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The potential use of CAMS for suicidal youth: building on epidemiology and clinical interventions

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ABSTRACT

It is vital to better understand and effectively treat suicide, as it remains a leading cause of death for youth. The present article discusses the epidemiology of suicidal outcomes for youth and provides an overview of existing treatments. The "Collaborative Assessment and Management of Suicidality" (CAMS) – an evidence-based suicide-specific treatment – is presented, followed by a discussion of the potential benefits of adapting it to youth. Patient-defined "suicidal drivers," which are identified and targeted within CAMS-guided treatment, may be especially pertinent to suicidal youth who are in the beginning stages of grappling with their experience related to suicide. Current efforts to adapt CAMS for suicidal adolescents and children are described. Crucially, with further development and rigorous clinical research, adaptations of CAMS may one day provide an empirically-proven and reliable approach to reducing suicide risk in adolescents and children.

The notion of young people taking their own lives seems to run against our cultural and adult sensibilities. The topic is by its nature deeply uncomfortable to consider; the idea that a child as young as 4 could terminate his or her own life in an intentional manner may be astonishing, even unthinkable, to many. In this article we endeavor to tackle this difficult topic from an epidemiological perspective, followed by a review of effective clinical approaches based on the extant research literature. We will then explore the promise of adapting and applying to youth populations the "Collaborative Assessment and Management of Suicidality" (CAMS), an intervention that has proven to be effective with suicidal adults.

The epidemiology of youth suicide

As the second leading cause of death among youth ages 10–17 years (Centers for Disease Control and Prevention [CDC], 2016), suicide among young people is a major public health issue in the United States. Over the past 15 years, the age-adjusted youth suicide rates have risen by 24% (Curtin, Warner, & Hedegaard, 2016; Plemmons et al., 2018). While suicide is rarer prior to the onset of

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adolescence, it still ranks as the 9th leading cause of death for children aged 5–11 years (CDC, 2016). More common than completed suicide are suicidal thoughts and behaviors. Among adolescents aged 12–17 years, lifetime prevalence rates range between 19.8% and 24.0% for suicidal ideation and 3.1% and 8.8% for suicide attempts (Cha et al., 2018; Nock, Borges, et al., 2008). Notably, adolescents who experience suicidal thoughts are at greater risk of attempting suicide. Most adolescents who transition from ideation to attempt do so within 1–2 years of ideation onset (Glenn et al., 2017). This is marked by distinct clinical presentations (Nock et al., 2013).

While our understanding of youth suicide remains limited, various demographic patterns have been identified. Consistent with trends observed among adults, female adolescents are more likely to experience suicidal thoughts and attempts than their male counterparts, but male adolescents are more than twice as likely to die by suicide than females (Cha et al., 2018). However, this sex difference does not appear until approximately age 11 (Cha et al., 2018; Nock & Kazdin, 2002). Studies have also demonstrated age-related racial disparities in youth suicide, with the highest rate of suicide among indigenous youth (Centers for Disease Control and Prevention, 2016). Though findings among other racial groups are nuanced, recent data have revealed a significant age-related racial disparity among black and white youth, in which the suicide rate among youth younger than 13 years is approximately two times higher for black children compared to white children (Bridge et al., 2018). A similar trend was found in a study that examined deaths by suicide in children (aged 5–11 years) and early adolescents (aged 12–14 years); black children made up 36.8% of deaths by suicide in the 5–11 year old sample as compared to 11.6% in the early adolescent sample (Sheftall et al., 2016). Potential explanations for this racial disparity include disproportionate exposure to violence or traumatic stressors among black youth and increased challenges to accessing mental health services for black youth compared with non-black youth (Sheftall et al., 2016). There is a strong need for additional research aimed at confirming and expanding these explanations and further elucidating the underlying mechanisms driving this racial disparity.

An elevated prevalence of suicidal thoughts and behaviors has also been observed among lesbian, gay, bisexual, transgender and questioning (LGBTQ) youth compared to their heterosexual counterparts (Cha et al., 2018). Importantly, the impact of sexual minority status appears to be influenced by degree and availability of social support. For example, LGB youth living in an "unsupportive county" (defined by low proportion of: same-sex couples, registered Democrats, gay-straight alliances in schools, and school policies to protect LGB students) had a 20% higher risk of attempting suicide than their LGB peers living in more supportive communities (Cha et al., 2018; Hatzenbeulher, 2011). In addition to these demographic variables, several psychosocial correlates and risk factors associated with suicidal thoughts and behaviors have been identified. Among the environmental risk

factors, childhood trauma, bullying, and academic pressure show consistent associations with increased suicidal risk.

Childhood trauma

Numerous studies have demonstrated that children who experience physical, sexual, or emotional abuse are at significantly higher risk for suicidal ideation, suicide attempts, and completed suicide (Cha et al., 2018; Joiner et al., 2007; Jokinen et al., 2010; Lanzillo, Horowitz, & Pao, 2018; Rajalin, Hirvikoski, & Jokinen, 2013). A study examining the effect of preadolescent physical abuse on adolescent suicidal behavior revealed a significant association between preadolescent abuse and elevated risk of suicidal ideation and attempt that was not mediated by contextual factors such as attachment to family or friends, internalizing or externalizing pathology, or life events (Lanzillo et al., 2018; Salzinger, Rosario, Feldman, & Ng-Mak, 2007). Another study examined suicide risk following childhood sexual abuse and found that the suicide rate was over ten times greater than the national rate among youth who experienced childhood sexual abuse (Lanzillo et al., 2018; Plunkett et al., 2001).

Bullying

There is extensive evidence highlighting the association between bullying and risk for suicide among youth. Findings suggest that for boys, being the perpetrator or the victim of bullying poses an increased risk for suicidal thoughts and behavior. Among girls, those who are victims of bullying are more likely to engage in suicidal behavior compared to girls who are neither perpetrators nor victims of bullying (Klomek et al., 2009; Lanzillo et al., 2018). A study examining risk for suicide in pediatric patients who presented to the emergency department found that over half (55%) of patients who reported recent bullying victimization screened positive for suicide risk (Lanzillo et al., 2018; Stanley, Horowitz, Bridge, Wharff, & Teach, 2016). As the use of social media and technology among youth continues to rapidly increase, recent research has focused on the effects of cyberbullying on suicidality. Findings indicate that cyberbullying has comparable, or potentially stronger effects, than traditional forms of bullying (Bauman, Toomey, & Walker, 2013; Cha et al., 2018; Hinduja & Patchin, 2010; Van Geel, Vedder, & Tanilon, 2014); however, more research is needed to further explore this relationship.

Academic pressure

The prevalence of "suicide clusters" in high schools known for their academic pressure reveals that such stress has the potential to trigger suicidal behavior (Lanzillo et al., 2018; Scelfo J., 2015). A suicide cluster exists when multiple deaths by suicide occur within an accelerated timeframe and/or in close

geographical proximity (Gould, Wallenstein, & Davidson, 1989; Robertson, Skegg, Poore, Williams, & Taylor, 2012). For example, in 2009 the Palo Alto region of California witnessed the suicide deaths of five teens over the course of nine months. Approximately five years later, the region experienced another suicide cluster when four teens died by suicide (Rosin, 2015).

The causative factors leading to suicide clusters are complex and the subject of ongoing research. Conditions such as highly competitive and demanding academic environments may contribute to the occurrence of suicide clusters. Evidence also supports the theory that suicidal behavior can be "contagious" in that it can be modeled – directly or indirectly – from one individual to another (Gould & Lake, 2013). In response to suicide clusters, Joshi and colleagues (2015) suggest that death may be a more appealing escape to youth experiencing significant academic stress. Moreover, an individual's ability to develop alternatives to suicide may be inhibited in this context. Prevention efforts specific to school-based mental health education and promotion are warranted (Joshi et al., 2015). Much research addressing the relationship between academic stress and suicidal behavior has focused on East Asian populations (Lanzillo et al., 2018). Cultural factors may influence the way academic pressure manifests among youth; however, comparative research is warranted.

Psychopathology

Beyond environmental risk factors, a history of psychopathology is a well-established risk factor for suicidal thoughts and behavior. Cash and Bridge (2009) indicate that at least one psychiatric disorder is present in up to 80–90% of youth who attempt or die by suicide, with the most common diagnoses being mood, anxiety, conduct, and substance use disorders (Cash & Bridge, 2009; Lanzillo et al., 2018). Despite the established risk posed by the presence of psychiatric disorders, it is critical to not assume that only youth with mental illness are at heightened risk for suicide. In fact, a recent study examining antecedents of death by suicide among youth in England revealed that 61% of suicide decedents did not have a known psychiatric diagnosis (Lanzillo et al., 2018; Rodway et al., 2016). Conversely, the vast majority of youth with psychopathology will not develop suicidal thoughts or behavior. This highlights the challenges inherent to accurately predicting who will engage in suicidal behavior.

Biological factors

An emerging line of research explores the influence of biological processes on suicidality in youth. As the majority of studies on the biological underpinnings of suicidal behavior utilize cross-sectional designs, it is crucial to conceptualize these biological processes as *correlates* and not risk factors (Cha et al., 2018). Preliminary findings suggest that the hippocampus,

involved in mood regulation and memory, and the dorsolateral prefrontal cortex, responsible for decision-making and emotional regulation, are structurally irregular in youth who have attempted suicide (Cha et al., 2018; Gosnell et al., 2016). These deficits can help to explain why and how individuals may choose to engage in suicidal behaviors. For example, poor decision-making and limited emotion regulation may contribute to making suicide a viable option in response to distress (Jollant et al., 2005). The default mode network (DMN) has also been found to be abnormally connected in adolescent attempters, suggesting that DMN irregularities may be a biomarker for suicide risk (Cha et al., 2018; Zhang et al., 2016). In addition to the DMN, abnormalities in the executive control network (ECN) and salience network (SN) have also been found among suicidal adolescents (Ordaz, Goyer, Ho, Singh, & Gotlib, 2018). These three networks (DMN, ECN, and SN) are involved in cognitive processes related to self-regulation and goal-directed behaviors (ECN), understanding of self and of one's place in the world (DMN), and interpretation of goal-relevant and threatening stimuli (SN) (Ordaz et al., 2018). As such, under- or over-activation of these networks in an adolescent's developing brain is likely to impair the adolescent's ability to effectively solve problems, regulate their emotions, manage and maintain satisfying interpersonal relationships, and have a sense of self-efficacy and ability to cope with stressors. In other words, disruptions in these networks are associated with many of the known risk factors for suicidal ideation and behaviors. Identification of abnormal network connectivity may improve our ability to understand, predict, and track suicide risk with the use of implicit and physiological measures. Research findings in this area are thus far limited by small samples and lack of replication, but neuroimaging research is a promising frontier.

Current approaches to preventing and treating youth suicidality

There is a paucity of research on interventions for suicidal teens and children particularly using randomized controlled trials (RCTs) which, along with RCT *replication* studies, are the definitive gold standard for determining what treatments are effective in a *causal* way (Cha et al., 2018; Glenn, Franklin, & Nock, 2015). Nonetheless, preliminary studies have been conducted on various psychotherapies. The reviews and meta-analyses that have been conducted on this target population all point to the need for more research on treatments for suicidal youth, particularly using longitudinal and RCT designs (Cha et al., 2018; Glenn et al., 2015; Ougrin, Tranah, Stahl, Moran, & Asarnow, 2015). Overall, the majority of psychotherapies for suicidal youth have been interpersonal, cognitive-behaviorally-oriented, and skills-based in their approaches, with a strong emphasis placed on parental and youth considerations.

Most of the research conducted on treatments for suicidal youth has been done with adolescent samples, although there have been some studies on children as young as 8– 11 years of age (Asarnow et al., 2011; Harrington et al., 1998; Huey et al., 2005; Perepletchikova et al., 2011). Treatments for suicidal youth have focused on the immediate reduction of suicidal outcomes (e.g., ideation, attempts). These interventions have primarily been studied for their ability to improve symptoms among those with a history of suicidal thoughts/behaviors. Efforts to decrease youth suicides also include a range of approaches and programs designed for youth with no history of suicidality, with the goal of preventing suicidal thoughts and behaviors, rather than intervening after the fact.

Following a brief discussion of universal and targeted prevention efforts, the current review emphasizes interventions that have been adapted or developed for suicidal youth, with suicide-related outcomes as the primary target within RCT designs. Although many existing interventions for youth target psychiatric disorders that may include suicidality as a symptom (e.g., depression, borderline personality disorder), the present review centers on treatments that target suicide and related suicidal thought and behaviors as *primary* outcomes so that we may build on previous work that has increasingly called for a trans-diagnostic assessment of and treatment of suicide outcomes (Cha et al., 2018; Jobes, 2000; Nock et al., 2013).

Prevention

Prevention efforts are essential for reducing youth suicides, yet much more research is needed in this area. Prevention efforts for suicide can broadly take various forms: *universal* for everyone; *selective* for individuals that share a risk factor for suicide; and *indicated* for those with suicide risk but not receiving treatment for it (Cha et al., 2018; Katz et al., 2013; Robinson et al., 2013).

Universal

One universal prevention program is *Signs of Suicide* (SOS) – a school-wide, evidence-based prevention program for middle and high school youth. It consists of psychoeducation with a cognitive-behavioral element and screening for suicide and its risk factors (Gilman & Chard, 2015). Two studies found that it significantly lowered suicidal behavior in comparison to a control group, and improved adaptive attitudes and knowledge about suicide (Aseltine & DeMartino, 2004; Schilling, Lawless, Buchanan, & Aseltine, 2014). However, there was no difference in help seeking (for self and others) between the SOS and control groups. *Sources of Strength* (SoS) is another universal prevention program that has produced promising results in training peer leaders to assist in suicide outreach in school settings (Wyman et al., 2010).

Selective

The *Family Check-Up and Family Bereavement Intervention* (Connell, McKillop, & Dishion, 2016; Sandler, Tein, Wolchik, & Ayers, 2016) aims to prevent suicidal behaviors among at-risk youth by focusing on the developmental importance of the family and conflict within this system. This prevention program has shown to lead to long-term reductions in suicide-related outcomes; while promising, more longitudinal research is needed.

Indicated

Suicide hotlines have not been studied in youth and have produced mixed findings for adults (Cha et al., 2018). Community postventions following a suicide are similarly lacking empirical support. Studies examining the benefits of postvention efforts for adults and or children that may have been impacted by a suicide death will need to consider the unique ecological systems inherent to the impact of a single suicide on a community (Bronfenbrenner, 1977).

Psychotherapies

Attachment-based family therapy

Developed by Diamond, Reis, Diamond, Siqueland, and Isaacs (2002) "ABFT" reduces self-injurious thoughts and behaviors by improving family relationships, particularly the attachment relationship within the parent-child dyad. ABFT posits a ruptured attachment as the source of an adolescent's suicidality, and the repair of this relationship is achieved through a combination of weekly individual, parent, and family sessions over the course of 3 months. One RCT found a reduction in suicide ideation in comparison to an enhanced usual care (EUC) group in an adolescent sample, with improvements maintained at 6-month follow-up. This is particularly noteworthy given that this was found in a diverse sample from minority backgrounds (Diamond et al., 2010). Moreover, this built on similar RCT findings assessing ABFT in comparison to a waitlist control group, where rapid reduction of suicide ideation was observed at posttreatment (Diamond et al., 2002). While promising, it is important to note that the comparison groups in both studies had a low rate of treatment completion, which raises questions about the robustness of the findings. Additionally, suicide *behaviors* were not assessed in either study.

Integrated cognitive-behavioral therapy

Developed by Esposito-Smythers, Spirito, Kahler, Hunt, and Monti (2011), "I-CBT" challenges maladaptive cognitions, affective processes, and behaviors. I-CBT consists of individual and family therapy sessions and a parent training component delivered over 12 months. The treatment is designed to be intensive, with a 6-month course of active treatment, 3 months of biweekly continuation sessions, and 3 months of monthly maintenance sessions. Initially, what is now

considered I-CBT only included individual CBT with the adolescent (Spirito, Esposito-Smythers, & Wolff, 2018) and findings showed no differences in outcomes between the experimental intervention and supportive therapy, as both treatments led to reductions in suicidal ideation and attempts (Donaldson, Spirito, & Esposito-Smythers, 2005). However, a small RCT (n = 40) with adolescents with a history of suicide attempts and substance use disorders revealed that while both I-CBT (modified to include parent-training and family therapy) and enhanced standard care (ESC) led to reductions in suicidal ideation, I-CBT had significantly lower rates of suicide attempts at 18-month follow-up (Esposito-Smythers et al., 2011). With a demonstrated ability to reduce suicidal behavior, I-CBT is clearly a promising approach, yet more research and replication needs to be done to address several limitations. Less than one-fifth of the families in ESC completed treatment, compared to nearly three-fourths of the I-CBT families; although the number of sessions attended was controlled for, this discrepancy in treatment engagement and completion does raise questions about the mechanisms of change in I-CBT. Additionally, I-CBT was adapted for and tested in a sample of suicidal adolescents with a co-morbid substance use diagnosis. As such, the positive treatment effects of I-CBT may not generalize to suicidal youth who are not also struggling with substance use.

Dialectical behavioral therapy for adolescents

"DBT-A" (Miller, Rathus, Linehan, Wetzler, & Leigh, 1997) is a developmental adaptation of DBT, an intensive treatment originally developed to treat adults with borderline personality disorder (BPD; Linehan, 1993), a diagnosis that is highly associated with suicide and self-harm. Through individual therapy, group-based skills-training, and between session phone-coaching by the therapist as needed, DBT targets maladaptive affective and interpersonal processes. In order to address the specific needs of adolescents, Miller et al. (1997) adapted DBT-A by shortening the length of treatment, incorporating parents in individual therapy as needed, and adding a skills training group specifically for parents. Results from one RCT found that DBT-A reduced suicidal ideation in comparison to the control condition over the course of the treatment, yet this reduction was not maintained at the one-year follow-up (Mehlum et al., 2016, 2014). One non-randomized controlled study comparing DBT-A to treatment as usual (TAU) found no significant difference in number of suicide attempts in each group; however they did find that adolescents in the DBT-A group had significantly fewer psychiatric hospitalizations than those in the TAU group (Rathus & Miller, 2002). DBT-A has subsequently been established as an evidence-based treatment for suicidal adolescents, with demonstrated reductions in suicidality found in two or more independent RCTs (McCauley et al., 2018).

Of note, Perepletchikova et al. (2011) tested an adaptation of DBT for younger children in a 6-week feasibility pilot study (n = 11); adaptions included a range of modifications, including larger text in handouts, second grade reading level, and

child-friendly pictures and examples. Perepletchikova and colleagues noted that the modified intervention maintained fidelity to the original principles of DBT, including the DBT skills, and they found that comprehension was high among participants. They found that their participants had increased coping skills and reductions in depressive and internalizing symptoms and suicidal ideation from pre- to post-treatment. Given the limited treatments available for pre-adolescent children, further examination of this innovative treatment, with larger samples, is much needed.

Interpersonal psychotherapy for youth in school settings

Developed by Tang, Jou, Ko, Huang, and Yen (2009), "IPT-A-IN" is a developmentally-sensitive intervention for adolescents, addressing interpersonal stressors and processes implicated in suicide and depression (Liu & Miller, 2014; Vergara, Stewart, Cosby, Lincoln, & Auerbach, 2019). IPT-A-IN specifically targets interpersonal stressors such as conflict or grief in order to lower suicidality and depression symptoms (Tang et al., 2009). In a sample of depressed adolescents, Tang et al. (2009) found a significant reduction in suicidal ideation from pre- to post-treatment in comparison to TAU after 6 weeks. There was also a reduction in internalizing symptoms in the treatment group, although it was unclear whether this reduction mediated or moderated the suicide ideation findings. However, the researchers did not assess for suicide attempt behaviors so the impact of IPT-A-IN on such behavior is unknown. There were also no follow-up outcomes reported, suggesting there is a need to assess the longer-term impact of this treatment. Future replication RCT studies examining the benefits of this promising treatment should also be examined using more clinically diverse populations.

Emergency department and safety planning

Much research has been conducted on the *SAFETY program* (Asarnow, Berk, Hughes, & Anderson, 2015; Asarnow, Hughes, Babeva, & Sugar, 2017), a 12-week CBT-based program with a strong family component designed to increase treatment engagement and reduce suicidal behavior in suicidal adolescents following admission to an emergency department for a suicidal crisis. The SAFETY program is an expansion of the *Family Intervention for Suicide Prevention* (FISP, Asarnow et al., 2011). FISP is a brief intervention which consists of one family-based session in the emergency department focused on means restriction, safety planning, and establishing a plan for follow-up treatment; this session is followed by a check-in phone call post-discharge. While Asarnow et al. (2011) found an increase in treatment compliance in comparison to TAU, they did not find a reduction in suicide outcomes for FISP. However, a subsequent development study found that the expanded SAFETY program was associated with a reduction in suicidal

behavior and internalizing symptoms (Asarnow et al., 2015). The effectiveness of the SAFETY program was further demonstrated in a recent RCT, with adolescents in the SAFETY program condition showing significant reductions in suicide attempts and emergency department visits as compared to youth in the control condition (Asarnow et al., 2017). Although additional research is needed, this suicide-specific, family-based intervention shows promise as an emergent evidence-based treatment option for suicidal youth.

Pharmacological treatments

No RCTs have been conducted assessing pharmacological interventions for suicide outcomes in youth (Ougrin et al., 2015). The *Treatment of Adolescent Suicide Attempters* (TASA; Brent et al., 2009) study, however, has suggested that medication in combination with psychotherapy may be especially relevant to study in this population. Specifically, Brent et al. (2009) conducted a study where suicidal adolescents received either CBT for suicide prevention (CBT-SP), medication only, or combined CBT-SP and medication over 6 months. There were no significant differences in suicidal ideation or attempts between the treatment conditions. This was an open trial, meaning participants were offered the option of selecting which treatment they wanted to receive; since most participants opted to receive the combined form of treatment, it is essential to further examine pharmacological treatments in this population.

Psychiatric hospitalization

Our review would be remiss if we did not discuss the common practice of inpatient hospitalization of suicidal youth. As discussed elsewhere by Jobes et al. (2017), this is a sensitive and contentious topic within the field of suicide prevention wherein some have argued that sub-sets of suicides are actually *caused* by the hospitalization experience (Large, Ryan, Walsh, Stein-Parbury, & Patfield, 2014). Recent work by Czyz, Berona, and King (2016) has in fact shown that re-hospitalization for a suicidal teenager significantly predicts a more severe course of suicidal ideation and can be a strong indicator for a future suicide attempt. Typical hospital stays are diagnostically-focused, rather than focused on addressing suicide as the primary treatment target (Jobes, 2016; Jobes et al., 2017; Jobes, Au, & Siegelman, 2015). The National Action Alliance for Suicide Prevention (2018) has recently released a document entitled: "Recommended Standard Care for People with Suicide Risk: Making Healthcare Suicide Safe". Incredibly, prior to this effort there were *no* accepted clinical guidelines or recommendations that might help address this urgent public health issue. This important document outlines the need for effective assessment of suicide risk, frank discussions with patients and family members about restricting access to lethal means in the home environment, the value of

stabilization planning, the recommended use of the National Suicide Prevention Lifeline (1-800-273-TALK), and the evidence-based value of follow-up "caring contacts." Widespread implementation of these practice guidelines should serve to reduce the economic and psychological costs of psychiatric hospitalizations for suicidal youth.

CAMS adaptations for suicidal youth

Having thoroughly reviewed the incidence of child and adolescent suicide and related morbidity one might presume an expansive scientific research literature for clinically treating and saving our youth from this major public health challenge. Yet as we have also discussed, the nascent evidence base for effective treatments for suicidal youth requires increased and ongoing research efforts, especially for children under the age of 12 (Ridge-Anderson, Keyes, & Jobes, 2016). As we have further noted, there are concerns about existing "go-to" interventions such as prescribing medication (often off-label) and routine inpatient hospitalizations that are at best insufficiently suicide-focused, and may even be contraindicated in some cases. Given these grave considerations, youth-oriented suicide treatment researchers are increasingly determined to create and disseminate effective clinical responses to suicidality among children and adolescents.

CAMS as proven suicide-specific treatment

The Collaborative Assessment and Management of Suicidality (CAMS, Jobes, 2006, p. 2016), is a suicide-specific therapeutic framework that has been shown to be effective in eight non-randomized clinical trials in a wide range of settings and suicidal populations (see reviews by Jobes, 2012; Jobes, Gregorian, & Colborn, 2018). CAMS has also been proven effective in three randomized controlled trials (RCTs) demonstrating the *causal* effectiveness of CAMS with suicidal adults (Andreasson et al., 2016; Comtois et al., 2011; Huh et al., 2018; Jobes et al., 2017). Importantly, these rigorous RCTs of CAMS *replicate* positive findings in support of CAMS both within and between independent laboratories.

As a flexible suicide-specific clinical framework, CAMS can be used across settings, disciplines, and theoretical orientations (Jobes et al., 2018). Central to CAMS is the use of the *Suicide Status Form* (SSF), a patient-centered multi-method assessment, treatment planning, and tracking tool, that measures a range of clinical outcomes and can simultaneously function as a comprehensive medical record of each therapy session. Current efforts with colleagues at Microsoft are underway to create an "e-SSF" that will interface with electronic medical records (EMRs) used in most health facilities, with plans to study the use of the e-SSF in future RCT research.

The SSF assessment aspects of CAMS have been previously shown to function as a "therapeutic assessment" in one meta-analysis (Poston & Hanson, 2010) and there is evidence that successfully treated CAMS patients appreciate the process and experience of engaging with providers using the SSF (Schembari, Jobes, & Horgan, 2016). A signature feature of CAMS which may be central to its effectiveness is the emphasis of having the *patient* define their own "suicidal drivers" which are the problems that compel them to consider suicide. It follows that within "standard" use of CAMS, patient-defined suicidal drivers are systematically targeted and treated over the course of clinical care (Jobes, 2016). Taken together, the accumulated research to date demonstrates the following *replicated* clinical trial results with adult samples: CAMS quickly reduces suicidal ideation in 6–8 sessions, decreases overall symptom distress, increases hope while decreasing hopelessness, decreases depression, and decreases Emergency Department (ED) visits in sub-samples of suicidal patients. Patients rate CAMS as more satisfactory than standard care and CAMS is routinely associated with better treatment retention.

Given these positive clinical and research findings, many clinicians are eager to use CAMS with suicidal adolescents and children. To this end, two preliminary papers have been published about possible adaptations and recommendations for using CAMS with suicidal youth based on clinical experience and some early exploratory research (O'Connor, Brausch, Ridge-Anderson, & Jobes, 2014; Ridge-Anderson et al., 2016). Investigations into the use of CAMS with adolescents and children are now underway with results pending regarding feasibility, effectiveness, and possible needed adaptations. We feel there are promising early results supporting the value of applying CAMS to young people, with preliminary indications that adolescents treated with CAMS experience significant reductions in suicidality and depression symptoms (Ridge-Anderson, Jobes, & Lento, 2017). However, we cannot *presume* that CAMS will work equally well with suicidal youth as it does with adults. Moreover, it is essential to ensure that a newly developed treatment *never does harm*. Given the import of the topic and the intense clinical needs, several research teams are diligently working to adapt CAMS as needed to ensure that it works effectively with suicidal youth.

Having thoroughly considered a range of possible names for adapted versions of CAMS to be used with suicidal adolescents and children, we have decided on "CAMS-4Teens" and "CAMS-4Kids." Both adaptations have at their cores the four defining "pillars" of the CAMS philosophy across its many uses and adaptations (Jobes et al., 2018). As described by Jobes (2016), fundamental to CAMS philosophy are the following essential considerations: 1) Empathy, 2) Collaboration, 3) Honesty, and 4) Suicide-focus.

Developing cams-4teens

What follows herein is a brief review of work being done to date in our on-going efforts to develop a proven and effective use of CAMS for suicidal teenagers, children, and their families that also addresses many of the needs that clinicians and systems have related to this topic.

Psychometrics of the SSF for youth

The psychometric validity and reliability of the SSF has been well-established with adult samples (Conrad et al., 2009; Jobes, Jacoby, Cimbolic, & Hustead, 1997). But a very common source of skepticism about using the SSF with adolescents is that the language may not be developmentally appropriate. It has been suggested that a teenager could not comprehend and therefore not accurately rate the variables that make up the "SSF Core Assessment" (i.e., Psychological Pain, Stress, Agitation, Self-Hate, Hopelessness, and Overall Risk of Suicide – Jobes, 2016). For example, we have received feedback that the concept of "Psychological Pain" could not be understood by teens or explained by providers; we have thus been urged for years to develop an adolescent version of the SSF so that youth can understand and use the tool. However, careful clinical research to date on this topic contradicts this common assumption and should assuage this skeptical concern. The SSF Core Assessment of constructs has been successfully used as part of the standard screening assessment done for years at the Mayo Clinic within their routine psychiatric intake practice. Indeed, Romanowicz, O'Connor, Schak, Swintak, & Lineberry (2013) published a study of more than 1100 youth (ages 8–18 years old) and found that the SSF variables were understandable to their patients and served as a valuable baseline assessment; their SSF data were used effectively to aid in optimal treatment decision-making.

More recently, Amy Brausch's research team at Western Kentucky University (e.g., Powers et al., 2018) has actively pursued a rigorous psychometric study of the SSF with suicidal teenagers. Preliminary analyses of their data from a sample of 67 suicidal teens indicate that the SSF Core Assessment is psychometrically valid and reliable and helps differentiate suicidal risk. These researchers also have useful preliminary data from adolescent Implicit Association Test results (IAT, Nock & Banaji, 2007) that may provide further psychometric support for the SSF with adolescents in the future. Feedback from this on-going line of psychometric research has confirmed that adolescent participants feel quite strongly that the wording of the SSF does not need to be changed for them to understand what is being assessed. Moreover, central to CAMS as a treatment approach is the opportunity to create "teachable moments"; we find that while teenage patients in our studies are quite able to understand SSF constructs, exploring their understanding of

these constructs helps teens cultivate an evolved language to better describe their suicidal experience. In sum, research to date on the use of the SSF with youth suggests that the SSF has good acceptability and the potential for strong psychometric properties.

The CAMS for youth working group continues to discuss and refine modifications to standard SSF *administration* guidelines in order to address developmental needs specific to children and adolescents. For example, many of the domains that child and adolescent clinicians generally include in a standard clinical assessment have important implications in the assessment of suicide risk: Sleep, social media use, and bullying experiences should be routinely monitored as part of the SSF assessment process within CAMS-4Teens and CAMS-4Kids. Establishing such developmentally-relevant guidelines is an important component of the CAMS research agenda, which is unfolding across several different clinical settings.

Seattle children's hospital

A major foothold in the development of CAMS 4-Teens is taking place at Seattle Children's Hospital where Molly Adrian (2017) and her colleagues have been adapting the use of CAMS for suicidal teenagers seen at their medical center. One project is an archival study that will compare a clinical sample of 62 suicidal adolescents receiving CAMS to a control group created using propensity score matching. A second project is an on-going feasibility study to further refine adaptations for youth and families to gather data to pursue grant funding to conduct a feasibility CAMS study and a small RCT with the ultimate goal of conducting well-powered – perhaps multi-site – RCTs of CAMS-4Teens.

The cleveland clinic

Other pioneers in the use of CAMS with adolescents are Tatiana Falcone and Jane Timmons-Mitchell at the Cleveland Clinic where they have been looking into the inpatient use of CAMS and the use of CAMS at discharge/disposition as a possible optimal discharge plan for certain suicidal inpatient teens (Pao et al., 2017). They are now pursuing grant funding for this line of research that may address a number of clinical challenges.

Georgia juvenile justice system

Given the increased risk of suicide and self-harm in forensic settings, there have been efforts to adapt the use of CAMS in juvenile justice facilities in the state of Georgia. Significant modifications are required to use an intervention like CAMS in a forensic setting. For example, an incarcerated youth cannot be allowed to fill out the SSF with a pen as there is the potential for it to be weaponized. Nevertheless, an adapted version of CAMS has been used in this system with some measure of clinical success (Cardeli, 2015). We are continuing to explore the prospect of further adaptations of CAMS in such

correctional settings with the goal of one day conducting a randomized controlled trial examining the impact of CAMS on suicidal risk and non-suicidal self-injury (NSSI) among juvenile inmates.

CAMS in the context of school mental health (SMH) programs

Led by Kurt Michael, J.P. Jameson, and their team at Appalachian State University (Michael & Jameson, 2017), CAMS has been effectively integrated into several school districts in western North Carolina as part of university-school partnerships titled Assessment, Support, and Counseling (ASC) Centers (Albright et al., 2013). In early 2017, the ASC Centers scaled up regional capacity to utilize CAMS by training 50 local providers, the majority of which served children and adolescents in schools. The use of CAMS as part of the ASC Centers is now entering its third year of implementation and it has been found to be a feasible and effective intervention that is readily and flexibly integrated into existing school-related systems of care including the Multi-Tiered Systems of Support (MTSS) Model (Michael, Jameson, Filbin, Rosston, & Butts, 2017).

Family considerations and the role of parents

As we have discussed at length elsewhere, one of the biggest issues of using CAMS with teenagers is the proper involvement of parents (O'Connor et al., 2014). In clinical work with adolescents and children, parental involvement is both a legal obligation and critical for successful outcomes. However, the level and nature of parental involvement that leads to successful outcomes with suicidal youth within CAMS has not yet been empirically evaluated. Anecdotally, we have observed a broad spectrum of potential parental attitudes that may impact their capacity to be constructively involved in treatment. These generally range from: 1) parents who feel angry, blamed, and defensive, with behavior that may undermine rather than optimize care; 2) parents who have a mixed, neutral, or minimal level of interest in and impact on treatment; and 3) parents who are eager to be positively involved and can play an indispensable adjunctive role within successful care. Beyond these three broad characterizations, the familial aspects impacting suicidal youth have long been well known (Wagner, 1997) and are a major focus within our feasibility research. Our team is focused on the importance of the CAMS experience being empathic, collaborative, honest, and suicide-focused – the core philosophy of the CAMS approach (Jobes, 2016). As CAMS clinicians and researchers, we are also determined that adaptations maintain a patient-centered and drivers-oriented approach. With a focus on the developmental needs of children and adolescents (patient-centered), and the common risk factors for youth suicidality (drivers-oriented), this likely means that parent involvement will be emphasized in all cases, regardless of parent and family

functioning at the start of treatment. Thus, as we work to develop and study youth adaptations for CAMS, our goal is to understand not *whether*, but rather *how* and *when* to involve parents and caregivers.

As a general matter, teens take pride in being expert on many topics; in our experience of using CAMS clinically with teens they appreciate being acknowledged as *the* expert on their own suicidal experience (which we explicitly embrace within CAMS-guided care). It is thus our general impression that suicidal teens take to CAMS quite well because it is so explicitly patient-centered. The adherent CAMS clinician follows the adolescent's lead; what the youth says matters most both in terms of assessment and the treatment of their self-defined suicidal drivers. Nevertheless, parents' perspectives must also be considered given their pivotal role in terms of risk assessment, lethal means safety, and further treatment. Assessing and managing parents' attitudes about their child's participation in a suicide-specific treatment can be difficult because parents often feel blamed or implicated. We are thus working on developing parent assessments that can be used to inform decisions about the types of support or resources parents might need to enable them to be optimally helpful to their child. We feel strongly that a child's SSF assessment data should be shared with parents in a joint meeting with the CAMS clinician and the child patient, to help the parents better understand the nature and seriousness of their child's suicidality. It is also crucial for the parents to review, understand, and retain a copy of their child's *CAMS Stabilization Plan* (CSP) because they are often key players in any discussion of lethal means safety within the household environment. They may also be able to help support the coping strategies that are listed on their child's CSP. In some cases, parents may be invited to participate in the development of the CSP, depending on the child's preferences and needs. Finally, it is imperative that parents be made aware of their child's self-defined suicidal drivers which will be the targets of treatment within CAMS-guided care. We also would support the use of an explicit *Crisis Support Plan* (Bryan, Stone, & Rudd, 2011) so that parents can have a treatment-oriented document that helps guide their support as an adjunct to the effective care of their child.

There are individual, developmental, and practical issues to consider in determining *how* the SSF and CSP are most effectively administered to youth and parents. Time constraints and the child's age and level of functioning may determine whether the CSP is developed with the parent and the teen present, or whether it is developed with the teen and then shared with the parent. Parent functioning and family dynamics must be considered when deciding whether to share the SSF with parents while the teen is present, or perhaps in a separate conversation. We are working to develop and evaluate guidelines that will ensure clinical flexibility while providing much-needed empirically-informed guidance. Respect for the *patient's* preferences must always remain at the forefront of clinical decision-making within CAMS.

Developing cams-4kids

In 2016, Ridge-Anderson et al. critiqued the limited attention the larger field of suicide prevention has placed on the problem of suicidal risk in children under the age of 12. For example, there is only one major book focused on the suicidal child within the published literature (Pfeffer, 1986). Interestingly, early research revealed that some medical examiners as a matter of medicolegal policy refuse to certify a suicide of a child under the age of 12, arguing that a child that young could not knowingly intend to terminate their life (Jobes, Berman, & Josselson, 1987). Nevertheless, Bridge et al. (2015) have shown more recently data that 657 children died by suicide between 1993 and 2012 – a death toll that amounts to about 33 children per year in the United States. While early on we discussed the epidemiology of youth suicide (which mostly focuses on teens), valid data on the number of young child suicide attempts and data on childhood suicidal ideation are elusive. But given the death toll, we might reasonably speculate that thousands of pre-adolescent children have suicidal thoughts. Although it may seem beyond our cultural grasp as adults, child suicides do indeed occur each year in the United States. When a child acts deliberately to cause his or her own death, dismissing the child's intentions by labeling such a death as accidental or undetermined ultimately serves to undermine efforts to prevent future similar tragedies. Although it may be difficult to accept, some young children do experience and act on thoughts of suicide when faced with intolerable pain.

To address this rare but nevertheless appalling concern, a nascent research effort is now underway with Jeff Bridge and his research team at Columbus Nationwide Hospital to develop a highly adapted version of CAMS for suicidal children under the age of 12, based on pioneering innovations and modifications of CAMS which are described in more depth elsewhere (Ridge-Anderson et al., 2016). Clearly a suicide-specific intervention for a 5-year-old girl must be highly modified, as someone that young can neither typically read nor comprehend the complexity of the SSF or ideas like a suicidal driver. The CAMS philosophy can be employed and the SSF can provide valuable clinical guidance, but the intervention must be significantly broken down and gently explained to a child in a way that they can understand and appreciate. CAMS-4Kids is thus fully consistent with the overall CAMS philosophy which guides the therapeutic process, and it still emphasizes the key elements of what we believe makes the treatment successful for other suicidal populations. Just as in CAMS with adults, CAMS-4Kids providers endeavor to enter the world of the patient to understand and see suicidality through the eyes of the patient (Jobes, 2016). However, rather than starting with side-by-side seating as in standard CAMS, we start CAMS-4Kids on the floor with lots of blocks, coloring books, toys, and sticker books readily available. Ideas like *psychological pain* and *self-hatred* are presented and

explained in empathic, developmentally-appropriate, and caring terms. Assessment and treatment in CAMS-4Kids takes more time, and a CAMS-4Kids clinician must exert considerable patience despite any internal sense of urgency they may feel in response to their reasonable fear and discomfort when faced with the suicidality of a young child. Children may need to take breaks during the assessment process, given the weighty and complex feelings they are exploring. Discussing one's own suicidality in depth is difficult for many patients, adults and children alike; working with young children requires particular care and a keen attunement to the child's cognitive and emotional capacities. Nonetheless, our clinical experience to date suggests that young children can and do benefit from suicide-specific treatment, and parents can play a key life-saving role in this work when they are skillfully engaged.

In our early clinical pilot work, we have lost two children under the age of 12 to suicide; another child was murdered at the hands of her father. Clearly, not all children at risk are going to make it and the work is sometimes simply harrowing. But it is also true that dozens of the children we have seen have had excellent outcomes. We are learning much about what it takes to help prevent a suicide in a young child and how to work effectively with families of children at risk. Clearly, this is serious and perilous work, but it simply must be done. To this end, our research team is determined to craft and responsibly develop a CAMS-4Kids manual that can be rigorously tested through RCT research to demonstrate that young lives can be saved.

Implications for practice

As the second leading cause of death for youth, suicide is a major public health concern. The present article reviews the epidemiology of suicidal outcomes, revealing childhood trauma, bullying, and biological differences as factors that contribute to suicidal thoughts and behaviors among children and adolescents. There are several existing clinical interventions and prevention efforts that seek to reduce youth suicide. These interventions generally target emotion regulation difficulties, maladaptive behaviors, and interpersonal stressors, include a family component, and were primarily developed for adolescents. While much progress has been made, this review reveals the need for more effective treatments, especially for children under the age of 12. We highlighted a suicide-specific treatment, CAMS, that has proven effective in suicidal adults. With developmentally-driven adaptations and an emphasis on the core pillars of the CAMS model – empathy, collaboration, honesty, and suicide-focus – we believe that ongoing research, dissemination, and implementation of CAMS-4Teens and CAMS-4Kids will contribute significantly to the goal of preventing the loss of young lives due to suicide. Ultimately, we seek to support children, caregivers, clinicians, and stakeholders in ensuring that all youth have the opportunity and

capacity to experience the many joys and challenges of living a full life that is worth living, with both purpose and meaning.

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