Published in final edited form as:

J Clin Psychol Med Settings. 2017 March ; 24(1): 8–20. doi:10.1007/s10880-017-9486-y.

Suicide Risk Screening in Healthcare Settings: Identifying Males and Females at Risk

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Abstract

Suicide is the 10th leading cause of death in the United States, accounting for more than 42,000 deaths in 2014. Although this tragedy cuts across groups defined by age, sex, race/ethnicity, and geographic location, it is striking that nearly four times as many males as females die by suicide in the U.S. We describe the current regulations and recommendations for suicide risk screening in healthcare systems and also describe the aspirational goal of “Zero Suicide,” put forth by the National Action Alliance for Suicide Prevention. We then provide information about suicide risk screening tools and steps to take when a patient screens positive for suicide risk. Given the substantially higher suicide rate among males than females, we argue that it is important to consider how we could optimize suicide risk screening strategies to identify males and females at risk. Further research is needed to accomplish this. It is recommended that we consider multi-factorial suicide risk screens that incorporate risk factors known to be particularly important for males as well computerized, adaptive screens that are tailored for the specific risk considerations of the individual patient, male or female. These strategies are not mutually exclusive. Finally, universal suicide risk screening in healthcare settings, especially primary care, specialty medical care, and emergency department settings, is recommended.

Suicide cuts short the lives of individuals and leaves the survivors – those left behind -- struggling with their grief and efforts to understand. More than 42,000 individuals in the United States died by suicide in 2014 (Centers for Disease Control and Prevention [CDC], 2015). In addition, across all ages, suicide is the 10th leading cause of death in the U.S. (CDC, 2015). Unfortunately, we have witnessed a significant increase in the prevalence of suicide since the start of this century (CDC, 2015). These data are illustrated in Figure 1,

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Conflict of Interest

Dr. Cheryl King receives royalties from Guilford Press for the publication, *Teen Suicide Risk: A practitioner guide to screening, assessment and care management*. Mr. Horwitz, Dr. Czyz, and Ms. Lindsay have no conflicts of interest.

Compliance with Ethical Standards

Ethical approval: This article does not contain any studies with human participants performed by any of the authors.

Conflict of Interest

Dr. XXXXXXXX receives royalties from Guilford Press for the publication, XXXXXXXX. Dr. XXX, Mr. XXX, and Ms. XXXX have no conflict of interest (REMOVED FOR BLINDING).

which also highlights that there are significantly more suicide deaths than homicide deaths in the U.S.

Suicide occurs across demographic subgroups defined by age, sex, race/ethnicity, and geographic location (CDC, 2015). The disparity in suicide prevalence rates between males and females, however, is particularly striking. Many more males than females die by suicide in every age and racial/ethnic group in the U.S. Figure 2 illustrates this variation in suicide rates across the lifespan. Whereas suicide was the 7th leading cause of death for males in our nation during the past decade, it was the 15th leading cause of death for females, with a 3.7 to 1 ratio of male to female suicide deaths (CDC, 2015). The prevalence rates for males and females also change differentially across the lifespan. Females show a steady increase in rates until their mid-50s, after which the rates show a steady decline. In contrast, the prevalence rates for males increase markedly in late adulthood, resulting in a widening gap between rates for males and females.

Although males are more likely than females to die by suicide, females are more likely to report suicidal thoughts and attempt suicide (CDC, 2015; Substance Abuse and Mental Health Services Administration, 2014). Among adolescents (9th–12th grade students), the prevalence of having seriously considered attempting suicide and the prevalence of suicide attempts are both approximately twice as high in females versus males (23.4% versus 12.2% seriously considering, and 11.6% versus 5.5% actually attempting, respectively; CDC, 2016). Consistent with this contrasting pattern of prevalence rates for suicide deaths and suicide attempts, in a review of multiple large nationally representative datasets, Han et al. (2016) found that 5.7% of male suicide attempts were fatal whereas only 1.2% of females attempts were fatal.

Why Screen for Suicide Risk in Healthcare Settings?

Healthcare settings have the potential to play a significant role in preventing suicide through suicide risk screening with an appropriate follow-up of positive screens. Healthcare settings serve large numbers of individuals in our communities from every age, sex, and racial/ethnic group. Moreover, health concerns are routinely addressed in these settings with attention to privacy issues, which is critical when discussing mental health concerns and, potentially, suicidal thoughts and impulses. There is a stigma – both societal and to the self – that can lessen individuals' comfort with disclosure and the sharing of mental health concerns (Ben-Zeev, Young, & Corrigan, 2010; Pattyn, Verhaeghe, Sercu, & Bracke, 2014). Finally, recent studies indicate that suicide risk screening is feasible in these settings and leads to the identification of individuals at risk for suicide who would not otherwise have been identified (e.g., Boudreaux et al., 2016; King, O'Mara, Hayward, & Cunningham, 2009).

Healthcare Utilization in Month Prior to Suicide

A recent review of medical records of suicide decedents from a large U.S. sample found high rates and patterns of healthcare utilization (Ahmedani et al., 2014). In the month prior to their death, half of suicide decedents received healthcare services and 24% received mental healthcare services. Similarly, Luoma et al. (2002) examined findings from psychological autopsy and record review studies. Psychological autopsy is a method where

all available information about the deceased is collected from structured interviews with relatives, friends, and attending healthcare professionals as well as medical health records, other documents, and forensic examination (Isometsa, 2001). Luoma et al. (2002) reported that approximately 45% of individuals who died by suicide had contact with a primary care provider within a month of their death whereas only approximately one of five (19%) had seen a mental health provider during this time period. In a Canadian record review study, 30% of suicide decedents ages 11 and older had visited an emergency department (ED) in the month prior to their death (Vasiliadis, Ngamini-Ngui, & Lesage, 2015).

Feasibility of Screening and Detection of Suicide Risk

Emergency Department-Safety Assessment and Follow-up Evaluation (ED-SAFE), a recent quasi-experimental clinical trial involving eight general medical EDs across the U.S., provides us with new knowledge about suicide risk screening for adults in EDs (Boudreaux et al., 2013). This study was designed to: 1) develop and test the feasibility and effectiveness of an ED-based universal suicide risk screening among adult ED patients, and 2) examine a brief intervention initiated during the ED visit with a follow-up telephone contact for those screening positive for suicide risk. The study included: 1) the Treatment-as-Usual phase to establish rates of screening and detection of self-harm and ideation; 2) the Universal Screening phase, which included the nurse-administered, three-item Patient Safety Screener-3 (PSS-3); and 3) the Universal Screening and Intervention phase used to determine if adding a brief intervention led to improved outcomes a year following the ED visit. The investigators demonstrated the feasibility of this screening approach, which resulted in significant improvement in the detection of suicide risk (Boudreaux et al., 2016). Specifically, the authors reported a nearly two-fold increase in positive suicide risk detection (i.e., patient endorsement of any past or present intentional self-harm ideation or behavior documented as present), with detection rates increasing from 2.9% in the treatment-as-usual phase to 5.2%, and to 5.7% in the subsequent study phases. These data indicate the feasibility and value of ED-based screening.

The ED-SAFE study also examined the change in ED providers' knowledge, attitudes, and practices related to care of suicidal individuals after the implementation of universal screening and brief interventions in the ED (Betz et al., 2015). Based on anonymous surveys completed by ED nurses and physicians three months after implementation, the authors found that increasingly more providers reported screening for suicide risk, and among physicians, conducting additional risk assessment of those screening positive. The study provided additional evidence for the feasibility of universal suicide screening in EDs. Though providers recognized that universal screening would require more frequent psychiatric evaluations, that recognition was not associated with believing that such screening would slow down the pace of clinical care.

Although much smaller in scope, studies also have documented the feasibility of ED-based suicide risk screening for adolescents (Horowitz et al., 2010; King et al., 2009) as well as the acceptability of ED-based suicide risk screening to adolescents and parents (O'Mara, Hill, Cunningham, & King, 2012). Studies also support the feasibility and concurrent validity of ED-based suicide risk screening for adolescents, as well as its ability to identify males and

females at risk who were not previously identified and were receiving no services (King et al., 2009); and its potential for pairing with a promising brief intervention (King, Gipson, Horwitz, & Opperman, 2015).

Taken together, studies indicate that suicide risk screening in healthcare settings -- particularly primary care, medical specialty clinics, and EDs -- can reach large numbers of individuals at risk for suicide whose risk would not otherwise be identified. Such screening is acceptable to patients, and because most people will not proactively disclose thoughts of suicide, it is the best way to identify many of the individuals at risk.

Regulatory Requirements and Recommendations Pertinent to Suicide Risk Screening

Current regulatory requirements and recommendations are pertinent to the implementation of suicide risk screening in healthcare settings. These impact health system priorities and may frame or in some cases dictate certain health system activities.

Joint Commission requirements

The Joint Commission is an independent, non-profit organization that accredits health organizations and programs in the U.S. The Joint Commission (2016c) cites data that confirms patient suicide is one of the most common sentinel events in healthcare settings and recognizes that healthcare settings must have an active role in suicide prevention. To achieve that objective, The Joint Commission has set forth suicide risk screening requirements for all psychiatric, behavioral healthcare, and general hospital settings that treat patients for emotional and/or behavioral disorders (The Joint Commission, 2016a). The relevant National Patient Safety Goal, Requirement, and Implementation Expectations for these types of settings are provided as part of National Patient Safety Goal 15.01.01, which requires organizations to identify patients or clients at risk for suicide. The Joint Commission put forth three implementation expectations for this requirement: (1) The risk assessment includes identification of specific factors and features that may increase or decrease risk for suicide; (2) The patient's or client's immediate safety needs and most appropriate setting for treatment are addressed; (3) The organization provides information, such as a crisis hotline, to individuals and their family members for crisis situations (The Joint Commission, 2016a).

In addition to these *requirements* for settings that respond to emotional or behavioral concerns, the Joint Commission recently released a Sentinel Event Alert (February 24, 2016) with *advisory* information and recommendations for a broader range of healthcare settings (The Joint Commission, 2016b). This information is designed to assist healthcare organizations (emergency, primary, and behavioral healthcare settings) in identifying and responding to individuals at risk for suicide in inpatient and outpatient settings. Specifically, the following three actions are recommended: (1) "Review each patients' personal and family medical history for suicide risk factors;" (2) "Screen all patients for suicide ideation, using a brief, standardized, evidence-based screening tool;" and (3) "Review screening questionnaires before the patient leaves the appointment or is discharged." Although beyond

the scope of this paper, the Alert also provides a review of suicide risk factors and provides recommendations for next steps with patients who screen positive, including immediate actions and safety planning, ongoing assessment, evidence-based treatment, and the importance of continuity of care.

U.S. Preventive Services Task Force recommendations

The U.S. Preventive Services Task Force (USPSTF) “makes recommendations about the effectiveness of specific preventive care services for patients without related signs or symptoms” (USPSTF, 2014). This Task Force recently updated its recommendations related to suicide risk screening for patients without an identified psychiatric disorder and concluded that “the current evidence is insufficient to assess the balance of benefits and harms of screening for suicide risk in adolescents, adults, and older adults in primary care” (LeFevre, 2014, p.719). Their report notes that we do not currently have sufficient evidence to indicate that such screening would identify patients at risk for suicide “who would not otherwise be identified on the basis of an existing mental health disorder, emotional distress, or previous suicide attempt” (LeFevre, 2014, p.719). Data on screening tools and their implementation in healthcare settings are limited, particularly in terms of psychometric properties related to accuracy (sensitivity and specificity) and predictive validity. However, this does not mean that there are no data to indicate the value of screening. Despite the cautious policy approach of the USPSTF in making recommendations, we argue that the data are now sufficient to recommend universal screening in healthcare settings, particularly when one weighs the tremendous cost of suicide.

Zero Suicide initiative

The 2012 National Strategy for Suicide Prevention highlights Zero Suicide as a key objective to “transform healthcare systems to significantly reduce suicide” (U.S. Department of Health and Human Services, Office of the Surgeon General, & National Action Alliance for Suicide Prevention, 2012, p. 27). The foundation of this initiative is the belief that suicide deaths are preventable in healthcare settings and the realization that healthcare systems often overlook suicidal patients due to the lack of appropriate infrastructure. As part of this initiative, the Suicide Prevention Resource Center (SPRC) has created an implementation toolkit for healthcare organizations based on seven “essential elements” of suicide care, which includes the identification of all individuals at risk for suicide through universal screening as an essential element (Hogan & Grumet, 2016; SPRC & National Action Alliance for Suicide Prevention, 2015b).

The Zero Suicide initiative recommends a universal suicide risk screening for patients at initial contact with the health organization and at each contact thereafter. This includes standardized procedures and policies to ensure identification of patients at risk and implementation of appropriate care plans (SPRC & National Action Alliance for Suicide Prevention, 2015a). It is recommended that policies and procedures include the documentation of risk screening and protocols for alerting staff of a positive screen. In addition, it is recommended that: written policies and procedures specify timely access to clinically trained staff for patients who screen positive for suicide risk, all staff use a standardized screening measure, and staff members receive formal training on suicide

screening and documentation. Although some individuals have raised questions about the potential of the Zero Suicide initiative to raise medical-legal liability concerns (Education Development Center, 2015), this policy has its roots in system-wide initiatives that have documented positive outcomes (Coffey, 2007) and establishes an aspirational goal for healthcare systems.

Tools for Suicide Risk Screening in Healthcare Settings

Screening tools identified in Sentinel Event Alert

There are a number of suicide risk screening strategies available for the identification of males and females at elevated risk for suicide. The Joint Commission's recent Sentinel Event Alert identifies several of the most well studied suicide risk screening tools. These include the Patient Health Questionnaire-9 (PHQ-9; Spitzer, Kroenke, & Williams, 1999); Patient Health Questionnaire-2 (PHQ-2; Löwe, Kroenke, & Gräfe, 2005); Suicide Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001); Columbia-Suicide Severity Rating Scale (C-SSRS; Posner et al., 2011); and ED-SAFE Patient Safety Screener (Boudreaux et al., 2013).

The PHQ-9 incorporates DSM-IV depression diagnostic criteria into a brief self-report tool for screening, diagnosing, monitoring, and measuring the severity of depression, including one question that screens for the presence and duration of suicide ideation (Kroenke, Spitzer, & Williams, 2001). Uebelacker, German, Gaudiano, and Miller (2011) found that the PHQ-9 suicide screening item had a sensitivity of 0.69 and specificity of 0.84 for identifying suicide risk (defined as recurrent thoughts of death or suicidal ideation, specific plan for suicide, or suicide attempt) within a sample of primary care patients. This is a relatively high level of specificity suggesting that, if an individual screens positive, the individual has a high probability of being at risk. However, the sensitivity level of 0.69 indicates that some individuals will screen negative yet be at risk (the screen is missing more than 30%). Sensitivity indicates how "sensitive" or likely the screen is to pick up suicide risk when it is present. The PHQ-2 is a two-item screener that includes the first two items of the PHQ-9 (frequency of depressed mood and anhedonia over the past two weeks; Kroenke, Spitzer, & Williams, 2003). With a nationally representative sample, including adolescents, Pratt and Brody (2014) found that a PHQ-2 cut off of two identified 76% of individuals with thoughts of self-harm. The SBQ-R is a four-item measure to assess lifetime suicide ideation and attempt, frequency of suicide ideation over the past 12 months, the threat of suicide attempt, and self-reported likelihood of future suicidal behaviors (Osman et al., 2001). It was found to be associated with relatively high sensitivity and specificity (defined in terms of endorsement of suicidal ideation or attempt on another scale) for undergraduate students, 0.93 and 0.95, adult inpatients 0.80 and 0.91, and adolescents, 0.83 and 0.96 (Osman et al., 2001).

The C-SSRS was developed to assess the severity of suicidal ideation and behavior by measuring severity and intensity of suicidal ideation, suicidal behavior, and lethality of suicide attempts (Posner et al., 2011). It has shown evidence of predictive validity for suicidal behavior in adult and adolescent patients (Gipson, Agarwala, Opperman, Horwitz, & King, 2015; Posner et al., 2011). There are several different versions of the C-SSRS

available, including a brief version (3–6 items) used as a screening tool in emergency care settings and non-clinical settings (Posner, n.d.).

The Patient Safety Screener-3 (PSS-3), developed for use in ED-SAFE (Boudreaux et al., 2013) warrants additional discussion as several aspects of PSS-3 screening implementation feasibility and impact have been evaluated. The PSS-3 includes the PHQ-2 to assess depression, the C-SSRS suicide ideation items (last two weeks), and the C-SSRS behavior items to assess lifetime history of suicide attempt and recent attempt history (Emergency Medicine Network, 2016). Following an introductory script designed to encourage a comfortable atmosphere for sharing personal information, the three questions screen for: depressed mood (past 2 weeks); suicidal thoughts (past 2 weeks); and history of suicide attempt, with a recent suicide attempt defined as one that occurred within the past six months (http://emnet-usa.org/ED-SAFE/materials/K_PtSafetyScreen.pdf). If the screen is positive, the physician asks the patient additional questions to determine severity, acuity, and next steps.

Additional screening tools for use with adolescents

Screening tools also worthy of consideration when screening adolescent males and females include the Ask Suicide-Screening Questions (ASQ; Horowitz et al., 2012), which is a brief and easy to administer 4-item self-report screen. The sensitivity and specificity of the ASQ for assessing severity of suicidal ideation are strong, as indicated by the ASQ's high correlation with the Suicidal Ideation Questionnaire (SIQ, Reynolds, 1988). Additional studies are currently underway to examine ASQ predictive validity. A second possible screening tool is the Tri-Factor Screen for Youth Suicide Risk, a 22 item self-report survey that requires approximately 3–4 minutes for completion. For this survey, a positive screen is defined by any one of the following: recent history of suicide attempt, Suicidal Ideation Questionnaire-Junior (SIQ-JR) score above the clinical cut-point (Reynolds, 1988), or co-occurring depression and alcohol or substance abuse (King, Berona, Czyz, Horwitz, & Gipson, 2015; King et al., 2009). The Reynolds Adolescent Depression Scale-2nd Edition Short Form (RADSD-2 SF; Reynolds, 2008) and the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, De La Fuente, & Grant, 1993) were used as the screens for depression and alcohol abuse in these studies. The Tri-Factor Screen has been used in EDs and found to identify youth at elevated risk for suicide who have not been previously identified and are not receiving mental health services (King et al., 2009). A second study indicates that near-term suicidal behavior (within 2 months) is increasingly likely as more Tri-Factor screening criteria are scored positive (King et al., 2015).

Follow-Up of Positive Suicide Risk Screens

When suicide risk screening results in the positive identification of an individual at risk for suicide, it is critically important for the physician or other trained healthcare provider to assess further the individual's level of suicide risk and determine if a referral for a mental health evaluation is warranted (triage) or to directly refer the individual for a mental health evaluation and suicide risk formulation. It is also important to consider appropriate interventions to support this individual. For instance, the Suicide Prevention Resource

Center Consensus Guide for EDs (Capoccia & Labre, 2015) outlines recommendations for supplementing discharge planning with at least one brief intervention (e.g., lethal means counseling, rapid referral, caring contacts, safety planning). Similarly, the newly issued Joint Commission guidelines described above (The Joint Commission, 2016a, 2016b) recommend the following steps: facilitating linkage for outpatient follow-up care, providing appropriate resources (e.g. crisis line contact information), assessing and limiting access to lethal means, and conducting safety planning. These three steps are briefly described below.

Safety Planning

Developed collaboratively with a provider, safety plans commonly incorporate a list of personalized coping strategies that also include resources for contacting social and professional support and information about restricting access to lethal means. Their primary purpose is to reduce the suicidal individual's imminent suicide risk by encouraging use of alternative coping strategies during a future crisis.

While empirical evidence for its efficacy to reduce suicidal behavior has not yet been established, safety planning is considered a best practice approach for intervening with suicidal individuals, as identified in the Best Practices Registry for Suicide Prevention (Suicide Prevention Resource Center, 2008). Along with related approaches (i.e., crisis response plan, stabilization plan), safety planning is a component of different treatment protocols for adults and adolescents at risk for suicide (e.g., Brent, Poling, & Goldstein, 2011; Jobes, 2006; Rudd, Joiner, & Rajab, 2001; Stanley et al., 2009; Wenzel, Brown, & Beck, 2009), and it is also a stand-alone intervention. The single-session Safety Planning Intervention (SPI) developed by Stanley and Brown (2008, 2012) has been used in urban and Veteran Affairs Medical Center EDs (Boudreaux et al., 2013; Currier et al., 2015; Knox et al., 2011) and was adapted for use in psychiatric inpatient group settings (Rings, Alexander, Silvers, & Gutierrez, 2012). Emerging evidence has shown that SPI, in combination with a structured phone follow-up, was associated with increased treatment attendance and decreased risk of hospitalization three months after an ED visit relative to when these outcomes were assessed after a previous ED visit without this intervention (Stanley et al., 2015).

It is important to distinguish safety planning from the no-suicide or the no-harm contracts. Specifically, the no-suicide contracts, wherein the suicidal individual provides an explicit written or verbal agreement not to engage in suicidal behavior and a promise to contact a mental health professional, are not recommended by suicide prevention experts (e.g., Rudd, Cukrowicz, & Bryan, 2008). In addition to lacking empirical support for their effectiveness, the no-suicide contracts may be perceived as coercive, may inadvertently discourage suicidal individuals from maintaining honest communication with their providers (e.g., limiting disclosure of suicidal behavior for fear of disappointing the provider), and may lower the provider's vigilance to adequately monitor ongoing suicide risk (e.g., Edwards & Sachmann, 2010; Lewis, 2007; Rudd et al., 2008; Shaffer & Pfeffer, 2001). Moreover, the no-suicide contracts do not include strategies for what to do during a suicidal crisis (Stanley & Brown, 2012). In contrast, a safety plan aims specifically to facilitate alternative coping and help seeking.

Reducing Access to Lethal Means

A goal of the 2012 National Strategy for Suicide Prevention is to “promote efforts to reduce access to lethal means of suicide among individuals with identified risk” (U.S. Department of Health and Human Services et al., 2012, p. 43). There is substantial evidence that limiting or restricting access to lethal means is an effective strategy for suicide prevention (e.g., Beautrais et al., 2007; Betz et al., 2016a; Bryan, Stone, & Rudd, 2011; Mann et al., 2005). Lethal means restriction counseling significantly increases the probability that lethal means restriction, or limited access to lethal means, is put into place for at-risk individuals (e.g., Kruesi et al., 1999; McManus et al., 1997; Runyan et al., 2016). The Suicide Prevention Resource Center (2015) recommends discussing lethal means restriction as an important action step in patient care for adults discharged from the ED with reported suicidal ideation. The Harvard School of Public Health “Means Matter Campaign” also promotes means reduction efforts, including lethal means counseling, as an essential part of suicide prevention (Harvard Injury Control Research Center, 2016). Adapting recommendations from the Harvard School of Public Health on lethal means restriction, Bryan et al. (2011) recommend that clinicians be mindful about: patient relationships when discussing lethal means restriction. They suggest the importance of lethal means counseling as a method of alleviating pain and facilitating a safe environment. A written agreement, or a means receipt, is also recommended to include details about the agreed upon plan and to reinforce the temporary nature of the plan (Bryan et al., 2011).

Providing Crisis Line Contact Information

All patients who screen positive should be provided with crisis line call-in information regarding the National Suicide Prevention Lifeline (1-800-273-TALK [8255]), which is a 24-hour suicide prevention hotline with linkages to a national network of local crises centers. Information about this service is available at suicidepreventionlifeline.org. Research is emerging about the effectiveness of Lifeline counselors in facilitating callers’ linkage with mental health services through referrals (Gould, Munfakh, Kleinman, & Lake, 2012). In a study of eight crisis call centers, Gould et al. (2016) found that for 76.4% of calls, the “crisis helper” at the call centers actively collaborated with a caller who was at imminent risk of suicide in order to keep the caller safe; in 24.6% of the calls, emergency services were sent to the caller without the caller’s collaboration (Gould et al., 2016).

Special Considerations for Identifying Males and Females at Risk: Gender Differences in Risk Factors

Suicide risk screening in healthcare settings has as its goal the recognition of males and females at risk for suicide, with the subsequent goal of effective intervention. Given the high rate of suicide deaths among males in our nation, however, it can be argued that special attention should be paid to optimizing our screening strategies so as not to miss identifying the males who are at risk. The effort to do so is partially informed by our understanding of differences in suicide risk factors for males and females. A multitude of risk factors for suicide have been identified for male and female suicides, including but not limited to: history of suicidal behavior, suicidal thoughts, and non-suicidal self-injury; psychiatric

diagnoses (e.g., depressive/bipolar disorders, alcohol/substance abuse, psychotic disorders); hopelessness; a pattern of aggressive behavior; and social isolation (e.g., Brown, Beck, Steer, & Grisham, 2000; Conwell, Duberstein, & Caine, 2002; King, Ewell Foster, & Rogalski, 2013). While many of these risk factors are associated with suicide for both males and females, there is significant variability in prevalence rates, such as greater depression prevalence in females (e.g., Blazer, Kessler, McGonagle, & Swartz, 1994). Furthermore, some risk factors vary in their predictive power for males and females. Better understanding of differences in suicide risk factors for males and females can lead to improved strategies for suicide risk screening.

Suicidal ideation

Several longitudinal studies have indicated that suicidal thoughts are more predictive of suicidal behavior for females than males. For example, King et al. (2014) found the severity of suicidal thoughts to predict of suicide attempts for females but not for males in a psychiatrically hospitalized sample of suicidal adolescents, a subgroup in which ongoing screening and evaluations of acuity are particularly important. Similarly, higher suicidal ideation scores predicted suicide attempts for females but not for males in a clinical sample of adults seeking treatment for a major depressive episode (Oquendo et al., 2007). In a community sample, Lewinsohn, Rohde, Seeley, and Baldwin (2001) endorsement of suicidal ideation (yes/no) in adolescence predicted suicide attempts for females in young adulthood, but not for males.

Suicide attempt method

Females are more likely to attempt suicide and males are more likely to die by suicide, a concept commonly referred to as the “gender paradox” of suicidal behavior (Canetto & Sakinofsky, 1998). One primary explanation for this discrepancy in fatal and non-fatal suicide attempts is the use of violent methods in male suicide attempts (e.g., Hawton, 2000). Research by Cibis and colleagues (2012) indicates that males had a higher case fatality rate for each type of suicide attempt method. For example, even among less-violent methods such as overdosing, males had a higher rate of death per overdose attempt relative to females. Thus, a combination of choosing violent methods and using these in more lethal ways (e.g., taking greater number of pills, jumping from higher heights) may help explain disparities in fatal and nonfatal suicide attempts between males and females. These data can be considered within the framework of the Interpersonal Theory of Suicide (Joiner, 2005; Van Orden et al., 2010), which stipulates that in order to die by suicide, one must have both the desire and the acquired capability to do so. Suicidal desire is theorized to develop from a combination of thwarted belongingness (i.e., unmet needs for social connectedness) and perceived burdensomeness (i.e., “others are better off without me”); acquired capability refers to accumulated experiences that reduce fear of death and increase tolerance for pain, which enable an individual to engage in a self-directed violent act. Males are significantly more fearless about death than females and fearlessness about death is associated with self-reported courage to attempt suicide (Ribeiro et al., 2014). Thus, even though females may have a greater desire for suicide, as evidenced by higher rates of suicidal ideation and nonfatal attempts, studies suggest that males have a higher level of acquired capability to

complete suicide (e.g., Anestis, Bender, Selby, Ribeiro, & Joiner, 2011; Witte, Gordon, Smith, & Van Orden, 2012).

Alcohol/Substance Use

A recent analysis of 92 studies involving 167,894 individuals who died by suicide indicated that approximately 27% of these individuals had positive blood alcohol concentrations at the time of their suicide, with or without a level consistent with intoxication at that time (Anestis, Joiner, Hanson, & Gutierrez, 2014). In terms of sex differences, a study of patients admitted to psychiatric emergency departments identified current substance misuse and alcohol abuse as unique risk factors for male repeat attempts but not female repeat attempts (Monnin et al., 2012).

Social Risk Factors: Changes in Roles and Relationship Status

Large case-control studies have indicated that unemployment and socioeconomic factors are more prominent predictors for male suicide deaths than for females (e.g., Andrés, Collings, & Qin, 2010; Qin, Mortensen, Agerbo, Westergaard-Nielsen, & Eriksson, 2000). In the Interpersonal Theory of Suicide, distress from unemployment is a risk factor theorized to contribute to perceived burdensomeness, particularly when the unemployment contributes to a sense of liability to oneself and others (Van Orden et al., 2010). However, mechanisms explaining stronger relationships between unemployment with suicide for males is unclear. Relationship status is also pertinent to our understanding of suicide risk, as social isolation is one of the most consistent predictors of suicide (Van Orden et al., 2010). A population-based study in Denmark by Andres et al. (2010) indicated that being single is associated with an increased risk for suicide for both males and females. However, in a representative United States sample, relationship status was only a significant predictor of suicide for males, once family size was also taken into account (Denney, Rogers, Krueger, & Wadsworth, 2009). Widowhood had especially strong associations with male suicides in this study.

Special Considerations in Screening Males and Females at Risk: Implementation

Studies have indicated that females have greater frequency of contact with healthcare providers than males in the year prior to suicide death (Chang et al., 2012; Rhodes et al., 2012). Furthermore, males are less likely than females to seek professional help for mental health problems (e.g., Hawton, 2000; Houle, Mishara, & Chagnon, 2008; Schrijvers, Bollen, & Sabbe, 2012). Thus, in order to reach more males at risk for suicide, prevention efforts may be more successful in non-mental health settings. Differences in healthcare utilization by gender are less pronounced for emergency department visits than primary care visits (e.g., Bertakis, Azari, Helms, Callahan, & Robbins, 2000). With regard to ED visits, Rhodes and colleagues (2012) found that girls were more likely seen for a mental health problem while boys were more likely to use the ED for other, non-mental health-related reasons. This suggests the potential importance of screening for suicide risk in general medical EDs that serve substantial numbers of males and females for the full range of medical emergencies.

Suicide Risk Screening Recommendations

Although further research is needed on the differential predictive validity of currently available and newly developed suicide risk screening tools for males and females, the current evidence is consistent with the following recommendations:

1. Universal screening in healthcare settings may reach large numbers of adolescent and adult males at risk for suicide, in addition to females at risk for suicide, who would not otherwise be recognized. Such screening has been shown to be feasible, acceptable, and associated with improved detection. The Joint Commission requires universal suicide risk screening in settings that address emotional and behavioral health concerns and recommends such screening in other healthcare settings such as emergency departments and primary care clinics. Given the heterogeneity of suicide risk factors and the fact that we do not have empirical data to indicate which specific subgroups of individuals would be most appropriately targeted in a selective strategy that screened only high risk groups, we recommend universal suicide risk screening in all healthcare settings. This is consistent with the recommendation of the Suicide Prevention Resource Center (SPRC) and National Action Alliance for Suicide Prevention (2015a) and may be particularly important to identifying males at risk who are less likely than females to seek services in mental health settings.
2. Our understanding of male suicide risk (and the heterogeneity of suicide risk factors in men and women) may have important implications for the components of a universal screen for suicide risk. In addition to screening for suicidal ideation, a history of suicide attempts, and symptoms of depression such as hopelessness, it is recommended that we examine the possibility of improved predictive validity for a screening strategy that also incorporates items pertaining to involvement in incidents of violence and unplanned, risky behaviors, such as those associated with fearlessness, and with alcohol and substance use. These suicide risk factors may be more pronounced among males and associated with increasing acquired capability to engage in suicidal behavior. It is further recommended that we include assessment of social and adaptive functioning related to unemployment and recent partner loss as possible ways to improve the predictive validity of our screening strategy.
3. Self-reported suicidal ideation is not indicated as a sole gateway question for continued suicide risk screening questions. Nevertheless, suicidal ideation is an important area of inquiry because substantial research indicates that it is a risk factor for suicide attempts (e.g., Chapman et al., 2015; Hubers et al., 2016; King et al., 2013). Importantly, the severity of suicidal ideation, including whether or not the individual experiences suicidal intent, has shown predictive validity for suicide attempts in pediatric and adult samples (Horwitz, Czyz, & King, 2015; Posner et al., 2011). Nevertheless, an individual's denial of suicidal ideation should not be considered a 'no-go' question for continued screening because not all individuals who engage in suicidal behavior report such ideation to others prior to engaging in the behavior.

A significant minority of adolescent suicide attempters do not report having made a suicidal plan prior to the attempt (Nock et al., 2013) and, within a psychiatrically hospitalized sample of suicidal adolescents, the severity of suicidal thoughts was not found to be a prospective predictor of suicide attempts for males (King et al., 2014), despite its common use in screening. In a recent meta-analysis, Anestis and colleagues found a relatively small relationship between trait impulsivity and suicidal behavior and argued that most suicide attempts are associated with planning (Anestis, Soberay, Gutierrez, Hernández, & Joiner, 2014). Although some type of planning, reflecting suicidal ideation and intent, may be present for most individuals at some point prior to their suicide attempt, the planning period may be brief or intermittent. Some individuals do not share their suicidal thoughts with others or acknowledge they are having them on a brief suicide risk screen. It is notable that approximately 78% of hospitalized patients who die by suicide explicitly deny suicidal thoughts or intent in their last communication before dying (Busch, Fawcett, & Jacobs, 2003).

4. The sensitivity and specificity of suicide risk screens may be further improved if we consider theories of suicide when selecting screen items (e.g., Joiner, 2005; Shneidman, 1993) and take advantage of advanced mathematical/statistical techniques in developing the screens. A statistically based, computerized adaptive screening approach is consistent with the notion of personalized medicine (e.g., National Institute of Mental Health [NIMH], 2014). In computerized adaptive screening, algorithms are developed based on a large number of individuals' responses to a wide range of potentially pertinent questions (e.g., assessing suicidal intent, hopelessness, sleep disturbance, agitation), and each subsequent question an individual is asked depends upon the individual's response to a previous question (e.g., Gibbons et al., 2012). This approach yields a brief, personally tailored (adaptive) screen, such as is currently being developed in a NIMH-funded Emergency Department Screening for Teens at Risk for Suicide (ED-STARS) study. Although future research is warranted to evaluate the sensitivity and specificity of these strategies with different populations, it is important to note that these two approaches are not mutually exclusive. It would be possible to include theoretically based screening items in a suicide risk survey that also serves as the basis for developing the algorithms for a personalized, adaptive screen.

The Aspirational Goal to Prevent Suicides among Patients

Zero Suicide is an *aspirational goal* for healthcare systems and health organizations to prevent suicide deaths among patients (SPRC & National Action Alliance for Suicide Prevention, 2015b). As we aim toward this goal, it is important to understand pertinent health system requirements and recommendations and to have an awareness of the suicide risk screening tools that are currently available. Given the substantially higher suicide rate for males than females in the U.S., and our knowledge of differing suicide risk factors for males and females, it is also important to carefully consider how to assure that our suicide

risk screening strategies identify both males at risk, and females at risk. To accomplish this objective further research is necessary. It is recommended that such research examine suicide risk screens that are theoretically based and multi-factorial (not limited to questions about suicidal ideation and recent suicide attempts). A second strategy, that is consistent with a multi-factorial strategy, may involve the use of statistical modeling to develop computerized, adaptive screens that are tailored for the specific risk considerations of the individual patient, whether male or female. Finally, with either or both of these approaches, it is also critically important to implement suicide screening in healthcare settings, such as medical emergency departments, that reach larger numbers of males than are likely to be found in specialized mental health settings.

Without question, there are many challenges to overcome to implement universal suicide risk screening in healthcare systems. As recently delineated by Betz et al. (2016b), steps to implement universal suicide risk screening include: the need for an available and trained workforce to conduct a comprehensive risk assessment with individuals who screen positive; overcoming attitudinal barriers among some healthcare providers; and not letting competing priorities in the healthcare environment get in the way of making necessary changes. There are potential solutions to each of these challenges. They involve changing provider behavior, modifying the system as a whole, having useful guidelines to follow, and the availability of training in how to implement those guidelines.

Acknowledgments

Work on this manuscript was partially supported by a grant from the National Institute of Mental Health (U01 MH104311).

Work on this manuscript was partially supported by a grant from the National Institute of Mental Health XXXXXXXXXX (REMOVED FOR BLINDING). We thank Taylor McGuire for her administrative assistance with the manuscript.

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Figure 1. Gender Differences in Suicide and Homicide Rates in the U.S., 2000–2014. These archival, deidentified data are reproduced from a report by the Centers for Disease Control and Prevention, Web-based Injury Statistics Query and Reporting System (WISQARS), Fatal Injury Reports, 2000–2014. Retrieved from https://www.cdc.gov/injury/wisqars/fatal_injury_reports.html.

Figure 2. Gender Differences in Suicide Rates Across the Lifespan in the U.S., 2014. These archival, deidentified data are reproduced from a report by the Centers for Disease Control and Prevention, Web-based Injury Statistics Query and Reporting System (WISQARS), Fatal Injury Reports, 2000–2014. Retrieved from https://www.cdc.gov/injury/wisqars/fatal_injury_reports.html.