Early Adulthood: A Developmental Perspective on Suicide Prevention and Intervention

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Introduction

For many individuals, the transition to early adulthood is characterized by relative independence from the family of origin and the opportunity to pursue relational, identity, and vocational paths of their own choosing. In early adulthood, physical health is also at a peak. Consequently, the leading causes of death during this period are not inevitable outcomes of disease or medical morbidity but are instead accidents, suicide, and homicide (Centers for Disease Control and Prevention, 2010). Perhaps it is this developmental context that makes the death of a young adult by her or his own hand a cause for particular anguish for survivors. Suicide is tragic and inexplicable at any age, but why would a young person kill themselves at their physical prime and with seemingly unlimited opportunities ahead of them for living and loving? Further examination and questioning of these themes of independence, opportunity, and health are needed in order better to understand and prevent suicide in early adulthood.

Independence

Independence is an aspiration of teenagers. Likewise, socialization by parents and teachers is in large part directed toward promoting children's eventual autonomy. Although Americans view residential and financial independence from the family of origin as a marker of adulthood, this transition typically does not coincide with the end of the teenage years. Instead, independence is often gradual and only tentatively achieved through the 20s, (Furstenberg et al., 2003) and the trends toward delayed assumption of adult roles are increasing in the United States. Specifically, 13%, 19%, and 26% of White men aged 25 years reported living with parents in the years 1970, 2000, and 2007, respectively (rates are higher among Black men and lower among women; Settersten & Ray, 2010). In current times, delaying traditional adult milestones, such as marriage and parenthood, and continuing to receive substantial social and economic support from parents confers distinct advantages to the individual's education, employment, and their eventual family of procreation. Conversely, invididuals who are prematurely launched into independence were more vulnerable to begin with, and may become more so during adulthood (Settersten & Ray, 2010).

Apart from this sociological view, psychological research suggests another challenge to the notion of young-adult independence. For a variety of reasons including heritability, social learning, and assortative partnering, there are surprising degrees of intergenerational continuity in contextual stresses, depression, and problem behaviors such as aggression and substance use. (Conger, Belsky, & Capaldi, 2009; Rhule-Louie, McMahon, 2007).Thus, although early adulthood appears to be a chance to escape the problems of the family of origin, some individuals instead continue to experience and recreate these problems. An appreciation of early adulthood as a period both of continuities and of transitions in dependence can inform suicide prevention efforts in a number of ways. Conversely, the popular traditional conceptualization of independence in early adulthood could blind us to the roles that family members may have as resourceful allies in our prevention mission.

Opportunity

Next, developmental research contradicts the notion of the apparently limitless opportunities adulthood presents. For many, the freedom from structure and constraint that is experienced after leaving home and completing compulsory education is indeed an unprecedented opportunity for self-determination. For others without requisite internal resources and surrounding supports, however, the sudden vacuum of structure, guidance, and supervision can be overwhelming and disorienting (Schulenberg & Zarrett, 2006). Additionally, young adults are not presented with a clean slate with respect to mental health nor with relationship, identity, and vocational opportunities. Rather, there is relative stability across the transition from adolescence to early adulthood in terms of the rank ordering of individuals on emotional and problem behaviors (Schulenberg & Zarrett, 2006). And, consistent with the life course perspective (Elder, 1998), opportunities are highly dependent on prior developmental successes and failures. For example, young adults who failed to develop positive peer relationships as adolescents, ran afoul with the law, did not achieve academically, and made premature transitions to adult roles (e.g., parenthood) carry these developmental burdens forward and find their opportunities constrained.

This perspective leads to the conclusion that preventing suicide in early adulthood truly begins with health promotion and the prevention or lessening of suicide risk factors in childhood and adolescence, an argument that should come as no surprise given

the developmental focus of the current volume. Though the requisite longitudinal studies are few, studies of community samples support that individual and contextual suicide risks (including suicidal ideation and prior attempts) detectable in childhood and adolescence are associated with suicidal thoughts and behaviors in early adulthood (Fergusson, Woodward, & Horwood, 2000; Herba et al., 2007; Kerr, Reinke, & Eddy, 2013; Reinherz et al., 1995). The continuity in risk from adolescence to early adulthood is evident not only in the recurrence of suicidal thoughts and behaviors themselves but in the myriad domains of early adulthood maladjustment that are associated with adolescent histories of suicide risk. These include higher rates of psychiatric disorder, problem behavior, relationship dissatisfaction and violence toward partner, lower salaries and socioeconomic status, and longer term residential dependence (Fergusson et al., 2005; Kerr & Capaldi, 2011; Reinherz et al., 2006).These poorer outcomes hint at failures to negotiate the key developmental tasks of early adulthood that are both predicted by prior suicide risk factors and that perpetuate suicide risk across the period. Thus, although early adulthood is a time of new opportunity, preventionists cannot ignore how adverse childhood experiences and cumulative developmental burdens limit these possibilities for many young people. Prevention should begin long before healthy children become suicidal adults.

Health

Young adults are often free from chronic illness, pain, and disability that are suicide risk factors for older adults (Qin et al., 2003). However, the protective effects of the relative physical health of early adulthood can be powerfully undermined by ongoing or emergent psychiatric and behavioral health problems. The prevalence of major depressive episode peaks among 18 to 25 year olds, and the age-of-onset distributions for substance use disorders and mood disorders implicate the early adult years (50% of cases onset between ages 18-27 and 18-43 years, respectively) (Kessler et al., 2002; SAMHSA, 2009). Rates of aggressive and impulsive behaviors decrease in early adulthood relative to adolescence, but still are high relative to older adults, and further contribute to suicide risk. On the other hand, across early adulthood there are strong developmental trends toward decreasing depressive symptoms, crime, and substance use, and increasing psychological well-being (Schulenberg et al., 2005).These seemingly contradictory patterns demonstrate how powerfully the transitions of early adulthood

can ameliorate or amplify individuals' problems (Schulenberg & Zarrett, 2006).From a public health standpoint, mood and substance-related disorders are important explanatory and malleable suicide risk factors that should be targeted, though other conditions such as psychotic and eating disorders, are less prevalent but in some cases more powerful risk factors.

In this chapter, the developmental context of early adulthood is briefly reviewed with a focus on the unique challenges and opportunities the period presents to suicide preventionists. Next, the current suicide prevention and intervention evidence base is reviewed. When possible, the special relevance of this evidence for young adults is highlighted. Finally, the chapter closes with recommendations for research directions and methodological considerations. It should be noted that the theoretical review and summary of the evidence are based largely on studies of adults in the United States.

Developmental Context of Suicide Prevention and Intervention in Early Adulthood

As reviewed by Swahn and Gressard (this volume), early adulthood is characterized by multiple important role transitions including leaving home, forming more stable romantic partnerships involving cohabitation and often marriage[1], having children, pursuing further education, and becoming employed full time. Though the effects of the timing of these transitions have not been studied in relation to suicide risk, successful resolution of each transition is associated with lower rates of suicide (Qin, Esben, & Bo, 2003).

The cases of partnering and parenthood are illustrative of the complexities of how key role transitions in early adulthood may impact mental health and ultimately suicide risk. Independent of other salient individual, familial, and contextual risks, being married and having a young child are associated with decreased risk of suicide among both men and women.(Qin et al., 2003).These role transitions not only coincide with but also may contribute to the declines in problem behaviors that are observed across early adulthood (Schulenberg & Zarrett, 2006). For example, in a 20+ year prospective study,

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[1] How developmental context should inform suicide prevention with lesbian, gay, bisexual, and transgender young adults deserves additional consideration; see Haas et al. (2011).

we found that marriage and fatherhood each were linked with a hastening decline in young men's criminal behavior and alcohol use relative to their prior trajectories and normative age trends (Kerr et al., 2011).Consistent with the discussion above of life course theory, adolescent problems were associated with premature transitions to fatherhood, and ameliorative effects were more pronounced the older men were when they became fathers. Others have found apparent impacts of engagement, marriage, pregnancy, and parenthood on decreases in various problem behaviors for men and women (Bachman et al., 2013) and have explored mechanisms of protective effects. For example, having a child is linked to more time spent with extended family and increased participation in church, community service, and paid employment (Knoester & Eggebeen, 2006; Labouvie, 1996). From the standpoint of increased connectedness and belongingness, all of these changes would be considered protective. However, role transitions do not have uniformly protective effects. For example, based on a large national sample, Evenson and Simon (2005) found that employment, marriage, and unmarried cohabitation each were associated with fewer depressive symptoms; however, parenthood, regardless of type (e.g., non-custodial parent, step-parent, custodial parent of minor child) was in most cases associated with more symptoms. Other research supports that the effects of this life transition on depressive symptoms is complicated by attachment style and spousal support prior to parenthood (Simpson et al., 2003).Thus, an implication for suicide prevention is that role transitions present opportunities for young adults to participate in stabilizing sociological forces, but may be complicated by developmental timing and prior functioning.

In addition to role transitions that typically occur in early adulthood, the legal transitions that occur at ages 18 and 21 years also occasion abrupt changes that may impact suicide risk. At age 18 years, young adults are no longer compelled to attend school and are no longer the daily responsibility of parents and teachers. The peaks in rates of heavy drinking of alcohol and drug use that occur at the beginning of early adulthood—which contribute to suicide risk through distal (e.g., psychosocial consequences) and proximal (e.g., facilitation of attempt)mechanisms—may be consequences of this new found freedom and of laws permitting alcohol consumption at age 21 years. Being legally designated an adult also causes abrupt changes in the social safety net for individuals. Specifically, unlike minors, young adults are not always entitled to the

same level of healthcare, food, shelter, or legal protections from victimization and exploitation. Relatedly, the transition to adulthood is particularly challenging for youth receiving public services (e.g., those in mental health, juvenile justice, and/or child welfare systems), given that at age 18 years they may become ineligible or may experience an abrupt shift to less developmentally sensitive adult service providers and treatment models (Osgood, Foster & Courtney, 2010).

The key role transitions and legal definitions of adulthood described above provide some developmental context for understanding suicide prevention in early adulthood. Additionally, the majority of young adults spend significant periods of early adulthood in one or more of the following institutional contexts: the military, employment, and college/university. As such, suicide preventionists must attend to how we can influence and capitalize on enormously powerful contextual forces to maximize benefit and minimize harm in the lives of young adults. Conversely, given the risk for suicide associated with disconnection from society (e.g., thwarted belongingness; anomie), young adults who *lack* involvement in these sectors also are an important population focus for suicide prevention; unemployed (Qin et al., 2003) and incarcerated (SAMHSA, 2012) individuals, in particular, require our attention. Consistent with this, Beautrais and Mishara (2007) suggest that suicide prevention should occur where such high-risk individuals can be found, including family courts, prisons, entertainment facilities, and religious centers.

The employment context is treated lightly here, as there has been surprisingly little attention to workplace-based suicide prevention. Gatekeeper and employee assistance programs are natural starting points. Large centralized (e.g., corporate, university, health care, and government) employers should be encouraged to test programs to maximize reach and serve as models within a sector. The military setting is the focus of another chapter in this volume (Armstrong, Reger, & Gahm, this volume). In brief, military experiences may contribute to suicide risk by causing physical disability, exposing young adults to psychological trauma, desensitizing individuals to pain and death, triggering or worsening psychopathology, , and providing ready access to lethal means. On the other hand, the military context has the potential for enormous protective effects to young adults via belongingness, purpose, and by facilitating education and employment. As a force for suicide prevention, the military is unmatched in its

financial and organizational capacity to impose and maintain fidelity of prevention mandates such as gate keeping, screening, and referral. For example, this is evident in the delivery of a multilevel suicide prevention program to over five million U.S. Air Force personnel (Knox et al., 2003). In the next section, the college/university context of suicide prevention is described in more detail.

Post-Secondary Education: Protective Context

Half of Americans ages 18-21 years who are out of high school are in college (U.S. Census Bureau, 2010). Much research on young-adult suicide risk has occurred with college students, and with good reason. The college context permits multiple opportunities for suicide prevention and intervention, given the following relatively unique features: supervision by culpable adults, increased exposure to activity and outreach, low-cost mental health care, and stricter limits on access to firearms. Each of these factors is discussed next, along with associated prevention implications.

First, perhaps the most powerful protective factor that is activated when a young adult enrolls in college is her or his informal supervision by a large network of resourceful and responsible (i.e., liable) adults. Here the responsibility for structuring and supervising young people's lives that may have abruptly ended when they turned 18 and left high school is at least partly taken up by instructional, advising, and residence life staff. Campus staff may be personally committed to student development and in many cases are professionally obligated to identify struggling students and intervene; people with whom non-college attending young adults interact at work or in daily life less often have these characteristics. Relatedly, relationships with college staff may permit young adults to disclose personal crises and mental health problems, whereas relationships with adults outside the college context (e.g., employers, landlords) may not. Additionally, funded initiatives and awareness programs (e.g., in service training, faculty mentorship, mental health liaisons) provide ways of reaching and training college staff to better support the mental health of young adults. These conditions reflect the overarching institutional goals of enhancing student success and development that pervade colleges and universities. These contrast sharply with those of institutions that employ young adults; for example, in manufacturing or food service, employers

may be motivated to avoid or dismiss employees with "problems" and are not thought to have any obligation to help an individual "grow."

Second, college students are exposed to a multitude of programs aimed at connectedness and psychological well-being, including outreach efforts by student life, counseling, and health-service staff. The abundance, low cost, and developmental appropriateness of these activities contrasts with those available to young adults not enrolled in college. Formal and informal campus programming may be relevant to suicide prevention if it improves a sense of belonging to valued groups (social, political, and recreational clubs), increases behavioral activation (e.g., exercise and new skills and hobbies), and decreases perceived burdensomeness (e.g., altruistic, service-oriented activities). These activities potentially serve as universal prevention. Framing them as such will encourage systematic evaluation and embedding of targeted prevention content. Other formal outreach efforts that may serve suicide prevention include presentations and informational events that destigmatize and increase awareness of health services and mental health, and aim to reduce suicide risk factors, such as depression and substance abuse. These efforts are funded, widespread, and delivered by experienced practitioners; whether the programs are effective needs to be established empirically. Identifying effective approaches and extending them beyond individual campuses will require collaborations of college consortia and the involvement of prevention researchers.

Third, college enrollment often entitles students to low-cost, conveniently located counseling and health services, and may extend coverage under parents' health insurance. This is notable because young adults are otherwise unlikely to have health insurance (Blanco et al., 2008), which presents a barrier to treatment seeking. Surprisingly, however, Blanco and colleagues (2008) found that, among young adults with a psychiatric disorder, those enrolled in college were *less* likely than unenrolled adults to seek alcohol or drug treatment and no more likely to seek other mental health treatment. This points to the need to address multiple barriers to identifying, referring, engaging, and retaining high-risk college students in treatment.

A fourth reason why college enrollment may protect against suicide is that campuses may impose stricter rules regarding gun possession than local laws may allow. In

Schwartz's (2011) recent study, he argues that the lower suicide rates in college students versus the matched general population owe to students' decreased access to firearms, particularly among those living on campus. Means restriction is a potentially powerful method of suicide prevention that college campuses can extend beyond firearms to include prevention of, for example, jumping and hanging.

Multiple studies support that college students are less likely to die by suicide than their non-college attending peers (Schwartz, 2011; Silverman et al., 1997), which contributes to the widely held view that college is protective against suicide. However, in their review, Haas, Hendin, and Mann (2003) highlight that a significant number of students who die by suicide do so after dropping out of college and are, therefore, not considered "college students" at the time of their deaths. Thus, the protective effects of college may be overestimated by the outflow of high-risk individuals. This presents at least two potential inroads to preventing suicide among young adults. First, students at risk for dropout could be identified and targeted for mental health screening and referral to campus health services before they become ineligible for such services. College computer systems that are widely accessible to staff already track student grades and credits, which are meaningful, standardized metrics used to identify and communicate with academically at-risk students (e.g., placing them on probation or requiring them to meet with an academic advisor). These processes and infrastructure could be used to serve a suicide prevention agenda, such as by providing gatekeeper training to staff who interact with these at-risk students. Second, the higher risk group of individuals who do drop out or are suspended or expelled from college could be targeted for screening and referral. Though colleges may not want the responsibility or liability for the health of prior students, they may be willing to assist with externally sponsored selective prevention.

Review of Effective and Promising Suicide and Intervention Programs for Young Adults

Attention now turns to the evidence base for prominent suicide prevention efforts, a summary that draws heavily on the results of prior systematic reviews and meta-analyses.

Physician education

In their influential review, Mann and colleagues (2005) called particular attention to the education of physicians to recognize and treat depression as an approach that has lowered suicide rates in multiple studies across multiple countries. The fact that most individuals who die by suicide have seen a primary care doctor within a month of their death further supports this as a promising general approach (Luoma, Martin, & Pearson, 2002).However, enthusiasm is dampened by Luoma and colleagues' findings that young-adult suicide decedents (age 35 years and younger) are much less likely (23%) than individuals ages 55 years and over (58%) to have done so. Furthermore, this may be an especially limited approach to reaching young men, given that male suicide decedents less often had been seen in primary care than female decedents. Enhanced training of emergency and urgent health care professionals to screen for depression and refer for treatment may help extend this approach to more young adults.

Gatekeeper training

Gatekeeper training is another promising approach to reducing suicide risk in some settings through case finding and referral. Gatekeepers are individuals who have direct contact with large numbers of people in a population of interest and can be trained to identify those at elevated risk for suicide and refer them for further evaluation or treatment. A value of gatekeeper training is the use of naturally occurring relationships and interactions to identify and link to treatment at-risk persons who might not otherwise present for professional help. As Mann and colleagues (2005) note, gate keeping will be most effective in settings in which clear pathways to treatment are available. Programs in military organizations, such as the multicomponent Air Force strategy of which gate keeping is a part (Knox et al., 2003) satisfy this requirement.

Isaac et al. (2009) further reviewed evidence of gatekeeper training. Of note, few studies have involved training of gatekeepers working with adults (Matthieu et al., 2008). Still, as most gatekeepers in these studies have been adults themselves, findings may be relevant to the promise of this approach for young adults. Most research has been from studies with relatively weak designs and has focused on trainee outcomes (e.g., skills, attitudes, and knowledge). The highest standard of evidence Isaac and colleagues (2009) identified for the effects of gatekeeper training on trainees was a

single randomized controlled trial, which found increases in self-reported knowledge, efficacy, and service access among adult staff at a secondary school (Wyman et al., 2008). Studies of the effects of gate keeping on referral rates and suicide-related outcomes are needed.

Gate keeping requires community participants to be convinced that suicide prevention is important, and gatekeepers must have adequate support so that their motivation to identify at-risk individuals is not undermined by their concern with having to manage the risk alone. Additionally, a weakness of the approach is that effects may be time limited without ongoing monitoring and training. College and military settings can the lead the way with this approach, as referral resources are relatively abundant and easily accessed, implementation can be a matter of policy rather than community "buy in," and gate keeping can be professionalized, incentivized, and monitored for periodic retraining. Peer gatekeepers may be another resource, though further research is needed. For example, Tompkins and Witt (2009) found that undergraduate residence hall advisors trained as gatekeepers showed pre- to post-training changes in suicide prevention knowledge and intentions that persisted to the following semester, but no changes in the enactment of gatekeeper behaviors such as asking a peer about suicidal thoughts. Residence life, instructional staff, and academic advisors are natural targets for gatekeeper training for young adults in college. A multi-college controlled trial of gatekeeper training would be a valuable contribution.

Means restriction

Mann and colleagues (2005) also drew particular attention to means restriction as a well-supported suicide prevention strategy. The effectiveness of this approach—making it more difficult for suicidal individuals to quickly access commonly used suicide methods—has been demonstrated for multiple means (firearms, pesticides, combustion fumes) and mechanisms of control (medicine packaging, firearms control legislation, barriers at jumping sites). Evidence that restricting access to firearms decreases suicide rates is especially relevant to suicide prevention among young-adult men in the United States. Nearly one half of young American men who die by suicide use a firearm to kill themselves (Centers for Disease Control, 2008). In one study of decedents, Black men were found to be twice as likely as White men to have used a firearm in their suicide (Joe, Marcus, & Kaplan, 2007). Fortunately, clinicians need not

wait for policies aimed at means restriction to be enacted. They should counsel patients directly. Surprisingly, providers often do not counsel high-risk patients on means restriction, even though studies support its effectiveness at changing the behaviors of patients and their families (see Bryan, Stone, and Rudd (2011) for a review and for specific recommendations and concrete clinical tools). The "Means Matter Campaign" of the Harvard School of Public Health highlights additional innovative approaches to means restriction, for example, by training firearms dealers and range owners to identify and discourage sales to potentially suicidal individuals (www.hsph.harvard.edu/means-matter/index.html).

Clinical treatment of high-risk individuals

Several categories of strategies have been shown to be promising or effective for at-risk or high-risk individuals in clinical care. Beautrais and colleagues (2007) and Mann and colleagues (2005) review the encouraging evidence for the effectiveness of relatively simple and low-cost interventions for individuals discharged after having made a suicide attempt. These are relevant to young adults who, given their generally strong physical health and lower rates of health insurance coverage, may present to emergency rooms during acute crisis, rather than to general physicians or mental health providers for truly preventative care. Psychotherapy and pharmacotherapy have been shown to decrease suicide-related outcomes in high-risk patients, including those with histories of suicide attempt and those with borderline personality disorder, major mood disorder, or schizophrenia (Brown et al., 2005; Linehan et al., 2006). Additionally, there are effective treatments for key risk factors for suicide (depression, hopelessness), including cognitive behavioral therapy (CBT), dialectical behavior therapy (DBT), interpersonal psychotherapy, problem-solving therapy, and pharmacotherapies. In contrast, Beautrais and colleagues (2007) called out recovered memory therapy and no-suicide contracts as clinical approaches for which there is evidence of harm.

Several meta-analyses further elaborate on the understanding of psychotherapy as a suicide prevention strategy. First, in Kliem, Kroger, and Kosfelder's (2010) analysis of 16 DBT trials, DBT was superior to non-specific treatments at reducing suicidal and

self-injurious behavior in patients with borderline personality disorder (BPD)[2]. Second, Tarrier et al. (2008) considered studies of therapies with a significant CBT component (including DBT) on self-harm or suicidal thoughts or behavior. They conducted meta-analyses of the 28 studies that had compared effects of CBT versus a control group (other than medication) on these outcomes. Therapies that used CBT had an ameliorative effect on suicidal ideation and on suicidal behavior (outcomes included attempts, plans, threats, and "probability of suicide"); this finding held when studies of adolescents were excluded, but unfortunately, further analyses of outcomes for young adults versus older adults were not possible. Of key importance, with respect to the reduction of suicide-related outcomes, CBT significantly outperformed no-treatment and treatment as usual conditions. However, evidence of its superiority over other active therapies, such as supportive counseling and nondirective discussion of suicide, was equivocal. The authors suggested both unique and nonspecific aspects of CBT may make incremental contributions to reducing suicide-related outcomes.

Tarrier and colleagues (2008) also shed light on other aspects of treatment that appear to be important. Consistent with observations by Linehan (2008), CBT was superior to control conditions when suicide-related outcomes were a primary focus of treatment but not when CBT was primarily directed at other conditions, such as psychotic symptoms or substance use, as an indirect means of reducing suicide-related outcomes. Also, although studies of DBT were included in Tarrier's primary analyses, separate analyses of studies of DBT and CBT therapies other than DBT both yielded significant average effect sizes. Thus, DBT effectively reduced suicide-related outcomes, and apparent CBT effects were not "carried" by this effective form of the intervention. Finally, Tarrier et al., (2008) found that the average effects of CBT were significant in studies of individual but not group delivery formats. This finding may have care delivery implications for settings such as college counseling centers that are faced with serving large numbers of young adults; group CBT may efficiently treat depression but has not been shown to reduce suicide risk.

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[2] See also Pistorello and colleagues' (2012) findings that DBT outperformed "optimized" treatment as usual in reducing suicidal thoughts and intentions in suicidal college students (i.e., young adults) with significant borderline personality disorder symptoms.

Intervention-related reductions in suicidal thoughts and behaviors are promising but cannot be assumed to indicate reductions in rates of suicide. Crawford et al. (2008) conducted a meta-analysis of the effects of interventions on suicide among high-risk individuals—those who had previously engaged in self-harm. Their analyses of randomized controlled trials found no evidence that enhanced interventions reduced the suicide rate compared to standard care. However, the analyses are illustrative of the power challenges that low base rates pose to suicide research; among the approximately 4000 high-risk patients considered, there were 18 suicides among approximately one half of the participants randomized to receive an enhanced treatment and 19 among those who received a control treatment. The authors also considered relative mortality rates, given that suicides are not always correctly identified. They noted a more encouraging (though still not statistically significant) trend toward fewer deaths among participants receiving enhanced treatment compared to those receiving standard care.

Recalling the developmental context of early adulthood reviewed above, psychotherapists may be in a position to provide forms of monitoring, emotional support, and modeling of problem solving that are lacking. Despite the promise of psychotherapy for those who receive it, however, Luoma et al. (2002) found that only 15% of individuals age 35 years and younger had contact with a mental health professional within a month of their suicide (38% during their lifetime) and rates were even lower for men. This points to the weakness of any stand-alone strategy; multilevel, multimodal prevention strategies are needed to first identify and refer high-risk young adults, and then to engage and treat them.

Mental health awareness

Other types of promising suicide prevention efforts relevant to young adults have been at the broad level of universal prevention. There is general agreement that decreasing stigma and increasing awareness of mental health problems and the availability of treatments are worthy goals. Such efforts could encourage not only self-referral but referral by partners, family, and friends. According to Dumesnil and Verger's (2009) review, population-based efforts to do so have demonstrated moderate changes in attitudes; however, currently there is no evidence that changes are durable or have resulted in the ultimate goals of increasing mental health treatment-seeking or de-

creasing suicide-related outcomes. Beautrais et al. (2007) consider such awareness campaigns to be promising but cautioned against those specifically focused on suicide awareness as being potentially detrimental. Though not uniquely so, young adults have been shown to be vulnerable to such effects (Klimes-Dougan & Lee, 2010). Relatedly, clear guidelines for the media's reporting on suicide have been developed and disseminated based on evidence of harm from particular types of portrayals and reporting of suicides (see www.reportingonsuicide.org; and Pirkis et al., 2006). Research is needed on the effectiveness of these guidelines particularly among young adults, who are avid consumers of relevant media (e.g., celebrity gossip) and may be more likely than older adults to identify with celebrities who die by suicide.

Crisis hotlines

Suicide crisis hotlines are part of a nationwide suicide-prevention effort aimed at providing immediate support, assessment, and referral. Along with emergency rooms and 911, crisis hotlines have value as a 24-hour lifeline available regardless of ability to pay. As such, they are relevant to suicide prevention among young adults. In a recent 2-week follow-up study of suicidal callers of the National Suicide Prevention Lifeline (1-800-273-TALK), Gould (2012) found that one half of those given a referral (often their current or prior mental health provider) reported following through with it or reaching a comparable provider. Though there was no suicidal comparison group (e.g., non-callers), this finding is cause for optimism about the potential of this approach for linking high risk individuals to treatment. Of note, a significant percentage (41%) of callers who had not utilized any mental health resource after receiving a referral cited financial barriers, such as lack of insurance, as a reason. Other identified barriers to follow through may be addressed in subsequent research, as these included denial that there was a significant problem, perceptions that services would not help, and simply not remembering the referral (19%). Whether crisis lines have a net protective effect in communities is not clear. Further research on the efficacy of this and related approaches (such as internet-mediated help) and how to enhance them would be a critical contribution given that these are among the most widely disseminated prevention efforts.

Prevention and Intervention Summary: Advancing the Scope

In addition to those noted above, a number of observations and recommendations emerge from consideration of the current evidence base. First, there are more studies and stronger evidence of effectiveness from indicated prevention studies of psychiatric patients (e.g., those with prior suicide attempts or borderline personality disorder) than from studies at other levels of prevention. This is problematic because such individuals represent a narrow range of the young-adult population at risk for suicide. For example, the samples identified in Kliem and colleagues' (2010) meta-analysis of DBT outcomes were almost entirely female (100% in 10 of the trials, and 87-96% in the others), and thus unlike most suicide decedents (i.e., men who do not have BPD). Furthermore, therapeutic strategies for patients who are already seriously impaired ought not be considered the front line of suicide prevention. Thus, more research on universal and selective prevention is needed.

A second, overarching comment is that there is little that is explicitly developmental about current strategies. Universal and selective prevention approaches and case finding organized around developmentally meaningful transitions would be an innovative direction. For example, the following populations could be fruitfully targeted: graduating high school students who are not enrolling in college, college students who are dropping out or at risk for doing so, young adults leaving or under the supervision of the justice system, those initiating or concluding divorce proceedings, young adults filing for disability or unemployment, or new or expecting parents. Given men's high rates of suicide and low rates of health care involvement, these and other transitions that involve public processes and contact with organized institutions (e.g., high school, legal system, health care) may be critical to reaching and engaging young men in suicide prevention. Developmentally oriented prevention programs could be organized around challenges common to a given transition. Such approaches may be appealing to individuals who are otherwise sensitive to mental health related stigma or who are not currently in significant distress but who are at some contextual risk. Embedded in such programs could be content directed toward destigmatizing mental health problems, providing education to encourage future self-referral for treatment, and screening and referral.

A third comment concerns a limitation of the ultimate aim of many suicide prevention approaches: to encourage vulnerable young adults to present for individually oriented treatments. This model assumes a level of independence that may not apply to a significant number of young adults. Thus, novel developmentally informed approaches are needed at all levels of suicide prevention to find ways to engage parents, family, and significant adults in ways that are appropriate for young adults. As an example of selective prevention, parents of non-college bound high school students could be offered programming on balancing support and autonomy in young adulthood and trained to watch for suicide warning signs. Regarding indicated prevention, community mentors have been used to provide emerging adults transitioning from child mental health systems to adult systems with emotional support and practical guidance regarding educational attainment, job preparation, and living skills (Rosenberg, 2008). Controlled research on such approaches is needed.

Prevention and Intervention Summary: Advancing the Science

Other comments pertain to the roles that meta-analysis, clinical trials methodology, and attention to measurement must play in advancing the science of suicide prevention. First, authors of systematic reviews and meta-analyses have identified a relatively limited number of effective approaches based on a relatively limited pool of studies of sufficient quality. Legions of caring and educated people are doing the hard work of prevention with available tools; regarding the efficacy of these tools, the adage "the absence of evidence does not imply evidence of absence" comes to mind. Indeed, the scope of the public health problem and the urgency of the individual acute case demand protective action with all available resources. However, this adage should be used to motivate further inquiry and innovation, not defend the clinical status quo.

Second and relatedly, the evidence base is dogged by the low base rates (by research standards not population standards) of suicide-related outcomes, especially suicide itself. This presents a challenge to statistical power even in meta-analysis, and also interacts with bias against publishing studies that fail to detect statistically significant effects (Tarrier, Taylor, & Gooding, 2008). A further consequence of these problems for the topic of the present chapter is that already underpowered studies

cannot examine moderators of prevention effects. Thus, the specificity of prevention efficacy claims to early adulthood, much less any further relevant demographic or clinical subgroup of young adults, is limited (Leitner, Barr, & Hobby, 2008).

Third, inconsistency in measurement limits the clarity of findings and the extent to which studies can be compared, using meta-analysis or informal approaches. This has sometimes been due to a compromise solution to the problem of low base rate outcomes; specifically, suicidal thoughts and behaviors are collapsed into "suicidality" and nuanced constructs such as severity of ideation and number of suicide attempts are collapsed into binary (presence/absence) outcomes. A recent stride toward uniform measurement was made with the publication of clear guidelines by the Centers for Disease Control (Crosby, Ortega, & Melanson, 2011; Posner et al., 2011).

Related to all three of these points, researchers understandably focus on statistical power and significance at the proposal, design, analysis, and publication stages, but should be encouraged to take an even longer view. Researchers should use designs and reporting (see CONSORT) (Schulz et al., 2010; Oxford Centre for Evidence-Based Medicine, 2009) that will facilitate the efforts of future meta-analysts to re-assess even null findings in the light of power considerations; in addition to these general standards, researchers should report suicide attempts and deaths by treatment group, as well as by key demographic and clinical classifications. Journal editors and reviewers can support these efforts by encouraging the reporting of descriptive statistics and underpowered secondary analyses in online appendixes.

Fourth, a concern expressed by Leitner and colleagues (2008) is echoed here: the interventions studied in scientific reports cannot easily be accessed by clinicians and are not described in sufficient detail. These issues are obstacles to community uptake of evidence based strategies and to scientific replication.

A final observation regarding the evidence base is that rigorous clinical science is too infrequently applied and may be rationalized by critical but not always insurmountable ethical challenges of studying suicide risk. In particular, researchers routinely exclude suicidal individuals from clinical trials, and studies of suicide prevention frequently have not used appropriate control groups. Linehan (2008) (p.484) succinctly

captures this latter issue by noting, "The belief that we know how to treat suicidal behaviors and the general unwillingness…to withhold standard, but untested treatments has been the enemy of finding effective interventions." The use of inappropriate research designs thwarts claims about efficacy that could inspire enthusiasm and widespread adoption and dissemination; moreover, weak designs delay us in discarding costly, inert approaches and identifying whether and for whom some prevention efforts may even do harm.

General Conclusions

Early adulthood is a time of transition when large segments of the population embrace new roles and show decreases in behaviors and problems thought to underlie suicide risk. Still, other segments show emergent or worsening psychopathology perhaps exacerbated by age-related disconnection from prior relational and institutional supports. Suicide prevention efforts are developmentally informed with respect to the distinction between adolescence and adulthood, but much less so in relation to earlier versus later adulthood. Developmentally sensitive approaches to suicide prevention during early adulthood should enhance the tried-and-true approaches of screening, means restriction, and treatment, and improve universal prevention by attending to (1) unique or high-risk developmental transitions (e.g., college dropout), (2) key institutional contexts in which most young adults spend significant time (e.g., workplace), (3) how ongoing dependence with respect to the family of origin can be leveraged by preventionists, and (4) the ways in which health care utilization patterns weaken the utility of key prevention pathways, such as via screening by general practitioners. Multilevel, multicomponent suicide prevention models will be needed to make use of the array of effective but often unintegrated strategies and to develop new ones. Finally, fundamental methodological considerations are required to advance the science, practice, and impact of suicide prevention in early adulthood.

Acknowledgments

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