive-compulsive disorder, post-traumatic stress disorder [PTSD], schizophrenia. This allowed us to test whether birth weight is specifically associated to suicide attempt or is associated with mental health problems strongly related with suicide risk. We performed a two-sample Mendelian randomization using the random-effect Inverse Variance Weighing method as primary analysis, supplemented by a wide range of sensitivity analyses, including Egger regression, weighted median, and Pleiotropy Residual Sum and Outlier. Results were considered statistically significant after accounting for multiple testing using False Discovery Rate (q = 0.05).
Results: After correction for multiple testing, we found evidence for a contribution of birth weight to suicide attempt (OR for 1 SD-unit decrease [~464 grams] in birth weight, 1.39; CI=1.05-1.84). There was also evidence for a contribution of birth weight to ADHD (OR, 1.29; CI, 1.03-1.62) and PTSD (OR=1.69; CI=1.06-2.71), but no association was found for the other mental disorders, including major depression (OR, 1.00; CI, 0.90-1.12), schizophrenia (OR, 1.03; CI, 0.87-1.21), and bipolar disorders (OR, 0.93; CI, 0.77-1.13). Results were consistent across main and sensitivity analyses.
Discussion: In line with observational evidence on the developmental origins of suicide, these findings support that birth weight could be an important element on the causal pathway to suicide. Associations with ADHD and PTSD suggest that impulsive and stress-related traits may be related mechanisms explaining these associations. However, such mechanisms may not implicate depression, schizophrenia, or bipolar disorders. Early interventions targeting birth weight may have a positive impact on promoting suicide prevention

T54. ASSOCIATION OF CHILDHOOD BULLYING WITH SUICIDE DEATHS: FINDINGS FROM A 50-YEAR UK NATIONALLY REPRESENTATIVE COHORT STUDY

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Background: Bullying-victimization has been associated with increased risk of suicidal ideation and suicide attempt throughout the lifespan, but to our knowledge no study has yet examined whether bullying-victimization translates to greater risk of death by suicide. We aimed to determine the association of bullying-victimization during childhood with death by suicide over the first five decades of life.

Methods: Participants were drawn from the 1958 British Birth Cohort, a prospective cohort of all births in one week in England in 1958. We conducted logistic regressions on 14, 946 participants whose mothers reported bullying-victimization at 7 and 11 years with linked information on suicide deaths through the National Health Service Central Register.
Results: Fifty-five participants (48 males) had died by suicide from age 18 to 52 years. A one standard deviation increase in bullying-victimization was associated with small increased odds for suicide mortality (OR, 1.29; 1.02–1.64) during adulthood. ORs attenuated by 11% after adjustment for individual childhood and familial characteristics (1.18; 0.92–1.51).
Discussion: Being the victim of bullying in childhood leaves a long-lasting scar on people's risk for suicide mortality in the adult years. Reducing bullying-victimization and other pre-existing vulnerabilities in childhood may contribute to the prevention of death by suicide in adulthood.

T55. SAFETALK SUICIDE PREVENTION TRAINING IN THE UNIVERSITY SETTING

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Background: Suicide is a growing trend amongst the adolescent population. Suicide was once not even on the top 100 list of death, but is now in the top 10. In 2015, there were twice as many suicides than homicides in the United States (National Institutes of Health [NIH], n.d.). According to the World Health Organization (2021), a suicide attempt happens every second, while every forty seconds one dies from suicide. According to NIH (n.d), the suicide rate has increased 24 percent in the past 15 years. Suicide has become a safety concern for the University setting because it has become a global health concern for the adolescent and young adult population. Faculty and staff have a unique role in this safety problem because they are able to interact one on one with students and have an impact on the future of the adolescent/young adult population. The project that is being implementing is an innovative approach to assisting community members (faculty and staff) to utilize interventions to reduce the risk of suicide in their community. A suicide intervention-training course will be implemented for faculty and staff in the College of Health Professions at Ferris State University, who deal with the adolescent/young adult population on daily basis. The investigators will utilize a program called SafeTALK to provide faculty and staff training which is intended to help raise awareness and suicide, and equip community members in how to engage with a person with thoughts of suicide (Lang, Ramsay, Tanney, and Kinzel, 2010).

Methods: The investigators will recruit participants for this study by advertising a professional development
SafeTALK training session, available to all faculty and staff within the College of Health Profession at Ferris State University. The target is to have 20-30 participants for this SafeTALK training.

The PICO question for the project is, "Do faculty and staff that attend a safeTALK program feel they have an increased comfort level in identifying a student with thoughts of suicide and intervening by the end of the course?" A mixed delivery approach utilizing a qualitative and a quantitative research design will be conducted. To evaluate the effectiveness of the project a five-question open ended style questionnaire will be given to assess the feelings and attitudes of the community members for the qualitative data.

For the quantitative data, a pre and post survey will be conducted with a Likert scale to see how much knowledge has been gained in suicide awareness. Group discussions as well as role-play during the training session will be conducted to evaluate how comfortable the participants are with the skills they are learning. By completing the four hour training, participants should be able to:

a. Recognize that caregivers and persons at risk are affected by personal and societal attitudes about suicide

b. Discuss suicide with a person at risk in a direct manner

c. Identify risk alerts and connect them to a person who can complete an in-depth intervention

d. Demonstrate the skills required to intervene with a person at risk of suicide

The date range for collecting the data would be right before the training and right after the training. No data will be collected after the day of the training.

Results: Preliminary results pending, in progress research.
Discussion: This project aspires to provide evidence to support that gatekeeper training, like SafeTALK, can be utilized to improve preventative measures for suicide in schools and community settings.

T56. RELATIVE EFFECTIVENESS OF TREATMENT WITH MOOD STABILISERS FOR PEOPLE WITH BIPOLAR DISORDERS ON SUICIDAL BEHAVIOUR AND PSYCHIATRIC REHOSPITALISATION: BETWEEN- AND WITHIN-INDIVIDUAL STUDY

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Background: Mood stabilisers are the indicated treatment of bipolar disorder. Yet, it remains to be determined which treatment is linked to the lowest risk of suicide. The objective of this study was to investigate whether rates of suicide, self-harm, and psychiatric rehospitalisation in individuals with bipolar disorders differed with respect to mood stabilisers.
Methods: A cohort design was applied to study people aged 15+ who were living in Denmark during 1995-2016 and diagnosed with bipolar disorders. Treatment with lithium, valproate, other mood stabilisers and antipsychotics were compared in between- and within-individual analyses adjusted for socio-demographics and previous self-harm. Kaplan-Meyer curves were fitted.
Results: In all, 33,337 individuals with bipolar disorder were identified (266,900 person-years). When compared to other individuals not in treatment, lithium users had a lower rate of suicide (HR: 0·59; 95% CI: 0·45-0·77), while higher rates were noted for other mood stabilisers (HR: 1·71; 95% CI: 1·30-2·24) and antipsychotics (HR: 2·06; 95% CI: 1·64-2·60). Comparing on and off periods of the same individual, lower rates of self-harm were noted for lithium (HR: 0·59; 95% CI: 0·47-0·74) and other mood stabilisers (HR: 0·76; 95% CI: 0·60-0·96) versus no drug. Lower rates of psychiatric re-hospitalisation were noted for all examined drugs in within-individual analyses.

Discussion: Lithium was associated with lower rates of suicide, self-harm and psychiatric rehospitalization in all analyses. With respect to suicide, lithium seemed superior to no treatment. Although confounding by indication cannot be excluded, lithium seems to perform better than other mood stabilisers.

T57. CHARACTERISTICS AND PSYCHOPATHOLOGY OF 1,086 PATIENTS WHO SELF-POISONED USING PESTICIDES IN TAIWAN (2012-2019): A COMPARISON ACROSS PESTICIDE GROUPS

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Background: Pesticide ingestion is a leading method for suicide worldwide, accounting for 110,000-168,000 deaths a year. Past research suggests that many suicides by pesticide ingestion were impulsive with low level of psychopathology, particularly in low- and middle-income settings. This has implications for policies to ban highly hazardous pesticides to prevent deaths from impulsive pesticide self-poisoning. However, less is known about whether pesticide self-poisoning in high income settings also showed similar profiles, and whether those with psychopathology were more likely to use specific pesticides, e.g., pesticides that were more lethal.

Methods: We retrospectively collected data for patients who self-poisoned using pesticides and were treated at eight major regional hospitals in Taiwan between 2012-2019. Data were extracted from hospital records for socio-demographic characteristics, lifestyle, chronic illness, pesticides ingested, poisoning-related factors, interpersonal conflicts before self-poisoning, and triggering events of self-poisoning. Information for psychopathology including previous suicide attempt, past psychiatric service use, and psychiatric diagnoses were extracted from the notes written by psychiatrists. Pesticides were classified into six groups: paraquat, glyphosate, glufosinate-ammonium, organophosphates, other pesticides, and unknown pesticides. Multinominal logistic regression was used to investigate the association of characteristics, interpersonal conflicts, triggers, and psychopathology with the groups of pesticides ingested, after controlling for sex and age.

Results: A total of 1,086 patients who self-poisoned using pesticides were identified: 67.0% were male and 39.8% were aged 65+ years. Approximately three quarters of the patients who received psychiatric assessment had at least one psychiatric diagnosis, while only 36.9% of them had interpersonal conflicts prior to self-poisoning. Lifestyle or poisoning-related factors did not differ across patients who ingested different groups of pesticides; however, patients who ingested paraquat tended to be younger and had higher educational level compared with those who ingested other groups of pesticides. There was no difference in interpersonal conflicts before self-poisoning, most of the triggers, past psychiatric service use, and psychiatric diagnoses across patients who ingested different groups of pesticides.

Discussion: The majority of patients who self-poisoned using pesticides in Taiwan had psychiatric illness that required treatment. Patients who ingested different groups of pesticides were generally very similar in their characteristics. The pesticides used in self-poisoning might more relate to availability than intentional choices. Restricting access to highly hazardous

pesticides is likely to prevent many deaths from pesticide self-poisoning, while psychiatric assessment and treatment are also important in patients who self-poisoned using pesticides.

T58. THE UNTAPPED OPEN DATA FROM THE CENTERS FOR DISEASE CONTROL AND PREVENTION: AN EXPLORATORY DATA ANALYSIS OF MARRIAGE'S VARYING IMPACT ON SUICIDE RATE BY RACE, SEX, AND AGE

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Background: Each year since 1968, the Centers for Disease Control and Prevention (CDC) has released open data with details of every death in the United States. These data are contained within Mortality Multiple Cause-of-Death data files published online in the National Vital Statistics System (NVSS). Information included have varied somewhat over time but consistently include qualification by International Classification of Disease (ICD) codes, with specific information about suicide such as by jumping from a high place, by firearm, and so forth. In addition, data about marital status, place of death, race and ethnicity, sex, and education are also available. Collectively these data represent a wealth of opportunities to add to the limited literature regarding racial and ethnic minorities and suicide method specificity. I conducted an exploratory data analysis (EDA) of the relation of marital status to suicide rate, and how this association varies by race, sex, and age. Special attention was paid to comparisons of married and single (never married) individuals.

Methods: To investigate continuous data with reasonably large samples, the ten-year prevalence of suicide from 2010 to 2019 was calculated for every combination of marital status, race, sex, and age. Data consists of the entire population of suicides in the United States within the time period (n = 435,166). In some cases, data were compiled by age group. Odds ratios comparing married and single population suicide rates by age were calculated and compared by the given strata. As odds ratios fluctuated by age in a nonlinear fashion, locally estimated smoothed scatterplots ("LOESS") curves were constructed as an appropriate mode of regression. Associated confidence intervals were used to assess differences between groups. Figures were used to explore the data.

Results: Clear visual differences are apparent when comparing regression models through scatterplots. With respect to race, odds ratios (single vs. married individuals) generally increased from young adulthood and peak between the ages of 30 and 40. Yet, the rate at which effect emerged varied. For example, when comparing LOESS curve confidence intervals, there is no evidence that the effect is stronger in non-Hispanic Asian males at age 25 compared to other non-Hispanic individuals (OR = 1.359, compare to White OR = 1.401; $p > .05$), but at age 35 the odds ratio observed in non-Hispanic Asians is expressly greater (OR = 3.733, as compared to second-highest – White OR = 2.260; $p < .0001$). This was also observed when comparing non-Hispanic Asian females to non-Hispanic non-Asian racial groups (at age 25, $p > .05$; at age 35, $p < .001$). Numerous other effects were observed and plotted in figures.

Discussion: The protective effect of marriage, in its variation across the lifespan according to demographic strata, is worth studying further. Second, these results demonstrated the potential utility of EDA in extant CDC data, which provide a rich resource for examining several important theoretical and epidemiological questions about suicide and its prevention.

T59. SEX DIFFERENCES IN SUICIDE TRENDS AMONG CANADIAN YOUTH AGED 10 TO 14

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Background: Suicide rates are rising among youth in North America. Although the risk of suicide increases with age, there are concerning trends in both the United States and Canada that younger females aged 10 to 14 years show the largest percentage increase in suicide. The last analysis of sex-specific suicide trends among adolescents aged 10 to 14 in Canada reported on data to 2008; therefore, the objective of this study is to extend this analysis to 2018 in order to identify trends over time.

Methods: We used the Canadian Vital Statistics Database, which is comprised of International Statistical Classification of Diseases and Related Health Problems codes recorded on death certificates. Suicide data were available for all recorded deaths among Canadians aged 10 and older. Based on census data, we calculated age- and sex-standardized suicide rates per 100,000 for each year from 2000 to 2018 for youth aged 10 to 14. We used segmented regression analysis to identify up to 2 breakpoints in the suicide rate for each age group and sex based on visual inspection, Bayesian Information Criteria, and by empirically fitting polynomial models to the series. We estimated the best location of the breakpoint(s) by testing for the difference of slopes. We compared suicide rate between sexes in 2000, 2009, and 2018 (start, middle and end of the study period), fitting a linear model that includes both sex and an interaction between sex and year. To account for the change in slopes, we added an indicator of the year being larger or equal to the breakpoint in the model, interacting with sex and year. We modelled the outcome on the logarithmic scale to calculate incidence rate ratio (IRR) at the desired time points and to calculated a linear contrast of estimated marginal means comparing males and females.

Results: Among males and females aged 10 to 14, the rate of suicide decreased in both sexes (males>females) up until 2009 when the rates diverged, and there is a steady and consistent increase in the rate in females, surpassing the rate for males until the last data point in 2018 (females>males). From 2009 to 2018 the rate of suicide in females increased an average of 7% per year ($p<.003$). The rates of suicide in males did not change significantly over the study period. The IRR (male:female) in 2000, 2009, and 2018 changed from 1.17 to 1.30 to 0.48 in 2018, and was reversed and significantly different in 2018 than in 2000 ($P<.00001$).

Discussion: After a period of decline in suicide rates in both sexes aged 10 to 14 from 2000 to 2009, the rate in females increased markedly and consistently over a period of ten years at an average of 7% per year, surpassing the rate of males. Possible explanations for the rising rates of suicide among females aged 10-14 in Canada include: 1) the effects of the financial crisis, either via social contagion from older cohorts or familial stress; 2) increased use of social media and smart phones; 3) possible clusters in Northern Canada or elsewhere. Further understanding of this trend is urgently needed to inform age- and sex- specific suicide prevention strategies targeting this vulnerable group.

T60. DISAGGREGATING THE DATA: TRENDS IN SUICIDE IN THE UNITED STATES, 1979-2019

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Background: With the exception of 2019 (and possibly 2020), the rate of suicide in the United States has been on the rise since the late 1990s. Prevention discussions typically center on late-life, white males as having the highest risk for suicide. The majority of previous and current prevention strategies, such as targeting firearm owners and promoting help seeking in mid-life

males, are based on the pattern that the male suicide rate increases as they age. However, this focus may obscure important variations across different demographic groups and developmental stages. The present work will highlight the importance of disaggregating national suicide statistics, to paint a more nuanced picture of suicide risk across various populations, including by race/ethnicity. gender, and age.

Methods: The proposed oral presentation makes use of data on suicide mortality drawn from the Centers for Disease Control's Wide-ranging Online Data for Epidemiologic Research (CDC WONDER; https://wonder.cdc.gov). CDC WONDER houses data on U.S. births, deaths, cancer diagnoses, tuberculosis cases, vaccinations, environmental exposures, population estimates, and a number of other topics related to public health in the U.S. Using CDC WONDER, the present paper examines U.S. suicide mortality from 1979 through 2019. We will provide suicide rates for the total U.S. population as well as parse the data further by race/ethnicity, gender, age, and present the intersections across these demographic groups. Last, we examine the literature on the preliminary data pertaining to 2020 to examine the impact of the Covid-19 pandemic, again with a focus on race/ethnicity, gender, age and the intersection of these various population groups.

Results: When examined in the aggregate and separately – the race/ethnicity, gender, and age patterns that emerge in the data are typical of the messaging surrounding suicide prevention. Our findings show whites have the highest rate by racial/ethnicity, men have the highest rate by gender, and midlife is the age range when suicide is most prevalent. However, when the data is disaggregated and the intersection of these factors are examined, very different configurations emerge. When suicide rates are examined by racial and ethnic groups and by age, we see that a pattern of elevated suicide risk in midlife is actually the exception to the rule – with all non-white racial/ethnic groups having elevated risk in emerging and young adulthood. At the aggregate level – though males typically have higher rates of suicide than females, when broken down by race and gender, we find that Native American females have high rates -- similar to those of other non-white males (though Native American males' rates are higher). Additionally, when we examine the percent increase from 1999 through 2019, we see that though females make up a smaller number of deaths, the rate of increase is greater for females than for males.

Discussion: This oral presentation focuses on the importance of disaggregating epidemiological data by different demographic characteristics. The typical patterns of U.S. national suicide risk is among adults in midlife, typically males. This results due to the use of aggregate data that is skewed by the larger population sizes among white decedents in the U.S. Therefore, by disaggregating the data and considering the intersections of race/ethnicity, gender, and age, we see important patterns emerge, that are ignored by aggregate analyses. For example, disaggregated data shows a pattern of increased risk of suicide during emerging and young adulthood -- a characteristic of all marginalized populations in the United States. Only by disaggregating the data can we detect more nuanced patterns and thereby shift our prevention foci accordingly.

T61. ADDRESSING SOCIO-ECONOMIC DETERMINANTS OF YOUTH SUICIDAL IDEATION: LESSONS FROM PUDUCHERRY YOUTH HELPLINE, INDIA

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Background: India is home to the highest youth population in the world. The National Crime Records Bureau (NCRB) of India reveals that more than 45% of suicide victims undergone a massive socio-economic burden which are the major determinants for mental health issues that

lead to suicidal ideation. The same report reveals that 66.9% of people who die by suicide are in the age group between (18-45) years. There is a significant gap in youth mental health research to assess the problem, implementation strategies, policies, and programs to prevent youth mental health issues in low and middle-income countries. It is essential to have scientific data to develop evidence-based practices to prevent youth suicide in developing counties like India. Social-economic situations in young people's families and communities make them more vulnerable to suicidal ideations. It requires a customized intervention from micro to meta-level through the collective action of multiple stakeholders to achieve the goal of zero youth suicide in Puducherry, India.

Methods: This paper adopted a mixed method with quantitative and qualitative longitudinal data collected from the Puducherry Youth Helpline from February 2017 to January 2021. The quantitative data was extracted from the Youth Helpline call tracker from around 300 young people. The qualitative data was collected from the beneficiaries of the youth helpline. The quantitative data were analyzed with the support of SPSS and qualitative thematic analysis has been done with the support of NVivo-12. The research process adopted appropriate ethical procedures throughout the research period.

Results: Trust for Youth and Child Leadership (TYCL), a youth-led organization's youth helpline model has a positive impact among youth. The youth helpline has made a significant difference in the youth's life and livelihood by addressing their social and economic needs with positive mental health support. The quantitative and qualitative data validates the micro and macro-level impact of youth helpline in Puducherry. However, the multi-stakeholder model faces challenges in ensuring accountability, particularly from the Government partners. We found that the direct intervention on socio-economic determinants on youth suicidal ideations has created positive differences in the mental health and reduction of suicide ideation in Puducherry.

Discussion: This paper aims to discuss the process, approach, and impact of the Puducherry Youth Helpline which is a crisis hotline dedicated to preventing youth suicide in Puducherry, India. Social identity-based inequalities and access to services are the major contributors to youth mental health problems. This paper critically discusses the multi-stakeholder process, youth-led approach in addressing socio-economic determinants adopted by the Youth Helpline, and its impact on the youth mental health. The Puducherry youth helpline challenges and obstacles were also highlighted in the article as lessons learned.

T62. ASSOCIATIONS BETWEEN RACE/ETHNICITY AND SUICIDAL BEHAVIORS AMONG SEXUAL MINORITY YOUTH: FINDINGS FROM THE 2017 AND 2019 YOUTH RISK BEHAVIOR SURVEY

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Background: Suicide is the second leading cause of death among youth in the United States (US). Traditionally, the rates of suicide among Black youth are lower than rates among White youth. However, current trends and estimates suggest the prevalence of suicidal behaviors, in particular suicide attempts, among Black youth are increasing. Although sexual minority youth experience harassment and victimization and demonstrate an increased risk of engaging in suicidal behaviors, few studies have examined the association between race/ethnicity and suicidal behaviors among sexual minority youth. Drawing on minority stress theory and intersectionality theory, the objective of this cross-sectional study was to investigate the

association between race/ethnicity and suicidal behaviors among sexual minority youth from the US.
Methods: Data came from the 2017 and 2019 Youth Risk Behavior Survey. An analytic sample of 2,703 youth who self-identified as lesbian/gay, bisexual, or questioning (LGBQ; 72.8% female) were included. Binary logistic regression analyses were used to examine associations between race/ethnicity and suicidal ideation and suicide attempts, controlling for school bullying, cyberbullying, sexual violence victimization, and depression symptoms.
Results: Of the 2,703 LGBQ youth, 44.2% reported suicidal ideation and 19.4% made at least one suicide attempt during the past year. About 31%) were victims of school bullying, 25%) were victims of cyberbullying, and 20%) were victims of sexual violence. In the multivariable binary logistic regression models, youth who self-identified as non-Hispanic Black were less likely to report suicidal ideation, compared to youth who self-identified as non-Hispanic White (AOR = 0.69, p = 0.11, 95% CI = 0.51-0.92). However, the association between race/ethnicity and suicide attempts became significant only when school bullying, cyberbullying, and sexual violence victimization were taken into account. Controlling for other factors, youth who self-identified as non-Hispanic Black had more than double the odds of making a suicide attempt, compared to youth who self-identified as non-Hispanic White (AOR = 2.13, p < .001, 95% CI = 1.52-2.98). Other factors associated with suicidal ideation and suicide attempts included school bullying, cyberbullying, sexual violence victimization, and symptoms of depression.
Discussion: Understanding the association between race/ethnicity and suicidal behaviors among sexual minority youth would help guide future research and suicide prevention efforts among youth with multiple minority identities.

T63. ETHICS IN SCHOOL-BASED ADOLESCENT SELF-HARM PREVENTION INTERVENTION RESEARCH: A RESEARCH SAFETY PROTOCOL TO MANAGE ETHICAL TENSIONS AND ADDRESS RESEARCH BARRIERS TO FACILITATE PUPILS' PARTICIPATION

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Background: Adolescent self-harm in Europe is a major public health challenge and shares a risk continuum with suicide. Recent UK research demonstrates a strong risk correlation with suicide attempts in the community-based adolescent self-harm population group, similar to research findings for populations in health setting-based research. Also in the UK increasing rates in hospital admissions represent the “tip of the iceberg” within the community, with potentially two thirds of the population group not accessing health services for support. This brings many health risks, including an increased suicide risk. Finding a solution to these issues requires a preventative intervention approach for young people, including community-based delivery to address service access barriers. Secondary schools are posited as key settings where this type of support could be delivered, and that preventative intervention research should centre on the school context.
Methods: In the UK there is emerging research demonstrating challenges in completing adolescent self-harm preventative intervention research with young people in schools. These can lead to significant barriers in the research quality and for developing community-based adolescent self-harm prevention intervention support. These points are highlighted in the groundbreaking SEYLE study, the first European multicentre study to begin to address the dirth of research in school-based suicide prevention intervention. In 2016 the GW4 research alliance (the research consortium of Bath, Bristol, Cardiff, Exeter and Swansea universities) began to take this work forward to explore if the UK school setting could be a feasible site for

adolescent self-harm prevention intervention. The current project from DECIPHer at Cardiff University builds on this work, which includes addressing the potential research challenges and barriers to conducting adolescent self-harm research with pupils in secondary schools in Wales. In prevention intervention support, understanding the implementation context and its socio-cultural system is important as these deliver strong impacts. There is now new focus on this in public health research. At the outset, this project focused upon ethics to manage the critical tensions in completing adolescent self-harm research with pupils in schools. This led to the design of an innovative school-based research safety protocol, which this presentation will exposit. This project is currently in its data analysis stage.
Results: The school-based research safety protocol was successful in managing the critical ethical tensions in adolescent self-harm preventative intervention research in the secondary school context in Wales. Additionally, it enabled some of the significant research barriers to be addressed to facilitate pupils' participation.
Discussion: Secondary schools in Wales reside within their own socio-cultural system and multilevel influences which can act as research barriers. The research safety protocol within this project addressed some (but not all) of the current research barriers to completing adolescent self-harm prevention intervention research in UK schools. The initial data analysis in this project demonstrates the impact of stigma. From a public health socio-ecological systems perspective, stigma operates across multiple societal contexts from an individual through to a societal level, which this study captures. Stigma is a major barrier in adolescent self-harm prevention intervention support, presenting many risks which this project can now exposit in detail to plan to address them. The school-based research safety protocol did address the barrier of stigma with some schools in Wales, facilitating their pupils' research participation.

T64. SUICIDAL FEELINGS IN A POPULATION-BASED SAMPLE OF OLDER ADULTS: ASSOCIATIONS WITH POLYGENIC RISK SCORES OF RELEVANCE FOR SUICIDAL BEHAVIOR

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Background: There are few studies investigating genetic factors related to suicidal ideation or behavior in older adult populations. Our aim was to test associations between suicidal feelings and polygenic risk scores (PRSs) based on results from large GWASs on traits of relevance for suicidal behavior and ideation in a population-based sample aged 70+.
Methods: Participants in the prospective H70 study in Gothenburg, Sweden took part in a psychiatric examination that included the Paykel questions on suicidal feelings (active and passive suicidal ideation). Genotyping was performed with the Neurochip (Illumina). After quality control of genetic data the sample included 3467 participants. PRSs were calculated based on summary statistics from recent GWASs of relevance. Exclusion of persons with dementia or incomplete data on suicidal feelings, yielded 3043 participants, age range 70-109 years. Associations between past year suicidal feelings (any level) and selected PRSs were analysed using general estimation equation models (accounting for repeated measures), adjusted for sex and age.

Results: We observed associations between suicidal feelings and PRSs for depression (five versions, based on different GWASs on depression and major depressive disorder), neuroticism, and general cognitive performance. No associations were found in relation to the PRS for Alzheimer's disease and PRSs for somatic disease (i.e. stroke, atherosclerotic heart disease, angina, and hypertension). After excluding individuals with current major depression, similar associations were seen with neuroticism, general cognitive performance, and three of the five PRSs for depression.
Discussion: Findings can help to shed light on potential mechanisms that may be involved in passive and active suicidal ideation in late-life, also in those with no current major depression. Given recent findings of cognitive deficits in suicidal older adults, we thought that we might see an association with PRS for Alzheimer's disease, but that was not the case. We did however see an association with the PRS for general cognitive performance. There are however some caveats. This is a population-based sample, and few participants had active suicidal ideation.

T65. EFFECT OF POSITIVE AND NEGATIVE ALLOSTERIC MODULATION AT α5-GABAA RECEPTORS ON PSYCHOLOGICAL CONSTRUCTS INVOLVED IN SUICIDALITY: A MOUSE STUDY

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Background: Recurrent thoughts of suicide (or suicidality) are prevalent in depression and other psychiatric disorders, and death by suicide is a leading cause of death worldwide. This suicidality/suicide crisis is not affected nor targeted by current antidepressants, and progress has been prevented by the lack of novel targets, pharmacological tools and animal models. Altered GABA signaling is frequently reported in psychiatric diseases and chronic stress models, participating in symptom emergence, including mood and cognitive symptoms. All these symptoms contribute to increased risk of suicidality. Previous approaches investigated the potential of negative allosteric modulators at the α5-GABAA receptors (α5-GABAA-R) as antidepressant. While promising, this approach provided little breakthrough. Recent studies showed that somatostatin (SST)+ interneurons from cortical layers and the hippocampus are altered in depression in their role at inhibiting excitatory neurons, through α5-containing GABAA receptors (α5-GABAA-R). Therefore, negative allosteric modulation of the α5-GABAA-R may further worsen the pathology. Recently, we showed that using a positive allosteric modulator at the α5-GABAA-R alleviates cognitive and mood symptoms in mice. Here, we investigated the behavioral effects of the same compound, in animal model of chronic stress, and compared it to the impact of a negative allosteric modulator.
Methods: C57BL6 mice (50% female) were subjected to unpredictable chronic mild stress (UCMS) to induce mood and cognitive symptoms. Efficacy of acute (ip) or chronic administration (3 weeks in drinking water) of a positive or negative allosteric modulator at the α5-GABAA receptors, at rescuing normal behavioral functions was assessed. Working memory was assessed in an alternation task. Cognitive flexibility was measured in the Noldus Cognition Wall. Anxiety-like behaviors were measured in the elevated plus maze and the open field. Aggressive behaviors were assessed in the resident intruder tests. Behavioral despair was measured in the forced swim test.
Results: Both treatment regimens contributed to some extends at reversing UCMS-induced pathologies. Negative and position allosteric modulation contributed to reduced mood

symptoms. However, only the positive allosteric modulator reversed UCMS-induced cognitive deficits by reversing UCMS-induced working memory deficits and UCMS-induced cognitive flexibility impairment, both acutely and chronically.
Discussion: Together, results support that positive and negative allosteric modulation at the α5-GABAA-R provide different behavioral profile, and highlight the specific impact of positive modulation on cognitive functions. Such information could represent a major breakthrough in the field by reversing cognitive dysfunctions in depressed patients, potentially reducing suicidality.

T66. HYPOXIA DISRUPTS BRAIN ENERGY METABOLISM IN VETERANS WITH BIPOLAR DISORDER: RESULTS AND IMPLICATIONS FOR SUICIDE PREVENTION AND TREATMENT

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Background: Veterans with Bipolar Disorder (BD) are at high-risk for suicide, with the risk being 60 times that of the general population. Epidemiologic research suggests that both BD and suicide are positively associated with altitude. Indeed, altitude of residence has been reported as a significant predictor of completed suicide in BD. A potential biological explanation for these findings is that oxidative stress and mitochondrial function, both implicated in BD pathophysiology, are aggravated by the hypobaric hypoxia at moderate altitude.
Methods: This study enrolls Veterans with BD and healthy controls (HC) who live in the Intermountain West Region. A hypobaric chamber is used to simulate sea-level and moderate altitude (10,000 feet) within the MRI. We use magnetic resonance spectroscopy to measure changes in high-energy brain metabolites that occur in response to acute hypoxic stress in BD and HC Veterans.
Results: Our preliminary results indicate a statistical trend toward a significant difference in Phosphocreatine slope in BD vs. HC ($p=0.1$).
Discussion: We present preliminary results from our ongoing Department of Veterans Affairs merit review study [I01CX000812]. In controls, PCr may be depleted to support ATP biosynthesis via the Creatine Kinase reaction. By contrast, Veterans with BD do not consume and "mobilize" their already-lower PCr concentrations. We explore these findings and their implications for suicide prevention and treatment, not just for veterans living at altitude, but for

T67. HIPPOCAMPAL MRI VOLUME DIFFERENCES IN LATE-LIFE SUICIDAL BEHAVIOR

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Background: In older adults, markers of neurodegeneration, such as decreased cortical thickness and volume, and cognitive decline are common with major depression (Lim et al., 2011). According to the depression-as-late-life neuropsychiatric-disorder model, hippocampal and entorhinal cortex volumes decrease in late-life depression and are associated with cognitive impairment (Gerritsen et al., 2011; Steffan et al., 2011; Lebedeva et al., 2015). Initial studies

on the relationship between neurodegeneration and suicide attempt in mid-life and adolescent suicide attempters demonstrated reduced right hippocampal volume compared to healthy controls (Gosnell et al., 2011) and smaller volumes of the left and right thalamus (Campos et al., 2021). Cognitive impairment has been independently associated with a higher rate of past suicide attempts and a higher likelihood of future re-attempts in late-life populations (Gujral et al., 2016; Szanto et al., 2018, 2020), but in older adults, the relationship between structural brain alterations and suicidal behavior and contemplation of suicide attempt is unknown. This study aimed to investigate volumetric differences in brain areas implicated in depression and suicide (hippocampus, amygdala, thalamus, and entorhinal cortex) among suicide attempters, suicide ideators, and non-suicidal depressed older adults.

Methods: Participants were 74 adults aged 50 years and older (53-81 years; M = 64.3, SD = 6.0, 79.7% non-Hispanic white) from a case-control study of late-life suicide. The sample included 47 females (63.5%, M = 64.7, SD = 5.5) and 27 males (36.5%, M = 63.6, SD = 6.7). All participants were diagnosed with major depression and categorized into three groups: suicide attempters (N=25), suicide ideators (N=32), and non-suicidal depressed controls (N=17) (no history of suicide attempt or contemplation of suicide). Brain volumes were extracted from T1-weighted structural MRI scans using Freesurfer (Fischl et al., 2002). Onset and severity of depression as well as the presence of lifetime anxiety and substance use disorders were assessed with the SCID-IV and the Hamilton Depression Rating Scale. We conducted linear regression analyses to investigate volumetric differences in hippocampus, amygdala, thalamus, and entorhinal cortex by study groups and clinical history.

Results: Linear regression results found that suicidal attempters have significantly smaller right hippocampus ($t(70)= 2.713$, $p=0.008$) and left hippocampus volume ($t(70)= 2.252$, $p=0.027$) compared to non-suicidal depressed controls in our late-life depression sample. In addition, attempters showed earlier onset of depression, as well as more lifetime anxiety disorder, compared to non-suicidal depressed controls. However, amygdala, entorhinal cortex, and thalamus volumes were not significantly different between suicidal attempters and suicide ideators and non-suicidal depressed controls ($ps > 0.05$).

Discussion: Our findings shed some light on why late-life suicide attempters are more difficult to treat (Szanto et al., 2003). We found an association between hippocampus volume and late-life suicide attempts. In addition, attempters had greater disease burden marked by earlier age of onset and higher comorbidity. These findings suggest that neurodegenerative processes in late-life suicide attempters may be more severe compared to non-suicidal depressed patients. Smaller hippocampus volume could indicate deficits in model-based planning, leading to a poorer internal sense of the consequences of one's actions (e.g., hurting family, losing future joy), and, in turn, to suicidal behavior (Dombrovski and Hallquist, 2021).

T68. SUICIDAL THOUGHTS, BEHAVIORS, AND EVENT-RELATED POTENTIALS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Suicidal thoughts and behaviors (STBs) are thought to be the result, at least in part, of abnormalities in various neural systems. Recent competing reviews (one qualitative and one a meta-analysis) have provided mixed results regarding whether STBs are associated with differences in neural functioning as measured by fMRI. Relatively unknown, however, is whether event-related potentials (ERPs) are associated with STBs. To address this question, the present meta-analysis examined how well ERPs can differentiate (a) those with and without

suicidal ideation, (b) those with and without suicide attempts, (c) those with different levels of suicide risk, and (d) differences between those with suicide attempts versus those with suicidal ideation only. We did this in two different ways: by grouping all ERPs together and by meta-analyzing each ERP separately. We used the former meta-analysis to also determine how statistically powered this literature is by using the pooled effect size as the "true" effect.
Methods: Our meta-analysis included 208 effect sizes from 2,517 participants from 27 studies. We used a random-effects meta-analysis using a restricted maximum likelihood estimator with robust variance estimation. We also examined small sample study bias and publication bias by using three approaches: (1) visual inspection of traditional and contour-enhanced funnel plots, (2) a modified Egger's regression and (3) using a three-parameter selection model (3PSM).
Results: When grouping all ERPs together, our meta-analyses found a small-to-moderate relationship between ERPs and suicidal ideation, suicide attempt, suicide risk, and differences in ERPs between those with suicide attempts versus those with suicidal ideation only (i.e., Hedges' $g = 0.24 – 0.43$). However, when meta-analyzing ERPs separately, we failed to find a single ERP-STB measure outcome that was statistically significant. Moreover, our results also revealed that nearly every study to date has been severely underpowered. Specifically, the average statistical power across STB outcomes ranged from .208 to .303, and the maximum statistical power (except for in the case of suicide attempt history) was much lower than the typically accepted criteria of .80.
Discussion: Our results suggest that in the best case scenario (i.e., meta-analytic effects from our grouped analyses), ERPs may complement other approaches, such as fMRI, in the study of the neurobiology of individuals with STBs. However, even if this is the case, nearly every extant study to date has been severely underpowered to detect these effect sizes. Thus, there is a strong possibility the literature has a high number of false positives. The future of examining individual differences in neural functioning to study STBs in general will also be presented. Specifically, the need for large-scale collaboration, better measurement practices, and use of more representative samples will be discussed.

T69. MOOD REACTIVITY AND IMPLICIT SUICIDE RISK AFTER MOOD INDUCTION DURING MAGNETOENCEPHALOGRAPHY

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Background: Suicide risk is dynamic over time, as described in the fluid vulnerability theory. Individuals at risk for suicide may not be imminently suicidal; instead, a "suicide mode" is activated which includes symptoms such as depression, hopelessness, feeling like a burden, shame and hyperarousal, which moves the individual into a suicidal state. Cha and colleagues have suggested that death-related psychological processes can be activated by a mood induction paradigm in the laboratory; specifically, they found changes in performance on the Death/Life Implicit Association Task (D/L IAT) after a mood induction in suicide ideators, but not non-ideators. This difference in D/L IAT scores was associated with suicidal ideation at six-month follow-up. We extend Cha's work by evaluating a mood induction paradigm using movie clips during magnetoencephalography (MEG) scanning. It is hoped that this work can begin to describe patterns of brain activation associated with the suicide mode.
Methods: A sample of 34 individuals with a mood disorder diagnosis (MDs) and 14 individuals without any psychiatric diagnoses (HCs) viewed four movie clips during MEG scanning. Two of the clips were selected to induce positive mood and two clips were selected

to induce negative mood. Participants completed the Positive and Negative Affect Scale (PANAS) at baseline and immediately following each clip, as well as the D/L IAT at baseline and immediately following each negative clip. A linearly constrained minimum variance beamforming algorithm was used to project whole-brain estimates of gamma power (30-58 Hz) for each clip. Gamma power was selected a priori as a proxy measure of excitation-inhibition balance, known to be dysregulated in MDs. Mixed effects models were used to compare group-level changes in PANAS ratings and D/L IAT associations and to test for gamma power group-by-valence interactions.

Results: Behaviorally, MDs demonstrated no mood changes on the PANAS following the positive clips and mixed response to the negative clips. In comparison, the HCs demonstrated decreases in positive affect following positive clips and increases in negative affect following negative clips. In contrast to the PANAS ratings, both groups showed changes on the D/L IAT, in that both groups demonstrated decreases in self-life associations following the negative clips. Neuromagnetically, significant group by valence interactions in gamma power were found in several brain regions. Specifically, MDs demonstrated reduced gamma power during positive clips and increased gamma power during negative clips in the amygdala and insula, as compared to HCs.

Discussion: Using a mood induction paradigm during MEG scanning, individuals with a mood disorder diagnosis showed reduced mood reactivity as compared to individuals without psychiatric diagnoses. However, there were no differences between the two groups on death-related psychological processes; both groups showed reduced self-life associations after negative mood induction. MDs also demonstrated distinct patterns of gamma activity, particularly in the amygdala and insula, in response to positive and negative clips. While results do not replicate Cha's work on a differential response of the D/L IAT in individuals at high suicide risk, further subgroup analyses of suicide attempter versus non-attempters are indicated.

T70. OLD PROBLEMS IN A NEW BOTTLE: AN EXPLORATORY MIXED ANALYSIS OF WHATSAPP SUICIDE VERSUS PAPER SUICIDE NOTES

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Background: Self-portrayal on social media has become a trend in modern lives. Whatsapp has evolved and become one of the most recommended platforms for the presentation of day-to-day affairs. Especially the online presentation of suicidal behavior which has received relatively little empirical attention and not been scientifically analyzed. This study analyze the content, affect, cognition, and expressions in suicide notes conveyed through manual (paper) and instant messaging App (WhatsApp) mode of expression so as to explore the scope for prevention of suicide or timely intervention for suicidal behavior of the deceased.

Methods: A total of 30 cases were included for the qualitative and descriptive analysis. There were 15 handwritten notes (Male-10, Female-5) and 15 suicide notes (Male-11, Female-4) announced on WhatsApp in the form of text messages, audio-video, only video, only audio. Psychological autopsy of all cases included was done.

Results: Analysis was done on the following aspects i) Addressing in a note which was found to be 33% in handwritten notes and 60% in Whatsapp notes, ii) Specific instructions were mentioned in 46.6% in handwritten notes while 40% in WhatsApp notes, iii) The most common emotions were Blame or passive aggression, Forgiveness Hopelessness, iv) Difficulty mentioned in the notes were Interpersonal Relationship which accounts for 40% in handwritten and 66.6% in Whatsapp notes.

Discussion: WhatsApp provides a window of intervention as it can be responded to by several users like group administrators and other users and instant help can be provided to intervene the suicide by informing authorities and calling for immediate help. It can also be helpful in the investigation of the case as in the majority of cases the actual reason was not really reported due to several factors like stigma and sometimes reasons were not known to anyone so proper investigation of the phone can reveal some facts related to suicide.

T71. TECHNOLOGY-ASSISTED SYSTEMS CHANGE FOR SUICIDE PREVENTION (TASCS) MOBILE APPLICATIONS: USER PERSONA DEVELOPMENT AND USABILITY TESTING IN THE ED

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Background: The Emergency Department Safety Assessment and Follow-up Evaluation (ED-SAFE) intervention effectively reduced prospective suicidal behavior in emergency department (ED) patients. However, there are many trenchant barriers to translating such an intervention into routine practice in a typical emergency department. Technology-Assisted Systems Change for Suicide Prevention (TASCS) is a study to develop a technology-facilitated version of the ED-SAFE intervention to address suicidal ideation and behavior in ED patients.
Methods: We applied a user persona development process, an innovative human computer interaction approach, to explore the needs and characteristics of patients presenting to the emergency department with suicide risk. We worked with clinicians (n=3) and suicidologists (n=4) to create proto-personas and validated these personas using interviews with individuals with lived experience of suicidality (n=6). We used the resultant personas to inform the design of our ED-based and home-based TASCS mobile applications. We are currently conducting field-testing in the ED with patients and clinicians (n=12) to assess usability and acceptability using a mixed methods approach. Next, we will conduct a pilot effectiveness-implementation trial of the TASCS ED app across three modalities in the ED (clinician on-site; clinician via telehealth; and self-administered), accompanied by three months of post-discharge counseling calls and access to the home-based TASCS app.
Results: The persona development process led to the creation of five user proto-personas. Our participants with lived experience (50% male, age range 18-73 years, 83% White) reported that their ED encounters were characterized by loneliness, fear, boredom, disrespect, and stigma/dehumanization. Any ED-based application for suicide risk needed to be clear, warm/caring, and directive, and participants were not put off by the idea of a chatbot-based safety planning process. Participants felt that the at-home mobile app needed to be simple, clear, and actionable, especially when they were in crisis. In ED-based field-testing, the mean System Usability Scale score is 70/100 to date.
Discussion: Our work to date suggests that those presenting with suicide risk are open to receiving technology-based interventions while in the ED and after they are discharged home. Our ED-based user-testing with patients currently presenting with suicide risk will provide further insight into the app's usability and acceptability in preparation for the pilot trial.

T72. SIX-MONTHS ECOLOGICAL MOMENTARY ASSESSMENT FOLLOW-UP OF PATIENTS AT HIGH RISK OF SUICIDE

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Background: Suicide is currently one of the most relevant public health issues. In fact, in 2018 suicide costed nearly as many Years of Life Potentially Lost in the USA as COVID-19 caused in 2020. An increase in suicide rates is expected due to the social and economic burden of COVID-19 pandemic.
Of all previously explored precipitating factors, number of previous suicide attempts (SAs) is the most relevant. Also, suicidal ideation (SI) is associated with SA as well as with death by suicide.

Ecological Momentary Assessment (EMA) is a useful tool for monitoring suicide risk. The advantages of EMA can be combined with a traditional clinical assessment to increase the potential of suicide cohort studies.

This study aims to explore: 1) correlates of suicidal relapse, 2) correlates of EMA-measured passive SI, 3) the association between EMA-measured passive SI and clinical suicidal relapses.

Methods: This is a prospective cohort multicenter study. Three hundred and ninety-three patients were recruited between February 2018 and March 2020 at emergency departments, inpatient facilities and outpatient psychiatric mental health clinics in three sites in Spain and two in France. Patients were followed-up for six months.
Clinical suicidal events and EMA-measured passive SI were the main outcomes. Clinical suicidal events were SA and emergency referral for SI, which are listed in the Columbia Classification Algorithm of Suicide Assessment (C-CASA) (42). EMA suicidal events were defined as extreme scores on the EMA questions on passive SI.

Kaplan-Meier survival analysis was used to estimate the occurrence of these events after six months of follow-up, and a Cox regression was used to explore the correlates of such events. Statistical significance was established at <0.05 p values, using two-sided tests and 95% confidence intervals.

Results: People who experienced EMA suicidal events were more likely to present with clinical suicidal events at 6-months follow-up, but the association was not statistically significant. However, during the first two months of follow-up, this association was statistically significant.
Risk factors statistically significantly associated with clinical suicidal events were younger age, male gender, diagnosis of personality disorders, SA in the past year excluding the past month, SA in the past month, number of lifetimes SAs, personality disorders, number of previous SAs and mean score in EMA-measured wish to die.

Protective factors were older age, female gender, diagnosis of mood disorders, separated/divorced marital status and history of SA over a year ago.

Risk factors statistically significantly associated with EMA suicidal events were severity of depressive symptoms at baseline. Also, people who experienced EMA suicidal events were more likely to present with clinical suicidal events during the first two months of follow-up - this difference was not statistically significant at 6-months follow-up-.

Discussion: The risk factors associated with EMA suicidal events differed from those associated with clinical suicidal events, which goes in line with authors who advocate making nuanced distinctions between different suicidal phenotypes.

EMA events were significantly associated with clinical events at 2-month but not at 6-month follow-up, which may be associated with the decrease in retention over the follow-up period. This points to a potential use of EMA for short-term risk but not yet for prevention in the mid to long-term. Short term prediction is highly important for suicide prevention, as the highest risk of suicide reattempt occurs during the first 2 months.

T73. PILOT STUDY OF VIRTUAL DELIVERY OF MULTIMODAL COMPLEMENTARY INTEGRATED HEALTH INTERVENTION FOR SUICIDE PREVENTION

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Background: Suicide is a major public health problem, especially among U.S. veterans. Complementary and Integrative Health (CIH) interventions are promising therapies in suicide prevention, and in promoting patient engagement. CIH interventions may play a critical role in transitioning veterans into mental health care who do not consistently engage in mental health services due to stigma. Previously, we have shown that in-person programs with complementary CIH interventions resulted in significant improvement in suicidal ideation and associated mental health risk factors, with high engagement. In a pilot program evaluation that was driven by COVID-19, we set out to see whether virtual delivery of CIH interventions were similarly effective.

Methods: This was a program evaluation study at an urban VA medical center, where participants were evaluated from pre- to post-program completion to determine effectiveness of virtual delivery of a 2hr daily 4-week multimodal CIH intervention for suicide prevention. The CIH interventions included yoga, horticultural therapy, nutritional education, narrative therapy, spirituality, and relaxation techniques that were delivered via cohort design, promoting social connectedness among participants. Veterans were clinician referred, identified as having difficulty coping with their stress, isolated, and/or interested in improving their health/wellness. Outcomes measured included depression/PTSD severity, suicidal ideation, stress/coping skills, pain, and sleep quality. Assessments were administered through Qualtrics, consisting of Patient Health Questionnaire (PHQ-9), PTSD Checklist 5 (PCL), Measure of Current Status (MoCS), Defense Veteran Pain and Rating Scale (DVPRS), and Pittsburgh Sleep Quality Index (PSQI) completed at baseline and post program. Using R, we assessed if there was improvement on assessment scores post-program. Pre-post difference scores for validated clinical assessments administered were calculated and one tailed t-test/Wilcoxon signed-rank test was used when needed.

Results: Data was collected from 35 participants from 5 cohorts. However, data presented are for 22 participants that had pre-post difference scores for all assessments. Among the 22 participants, n=10 (45%) had no history of suicidal ideation/attempt, (no SI/SA), and n=12 (55%) did have history of suicide ideation/attempt (SI/SA). There were 8 (36%) females and 14 (64%) males with participants' ages ranging from 28 to 74yrs. We found significant reduction in depression severity (PHQ-9: mean difference = -3.79, p = 0.0010, d=-0.80) and PTSD severity (PCL: mean difference = -8.33, p = 0.0113, d= -0.53). However, we found no statistically significant reduction in PTSD severity with respect to veteran's suicide history. A significant reduction was found in depression severity (PHQ9 No SI/SA: mean difference = -

5.35, t8=-2.90, p = 0.0099, d= -0.97; and PHQ9 SI/SA: mean difference= -2.53, t10= -2.25 p=0.0242, d= -0.68). No significant pre vs. post differences were observed in any of the other outcome measures.
Discussion: As a pilot study, findings are based on small sample sizes. Although virtual delivery of CIH interventions resulted in significant reduction in depression/PTSD severity across all participants, only depression severity was improved among those at suicide risk. However, among these at-risk veterans compared to veterans with no history of suicide ideation/attempt, improvements in depression symptoms were modest. These findings are encouraging, underscoring the potential importance of CIH interventions in suicide prevention, and need for future studies to refine virtual CIH interventions to broaden access to care for at-risk populations.

T74. CHARACTERIZING SLEEP DISTURBANCE BASED ON TEXT MESSAGES OF SUICIDE ATTEMPT SURVIVORS

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Background: Sleep disturbance is a modifiable, acute risk factor for suicidal thoughts and behaviors (STB), but naturalistic assessment of sleep problems can be challenging. One relatively unexplored method for capturing sleep problems includes examining how individuals communicate about sleep issues on digital platforms. Prior research has found that people often self-disclose their insomnia symptoms on Twitter (Jamison-Powell et al., 2012), and that Twitter users with self-identified sleep problems are more active on Twitter during typical sleeping hours compared to control participants (McIver et al., 2015). Thus, there may be digital signatures or phenotypes of sleep disturbance that can aid in the assessment of sleep problems, and by proxy, STBs. The present study examined sleep-related communication and texting patterns in a database of personal text messages (N = 86,705) provided by 26 living individuals who made at least one lifetime suicide attempt (Glenn et al., 2020).
Methods: Participants provided the dates of past suicide attempts, as well as two-week periods in which they experienced positive mood, depressed mood, or suicidal ideation. Generalized linear mixed effect models were used to test the association between episode type (e.g., attempt versus ideation) and three outcomes of interest: likelihood of a text including sleep-related content or not, nightly count of texts sent from midnight-5:00 AM, and the sum of unique hour bins from midnight - 5:00 AM with any outgoing text. All hypotheses were preregistered: https://osf.io/9f3v2/.
Results: Analyses using Linguistic Inquiry Word Count (LIWC) software indicated 2.71% of all texts were "sleep related" based on a custom dictionary of sleep-related words, phrases, and emojis. There were initially no significant differences in the likelihood of sleep-related communication across suicide/mood episode types (ORs = .96 – 1.05, zs < .41, ps > .05). However, a secondary analysis with a revised sleep dictionary showed that, as hypothesized, sleep-related communication was more likely during depressed mood episodes, relative to positive mood episodes (OR = 1.47, z = 2.32, p = .020). Negative binomial models did not reveal any significant differences in the count of outgoing text messages across episode types (Bs < .36, SEs < .43, zs < 1.10, ps > .05). Multilevel ordinal regression analyses did not reveal significant differences in the volume of nightly texting activity across episode type (Bs < .10, SEs < .37, zs > −1.49, ps > .05).

Discussion: Sleep-related communication may differ as a function of within-person mood level. However, the present study did not detect differences in sleep-related communication tied to STBs. Future research with larger datasets and multiple data streams (e.g., call and social media logs) may provide insight into digital communication phenotypes associated with sleep problems and STBs.

T75. STUDENTS' OPINIONS ON INTERVENTIONS FOR SELF-HARM, INCLUDING A SMARTPHONE APP (BLUEICE)

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Background: University students are twice as likely to engage in self-harm than age-matched non-students, with prevalence rates estimated at around 20%. Despite this, only around 19% seek support for self-harm. Self-harm is often a private act associated with shame and stigma so traditional talking therapies can be unappealing. University mental health services in the UK are also over-stretched, with 1 in 4 students using them or waiting to use them. A smartphone app for self-harm, such as BlueIce, could be a viable option given that 99% of university students own a smartphone. BlueIce is an evidence-based app that has been found to be effective in improving self-harm, anxiety and depression in adolescents, however, it is currently unclear if BlueIce could also be an acceptable option for university students. This study aimed to explore what students think about different interventions for self-harm, including 'BlueIce', and to understand how students determine if support for self-harm is effective.
Methods: Semi-structured audio interviews were conducted with 25 students from the University of Bath who had experience of self-harm thoughts and/or behaviours.
Results: The interviews were thematically analysed and five key themes were identified: 'understanding self-harm', 'barriers to seeking support', 'preferences in support', 'appraisal of BlueIce' and 'context of university during COVID-19'. Students typically understood self-harm as private, secretive and stigmatised. Barriers to seeking support therefore related to difficulties around disclosing self-harm, however, issues of access such as long waiting lists were also discussed. Preferences for support were varied with some wanting the personal connection available through professional support, and others preferring the anonymity and convenience of digital interventions. Participants mostly wanted support to develop alternative coping mechanisms and to address the other emotional or mental health issues underlying self-harm. Following this, BlueIce was perceived positively, with students expressing that it would help them to achieve these aims. Students also suggested that coping ability and wider mental wellbeing are important factors in evaluating outcomes from support and interventions, and that relying on instances or frequency of self-harm may not accurately indicate recovery. Finally, participants discussed how university can be a challenge for mental health, particularly during the pandemic.
Discussion: Participants mostly wanted support for self-harm to focus on developing coping skills and addressing issues that underly the self-harm, and they therefore believed that recovery from self-harm should take these into account. Participants believed that BlueIce could be a positive resource for the university, and therefore a subsequent randomised controlled trial of BlueIce with students at the University of Bath is currently ongoing.

T76. BIOMARKERS CORRELATES OF PSYCHOSOCIAL INTERVENTIONS: AN UPDATE

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Background: Mental disorders are one of the main causes of death worldwide and, due to their mutual comorbidity, heterogeneity and pharmacoresistance represent one of the current health challenges. In the new era of precision medicine – according to RDoC initiative – screening, diagnostic process, treatment, prognosis, and prediction as well as monitoring and modulation of interventions can refer to various biomarkers. Therefore, the inclusion of biomarkers in clinical studies is becoming widespread; nevertheless, evidence in psychotherapy research is still relatively sparse. For this reason, in this narrative review, the state of the art of biomarkers correlates of psychotherapy is presented to identify them and investigate their role as predictors and pre to post outcomes across different psychosocial interventions and mental disorders, with particular attention to suicidal outcomes.
Methods: Different searches on various databases (PubMed, PsycINFO, Google Scholar and the Web of Science) using the following terms were performed in February 2021: biomarkers OR "peripheral biomarkers" OR "cytokines" OR "inflammatory markers" OR "chemokines"; cortisol OR alpha-amylase OR "HPA axis" OR "stress related markers"; "neural correlates" OR "neuroimaging markers" OR "neural response" OR "neural mechanism" AND "psychological intervention" OR psychotherapy OR "psychosocial intervention" OR "cognitive behavioral therapy" OR mindfulness OR "relaxation therapy". To provide a synthesis of multiple and more robust results we focused on meta-analyses and/or systematic reviews; moreover, we included some original studies to interpret and discuss reported findings.
Results: Studies have shown that some peripheral inflammatory markers like C-reactive protein (CRP), Interleukin 6 (IL-6) and Interleukin 10 (IL-10) can be considered as valid markers of different psychosocial interventions outcomes across various mental disorders; notably, although subjects with major depression were involved in most of the included studies, no mention of suicidal outcomes was made in any of the included meta-analysis or systematic review. This issue became particularly important since most studies have shown that inflammation in patients with major depressive disorder can boost suicidal thoughts and behaviors. Results on stress-related biomarkers, on the other hand, are not so consistent, owing to heterogeneity in study designs and in cortisol sampling protocols (i.e. diurnal profiles, single measure morning cortisol, 24h urinary cortisol) that make it difficult to compare them. Regarding neuroimaging studies, results identified the Default Mode Network (DMN) as a trans-diagnostically reliable biomarker, particularly in acceptance-based therapies (PCC/precuneus).
Discussion: These results highlight the need for more consensus concerning a more precise translation of evidence into practice, and the understanding of the long-term mechanisms underpinning beneficial psychotherapeutic effects. Looking forward, the inclusion of suicidal outcomes is desirable to ameliorate prevention as well as treatment.

T77. SUICIDE PREVENTION IN MEXICO: PROPOSAL OF AN IMPLEMENTATION STRATEGY

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Background: Within the Latin American context, the situation of suicide in Mexico stands out, the mortality statistics for 2017 report a total of deaths, 6,494 were due to self-inflicted

injuries, which constitutes 0.9% of the total deaths (INEGI, 2019). The epidemiology of completed suicide in Mexico has changed in recent decades, in a gradual but constant process, it has already reached similar dimensions to other traditionally affected countries.
The purpose of this work is to offer a contribution from an analysis of public policies, for the design of a proposal for the implementation of a national strategy based on a theoretical model of implementation science. Based on evidence and experiences, recognizing the importance of the context in building a prevention proposal of suicide.

Methods: This exploratory, descriptive character inquiry is based on documentary research techniques, a database review, secondary sources in order to present the elements for a public policy. This work has as a methodological tool the so-called "implementation science" or "implementation research",

For the purposes of this research, the use of this methodological approach followed a process that included the recovery of the context in which suicide emerges in Mexico, collecting epidemiological information, returning to the sociocultural elements that predominate in the population, describing the normative frameworks, the health system, reviewing the health sector plans, identifying the established suicide prevention actions The factors, the target population, some needs, and obstacles were obtained. Subsequently, successful and effective interventions applied in other regions were investigated, from there those synergies that can be used in the Mexican context were identified.

In addition, as inspiration, « the Roots of Hope change and evaluation model of B. Mishara and A. T. Tran (2020) was taken up, complemented with the various recommendations issued in the reports and guidelines of the WHO for the prevention of suicide.

Results: The results of epidemiological investigations conclude that Mexico has had an increase in suicide rates in recent years (Borges, WHO), it is a public health problem that requires urgent attention to prevent in the community and in risk groups, in the children, young people and women who experience violence by their partner. After the review, it could be said that the Mexican federal government in the last 20 years has been disinterested in addressing the phenomenon of suicide. It can be said that civil organizations, universities, and some state governments have established alliances to push for action. In general terms, Mexico has not put suicide prevention on the national agenda. The understanding of the problem has a one-dimensional predominance focused on mental disorders, on the clinical.

Discussion: This initiative sets a precedent in its contents and methodology, it houses a synthesis of various aspects of suicide in Mexico, as it provides the reader with a general overview of the situation.
It is a unique study that invites us to continue with reflection, open the way to research and the design of actions, but fundamentally sensitize decision-makers about the relevance of investing in mental health. There are various obstacles, barriers to political will and challenges to undertake in the same direction, however, the foundations are gradually being built until reaching the goal of a national strategy for the prevention of suicide in Mexico. A complex country in its health system, with a multicultural population, a social and economic context of inequality and poverty, a lack of budget for the promotion, prevention and attention to mental health and suicidal behaviour; as well as low funding towards the production of scientific knowledge, without neglecting political inertia and little interest and will in addressing the phenomena associated with mental suffering.

T78. DOES GENDER PREDICT RESEARCH PRODUCTIVITY? THE CASE OF SUICIDOLOGY

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Background: The work on the relationship between gender and research productivity has included papers in such fields as economics (Cainelli et al, 2015), medicine (Fukuzawa, 2014; Raj et al., 2016), nanoscience (Sotudeh and Khoshian, 2014), otolaryngology (Eloy et al, 2013), science (Fox and Nikivincze 2020), and sociology (Akbar et al., 2018; Stack, 2002). Females are often thought to be at a disadvantage in research for reasons including carrying more of the burdens in domestic life, discrimination, and having fewer resources than males. Nevertheless, the results of this body of work are mixed. However, no study is available for Suicidology. The present study fills this gap. In addition, its focus is on the most prolific researchers, who are thought to exert substantial influence on the direction of a field through such mechanisms as contributing a disproportionate share of publications and citations, as well as holding key resources such as research funding (e.g., Fox and Nikivincze, 2020). Perhaps among the proven prolific researchers, gender may not predict productivity.

Methods: The sample of prolific suicidologists is taken from the Web of Science, WoS, (online, accessed November 2020). The WoS ranks the most 500 published researchers in a field. In suicidology, a researcher needed at least 34 works to make the top 500. The current sample consists of researchers with 70 or more published works on suicide cited in WoS. A total of 116 suicidologists met this criterion (30 females, 86 males). Measures of research productivity, provided by the WoS, include (1) the number of papers on the subject of suicide (2) the number of citations received on these papers, and (3) the h-index. The 116 researchers published 14,722 works, received 546,667 citations, and their mean h-index was 32.11 (32 articles with 32 or more cites). These measures were log transformation to address a problem of skewness. Predictor constructs included gender (0,1=male) and, drawing on previous work, experience: the number of years since publishing the first paper on suicide, research clusters: residing at a location with four or more other prolific suicide researchers (0,1), and region of the world using a series of binary variables: North America (N=50), Europe (N=51), and other (N=15), with North America serving as the reference category.

Results: The results of three multiple regression analyses provided mixed support for gender using one tailed tests. First, adjusting for the other predictors, males had more publications than females (b=.093, se=.043, p=.015). In the second analysis, gender was, however, unrelated to citations (b=.094,se=.068,p=.08). And third, gender was also unrelated to the h-index (b= .039, se=.031, p=.10). As anticipated, in all 3 regressions, the greater the number of years publishing, the greater the number of publications and citations, and the higher the h-index. 29 researchers were located in research clusters. In all 3 analyses, membership in a local research cluster, also predicted higher levels of all measures of research productivity. However, in all 3 equations, the productivity of persons located in Europe or other locations was not significantly different than persons located in the U.S. Model fit: all F-statistics were significant and r-squared statistics indicated that 13.0, 24.6, and 21.7% of the variance was explained.

Discussion: The study provides the first analysis of the relationship between gender and research productivity in Suicidology. Gender predicted only the number of publications. Among prolific researchers, gender may not matter in predicting productivity (e.g., Fox and Nikivincze, 2020). Future work might explore the link between gender and receipt of awards in Suicidology (e.g., Morselli, Stengel).

T79. EMERGENCY DEPARTMENT VISITS FOR SELF-HARM IN YOUTH IN ONTARIO FOLLOWING THE RELEASE OF '13 REASONS WHY'

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Background: The first season of the Netflix show "13 Reasons Why" (13RW), which depicted the suicide of a teenager was criticized for violating numerous recommendations for responsible portrayals of suicide. Previous studies found the show was associated with increases in youth suicides in the US and Canada however there is very limited data on self-harm presentations to emergency departments (EDs). This study aims to determine whether the release of the first season of the Netflix series '13 Reasons Why' (13RW) was associated with changes in ED presentations for self-harm.

Methods: Healthcare utilization databases were used to identify ED and outpatient presentations according to age and sex for residents of Ontario, Canada. Data from 2007-2018 were used in autoregressive integrated moving average (ARIMA) models for time series forecasting with a pre-specified hypothesis that rates of ED presentations for self-harm would increase in the 3-month period following the release of 13RW (April 1, 2017-June 30, 2017). Chi-squared and t-tests were used to identify demographic and health service use differences between those presenting to ED with self-harm during this epoch compared to a control period (April 1, 2016-June 30, 2016).

Results: There was a significant estimated excess of 75 self-harm-related ED visits (+6.4%) in the 3 months after 13RW above what was predicted by the ARIMA model (SE – 32.4; P=0.02; SE – 213; P=0.02). Sex stratified analyses demonstrated that these findings were largely driven by significant increases in females. The largest numerical and proportionate increases were observed in the 10-19 year group. There were no differences in demographic or health service use characteristics between those who presented to ED with self-harm in April-June 2017 vs. April-June 2016.

Discussion: This study demonstrated a significant increase in self-harm ED visits associated with the release of 13RW. It adds to previously published mortality, survey and helpline data collectively demonstrating negative mental health outcomes associated with 13RW.

T80. IS THE NARRATIVE THE MESSAGE? THE RELATIONSHIP BETWEEN SUICIDE-RELATED NARRATIVES IN MEDIA REPORTS AND SUBSEQUENT SUICIDES

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Background: It is well known that suicide can be influenced by social learning. The "Werther" and "Papageno" effects refer to increases and decreases in suicides across populations following media reports on suicidal acts or mastery of crises, respectively. The goal of this study was to investigate the impact of these different narrative constructs on subsequent suicides.
Methods: This study examined the change in suicide counts over time in Toronto, Canada. It used Latent Difference Score (LDS) analysis, examining suicide-related print media reports in the Toronto media market (2011-2014). Articles (N=6367) were coded as having a potentially harmful narrative if they described suicide death in a celebrity or described a suicide death in a non-celebrity and included the suicide method. Articles were coded as having potentially protective narratives if they included at least one instance of protective content (e.g., alternatives to suicide) without including any information about suicidal behaviour (i.e., suicide attempts or death).
Results: LDS longitudinal multigroup analyses identified a dose-response relationship in which the trajectory of suicides following protective "Papageno" narrative reports declined significantly over time, while those following harmful "Werther" narrative reports increased. The LDS model demonstrated significant goodness of fit and parameter estimates, with each group demonstrating different trajectories of change in reported suicides over time: $\chi 2[6]$, N = 6367) = 13.16; $\chi 2/df = 2.19$; AIC = 97.16, CFI = .96, RMSEA = .03.
Discussion: These results lend support to the notion that the "narrative" matters when reporting on suicide. Specifically, "Werther" narratives of death in celebrities and those including suicide methods were associated with more subsequent suicides while "Papageno" narratives of survival and crisis mastery without depictions of suicidal behaviours were associated with fewer subsequent suicides. These results should inform efforts by journalists and suicide prevention experts to prevent imitative suicides.

T81. IMPACT OF WEB-BASED SHARING AND VIEWING OF SELF-HARM–RELATED VIDEOS AND PHOTOGRAPHS ON YOUNG PEOPLE: SYSTEMATIC REVIEW

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Background: Given recent moves to remove or blur self-harm imagery or content on the web, it is important to understand the impact of posting, viewing, and reposting self-harm images on young people.
The aim of this study is to systematically review research related to the emotional and behavioral impact on children and young people who view or share web-based self-harm–related videos or images.

Methods: We searched databases (including Embase, PsychINFO, and MEDLINE) from January 1991 to February 2019. Search terms were categorized into internet use, images nonspecific and specific to the internet, and self-harm and suicide. Stepwise screening against specified criteria and data extraction were completed by two independent reviewers. Eligible articles were quality assessed, and a narrative synthesis was conducted
Results: A total of 19 independent studies (20 articles) were included. Of these, 4 studies focused on images, 10 (11 articles) on videos, and 5 on both. There were 4 quantitative, 9 qualitative, and 7 mixed methods articles. In total, 11 articles were rated as high quality. There

has been an increase in graphic self-harm imagery over time. Potentially harmful content congregated on platforms with little moderation, anonymity, and easy search functions for images. A range of reactions and intentions were reported in relation to posting or viewing images of self-harm: from empathy, a sense of solidarity, and the use of images to give or receive help to potentially harmful ones suggesting new methods, normalization, and exacerbation of self-harm. Viewing images as an alternative to self-harm or a creative outlet were regarded in 2 studies as positive impacts. Reactions of anger, hostility, and ambivalence have been reported. There was some evidence of the role of imitation and reinforcement, driven partly by the number of comments and wound severity, but this was not supported by time series analyses.
Discussion: Although the results of this review support concern related to safety and exacerbation of self-harm through viewing images of self-harm, there may be potential for positive impacts in some of those exposed. Future research should evaluate the effectiveness and potential harms of current posting restrictions, incorporate user perspectives, and develop recovery-oriented content. Clinicians assessing distressed young people should ask about internet use, including access to self-harm images, as part of their assessment.

T82. THE IMPACT OF A HARRY POTTER-BASED COGNITIVE-BEHAVIORAL THERAPY SKILLS CURRICULUM ON SUICIDALITY AND WELLBEING IN MIDDLE SCHOOLERS: A RANDOMIZED CONTROLLED TRIAL

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Background: To evaluate the impact of a Harry Potter-based mental health literacy curriculum, imparting cognitive behavioral therapy (CBT) skills, on suicidality and well-being in middle-schoolers.
Methods: Students (aged 11-14; grades 7-8) who received a 3-month teacher-delivered intervention embedded in the language arts curriculum (N=200) were compared to a wait-list control group (N=230) in the largest urban school board in Canada. Suicidality defined as a composite measure of self-reported suicidal ideation and attempts [primary outcome], self-reported emotion dysregulation, interpersonal chaos, confusion about self, and impulsivity [Life Problems Inventory (LPI)] and self-reported depression and anxiety symptoms [Revised Child Anxiety and Depression Scale (RCADS)] were the outcomes of interest. Measurements occurred prior to and after curriculum delivery with independent t-tests used to compare mean change scores between groups clustered by class.
Results: Thirty-seven English teachers in 46 classes across 15 schools comprised the planned study cohort. Composite suicidality scores were significantly worse in the control than intervention group 0.05□0.54 vs. 0.17□0.47, t= -2.60, df=428, p=0.01). There were also significant improvements in LPI and RCADS scores (LPI:-3.74□7.98 vs. 1.16□10.77 t=5.28, df=428, p<.001; RCADS: (-3.08□5.49 vs. -1.51□6.53 t=2.96, df=429, p=0.01) in the intervention group compared to controls. Sub-analyses revealed that these improvements were largely driven by a significant difference in scores in girls.

Discussion: This study demonstrates significant improvement in suicidality, emotional regulation, self-concept, interpersonal difficulties, depression and anxiety in youth, particularly girls. Replication studies in larger samples are needed to confirm these Results:.

T83. TOWARDS A COMPREHENSIVE EVALUATION OF THE REPLICABILITY OF SUICIDE RESEARCH: INITIAL RESULTS FROM A GROWING DATABASE OF HAND-CODED STUDIES

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Background: Replication is an important part of research in suicide science. However, defining replicability has been contentious and, perhaps consequently, replication studies are rare. Recent methodological developments like the Z-Curve provide an estimate for the average statistical power of a set of studies. This provides one way of analyzing the replicability of suicide research. The purpose of this project is to build a database of articles fitted to a Z-Curve. We started with studies investigating correlates of suicidal thoughts and behaviours in youth and are expanding to include suicide-related research more broadly.
Methods: We searched PsycINFO for articles in youth/adolescent suicide. Eighty articles were randomly sampled and the exact p-values that corresponded to the focal hypotheses of each study were extracted. Seven hundred and sixty-two p-values were converted to z-scores, which were fit to a Z-Curve using a finite mixture model. The materials for this study can be found at https://osf.io/w8zxm/.
Results: The observed discovery rate was 60%, 95% CI[56, 63], and the expected discovery rate was 25.2%, 95% CI[9.1, 53.2], indicating a discrepancy between the observed power and power when corrected for publication bias. The expected replication rate was 65.3%, 95% CI[56.1, 74.5], meaning that approximately 65.3% of studies are expected observe statistically significant effects in a direct replication. Soric's False Discovery Rate was 15.6%, 95% CI[4.6, 52.6], which is the estimated number of false positives of all null hypotheses rejected. The dataset can be found at https://drive.google.com/file/d/1_RFpvdyOqKwb7i1ISpTfXKaZjC72LYz1/view?usp=sharing.
Discussion: The current findings show evidence for publication bias. The estimated false discovery rate can be lowered to approximately 5% if alpha (i.e., the decision to reject the null hypothesis) is lowered to p = 0.02. Hand-coded articles will be continuously added to the dataset to increase the representativeness of the sample. Users can comment and contribute to the dataset linked above. We aim to expand this dataset into a database of articles and to include filters so that users can filter articles based on their specific interests (e.g., focusing on community samples, ethnic minorities, etc.). In the long run, we hope to build a searchable database that allows users to assess the replicability of the studies that they are interested in.

T84. BENEFITS AND CHALLENGES OF USING THE LIFELINE INTERVIEW APPROACH IN PHENOMENOLOGICAL RESEARCH EXPLORING THE RELATIONSHIP BETWEEN DEVELOPMENTAL TRAUMA AND SUICIDALITY AMONG LGB WOMEN

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Background: Growing evidence demonstrates that exposure to traumatic events and traumatic stress symptoms are strongly related to suicidality, particularly among marginalized groups, such as individuals identifying as lesbian, gay or bisexual (LGB). Specifically, developmental trauma during childhood has been found to have one of the strongest associations with suicidality. However, despite significant evidence of this relationship, there exists a dearth of qualitative research exploring individuals' lived experience of the bidirectional relationship between exposure to trauma, traumatic stress, and suicidality. In particular, scholars have called for more phenomenological research in suicidality (Cutcliffe, 2013).

Therefore, this study used an adapted interview approach from narrative exposure therapy (NET), an evidence-based treatment for complex posttraumatic stress, in order to facilitate a phenomenological approach to exploring LGB women's lived experience of suicidality (e.g., ideation, attempts) and its relationship with exposure to traumatic events, traumatic stress, and discrimination. The goal of this presentation is to explore the benefits and challenges of using the lifeline interview approach in suicide research.

Methods: The lifeline interview takes a chronological approach to assessing for exposure to potentially traumatic events across the lifespan. In NET, this process guides the exposure treatment. However, for this study, the lifeline was adapted to include questions about experiences with suicidality and discrimination. Fifteen qualitative interviews were conducted using this adapted lifeline interview approach, and detailed field notes about research methodology were maintained. Second interviews were conducted, wherein questions about micro- and meso-systemic factors, such as the influence of and on relationships and community, were layered onto the participant's previously developed lifeline.

Results: Several benefits and challenges were associated with implementing the lifeline interview approach in this study. Benefits include that the lifeline interview facilitates depth and meaningful links between life events when employing a phenomenological qualitative methodology. Challenges include careful assessment of participant stability to discuss this topic if they are currently experience symptoms of traumatic stress and suicidal ideation, and the ethical complexities of differentiating between a research interview and a clinical treatment interview.

Discussion: This adapted lifeline interview approach demonstrates a novel method for structuring interviews in phenomenological research on suicide, and facilitates the integration of a developmental lens. Additionally, it provides a means of developing a meaningful narrative grounded in the lived experience of the participant, which is especially important in research with marginalized populations. Recommendations for integrating the lifeline in future research will be discussed.

T85. HELPING ADOLESCENT SUICIDAL PEERS: OUTCOMES FROM AN EXTENDED PILOT OF TEEN MENTAL HEALTH FIRST AID

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Background: Suicide is a leading cause of death among adolescents, indicating the importance of prevention programs implemented in settings serving adolescents. As most adolescents attend school, schools are an ideal setting for universal prevention programs. A recent systematic review by Mann and colleagues (2021) found that several randomized studies of education for high school students about mental health prevent student suicide attempts,

whereas studies training adults in schools/teachers largely did not find benefit. teen Mental Health First Aid (tMHFA) is a school-based training program with the goal of giving students guidance on how to help a peer in a mental health crisis. tMHFA was first created in Australia, and was then adapted for U.S. high schools in a previous pilot study. This research evaluated an extended pilot and randomized controlled trial of tMHFA; comparing students on their willingness, confidence, and approaches they would employ to help a suicidal peer before and after the program was implemented.

Methods: The program was presented universally to students in grades 10-12 in 44 propensity-matched schools. Online, self-report surveys were given to students at three time points: baseline (before training began), post-training (immediately after training) and follow-up (approximately 6-12 months after training). Students were asked questions about their responses to a vignette on John, a 16 year old clearly experiencing suicidal ideation. Survey questions included willingness and confidence to help John, whether students would ask John directly if he's thinking about suicide, tell a trusted adult, avoid talking about suicide, and suggest John talk to a doctor.

Results: Preliminary analyses utilizing paired samples t-tests and Cohen's d effect sizes were run to compare measures at baseline and post-training surveys in a total of 515 students. Willingness to help saw a significant decrease from 92% to 88% ($p = 0.015$, $d = 0.40$). There was a significant increase in confidence to help John from 58% to 72% ($p = <.001$, $d = 0.58$), asking John about suicide from 46% to 75% ($p = <.001$, $d = 0.59$), telling an adult from 76% to 85% ($p = <.001$, $d = 0.44$), and suggesting John talk to a doctor from 88% to 93% ($p = .002$, $d = 0.38$). There was a significant decrease in avoiding talking about suicide from 42% to 15% ($p = <.001$, $d = 0.55$). Effects of up to 0.2 are small, 0.2-0.5 are moderate, and over 0.5 are large.

Discussion: While there was a decrease in willingness to help before to after tMHFA, our preliminary data show increased confidence in helping John and an increase in hypothetical helpful behaviors (asking, telling an adult, and suggesting telling a doctor) and a decrease in hypothetical unhelpful behaviors (avoidance). All effect sizes were moderate or large. These data suggest promise of the effectiveness of the tMHFA program by giving students guidance on satisfactory methods of helping a suicidal peer. This extended pilot included an ethnically diverse sample of students across the country. Data on which subpopulation (e.g. race/ethnicity, sexual minority status, grade, region of the United States) of students are more and less likely to help John will also be presented. Follow-up data examining actual helping behaviors after the program will be presented as well.

T86. STUDIES ON THE PREVALENCE OF SUICIDAL BEHAVIOR AMONG BLACK POPULATION IN THE UNITED STATES MAY BENEFIT FROM SELF-REPORTED DATA INSTEAD OF SYSTEMS LEVEL DATA

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Background: Accurate determination of the prevalence of suicidal ideation and attempts is critical for informing appropriate risk stratification, prevention and policy. While much focus has been given to the white population, suicidal ideation and attempts among the minority racial subgroups have been largely unexamined. This study examines the prevalence of suicidal ideation and attempts among black communities in the United States for the years 2008 to 2018. The data were combined from National Survey on Drug Use and Health (NSDUH) and Web-based Injury Statistics Query and Reporting System (WISQARS)- nonfatal Injury Data.

Methods: In this paper, to determine the significance level of suicidal ideation and attempts among races, namely white and black, the chi-square test was used in a multivariate analysis. In the chi-square, $p < 0.05$ was considered significant. Because of the large sample size, many parameter estimates were statistically significant. Thus, the Bonferroni method was applied to get the accurate significance level of the variables.
Results: The rate of suicidal attempts among the black population was found to be significantly higher compared to the white population in the NSDUH dataset. This observation did not match with the data from WISQARS, where the time trend for suicide attempts for the black population was significantly less than the white population. Interestingly, while the time trend of suicide attempts in both the WISQARS and NSDUH datasets were similar for the white population, the time trend for suicidal attempts in the black population exhibits discrepancies between the datasets.
Discussion: NSDUH dataset is a self-reported survey that provides more personal insights, while the WISQARS dataset borrows data from the Emergency Room (ER) reports. Thus, the discrepancy in the reporting rates among the black population may indicate disparities in accessing ER facilities after a suicide attempt. This study suggests that self-reported data on suicidal behavior may need to be considered for designing targeted policy measures for the socioeconomically disadvantaged populations.

T87. A CULTURAL EXAMINATION OF SOUTH KOREA'S SUICIDE EPIDEMIC

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Background: Suicide is a major global epidemic and is one of the fastest growing causes of death in South Korea. South Korea has seen a consistent rise in suicide rates over the decades, increasing by 206% for the general population, 245% for persons 65 years and older and 38.4% for adolescents aged 10 to 19, from 1983 to 2018. In order to examine these alarming rates of suicide, this study used a socio-cultural anthropological framework to understand such trends. Confucianism has pervaded the cultural milieu of South Korea since 200 AD. Confucianism is a system of teachings, doctrines and behaviors which encompasses most aspects of one's life. With the Japanese Colonial Occupation of 1910, Korea's Confucian dynasty came to an end.

With the introduction of Western capitalistic ethos after WWII, the traditional community-centric familism changed to a more competition-centric familism. This change downsized kinship ties, favoring a nuclear structure over an extended structure. Also, with growing economic pressures, parental expectations grew, prompting children to pursue education.

Hence, this study's aim was to first examine the relationship between academic pressure and suicide for youths and second, assess the relationship between changing household structures and suicide for South Korean elders.

Methods: The Korean Statistical Information Service database was used. In the youth age group, the count of suicide deaths from 2007 to 2018 was used with $n = 12$. In the elderly age group, the count of suicide deaths from 2000 to 2017 was used with $n = 18$.
For the youth group, a Poisson regression with log link function was conducted and incidence rate ratio (IRR) with 95% confidence interval (CI) was computed. For the elderly, a negative binomial regression with log link function was used to account for the presence of overdispersion. Analysis was conducted using SPSS version 26.0.

Results: The unemployment percentage from the Poisson regression results for the youth group was negatively associated with suicide count (IRR .855; 95% CI, .742 – .986). Hagwon participation and GDP per capita growth did not show a significant relationship with suicide. Average weekly hours studied at hagwons showed a significant positive association with an IRR value of 1.27 (95% CI, 1.10 – 1.46).
The economic measure of unemployment from the negative binomial results for the elder group showed a negative association with elderly suicide, with an IRR value of .609 (95% CI, .435 - .852). GDP per capita growth and welfare spending were not statistically significant. Both sociological measures for family structure were significant. A 1% increase in three or more generation households was associated with a 10.2% increase in elderly suicide (IRR 1.10; 95% CI, 1.05 – 1.16). Percentage of 65 year and older couples living with parents was negatively associated with suicide with an IRR value of .271 (95% CI, .124 - .591).

Discussion: The findings illustrate how abrupt transitions on deeply rooted cultural structures can force maladaptive changes to health. The findings provide additional evidence in support of the current understanding of the association between academic pressure and increased suicidality. However, results for the elderly age group showed mixed results for the relationship between household composition and increased suicidality. The findings highlight the importance of considering sociological and cultural factors in understanding suicidal behaviors among South Koreans. Future prevention and intervention efforts need to better incorporate cultural factors in their designs, in order to reflect a more comprehensive phenomenology of suicide.

T88. A SCOPING REVIEW OF GENDER DIFFERENCES IN SUICIDE IN INDIA

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Background: Much of the published literature on suicide relates to high income countries (HICs). Suicide is particularly concerning in lower-middle income countries like India, where access to mental healthcare is limited. Age-disaggregated data shows that in some countries such as India, female suicide rates are higher than the global average, and exceed those rates found in their male counterparts. Results from previous studies indicate that factors related to suicide among men and women in India are different from those seen in HICs. However, no studies have reviewed the relationship between gender and suicide in India. Therefore, the aim of this scoping review is to provide a comprehensive understanding of existing literature reporting gender differences in suicide rates, methods, risk factors and protective factors in India by reviewing published studies.
Methods: A scoping review was conducted to map the existing literature on gender differences in suicide in India. To identify peer-reviewed publications, online databases PsycINFO, EMBASE and CINAHL were searched. The search terms were [suicid* AND India*]. The searches took place in November 2020, with no language restrictions. Studies were excluded if they focused on self-harm or did not report gender differences. Articles published from 2014 onwards from India were included. This timeframe was chosen to provide a contemporary overview of Indian suicide data, as there was a systematic review on suicide in India from Rane and Nadkarni from 2014. Reference lists of selected studies were searched for studies that could meet the inclusion criteria.
Results: This review identified 17 studies that met the inclusion criteria. The ratio between women and men who die by suicide in India is much lower than in HICs. It was found that Indian women in particular account for a large proportion of suicides worldwide, with the

suicide rate and proportion of deaths by suicide particularly high in young women aged between 15 and 29. While marriage is considered to be a protective factor for women in HICs, it was less so for women in India. Self-immolation and the consumption of pesticides were found to be more commonly used methods in India than in HICs. This review also identified several gaps in the literature. For example, despite being a vulnerable group, there were few studies that examined suicide among transgender Indians. There was limited literature on gender differences in risk and protective factors for suicide. Limitations such as the omission of a definition of suicide, lack of gender-based analyses, and under-reporting of suicide rates were identified in several studies.

Discussion: Understanding suicide within the context of individual countries is essential in designing culture-appropriate suicide prevention strategies. The aim of this review was to contribute to this understanding by synthesising data on suicide and gender in India, and highlighting gaps and methodological issues in the existing literature. This review identified an urgent need to establish and evaluate suicide surveillance systems in India. Furthermore, additional research is warranted to understand suicide among individuals who identify outside the gender binary, and gender-specific risk and protective factors.

T89. CANDIDIASIS AND URINARY TRACT INFECTIONS DURING PREGNANCY ELEVATE THE RISK FOR MATERNAL SUICIDE IDEATIONS, SUICIDE ATTEMPTS, POSTPARTUM DEPRESSION AND MAJOR DEPRESSIVE DISORDER

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Background: The Centers for Disease Control and Prevention estimate that postpartum depression (PPD) affects 1 in 8 women in the US. PPD is difficult to detect and poses a significant health risk to both mother and child. Suicide is a leading cause of death among postpartum women and its rate is rising. Identifying risk factors associated with depression and suicide can lead to more prompt treatment and better outcomes.

The link between infections during pregnancy and the onset of new neuropsychiatric disorders in mothers is receiving renewed interest given the current COVID-19 pandemic. Urinary tract infections (UTIs) are particularly prevalent in pregnant women and result from shifts in the genitourinary microbiome and invasion of specific bacterial, viral and fungal pathogens. We previously reported that immunological evidence of exposure to the yeast Candida albicans is associated with suicide attempts and cognitive impairments in women with mood disorders.

Here we undertook a medical records-based investigation of a large cohort of women living in the US to examine evidence that candidiasis and UTIs during pregnancy are associated with the maternal development of new-onset suicidal ideations, suicide attempts, PPD, and Major Depressive Disorder (MDD).

Methods: Anonymized records were drawn from 212,775,768 patients as part of the US TriNetX electronic health networks platform. Records reflecting the onset of targeted outcomes occurring within a year of pregnancy were identified. Of 3,158,858 pregnancies, there were 17,583 instances of suicidal ideation, 1,168 suicide attempts, 5,663 PPD, and 246,819 MDD. Suicidal ideations and suicide attempts were combined to form a SUIC outcome. PPD and MDD were combined to form a DEP outcome. We compared outcomes for presence/absence of genito-UTIs (gUTIs) and candidiasis. Cohorts were highly matched for demographic, socioeconomic and clinical variables using propensity score analyses. Kaplan-Meier (KM)

survival functions were used to measure infection-associated outcomes over the period of one year post-pregnancy. Other health conditions (obesity, hypertension, diabetes, asthma, stroke, smoking, alcohol) and neurological disorders (autistic disorder, multiple sclerosis, Alzheimer's Disease) were evaluated as covariates and low probability control outcomes, respectively.
Results: Odds ratios for developing new onset SUIC or DEP within one year by pregnant women experiencing gUTIs compared to infection-free women were as follows: SUIC OR 2.11,1.95-2.29, p<0.0001; DEP OR 1.92,1.86-1.97, p<0.0001. Odds ratios for candidiasis infections with these outcomes were as follows: SUIC OR 2.33,1.95-2.77, p<0.0001; DEP OR 2.58, 2.42-2.76, p<0.0001. The presence of candidiasis and of any gUTI infection was associated with worse KM survivor probability at the end of a one year time period post-pregnancy for both outcomes (SUIC 2=82.00-301.10, p<0.0001; DEP 2=687.07-1,735.15, p<0.0001). Hazards Ratios (HRs) for survivor curve differences were significant in SUIC for gUTIs (HR 2.00, 1.85-2.16, p<0.007) and in DEP for candidiasis (HR 2.32, 2.18-2.48, p<0.05) and gUTIs (HR 1.81, 1.76-1.86, p<0.0001).
Discussion: These findings from medical records of a large patient cohort support elevated risks for new-onset suicidal ideations, suicide attempts, PPD, and MDD in pregnant women who have been exposed to UTI-related microbes including the less well-studied fungal pathogens. The presence of a gUTI may represent an easily obtainable biomarker that may identify women who are at risk for suicide ideations, suicide attempts, and mood disorders associated with pregnancy,

T90. USE OF HEALTH SERVICES LAST YEAR BEFORE SUICIDE IN PEOPLE WITH SUBSTANCE USE DISORDERS – A NATIONAL REGISTER STUDY

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Background: Substance use disorders (SUDs) are associated with an increased risk of suicide. Still, we lack knowledge regarding the use of health services in people with substance use disorders in the time before suicide. Several previous studies have found a high prevalence of use of treatment for both mental health problems and substance use disorders the last year before suicide. These studies have only reported dichotomous data on contact with services. The aim of this study is thus to describe what are the most common patterns of health service use over the last year before suicide in people having received treatment for substance use disorders.
Methods: We used a registry linkage between the Norwegian Cause of Death Registry and the Norwegian Patient Registry containing all suicides (X60-X84; Y10-Y34; Y872) in Norway between 2008 and 2019 who had contact with mental health or substance use disorders services last year. From this linkage, we included all persons who were registered with a substance use disorder (F10-F16; F18-F19) the last year before suicide (n = 830) between 2010 and 2019.
We used sequence analysis to build sequences of contact with services per week for the last year. Contact with services was categorized as 'inpatient SUD services', 'inpatient mental health services', 'outpatient SUD services', 'outpatient mental health services', and 'no service use'. Next, we used agglomerative hierarchical clustering to group sequences of service contact into clusters. Last, we used multinomial logistic regression to examine the association between the clusters and the following covariates: gender, age, method of suicide, psychiatric comorbidity, and deliberate self-harm.

Results: We identified four clusters of service use last year (number of cluster members in parentheses): (1) a low degree of contact (n = 366), (2) outpatient contacts with brief inpatient admissions (n = 160), (3) contact with primary outpatient SUD services (n = 195), (4) long inpatient admissions (n = 109).
Clusters 2 (aOR = 2.28), cluster 3 (aOR = 1.39), and cluster 4 (aOR = 1.71) all had more females than males. Clusters 2 to 4 were also more strongly associated with psychiatric comorbidity compared to cluster 1, with the aOR for psychosis or bipolar disorder ranging between 4.2 and 15.48, and aOR for depressive or anxiety disorders ranging between 2.93 and 4.93. Somatically treated deliberate self-harm was not significantly associated with any of the clusters.

Discussion: We found a high degree of heterogeneity of service use last year, which dichotomized measures of contact with services inadequately capture. By describing the service use per week for the last year before the suicide, we identified differential opportunities for suicide prevention in the different clusters of service contact patterns.
The by far largest cluster was characterized by few contacts with services last year. This shows that services reach people at risk, but points to the importance of securing adequate duration and intensity of treatment contacts. Psychiatric comorbidity was present in all clusters except the first, suggesting that integrated treatment of comorbid mental disorders may have the potential to prevent suicide in persons with substance use disorders.

The primary limitation of this study is that it is uncontrolled. We were thus unable to estimate risk factors for suicide. The main strength is that it is a nationwide study that includes all specialized in- and outpatient services in Norway.

T91. PTSD, RISK OF SUICIDE, AND UNINTENDED DEATH BY OVERDOSE IN LATE LIFE

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Background: Although posttraumatic stress disorder (PTSD) may increase risk of suicide in late life, findings have been controversial, in large part, because studies have not accounted for comorbid disorders. Moreover, little is known about association between late-life PTSD and apparent accidental death by overdose, which may be due to suicidal intent. Thus, our objective was to examine associations between PTSD, suicide attempt, death by suicide, and unintended death by overdose in mid- to late-life.
Methods: This is a nationwide cohort study across all Veterans Health Administration medical centers and integrated multiple databases, including the Department of Veterans Affairs' (VA) National Patient Care Database and national suicide and cause-specific mortality data and the Centers for Medicare and Medicaid Services data. Information on suicide attempts, death by suicide, and unintended death by overdose, including event dates, was provided by the VA's National Suicide Prevention Applications Network (SPAN; non-fatal attempts) and Mortality Data Repository (MDR; cause-specific mortality). Our participants included U.S. veterans aged ≥50 years with PTSD diagnoses (on at least two occasions) at baseline starting 2012-2013 and through December 31, 2017. They were propensity-matched 1:1 with veterans without diagnoses of PTSD based on sociodemographics, the Charlson Comorbidity Index, and neuropsychiatric disorders (N=951,018).

Results: The mean age of our sample (PTSD/no PTSD, N= 475,509 each) was 63.3, 56,384 (5.9%) were women, and 700,605 (73.7%) were non-Hispanic White. Results adjusting for sociodemographics, Charlson comorbidities, and neuropsychiatric diagnoses showed that the hazard ratio for suicide in veterans with PTSD was associated with any suicide attempt (HR, 1.59; 95% CI, 1.54-1.65; P<.001), death by suicide (HR, 1.08; 95% CI, 1.00-1.18; P=.055); drug overdose death overall (HR, 1.32;95% CI, 1.22-1.42; P<.001), and suicide death by drug overdose (HR, 1.44;95% CI, 1.15-1.80; P=.002). Further analyses examined type of drug involved in overdose and demonstrated that veterans with PTSD had significant hazard ratios for narcotics (HR, 1.30; 95% CI, 1.15-1.46; P<.001), antiepileptic/sedative-hypnotics (HR, 1.29; 95% CI, 1.02-1.62; P=.032), and for other/unspecified drugs (HR, 1.35; 95% CI, 1.20-1.51; P<.001), the last category being a proxy for polypharmacy of mainly psychoactive drugs. Results remained robust when examined for unintentional, suicide, and undetermined intent for cause-specific death by other/unspecified drugs.
Discussion: The impact of PTSD persists throughout mid- to late-life with considerable increased risk for suicide attempts and suicide death, particularly by drug overdose (and accidental and undetermined death), independent of comorbid disorders. It also provides important information about the relationship of suicide outcomes in late-life PTSD to specific drugs. Lastly, it helps to inform clinical practice, especially the importance of assessing for suicide and polypharmacy as well as the role of drug-monitoring in prevention of late-life suicide.

T92. SUICIDE AFTER CONTACT WITH CHILD AND ADOLESCENT MENTAL HEALTH SERVICES - A NATIONAL REGISTRY STUDY FROM NORWAY 2008-2018

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Background: Suicide is one of the leading causes of death among young people, and an important contributor to years-of-life lost. Previous research on suicide in children and adolescents have either included broader use of services or wider age groups, thus, to our best knowledge, studies describing suicide in Child and Adolescent Mental Health Services (CAMHS) is currently lacking. The aim of this study was to examine suicide rates among Norwegian adolescents who have been in contact with CAMHS the year before suicide and to describe their service utilisation the last year before the suicide.
Methods: All children and adolescents in contact with CAMHS within 12 months before suicide in the period 2008-2018 were identified by a linkage of the Norwegian Cause of Death Registry and the Norwegian Patient Registry. Information about gender, age, date of death and method of suicide were retrieved from the CDR and ICD-10 diagnosis and service contact were retrieved from the NPR. The analysis were stratified by gender and age groups (10-13 years, 14-16 years and 17-19 years).
Results: 24 boys and 49 girls died by suicide within one year of contact with CAMHS. More girls (39.7 %) than boys (11.8 %) had contact with CAMHS the year before suicide, and lowest proportion in contact was in the age group 17-19 years, 33.8 % and 10.7 %, respectively. Among girls, suicide rates per 100 000 patients gradually increased in the age group 10-13, 14-16 and 17-19 years; 5 -, 22 - and 38 per 100 000 patients, respectively. Among boys, the suicide rate sharply increased in the oldest group and suicide rates per 100 000 were 2 -, 7 - and 40 per 100 000 patients, respectively.

The majority of girls (71.4 %) had an ongoing outpatient contact at time of death, compared to 45.8 % of boys (p = 0.04). Only 14.3 % of girls had a terminated outpatient contact, compared to 50 % of boys (p= <0.01). Eight children and adolescents (11.0 %) had in-patient contact (current or discharged) as their last contact. Median days from last contact to suicide was 72 for boys and 6 for girls (p= <0.01). Five boys (20.8 %) and 24 girls (49.0 %) had been admitted to in-patient care the last year (p = 0.02)

Affective disorders was the largest diagnostic group the last year before suicide in both genders (49.3 % in total). 24.7 % did not receive a specific ICD-10 diagnosis. None of the boys and nine girls (18.4 %) were diagnosed with personality disorder during the last year (p = 0.03). In total, 9.6 % was diagnosed with substance use disorders. However, 24.7 % had been in contact with substance use disorder services the last year before death.

Discussion: Suicide rates were highest in the oldest adolescents. However, compared to the suicide rate in adult mental health services, suicide rates are around four times lower. Higher suicide rates among older adolescents and adults, compared to younger adolescents can relates to higher occurrence of mental disorders. This can partly explain why the overall proportion in contact with CAMHS is lower than the proportion in contact with adult mental health services the year before suicide (around 40 %). However, contact with CAMHS were lower among boys than girls in all age groups, and lowest proportion in contact was found among boys in the age group 17-19 years, the age group with highest suicide rate. Unclear symptoms and less warning signs, not always qualifying for contact with CAMHS, impulsive behaviour and a possible lower degree of help-seeking behaviour among boys, may be an explanation for this.
Outpatient contact is the most important arena for suicide prevention in CAMHS. Focus on the oldest age group, in addition to better diagnostic assessments and an increased focus on substance use disorders is important to ensure adequate treatment in high-risk groups

T93. PEOPLE EXPOSED TO SUICIDE ATTEMPT: FREQUENCY, IMPACT, AND THE SUPPORT RECEIVED

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Background: Little is known about people who have been exposed to a suicide attempt by someone they know. The purpose of this study was to examine how many people have been exposed to a suicide attempt by someone they knew and whether the exposure was associated with general well-being and suicidal ideation.

Methods: A population-based online survey was conducted during 2019 in Denmark (n = 6,191). The associations between exposures to suicide attempt and general wellbeing (WHO-5) and suicidal ideation (Suicidal Ideation Attributes Scale) were examined using linear regression analyses.

Results: Overall, 24.6% reported having experienced a suicide attempt by someone they knew. Of those, 46.5% had experienced a suicide attempt of a close relation and this group reported having been more affected by the event. Those exposed scored lower on general well-being (b: −3.0; 95% CI: −4.2 to −1.8; p > 0.001) and higher on suicidal ideation (b: 1.6; 95% CI: 1.3 – 1.9; p = 0.001) than those not exposed. Half of the exposed reported not having received sufficient support after the event.

Discussion: Suicide attempt affects a substantial share of the population, and it might be relevant to ensure that support is available for those exposed perceived to be inneed of support.

T94. HEALTHCARE USE BEFORE AND AFTER SUICIDE ATTEMPT IN REFUGEES AND SWEDISH-BORN INDIVIDUALS

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Background: There is a lack of research on whether healthcare use before and after a suicide attempt differs between refugees and the host population. We aimed to investigate if the patterns of specialised (inpatient and specialised outpatient) psychiatric and somatic healthcare use, three years before and after a suicide attempt, differ between refugees and Swedish-born individuals in Sweden. Additionally, we aimed to explore if specialised healthcare use differed among refugee suicide attempters according to their sex, age, education or receipt of disability pension.

Methods: All refugees and Swedish-born individuals, 20-64 years of age, treated for suicide attempt in specialised healthcare during 2004-2013 (n=85,771 suicide attempters, of which 4.5% refugees) were followed three years before and after (Y-3 to Y+3) the index attempt (t0) regarding their specialised healthcare use. Annual adjusted prevalence with 95% Confidence Intervals (CIs) of specialised healthcare use were assessed by generalized estimating equations (GEE). Additionally, in analyses among the refugees, GEE models were stratified by sex, age, educational level and disability pension.

Results: Compared to Swedish-born, refugees had lower prevalence rates of psychiatric and somatic healthcare use during the observation period. During Y+1, 25% (95% CI: 23-28%) refugees and 30% (95% CI: 29-30%) Swedish-born used inpatient psychiatric healthcare. Among refugees, a higher specialised healthcare use was observed in disability pension recipients than non-recipients.

Discussion: Our study revealed that during a period of three years before and three years after the index suicide attempt, refugees generally used specialised healthcare less than the Swedish-born population. Future research, preferably qualitative in nature, should focus on finding specific mechanisms behind the underutilisation of healthcare in refugee suicide attempters, so that specific measures can be taken to improve healthcare use in this vulnerable group.

T95. SUICIDALITY AND EATING DISORDERS IN ADOLESCENTS IN HIGHER LEVELS OF CARE

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Background: Anxiety and eating disorder symptom severity have both independently demonstrated strong relations with suicidality. Although general differences for risk and prognosis have been identified for individuals who experience various levels of suicidality (none, passive, active; Simon, 2014; Van Orden et al., 2015), minimal research has examined differences in anxiety or eating disorder symptoms across the course of treatment for adolescent patients in an eating disorders treatment program. The current study seeks to offer insight about anxious and eating disorder distress at entry and discharge among adolescent patients with various levels of suicidality in order to better inform the overall treatment process.
Methods: Adolescent patients presenting for inpatient and partial hospitalization eating disorder treatment (n = 228) were involved in this study (age range 12-18; mean age = 14.48, SD = 1.57, 85.5% female, 7.5% male, 7% gender minority; 53.5% Caucasian, 32.9% Hispanic, 13.6% other). Diagnoses included: Anorexia Nervosa (84.2%), Bulimia Nervosa (14%), and Unspecified Eating Disorder (1.3%). Data was collected at entry into the intensive therapeutic program, and at discharge from the partial hospitalization program. Participants completed the QIDS-16 (Rush et al., 2003), SCARED (Birmaher et al., 1999), and EDE-Q (Fairburn and Beglin, 1994). Item 12 on the QIDS-16 is used as a measure of suicidality with scores of 0 indicating no suicidality, scores of 1 indicating passive suicidality, and scores of 2 or 3 indicating active suicidality.
Results: Descriptive statistics, including means and standard deviations, were examined. Results suggest increased anxiety among individuals with more acute suicide symptoms. Moderate correlations were found for eating disorder symptoms and suicidality at entry ($r = .40$) and discharge ($r = .48$) and moderate correlations were found for anxiety and suicidality at entry ($r = .45$) and discharge ($r = .40$). To examine change in symptoms over the course of treatment, paired samples t-tests were conducted. Among the overall sample, results suggest improvements over the course of treatment in suicidality ($t = 2.29$, $p < .05$) and eating disorder symptoms ($t = 8.36$, $p < .05$), while improvements in anxiety were approaching significance ($t = 1.92$, $p = .056$).
Discussion: Elevated anxiety and eating disorder symptoms appear to be related to increased, or more acute suicidality at entry and at discharge. Overall, participants in the treatment program improved in their suicidality and eating disorder symptoms. Participation in an interdisciplinary and multifaceted eating disorder treatment program evidences improvement in suicidality among this sample. It remains unclear whether improvements in suicidality can be attributed to eating disorder symptom improvement. Future research should investigate directionality of symptom improvement and explanatory factors in reduced suicidality over the course of intensive psychological intervention.

T96. ASSOCIATION BETWEEN UNEMPLOYMENT RATE AND SUICIDE RATES AMONG THE EMPLOYED AND UNEMPLOYED: A TIME-SERIES ANALYSIS

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Background: The association between unemployment and suicide is complex. Previous studies have found that the unemployment rate is associated with elevated overall suicide rate. However, it is unclear whether the influence of unemployment rate is consistent on the suicide rates across subgroups. This study aimed to explore the association between unemployment rate and suicide among the unemployed and the employed population in Hong Kong.

Methods: Quarterly statistics on labor force, unemployment rate and suicide counts by employment status in Hong Kong from 2003 to 2017 were obtained from the Hong Kong Census and Statistics Department and the Coroner's Court suicide reports. Suicide rates of the employed/unemployed were calculated by the number of suicide cases for each group divided by the corresponding population. To account for time-lagged influence and potential autocorrelation for time-series, vector autoregressive (VAR) model was used to examine the association between unemployment rate and unemployed/employed suicide rate between 2003 and 2017.
Results: The two peaks of unemployment rate emerged during the SARS epidemic and the economic recession (2008-2009). The unemployed and employed suicide rates ranged from 25.9 to 61.9 and 0.4 to 3.7 per 100,000 population respectively. The Granger causality test indicated that the unemployment rate predicted the future unemployed suicide rate ($p=0.006$). The results showed that a 1% increase in the unemployment rate would lead to a 7.89% decrease in the unemployed suicide rate in the next quarter.
Discussion: The results showed a statistically significant negative relationship between current unemployment rate and future unemployed suicide rate. This may be explained by the increase in the unemployed population diluting the suicide rate of the unemployed. It may also be possible that the society is more supportive and less prejudiced towards the unemployed population during the economic recession, leading to less pressure among the unemployed. Currently, the unemployment rate has risen in many countries and regions during the COVID-19 pandemic. Although we might observe a decreasing unemployed suicide rate during the pandemic, we should be well prepared for an uprise when the economy bounces back. When the situation is improving, more attention and resources should be allocated to help the unemployed to alleviate their stress and discrimination faced to suppress the anticipating increasing suicide rate among the unemployed.

T97. EXPLORING THE MALADAPTIVE COGNITIONS OF MORAL INJURY WITHIN A PRIMARILY COMBAT-TRAUMA MILITARY SAMPLE

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Background: Post-Traumatic Stress Disorder (PTSD) and moral injury (MI) are mental health conditions that affect military personnel. PTSD is an adverse response to a traumatic event in which an individual was exposed to a threat of death. Meanwhile, MI results when the individual is exposed to a situation or event that violates their moral code. MI may also result from a traumatic event; however, its unique presentation differentiates it from PTSD. Both MI and PTSD have been identified as risk factors for suicidal ideation and attempts. It is crucial to further identify the unique components of MI and PTSD to tailor treatment and therefore decrease overall suicide risk.

Previous literature on information processing indicated that traumatic events are encoded and processed differently than ordinary events. Following trauma exposure, individuals can develop biased patterns of interpreting new information. These biased patterns affect how individuals perceive the world around them and can maintain PTSD symptoms.

Although distorted cognitions are core components of PTSD symptomatology, there is no research of cognitions within MI. We examined how maladaptive cognitions may be associated with either MI or PTSD and hypothesized that MI would be associated with five maladaptive

cognitions (i.e., low self-worth, low reliability and trustworthiness of others, lack of forgiveness of others, lack of forgiveness of self, and atonement) and that PTSD would be associated with two maladaptive cognitions (i.e., increased threat of harm and lack of forgiveness of the situation).

Methods: Participants (N=253) were recruited online and eligible for the study if they endorsed a previous deployment, answered military-specific questions, and reported clinical levels of distress on PTSD and/or MI self-report measures. Qualitative data were checked to ensure a traumatic or potentially morally injurious event occurred. An overwhelming majority of participants experienced foreign deployment(s; 90.1%). A significant minority endorsed lifetime suicidal ideation (41.4%) and a past suicide attempt (15.4%).

Results: A series of three CFAs via SEM in MPlus were conducted to examine which maladaptive cognitions were associated with MI and PTSD. The original proposed model, a modified model, and an alternative model were tested. MI was defined by atonement, low self-worth and judgement, low reliability and trustworthiness of others, and lack of forgiveness of others. PTSD was defined by increased threat of harm and lack of forgiveness of the situation. Forgiveness of self was not associated with MI nor PTSD. The alternative model that combined MI and PTSD into a unitary "trauma" variable did not have a better fit than the modified model.

Discussion: The results indicated that MI and PTSD are associated with distinct maladaptive cognitions. Despite self-forgiveness being the hypothesized mechanism of action within MI treatments and identified as a pathway to decrease suicidal ideation, we did not find an association between self-forgiveness and MI nor PTSD. Examination of forgiveness is difficult due to the variety of measurements available, and the lay concept of forgiveness may be different than the research conceptualization. Given the complex association between forgiveness, PTSD, and MI, it is important to examine the subfactors of forgiveness. The current study was the first of its kind, to our knowledge, to examine the maladaptive cognitions.

T98. ATTACHMENT-BASED FAMILY THERAPY FOR LGBTQ+ YOUTH WITH SUICIDAL THOUGHTS AND BEHAVIORS: FEASIBILITY, ACCEPTABILITY AND TRANSPORTABILITY

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Background: Suicide is a serious public health problem for LGBTQ+ youth. LGBTQ+ youth report higher rates of both suicidal ideation and attempts than their heterosexual and cisgender peers. Surprisingly, few suicide interventions have targeted this high-risk population. Attachment-based family therapy (ABFT) is one intervention model that has been used and tested with this population. The challenge that remains, however, is in how to disseminate this treatment into specialized settings where LGBTQ+ youth seek clinical services. Unfortunately, importing empirically-supported treatments (ESTs) into community settings can be challenging. Barriers exist at multiple levels. Dissemination and implementation science recommends the use of both quantitative and qualitative methods to guide modification of ESTs to fit within the clinical and administrative contexts of community services. The purpose of this study is to modify the delivery of ABFT and implement this EST into community centers serving LGBTQ+ youth.

Methods: This study utilized an exploratory sequential mixed methods approach. First, interviews and focus groups were conducted with key stakeholders [adolescents/young adults (n= 9), caregivers (n= 11), providers (n= 22), administrators (n= 10)] to adapt the delivery of ABFT to the culture of the LGBTQ+ organizations. These interviews were coded and analyzed

using thematic analysis. Following the thematic analysis and subsequent delivery modifications, ten participants (ages 12-24) were enrolled in 16-weeks of ABFT, across three LGBTQ+ organizations. The majority (80%) of participating youth were trans-identified. Feasibility (treatment completion) and acceptability (Working Alliance Inventory, WAI; Opinions About Treatment, OAT) were measured from youth and caregivers. Depression (BDI-II) and suicide (SIQ-JR) outcomes were assessed at pre-treatment, mid-treatment, and end-of-treatment.
Results: Qualitative analysis revealed several major themes among the stakeholder groups: a) youth reported distrust of the healthcare system and ambivalence towards involving caregivers in treatment; b) caregivers wanted to be involved in treatment, yet had some reservations about the process; c) providers discussed their own ambivalence regarding caregivers and the challenges of meeting LGBTQ+ youths' needs in stigmatizing systems; and d) administrators noted the need for services, yet also reported a lack of training and limited referral sources. Based on these findings, delivery modifications were developed in an ABFT manual addendum, including: a) increasing youth sessions to help build the therapeutic alliance; b) increasing sessions with caregivers who displayed rejecting behaviors or anxiety about the impact of sigma on their child; c) increasing attention to helping caregivers empathize with their child's experiences of discrimination; and d) engaging caregivers in advocacy and education efforts. In the pilot study, the ABFT addendum was found to be both feasible and acceptable. All participants completed treatment and there were no dropouts. Youth and their caregivers reported high WAI and adequate OAT scores throughout treatment. There was a significant decrease in suicidal ideation ($\beta = -12.16$, $t(10) = -3.14$, $p < .01$); yet, no significant changes in depression ($\beta = -1.83$, $t(9.11) = -.88$, $p = .40$).
Discussion: Interviews with stakeholders suggested that ABFT needed delivery modifications to fit within the context of LGBTQ+ community centers. Pilot data indicates that ABFT is a promising treatment for LGBTQ+ youth presenting in these settings. Future ABFT modifications for LGBTQ+ and, specifically, for trans-identified youth, are discussed.

T99. POLY (ADP-RIBOSE) POLYMERASE 1 (PARP1) AND NEUROINFLAMMATION IN CEREBRAL CORTICAL WHITE MATTER IN MAJOR DEPRESSIVE DISORDER AND SUICIDE

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Background: Poly (ADP-ribose) polymerase 1 (PARP1) is a facilitator of DNA damage repair in cell nuclei, and is also an activator of neuro-inflammatory pathways. PARP1 is activated by oxidative DNA damage and separately by the inflammatory cytokine TNF-alpha, both of which have been found to be elevated in MDD and suicide. Moreover, we have reported elevated PARP1 gene expression in both oligodendrocytes and astrocytes from the white matter of Brodmann area 10 (BA10) in MDD and suicide. In this study, the role of PARP1 and a downstream mediator (NF-κB) in the pathobiology of depression and suicide was investigated.
Methods: BA10 cerebral cortex and hippocampus was obtained from brain donors with MDD at the time of death that died either by natural/accidental causes or by suicide and from donors with no history of a psychiatric diagnosis. Semi-quantitative fluorescence immunohistochemistry (FIHC; BA10, hippocampus) and quantitative Western blotting (BA10) were used to measure PARP1 immunoreactivity (ir) in brain tissues from MDD and control

donors. NF-κB proteins (p50 and p65 subunits) were measured in cytoplasmic and nuclear fractions of BA10 white matter tissue by Western blotting. Group data were compared using an unpaired Student's t-test when normally distributed, and a Mann-Whitney test when data were not normally distributed.

Results: Consistent with previous preliminary results using smaller sample sizes, area fractions of PARP1-ir determined by FIHC were significantly ($p=0.02$) elevated in BA10 white matter, but not cortical gray matter, in donors with MDD ($n=26$) regardless of the cause of death as compared to psychiatrically normal control donors ($n=16$). To confirm these findings with quantitative Western blotting of PARP1-ir, BA10 white matter tissue punches were collected from 6 of the control cases and 10 of the age-matched MDD cases used in the FIHC study. The average increase in area fractions of PARP1-ir (FIHC) comparing MDD to control donors for the selected cases of these groups was 206%, with Western blotting of the same subjects showing an average increase of 211% in the MDD donors. Area fractions of PARP1 immunostaining in multiple hippocampal subregions, determined using FIHC, did not show any significant differences comparing MDD to control donors. Amounts of p65-ir were significantly lower ($p=0.03$) in cytoplasmic fractions of BA10 white matter from MDD ($n=19$) as compared to control donors ($n=12$). However, nuclear p65 protein expression levels were similar in the two groups. No significant differences in the amounts of cytoplasmic or nuclear p50-ir were observed comparing the two groups. Comparing MDD donors that died by suicide to those that died of other causes did not reveal any significant differences for any of the measured proteins.

Discussion: The present findings provide further support for a role of PARP1 in the pathobiology of MDD, and implicate it as a potential target for treatments that could reduce MDD and suicide. In fact, we have previously reported that PARP inhibitors produce robust protection from behavioral disruptions resulting from exposure of rodents to stress, paradigms that have been useful in identifying antidepressant/anti-anxiety drugs such as fluoxetine. Since PARP1 activation is known to directly link to NF-κB, reduced cytoplasmic p65 protein in MDD as observed here is suggestive of altered NF-κB signaling. Whether this latter finding is linked directly to elevated PARP1 activity remains to be determined. A lack of significant alterations of PARP1 in gray matter regions of BA10 and the hippocampus implies that PARP1 in brain cells enriched in white matter (e.g. glia) is primarily affected in MDD.

T100. CULTURAL INFLUENCES ON THE PATHWAY FROM ADULT DISCONNECTION TO ALCOHOL USE: A MODERATED MEDIATION STUDY OF SUICIDE ATTEMPTS IN ADOLESCENTS

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Background: Suicide is a complex public health problem emphasized by the disproportionate number of adolescent deaths by suicide. Given adolescents' unique susceptibility to social influences and reliance on adults, the present study examined whether feelings of disconnection from adults (mothers, fathers, teachers, general) led to frequent alcohol use, a known risky behavior for adolescents and a known risk factor for suicide. Frequent problematic alcohol use may indicate capability for suicide, a key feature of the ideation to action framework, which may lead to a suicide attempt. Thus, alcohol use may mediate the relationship between adult disconnection and suicide attempts. Additionally, this relationship may differ for adolescents from marginalized backgrounds (students of color, females, lower SES backgrounds) who experience increased vulnerability to problematic alcohol use given the additional social barriers of discrimination and may benefit the most from adult support.

Methods: Using SEM to examine the complex data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), our model consisted of four latent variables of adult disconnection (mother, father, teacher, general), an averaged measure of problematic alcohol use (how many days in a month spent drinking, getting drunk, throwing up after drinking), and a dichotomized measure of suicide attempts. Participants included 11,577 adolescents from the United States (ages 12-17; 52.3% female; 52.6% White, 21.7% Black/African American, 16.3% Hispanic/Latino, 6.6% Asian/Pacific Islander, 1.8% American Indian/Native American, 0.9% another category).
Results: Results indicated no evidence for sex or SES as moderators of adult disconnection, but did reveal race/ethnicity as a significant moderator. For white teens, increased feelings of disconnection to mothers and teachers had a significant effect on alcohol use after controlling for the other types of adult disconnection for white adolescents (bmother = .29, SE = .07, p <.001; bteacher = .37, SE = .06, p <.001). For adolescents of color, only disconnection to teachers had a significant effect on alcohol use after accounting for the other types of adult disconnection (bteacher = .15, SE = .04, p = .001). For all adolescents who reported an additional day of problematic alcohol use, they were 1.50 times more likely to attempt suicide (OR = 1.50, p <.001).

Alcohol use mediated the relationship between mother and teacher disconnection and suicide attempts as indicated by the significant indirect effects for teens who identified as white (bmother = .12, SE = .04, pmother = .001; bteacher = .15, SE = .04, pteacher <.001). For teens who identified as Black/African American, Asian/Pacific Islander, Hispanic/Latino, American Indian/Native American, or other, alcohol use mediated the relationship between only teacher disconnection and suicide attempts (bteacher = .06, SE = .02, p = .004).

Discussion: For all adolescents, problematic alcohol use may be an important mechanism by which feelings of disconnection from teachers leads to a suicide attempt. Notably, disconnection from mothers predicted problematic alcohol use for only white adolescents. Understanding what drives adolescents from different cultural backgrounds to engage in problematic alcohol use is important in the prevention of adolescent suicide and treatment of suicidal adolescents. Future research needs to focus on how specific racial/cultural experiences (beyond the comparison of students of color vs. white students) may change the pathway from feeling disconnected to an adult to engagement in problematic alcohol use and why these various racial experiences have differing effects.

T101. 'INFORMAL FAMILIES LIKE OURS SEEMED UNACCOUNTED FOR'

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Background: Across the UK, COVID restrictions aim to prevent spread of infection; however, the isolation of lockdown harms mental health. Separated traditional parent households were considered, enabling care for young children or exclusive bubbles for single-person households. However, as the UK is more diverse than the outdated view of a 'typical family and their needs', these criteria did not meet all families' needs. During the pandemic, all families and individuals were isolated. However, informal families, such as informal fostering, were isolated, forcibly separated and neglected. The reduction in funding for UK mental health services prior to the pandemic and the impact of these cuts has been exponential; for example, suicide rates were at an all-time high in 2019. The aim of the case study was to understand the

experience of an informal carer who was supporting his three adult children remotely during the lockdown period due to the Government restrictions.
Methods: The experience of informal families was explored via a case-study of a father who informally cares for three children of family/friends. These children are now adults (average age 25.33) living in their own homes who experience mental health difficulties daily, thus impacting the role of mental health carer to the position of the father. The father's house was the lynchpin for the three male adults; separating the unit induced further psychopathology/suicidality ideation due to isolation and its effects.
Results: Indicated the use of recognised strategies employed by the father to reduce the impact of increased mental health issues due to isolation were insignificant. Further demonstrated was the risk of suicidality and self-harm increased, as the children discussed suicide more regularly, with one attempting suicide more frequently. Results evidenced increased self-harm behaviours from the children during restrictions and how video calling may have impacted how self-harm behaviours evolved, from cutting to self-facial beatings. The detrimental impact on the carer's mental health, due to feelings of guilt, was also illustrated. Additionally, the case study suggests that the children were attempting to show the father that they did not have the resources to face the stressor during their appraisal. Moreover, when the father could no longer check for self-harm or aid in the prevention of self-harm and suicidal thoughts or actions, these risks and actions increased.
Discussion: Concluding, local restrictions have had detrimental effects on informal families, mentally-ill individuals and their carers'. The impact of restrictions left the father's family experiencing more significant risks of psychopathology and their symptoms. The following recommendations were made for future Government lockdowns to aid people's mental wellbeing: 1) larger support bubbles for single vulnerable adults, including a registry system to remove anxiety of being stopped by police; 2) financial aid to prevent digital poverty, enabling vulnerable adults to connect to their support unit, or access to wellbeing services (as laptops were provided to children in education); and, 3) increased and more immediate access to mental health crisis teams during the pandemic.

T102. CULTURAL MODERATORS OF PATHWAYS TO SUICIDE RISK AMONG INTERNATIONAL STUDENTS

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Background: Suicide remains a global problem, yet there has been limited attention to cultural factors impacting risk. In addition, little attention has been given to suicide risk among international students who may experience greater cultural clashes or stressors than native minority populations, subsequently increasing risk. The integrated motivational-volitional theory of suicide (IMV; O'Connor and Kirtley, 2018) offers a framework for understanding processes that influence transitions from thinking about suicide to acting, but little is known about how this model operates in cross-cultural contexts. Chu and colleagues (2010) proposed a cultural model of suicide specifying a need to integrate unique cultural stressors, attitudes towards suicide, and role of familial/community connection within existing models. The current study aimed to do this by examining how culture-specific experiences map onto both the motivational and volitional pathways of suicide risk proposed by the IMV theory.
Methods: Participants included 471 International students (Mage = 24.69, SD = 5.1yrs; 60% Asian, 90% on F1 academic Visa) recruited through email solicitations and newsletter postings from two Midwestern and one Southern university in the U.S. Participants completed an online survey assessing past year suicidal thoughts and behaviors, entrapment, acculturation/cultural

stress, discriminatory experiences, family conflict, and cultural sanctions against suicide. Two moderated mediational regression models were run using the PROCESS macro (Hayes, 2012) for SPSS specifying cultural stress and family conflict as moderators of the entrapment to suicidal ideation pathway, with discriminatory experiences and cultural sanctions as moderators of the ideation to suicide behaviors pathway.
Results: Cultural stress significantly interacted with entrapment ($t = 2.89$, $p<.005$; CI: 0.03 – 0.02) to explain 14.13% of the variance in past year suicidal ideation and discriminatory experiences interacted with ideation ($t = 2.56$, $p< .01$: CI: 0.084 – 0.640) to explain 24.16% of the variance in suicidal behaviors. In the second model, family conflict significantly interacted with entrapment ($t = 4.52$, $p < .001$; CI: 0.01 – 0.03) to explain 17.13% of variance in past year suicidal ideation, whereas cultural sanctions did not interact with ideation ($t = 1.87$, $p > .05$; CI: -0.002 – 0.088) to influence suicide behaviors.
Discussion: The current data provide much needed information about cultural moderators of risk for suicidal thinking and behaviors among international students and offers support for the theoretical pathways of risk specified by the IMV theory. The data suggest that greater experiences of cultural stress and family conflict enhance the effect of entrapment on suicidal ideation while discriminatory experiences affect the relationship strength between ideation and suicidal actions. Contrary to hypotheses and theory, cultural sanctions did not lessen the influence of suicidal ideation on suicidal behaviors. The findings underscore the importance of focusing on cultural stressors when conceptualizing risk for suicide among international students.

T103. OPEN BOARD

T104. EVIDENCE-BASED PSYCHOTHERAPIES FOR SUICIDE PREVENTION: A COMPLETE AND UPDATED OVERVIEW

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Background: Implementing suicide-specific interventions, for which efficacy or effectiveness in reducing suicidal risk has been scientifically demonstrated, is one of the key elements in suicidal patients' treatment (Brent et al., 2019). Literature of recent years reported some preliminary systematic reviews and meta-analyses that examined the efficacy of psychotherapeutic interventions specifically targeting suicidal risk, and promising results have emerged (Briggs et al., 2019; Calati and Courtet, 2016; Hawton et al., 2016; Hofstra et al., 2019).
Methods: Bibliographic research was carried out using PubMed and reference lists of identified articles were examined to extract additional papers.
Results: Thirty-three evidence-based treatments, psychotherapies, and interventions for adults and adolescents at risk of suicide were described in this work. They were organized according to the underlying theoretical orientation or other specific characteristics (e.g. duration or target themes). Specifically, 2 cognitive-behavioral treatments, 7 third generation cognitive-behavioral therapies, 2 problem-oriented treatments, 5 psychodynamic and psychoanalytic interventions, 2 therapies with integrated approach, 2 brief and 6 one-session interventions,

internet-based interventions, systemic family therapy, 3 trauma-focused treatments, and 2 supplementary treatments were included.

Discussion: Taking care of suicidal patients effectively is essential to tackle one of the most serious health problems in the world, causing nearly one million deaths every year. Nowadays we know that, besides psychopharmacological treatments, we have a significant number of therapies with different orientations and methods of implementation for which some extent of efficacy/effectiveness in terms of suicide risk reduction has been largely demonstrated in scientific literature. In most cases, their high feasibility and acceptability allow these interventions to adapt to many different contexts and types of patients. Evidence-based strategies should now help us to plan effective care specifically for patients at risk of suicide. Some future perspectives may include the examination of the sub-components of each therapy to understand which perform better, on which groups of patients and on which symptoms, the exploration of possible adverse effects, the investigation of dynamics and duration of suicide risk reduction, and biomarkers of treatment response.