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Editorial: Reducing Adolescent Suicide

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Suicide is currently the second leading cause of death in young people ages 10–19 (CDC). Current statistics suggest that in the US 1 in every 7 youths has seriously considered or made a plan to commit suicide and 1 in every 13 youths has attempted suicide in the previous year (CDC). Suicide represents a –if not the– major public health problem in adolescents. A recent report released by the CDC suggests that adolescent suicide rates in the United States have been increasing since 1999, with adolescent suicide rates roughly 25% over the last fifteen years. This spike has been particularly profound in adolescent females who have experienced a roughly 75% rise in the rate of completed suicides over the last 15 years (National Center for Health Statistics, 2016).

In recent issues of JCPP, there are a series of 3 articles that represent significant advances in our understanding of suicide and related conditions such as non-suicidal self-injury and adolescent depression.

In the May issue of JCPP, Adrian et al. (2016) examine the developmental trajectory of suicidal ideation in a cohort of over 500 children age 11–15 years for over 3 years starting in the 6th grade in Washington State. The authors reported several novel sex-specific differences and predictors of longitudinal course that are of great public health and clinical significance. The important findings were: the highest developmental age for suicidal ideation peaked earlier than expected for boys at 12 years (by contrast, suicidal ideation for girls peaked around age 14 years); depressive symptoms, externalizing problems and alcohol use were associated with high-risk trajectories for both genders; increased family and peer support discriminated low risk suicidal ideation trajectories from higher risk groups for both genders; and semi-parametric group-based trajectory modeling demonstrated a rather large proportion of boys (12%) who experienced the highest severity of suicidal ideation at baseline (age 11–12 years) but also experienced a quick decline in suicidal ideation early in the study period. This group of high suicidal ideation quick decline boys were nonetheless likely to attempt suicide (average of 0.15 attempts per high-decline suicidal ideation male).

The finding in Adrian et al. (2016), that the developmental trajectory of suicidal ideation peaks around 6th grade complements nicely data presented from *Whalen et al.* in this issue of JCPP on developmental trajectories of depressive symptoms in a cohort of 348 children, followed for over 10 years since preschool as part of the Preschool Depression Study at Washington University School of Medicine (in St. Louis). Depression symptoms peaked for

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the high depression severity latent class for both boys and girls around 11 years of age (aka 6th grade). *Whalen et al.* demonstrated that among other things early childhood social adversity, preschool-onset externalizing problems (opposition defiant disorder and conduct disorder) and family history of affective disorders were associated with being in the high symptom trajectory of depression symptoms for both genders.

Glenn et al., in this issue of JCPP, examined a related but distinct phenomenon, nonsuicidal self-injury (NSSI), in a cohort of 662 adolescents in three rural, low-income middle schools in the southeastern United States. NSSI typically begins in early adolescence and represents both a risk factor for suicidal ideation and attempts and an important clinical phenomenon to distinguish from suicidal behavior (Asarnow et al., 2011). Glenn et al. examined clinical assessments of NSSI and performance on an Implicit Association Task for Self-Injury, (a brief, computer-based task that measures the association between NSSI and self-using reaction times) across three time points in this cohort. Glenn et al. demonstrated that there was a stronger implicit association between self and NSSI among adolescents who engaged in NSSI than adolescents who did not engage in NSSI; that adolescents with higher implicit NSSI identification were more likely to engage in NSSI over the following year; and that performance on the implicit association task for self-injury was predictive of future NSSI engagement even after controlling for known clinical risk factors (e.g. depression, gender and alcohol use). Previous research has suggested that implicit association tasks focusing on the association between suicide/death and self has a similar ability to predict future suicide attempts in adults (even after controlling for known clinical risk factors) (Nock et al., 2010).

The findings from these manuscripts highlight several challenges and opportunities in combating the major public health problem of adolescent suicide: first that suicidal ideation and depressive symptoms may emerge and peak earlier than when suicide attempts/completion peak in adolescence; secondly, there exist a sizable population of adolescent males who experience a frighteningly high degree of suicidal ideation which is often ephemeral; and thirdly, successful interventions to reduce the adolescent suicide rate must focus on reducing risk factors for suicidal ideation and depression (e.g. depression, alcohol use) and completed suicide (access to means) and promote protective factors to decrease suicidal ideation and depression (e.g. increase parental and peer support).

The high proportion of children in early adolescence experiencing suicidal ideation, depressive symptoms and self-injurious behavior suggests the need for suicide prevention programs to target early adolescence (e.g. middle schoolers) rather than the later high school years when mortality from suicide is higher. Suicide prevention programs will also need to help promote protective factors such as improving parental and peer support.

The recognition that there exists a sizeable group of adolescent males with a high severity of suicidal ideation with an ephemeral time-course presents a particularly daunting challenge for adolescent suicide screening programs. Although adolescent females are more likely to report suicidal ideation and have suicide attempts compared to males, adolescent males are four times more likely to die by suicide (CDC). In devising successful screening and prevention programs for reducing suicide mortality we must recognize that the developmental trajectory of suicidal ideation in adolescent males suggests very high risk,

transient periods of suicidal ideation. Particularly, recognizing that a large proportion of the highest risk adolescent males (roughly 12%) suffer from transient periods of increased suicidal ideation and even suicide risk requires that public health programs focusing on reducing suicide mortality must focus on modifiable risk factors that reduce likelihood and lethality of suicide attempts such as firearm access, substance use and social isolation rather than just depressive symptoms and suicidality per se. Focusing primarily on depressive and suicide symptoms in prevention programs will be difficult if these symptoms are often short-lived.

The demonstration that performance on Implicit Association Tasks can predict future suicidal behavior and non-suicidal self-injury offers the promise of a possibility that neuropsychological testing could be potentially clinically useful in the future towards better predicting suicide risk. A major limiting factor regarding reducing suicide mortality across the lifespan is the lack of power of current clinical data (with the possible exception of a history of previous attempts) to predict future suicide attempts.

As pediatric mental health professionals reducing mortality in our patients and our children represents an important and daunting challenge. Reducing adolescent suicide will only be accomplished through public health education and advocacy to firstly increase research funds designed to (a) better understand the phenomenon of suicide and (b) effectively evaluate screening and intervention programs that target reducing adolescent suicide and mortality; and secondly, education campaigns towards eliminating modifiable risk factors contributing to suicide such as reducing handgun availability (Dahlberg et al., 2004) and encouraging our legislatures to require large quantities of potentially lethal over the counter medications to be sold in blister packs (e.g. acetaminophen/paracetamol). Paracetamol self-poisoning is often highly impulsive and associated with both low suicidal intent and limited knowledge of the possible lethal consequences of overdose. In 1998 the United Kingdom passed legislation limiting the overall quantity of medication sold and requiring paracetamol be sold in blister packs. After implementation of these measures the overall number of paracetamol self-poisoning attempts and fatalities was reduced as well as the average number of paracetamol tablets taken per attempt and liver transplants rates due to paracetamol self-poisoning (Hawton et al., 2001). Reducing ready access to means with high lethality may do little to decrease overall adolescent suicide attempts but will likely reduce mortality. Decreasing the overall lethality of adolescent suicide attempts is crucial to reducing adolescent suicide deaths as often suicidal ideation is ephemeral in this population, the underlying motivations for suicide are treatable and the attempts are often impulsive or occurring during periods of substance use. Additionally, public advocacy to reduce the stigma associated with suicide deaths is critical for both prevention efforts and increasing treatment/research funding in this area.

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