SUICIDE RISK ASSESSMENT IN PSYCHIATRIC TREATMENT SETTINGS

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DEDICATION

I would like to thank the members of my Graduate Committee, Lauren, my husband, children, family, and all my Guides, who supported me through this journey.

SUICIDE RISK ASSESSMENT IN MENTAL HEALTH SETTINGS

by

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THESIS

Presented to the Faculty of the School of Health Professions

The University of Texas Southwestern Medical Center

Dallas, Texas

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF CLINICAL REHABILITATION COUNSELING

Abstract

Suicide is a significant public health issue in terms of both loss of life and the associated economic burden. The psychological factors associated with suicide and its related behavioral manifestations are not well understood despite decades of focused legislative initiatives and research. The approach to suicide prevention is multifaceted ranging from governmental policies, to public awareness, to clinical interventions for individuals at risk.

It is understood that precise prediction and prevention of suicide may never be possible; however, it may be possible to develop an improved understanding of risk and protective factors to estimate the overall level of risk. This estimation of risk can then be directly linked to an individualized treatment plan in order to reduce suicidal behavior. This model is only possible through the use of a systematic approach consisting of the use of validated instruments and methods in combination with clinical judgment by a well-trained provider. The purpose of this document is to review the existing literature regarding suicide risk assessment in mental health settings and identify knowledge gaps and opportunities for improving both research initiatives and clinical practice. The document will conclude with a summary of recommendations for clinical care and future research directions.

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LIST OF ABBREVIATIONS

APA – American Psychiatric Association

BHS – Beck Hopelessness Scale

BSS – Beck Scale for Suicide Ideation

CDC – Centers of Disease and Control

C-SSRS – Columbia-Suicide Severity Rating Scale

ED – Emergency Department

IASP – International Association of Suicide Prevention

NAASP – National Action Alliance for Suicide Prevention

OCDS – Operational Criteria for the Determination of Suicide

SAFE-T – Suicide Assessment Five-step Evaluation and Triage

SAMHSA – Substance Abuse and Mental Health Services Administration

SRA - Suicide Risk Assessment

SRF – Suicide Risk Formulation

SSRI – Selective Serotonin Reuptake Inhibitor

US – United States of America

WHO – World Health Organization

CHAPTER ONE

Statement of the Problem

Understanding of suicide risk in mental health settings

According to the Centers for Disease Control & Prevention (CDC, 2017a) in 2015, suicide was the 10th leading cause of death in the United States and the second leading cause of death for Americans between ages of 10 – 34 years old. In the United States, an average of 105 individuals die due to suicide daily, and the total number deaths due to suicide in the year 2014 was 42,773. The World Health Organization (WHO, 2014b), has estimated that there is one suicide every 40 seconds, constituting approximately 1.4% of all deaths worldwide. The prevalence is reportedly highest among elderly and younger groups. Suicide rates also vary according to racial and ethnic differences as well as geographic location (WHO, 2014b). However, one of the major challenges faced by epidemiologists is determining the true prevalence of suicide and suicide-related behavior resulting from difficulties related to the appropriate classification of completed suicide and cultural stigmas (Khan, 1998; Shahid & Hyder, 2008). Thus, current estimates of suicide rates are highly variable and likely an underestimation of the true rates globally.

Suicide not only affects individuals and families, but it also creates a substantial economic burden in the US. According to the CDC, $154,032,000 was spent on medical-related care of suicides in 2010, with a total estimated cost of work loss of more than $44 billion dollars (Center for Mental Health Services - Substance Abuse and Mental Health Services Administration, 2010). The estimated financial cost for each suicide death is approximately $4,000 and for attempted suicide is $9,000 (De Leo, 2011).

Although some risk factors for suicide are well known, it is imperative to broaden the understanding of both risk and protective factors to inform prevention and treatment strategies. One of the most studied predictors of suicide is the presence of a psychiatric disorder. Suicide risk increases with the presence of each additional psychiatric disorder, particularly with the comorbidity of substance-use or mood disorders with any other psychiatric disorder (Nock, Hwang, Sampson, & Kessler, 2010). It has also been established that a previous suicide attempt is one of the strongest predictors of future suicide. Suicide attempts typically occur within the first year of suicidal ideation (Nock et al., 2008), and approximately 34% of individuals who experience suicidal ideation transition toward making a serious plan, of which 72% transition from a suicide plan toward a suicide attempt (Kessler, Borges, & Walters, 1999). Psychosocial problems, including loss of a relationship, financial stress, unemployment, and physical illnesses, also are factors known to increase risk of suicide attempts in the presence of suicidal ideation (Hall, Platt, & Hall, 1999). Although there are many known suicide risk and protective factors, each of these individual factors alone cannot identify absolute risk. Previous research has shown that the presence of multiple individual risk factors increases risk overall more than a single factor alone (Rudd et al., 2006). Despite existing knowledge about suicide risk factors, national and international suicide rates have not decreased. In fact, a recent CDC report described a startling increase in suicide over the past decade (Curtin, Warner, & Hedegaard, 2016).

Prevention of suicide is likely best addressed through a multi-level approach involving family, friends, schools, government, and health care providers. A critical first step to reduce suicide is accurate identification and assessment of individuals at risk for self-directed violence (Horowitz et al., 2001). There is clear evidence that suicide cannot be predicted with perfect precision, but an assessment of the level of risk and a subsequent effort to reduce the level of risk

is possible (Jabbarpour & Jayaram, 2011). Given that one of the most important suicide risk factors is the presence of a psychiatric illness, mental health care settings (e.g., inpatient psychiatric hospitals) are particularly important locations for risk identification, stratification of the level of risk, and development of a treatment response that is appropriate to the level of suicide risk. Although screening for potential suicide risk is an important initial step, this effort alone is not sufficient for reducing suicide. A comprehensive suicide risk assessment also is critical in determining an individual's overall level of risk. However, suicide risk assessment methods have remained largely underdeveloped, especially compared to suicide screening procedures (Suicide Prevention Resource Center, 2014b).

The purpose of this document is to review the current literature related to suicide and suicide risk assessment in mental health settings and suggest future directions for research and intervention efforts. The review of the literature will begin with a broad discussion of suicide risk assessment in general healthcare settings and then focus more specifically on the available information about suicide screening and risk assessment practices and research in mental health settings.

CHAPTER TWO

Review of the Literature

Suicide: An Overview

Suicide is a catastrophic form of self-directed violence, and a potentially preventable outcome of significant mental illness (WHO, 2014b). According to the WHO and the Violence Prevention Alliance (VPA), violence is defined as: "The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development or deprivation" (WHO, 2014a, para. 2). The WHO defined suicide as "the act of deliberately killing oneself" (WHO, 2014b, p. 17). The WHO further specified that self-directed acts of violence include suicide, suicide attempts, and self-abuse (Krug, Mercy, Dahlberg, & Zwi, 2002).

Prevalence

Difficulties related to determining prevalence rates. Accurately determining prevalence rates of suicide-related behaviors is substantially more difficult than determining other causes of injury and death, and thus national and international estimates likely underrepresent true rates. First, correct classification of the cause of death is especially difficult to determine in the context of suicide. For a death to be ruled a suicide, it requires both evidence of self-directed violence and the implicit or explicit intent to die (Värnik, 2012). In its report, "Preventing Suicide - A global imperative," the WHO acknowledged that suicide often is underreported because of misclassification as "death by other causes." In a recent meta-analysis, Tøllefsen, Hem, and Ekeberg (2012) reviewed 31 studies on suicide statistics completed between

1963 and 2009, and reported that at least half of the studies found 10% underreporting of suicides and almost a third of the studies found 30% underreporting of suicides.

Legal and administrative factors can also affect the reporting of suicide. For example, inaccuracies in reported suicide rates may result from complexities related to the process of official suicide determination and documentation. For a death to be ruled a suicide, the necessary law enforcement and medical resources must be available to accurately determine the cause of death. Many countries require deaths to be registered with more than one authority, thus increasing the time and effort to classify a death accurately (Goldsmith, Pellmar, Klienman, & Bunney, 2002). Additionally, Goldsmith and colleagues (2012) indicated that available suicide data are directly affected by the qualifications and training of the individuals tasked with determining and reporting the information. Without properly trained investigation professionals, suicides may not be reported because they are mistaken as death by another cause (e.g., murder, accident, natural cause). This becomes more complex in ambiguous situations involving deaths that are related to "accident proneness and unconscious self-destructive impulses" such as single-car motor-vehicle accidents. For example, Pompili et al. (2012) estimated that more than 2% of car accidents were likely a result of suicidal behaviors rather than to accidental traffic collisions.

Cultural factors may also affect accurate reporting of suicide risk. In countries where suicide is considered a crime and the reporting of suicide is based on police documentation (e.g., India, Pakistan, and other Muslim countries), underreporting of official suicides may be particularly common. Potential reasons underlying the high rates of underreporting in these regions include stigma against mental health and fear of being punished (Gururaj, Isaac, Subbakrishna, & Ranjani, 2004). The stigma of suicide is especially prevalent within certain regions (e.g., India) and religious cultures (e.g., Islam). Because reporting a suicide within these

regions/cultures may lead to in family ostracization and shame, suicides are likely underreported, generating inaccurate estimations of suicide rates.

Gururaj et al. (2004) also noted that the combination of medico-legal complexities and stigma have a particularly detrimental effect on the reporting of suicide rates. This would be especially true in cultures such as in India where the law enforcement agencies that are responsible for reporting suicides often do not have the resources to completely investigate the cause of death (Khan, 1998). Thus, the combination of lack of proper resources and cultural stigma likely results in high rates of misclassified deaths. For example, the National Crime Records Bureau (the Indian government agency responsible for collecting and analyzing crime data) reported 135,000 suicides in 2010, whereas the WHO estimated approximately 170,000 suicides in India in 2010. Similarly, legal and religious barriers also prevent accurate reporting of suicide rates in Pakistan and other Muslim countries because suicide is considered both a criminal offense and a sin within these regions. Because suicide statistics are not compiled and thus not reported to the WHO in these countries, suicide is a highly neglected public health issue in this area of the world (WHO, 2014b). Taken together, these findings suggest that the combination of cultural and medico-legal factors continue to contribute to underestimation of global suicide prevalence rates.

Global epidemiology. In "Preventing Suicide - A global imperative," the WHO (2014b) reported that there were approximately 804,000 suicides worldwide in 2012, an overall rate of 11.4 suicides per 100,000 people. This rate was almost twice as high among males (15 per 100,000) compared to females (8 per 100,000). These gender differences are magnified in wealthier countries, where males are three times more likely to die by suicide compared to females. In contrast, these gender differences narrow in poorer countries, with males only 1.5

times more likely to die by suicide than females (WHO, 2014b). With regard to age-related differences, elderly (>70 years old) men and women are at greater risk of suicide compared to other age groups (Värnik, 2012). Among adolescents and young adults (15 – 29 years old), suicide is the second leading cause of death worldwide, accounting for 18% of deaths in this age group (WHO, 2014b), suggesting that both younger and elderly population groups are at greatest risk for suicide.

Suicide rates also vary based upon country of origin; however, this variation may be accounted for by both the time period in which suicide rates were examined as well as limitations in data collection. With regard to the latter, the WHO began measuring suicide rates only in 1950, and data are collected from only 105 out of 193 member countries of the United Nations. Thus, data on suicide rates across time and regions are not necessarily representative of global rates. Nonetheless, Värnik (2012) described regional trends in reported suicide rates longitudinally. In the 1950s, Japan had the highest global suicide rate at (25 per 100,000), but for several subsequent decades Hungary had the highest suicide rates ranging from 34 per 100,000 to 44 per 100,000. By 1990, Lithuania had the highest rate of suicide at 34.1 per 100,000. According to the report, the top ten countries with the highest suicide rates from 1991 to 2009 were Lithuania (34.1 per 100,000), South Korea (31 per 100,000), Sri Lanka (31.0 per 100,000), Russian Federation (30.1 per 100,000), Belarus (27.4 per 100,000), Guyana (26.4 per 100,000), Kazakhstan (25.6 per 100,000), Hungary (24.6 per 100,000), Japan (24.4 per 100,000) and Latvia (22.9 per 100,000).

In contrast, most Western European countries have not exceeded 22.0 suicides per 100,000 deaths (Organisation for Economic Co-operation OECD, 2014). In fact, suicide rates have begun to decline in most European countries. For example, suicide rates in Estonia

declined from 40 per 100,000 in 1995 to less than 18 per 100,000 in 2011, and in Lithuania, suicide rates decreased from 50 per 100,000 in 1995 to below 35 per 100,000 in 2010 (Chang, Gunnell, Sterne, Lu, & Cheng, 2009; Hong & Knapp, 2014). Yet other countries, especially South Korea, have experienced steady increases in suicide rates over the past two decades. The previously high rates of suicide in South Korea and other Asian countries were hypothesized to be the result of the national economic and political changes during the time period, characterized by economic crises and high unemployment rates (WHO, 2014b). Värnik (2012) documented the lowest suicide rates in the Eastern Mediterranean region (5.6 per 100,000) and the highest rates in Southwest Asia (15.6 per 100,000). However, caution should be used in interpreting these statistics because of lack of available valid data in most countries within these regions.

The most common methods of suicide globally are pesticide ingestion, gunshot wounds, and hanging (WHO, 2014b). However, data collected by the WHO from 2001 to 2005 revealed that of the 194 member countries, only 76 countries had available data on methods of suicide, and suicides in these countries accounted for only 28% of all suicides, suggesting that these statistics may be limited by these methodological reporting deficits.

Regional and economic-based differences in suicide methods have emerged from the WHO data. In higher-income countries, the most common method of suicide by far was hanging (50%), followed by firearms (18%). Yet, the suicide by firearm data are heavily skewed by the North American data, where firearm use constitutes 46% of suicides, compared to 5% in other high-income countries. In contrast, lower and middle income countries, particularly in regions whose economy is heavily dependent on agricultural resources, pesticide poisoning was the most common method (Lester, 1990).

Lester (1990) also observed changes to trends in suicide recording methodology between 1960 and 1980, which is notably a time period in which the overall rate of suicide increased. For example, suicides by exhaust fumes, hanging, and firearms increased, while suicides by domestic gas decreased. In contrast, suicides by ingestion of solids and liquids, drowning, and cutting did not change significantly (Ajdacic-Gross et al., 2008). One possible explanation for changes in methodology over time is the availability of means (Carrington & Moyer, 1994). For instance, the CDC (2012) reported that stricter gun control laws reduced the access to firearms, thereby reducing suicide by firearms, but suicides by other means, such as jumping from heights, increased.

Suicide prevalence in the US. According to the CDC (2017a) there were 44,193 reported suicides in 2015 in the United States. This is equivalent to a suicide rate of 13.4 per 100,000 people, which is slightly higher than the WHO's estimated global suicide rate of 11.4 per 100,000. The suicide rates in the US have fluctuated over the past several decades from 12.5 per 100,000 in 1986, down to 10.4 per 100,000 in 2000, and back up to 13.0 per 100,000 in 2013 and 13.4 per 100,000 in 2015 (CDC, 2017a). Suicide deaths in the US in 2015 were highest among Caucasian males (30,658), followed by Caucasian females (9,138) and African American males (2,023) (CDC, 2017b).

Although suicide is the tenth leading cause of death in the US, significant variability exists across age groups, consistent with global trends. According to the National Center for Health Statistics and National Vital Statistics System (2017a), suicide is the third leading cause of death among children between the ages of 10 and 14 years and the second leading cause of death among adolescents and young adults between the ages of 15 and 34 years in the US. Suicide is the fourth leading cause of death among adults between the ages of 35 and 54 years

and the fifth leading cause of death for individuals between the ages 45 and 54. It is the eighth leading cause of death among older adults ages 55 to 64 years. Adults between the ages of 45 and 64 years have the highest suicide rate at 19.6 per 100,000, followed by the 85 and older age group with 19.4 per 100,000, the 15-24 age group with the rate of 12.5 per 100,000 (CDC, 2017a).

Suicide prevalence rates in the US also vary substantially based on racial and ethnic background and geographic region. The CDC reported that Caucasians have the highest rate of suicide (15.1 per 100,000), followed by Native Americans (12.6 per 100,000) and Asian/Pacific Islanders (6.4 per 100,000). African Americans have the lowest rate at 5.6 per 100,000 (CDC, 2017b). With regard to regional differences in the US, Western states have the highest age-adjusted suicide rates. The nine Western states with a crude rate of greater than 18 per 100,000 include Montana (23.7) Alaska (23.1), Utah (21.4), Wyoming (21.4), New Mexico (20.3), Idaho (19.2), Nevada (18.2), Colorado (18.5), and South Dakota (18.2). In contrast, the East Coast has the lowest suicide rates with most age-adjusted suicide-rates under 9.0 per 100,000: District of Columbia (5.8), New Jersey (8.0), New York (8.1), Massachusetts (8.2), and Connecticut (8.7) (CDC, 2017b).

The most common method of suicide in the US is by firearms, accounting for 50% of suicides in 2015 (American Foundation For Suicide Prevention, 2015). Suffocation and poisoning (e.g., pesticides, drug overdose, carbon monoxide, and other toxins) are also common methods, constituting 27% and 15% of American suicides, respectively. Firearms represent the most common method among American males (56%), but poisoning is the most common method among American females (36%) (CDC, 2015a).

Evolution of the Concept of Suicide

Ancient perspectives on suicide. The concept and definition of suicide as well as the public response to and perception of suicide have evolved over time. Watt (2004) summarized the changing view of suicide as evolving "from sin to insanity." Yet, Mayo (1986) has noted that suicide was considered a valorous act in specific ancient cultures. For example, in certain regions of Keos and Sardinia during the 4th century, suicide was imposed on the elderly in the interest of the larger population's wellbeing. Additionally, in several ancient Eastern cultures, suicide was a celebrated act. In India during the 10th century, Sati (or Suttee) was a practice involving the suicide of a widow by self-immolation on her deceased husband's funeral pyre (Mayo, 1986). In Japan during the 12th century, Seppuku (or Hara Kiri) was a ritualized suicide involving extensive decorum and self-inflicted disembowelment practiced by the Samurai, and considered to be an honorable death.

In contrast, suicide within many Western cultures initially was considered to be a sinful act. This view emerged during the 5th century when St. Augustine condemned the practice of suicide as immoral, which remained the prominent view through the Middle Ages (De Leo, 2011). It was not until the beginning of the 17th century that societal perceptions of suicide began to change, coinciding with advances in the medical field. As a better understanding of the connection between the mind and body developed, suicide was increasingly understood within the medical context, and thus gradually recognized to be the result of psychopathology (Van Hooff, 2000).

Modern perspectives on suicide. The perception of suicide as a tragic outcome to mental illness was more firmly entrenched by the 19th century, as suicide was no longer considered an act of bravery or a sin, but rather a negative outcome of illness (Silverman &

Maris, 1995). During the latter part of the 20th century, the approach to conceptualization of suicide changed again from a focus on pathology to a focus on suicide as a behavior. Suicide researchers started to challenge the predominant notion that suicide was an isolated, separate disease, and instead argued that it was a behavioral outcome occurring within the context of illness more broadly (De Leo, 2011).

Although most suicide and related behaviors are now considered to arise from psychiatric illness rather than representing an independent phenomenon, during the development of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), Oquendo, Baca-García, Mann, and Giner (2008) advocated for the addition of a sixth axis to include suicidal ideation or behavior. They emphasized that suicidal behavior deserved a prominent place in treatment planning and warranted separate attention in the multiaxial system. They argued that all psychiatric patients, regardless of diagnosis, should be evaluated for suicide risk and the information should be used to develop a more accurate treatment plan. Similarly, O'Carroll et al. (1996) previously emphasized the importance of examining suicidal behavior both independently from and within the context of all psychiatric disorders. Although the DSM-5 no longer includes the multiaxial system, it includes “suicidal behavior disorder” and “non-suicidal self-injury” in the “Conditions for further study” section, indicating continued interest in suicidality as a potential diagnostic category.

Evolution of Nomenclature

As the perception and understanding of suicide changed over the centuries, the field of suicidology has been challenged by inconsistencies in suicide terminology. O’Carroll and colleagues (1996) have examined the complexities of suicide terminology and emphasized the potential negative consequences of using non-standardized nomenclature in this field.

Nomenclature is a system of specific definitions of terms, which makes the assessment of any behavior or activity more reliable and consistent among different people and across various settings. Once a reliable nomenclature is established, it allows researchers and clinicians to use common terminology within and across fields, leading to more effective research and clinical care. Without standardized terminology, precise clinical assessment, accurate epidemiological studies, and the translation of research into intervention are not possible, reducing the quality of patient care (O'Carroll et al., 1996). The CDC (2011) specifically emphasized that consistent nomenclature will improve the accuracy and quality of data on all self-directed violence.

Many suicidologists and suicide prevention organizations have attempted to clarify and standardize terminology used to describe suicide-related behavior, which has largely corresponded to the changes in the understanding of suicide over time. A paradigm shift in the field occurred in 1974, at which time a committee led by Aaron T. Beck concluded that suicidal phenomena existed on a spectrum rather than representing categorical behaviors. This paradigm shift begat additional terms to describe suicidal behavior, including *suicidal ideation* on one end of the spectrum and *suicide* on the other end of the spectrum (Nolen-Hoeksema & Hilt, 2013, p. 209). Suicidal ideation is defined as any self-reported thoughts about engaging in suicide-related behavior (Office of the Surgeon General, 2012). The WHO defined suicide "an act with a fatal outcome, which the deceased, knowing or expecting a fatal outcome, had initiated and carried out with the purpose of provoking the changes he desired." Although this earlier WHO definition touched on the concept of suicidal intent, it was not until the following decade that intent became more central to the definition of suicide (WHO, 1986). In 1998 the WHO modified the definition of suicide to explicitly include the requirement that the person committing the act fully intended to die: "The act of killing oneself deliberately, initiated and

performed by the person concerned in the full knowledge or expectation of its fatal outcome" (CDC, 2011, p. 23).

Currently, the CDC (2006) also includes intent in its definition of suicide: "Death caused by self-directed injurious behavior with any intent to die as a result of the behavior. " Yet, the shift in the field of suicide research toward the inclusion of intent to die as part of the definition for suicide was met with concern from some suicidologists. For example, De Leo and colleagues (2006) argued that the definition of suicide should not include intent so definitively because it is difficult to confirm whether the act was carried out with the intent to die with absolute certainty or not. Instead, the authors proposed the following definition: "Suicide is an act with a fatal outcome, which the deceased, knowing or expecting a potentially fatal outcome, has initiated and carried out with the purpose of bringing about wanted changes" (De Leo et al., 2006, p. 9).

O'Carroll and colleagues (1996) focused on two important aspects of suicidal behavior. First, they addressed the outcome of the suicide-related behavior, which can include no injury, injury, or death. Second, they addressed the aspect of intent, emphasizing that intent is independent of the outcome. They argued that intent, if ascertained with certainty, is the most important element of determining whether a death was considered to be "a true suicide" (O'Carroll et al., 1996). O'Carroll and colleagues also referred to the Operational Criteria for the Determination of Suicide (OCDS), which were developed under the oversight of the CDC in the 1980s and composed of a group of individuals with representation from various professional groups including coroners, medical examiners, statisticians, and public health agencies. The group's goal was to develop criteria that could help confirm whether a death was a suicide or not. The OCDS's definition of suicide was "death arising from an act inflicted upon oneself with the intent to kill oneself" (O'Carroll et al., 1996; Rosenberg et al., 1988, p. 1451). The OCDS

criteria required that a death be considered suicide if three elements were present: 1) The outcome was death, 2) The death was the result of a self-inflicted injury, and 3) The injury was intentionally inflicted.

O'Carroll and colleagues (1996), however, argued that the OCDS criteria are insufficient and leave room for ambiguity because it can be difficult to clearly establish intent based on the requirement of evidence that the person had intent to die as a result of the behavior. Thus, the authors proposed eight distinct terms with clear definitions to develop standardized nomenclature in the field: suicide (death from suicide), suicide attempt with injuries (attempt to take one's life but ending in injury and not death), suicide attempt (an act with intent to end one's life, but ends up being non-fatal, whether with or without injury), suicidal act (a behavior that is in the service of carrying out an intent to kill self which may result in no injury, injury, or death), instrumental suicide-related behavior (a behavior which appears to be a suicidal behavior but the intent is to gain some other goal than taking one's life), suicide-related behavior (a broader term that includes a suicidal behavior or an instrumental suicide-related behavior, or there is no way to confirm either intent to kill self or intent to secure another goal than killing self), suicide threat (an action that implies a wish to carry out a behavior that may result in either a suicidal act or suicide-related behavior), and suicidal ideation (an internal wish to engage in a suicide-related behavior).

Smith, Cox, and Saradjian (1999) described "self-harm" as behaviors that are self-inflicted and produce clear and immediate injury to the body. The authors noted that many overlapping terms have been used to describe similar behaviors, including "self-mutilation," "self-injury," and "para-suicide;" however, the authors emphasized that the use of the inclusive term "self-harm" is the most appropriate, descriptive, and least judgmental language to reflect

these behaviors. They also specified that self-harm behavior differs from suicidal behavior in that the intent of self-harm behavior is to injure/harm oneself, whereas the intent of suicidal behavior is to die. Consistent with this view, Smith and colleagues (1999) also noted that self-harm behavior may take numerous forms (e.g., cutting, skin burning, skin scraping), but without intent to die. Importantly, they also emphasized that self-directed violence without intent to die often occurs independently from and for different reasons than a suicide attempt. However, Smith and colleagues (1999) acknowledged that if self-harm behavior is unable to fulfill the individual's specific needs, then self-harm behavior may develop into a suicide attempt.

Prevention of Suicide

Global initiatives. As the understanding and perception of suicide has evolved over time, focused efforts to increase the research into and prevention of self-directed violence globally have intensified. In 1996, the United Nations Guidelines for National Strategies were published to encourage countries to develop national schemes and strategies to reduce suicide and the impact of suicide-related behavior. These guidelines advocated for adequate governmental support, clear-cut conceptual frameworks with aims and goals and measurable outcomes, ongoing monitoring, and evaluation of such regarding suicide (WHO, 2014b).

International efforts to study suicide and promote suicide prevention culminated in the adoption of the Comprehensive Mental Health Action Plan 2013-2020 during the 66th annual World Health Assembly in 2013 (WHO, 2013). This plan included the specific goal of reducing the worldwide rate of suicide by 10% by the year 2020. The plan further emphasized that "actions to prevent suicide must not only come from the health sector, but also from other sectors simultaneously" (WHO, 2013, p. 13). This paradigm shift parallels efforts within the US, which also highlight that the mental health sector should not be solely responsible for the prevention of

suicide. Instead, the prevention of suicide should incorporate education and public sectors, thus allowing for increased efforts across disciplines to test all hypotheses related to the behavior and preventive efforts (IASP Executive Committee, 1999).

Based on this work, the WHO identified six primary approaches to the prevention of suicidal behavior. These include: 1) treatment of mental disorders, 2) gun control, 3) detoxification of domestic gas, 4) detoxification of car emissions, 5) control of toxic substances availability, and 6) responsible reporting of high profile and celebrity suicides in the media. Although the first objective may be more uniformly important across societies, the other objectives may be less relevant in other cultures and/or regions depending on availability of certain means as a method of suicide. For example, gun control may be more relevant in the US given the frequency of firearm related suicides, whereas detoxification of gas may be less pertinent in the US given the relatively low rate of suicide using this mechanism. Previous studies indicate that means restriction approaches have been successful in other countries, including the United Kingdom, Japan, and Switzerland. For example, decreases in suicide rates were observed in these regions following the detoxification of domestic gas (IASP Executive Committee, 1999). Other region-specific approaches may be pertinent. For instance, in economically-disadvantaged countries where harvesting is a primary source of revenue (e.g., Sri Lanka, India and Western Samoa), pesticide control may help reduce suicide rates within these regions (IASP Executive Committee, 1999). Additionally, prescription drug control measures (i.e., through physician education and legislation to control medication availability) have been proposed in Australia as a method to reduce suicide (Gould, Jamieson, & Romer, 2003; Muhm, 1995; Stack, 2003).

There is significant evidence from multiple countries (e.g., Austria, Canada, the Netherlands, the UK, and the US) that the sensationalization and dramatization of suicide by the media has contributed to increasing the risk of suicidal behavior particularly in the period immediately following the high profile death (Gould et al., 2003; Muhm, 1995; Stack, 2003). Conversely, there is some suggestion (Robinson, Rodrigues, Fisher, Bailey, & Herrman, 2015) that the appropriate use of social media may have the potential to increase suicide risk awareness and mobilize social support.

Initiatives in the US. As general perceptions of suicide and more specifically in the US health care field shifted during the latter half of the 20th century, several national efforts were initiated to address suicide and related behaviors. The first suicide hotline was opened at the Suicide Prevention Center in Los Angles in 1956, and by 1967, the Center for Studies of Suicide Prevention was established within the National Institute of Mental Health (NIMH). One year later, the American Association of Suicidology was founded and the first national conference on suicide was held in Chicago. In 1987, the American Foundation for Suicide Prevention was created, and in 1996, the United Nations Guidelines served as a precursor for the development of the National Strategy for Suicide Prevention in the United States (Office of Surgeon General, 2012).

In 1997, the Jason Foundation was established following the suicide of Clark Flatt's son, Jason. Subsequent high-profile events such as the mass suicide known as "Heaven's Gate" led to Congress recognizing suicide as a national problem and its prevention a national priority (Office of Surgeon General, 2012). Subsequently, the CDC established the National Center for Injury Prevention and Control (National Action Alliance for Suicide Prevention, 2012), the Surgeon General's Call to Action to Prevent Suicide was published, and the National Council of Suicide

Prevention (NCSP) was established (Goldsmith, Pellmar, Kleinman, & Bunney, 2002). In 2001, the National Strategy for Suicide Prevention was published by the US Department of Health and Human Services, which focused on advocating for support to build the infrastructure that would make it possible to reduce suicide through the addition of resource centers and technical assistance to those in need. During the following year, $9 million was allocated for the establishment of the National Suicide Prevention Resource Center, and the IOM (Institute of Medicine) published *Reducing Suicide: A National Imperative* (Suicide Awareness Voices of Education, 2015).

The first federal legislation for suicide prevention, the Grant Lee Smith Memorial Act, which targeted reducing youth suicide in the US in tribal nations and in educational institutions, was written in 2004 and passed in 2005. In 2005, the Substance Abuse and Mental Health Services Administration (SAMHSA) supported the development of the National Suicide Prevention Lifeline (1-800-273-TALK). One year later, $30 million were allocated to suicide prevention efforts under the Departments of Labor, Health and Human Services, and Education, and Related Agencies in the Appropriations Act of 2006. The National Action Alliance for Suicide Prevention (NAASP) was established in 2010 (Office of Surgeon General, 2012). In 2012, the Surgeon General of the United States and the NAASP published the "2012 National Strategy for Suicide Prevention," describing the history of approaches taken to prevent suicide in the US, including those efforts detailed above as well as those by Suicide Awareness Voices of Education, SAMHSA, and the American Foundation for Suicide Prevention. This document outlined the national strategy to prevent suicide by identifying the following specific goals and objectives:

1) Integrate and coordinate suicide prevention activities across multiple sectors and settings

2) Implement research-informed communication efforts designed to prevent suicide by changing knowledge, attitudes, and behaviors

3) Increase knowledge of the factors that offer protection from suicidal behaviors and that promote wellness and recovery

4) Promote responsible media reporting of suicide, accurate portrayals of suicide and mental illnesses in the entertainment industry, and the safety of online content related to suicide

5) Develop, implement, and monitor effective programs that promote wellness and prevent suicide and related behaviors

6) Promote efforts to reduce access to lethal means of suicide among individuals with identified suicide risk

7) Provide training to community and clinical service providers on the prevention of suicide and related behaviors

8) Promote suicide prevention as a core component of health care services

9) Promote and implement effective clinical and professional practices for assessing and treating those identified as being at risk for suicidal behaviors

10) Provide care and support to individuals affected by suicide deaths and attempts to promote healing and implement community strategies to help prevent further suicides

11) Increase the timeliness and usefulness of national surveillance systems relevant to suicide prevention and improve the ability to collect, analyze, and use this information

for action

12) Promote and support research on suicide prevention

13) Evaluate the impact and effectiveness of suicide prevention interventions and systems and synthesize and disseminate findings (Office of the Surgeon General, 2012, pp. 29, 32, 35, 37, 41, 43, 45, 51, 57, 62, 66, 69, 71).

Despite national and international efforts to prevent suicide, suicide remains an important global issue. Low- and middle-income countries in particular continue to face challenges related to limited health care resources and few resources for mental health treatment (WHO, 2012). In addition to financial constraints, political outlook and cultural stigma continue to hinder suicide prevention in some cultures and regions. Thus, the WHO has emphasized the need to develop focused strategies to deal with specific cultural issues associated with suicide awareness and prevention (Schulberg, Bruce, Lee, Williams, & Dietrich, 2004). Much of this work focuses on the identification and mitigation or specific risk factors.

Risk Factors

Conwell, Duberstein, and Cain (Suicide Prevention Resource Center, 2001) emphasized that effective strategies for suicide prevention can be developed only if we have the ability to identify specific risk factors that can be assessed effectively. A risk factor for suicide can be any characteristic that is associated with an increased chance of suicidal behavior or suicide (WHO, 2014c), such as mental illness which is a well-established risk factor for suicide. Additionally, many suicides occur in the context of acute life changes (i.e., psychosocial stressors), chronic illness, interpersonal conflicts, history of trauma or abuse, or lack of social support. One of the strongest and most well-established risk factors for suicide is a previous suicide attempt (CDC, 2012).

The CDC (2012) recently described the following as primary risk factors for suicide: history of suicide in the family; history of childhood abuse; previous suicide attempts; current suicidal thoughts, mental illness, physical illness, substance use, and alcohol abuse; hopelessness; impulsivity; tendency to be aggressive; influence of cultural and religious beliefs; increase in suicide in the local community; isolation; lack of access to mental health care; recent loss; access to means; and barriers to seeking help (e.g., unwillingness related to stigma). In addition, the CDC reported that multiple risk factors should be considered to have additive effects for increasing suicide risk. Unfortunately, simple knowledge of correlational relationships between these risk factors and suicidal behavior is not sufficient. Further investigation into individual risk factors is essential to more fully understand the relationships between risk factors and suicidal behavior.

Demographics. Many studies have demonstrated a relationship between specific demographic factors and suicide risk. Men have higher rates of suicide than women, even though women have higher suicide attempt rates. The different methods by which males and females use to attempt suicide likely contribute to these seemingly contradictory findings. Males tend to use firearms, suffocation, and other related methods with higher probability of immediate lethality, whereas females are more likely to use poison or prescription drugs, which have lower success rates and less commonly result in suicide (Diego De Leo, Cerin, Spathonis, & Burgis, 2005).

The interaction between age and gender also provides additional information about suicide risk. Adolescents, young adults, and the elderly are at the highest risk for suicide. Among individuals between the ages of 25 and 44 years, suicidal ideation and attempts remain stable and often decline with advancing age. Further, adolescents with pre-existing psychiatric

illness are at particularly high risk, and more than 90% of adolescents who committed suicide had documented evidence of a psychiatric disorder at the time of their death (Hirschfeld & Russell, 1997; Shaffer & Pfeffer, 2001). Consistent with adult data, suicide attempts among adolescents are three times more common in females compared to males; however, adult males are four times more likely than adult females to die by suicide (AFSP, 2015). More adolescents referred to mental health facilities have suicidal ideation than actual suicide attempts. Still, an estimated 2 million adolescents attempt suicide each year in the US.

Race and ethnicity represent potential suicide risk factors, particularly for some sex and age-group subsets. In the US, rates of suicide are highest among American Indians and Alaskan natives, and lowest among African Americans and Hispanics. Factoring in gender, white and American Indian males have the highest suicide rates. The suicide rate for non-Hispanic white males from 2005 to 2007 (22 per 100,000) was higher than the rate for American Indian males during this same period (19 per 100,000). The rate of non-Hispanic white males was more than four times the rate of females in any racial or ethnic group, and two times the rate of other ethnicities such as African Americans, Asian or Hispanic males (Shaffer & Pfeffer, 2001). Considering age-related effects, Shaffer and Pfeffer (2001) found that the suicide rates among African American adolescents and young adults (ages 15 to 24 years) have been steadily increasing. Examining adolescents (ages 15-19 years), the highest rate of suicide was among American Indians/Alaskan Natives males with a rate of 23 per 100,000, compared to 13.6 per 100,000 among white males in the same age group. The lowest rate in the same age group was among African American females at 2.2 per 100,000 (Brenner, Cheng, Clark, & Camargo Jr, 2011). In summary, these findings suggest that Native American and Alaskan youth have higher suicide rates than Caucasian youths; however, in terms of suicide attempts, white Hispanic

youths have higher rates than white non-Hispanic or African American youths. Although these results do not suggest a mechanism by which race or ethnicity may increase risk of suicide, they provide ample evidence that race and ethnicity are nonetheless important factors to consider in association with suicide risk, especially in relation to other risk factors.

Psychiatric and substance use disorders. Studies have consistently demonstrated the link between suicide and psychiatric illness. Comorbid substance-use and mood disorders, especially major depressive disorder, are the psychiatric disorders most strongly associated with suicide risk (Goldsmith, Pellmar, Kleinman, et al., 2002; Knesper, 2011). Numerous studies have demonstrated that approximately 90% of all people who have made a medically serious suicide attempt also had a current psychiatric disorder at the time of their attempt, with approximately 57% of those having more than one disorder (Knesper, 2011). Additionally, individuals with a psychiatric disorder and non-adherence to antidepressant medication were at greater risk for suicide compared to individuals with a psychiatric disorder and appropriate medication adherence (Qin, Agerbo, & Mortensen, 2003). Lastly, individuals who required inpatient psychiatric care were at even higher risk for suicide, and individuals recently discharged from an inpatient stay had the highest risk (Knesper, 2011).

Substance and alcohol use disorders also have an apparent relationship with increased suicide risk. Knesper (2011) reported that one-third of individuals who died by suicide had traceable amounts of alcohol in their system at the time of their death. De Leo and colleagues (2005) found that half of the patients with suicidal behaviors had recently increased their alcohol consumption and a third were engaging in more reckless behavior than usual (e.g., dangerous driving, unsafe sex, drug misuse). Although alcohol-use disorder by itself has been found to be a minimal risk factor for suicide, in combination with another major psychiatric illness or use of

inhalants or cocaine, alcohol-use disorder significantly increases suicide risk (Borges, Walters, & Kessler, 2000).

Drug overdose is the cause of many accidental deaths, but it is also a relatively common method of suicide. Prior history of a combination of heroin use and suicidal ideation are common factors related to overdose-related suicide attempts, and thus should be regarded as potential risk factors for suicide (Vingoe et al., 1999). Research has suggested that the number of substances being used, rather than type of substance being used, is a better predictor of future suicidal behavior (Borges et al., 2000). Additionally, among male and female adolescents, the combination of drug or alcohol abuse and family history of suicide increases the risk of suicide (De Leo et al., 2005).

Ronquillo, Minassian, Vilke, and Wilson (2012) suggested that excessive alcohol and drug use should be considered both chronic and acute risk factors for suicide. They noted that long-term problematic alcohol and drug use is associated with chronic suicide risk, but acute use and/or intoxication is associated with impaired judgment and elevated imminent suicide risk. They also noted that chronic use of alcohol alone should be considered in the context of other risk factors such as hopelessness and/or recent psychosocial stressors, and is less valuable as a risk factor independently. Thus, research provides substantial evidence of a correlation between pre-existing psychiatric illness, excessive alcohol and drug use and suicide, and these indications together should alert the health care provider to consider potential for suicide risk.

Genetic and neurobiological factors. Qin et al. (2003) reported that family history of psychiatric illness increased risk of suicide, but a family history of suicide was associated with an even higher risk of suicide. It is important to note that the family history of a psychiatric illness raises the risk of suicide only in individuals who themselves have a psychiatric illness. In

contrast, family history of suicide puts all family members at increased risk of suicide, regardless of the presence or absence of any psychiatric illness in a given individual (Qin, Agerbo, & Mortensen, 2002; Roy, 1983).

The mechanism of the strong relationship between family history of suicide and individual suicide risk remains poorly understood. One possible explanation for the relationship is that like major psychiatric disorders, suicidal behavior also is heritable, suggesting a genetic component to suicide. Mann (2003) suggested that another possible explanation could be related to the diathesis–stress model—a psychological theory asserting that a specific vulnerability in combination with stressful life experiences leads to psychological distress and increased suicide risk. This vulnerability could be genetic, psychological, biological, or related to situational factors. Thus, people with different levels of vulnerability may develop different levels of a psychological distress in the context of the same stressor. Another possible explanation is the finding that proximity to others with suicidal behavior increases individual suicide risk (De Leo et al., 2005).

Genetic vulnerability, or the association between suicide risk and the presence of certain genes, is a promising new area of suicide research. Mann (2003) suggested that impulsive behavior and hopelessness, two traits associated with risk for suicidal behavior, may relate to dysfunction of the serotonergic system in the ventromedial prefrontal cortex. The association between ventromedial prefrontal cortex dysfunction and depression has been well elucidated (Mann, 2003; Stanley & Mann, 1983; Van Praag, 1982). In a prior study, Mann, Brent, and Arango (2001) examined the highly heritable serotonergic system to determine the relationship between suicidal behavior and ventromedial prefrontal cortex dysfunction, concluding that the serotonergic system may have influence over suicide risk. The phenotypic risk factors

previously linked to risk for suicidality such as impulsivity and aggression also seem to have a direct genetic influence (Mann et al., 2001).

Medical illness. Numerous serious medical illnesses have been found to be associated with increased risk of suicide in adults as well as children and adolescents; however, the relationship appears to be mediated or moderated by the presence of an active comorbid psychiatric disorder, most commonly major depressive disorder (Bhatia & Bhatia, 2007; Henriksson, Isometsä, Hietanen, Aro, & Lönnqvist, 1995; Jones et al., 2003). Among adults, illnesses affecting neurological function, including epilepsy (Brent, 1986), acquired immune deficiency syndrome (AIDS) (Marzuk et al., 1988), Huntington's disease (Schoenfeld et al., 1984), traumatic brain injury (Reeves & Laizer, 2012), and cerebrovascular accidents (Lishman, 1998) are associated with increased risk of suicide. Mann (2002) suggested two possible mechanisms that could account for this relationship. First, neurological injury may increase susceptibility to major depressive disorder. Second, neurological changes underlying or preceding the neurological issues may lead to impaired impulse control. Kishi, Robinson, and Kosier (2001) examined patients with acute life-threatening medical illness including stroke, traumatic brain injury, myocardial infarction, and spinal cord injury, and found that 7% of patients had suicidal ideation. Patients with physical illness who expressed suicidal ideation and met criteria for a depressive disorder showed improvement in suicidal ideation when their depressive symptoms improved. However, in patients whose depressive symptoms did not improve, suicidal ideation persisted (Kishi et al., 2001). Taken together, these findings support the idea that suicide risk associated with certain medical illnesses is likely closely related to depressive disorders.

Psychosocial factors. Li, Page, Martin, and Taylor (2011) noted that the many suicide risk factors represent social variables. For example, cohabitation or single marital status, unemployment, low income, retirement, disability, and sickness-related absence from work have all previously been identified as risk factors and involve social circumstances. Low socio-economic status is a risk factor for suicide among both males and females in the US (Li et al., 2011). In India, Mohanty, Sahu, Mohanty, and Patnaik (2007) examined 588 suicides and found that 48% of the suicides were by individuals with low socio-economic status, as opposed to 15% from higher socio-economic groups and 36% from middle socio-economic groups.

Kposowa (2001) examined the correlation between unemployment and suicide and found that unemployed males were more than twice as likely to commit suicide as those who were employed. The study reported that although the relationship between unemployment and suicide in men is stronger in younger age groups, in women, the relationship between unemployment and suicide persists throughout the lifespan. One meta-analysis found that suicide risk is greater in the chronically unemployed compared to those with only short-term unemployment (Milner, Page, & Lamontagne, 2014).

Psychosocial factors have also been shown to play an important role in suicide risk among adolescents. History of sexual and physical abuse in childhood, gender dysphoria, comorbid substance use, family conflicts, and/or having difficulty with acceptance of unwanted social or economic situations are risk factors for suicide and suicide-related behaviors in adolescents (De Leo et al., 2005).

Psychological factors. Hopelessness has consistently been identified as a strong risk factor for suicide (Brown, Beck, Steer, & Grisham, 2000). Mann, Waternaux, Haas, and Malone (1999) emphasized that hopelessness is both a state (i.e., the current psychological or psychiatric

disposition of the person) and a trait (i.e., a longstanding, relatively permanent, ingrained psychological or psychiatric attribute). Acute hopelessness can be considered an acute risk factor, whereas chronic, trait-based hopelessness may not signify imminent risk and is best understood in the context of other potentially additive risk factors. Further, Rosellini and Bagge (2014) reported that hopelessness mediated the relationship between individual temperament and suicide risk. Mann et al. (1999) found that individuals with higher levels of aggression and impulsivity were at greater risk of suicidal behavior, regardless of their psychiatric diagnosis. Thus, the authors concluded that the combination of suicidal ideation and propensities toward impulsivity and aggression is a valuable predictor of future suicidal behaviors.

Examination of trait factors may also be a valuable strategy for predicting suicide attempts among adolescents. In a study of adolescents who had been hospitalized for suicidal behavior, Goldston and colleagues (1999) reported that elevated rates of trait anxiety and proneness to agitation were greater predictors than a psychiatric disorder alone of risk of suicidal ideation. The authors suggested that past suicidal behavior and suicidal ideation may not have as much clinical utility as was previously thought, and should be considered within the context of the individual's traits. The existing literature suggests that certain traits may be important indicators of acute risk, perhaps even more so than transient emotional states.

Medication factors. A great deal of attention has been given to the potential relationship between psychiatric medications and increased risk of suicide. Available data suggest that patients who are in the acute phase of treatment with antidepressant medication have a 1/3,000 risk of suicide per treatment episode and a 1/1,000 risk of a serious suicide attempt (Simon, Savarino, Operskalski, & Wang, 2006). Although there was a slight increase in suicide attempts in the first week post initiation of antidepressant treatment, the rate of serious suicide attempts or

suicide deaths was constant. There was no evidence to suggest that newer antidepressant drugs are associated with any further increased risk of suicide (Simon et al., 2006). Carlsten and Waern (2009) also demonstrated that antidepressants and antipsychotics were not associated with significant suicide risk after adjusting for depressive/anxiety and psychotic disorders. However, they did find that sedatives and hypnotics were both associated with suicide risk: four-fold higher for hypnotics and 14-fold higher for sedatives (Carlsten & Waern, 2009). The relationship between antidepressant use and suicide was further examined by Gibbons and colleagues (2007), who specifically assessed the overall change in antidepressant use before and after the release of public health warnings. After the public health warnings between 2003 and 2005, the use of selective-serotonin reuptake inhibitors (SSRIs) decreased by 22% among youths in both the Netherlands and the US, but the suicide rates among youths increased by 49% and 14%, respectively. Thus, during this time, although there was a decrease in SSRI use, there was an increase in suicide rates. This data supports that antidepressant use is not related to higher suicide rates and that its clinical use may actually drive the suicide rate down in relevant populations (Gibbons et al., 2007).

Protective factors. Although certain social factors appear to increase suicide risk, others decrease suicide risk (CDC, 2015). According to the CDC (2015b), protective factors against suicide include the availability of health care related to mental, physical, and substance use disorders; perception of support from family members, community, and/or health care professionals; diversity of available and accessible clinical interventions; problem-solving and conflict-resolution skills; ability to handle disputes without resorting to violent methods; support instincts for self-preservation; and cultural and religious factors discouraging suicide.

Some social circumstances may act as protective factors. According to Milner, Page, and LaMontagne (2013), strong social support has a protective effect and can provide a positive influence during life stress related to physical or mental ailments. D'Attilio, Campbell, Lubold, Jacobson, and Richard (1992), studied the relationship between quantity and perceived quality of social support and suicide risk. Results demonstrated an association between suicide risk and significant dissatisfaction with one's perceived quality of social support. Additionally, among females, having a young child serves as a protective factor (McLean, Maxwell, Platt, Harris, & Jepson, 2008).

Addressing risk and protective factors may require different types of interventions from specific disciplines or providers in the healthcare system. For example, transportation barriers may be best addressed by social workers, but prescription medication would be managed by a psychiatrist. When multiple factors are present it may be necessary to involve a case manager to effectively coordinate care across disciplines.

Theoretical Understanding of Suicide. The discussion of risk and protective factors is incomplete without addressing theoretical models of suicide. Prinstein (2008) noted that while risk factors and protective factors are associated with varying levels of risk for suicidal behavior, not all people with risk factors commit suicide, nor are they persistently suicidal at the same level of risk. Theoretical models of suicide supply a framework for the integration of risk factors, individual differences, and other variables in order to understand the potential pathway(s) leading to suicidal behavior.

The sociologist Emile Durkheim (1897) was one of the first to explicate a theoretical conceptualization of suicide in his work titled "Suicide." He conceptualized suicide as a "social fact" and noted that social integration played a major role in suicide. He proposed three main

forms of suicide. The first is “egoistic” suicide, in which a person experiences himself as not integrated into society, eventually leading to suicide. On the opposite end of the spectrum, an “altruistic” suicide occurs when an individual is over integrated in a society and commits suicide for the sake of societal values. The third type of suicide Durkheim described was “anomic” suicide in which the individual is unable to find a reference point within a changing society and subsequently commits suicide. Blumenthal and Kupfer (1986) expanded on Durkheim’s work and described five domains in which suicide risk can be conceptualized: biology, psychosocial life events and chronic medical illness, personality traits, family history and genetics, and psychiatric illness. They suggested that data from all these domains should be used to develop an understanding of the evolution of suicidal behavior, intent, and suicide. Maris (1991) also emphasized the importance of looking at risk factors across several domains of risk and over time. He emphasized that the impact of the same risk factor on the overall risk of suicide could change with the passage of time.

Joiner et al. (2010) noted that, while these concepts offer strategies for understanding suicide, they lack the precision needed to predict the risk of suicidal behavior. In order to address this gap, Joiner and colleagues developed the interpersonal-psychological theory of suicidal behavior which includes two intrapersonal constructs and one intra-individual construct. The first of the two intrapersonal constructs, *thwarted sense of belongingness*, refers to an individual’s experience of loneliness and a sense of loss of reciprocal care. The second intrapersonal construct, *perceived burdensomeness*, has two dimensions, self-hate and a sense of being a liability. The intra-individual construct is *acquired capability* and refers to an individual’s ability to carry out the act of suicide which is believed to develop over time as an individual repeatedly experiences painful and provocative events that eventually lead to

diminished fear of death, increased ability to tolerate pain, and often involves practicing behavior and habituation. Joiner and colleagues suggested that each of the intrapersonal constructs has an individual influence on suicide risk, but when they coexist the potential for the development of suicidal intent is increased. They further specified that the presence of thwarted belongingness and/or perceived burdensomeness alone is not sufficient to lead to suicidal behavior and instead acquired capability must also present. Thus, in the interpersonal-psychological theory of suicidal behavior, potential suicide risk is evaluated through a synthesis of risk and protective factors in the context of the three constructs.

Purpose of the Study

Suicide is a significant global public health issue with devastating individual and societal consequences. Although risk and protective factors for suicidal behavior are well-known, it is less clear how those factors may be used to determine imminent or near-term risk. Subsequently, it is challenging for providers to translate risk factors into an effective and meaningful intervention strategies. This is especially true for mental health providers who care for patients with the most complicated psychiatric issues. The purpose of the following chapters is to examine and review the existing literature regarding the assessment of suicide risk in mental health settings such as inpatient psychiatric units and psychiatric emergency services. The remainder of the document will provide an overview of existing screening and assessment protocols and their applicability for clinical work in mental health care settings. The primary goals are: 1) to identify the strengths and weaknesses of current methods of screening and assessment of suicide risk and 2) to provide recommendations to improve clinical practices in mental health care settings and suggest future research directions related to suicide screening and risk assessment.

CHAPTER THREE

Discussion

The previous two chapters addressed the notion that suicide is a potentially preventable cause of death. These chapters detailed the history of suicide in the context of culture, evolution of nomenclature, and the emerging knowledge of suicide risk and protective factors. The current chapter will provide a comprehensive overview of how the concepts of screening and assessment are applied in mental health settings. Currently available screening and risk assessment methods and tools will be reviewed. The current chapter will also highlight the limitations associated with using risk factors alone to determine an individual's imminent danger of suicide. It will distinguish between predicting suicide as an outcome and predicting suicide risk level to inform clinical decision making. Finally, this chapter will also examine the importance of documentation of suicide risk assessment in clinical settings.

Screening versus Assessment

The terms suicide screening and suicide risk assessment are often used interchangeably; however, the concepts are quite distinct from one another. Suicide screening refers to a procedure for identification of individuals at risk of suicide, using a standardized, brief instrument or protocol. Suicide screening may be administered universally (i.e., for all members of a given population) or selectively (i.e., among selected subgroups or members of subgroups, such as in a specific patient population). In contrast, suicide risk assessment refers to a comprehensive evaluation completed by a clinician to determine the level of risk and create an appropriate treatment plan (SPRC, 2014a).

Screening is an important first step in the process of identification and treatment of at-risk individuals. Because the majority of individuals who attempt or complete suicide display at least

one warning sign or risk indicator prior to their attempt, the value of screening cannot be overemphasized (Vannoy et al., 2010). Effective screening not only helps identify individuals at risk, but also helps separate out those without risk, leading to appropriate allocation of resources for comprehensive risk assessments to those with potential need for them (Kaplan, 2011).

Consideration of the setting where a screening tool may be used is as important as the construction of the screening process itself. Both the practical implementation of the screening process and the likelihood of clinically significant yield in the setting should play a role in the development of a screening process. Ahmedani et al. (2014) reported that 83% of the patients in their cohort who committed suicide contacted a health care professional prior to their suicide. Of these patients, 45% visited their primary care physician a month before suicide and 24% of them visited a mental health professional. Gairin and colleagues (2003) found that 39% of individuals who died by suicide sought treatment in an ED in the year prior to death. However, the data regarding the potential benefit of screening in healthcare settings is still limited. For example, in (2004), Gaynes and colleagues concluded that screening for suicide risk in the general population did not significantly improve clinical outcomes and stated that there was insufficient evidence to support the practice of screening for suicide risk in primary care settings. However, other research has demonstrated that patients who eventually die by suicide often present for health care in the weeks and months prior to death, suggesting that it may be useful to develop screening programs in healthcare settings (Appleby et al., 1999). Taken together, these findings suggest that primary care clinics, EDs, and psychiatric care settings may be important locations for early identification of suicide risk, but further investigation is needed to understand when and how to identify risk.

Ronquillo et al. (2012) recommended that to allocate appropriate resources for patients at risk, the primary location for determination of the level of risk should be the emergency department (ED) because many people with suicidal behavior present to EDs for evaluation and/or treatment. They developed criteria to separate patients into two risk stratification groups: a low-risk group composed of individuals who did not need psychiatric consultation for suicide risk, and a moderate to high-risk group of individuals who required additional psychiatric assessment. The low-risk group included the individuals who scored less than five on the Modified Sad Persons Scale and low on Manchester Self-Harm Rule. The authors made two primary recommendations. The first is that screening should be done during an individual's first point of contact in the healthcare system, which is often in the ED. Determination of risk initially permits appropriate allocation of resources from the start, and conserves resources by reducing unnecessary evaluations for persons with low risk. The second is that the process should be broken down into two steps, screening and risk assessment, operationalizing the concept in the first recommendation.

Similarly, other authors have indicated that the most effective strategy for identifying risk in the ED setting is an initial screening process followed by a comprehensive risk assessment for patients with indicators of elevated risk (Gutierrez, Osman, Kopper, Barrios, & Bagge, 2000). For example, the Emergency Department Safety Assessment and Follow-up Evaluation (ED-SAFE) is a three-phase process (Phase 1: Intake, Phase 2: Universal Screening, and Phase 3: Universal screening + intervention) used in the ED. The ED-SAFE project demonstrated clinical feasibility, with evidence of a two-fold increase in the detection of suicide risk (Boudreaux et al., 2016). This suggests that screening can successfully separate out the individuals who need a full risk assessment.

Although early detection of suicide risk in general healthcare settings may be an important opportunity for risk identification, the robust relationship between psychiatric disorders and suicide risk makes it imperative that effective screening and risk assessment processes are utilized in mental health settings. Lowe, Heap, and Moorey (1999) reported that of the patients who had an encounter with a mental health professional within the year prior to suicide, approximately 16% were admitted to a psychiatric inpatient unit and 24% of these patients were discharged from a psychiatric inpatient unit within three months prior to their suicide. Other studies have confirmed that the time period immediately after discharge from a psychiatric hospital is an especially high risk timeframe (Bickley et al., 2013; Hunt et al., 2009). Taken together, these findings suggest that large numbers of high-risk patients have contact with providers in mental health settings, and therefore systematic risk assessment, often utilizing screening procedures to conserve resources is warranted in such settings.

Risk factors, risk assessment, and level of risk

Although the data supports the potential benefit of early identification through screening in healthcare settings it is also apparent that screening alone is not sufficient in mental health care settings. The Joint Commision (2015), in its National Patient Safety Goals for mental health care, specifically requires suicide risk assessment be conducted for all individuals receiving care in mental health settings, provision of immediate and the necessary level of care appropriate to the level of risk, and education about prevention of suicide risk.

Although screening plays an important role in determining who may be at risk and should be further evaluated, the identification of risk factors alone is not sufficient to determine imminent danger of suicide (Silverman & Berman, 2014a). Additionally, evidence-based protective factors may mitigate suicide risk, and understanding these factors is as important as

identification of risk factors (CDC, 2016). For example, in a study by Gutierrez et al. (2000), undergraduate students completed multiple suicide screening measures to evaluate risk. The researchers found that inclusion of protective factors in the risk formulation significantly reduced the rate of false positives. Their findings demonstrated that a rapid risk screening approach was possible within a non-patient sample, but also highlighted the importance of incorporating protective factors to formulate an effective treatment plan and concluded that risk factors alone are not sufficient to determine suicide risk. Roaten, Khan, Brown, & North (2016) demonstrated that screening items alone were not sufficient to determine disposition in a psychiatric emergency service patient sample, but instead were synthesized with protective factors and clinician judgment through risk stratification which then led to disposition decisions.

It follows then that risk stratification must address the temporal relationship between a risk factor or set of risk and protective factors and suicidal behavior. Individuals who are acutely or imminently dangerous and those with more chronic or long-term risk must be differentiated (Boudreaux & Horowitz, 2014). Acute risk factors are those that are temporally associated with imminent suicide risk. They relate to an acute change in the emotional and cognitive states of the individual, such as development of hopelessness, helplessness, rage, panic, or psychosis. Acute risk factors also include other indicators of acuity, such as the development of the logistical parts of a plan to harm self (i.e., formation of a viable suicide plan, acquiring access to means, sending signals to loved ones, and practicing for suicide through suicide attempts or self-harm behavior). In contrast, chronic risk factors are those that predispose a person to higher risk, but do not necessarily predict a higher level of imminent risk (Rudd, 2006). Information about acute and chronic risk is used to create an appropriate treatment plan.

Silverman and Berman (2014a) further elaborated on the suicide risk assessment process by distinguishing between Suicide Risk Assessment (SRA) and Suicide Risk Formulation (SRF). SRA is the process of identifying risk and protective factors. In contrast, SRF is a method that uses relevant clinical information obtained during the SRA to aid in the determination of level of risk. SRA involves predominantly data gathering, whereas SRF is a process that utilizes the data to inform clinical judgment about risk stratification, which in turn informs the treatment plan. The authors emphasized that both parts of the overall risk assessment are necessary. The SRA alone is insufficient, and the SRF is highly dependent on the presence and accuracy of data obtained through SRA. For example, a patient may deny suicidal ideation during the SRA, but the combination of predisposing demographic factors and the patient's reluctance to engage in the assessment lead the provider to estimate during the SRF that the patient's risk is elevated. This suggests that the synthesis of collected information with clinical judgment is necessary to develop a sound treatment plan. More reliable approaches to SRF are essential for treatment planning and patient care. Not only is SRF essential for optimal clinical care decisions, the clear documentation of assessment and formulation may also mitigate provider and institutional liability in the event of an adverse outcome (Frierson, 2007; Roaten et al., 2016).

Suicide Screening and Assessment Tools

Standardized suicide screening tools are an important first step in the process of identification of suicide risk. However, the complexity of suicidal behavior makes it difficult for researchers to develop validated screening tools (Motto, 1991). Despite these challenges, many measures are available and are commonly used for suicide screening and risk assessment. Some of the most commonly used suicide risk screening tools include the Beck Hopelessness Scale (BHS), Scale for Suicide Ideation (SSI), the Beck Scale for Suicide Ideation (BSS), the

Columbia-Suicide Severity Rating Scale (C-SSRS), the Sex Age Depression Previous-attempt Excess-drug-use Rational-thinking Social-support Organized-plan No-spouse Sickness (SAD PERSONS) Scale, and the Suicide Assessment Five-Step Evaluation and Triage (SAFE-T). Table 1 provides a comprehensive list of screening and assessment measures and their basic characteristics and Table 2 includes information about specific risk factors included in each tool. The most commonly used of these instruments are described below.

The BHS (Beck & Steer, 1988) is an assessment tool that consists of 20 true/false questions about hopelessness that are related to negative feelings about the future, absence of motivation, and pessimistic expectations. This tool can be used in both psychiatric and more general health care settings (Neufeld, O'Rourke, & Donnelly, 2010). The internal consistency of the BHS ranges from .83 to .93 in patients with mental illness, and its predictive validity has been well established across different settings (Beck & Steer, 1988). The Spearman's rho for the relationship between the BHS and other clinical ratings of hopelessness ranged from .62 to .74 for patients in primary care clinics and hospital settings, indicating good concurrent validity (Beck, Weissman, Lester, & Trexler, 1974). The BHS has Cronbach's coefficient alphas ranging from .87 to .93, indicating good internal reliability (Brown, 2001).

The SSI (Beck, Kovacs, & Weissman, 1979) is a 19-item clinician-administered assessment tool designed to measure the current intensity of suicidal intent and ideation. The SSI is appropriate for use in inpatient and outpatient settings. Cronbach's alphas for the SSI range from .84 to .89 and inter-rater reliability ranges from .83 to .98. The predictive validity of SSI has been established by determining that individuals with higher scores were seven times more likely to commit suicide than those with lower scores (Beck, Kovacs, & Weissman, 1997; Beck et al., 1979).

The BSS (Beck & Steer, 1991) is composed of 21 multiple-choice items that measure the current intensity of ideation, attitudes, behaviors, and plans for suicide in psychiatric patients. This BSS can be used for screening and assessment. This tool has also shown clinical efficacy across other settings for screening purposes including EDs, primary care, and educational settings. The internal consistency of the BSS ranges from .84 to .89. The average reliability coefficient for inpatients is .90 and for outpatients is .87. The test-retest reliability of the BSS is .54.

Posner and colleagues (2008) developed a series of tools to screen for and assess suicide risk, the Columbia Suicide Severity Rating Scales. The C-SSRS set of tools has two primary versions, the full scale and the screener. Five additional versions are available for use based on the point in treatment at which the patient is assessed the specific patient characteristics: the *Lifetime/Recent* version is completed as part of an initial interview and includes the assessment of lifetime history of suicidality, as well as recent suicide-related ideation and/or behavior; the *Since Last Visit* version assesses suicide-related behavior since the person's last visit, or since the last time the C-SSRS was administered; the *Risk Assessment* version is intended for use in acute care settings as it focuses on the assessment of imminent risk of suicide; the *Cognitively Impaired* version for the assessment of suicidal ideation and behavior in individuals with cognitive impairments; and the *Pediatric* version for use with individuals 7 to 11 years old. The internal consistency of the C-SSRS intensity scale (Cronbach α) was .94 and .95 (Gipson, Agarwala, Opperman, Horwitz, & King, 2015), and had 99% specificity and 100% sensitivity in correctly identifying suicide attempts and 100% sensitivity and specificity for both interrupted and actual suicidal attempts (Posner et al., 2011).

The SAD PERSONS Scale (Patterson, Dohn, Bird, & Patterson, 1983) is an assessment tool that addresses ten major suicide-related risk factors: Sex, Age, Depression, Previous attempt, Ethanol abuse, Rational thinking loss, Social support lacking, Organized suicide plan, No spouse, and Sickness. This instrument is used as an assessment and also as a screening tool. Positive responses on each Yes/No item receive one point and negative responses receive no points; the score represents the sum of the points for all of the items. A score of five or greater is considered clinically significant and indicative of suicide risk. This scale was designed to be used in all health care settings. The psychometric properties of this scale are relatively poor: one study revealed that the scale has an estimated 87% false positive rate and 14% false negative rate (Bullard, 1993). Regardless of its psychometric limitations, this scale is widely used in many healthcare settings.

Unlike the previously described tools, the SAFE-T (Suicide Assessment Five-step, Evaluation and Triage) (Jacobs, 2011) is a five-step protocol for suicide risk assessment that was designed to be used by mental health professionals in mental health care settings. It is based on the American Psychiatric Association (APA) Practice Guidelines for Assessment and Treatment for suicidal patients (Jacobs et al., 2003). The components of SAFE-T include identification of risk, identification of protective factors, conduction of a suicide inquiry, determination of risk levels, interventions, and finally documentation.

Notably, the majority of the suicide risk assessment tools described above were developed for use in research and the data regarding potential clinical utility are limited. According to the APA guidelines (2006), these tools should not replace clinical judgment and should be used only in combination additional detailed information gathered during the assessment and formulation process. Patel, Harrison, and Bruce-Jones (2009) also emphasized

that because there is no “gold standard” screening or risk assessment instrument, the available tools are not sufficient for risk estimation and must be combined with clinical judgment.

Clinical judgment

Provider clinical judgment has long been considered the mainstay for assessment of suicide risk. Several studies have examined the role of clinical judgment, yielding inconsistent results. In a meta-analysis, Meehl (1954) reported that 19 out of 20 studies found that statistical methods/standardized tools were superior to clinical judgment in determining suicide risk. Meehl concluded that being an “expert” clinician does not preclude human error, and standardized tools should be the sole basis of risk assessment and stratification. It should be noted that Meehl did not examine studies that included the combination of standardized tools and clinical judgment. In contrast, Borum (1996) reported that statistical methods in combination with clinical judgment resulted in the most reliable predictions of suicide risk. Hilton, Harris, and Rice (2006) also found that the combination of demographic data such as age, race, and/or sex with clinical judgment has more predictive value than clinical judgment alone.

Dawes, Faust, and Meehl (1989) stated that beyond a certain threshold of education there is only minimal evidence to suggest that additional education or training improves the accuracy of clinicians’ judgment above that of actuarial judgment. Yet, in a meta-analysis examining accuracy of clinical judgment among a cohort of mental health counselors, Spengler and colleagues (2009) found that additional clinical and/or educational experiences were associated with a marginal (13%) but statistically significant improvement in the accuracy of clinical judgment compared to those who were not considered experts. However, it should be noted that these results were based on the clinicians’ assessment of the accuracy of their own judgment rather than the actual predictive accuracy of their judgment. Thus, it is possible that additional

clinical and educational experiences only serve to increase confidence in judgment rather than accuracy of judgment. In a separate meta-analysis, Ægisdóttir et al. (2006) compared the accuracy of suicide risk assessment based on clinical judgments made by mental health professionals versus the use of validated standardized tools such as the Minnesota Multiphasic Personality Inventory®-2 (MMPI-II). Their findings revealed that the MMPI-II had 13% greater accuracy at predicting suicide risk than clinical judgment, suggesting standardized tools may be a better predictor of suicide risk than clinical judgment alone.

Taken together, these findings suggest that both clinical judgment and standardized screening and assessment tools each play an important in the accurate evaluation of suicide risk, but it remains unclear how to most effectively combine the methods to further enhance risk assessment. Additional research is needed to determine the most effective combination.

Documentation

Even when appropriate screening measures and risk assessments are used to identify potentially high-risk patients, the associated documentation and follow-up plans are often incomplete. For example, Kemball, Gasgarth, Johnson, Patil, and Houry (2008) studied patients who presented to EDs with self-reported suicidal ideation. The authors found that only 25% of these patients had any relevant mental health information documented in their medical records. Of the 118 patients with suicidal ideation, only 11 (9%) received a subsequent referral to a psychiatric provider, and four of them attempted suicide after their initial ED visit. None of the four patients who attempted suicide had a psychiatric symptom listed as a chief complaint, and only one of the patients had an existing diagnosis of depressive disorder. Further, chart review was not able to confirm whether a physician had evaluated the patients specifically for suicide risk or not. Thus, the authors concluded that not only is suicidal ideation a relatively common

phenomenon among patients who present to EDs, but also that the use and documentation of suicide risk assessments and related clinical responses are poorly documented and inconsistently implemented (Kemball et al., 2008). These findings were consistent with a previous study by Claassen and Larkin (2005) in which it was found that 81% of patients who reported suicidal ideation on a tablet-based triage survey were not identified and properly documented by ED providers during usual care.

It is difficult to establish standard methods for documentation or suicide risk and related treatment planning issues due to the lack of clarity about the essential components or screening and risk assessment. Further research is needed to clarify the necessary components of suicide risk assessment in order to inform documentation practices in mental health settings.

CHAPTER FOUR

Suggestions for Future Research

Although suicide is not a common occurrence, it is a devastating and potentially preventable consequence of mental illness (Gaynes et al., 2004; Motto, 1991). The majority of clinical and research efforts in the field of suicidology have focused on identifying the risk factors associated with suicide. However, the translation of these risk factors into a valid and reliable method of risk estimation has lagged behind (Glenn & Nock, 2014). Thus, mental health providers remain unable to consistently and accurately predict which individuals are at imminent risk of harm and which are not. Ultimately, this limits the ability to effectively implement treatment plans and reduce suicide rates. This chapter will: 1) summarize the current gaps in the literature regarding standardization of assessment and clinical practice, and 2) provide recommendations for future research aimed at improving suicide risk assessment.

Mental health providers tend to rely more on clinical judgment than evidence-based tools to determine risk level, which may leads to inaccurate estimation of risk (Borum, 1996). In turn, treatment plans are likely to be less effective. Incorporating the individual's unique profile of strengths and weaknesses from evidence-based tools is necessary for effective treatment planning because it helps reduce the risk by addressing modifiable factors within the individual.

A standardized method of suicide risk assessment has not yet been established. However, several groups have attempted to provide guidelines for the assessment of suicide risk. For example, Motto (1991) proposed a model leading to the stratification of suicide risk via a stepwise-standardized approach. In the first step, a well-validated screening tool is administered to separate high risk individuals who need further assessment from low risk individuals who do not require follow-up (Kaplan, 2011; Vannoy et al., 2010). In the next step, those identified as

high risk complete a full risk assessment, which consists of detailed questions regarding the individual's risk and protective factors (Gutierrez et al., 2000). Next, the suicide risk formulation is developed based upon the full risk assessment and clinical judgment. Based upon the suicide risk formulation, the stratification level of suicide risk can be determined (Silverman & Berman, 2014b), which will inform the individualized treatment plan (Roaten et al., 2016). Using this standardized-stepwise approach is suggested to improve efficiency and accuracy of suicide risk assessment, and thus improve clinical outcomes.

Screening

The initial screening process in this step-wise approach is key. However, there are multiple challenges associated with creating an effective screening process for suicide risk. Screening processes should be brief and rely on limited information to remain efficient, yet be comprehensive enough to obtain accurate information regarding known risk factors (Horowitz & Ballard, 2009). Additionally, screening processes should use a standardized, validated tool that is tailored to the clinical setting in which it is used. The screening tool should have appropriate sensitivity and specificity levels in order to help determine which individuals should receive full evaluations and which ones should not. Lastly, documentation of the screening processes should be completed in a standardized manner.

Risk factors and risk assessment

Once individuals have been identified as at-risk during the screening process, they should complete a suicide risk assessment. Unfortunately, guidelines regarding effective means of suicide risk assessment remain limited. In the past, suicide risk assessment has largely relied on clinical judgment rather than a standardized suicide risk assessment tool or procedure (Borum, 1996; Dawes et al., 1989; Hilton et al., 2006; Silverman & Berman, 2014b). Additionally,

because suicide risk assessment predominantly relies on information provided by the patients, the risk assessment may contain inaccurate or insufficient information regarding risk and protective factors (Petrik, Billera, Kaplan, Matarazzo, & Wortzel, 2015). Furthermore, it remains unclear which risk factors are most important clinically and how protective factors influence overall risk (Gutierrez et al., 2000). One reason for this is the fluidity of certain risk factors. Some risk factors are static (e.g., race), other risk factors may change over time (e.g., marital status), and some may even come and go (e.g., job-related stress). Because temporal relationships between risk factors and suicidal behaviors are not well-understood, it is important to consider the acuteness or chronicity of specific risk factors in order to obtain an accurate risk assessment. In summary, it is suggested that risk assessments consistent of a comprehensive evaluation of risk factors, protective factors, and additional social factors, each of which must be documented accordingly. This documentation leads to efficient and effective interventions and supports the process of separating high-risk individuals from low-risk individuals with acceptable sensitivity and specificity (Boudreaux & Horowitz, 2014; Morgan, 2007).

Once risk assessment and stratification is complete, treatment planning may follow. Information gathered regarding risk and protective factors must be incorporated in order to develop the most appropriate and comprehensive treatment plan (Silverman & Berman, 2014b). Protective factors can be reinforced and enhanced as part of the treatment plan. In addition, acute and chronic risk factors identified during risk assessment may be addressed by the appropriate individual from the treatment team. Modifiable acute risk factors include intoxication, recent relationship distress, and conflict at work, each of which may be addressed through observation, support, and brief psychotherapy. Similarly, examples of modifiable chronic risk factors include severe chronic depression, psychotic illness, substance use disorders,

personality disorders, and medical illnesses. These risk factors often require intense or long-term interventions such as pharmacotherapy or psychotherapy.

Recommendations

Despite advances in the field of suicidology, the prevalence of suicide in the US is on the rise, suggesting that innovations proposed and implemented to date are insufficient. Many national and international organizations are providing guidelines for the future of suicide research. The best approach to reducing suicide is likely multifaceted, grounded in empirical research, and aimed at improving public education and awareness about the identification and treatment of suicide risk. Mental health settings are particularly important for focused research studies and refinement of clinical interventions.

The following recommendations are based on the identified gaps in the current literature regarding suicide risk assessment in mental health care settings. These recommendations are primarily focused on mental health systems, but may also generalize to other settings with some modifications. The recommendations are divided into two primary categories – recommendations for current clinical practice and recommendations for future research. Many of the recommendations below reiterate or summarize suggestions made in other documents outlining future suicide prevention initiatives such as the *2012 National Strategy for Suicide Prevention*.

Recommendations for current clinical practice:

1. According to Glenn and Nock (2014), mental health providers may improve clinical practice by focusing on accurate stratification of risk rather than prediction of suicidal behavior for treatment planning.

2. As previously suggested by Motto (1991), Boudreaux and Horowitz (2014) and Morgan (2007), it is recommended that screening processes be clearly operationalized and include the use of a validated tool that is: a) highly sensitive, b) highly specific, c) simple, and d) brief. Appropriate clinical actions should be associated with results of the screening process in a standardized fashion.
3. As proposed by the Suicide Prevention Resource Center (2014a), an evidence-based approach to risk assessment must be utilized to inform treatment planning. The combination of standardized assessment data and clinical judgment may be the most effective method for determining risk.
4. According to Roaten et al. (2016), risk stratification is more likely to be effective when it consists of a standardized algorithm-driven process that determines the level of care and interventions needed.
5. Current mandates from healthcare oversight organizations such as The Joint Commission (2015) mandate that all patients who present with either a history of psychiatric health issues and/or acute mental health concerns be assessed for suicide risk.
6. According to Silverman and Berman (2014a), treatment plans must be created based upon information gathered during the suicide risk formulation and focused on interventions aimed at mitigating risk factors and fortifying protective factors.
7. Boudreaux and Horowitz (2014) suggest that treatment plans incorporate information regarding acute and chronic risk in order to refine interventions.
8. Based on the APA Practice Guidelines, it is suggested that all members of the interdisciplinary team involved in risk assessment and treatment planning be educated about evidence-based risk and protective factors.

9. Based on the literature indicating that patients at risk for suicide often initially present in non-mental health settings it is suggested that suicide screening programs be designed so that non-mental health providers may effectively administer the items and escalate care appropriately.
10. Based on the work of Claassen and Larkin (2005) and Roaten et al. (2016), it is suggested that suicide risk assessments and treatment plans are documented in a standardized format that is clear to all readers and members of the treatment team in order to improve the quality of care, reduce provider/hospital liability, and improve communication.
11. Based on the review of current literature, it is suggested that interventions to reduce suicide risk are completed by those individuals with the specific expertise and experience required to increase efficacy – e.g. requesting that a social worker assist with transportation barriers that could negatively affect treatment adherence. A case manager may be involved to integrate and coordinate the treatment plan.

Recommendations for future research:

1. Based on the current literature standardized, validated approaches to screening and risk assessment are lacking. It is recommended that future research be directed at developing standardized tools to perform screening and risk assessment that are validated and implemented in a manner such that outcomes can be measured.
2. Even when a standardized and validated screening tool is used to identify risk, there is limited empirical evidence about strategies for operationalizing an associated clinical response. More research is needed to understand how specific algorithms can follow a

screening process through studying the impact of each step of these algorithms and measuring the overall outcome of the effectiveness of the screening program.

3. There is limited evidence regarding the predictive validity of screening tools and risk assessment paradigms. Additionally, previous studies of predictive validity were often limited to suicidal ideation or suicide attempts for outcome variables due to the difficulty gathering adequate data to use suicide as an outcome. Therefore, additional research is needed to determine the extent to which risk factors are predictive of the full spectrum of suicidal behavior.
4. Based on the lack of existing empirical evidence regarding the best approach to combining clinical judgment and standardized screening tools it is recommended that future studies examine the predictive validity of each independently, and then in combination.
5. The temporal relationships between risk factors and suicidal behavior have not been established. It is recommended that future research focuses on studying this relationship to create guidelines on how the risk factors influence suicidal behavior over time. This information may help develop precise individualized treatment plans that not only address an individual's current state of suicidal risk, but also addresses the possibility of fluctuations in future levels of risk.
6. The current knowledge regarding the resource needs associated with screening and risk assessment processes is lacking. It is recommended that research is conducted to establish the resource needs of various types of screening and risk assessment procedures so that health care settings can plan the most appropriate type of risk identification program in specific settings.

7. Many of the existing screening and risk assessment tools were developed for use in mental health settings or for research, and have not been validated for use in non-mental health settings. It is recommended that future research is conducted to assess the utility of the available tools in non-mental health settings.

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Table 1. Screening measure characteristics

Name	Intended Use	Administration type	No. of Questions	Age	Setting
Ask Suicide-Screening Questions (ASQ)	Screening	Clinician	4	11+	Behavioral Health
Beck Hopelessness Scale (BHS)	Assessment	Self	20	17-80	Behavioral Health
Beck Scale for Suicide Ideation (BSS)	Screening/Assessment	Self	21	17+	Behavioral Health
Beck Suicide Intent Scale (SIS)	Screening/Assessment	Clinician	15	17+	Behavioral Health
Columbia-Suicide Severity Rating Scale (C-SSRS)	Screening	Clinician	3-6	17+	General Health
Death/Suicide Implicit Association Test (S/D-IAT)	Assessment	Self		18+	Behavioral Health
Depressive Symptom Inventory-Suicidality Sub-scale (DSI-SS)	Screening	Self	14	8-64	General Health
Geriatric Suicide Ideation Scale (GSIS)	Screening	Self/Clinician	10	65+	Behavioral Health
Manchester Self-Harm Rule	Screening	Self/Clinician	4	17+	Behavioral Health
SAD PERSONS Scale	Screening/Assessment	Clinician	10	17+	General Health
Nurses Global Assessment of Suicide Risk (NGASR)	Assessment	Clinician	15	17+	Behavioral Health
ReACT Self-Harm rule	Screening	Self	31-65	17+	Behavioral Health
Risk Assessment Matrix (RAM)	Screening/Assessment	Clinician	4	17+	General Health
Risk of Suicide Questionnaire (RSQ)	Screening/Assessment	Clinician	4	12+	General Health
Suicide Assessment Five-step Evaluation and Triage (SAFE-T)	Assessment	Clinician	5	17+	Behavioral Health
Scale for Suicide Ideation (SSI)	Assessment	Self/Clinician	19	17+	General Health
Suicidal Behaviors Interview (SBI)	Assessment	Clinician	20	17+	Behavioral Health
Suicidal Behaviors Questionnaire-Revised (SBQ-R)	Assessment	Self	34	17+	Behavioral Health
Suicidal Ideation Questionnaire (SIQ)	Screening/Assessment	Self	30	17+	General Health
The P4 screener	Screening	Clinician	4	17+	Behavioral Health
Violence and Suicide Assessment Form (VASA)	Assessment	Clinician	10	17+	Behavioral Health
interRAI SoS (Severity of Self-harm)	Screening/Assessment	Clinician	Varies	17+	Behavioral Health

Table 2. Common themes in screening measures

Name	Hopeless-ness	Death wish	Loss	Plan	History of SDV	Intent	Depression	Anxiety
Ask Suicide-Screening Questions (ASQ)	-	x	-	-	x	x	-	-
Beck Hopelessness Scale (BHS)	x	-	-	-	-	-	-	-
Beck Scale for Suicide Ideation (BSS)	-	x	-	x	x	x	-	-
Beck Suicide Intent Scale (SIS)	x	-	-	-	-	x	x	-
Columbia-Suicide Severity Rating Scale (C-SSRS)	x	x	x	x	x	x	x	x
Death/Suicide Implicit Association Test (S/D-IAT)	-	x	-	-	x	x	x	-
Depressive Symptom Inventory-Suicidality Sub-scale (DSI-SS)	-	x	-	-	-	x	x	x
Geriatric Suicide Ideation Scale (GSIS)	x	x	x	-	-	x	x	x
Manchester Self-Harm Rule	-	-	-	-	x	x	-	-
Modified SAD Persons Scale (MSPS)	x	-	x	x	x	-	x	-
Nurses Global Assessment of Suicide Risk (NGASR)	x	x	x	x	x	x	x	x
ReACT Self-Harm rule	x	-	x	-	x	x	x	-
Risk Assessment Matrix (RAM)	-	-	x	-	x	x	x	-
Risk of Suicide Questionnaire (RSQ)	x	x	x	-	-	x	x	-
Suicide Assessment Five-step Evaluation and Triage (SAFE-T)	x	x	x	x	x	x	x	x
Scale for Suicide Ideation (SSI)	x	x	-	x	x	x	-	-
Suicidal Behaviors Interview (SBI)	-	x	-	x	x	x	-	-
Suicidal Behaviors Questionnaire-Revised (SBQ-R)	-	x	-	x	x	x	-	-
Suicidal Ideation Questionnaire (SIQ)	-	x	-	x	x	x	-	-
The P4 screener	-	x	-	x	x	x	-	-
Violence and Suicide Assessment Form (VASA)	x	x	-	-	x	x	-	-
interRAI SoS (Severity of Self-harm)	-	x	x	x	-	x	x	x

BIOGRAPHICAL SKETCH

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EDUCATION/TRAINING

The University of Peshawar	M.S.	2009	Rehabilitation Science
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2006-2009 Shafique Psychiatric Hospital: Trainee Psychologist
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Professional Memberships

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