

A Retrospective Chart Review Examination of Demographic, Military, and Psychiatric  
Differences among Psychiatric Inpatients Admitted for Suicide-Ideation versus Suicide  
Attempt with an Emphasis on Gender

by

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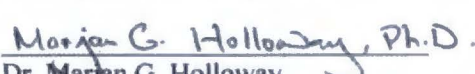
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## **DEDICATION**

I have three dedications for this dissertation. First, to my husband, my son and daughter: you are all my shining stars and my driving force. I thank God for you and thank you for the sacrifices made during this journey into which I have pulled you. Thank you for all the times you waited patiently for me as I participated in our lives with a computer screen between us. I owe you all so much, but as a small token, I dedicate this dissertation to you.

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Finally, this dissertation is dedicated to the men and women of the United States Armed Forces. You are a small slice of America, but an intensely patriotic, selfless and industrious group of amazing individuals I am proud to call my family. Many challenges are placed on you all and your own families, but you keep fighting the good fight. I will work my hardest to fight for you. Never give up on life or hope.

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## ABSTRACT

A Retrospective Chart Review Examination of Demographic, Military, and Psychiatric Differences among Psychiatric Inpatients Admitted for Suicide-Ideation versus Suicide Attempt with an Emphasis on Gender:

Brianne J. George, Doctor of Philosophy, 2014

Dissertation directed by: Marjan G. Holloway, Ph.D., Associate Professor, Department of Medical and Clinical Psychology

**Background:** Psychiatric hospitalizations, due to suicide ideation (SI) or suicide attempt (SA), are a risk factor for fatal and non-fatal suicidal self-directed violence. Mental health related inpatient stays are now the leading cause of hospitalizations within the Armed Forces, yet little is known about suicidal military psychiatric inpatients.

**Purpose:** (1) To describe the demographic, military service, psychiatric, and hospitalization-related characteristics of a sample of service members psychiatrically hospitalized for suicide-related events; (2) To examine differences between patients admitted for SI versus SA across a number of available data categories; and (3) To determine if the observed significant differences among these two groups are maintained when adjusting for gender.

**Method:** A retrospective, cross-sectional, review of Electronic Medical Records (EMR) of 955 active-duty military, Reserve, and National Guard members psychiatrically



hospitalized for SI (n = 534) versus SA (n = 421) at the Walter Reed Army Medical Center (between 2001 and 2006) was performed.

**Results:** The sample was primarily men (69%), from the Army, with an average age of 26. Men were overrepresented in the SI group whereas women were overrepresented in the SA group. Individuals in the SI group were significantly more likely to demonstrate documented Adjustment Disorder with Depressed Mood, deferred Axis II diagnosis, unidentified lifetime trauma, and psychosocial stressors associated with adjustment to military life. In comparison, individuals in the SA group were significantly more likely to demonstrate Adjustment Disorder with Mixed Disturbance of Emotion and Conduct, Borderline Personality Disorder, Personality Disorder Not Otherwise Specified, childhood sexual abuse and adulthood domestic violence trauma histories, and psychosocial stressors associated with end of military service. Statistically adjusting for gender did not alter the study findings; however, several gender-specific differences were observed based on independent analyses run for males and females.

**Conclusions:** As a first study to examine differences among military psychiatric inpatients admitted for ideation versus attempted suicide, this dissertation highlights the need for more thorough medical record keeping. Providers are encouraged to adjust treatment dosage and interventions based on the unique characteristics of each patient subgroup. A number of clinical, research, and policy recommendations are provided.



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## **CHAPTER 1: Introduction**

The recent media coverage has focused on the increasing number of suicides in the United States (U.S.) military and has not gone unnoticed. Every day, many men and women of the U.S. military continue to struggle with life stressors and associated complex mental health issues during and following their service. Frequently, we hear from media outlets about the mental health costs that our service members bear, in addition to the enormous challenges military life presents (e.g., separation from family, sacrifice of personal liberties, and potential injury or loss of life in wartime). Even with the completion of Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), there is much work that remains to be completed in best serving this population who has so dutifully served our nation.

One of the most important mental health domains is related to our scientific endeavors and clinical practices in the area of military suicide prevention. The first step in designing effective suicide prevention programs for the military is to have a better understanding of the factors that contribute to these men and women developing a wish to die and how we, as mental health providers, may better assess for such suicidal thoughts and behaviors in order to provide an early and hopefully timely intervention. To date, there is a lack of scientific inquiry about military personnel who are psychiatrically hospitalized following a suicide related event.

The aim of this dissertation study was to examine demographic, military-service, psychiatric, and hospitalization-related differences among a sample of U.S. military personnel psychiatrically hospitalized due to (1) suicide ideation (SI) deemed severe enough to warrant inpatient care or (2) suicide attempt (SA). In addition, the role of



gender was particularly examined to best understand differences between males and females falling within each of the suicide admission categories (SI versus SA).

The dissertation is organized into the following major sections: (1) Background; (2) Rationale and Significance; (3) Aims and Hypotheses; (4) Methodology; (5) Results; and (6) Discussion. The background section provides a review of (a) the global, national, and military public health significance of suicide; (b) the stress-diathesis model as a framework to understanding suicide; (c) gender differences in relation to suicide deaths, attempts, and ideation based on the existing empirical suicidology literature; and (d) a brief review of the role of gender in relation to established risk and protective factors for suicide. Next, the rationale for the dissertation study and the potential significance for clinical, research, and policy efforts related to gender-focused suicide prevention research are outlined. The aims and hypotheses for the dissertation study are presented.

Moreover, the methodology section provides information about the study design, sample inclusion and exclusion criteria, study procedures including the usage of a coding template for extraction of data from the electronic medical records of hospitalized patients, and human subjects protection. The results section presents the study findings pertaining to all aims and hypotheses including the exploratory objectives. Finally, the discussion section presents a summary of major study findings in relation to the existing scientific literature, lists a series of specific research and policy recommendations, and provides clinical implication considerations. Finally, the limitations and strengths of the study are highlighted to guide future research.

## **BACKGROUND**

### **Public Health Significance of Suicide**

Suicide is a preventable public health problem with significant impact on the world, the nation, and the U.S. Armed Forces. According to the World Health Organization (WHO), worldwide deaths by suicide total nearly one million individuals (16 per 100,000) annually – a greater number of lives than those claimed by murder and war (188). While global rates of suicide by gender vary by nation, men are consistently more likely to die by suicide than women, except in China (189). In the U.S. in 2010, suicide claimed the lives of over 38,000 (12.4 per 100,000) Americans, over 30,000 men (20.0 per 100,000) and about 8,000 women (5.2 per 100,000) (130). Among adults between the ages of 18 and 45 years old, suicide is the 3<sup>th</sup> leading cause of death (49).

Not surprisingly, suicide has historically received much attention in the U.S. military given the at-risk age group of service members and its designation as the 2<sup>nd</sup> leading cause of death for military personnel (157). While the Department of Defense (DoD) has historically reported lower suicide rates than those in the civilian population, these rates are growing closer as a decade of two wars and heavy operations tempo place significant stressors on the military at home and abroad (62). The most recently reported rates for calendar year 2011 per 100,000 for the U.S. branches of military service are as follows: 13.27 for the U.S. Air Force (USAF), 22.90 for the U.S. Army (USA), 14.87 for the U.S. Marine Corps (USMC), and 14.98 for the U.S. Navy (USN) (124).

### **Epidemiology of Suicidal Self-Directed Violence**

Clinically, thoughts about suicide (i.e., suicide ideation) are conceptualized as a precursor to suicidal self-directed violence, which in turn may lead to eventual death by suicide. Yet, not every person who experiences suicide ideation (SI) moves in a predictable trajectory that leads to future occurrence(s) of suicidal behaviors. More

specifically, some individuals who experience SI may have had these thoughts in a persistent and chronic manner, yet display no intent and/or plan to die by suicide. However, for some, SI may serve as an activating internal cognitive event that precipitates a subsequent suicide attempt, multiple attempts, and/or eventual death by suicide (16; 176). Borges and colleagues found that individuals with persistent SI without a suicide plan or a prior suicide attempt (compared with those with a plan or a history of attempt) are at a decreased risk for a future suicide attempt (31).

In suicide nomenclature, SI is defined as thoughts of suicide that may have: (1) no suicidal intent, (2) an undetermined degree of suicidal intent, or (3) some suicidal intent and the thoughts may be causal, transient, active, passive or persistent (170). In general, the suicide epidemiology literature has paid closer attention to suicide deaths and suicide attempts – however, emerging data is becoming available on SI prevalence. The true global, national, and military prevalence of SI is difficult to accurately identify due to lack of systematic surveillance efforts and the denial of suicide ideation by some individuals even when strongly suspected by the provider, as described by Busch and colleagues (46). In the U.S., approximately 8.3 million adults (about 3.7% of U.S. adult population) report having serious thoughts of suicide while 2.3 million adults planned suicide (1.0%) (178). When compared by gender, the lifetime prevalence of suicide attempts for men (1.9%) is lower than for women (5.4%) (70).

Kessler and colleagues reported a 12-month suicide ideation (SI) prevalence of 2.8% (SE = 0.3) for the U.S. based on the National Comorbidity Survey (108). Nock and colleagues reported a SI lifetime prevalence of 9.2% (SE = 0.1) based on the World Health Organization's multi-national survey of suicide behaviors (140). Both studies

address the conditional probability of suicide attempts among individuals with SI, with or without a suicide plan. For those individuals with SI and no suicide plan, the conditional probability of a later suicide attempt has been estimated as 7.3% (SE = 2.8) for the U.S. and as 15.4% (SE = 0.6) globally (108; 140). For those individuals with SI and a suicide plan, the conditional probability of a later suicide attempt has been estimated as 32.8% (SE = 7.9) for the U.S. and as 56% (SE = 1.2) globally (108; 140). Therefore, those individuals with SI and a suicide plan are significantly more likely to make a future suicide attempt compared to their counterparts without a suicide plan. This recurrence of SI may for some individuals lead to eventual death by suicide.<sup>1</sup>

Within the U.S. military, the prevalence of SI has been examined with the DoD Health Behavior Survey (DHBS), a tri-annual survey that examines SI among a number of health-related behaviors among U.S. service members. Between 2005 and 2008, the survey found that SI within the previous 12 months was reported in approximately 5% of the military population (35). In the 2011 DHSB, 3.9% reported SI over the last year, but 7.9% reported SI since entering military service (19). The 2011 survey results also indicated that individuals with a higher anger propensity, abuse history since entering service, and higher post-traumatic stress were more likely to report SI in the past year than those who did not share these characteristics (19).

Another source of our understanding of SI in the U.S. military has been derived from the Post Deployment Health Assessment (PDHA) data collected on those who have deployed since the onset of OEF/OIF conflicts. For instance, Hoge and colleagues reported findings based on PDHAs administered to a sample of USMC and USA service members (N = 220,620) returning from OEF/OIF deployments (94). Approximately

1.1% of the respondents in this sample endorsed “some” SI, while 0.2% reported “a lot” of SI. Similarly, Milliken and colleagues examined SI endorsement on the PDHA, particularly within an Army sample of active duty OIF returnees (N = 56,350) (134). In this sample, 1.2% of the soldiers reported experiencing SI. Given that participants in both of these studies were completing the PDHA prior to their return home from deployment, reports of SI may have been an underestimate of the true population prevalence as service members may have been afraid to have their return delayed for mental health reasons.

With the increase in suicidal self-directed violence in the U.S. military, attention is being paid to increasing surveillance efforts. The Department of Defense Suicide Event Report (DoDSER) summarizes suicide-related events in the DoD, to include suicide deaths and some but not all suicide attempts as well as factors associated with these events. Until the 2011 DoDSER, the U.S. Army was the only service mandated to collect information regarding suicide ideation among service members with 918 reported instances of SI, with 43 soldiers having two reports for SI created in 2010 (4.98% of all Army SI reports) (124).

While suicide ideation is a predictor of suicide risk (174), a suicide attempt is considered one of the most robust clinical indicators of eventual death by suicide (142). A suicide attempt is defined as a non-fatal, potentially self-injurious behavior that occurs with the intent to die (143; 169; 170). Worldwide, suicide attempts are estimated to occur at a rate 20 times higher than suicide deaths, resulting in approximately 20 million suicide attempts each year (188). In the U.S., approximately 1 million American adults

attempt suicide annually, which is approximately 0.32% of the U.S. population and is approximately 11 times higher than the rate of suicide deaths in the U.S. (48).

The DoD Health Behavior Survey showed a significantly increased number of reported SA among U.S. service members in 2008 (2.2%) compared to the reported 0.8% in 2005; however, this figure decreased to 0.5% in 2011 for reported SA within the past year (19; 35). However, this data needs to be interpreted carefully because the prevalence information reported is based on self-reported information by those who voluntarily completed the DoD survey. The most recent DoDSER data indicate that 915 suicide attempts occurred in the military in 2011, with the majority of reported attempts occurring in the Army (432; 47.2%), followed by the Air Force (241; 26.3%), Marine Corps (156; 17.0%), and Navy (86; 9.4%) (124). Of the individuals for whom a DoDSER was completed following an SA, nearly a third (28.7%) had a history of previous self-injury.

### **Psychiatric Hospitalization for Suicide-related Thoughts and Behaviors**

While there is significant variance within the clinical practice guidelines for how to treat an individual following an SA, hospitalization is recommended for an SA requiring medical treatment and/or those considered to be at imminent risk of suicide (17; 110). About 40% of individuals who died by suicide sought medical care in the year prior to their death and over 15% sought medical care within the 30 days prior to death (76; 186). Individuals who are hospitalized for SI or SA are more likely to seek subsequent emergency care or to be hospitalized.

Approximately 398,000 people who made an SA sought emergency department (ED) care between 2007-2008 (58) and in 2009, over 144,000 hospitalizations were due

to self-inflicted injury (50). About 46% of individuals who made an SA are hospitalized for at least one day due to their attempts (179). The number of ED visits due to SI is often lower than for SA because individuals may not seek treatment for such thoughts or do not share them with their physician when they are together (77). However, seeking health care for other reasons is common among those with SI. In a survey of 1,590 ED patients regarding SI, it was found that 12% of patients endorsed passive SI while 2% had plans to make an SA, but the attending physicians did not know or inquire about these thoughts (53). Ilgen and colleagues reported that among a sample (N = 5,641) of individuals seeking ED care unrelated to suicide, 8% endorsed SI within the 2 weeks prior to the ED visit (96).

Among the U.S. military in 2009, psychiatric conditions were the leading reason for hospitalization overall, accounting for over 15,000 hospitalizations and were the second leading reason for ambulatory visits (11; 13). Intentional self-inflicted injury resulted in 346 hospitalizations for active duty military members in 2009 (12). Walter Reed Army Medical Center, one of the largest military treatment facilities in DoD that recently merged with National Naval Medical Center-Bethesda, reported that of the 2,747 inpatient psychiatric admissions between 2003-2006, the mean length of stay was 9.65 days (SD =13.12) and ranged from 1-178 days (139). According to the 2011 DoDSER, U.S. service members who made an SA in 2011, 233 (24.9%) had documentation regarding a previous hospitalization and 95 (10.2%) individuals had been hospitalized in the month prior to the SA (124).

### **Differentiating Between Suicide Risk Indicators and Risk Factors**

In terms of the epidemiology nomenclature, there is often confusion about how a risk factor and a risk indicator differ in terms of the development of a medical or psychiatric-related outcome. The term “risk factor”, otherwise known as a predisposing factor, includes both attributes and exposure and is associated with the occurrence of disease (45; 78; 118). Attributes include characteristics of a person, such as age, sex, or genetic predisposition while exposures include risk factors from an individual’s environment (45). These risk factors may be a personal behavior, an environmental exposure, or simply genetic in nature and are associated with the health-related outcome or condition. The term “risk indicator” has been used interchangeably with terms such as risk marker or vulnerability indicator and may be associated with the probability of an outcome or disease, but is not always a causal factor (44).

Furthermore, the term risk factor as used in research is applied primarily to longitudinal studies, while risk indicators in research are used in cross-sectional research (29; 44). These epidemiological terms are applied across the body of suicidology literature. Because the present study consisted of a cross-sectional design examining indicators that distinguish psychiatrically hospitalized individuals who have made a suicide attempt from those hospitalized for severe suicide ideation, the term risk indicators is most appropriate. Certainly, some of the patients have several risk factors predisposing them to suicide, but the data from this study can only be used to describe indicators of vulnerability.

### **Diathesis-Stress Model as a Framework of Understanding Suicide**

Initially described in terms of a theory focused on schizophrenia (28; 158), the diathesis-stress model was developed to best describe how diatheses (or dispositions) and



stressors interact to impact psychopathology (138). The first component of the model, the diathesis is described as a vulnerability predisposing individuals to psychiatric difficulties (138). Conversely, stress is described as a disruption of normal physical or mental function due to negative life events (99). This model has been applied to a number of psychiatric disorders to describe how biological, historical, and environmental factors impact risk of impairment or disease when negative life events or stressors occur. In particular, the diathesis-stress model has been used to conceptualize the development of Borderline Personality Disorder (BPD), Post-traumatic Stress Disorder (PTSD), and Major Depressive Disorder (MDD) – all psychiatric diagnoses highly associated with suicide risk (37; 131).

The diathesis-stress model has been applied in the suicidology literature as a framework to explain the coincidence of biological factors and/or genetic vulnerability with stressful life events as precipitants to suicide behavior (129; 145). These diathesis and stress factors cumulatively contribute to a predisposition for suicide by lowering the individual's threshold towards suicidal thoughts and behaviors (141). Harkavy-Friedman described the interaction of diathesis and stress in terms of the progression towards suicide behaviors and how the interactions lead to an exacerbated stress response that may culminate in suicide attempt or death (87).

Within the framework provided by applying the diathesis-stress model to suicide, several diathesis risk indicators have been identified within suicide research. For example, neurobiological risk markers, such as decreased serotonin levels, have been documented as a significant predisposing factor for suicide behaviors independent of major depression (128). Environmental risk factors, such as childhood physical or sexual

abuse, family and personal history of suicide behavior, psychiatric disorders, and lack of social support have also been identified (38; 127; 145). Other risk factors identified within this framework include cigarette smoking and occupations that are susceptible to more chronic stress (e.g., a military career). In whole, the diathesis factors may be best described as those that include biopsychosocial factors that increase an individual's vulnerability for suicide behavior (183).

Acute stressors or negative life events within the diathesis-stress framework applied to suicide include current psychiatric symptom exacerbation and substance abuse and dependence. Acute physical illness or exacerbation of illness, current trauma and significant interpersonal loss (e.g., death of a parent or end of a romantic relationship) further interact with the biological and ecological factors, increasing suicide risk (126; 145). Health-related difficulties and physical impairments such as chronic pain, head pain, and permanent injury due to accidents impact quality of life and may lead to a greater risk for suicide-related thoughts or behaviors among individuals dealing with such challenges (98; 105). After exposure to significant negative events, the resulting stress may trigger or exacerbate a depressive episode, which is further compounded by the existing diathesis factors, increasing the risk for suicide-related events (87; 183).

### **Risk and Protective Factors for Suicide – With Commentary on Gender Differences**

Understanding what factors contribute to an individual's decision to attempt suicide is crucial in developing practical and meaningful suicide prevention programs. Moreover, identifying what experiences, predispositions or other factor contribute to the likelihood of suicide ideations occurring can aid a clinician in tailoring treatment efforts

to reduce the likelihood of later suicide attempt or death. As previously described, the diathesis-stress model aids in describing the proximal and distal factors that may lead to increased risk of eventual suicide death.

Public health research takes into account gender in identifying risk factors for public health conditions, and suicide is no different. Better understanding possible gender differences in regards to historical factors or acute life stressors will inform future suicide prevention efforts which can subsequently be tailored to the needs of men and women recognized to be at risk for suicide. The sections below provide a brief summary of the scientific literature on risk indicators as well as well-established risk and protective factors for suicide – with particular attention paid to known gender differences.

### ***Risk Factors for Suicide***

#### *Adverse childhood events*

Adverse childhood experiences (ACE), which include sexual and physical abuse, neglect, parental divorce/separation, witnessing domestic violence (DV) and other trauma are identified for their significant impact on the development of suicide-related risk in adulthood (2). ACE have been linked to risk of suicide among children and adolescents and this increased risk for suicide may persist into adulthood (164). Childhood physical abuse has been linked to suicide death in numerous studies (36; 39); it is also associated with increased risk of suicide attempt during adolescence and adulthood (102). Risk of at least one suicide attempt among adults (N = 9,367) with a history of ACE increases two to five times compared with adults without such history (70); further, the odds of ever making a suicide attempt increases sharply for those with seven or more adverse childhood experiences (AOR = 31.1; 95% CI: 20.6 - 47.1). When compared by gender,

Dube and colleagues found that the lifetime prevalence of suicide attempt for men (1.9%) was lower than for women (5.4%) (70).

ACE have been associated with increased risk for suicide-related thoughts and behaviors as the traumatizing events of childhood lead to difficulties with behavioral and emotional regulation in later life, resulting in poor coping ability in times of adversity (20; 154; 182). Adverse childhood experiences may lead to SI early in life, as SI was reported in 9.9% of a sample (N = 1,051) of eight-year old children who experienced ACE or were at risk for ACE (181). Afifi and colleagues found that for women, childhood sexual and physical abuse were associated with SI in adulthood, while any ACE were associated with a suicide attempt in adulthood; however, for men, physical abuse and witnessing DV in childhood were associated with SI in adulthood, while childhood physical and sexual abuse were associated with a suicide attempt in adulthood (2).

### *Demographic factors*

Numerous demographic risk factors have been consistently identified within the suicidology literature. Women (OR = 1.4; 95% CI: 1.3-1.4) and adults between the ages of 18 and 34 years old (OR = 9.5; 95% CI: 8.1-11.0) are recognized to be at a higher risk for first onset of SI (140). Marital status has been examined in several studies (61; 171) in terms of its possible association with suicide risk; findings suggest that divorced or separated marital status conveys a higher risk of suicide death, while being married and having children in the home appears protective (61; 114). Divorced men are significantly more likely to die by suicide (RR = 2.38; 95% CI: 1.77 - 3.20) compared with married men (114). However, the risk by marital category is not supported for women (114). In

particular, the dissolution of a romantic relationship carries a particularly strong suicide risk for men. For instance, Iribarren, Sidney, Jacobs, and Weisner (100) found the risk for suicide attempt for men was increased if they were never married, but the same was not true for women. For individuals who are widowed earlier in adulthood, there appears to be a greater risk of suicide than for those in older age demographics (42; 123).

Additional demographic risk factors for suicide have been identified. For men, sexual orientation and activity, is predictive of suicide-related thoughts and behaviors (91; 120). Herrell and colleagues (91) found that among male twins, the same-sex oriented men had an increased risk of SI (OR = 4.1; 95% CI: 2.1 - 8.2) and a 6.5 times greater risk of SA (95% CI: 1.5 - 28.8). For men, problems in the parents' relationship, living alone and ages 26-30 have been noted as predictors of SI (120). For women, the demographic risk factors for suicide-related thoughts and behaviors include younger age (18-34 years), lower educational attainment and being never married (140).

#### *Medical and health factors*

Individuals dealing with chronic medical conditions may be at a greater risk for suicide (125). In addition, the presence of medical conditions may increase the risk of suicide attempt among those with suicide ideation. About one third (35%) of young adults (ages 17-39) with diagnoses of two or more medical conditions reported SI during their lifetime and 16.2% of this group had made a suicide attempt (69). Individuals dealing with chronic pain, head pain, and permanent injury due to accidents may all be at greater risk for SI and a subsequent SA (97; 105). Consistently, research finds the risk for suicide-related behaviors to be greater for men with serious medical conditions (51; 74). For instance, among a sample of young adults, a history of medical disorders,

namely cancer or pulmonary disease, predicted increased risk (OR = 9.86, 95% CI: 5.08 - 19.14) of suicide attempt for men (191).

### *Psychiatric factors*

Many psychiatric risk factors for suicide-related thoughts and/or behaviors have been identified in the suicidology literature. In terms of Axis I psychopathology, mood, anxiety, adjustment, substance-related and sleep disorders have been associated with an increased risk for suicide. A number of psychiatric risk factors have been identified for the first onset of suicide-related thoughts and subsequent risk for suicide-related thoughts and behaviors. The lifetime prevalence for individuals who have previously been hospitalized for suicide-related reasons is the greatest (8.6%), but the prevalence of suicide death is also heightened among those hospitalized for affective disorders (4.0%) and for those receiving partial hospitalizations (inpatient/outpatient; 2.8%) care (33).

Mood disturbances and disorders impact normal functioning and are of high concern because of the potential for posing a risk for suicide while the individual struggles with these symptoms (7). In a longitudinal study following a sample of individuals with MDD, the relative risk of suicide attempt for those with a current major depressive episode was 7.54, compared to a relative risk of 2.50 for individual in partial remission of their depression (173). Zhang and colleagues (191) found mood disorders, especially MDD places both men (OR = 9.86, CI 95% [5.08-19.14]) and women (OR = 5.00, CI 95% [3.19-7.83]) at greater risk for suicide attempt. Individuals recently diagnosed with MDD expressed more severe mood symptoms, impact on daily functioning by time at work missed due to depression and greater SI when compared to individuals with an Adjustment Disorder with Depressed Mood (AD w/ DM) (193).

Anxiety disorders comprise another area of concern when assessing for suicide risk. Among a sample of men, PTSD and Panic Disorder were predictive risk factors of either SI or SA (56). Among women, anxiety disorders, namely PTSD, Social Anxiety Disorder, Generalized Anxiety Disorder, and Panic Disorders predict suicide risk (56). For those with PTSD, a greater prevalence of SI is noted with co-morbid depression (57). For military members, mental health hospitalizations have been associated with risk of suicide following discharge, especially if the soldier has a history of injury or alcohol use (23).

Substance-related disorders are often noted among individuals who have suicide-related thoughts and behaviors, with alcohol involved in approximately one-third of all suicide deaths (106). Further, the link between impulsivity, substance abuse, and suicide has been widely noted in risk literature for suicide (113; 129; 168). Substance abuse co-occurring with mood disorders or other historical risk indicators has been associated with increased risk of SA and SI (161). While substance abuse risk for suicide may be present in men and women, it appears that there may be a stronger link between suicide behaviors and substance use for men.

When examining recurrent suicide attempt risk indicators by gender, current substance use was specific to men, while recurrent attempt in women was associated with PTSD, higher scores on measures of depression, and with being in follow-up care or current treatment (137). Monnin and colleagues found the psychiatric characteristics of individuals at risk for subsequent SA include current abuse or dependence of alcohol/drugs and current recurrence of a psychotic syndrome (137). The role of substances in coping strategies appears to vary by gender and psychiatric differences.

Harlow and Newcomb (88) found that while men are more likely to use substances to cope with depression or self-derogation, women were more likely to report SI.

Conversely, when dealing with a perceived sense that one's life lacks purpose, women are more likely to use substances while men experience SI.

As reported in the 2011 DoDSER, nearly a quarter (24.0%) of all service members who died by suicide were known to have a history of substance abuse (124). Alcohol use was involved at the time of suicide for over a fifth (21.3%) of the service members who died by suicide and almost 9% involved drugs. Alcohol was involved in a third of all DoD suicide attempts (31.2%), while drugs were used in almost 64% of all suicide attempts (40.9% involved prescription drugs). Finally, a combination of drugs and alcohol were present in nearly a fifth (19.7%) of all DoD suicide attempts (124).

While substance-related disorders viewed as risk indicators often include alcohol or drugs, another potential substance-related risk factor for suicide is the use of nicotine products. There is currently some disagreement in the literature with regards to gender differences. Nicotine dependence has been implicated as a risk factor for suicide attempt among adolescent females (OR = 4.7; 95% CI: 1.3-17.2) compared with non-smoking females (155). However, Schneider, Schnabel, Weber, Frolich, Maurer & Wetterling (165) examined suicide deaths and found that current and heavy smokers at the time of death were significantly more likely to be male and that for women, nicotine use was not implicated as a risk factor for suicide death. Examination of the risk for suicide among smokers in the U.S. military agrees with Schneider and colleagues' finding that heavy smokers are at greater risk of suicide. Miller and colleagues (133) found the relative risk



for suicide among military men who smoke is higher than for those who do not smoke (RR = 2.3; 95% CI: 1.2 - 4.6).

Individuals who have been exposed to a recent stressful event may go on to have acute, significant impairment diagnosed as an Adjustment Disorder (10); moreover, the precipitant stressors involved in the AD (i.e., problems in or at the end of significant interpersonal relationships, financial difficulties and legal problems) increase the likelihood of suicide behaviors (21). Suicide ideation and AD were identified respectively as the most common presenting symptom and diagnosis in a psychiatric emergency care center, highlighting the acute distress faced by those seeking psychiatric care (34). SA rates, up to 12 times higher, have been found for psychiatrically hospitalized patients with a diagnosis of AD compared to those without such an AD diagnosis, after controlling for marital status, income and depression (83).

The acute nature of an AD, coupled with impulsivity, is thought to increase the likelihood of suicide attempts. Suicide-related thoughts or behaviors may increase among individuals with a history of AD compared to individuals with a mood disorder, and suicide-related events may be more likely when an individual uses alcohol (150). For individuals with a first onset suicide attempt, a diagnosis of AD is more likely while those with multiple suicide attempts are likely to receive a diagnosis of an affective disorder, which further highlights the conceptualization of the first onset SA as an impulsive reaction to an acute stressor (82).

Diagnoses of AD and subsequent suicidal thoughts or behaviors have been noted among several demographic groups and in some cases, the risk of suicide-related thoughts or behaviors may differ within these groups. Women have been found to be

more likely to receive a diagnosis of a mood disorder such as major depression or dysthymia, compared to men who more frequently received Adjustment Disorder diagnoses (104). For adults above 60 years of age, the increased reaction to stressors and presence of an Adjustment Disorder has been linked to increased risk of suicide, especially among older men (151). Among adolescents and young adults receiving outpatient psychiatric care for an AD, the suicidal group differed from non-suicidal patients by having had previous psychiatric care, especially inpatient care, the suicide death of a significant other as a precipitant stressor, and poorer psychosocial function (148).

Within the civilian inpatient psychiatric setting, insurance reimbursement for adjustment disorders is not as likely to occur; however, such constraints are not as prevalent within in the military health care system. However, diagnoses occur more frequently in the outpatient setting (47). Estimates of prevalence of AD within the civilian outpatient population range from 5-20% (10), with a multinational civilian prevalence estimate of 12% within a medical setting (177). This is in contrast to a prevalence of 26% within the U.S. military (27). Moreover, because the diagnostic criteria for AD includes maladaptive reactions to a stressor (10), the diagnosis is often seen among Service Members who may be having difficulties adapting to the rigors of military service (30), thus increasing the prevalence of AD above those seen in the general population.

Furthermore, sleep related problems have been established as a risk factor for suicide-related thoughts and behaviors – where sleep is frequently related to other psychiatric disorders that increase risk of suicidal behaviors including suicide death.

Research efforts aimed at identifying how sleep disorders may impact suicide behaviors suggests that sleep disorders are more predictive of suicide than depression or hopelessness, two powerful indicators of suicide risk (156). In terms of intervention for suicide risk, sleep is a modifiable risk factor, as long as providers directly assess for sleep problems. Moreover, there are numerous sleep disorders and conditions that may complicate the clinical picture when examining the level of increased suicide risk. Sleep problems are a symptom of many psychiatric disorders and may include both problems falling and staying asleep, as well as hypersomnia (10; 25). Individuals with sleep disorders may be more likely to have greater depression which is exacerbated by poor sleep, and later may lead to increased suicidal thoughts or behaviors (115).

As sleep problems persist for several nights, insomnia may take a toll on not only physical health, but it negatively impacts mental health and increases the likelihood of SA (85). Symptoms of insomnia have been associated with SI and predicted future SA one month following a baseline assessment among U.S. service members referred for suicide-related reasons (156). Sleep problems pose a unique risk for the military, as deployment often involves sleep deprivation or fragmentation and may lead to sleep disorders due to combat and duty obligations. The environment of the deployed setting, the stressors involved with being in a hostile environment, and conditions such as PTSD may additionally contribute and/or exacerbate to sleep related difficulties.

Nightmares, a symptom of PTSD that negatively impacts the quality of sleep, have been associated with increased risk of suicide (25). Among individuals who made a recent SA, frequent nightmares were associated with an increased risk of a subsequent SA among men (OR = 3.89) and women (OR = 1.74) and a significant increase in SI for

both men (OR = 2.97) and women (OR = 1.58) (180). While medical conditions causing sleep disturbance may be evaluated, the role of psychological distress on the development of disordered sleep is only recently being examined. Krakow and colleagues (115) examined sleep disturbance among female sexual assault survivors who had PTSD and found that women who had greater levels of suicide ideation also had signs of breathing-related sleep disorders.

Co-morbid psychiatric disorders and history are noted risk indicators for suicide behavior and may be different when compared by gender. Psychiatric comorbidity is a common and important treatment issue and is of great importance because of the numerous risk factors that it may present for suicide. As previously discussed, mood and anxiety disorders significantly increase suicide risk. Anxiety disorders have been noted as the most common (non-substance related) comorbid disorder among individuals diagnosed with MDD, with nicotine dependence as the most common lifetime comorbid disorder (192). For men who made a suicide attempt, a family history of suicide, previous drug use, nicotine use, BPD and early parental separation conveyed a three times greater risk for future suicide behavior (144). However, for women with a previous suicide attempt, there was a six times greater risk of suicide attempt; also, SI, higher suicide attempt lethality, hostility, fewer reasons for living, BPD and nicotine use increased suicide attempt risk beyond the impact of prior attempt (144). The role of psychiatric co-morbidity has been examined among U.S. Veteran populations in terms of suicide risk. For Veterans with diagnosed mood disorders, the risk for completed suicide was increased for individuals with comorbid Panic Disorder, Generalized Anxiety Disorder, and Anxiety Disorder Not Otherwise Specified (149).

Familial history of suicide and mental health disorders are also predictors of risk for suicide-related thoughts and behaviors. A young person whose parent died by suicide or any other means or who has a family history of mental illness is significantly more likely to die by suicide than those individuals without such family history (6). Sorenson & Rutter (175) found that female gender, being unmarried, and a history of psychiatric disorders for individuals and one of their parents showed direct effects for SI risk. Roy (160) found that 48.6% of a sample of individuals (N = 243) with a family history of suicide had also attempted suicide. Suicide risk among familial suicide survivors is higher when compared to families without suicide history (162). Among the families of those who had died by suicide, 9.4% of all deaths were identified as suicide; by comparison, 4.6% of deaths were suicide among the non-suicide death family members.

Axis II psychopathology has also been implicated in increased suicide risk. Comorbidity of Axis I disorders with personality disorders has been identified as a significant risk factor for suicide (90). However, the co-occurrence of personality disorders contributes greater risk of suicide independent of Axis I diagnosis among men and women (166). By gender, cluster B personality disorders (i.e., dramatic) are independent predictors of suicide death in women while cluster C personality disorders (i.e., avoidant) are independent predictors of suicide death in men (166). Specifically, BPD has been identified with a significantly increased risk for suicide in women, however, younger age (< 35 years) and BPD together are associated with increased suicide risk for both men and women (151). Personality disorders and traits, such as a perceived need for perfectionism or BPD also appear to be risk indicators for SI (86; 147)

(Hamilton, 2000; Paris, 2002). Antisocial Personality Disorder has been associated with increased risk (OR = 11.1; 95% CI: 5.9-20.6) of making a serious suicide attempt (21).

### *Current life stressors*

Risk factors for suicide may permeate all levels of an individual's history. Negative stressors, poor problem solving, and hopelessness lead to greater risk of suicide ideation or attempt (68; 167). Acute stressors may include exacerbation of the psychiatric and health factors previously discussed, but they may also be related to occupational, interpersonal, and social support. For example, negative interactions with significant friends are associated with suicide attempts among those experiencing SI (74).

Unemployment is a predictor of suicide risk for men; however, this has not been consistently identified as a risk factor for women (152). While men have an increased risk for suicide attempts when unemployed, women display the higher risk when faced with workplace problems. Factors predictive of SI in women facing occupational difficulties include younger age, perceived workplace harassment, working with inadequate resources, and occupational burnout (75). Other significant professional difficulties may also contribute to SI (55). Professional burnout, low perceived quality of life, and increased depressive symptoms have also been identified as predictive of suicide-related thoughts, as noted in a sample of U.S. medical school students (71).

The workplace problems experienced by women may be linked to another risk factor for suicide – i.e., interpersonal problems. For women, dealing with interpersonal crises or loss of any significant relationship conveys an increased risk of SI or SA; this risk has been seen for women across their lifespan and independently of their culture (26; 51; 109). Individuals whose close friends or relatives have attempted or died by suicide

are at an increased risk for SI (119). These findings highlight that both occupational and interpersonal stressors are key risk indicators for suicide. The ending of important relationships or difficult life events may confer greater risk for SI – divorce and unemployment have been significantly associated with subsequent SI (119).

Professional risk factors are salient in understanding military-related suicide risk. Occupational and work dissatisfaction among military members play a role in suicide-related behaviors. The Air Force previously identified relationship, legal and financial stressors as the primary risk factors for individuals who had died by suicide (62). For men in the USAF, dissatisfaction with Air Force life in general was significantly associated with SI, while differences in satisfaction with work relationships was associated with SI among USAF women (117). Additional military-related occupational risk factors include access to firearms and exposure to workplace trauma (126). While not all military members work with weaponry or are exposed to trauma in the workplace, the risk exists because the majority of military members is trained to use weapons and may also experience combat related-trauma or loss.

#### *History of suicide attempt*

While each of the previously mentioned risk factors may increase an individual's risk of eventual suicide death, individuals with multiple suicide attempts have been identified to be at the greatest risk of eventual death by suicide (89; 149). For individuals discharged from inpatient psychiatric hospitalization, the first month following hospitalization is the period of greatest risk for suicide death (81) and current SI and depression convey increased risk of repeated suicide attempt (121). Individuals who had previously attempted suicide via strangulation, suffocation or hanging are six times more

likely to succeed in a subsequent SA by the same means and the more severe method of suicide attempt conveys an increased likelihood of death in future SA (163).

Much is still unclear about why an individual who experiences SI differs from an individual with SI and a history of SA. Joiner's Interpersonal-Psychological Theory of Suicidal Behavior (IPTSB) provides one potential explanation for the increased likelihood of suicide among individuals with prior SA. The IPTSB conceptualizes risk for suicide in three main components: (1) perceived burdensomeness; (2) low belongingness; and (3) acquired ability to enact lethal injury to the self (103). For many individuals who express suicidal thoughts, they will not go on to die by suicide because they have not acquired the ability to carry out the self-harm necessary to die by suicide. Individuals who have made multiple attempts have been identified as having increased levels of acquired ability, thus raising the risk of eventual suicide death (184). Notably unique to the military, combat experience increases levels of acquired capability, even in the absence of perceived burdensomeness or low belonging, highlighting an important risk factor and point of intervention for service members with such exposure (41).

### ***Protective Factors for Suicide***

Suicide risk may be attenuated by the presence of protective factors, these factors may be social, psychiatric or health related, similar to risk factors. Positive family relationships, a sense of familial connection and social support (32; 95) serve as socially protective factors for suicide attempts. Perceived social support appears to lessen or to protect against SI (52; 95). Satisfaction in personal relationships and sense of usefulness to one's family and friends are also associated with lower SI risk (159). A sense of belonging and perceived social support are reported to weaken the relationship between



depression and SI in men (132). In a sample of female physicians, meetings to discuss stressful workplace situations predicted lower risk of SI (75). For individuals with chronic medical problems, risk for thoughts of suicide may be mitigated by feelings of happiness despite the medical conditions (93); however, social support and healthy interpersonal relationships appear to attenuate SI for both men and women.

### ***Gender Differences in Suicide***

If men and women differ in their presentation of suicide related thoughts and behaviors, a gained understanding of such differences can enhance our targeted suicide prevention efforts. Globally, men are more likely to attempt suicide at varied rates, with the exception of areas in China, where women outnumber men in suicide deaths (188). In the U.S., gender differences in suicide-related behaviors have been well documented, with men dying by suicide four times more frequently and women attempting suicide with three times greater frequency (8). Of the 35,000 (24.76 per 100,000) suicide deaths among American adults in 2008, over 27,000 were men while only about 7,000 (6.21 per 100,000) were women (50). While 93.4% of the 301 U.S. military suicide deaths in 2011 were men, over a quarter (26.5%) of the 935 DoD SA were made by women (124), despite women comprising only 14.6% of the military (63).

In the WHO multi-national survey of suicide behaviors (140), first onset of SI was more common among women (OR = 1.4; 95% CI: 1.3-1.4). For those individuals who reported ideation, women also had a significantly higher conditional probability of (1) making a future attempt (OR = 1.3; 95% CI: 1.1-1.5), (2) making an attempt without a lifetime plan (OR = 1.4; 95% CI: 1.1-1.7), or (3) making an attempt with a lifetime plan (OR = 1.3; 95% CI: 1.0-1.6). Among the adults in the U.S. who endorse SI, 3.8 million

are men (3.5% of all U.S. men) but 4.6 million (3.9%) are women (50). While a slightly increased number of women in the civilian population endorse suicide ideation, the percentage of women in the military endorsing SI appears to be higher. For example, of the 888 Suicide Event Reports for Army soldiers who reported SI in 2011, 188 (21.17%) were women (124). In a community assessment of active duty Air Force members, 3% of men and 5.5% of women endorsed SI within the previous 12-months and 8.7% of all those with SI reported having made a recent suicide attempt (172).

#### *Gender differences in emotional distress expression and help seeking*

As demonstrated through the earlier discussion of risk factors for suicide-related thoughts and behaviors, there are several ways in which men and women differ in terms of risk. Help-seeking and affect expression is another area in which distinct gender differences are of clinical importance in identifying risk and tailoring treatment and prevention options. Women are seen as generally more emotionally expressive and open to seeking help as well as identifying and using more social supports than men (18; 24). In times of emotional distress, men are less likely to express a need for help and may avoid their problems or use unhealthy coping strategies (e.g., alcohol) in an attempt to reduce their distress (79). Greater distress levels and lower expressiveness among men have been tied to negative coping responses associated with the perceived threat to their masculinity (43). The general stigma and avoidance related to help seeking among men in the military is not surprising given the overrepresentation of men in service and the masculine normative behaviors associated with military service (43).

#### **Military Career Implications for Suicide Behaviors**

The stigma related to help-seeking for suicide-related thoughts and behaviors has long been identified within the U.S. military. The individual negative perceptions of mental health treatment have been associated with lower interest in help seeking; however, the perception of military unit stigma towards help seeking increased interest in help seeking for a significant number of Veterans (40). Interest in treatment may not always be present, especially in situations involving involuntary psychiatric hospitalization, which may impact engagement in treatment and intervention.

Certain medical and psychiatric conditions may have significant impact on service members' careers. If an individual is hospitalized for SI or SA, they will not necessarily be discharged. However, clinicians are faced with the difficult decision of determining the fitness and suitability for military service in individuals who have a history of suicide thoughts and behaviors. Specific psychiatric conditions that may result in a member's administrative separation include, among other conditions, certain personality disorders (i.e., BPD, Antisocial PD), Impulse Control Disorder and adjustment disorders that have not been determined to be chronic in nature (64). Individuals who develop other psychiatric conditions during their service may be separated from the military through a medical evaluation board. These conditions include mood and affective disorders, PTSD, other anxiety disorders, psychotic disorders and chronic adjustment disorders. One of these diagnoses does not mean an individual will be guaranteed separation from the military, but this outcome may occur following further evaluation of their fitness and suitability. Suicide-related thoughts and behaviors that result in hospitalization do not warrant a mandatory separation from military service.

In a previous study of military members hospitalized for suicide-related reasons, nearly half the sample was returned to full duty status (157).

### **Path to Psychiatric Hospitalization**

The decision to psychiatrically hospitalize an individual is a difficult one that must be made quickly by attending medical providers at the initial presentation for emergency care. Individuals who endorse suicide ideation severe enough to require emergency evaluation may be evaluated using a decision-making tool, such as one described by Gliatto (80). This decision making tool requires an evaluation of the severity of suicide risk, with the presence of a suicide plan, access to lethal means, poor judgment and inability to contract for safety leading to the need for hospitalization (80). Because the desire to die is present at varied degrees among individuals who have made a recent suicide attempt, a similar decision-making algorithm would be appropriate for those patients. Factors predicting psychiatric hospitalization following an SA include the use of lethal means, high SI and suicide planning, and previous attempts; such factors are frequently used when making the decision to hospitalized an individual for SI (135). However, the decision to hospitalize a suicidal individual remains a difficult clinical decision. Admitting providers attempt to strike a balance of subjective clinical intuition and objective assessment data coupled with a sensitive understanding of the ramifications to the patient should hospitalization be deemed necessary (84).

## **RATIONALE AND SIGNIFICANCE**

This author's master's thesis focused on gender differences in a smaller subset of military service members psychiatrically hospitalized due to suicide ideation. The master's project consisted of a retrospective medical chart review designed (1) to examine gender differences in a military sample (N = 410) hospitalized for suicide ideation and (2) to identify mediators of the relationship between gender and length of psychiatric hospitalization. A greater percentage of female service members compared with their male counterparts were lower ranking, company-grade officers (O1-O3). Women were documented as having more significant difficulties adjusting to the military as noted in the medical record, while men were significantly more likely to have demonstrated difficulties with end of career concerns (i.e., retirement, separation, or medical board).

While men and women did not differ in terms of the types of Axis I psychiatric diagnoses received at admission, women were significantly more likely to be diagnosed with BPD. Women, compared with men, were also more significantly likely to endorse trauma histories and current traumatic exposure. Moreover, women were significantly more likely to have documented histories of psychiatric hospitalization and suicide attempts. Despite women endorsing a more severe psychiatric profile history with regards to trauma, prior psychiatric treatment and previous suicide attempts, there were no differences in the length of their hospitalization compared with their male counterparts. In addition, men and women were returned to duty at the same rate.

While the thesis project was limited in scope to individuals hospitalized for suicide ideation, it did not consider a continuum of severity in suicide behaviors. This dissertation study builds upon the earlier master's project and includes the following

areas of clinical investigation. First, it offers a summary of demographic, military service, psychiatric, and hospitalization-related characteristics of a larger sample of military service members hospitalized for suicide-related events (including both suicide ideation and suicide attempts). Second, it provides a comparison of the demographic, military service, psychiatric, and hospitalization-related factors for patients hospitalized for suicide ideation versus suicide attempt. Third, it contributes to our understanding of the role of gender in observed between group differences. Given that there are no studies to date to document the unique characteristics of military men and women hospitalized psychiatrically due to suicide-related events, this project specifically addresses this important research gap within the military mental health literature.

Given the increasing problem of suicide in the U.S. military over the past decade, research, clinical, and policy efforts within the DoD must continue to pay attention to suicide mortality but also to the public health problems of suicide-related ideation and behaviors. The empirical literature has consistently shown that suicidal individuals who are psychiatrically hospitalized are at an increased risk for suicide (22; 160). There is a critical need for early recognition and evidence-based assessment and treatment of individuals presenting with suicide ideation in order to address the cognitive sensitization that may occur for individuals as they contemplate suicide; such sensitization is more pronounced for those who have previously attempted suicide and are having current thoughts of suicide for which they have been psychiatrically admitted. Furthermore, there is a critical need for the development and empirical validation of assessment and treatment strategies targeted at meeting the unique needs of those psychiatrically hospitalized in military settings following a suicide attempt. Yet, this work cannot be

accomplished unless there is a solid understanding of patient characteristics and how factors such as gender and suicide attempt history can alter the unique needs of these patients and how the medical healthcare system approaches the care provided to them.

To date, most of our knowledge about individuals who report SI and/or individuals who attempt suicide within the U.S. military is derived from emerging epidemiological literature which is somewhat confined to estimations of prevalence for the presence of SI and/or SA. While surveillance efforts within the DoD have significantly improved for suicide, much remains unknown about service members who experience severe SI or those who decide to attempt suicide and survive their attempt. In particular, not much is known about military personnel who are psychiatrically hospitalized due to either SI and/or a recent suicide attempt. Further, given the gender differences noted in the civilian suicidology literature for individuals with SI and/or SA, there is a continued lack of scientific understanding about the possible role of gender in the demographic and clinical presentation of psychiatrically hospitalized military inpatients following suicide-related events. Men and women in the military, within this highly vulnerable and at-risk subgroup, may have different gender-related assessment and treatment needs. Additionally, one may expect that individuals with a prior history of attempt may also have unique assessment and treatment needs.

This study aimed to address this gap in the suicidology and military mental health literature. The broad purpose of this study was to examine demographic, military-service, psychiatric, and hospitalization-related differences in an inpatient military sample hospitalized for either suicide ideation or a recent suicide attempt because of the high risk for eventual death by suicide among these individuals. More specifically,

suicide status (i.e., SI versus SA) group differences were independently examined with further attention paid to possible gender differences among these groups.

### **AIMS AND HYPOTHESES**

This study furthers our clinical knowledge regarding current treatment of men and women service members hospitalized in a large military psychiatric facility. As suicide continues to be a mental health and readiness priority for DoD, this project is a timely contribution to these efforts. The results of this study may inform future research, policy, and practice efforts in the prevention and treatment of suicide-related thoughts and behaviors. The specific aims and hypotheses of this dissertation are as follows:

Aim 1. To describe the demographic, military service, psychiatric, and hospitalization-related characteristics of an inpatient military sample psychiatrically admitted due to suicide-related events.

Aim 2. To compare the demographic, military service, psychiatric, and hospitalization-related characteristic between inpatients psychiatrically hospitalized due to suicide ideation (SI Group) versus suicide attempt (SA Group).

Military inpatients in the SA Group compared with those in the SI Group are significantly more likely to demonstrate the following based on their electronic psychiatric records:

Hypothesis 2a) to be female and lower rank;

Hypothesis 2b) military related adjustment stressors as indicated in the Axis IV of their admission diagnoses;



Hypothesis 2c) a higher frequency of admission diagnoses of mood disorders, anxiety disorders, substance-related disorders, and personality disorders AND a lower frequency of admission diagnoses of Adjustment Disorder;

Hypothesis 2d) history of suicide attempt(s);

Hypothesis 2e) histories of childhood and adulthood negative life events;

Hypothesis 2f) longer length of psychiatric hospitalizations and lower likelihood to be returned to duty following hospital discharge.

Aim 3. To examine the extent to which the characteristics significantly differentiating the SI Group from the SA Group (based on univariate analyses) would predict suicide group status (SI versus SA) after controlling for gender.

Hypothesis 3a. After controlling for gender, no predictors of suicide group status (SI versus SA) will reach significance.

## **CHAPTER 2: Method**

### **RESEARCH DESIGN**

A cross-sectional and retrospective chart review comprised the research design of this study. While a prospective design is preferable to a retrospective study (92), the information from this study may be used to generate hypotheses for subsequent prospective and treatment development research. The study utilized a subset of the data collected for a larger study which aimed to characterize the differences between patients admitted for suicide attempts, suicide ideation, versus non-suicide related events. In addition, this study was an expansion of the previous thesis research conducted by the author to examine gender differences among service members hospitalized for suicide ideation.

### **PROCEDURE**

#### **Identification of cases**

Each psychiatrically hospitalized patient at the Walter Reed Army Medical Center (WRAMC) has an electronic medical record (EMR) within Essentris that details the evaluation and care received at the time of his or her psychiatric hospitalization (Figures 1-12). To identify EMRs of individuals admitted to WRAMC inpatient psychiatry, an Essentris data technician produced a list of patients hospitalized for psychiatric care from January 1, 2001 to December 31, 2006. Consecutive records were then reviewed. Trained study coders first determined the reason for hospitalization by conducting a review of the EMR (more specifically, the admission and discharge note) of each psychiatrically hospitalized patient. Individuals who had more than one psychiatric

hospitalization at WRAMC, during the 2001 to 2006 period, only had the first episode of their hospitalization coded. This decision was made in order to allow for the appropriate utilization of resources (i.e., time and funding) made available for the study.

### **Case inclusion and exclusion criteria**

As indicated above, this study focused on military service members psychiatrically hospitalized for either suicide attempt or suicide ideation at the Inpatient Psychiatric Unit of the WRAMC from January 2001 to December 2006. Demographic, military service, medical, and psychiatric information for each patient were obtained from Essentris, the EMR system used at WRAMC to document all inpatient hospitalization clinical information (59). Case selection, for the purposes of this study involved the following inclusion criteria: (1) inpatient psychiatric hospitalization due to reported suicide ideation or suicide attempt at the time of admission; and (2) status of active-duty, reserve, or National Guard at the time of admission. Application of these inclusion criteria resulted in a total of 1003 cases. A total of 48 cases out of 1003 (approximately 4.8%) were excluded, given that these were duplicates (i.e., double or triple coded for inter-rater reliability purposes). The final sample size, used for subsequent analyses reported in this dissertation, was 955, which included 421 unique SA cases and 534 unique SI cases.

### ***Training of study coders***

Trained Clinical Psychology doctoral students in the Laboratory for the Treatment of Suicide Ideation and Behavior served as study coders. All coders received an introduction to the study and training on how to use and navigate the Essentris system. The four-hour Essentris system training was conducted at WRAMC, led by the Essentris

program manager (Mr. John Garza) or designated Essentris staff member, and covered basics of EMR documentation, and topics such as patient confidentiality and record security. In addition, study coders were trained on coding procedures, the usage of the coding template, and accompanying coding guide (see section on “Measures” below for a detailed description). Each study coder performed the first coding under the direct supervision of a senior coder (i.e., a trained coder with experience in coding at least 10 cases) and this type of individualized training generally lasted for approximately 2-3 hours. Codings were conducted in the Essentris classrooms and in the inpatient psychiatry ward of the WRAMC, based on coder and computer availability. While collecting data, coders were able to reference the coding manual to clarify what information was needed for database entry, what format was required and where the information could be found within the EMR.

### **Coding strategy**

Study coders were instructed to extract data from the EMRs. Prior to each session, coders signed out a numerological tracking sheet of 10 medical record numbers and obtained a flash drive containing a blank Microsoft Access coding template. Coders performed a brief initial review of the EMR and entered data into the coding template during the second viewing. If a coding variable was not annotated in the EMR, coders were instructed to assume that it was not present and code accordingly. Coding meetings were held as needed to provide additional training to study personnel and to discuss potential coding questions. Coding decisions made in these meetings were documented to assist coders in their decision making process. These decisions were documented in

the coding template and manual for further use. Additionally, these meetings were used to improve reliability.

### **Inter-rater reliability**

The Statistical Package for the Social Sciences software for Mac, version 20.0 (SPSS v. 20.0) was used to calculate a kappa coefficient in order to verify the integrity of study codings. A total of 34 (5%) cases were coded twice and 7 (0.9%) were triple coded (yielding an additional 14 duplicate cases) to ascertain the reliability between coders, resulting in 48 re-coded cases for inter-rater reliability calculations. A kappa coefficient was calculated for age, rank, admission diagnoses, history of suicide attempt, history of childhood negative life events, history of adulthood negative life events, length of psychiatric hospitalization, and disposition. The inter-rater reliability ranged from 0.53, which indicated *moderate* agreement to 1.00, which indicated *perfect* agreement between raters (54; 116).

### **CODING TEMPLATE AND MANUAL**

#### **Electronic Medical Record - Coding Template (EMR-CT) and accompanying coding manual**

The coding manual was developed in consultation with a number of suicidology and military mental health care experts and served as the basis for the development of the EMR-CT. The coding template, created in Microsoft Access format, is a multi-variable form that includes several basic demographic descriptors such as age, ethnicity, religious affiliation, marital status, and gender for all patients (Figures 1-10). In addition, the template was designed to include information on each individual's military service history; this service history was used to make the determination of including cases based

on military service status. Comprehensive information regarding suicide-related ideation and behaviors, suicide event information, and previous medical and psychiatric history were captured in the database by extracting information as it was entered into the EMR during the patient's hospitalization. Finally, an inclusive trauma history was recorded in the EMR-CT based on a number of potentially traumatizing experiences that may have been listed in the inpatient EMR. This template provided a clear view of EMRs that were suitable for inclusion in the study based on examination of the research aims and sample design. No HIPAA identifiers (e.g., social security numbers) were recorded on these forms. Once eligible EMRs were identified, a unique study subject identification number was assigned to each record.

#### **DATA ANALYTIC STRATEGY**

The current study utilized data that focused on information logged into the EMR by a number of different healthcare providers (e.g., admitting physician, social worker, psychiatric nurse) during each patient's psychiatric stay at the WRAMC inpatient ward. Preliminary analyses assessed for basic demographic, military service, psychiatric and hospitalization characteristics of the sample using descriptive statistics and examined differences between the SI versus SA groups for the same characteristics. A detailed description of the data analytic strategy utilized in the study is provided below with an outline of the research aims, related hypotheses (when necessary), and estimations pertaining to power, as well as performed statistical analyses.

#### **Aim 1**

To describe the demographic, military service, psychiatric, and hospitalization-related characteristics of an inpatient military sample admitted due to suicide-related events.

### ***Statistical analyses***

Basic descriptive statistics were calculated to provide demographic (gender, age, race and marital status), military service (branch and pay grade), psychiatric (Axis I and Axis II diagnoses and previous suicide attempts), and hospitalization (disposition and length of hospitalization) characteristics for the entire sample. Such statistics included the mean, standard deviation, frequency counts, and range for each continuous variable. For categorical variables, percentages were calculated. Since this aim is descriptive in nature, there were no hypotheses or power calculations conducted.

### **Aim 2**

To compare the demographic, military service, psychiatric, and hospitalization-related characteristics between inpatients psychiatrically hospitalized due to suicide ideation (SI Group) versus suicide attempt (SA Group).

### ***Independent variables***

Suicide Status (SI Group versus SA Group)

### ***Dependent variables***

Demographic (gender, rank – categorical; age - continuous); military related adjustment stressors (categorical); psychiatric diagnoses (mood disorders; anxiety disorders; substance-related disorders; personality disorders; adjustment disorders – categorical); histories of suicide attempt(s) (categorical); histories of childhood and adulthood negative

life events (categorical); and hospitalization/disposition characteristics (length of psychiatric hospitalization – continuous; disposition at discharge – categorical).

### ***Statistical analysis***

Chi-square analyses were conducted to assess the associations between all categorical dependent variables and each of the two suicide status groups (IV). For variables with fewer than 5 entries, Fisher's Exact Statistics were calculated.

Independent samples t-tests were conducted for continuous variables, such as age or length of hospitalization.

### ***Power analysis***

An *a-priori* power analysis was conducted using G\*Power, version 3 for Macintosh (72). Based on Cohen's (54) small (0.2) effect size, the estimated minimum sample size necessary for a two-group  $\chi^2$  test with a 0.05 two-sided significance level to have 80% power to detect differences in each demographic characteristic was calculated at 197 records. Therefore, the sample ( $N = 955$ ) was adequately powered for these analyses.

### **Aim 3**

To examine the extent to which the characteristics significantly differentiating the SI Group from the SA Group (based on univariate analyses) would predict suicide group status (SI versus SA) after controlling for gender.

### ***Independent variables***

Significant demographic, military, psychiatric, and hospitalization-related characteristics identified based on univariate analyses conducted under Aim 2.



### ***Dependent variables***

Suicide Status (SI Group versus SA Group)

### ***Control variable***

Age was entered into the second level of the regression to control for potential confound based on age. Gender was entered into the final level of the regression after the characteristics from univariate analyses were examined.

### ***Statistical analysis***

A binary logistic regression model (Model 1) was initially conducted to examine the association between significant demographic, military, psychiatric, and hospitalization-related characteristics (identified based on univariate analyses conducted under Aim 2) and suicide status groups (SI versus SA). Age was entered into a second level of the model to control for the potential confound of age. Gender was incorporated into the final level of the model to determine if the significant factors from Level 1 maintained their predictive power. Subsequent regression models (Models 2 and 3) were conducted for both men and women independently to determine how the suicide status groups differed by each particular gender.

### ***Power analysis.***

Using G\*Power 3.0 (72) to conduct an a priori power calculation for necessary sample size. Based on Cohen's (54) small (0.2) effect size, the estimated minimum sample size necessary for a two-group  $\chi^2$  test with a 0.05 two-sided significance level to have 80% power to detect differences in each demographic characteristic was calculated

at 568 cases. Therefore, the sample ( $N = 955$ ) was adequately powered for these regression analyses.

## **CHAPTER 3: Results**

### **AIM 1. DEMOGRAPHIC MILITARY SERVICE, AND PSYCHIATRIC CHARACTERISTICS OF THE SAMPLE**

#### **Demographic characteristics**

The sample was comprised of 955 military service members psychiatrically hospitalized for inpatient care at WRAMC due to suicide ideation or a suicide attempt between 2001 and 2006. Table 2 shows the demographic characteristics of the sample based on information recorded in the EMR. The mean age of the sample was 26.3 years, with a median of 23.0 years (SD = 8.0; range 17-60 years). Men comprised 68.8% (n = 657) of the sample and women 31.2% (n = 298). Women are generally hospitalized more frequently for suicide behaviors, both within the civilian population and the military (The majority of the sample was Caucasian (64.4%), followed by African American (21.0%), Hispanic/Latino (5.4%) and other races comprised 9.2% of the sample. At the time of hospitalization, the majority of the sample (48.6%) was not married, followed by 35.9% being married, and 15.5% of patients were divorced, separated or widowed.

#### **Military service characteristics**

All active duty, National Guard, and reserve personnel were included in this study. The following distribution was noted: Army (69.2%), Air Force (13.4%), Navy (9.8%), Marine Corps (6.3%), and Coast Guard (1.3%). The majority of those hospitalized were junior enlisted (E1-E4; 69.7%), followed by junior non-commissioned officers (E5-E6; 19.5%). The remaining rank categories consisted of senior non-commissioned officers (E7-E9; 4.5%), company grade officers (O1-O3; 4.2%), field grade officers (O4-O6; 1.9%) with only one warrant officer (W1-W5; <1%) in the sample (See Table 2). Rank at the time of hospitalization was unknown for only one patient in

the sample; however, this member was noted as being active duty in the U.S. Marine Corps, so the patient was included in the analyses.

### **Psychiatric characteristics**

Psychiatric characteristics for the entire sample are provided in Table 3. The most common primary diagnostic categories for Axis I disorders were adjustment disorders (44.1%), followed by mood disorders (40.8%), with substance-related disorders (23.8%) and anxiety disorders (15.1%) comprising the other predominant diagnostic categories. Further, the most common primary psychiatric diagnoses recorded in the EMRs included: Adjustment Disorder with Mixed Disturbance of Emotion and Conduct (AD w/ MDEC) (26.4%), MDD (25.2%), Adjustment Disorder with Depressed Mood (AD w/ DM) (10.9%), PTSD (8.8%), Dysthymic Disorder (7.4%) and Bipolar Disorder (4.3%). The most common substance-related disorder was Alcohol Dependence (11.5%), followed by Alcohol Abuse in (8.5%). In terms of Axis II psychopathology, about a quarter (25.1%) of the sample was given an Axis II personality disorder diagnosis after admission evaluations and a fifth (20.8%) of the sample had personality disorder traits annotated in the EMR. The remainder of the sample had either no diagnosis annotated (41.9%) or a deferred diagnosis (12.0%) on Axis II.

Further, information related to the hospitalization such as length of stay and disposition at discharge was analyzed for the entire sample (Table 3). The mean length of hospitalization was 8.79 days (SD = 9.98). At discharge, 38.7% were returned to full duty, whereas nearly a third (29.9%) were recommended for administrative separation, 14.3% were recommended for medical evaluation boards, 10.1% were released to locations other than the patient's home (e.g., released to law enforcement, First Sergeant

or commanders), 2.9% were discharged to their homes and 2.3% were discharged to partial hospitalization programs). Disposition was unknown or not annotated in the EMR for 1.7% of the sample.

To determine military-related stressors for each case, the providers' entries on Axis IV were examined. Military stressors were annotated for 59.6% of the sample. Of the military-related stressors, adjustment issues were examined for both individuals with documented difficulty adapting to military life or difficulty adapting to leaving the military near the time of hospitalization. Pending military separation, retirement, or other end of military career stress was noted on Axis IV for 6.9% of the sample while stressors related to military adjustment were present in the EMR for 6.3% of the sample.

Documentation of previous suicide attempt history was examined for the sample. It is important to note that 421 cases had been admitted for a recent suicide attempt. The suicide attempt history presented here is for the entire sample and does not take into account the suicide attempt for which the person was hospitalized for at the time of the record review. While the majority of the sample (55.1%; n = 526) had no prior suicide attempt history, one-fifth (20.0%; n = 191) of the sample had a documented history of one prior suicide attempt, with 17.0% (n = 162) recorded as having made two or more previous suicide attempts. Suicide attempt history was unknown for 8.0% (n = 76) of the sample, meaning there was no indication that previous history had been recorded in the EMR. Of the portion of the sample who disclosed a discrete number of prior SA, there was an average of 1.67 attempts (SD = 1.08, range = 1-8).

## **AIM 2. COMPARISONS BETWEEN THE SUICIDE ATTEMPT VERSUS SUICIDE IDEATION GROUPS**

### **Demographic and military service characteristics.**

Of the 955 total records coded, 421 records (44.1%) were categorized as suicide attempt admission cases whereas 534 (55.9%) records were categorized as suicide ideation admission cases. In terms of the sample, categorization was based upon reason for admission as opposed to lifetime history of non-fatal self-injurious suicidal behaviors. Therefore, the operational definition for SA status group member was an individual *specifically* hospitalized for suicide attempt; conversely, the operational definition of an SI status group member was an individual *specifically* hospitalized for suicide ideation *regardless* of prior suicide attempt history. Suicide status (i.e., attempt versus ideation) group differences were examined across all of the demographic and military characteristics. Table 4 presents a summary of these analyses.

Overall, Chi-Square analyses  $\chi^2(1, N = 955) = 16.220, p = .000$  indicated that the sex ratio for the SI group (i.e., 2.87 males for every 1 female) was significantly greater than the sex ratio for the SA group (i.e., 1.63 males for every 1 female). In terms of age, an independent sample t-test showed significant between group differences with the SI ( $M = 26.83$  years;  $SD = 8.46$ ) group older than the SA groups ( $M = 25.64$  years;  $SD = 7.24$ );  $t(953) = -2.312, p = .021$ . The mean age of men in the sample was 26.7 years ( $SD = 8.18$ ), with a median age of 24.0 years (Figure 11). For women, the mean age was 25.44 years ( $SD = 7.39$ ) with a median age of 23.0 years (Figure 12). For both genders, the age distribution negatively skewed towards a greater frequency of younger adults within the sample. No significant between group differences were noted on race, marital status, and military service branch. In terms of military rank, no significant between group differences were observed for the various rank groupings.

### **Psychiatric diagnostic characteristics**

Table 5 provides a summary of psychiatric admission diagnostic differences based on suicide status group. The most common Axis I admission diagnostic categories for those in the SA group were adjustment disorders (46.1%), mood disorders (39.7%) substance-related disorders (24.2%), and anxiety disorders (12.8%). Similarly, the most common Axis I admission diagnostic categories for those in the SI group were adjustment disorders (42.5%), mood disorders (41.8%), substance-related disorders (23.6%), and anxiety disorders (16.9%). Chi-Square analyses did not demonstrate any significant between group differences on the Axis I admission diagnostic categories. However, there was a trend towards more anxiety disorders diagnostic category in the SI group than the SA group, but it did not reach statistical significance,  $\chi^2 (1, N = 955) = 2.982, p = .084$ . Comorbid Axis I psychopathology for each patient was compared by group status by using an independent sample t-test. There were not significant differences between groups with the SI ( $M = 1.39; SD = .74$ ) having nearly the same number of Axis I diagnoses compared to the SA group ( $M = 1.45$  years;  $SD = .86$ );  $t (953) = -.882, p = .38$ .

The most common Axis I admission diagnoses for those in the SA group were AD w/ MDEC (32.1%), MDD (22.3%), Alcohol Dependence (11.2%), Alcohol Abuse (8.8%), AD w/ DM (8.6%), and PTSD (8.1%). For the SI group, the most common Axis I admission diagnoses were MDD (27.5%), AD w/ MDEC (21.9%), AD w/ DM (12.7%), Alcohol Dependence (11.8%), PTSD (9.4%) and Alcohol Abuse (8.2%). Chi-Square analyses indicated that AD w/ MDEC was diagnosed in a significantly higher percentage of patients in the SA group compared to those in the SI group,  $\chi^2 (1, N = 955) = 12.501, p = .000$ . Conversely, there was a higher percentage of AD w/ DM diagnoses for patients

in the SI group,  $\chi^2 (1, N = 955) = 4.245, p = .039$ . Finally, there was a trend towards more MDD diagnoses in the SI group than the SA group, but it did not reach statistical significance,  $\chi^2 (1, N = 955) = 3.374, p = .066$ . None of the remaining diagnoses resulted in significant between group differences.

In terms of Axis II admission diagnoses for patients in the SA group, the most commonly documented were Personality Disorder Not Otherwise Specified (PD-NOS) (19.2%) followed by BPD (8.6%). Similarly, among the SI group, PD-NOS was the most common diagnosis (13.1%), followed by BPD (4.9%). A significantly greater percentage of SA patients, compared with SI patients, received a PD-NOS diagnosis,  $\chi^2 (1, N = 955) = 6.648, p = .010$ . In addition, a significantly greater percentage of SA patients, compared with SI patients, received a BPD diagnosis,  $\chi^2 (1, N = 955) = 5.258, p = .022$ .

Approximately 4 out of 10 patients in both the SA (40.1%) and SI (43.3%) groups did not receive a psychiatric diagnosis on Axis II. However, the EMR review showed that there was a significantly greater percentage of deferred diagnosis on Axis II for those in the SI group (14.0%), compared with the SA group (9.5%),  $\chi^2 (1, N = 955) = 4.589, p = .032$ .

### **Suicide attempt history**

As stated earlier, approximately 37% (n = 353) of the total sample had a documented history of at least one prior suicide attempt. Table 6 provides a summary of prior suicide attempt differences based on suicide status group. Of those who indicated a history of previous suicide attempt, there were 324 individuals who reported a discrete number of suicide attempts (versus those whose records indicated “multiple” suicide attempts). For those patients who had a documented prior suicide attempt (i.e., occurring



prior to hospitalization date included in the EMR), those in the SA group had an average of 1.64 attempts (SD = 1.00) and those in the SI group had an average of 1.65 attempts (SD = .98). An independent samples *t*-test indicated no significant between group differences on the average number of documented prior suicide attempts,  $t(322) = -.071$ ,  $p = .937$ .

Furthermore, analyses on the categorical number of prior suicide attempts (i.e., none, one, two or more) indicated no significant between group differences. A trend towards significance was observed for those in the SA group who were more likely to show documentation of one prior SA compared with those in the SI group,  $\chi^2(1, N = 955) = 3.097$ ,  $p = .078$ . The EMR for a certain percentage of patients (i.e., 4% of the SA group versus 11% of the SI group) did not contain documentation for prior SA. This may be due to either the provider not documenting the reported information and/or simply not having this information (i.e., unknown). A significantly greater number of SI cases, compared with SA cases were missing the prior suicide attempt information,  $\chi^2(1, N = 955) = 15.796$ ,  $p = .000$ .

### **Childhood and adulthood traumatic history**

Information for these analyses was based on documented trauma histories noted in the EMR for each case. In terms of childhood trauma, the following categories of trauma were extracted during coding: domestic violence, sexual abuse, neglect, physical abuse and any other types of reported trauma. Within the category of adulthood trauma, the following categories of trauma were extracted during coding: combat exposure, death of a person close to patient, domestic violence, emotional abuse, motor vehicle accidents, physical abuse, pregnancy loss, robbery, sexual trauma, and other (undefined) traumas.

Table 7 provides a summary of analyses pertaining to childhood and adulthood traumatic life events.

In terms of childhood trauma, individuals in the SA group compared with those in the SI group were significantly more likely to have documented histories of sexual traumatization,  $\chi^2(1, N = 955) = 4.862, p = .027$ . Although not statistically significant, there was a trend for a greater percentage of documented childhood neglect within the SA group,  $\chi^2(1, N = 955) = 3.590, p = .058$ . Conversely, there was a non-significant trend for more documented childhood physical abuse within the SI group,  $\chi^2(1, N = 955) = 3.141, p = .076$ .

In terms of adulthood trauma, individuals in the SA and SI groups were generally comparable in terms of the frequency of their documented traumatic life events (e.g., combat exposure, sexual assault). However, individuals in the SA group compared with those in the SI group were significantly more likely to have documented histories of domestic violence,  $\chi^2(1, N = 955) = 6.891, p = .009$ . EMR for those in the SI group had a significantly higher percentage of other (unidentified) lifetime traumas,  $\chi^2(1, N = 955) = 4.318, p = .038$ .

A final examination of trauma was conducted to determine if there were any differences in terms of polytrauma history. First, the documented trauma history for those ( $n = 541$ ) with at least one trauma history indicated a mean of 1.90 prior traumas in the SA group ( $SD = .867$ ) and a mean of 1.89 prior traumas in the SI group ( $SD = .823$ ). An independent samples *t*-test revealed there was no significant between group differences on the average number of documented trauma history,  $t(539) = .040, p = .968$ .

#### **Psychosocial stressors as indicated on Axis IV**

Using the information entered into Axis IV regarding psychosocial stressors at the time of admission, comparisons between the SA and SI groups were conducted (see 8). Military stressors noted on Axis IV were examined by military adjustment issues, namely those related to early career adjustment and end of career issues (e.g., medical or administrative separation, retirement). Patients in the SA group had a higher percentage of stressors related to end of career (i.e., pending retirement, separation, or medical evaluation board); this was significantly different when compared using Chi-square analysis,  $\chi^2 (1, N = 955) = 4.126, p = .042$ . In comparison, patients in the SI group had a higher percentage of stressors relating to adjustment to military life, resulting in a significant Chi-square analysis,  $\chi^2 (1, N = 955) = 4.005, p = .045$ .

### **Length of psychiatric hospitalization and disposition**

Table 9 provides data pertaining to documented length of psychiatric hospitalization and disposition following discharge from the hospital. For 25 individuals in the sample, the length of hospitalization was not documented. First, the average length of psychiatric hospitalization was 9.40 days (SD = 12.13, range = 1-108 days) for the SA group and 8.30 days (SD = 7.84, range = 1-77 days) for the SI group, with no significant between-group differences found,  $t(928) = 1.677, p = .094$ .

In terms of disposition status at discharge, none of the between-group comparisons reached statistical significance, indicating for the most part, equivalence of disposition decisions amongst both groups. Noteworthy was the following finding: individuals in the SI group were slightly more likely to be returned to full duty (41.2%) compared with individuals in the SA group (35.6%), which trended towards significance  $\chi^2 (1, N = 955) = 3.076, p = .079$ . Otherwise, as stated earlier, none of the other

comparisons reached significance. For instance, about one out of three from both the SA group (32.1%) and the SI group (28.3%) were recommended for administrative separation, which did not significantly differ by group. Approximately one out of seven from both the SA group (14.5%) and the SI group (14.2%) were recommended for a Medical Evaluations Board, which also did not reach significance.

### **Comparisons by documented suicide attempt history**

Based on the similarities noted within the univariate analyses, the author explored the potential impact of differences when examined by suicide status group and documented suicide attempt history. To conduct these analyses, an additional variable was created with three suicide status groups 1) Suicide Attempt, 2) Suicide Ideation with Documented Prior Suicide Attempt and 3) Suicide Ideation with No Documented Prior Suicide Attempt. All EMR with an unknown history of prior suicide attempt were excluded from these analyses, yielding a sample size of 879 records. Demographic, military service and psychiatric diagnoses were examined with Chi-Square analyses. The suicide attempt group had a mean age of 25.59 (SD = 7.25), the SI with documented prior suicide attempt mean age was 25.41 (SD = .33), while the SI with no history of prior suicide attempt had a mean age of 27.36 years (SD = 8.82). A one-way ANOVA was used to test for differences among the three groups by age; it indicated the groups differed significantly by age,  $F(2, 876) = 5.35, p = .005$ .

Significant findings within these supplemental analyses included gender differences, with a greater percentage of women within both the SA and SI with documented prior suicide attempt groups compared to the SI with no documented suicide attempt history,  $\chi^2(2, N = 879) = 16.780, p = .000$ . Further, E1-E4 pay grades were

significantly more likely to be within both the SA and SI with documented prior suicide attempt groups compared to the SI with no documented suicide attempt history,  $\chi^2 (2, N = 879) = 11.380, p = .003$ .

In terms of significant psychiatric diagnostic *categories*, AD were noted more frequently in the SA and SI with no documented SA than the SI with documented prior suicide attempt,  $\chi^2 (2, N = 879) = 6.417, p = .04$ . Substance disorders were seen disproportionately more often within the SI with documented SA history,  $\chi^2 (2, N = 879) = 6.861, p = .032$ . Specific Axis I *diagnoses* that revealed significant differences included AD with MDEC, which was documented more often within the SA group,  $\chi^2 (2, N = 879) = 7.241, p = .027$ . Alcohol dependence was noted more frequently in the SI with documented prior SA group than the other groups,  $\chi^2 (2, N = 879) = 7.239, p = .027$ . BPD was seen frequently within both the SA and SI with documented prior suicide attempt groups compared to the SI with no documented suicide attempt history,  $\chi^2 (2, N = 879) = 13.933, p = .001$ . PDNOS diagnoses followed this same trend for significantly more diagnoses in the SA and SI with documented prior suicide attempt groups compared to the SI with no documented suicide attempt history,  $\chi^2 (2, N = 879) = 12.124, p = .002$ . Conversely, deferred diagnosis on Axis II was seen more frequently in the SI with no documented suicide attempt history when compared to the SA and SI with documented prior suicide attempt groups,  $\chi^2 (2, N = 879) = 6.104, p = .047$ . Full statistical information for these analyses is presented in Table 10.

### **AIM 3. REGRESSION ANALYSES**

In order to address how the significant between-group differences, as identified in univariate analyses, were associated with an increased likelihood of being in either the

suicide ideation or suicide attempt groups, several logistic regressions were conducted. To properly construct the data for these analyses, each of the variables were dummy coded into dichotomous variables (i.e., “0” / “1”), with “1” representing that the variable was present in that patient’s record. The only exceptions were for gender and suicide status, where women and suicide ideation were coded as “1”, while men and suicide attempt were coded as “0.”

The variables included in the initial regression analysis included: Axis I diagnoses (AD w/ DM and AD w/ MDEC), Axis II diagnoses (deferred diagnosis, BPD, and PD-NOS), Axis IV annotations (difficulties adjusting to military life and difficulties adjusting out of the military), documentation of trauma history (childhood sexual trauma, adult domestic violence history and other [unidentified] lifetime trauma history). Adjusted odds ratios were obtained by adding age and documented history of prior SA to control for potential confounding and then by adding gender to the final iteration of the model.

Table 11 shows the results of the first age-adjusted binary logistic regression model indicating several variables that were associated with either suicide status group at significant levels. PDNOS diagnosis on Axis II was negatively associated with the SI group (AOR = .61;  $B = -.491$ ; SE .200;  $p = .037$ ). In terms of trauma history, documented history of adulthood domestic violence was negatively associated with membership in the SI group (AOR = .29;  $B = -1.237$ ; SE .599;  $p = .030$ ). Finally, those whose Axis IV entries indicated difficulties adapting to the military were 1.90 times more likely to be in the SI group ( $B = .644$ ; SE .300;  $p = .033$ ). Those individuals with a documented history of other (unidentified) lifetime trauma were 1.93 times more likely to be in the SI group ( $B = .656$ ; SE .260;  $p = .033$ ).

In the second adjusted logistic regression, gender was entered into the model to determine if it would account for the significant predictors in the first model. The results reflected minor changes to the predictors, but all of the predictors identified to be significant in the first adjusted regression still remained significant. A diagnosis of PDNOS on Axis II was negatively associated with membership in the SI group (AOR = .60;  $B = -.506$ ; SE .201;  $p = .030$ ). As reflected in the first model, adult domestic violence trauma was negatively associated with membership in the SI group (AOR = .31;  $B = -1.174$ ; SE .600;  $p = .038$ ).

Individuals with difficulty adjusting to military service were 1.83 times more likely to be in the SI group ( $B = .605$ ; SE .302;  $p = .048$ ). Patients with a documented other [unidentified] lifetime trauma were 1.92 more likely to be in the SI group ( $B = .650$ ; SE .261;  $p = .028$ ). Finally, female gender was negatively associated with membership in the SI group (AOR = .65;  $B = -.426$ ; SE .159;  $p = .004$ ). Table 11 presents the summary of the logistic regression analysis predicting suicide status group for the entire sample controlled for age and suicide attempt history, with the addition of gender into the final model.

### **Gender Related Analyses**

Additional analyses were conducted with the sample split by gender using the variables that had been entered into the original regression analyses. The variables included: Axis I diagnoses (AD w/ DM and AD w/ MDEC), Axis II diagnoses (deferred diagnosis, BPD, and PD-NOS), Axis IV annotations (difficulties adjusting to military life and difficulties adjusting out of the military), documentation of trauma history (childhood sexual trauma, adult domestic violence history and other [unidentified] trauma history).

Chi-square analyses were then conducted on the split group. The predictors from the original regressions were then entered into a logistic regression by gender, results of which are listed in Table 12. Adjusted odds ratios again were obtained by adding age and history of prior suicide attempt into the second level of the regression model.

### **Findings for Men**

There were a total of 657 men in the sample, with 261 men in the SA group and 396 men in the SI group. Overall, men in the SA versus SI group did not significantly differ on BPD, deferred diagnoses on Axis II, difficulties in adjustment to military life and end of service, history of childhood sexual abuse and documented history of prior SA.

In terms of notable findings, there was a significantly greater percentage of men with a diagnosis of Adjustment DO with MDEC in the SA group (29.9%) compared to the SI group (23.0%),  $\chi^2 (1, N = 657) = 3.926, p = .048$ . Conversely, there was a significantly greater percentage of men with a diagnosis of Adjustment DO with depressed mood in the SI group (13.4%) than the SA group (7.3%),  $\chi^2 (1, N = 657) = 6.007, p = .014$ . PDNOS diagnoses were more commonly given to men in the SA group (20.3%) versus the SI group (14.1%), which was significant when compared with the Chi-square analysis,  $\chi^2 (1, N = 657) = 4.321, p = .038$ . Men in the SA group (2.7%) had documented trauma as a domestic violence victim in adulthood more frequently than men in the SI group (0.5%) when compared with Fisher's Exact Test,  $\chi^2 (1, N = 657) = 5.518, p = .033$ . Other [unidentified] lifetime traumas were documented more frequently in the SI group (10.9%) than the SA group (6.1%), which was also significant,  $\chi^2 (1, N = 657) = 4.303, p = .038$ .



Each of the predictors entered into the original regressions were put into the model, with age and documented history of prior SA again included to determine which factors were significant specific to males in this study. Significant factors were associated with suicide status in the split sample. PDNOS diagnosis was negatively associated with SI group status (AOR = .57;  $B = .710$ ; SE .318;  $p = .03$ ). Finally, other [unidentified] lifetime trauma was associated with a 2.14 greater odds of being in the SI group ( $B = .710$ ; SE .318;  $p = .03$ ).

### **Findings for Women**

The same strategy was applied to examine the women in the sample, starting with Chi-square analyses. Overall, women in the SA versus SI group did not significantly differ on AD w/ DM, BPD, PD-NOS, deferred diagnoses on Axis II, difficulties in adjustment to end of service, childhood sexual abuse, adult domestic violence, other [unidentified] trauma or documented history of prior SA.

Notable findings included a significantly larger percentage of women with a diagnosis of Adjustment DO with MDEC in the SA group (35.6%) than the SI group (18.8%),  $\chi^2 (1, N = 298) = 10.388, p = .001$ . Also, a greater percentage of women in the SI group (7.2%) had documented difficulties adapting to military life than those in the SA group (1.9%),  $\chi^2 (1, N = 298) = 5.124, p = .024$ .

The regression analysis was conducted for women and yielded two significant results. First, Adjustment DO with MDEC was negatively associated with SI group membership (AOR = .45;  $B = -.842$ ; SE .292;  $p = .004$ ). Second, documented difficulties adapting to military life was associated with 5.29 times greater odds of being in the SI

status group ( $B = 1.533$ ; SE  $.695$ ;  $p = .03$ ). Full results for these exploratory analyses are also presented in Table 12.

## **CHAPTER 4: Discussion**

In this dissertation study, a retrospective review of 955 electronic medical records for military service members hospitalized due to suicide ideation (44%) or suicide attempt (56%) was performed. In this chapter, the research aims are discussed in context of the findings and their relation to the existing literature in the relevant content areas.

### **AIM 1: DEMOGRAPHIC, MILITARY SERVICE, PSYCHIATRIC AND HOSPITALIZATION CHARACTERISTICS**

The first aim of the study was to gain a better understanding of the overall characteristics of the sample. There were no hypotheses tested here. In summary, the average age of the sample was 26 years old with a median of 23 years. The most commonly documented military rank was junior enlisted (E1-E4) and the Army was the most frequently represented branch of service. Women were overrepresented at about one-third of the sample when compared to the general military population; as the average representation of women in the military is about 15% (63). This finding highlights that while military men, compared with their female counterparts, have higher rates of suicide death in the military (124), military women require much attention in terms of their experiences with suicide ideation as well as with non-fatal suicidal self-directed violence.

A majority of the sample had at least one Axis I diagnosis, most commonly a mood or an adjustment disorder, followed by a substance-related and an anxiety disorder. In 2012, these four diagnoses were among the top five conditions accounting for over half the total DoD hospital bed days in 2012, the fifth reason being maternal delivery (15). Within the U.S., the most common diagnoses for individuals hospitalized in 2011 included mood disorders, dementia-related and cognitive disorders, anxiety disorders, and

substance-related disorders(5). While most in the sample had a deferred diagnosis on Axis II or no diagnosis on Axis II at all, about 25% of the sample was given a personality disorder diagnosis. Overall, the sample was hospitalized for over 8 days on average and individuals were primarily returned to duty following their hospitalization (~40%) with about a third of the sample recommended for administrative separation. Notably, this length of hospitalization appears longer than the national average of 2.7 days for suicide-related admissions (4). Moreover, it is longer than the national average of 6.3 days for individuals hospitalized with a personality disorder (3).

Military stressors were documented for almost 60% of the cases on the DSM Axis IV. Pending military separation, retirement, or other end of military career stress and stressors related to military adjustment were noted for about 6% of the sample. The remainder of the military stressors did not explicitly describe the nature of the military stressor or were related to other domains (e.g. isolation from social support). Quick and colleagues (153) found that self-reliance predicted positive training outcomes and low burnout among basic military trainees, suggesting among this sample, the adjustment to military stress might have contributed to their difficulties. Moreover, for those individuals with difficulty adapting to the end of a military career, stress is a commonly noted problem, whether the end of career is chosen and desired (e.g. wanted retirement) or unexpected (e.g. separated due to administrative or medical reasons, legal-related reasons). (187).

One out of five admissions had a documented history of one prior suicide attempt with 17% of these as having made two or more previous suicide attempts. The average number of prior attempts (for those with documented histories of SA) was 1.67 attempts.

These findings suggest that the assessment and treatment needs of single versus multiple suicide attempters must be considered carefully by treating providers as these two subgroups may, in fact, present typologies of suicide that can facilitate more comprehensive risk assessment and management (111; 112). Finally, approximately 8% of the records did not indicate any documentation about prior history of suicide attempt. Therefore, one clear recommendation for clinical practice is that providers who work in inpatient military treatment facilities do a systematic job in terms of documenting this crucial piece of clinical data for their patients. As mentioned earlier, prior suicide attempts are robust risk factors for eventual death by suicide and must be clearly documented in a patient's chart for risk determination and treatment planning purposes.

## **AIM 2: COMPARISONS BETWEEN THE SUICIDE ATTEMPT VERSUS SUICIDE IDEATION GROUPS**

### **Suicide Status Group, Gender, and Rank (Hypothesis 2a)**

Individuals in the SA group compared with the SI group were expected to be more likely to be female and of lower rank. While men outnumbered women in terms of the overall representation in the sample, women were hospitalized for a suicide attempt at a greater proportion than for suicide ideation, supporting the hypothesis that women would more frequently be among the suicide attempt group. The sex ratio within the SI group was 2.87 men to 1 woman, while the sex ratio in the SA group dropped to 1.63 men to 1 woman, despite men being represented more frequently in the sample. This finding is supported by the general suicidology literature reflecting that women attempt suicide at a rate three times higher than men (9). Within the sample of women, there were 1.15 hospitalizations for SA to every one hospitalization for SI (1.15/1); while for men, the ratio was 0.66 SA hospitalizations for every one instance of SI hospitalization

(.66/1). While the ratio in the general U.S. population is a higher ratio than seen in this sample, the significant findings between suicide status group and gender suggest that the literature is somewhat supported in terms of a higher ratio of suicide attempts, despite the lower percentage of women in the sample.

Expanding upon the well-documented gender gap in suicide attempt occurrences, within the U.S. Military, women are given psychiatric diagnoses more frequently than men, as noted in a 12-year (2001-2011) surveillance of military mental health diagnoses (14). The top two diagnoses were AD and PD, twice as high as for men, both unsuiting conditions for military service that require administrative discharge. Given the literature presented in this study that suggests AD and PD are associated with increased suicide risk, and that women are more likely to attempt suicide than men, it would be expected women would be less likely to be retained in the military than men. This would contribute to a lower ratio of SA between women and men, as seen in this present study.

An important factor that may have contributed to the differences in suicide attempt ratios is the increased risk for suicide following an SA. The Defense Suicide Prevention Office reports that the risk of suicide is increased up to 80 times for women in the 12 months after an attempt; however, for men, this risk increases to about 200 times greater risk (60). This knowledge may have inherently influenced providers to hospitalize men for SA, no matter how severe; further, it may have influenced providers to hospitalize men for SI.

Contrary to the expectation that the suicide attempt group would consist of a significantly higher number of junior ranking enlisted or officers, no significant between group differences were found for various categories of military rank. This finding

suggests that military personnel who are hospitalized for suicide ideation versus suicide attempt did not appear to differ on military rank status. However, it is notable that while the junior enlisted seemed to be equally likely to be hospitalized for SI or SA, in general, those in the SI group were significantly older than the SA group, suggesting that younger service members (expected to be of lower rank) are more prone to be hospitalized for suicide ideation-related reasons.

### **Suicide Status Group and Military Adjustment Stressors (Hypothesis 2b)**

Individuals in the SA group compared with the SI group were expected to show more military adjustment related psychosocial stressors as indicated on Axis IV of their admission diagnosis. An examination of the *types* of adjustment stressors showed that individuals hospitalized for SI were significantly more likely to report difficulties adjusting into the military or adapting to military life. Conversely, individuals hospitalized for SA were significantly more likely to report difficulties with the end of their military careers, whether through retirement, separation or medical separation, providing partial support for the research hypothesis.

These findings suggest that different types of psychosocial stressors pertaining to one's military career may potentially serve as contributors to one's suicidal thoughts and/or behaviors – and that these stressors are being documented for personnel psychiatrically hospitalized for a subgroup of SI versus SA patients. Providers are encouraged to more consistently document these types of military specific stressors for each psychiatric patient. Previous literature notes interpersonal, workplace adjustment and career change difficulties in conjunction with suicide risk (117). This study is the first reporting on adjustment stressors within an inpatient military sample to determine

differences between suicide ideation and attempt samples. An exploratory hypothesis for future examination is whether or not the end of career related military stressors, in fact, directly or indirectly contribute to one's suicide attempt, necessitating psychiatric hospitalization.

Finally, while Axis IV contains information on numerous psychosocial stressors, only military adjustment stressors were examined. While interpersonal or financial problems could contribute to individual risk for military adjustment difficulties (117), such stressors were not examined. This information was listed within the EMR as free-flow text, making it cumbersome to extract. For a large sample as this, full psychosocial stressor analyses were not practical. Moreover, the connection between interpersonal, legal and financial stressors are well documented in terms of increased suicide risk; therefore, it is recommended this sample be examined in subsequent studies to determine if any relevant risk indicators are present within this raw data.

### **Suicide Status Group and Admission Psychiatric Diagnoses (Hypothesis 2c)**

Individuals in the SA group compared with the SI group were expected to demonstrate a higher frequency of admission diagnoses of mood disorders, anxiety disorders, substance disorders, and personality disorders as well as a lower frequency of admission diagnoses of adjustment disorder. Contrary to expectations, no significant between group differences were found in terms of the *broad* categories of mood, anxiety, substance, and adjustment disorders. If the SA group is conceptualized as a subset of patients with more severe psychopathology, the analyses performed here do not support this expectation.



One explanation for this finding (i.e., similar diagnoses across the two groups) may be related to military providers' caution in assigning diagnoses to service members in order to minimize potential negative consequences to one's military career. However, another explanation may be that the diagnoses observed truly reflect the diagnostic characteristics of the patients. The best strategy for commenting more clearly on this issue would be to design a study where the provider diagnoses are compared with independent diagnoses assigned based on a structured clinical diagnostic interview.

An analysis of the *specific* diagnoses within each category of mood, anxiety, and substance disorders showed non-significance as well. However, individuals hospitalized for SA versus SI were significantly more likely to have a documented admission diagnosis of AD w/ MDEC whereas those hospitalized for SI versus SA were significantly more likely to have a documented admission diagnosis of AD w/ DM. This provided partial support for the hypothesis regarding adjustment disorder diagnoses.

The findings related to adjustment disorders both confirm and contrast with the literature on psychiatric diagnoses and suicide risk. For example, mood disorders have been noted to increase suicide attempt risk in both men and women (191); however, this was not statistically significant in this sample. Among individuals presenting with suicide ideation, adjustment disorder has been noted as the most common disorder at admission (34). A twelve-fold risk of suicide attempt has been noted among individuals with an adjustment disorder, as individuals struggle with the difficulties of an acute stressor (83). This was seen within this sample, as individuals who had made a suicide attempt were more frequently diagnosed with AD w/ MDEC while those who were experiencing suicide ideation were commonly diagnosed with AD w/ DM. The diagnosis

of AD w/ MDEC captures the disruption of the individual due to anxiety, depression, and the distress and behavior changes due to a stressful life event while the specifier of depressed mood describes symptoms like those of depression (10). What cannot be ascertained by the data is how providers made the clinical decision between the MDEC and depressed specifiers. However, it is likely MDEC was given to those who had made a suicide attempt because of the suicide behavior. Moreover, it is unclear if a clinical bias was involved in the diagnosis of MDEC being made for those hospitalized following SA, as opposed to primarily mood-related characteristics of the depressed mood specifier added for those who reported only thoughts of suicide.

Some of the predominant, frequent diagnoses noted within the military were not significantly different by suicide status group in this study, namely substance related disorders and PTSD. This does not diminish the fact that nearly a quarter of the sample received a substance-related diagnosis, given the fact that a quarter of all military suicide deaths were among individuals with a history of substance abuse (124). Also, PTSD has long been connected to individuals in the military, but among this sample, the percentage of patients given the diagnosis was quite small. Recent events, involving under-diagnosis within certain areas of the Department of the Army have led to standardized diagnosis and treatment of PTSD (66).

Other potentially relevant diagnoses for this research included sleep-related disorders. There were no sleep-related disorders documented on Axis I for this sample, which highlights the underutilization of these important diagnoses for psychiatric inpatients in this sample. Sleep disorders are associated with a greater odds of psychiatric inpatient hospitalization (107), and the co-occurrence between sleep

problems, psychiatric conditions and suicide ideations is well documented (25); yet in this sample, the diagnoses were not apparent upon admission. Given this wealth of understanding, this is a surprising finding because of the robust relationship between sleep disturbance and suicide risk.

Further, the SA group showed a significantly higher frequency of BPD and PD-NOS diagnoses when compared to those within the SI group, which supported the research hypothesis. Conversely, those in the SI group compared with those in the SA group had a significantly greater proportion of deferred Axis II diagnoses. BPD and PD-NOS are associated with increased suicide risk, both SI and SA (86; 147; 151). Notably these diagnoses were made in context of admission to inpatient care. The diagnosis of a personality disorder is a sensitive one, especially within the military population, where a personality disorder is an unsuiting condition for military service, and will lead to likely discharge. Another area for consideration in this sample is potential bias of providers to make a personality disorder diagnosis for individuals who have made a suicide attempt or who endorse suicide ideation, as it is a diagnostic characteristic of disorders such as BPD.

With regards to personality disorder diagnoses, the predominant diagnoses included PD-NOS and BPD, which (as stated previously) were more frequently diagnosed within the suicide attempt group. This is not surprising as individuals with BPD are at an increased risk of suicide attempt, especially when present with Axis I disorders (185). Such comorbid disorders include MDD, PTSD, and substance-related disorders further history of traumatic events increases suicide risk within this population. Further, the higher percentage of deferred Axis II diagnoses within the SI group is of interest, given that personality disorder diagnoses are listed as an unsuitable condition for

military service, especially if the disorder impacts a person's functioning or ability to carry out the military mission (136). For individuals in the SA group, a personality disorder diagnosis was made more frequently at admission, which was generally within the first 48 hours of admission. There also was no evidence of inter-clinician reliability in terms of personality disorder diagnoses. Lobbestael and colleagues (122) found that inter-clinician diagnosis of Axis II conditions was good when a structured clinical interview was given; however, there was no evidence listed within the EMR of what assessments were conducted to reach this career-impacting diagnosis. PDNOS is not as specifically defined as other personality disorders, which Pagan and colleagues stated leads to lack of consistency in its diagnosis. They attempted to identify among Air Force recruits and college undergraduates a standardized assessment of PDNOS criteria, rather than using the diagnosis as a "catch-all" for individuals who may not meet criteria for a specific PD. Because personality disorders are not seen as a disease or injury, they render a Service Member unsuitable for military service and are not eligible for compensation.

Overall, these findings indicate that military personnel admitted for a suicide attempt (i.e., suicidal behavior compared with suicide ideation), are more likely to receive psychiatric diagnoses reflective of conduct problems (e.g., AD w/ MDEC) and personality pathology (e.g., BPD and PD-NOS). To date, no comparative data on psychiatric diagnostic differences among military patient samples with SA versus SI admissions exist. One interpretation of these findings may be that the admission psychiatric diagnoses are accurately reflecting the symptomatology presented by individuals within each of these two groups. Another interpretation may be that military

providers are biased in terms of the diagnoses documented in records. This important scientific and clinical question cannot be adequately answered unless research studies are designed to compare the reliability of documented admission psychiatric diagnoses against results obtained through independent diagnostic evaluations based on psychometrically valid structured interviews.

### **Suicide Status Group and History of Suicide Attempt (Hypothesis 2d)**

Individuals in the SA group compared with the SI group were expected to have documented a significantly higher number of prior suicide attempts. Findings indicated that the two suicide status groups did not differ significantly in terms of their mean number of previous suicide attempts, which was contrary to the expectation that those in the SA would have a greater number of prior SA. A clinical as well statistical significant finding was that individuals in the SI group compared with the SA group showed a significantly greater percentage of unknown histories of suicide attempt (exploratory finding). Mental health providers are constantly educated about the importance of asking about and documenting information about prior suicide attempt behavior of patients at risk for suicide. Patients psychiatrically hospitalized for suicide ideation and attempts are a highly vulnerable group. Medical documentation must reflect this type of information and its absence indicates either that the provider did not ask about the information (which reflects problematic care) or did not document the information appropriately (which reflects problematic record-keeping).

The scientific literature indicates that individuals who presented for medical care were not often asked about suicide ideation and up to 2% of those with suicide ideation had a suicide plan (53). This is significant because the patient in the ideation group had

the same mean number of suicide attempts when the number was known. Despite having suicide ideation strong enough to warrant psychiatric hospitalization, an unknown suicide history was more frequently noted in the records of those with suicide ideation.

Understanding that patients may not spontaneously disclose their suicide history is key in facilitating a thorough risk assessment, as we know that risk cannot be ascertained without asking a person if they are suicidal (101).

Because of the similarities within the two suicide status groups, suicide attempt history was analyzed to determine if there may have been within-group differences in the SI group based on documented history. Multiple between group differences occurred between the SA group and the two SI subgroups. Further, alcohol dependence was significantly different with diagnoses more frequently noted in the SA group and the SI with documented SA history group than the SI with no documented SA group. AD w/ MDEC, BPD and PDNOS were seen more frequently within the SA group, indicating a more distinct level of severity. Because the sample was split into three subgroups for these exploratory analyses, the risk of a type-I error (false positive finding) may be increased. However, the results are consistent with the literature demonstrating PD and AD conveying increased risk of suicide, so further examination within an inpatient sample of individuals with SA history is recommended.

### **Suicide Status Group and Trauma (Hypothesis 2e)**

Individuals in the SA group compared with the SI group were expected to have significantly more documented histories of childhood and adulthood negative life events. Findings of the study showed significance (SA > SI) on two specific types of trauma: (1) childhood history of sexual abuse and (2) adulthood history of domestic violence.

Uncategorized history of lifetime trauma was documented in a significantly higher percentage of SI records than SA. Trauma history has been associated with increased risk for suicide; and childhood sexual trauma is consistently associated with such risk (70). Domestic violence exposure increases risk for suicide and is a critical area requiring clinical focus for safety reasons (67), especially if the suicide risk is still ongoing. The significant finding in uncategorized lifetime trauma reflects the importance of obtaining a full history, to include trauma. There are many experiences that may traumatize patients and lead to a perceived inability to tolerate the distress that goes along with it, which could ultimately lead to a greater suicide risk.

Moreover, the exploratory analyses on clinical documentation of trauma history reflected significantly higher percentage of *unknown history* of for all categories of trauma. This was the second finding for a distinct difference in documentation and history recording by suicide status group. Given the importance of traumatic events in relation to suicide risk (38; 70; 105; 109; 129; 154; 182), it is crucial that mental health providers directly assess for trauma in a systematic manner such that documented records do not indicate an absence of this clinically significant information. Across nearly all types of trauma, it was apparent that trauma history for those individuals hospitalized for SI was not clearly annotated in the EMR.

### **Suicide Status Group and Psychiatric Hospitalization Characteristics (Hypothesis 2f)**

It was hypothesized that individuals in the SA group, when compared with the SI group, would have a longer length of psychiatric hospitalization and a lower likelihood to be returned to duty following hospital discharge given that they are expected to reflect a generally more at risk patient population. However, no statistically significant

differences based on suicide status group, were found in terms of length of psychiatric hospitalization (average of 8 days for overall sample). However, the chart review documentation did not specifically capture factors that may have been described in the decision making process about the length of hospitalization. Further, in terms of disposition status at discharge, none of the comparisons reached statistical significance, indicating for the most part, equivalence of disposition decisions amongst both groups. It was expected that, given more severe nature of a suicide attempt, those who made an attempt would be hospitalized for a longer period, which was not the case with these findings.

This issue deserves close attention and has important implications for DoD inpatient care of suicidal service members as well as cost effectiveness. Given the more severe nature of suicide attempt admissions compared with suicide ideation admissions, one would reasonably expect that the “dose” of treatment for the two patient groups would be different. However, the findings of this dissertation do not confirm this expectation. As stated above, more guidance is needed on how providers should make decisions about the length of psychiatric stay of inpatients admitted for suicide-related events. Ideally, the patients in each category would need to demonstrate improvement on a standard set of criteria before being discharged and the expectation might be that the suicide attempt group may take longer to reach this discharge checklist compared with those in the suicide ideation group, given the sharp increase in subsequent suicide attempt risk for those with a previous attempt.

### **AIM 3: REGRESSION ANALYSES**

#### **Logistic Regression Findings (Hypothesis 3A)**



The final aim of this dissertation was to examine the extent to which the characteristics significantly differentiating the SI Group from the SA Group (based on univariate analyses) would predict suicide group status (SI versus SA) after controlling for gender. It was hypothesized that after controlling for gender, no predictors of suicide group status (SI versus SA) would reach significance. Upon controlling for gender, all previously significant factors retained their ability to predict suicide status, which did not confirm the research hypotheses. In order to better understand potential gender differences within this sample, additional regressions were conducted with the sample split by gender.

Several differences were observed when further regression analyses were conducted by gender for exploratory purposes. These gender differences are presented Table 1. For men, history of uncategorized lifetime trauma history was associated with increased odds of SI group membership. PDNOS diagnosis was negatively associated with SI group membership. For women, difficulties adjusting to the end of military career were significantly associated increased odds of having been hospitalized for SI, while AD w/ MDEC was negatively associated with being hospitalized for SI. While there was not a robust list of predictors of suicide group status by gender, no predictors were shared by gender. Notably, several factors that were significant within univariate analyses were not significant in these models, especially after controlling for age and documented history of SA. These factors accounted for some of the variance within the groups; further, it reflects the importance of inquiring about prior history of SA, whether a patient is endorsing SI or has made suicide attempt.

While gender did not account for the differences in terms of predicting suicide status group, it does draw attention to potential clinical factors within this sample. Such differences highlight important factors in being mindful of gender differences when working with suicidal patients. For example, the negative association of PDNOS and SI status group highlights that men in the SA group were significantly more likely to receive this diagnosis. Further, unspecified trauma history was associated with the SI group, demonstrating that there may be potential points of intervention with men and trauma that may not have been examined by this study. Conversely, there was a higher odds ratio of women with documented difficulties in acculturation to the military having been hospitalized for SI, but a greater odds of being in the SA group and having an Adjustment DO with MDEC diagnosis. Both factors highlight difficulties in adapting to an acute stressor; however, the full diagnosis of AD with MDEC indicates a higher level of severity and the conduct component (e.g. a suicide attempt).

Of further clinical concern is the potential for gender bias in terms of documentation. Stigma is associated with personality disorders, namely BPD, and this stigma is increased because of the inability of a person to serve in the military with a PD that causes significant distress or impairment. Adjustment disorders can also lead to discharge from the military, as the condition is unsuitable for continued service. Possible gender bias in terms of mental health may occur in assessment, treatment and disposition and carries significant impacts for the patients' treatment and long term functioning (1; 73). Such diagnostic biases should be considered in terms of the gender differences in the regression results.

#### **DIATHESIS-STRESS MODEL**

As discussed within the introduction, the diathesis-stress model was developed to describe how diatheses (or dispositions) and stressors interact to impact psychopathology (138). In the case of the present study, the primary outcome was reported suicide ideation or suicide attempt. Because of the severity involved with an inpatient hospitalization, it was expected that there would have been acute and chronic factors that were involved with the need for inpatient care.

Examining the diathesis-stress model in terms of a framework to conceptualize risk indicators for suicide, several diathesis risk indicators were noted within the present study. In terms of the chronicity of the mental health conditions, the author could not ascertain long-term mental health history, but numerous factors were documented at the time of admission. Environmental risk factors, such as childhood sexual abuse, adult domestic violence trauma and psychological factors (i.e. personal history of suicide behavior, psychiatric disorders, chronic substance abuse) were noted in the sample and all factors are associated with increased suicide risk (38; 127; 145).

Acute stressors, as discussed in the Introduction, include psychiatric symptom exacerbation, acute substance abuse and dependence, which were noted within this sample (126; 145). Most notably, the sample had a large number of adjustment-related annotations within the EMR, primarily in terms of Adjustment Disorder diagnoses and military stressors on Axis IV. Because of the resulting stress following exposure to significant negative events, pre-existing diathesis factors may have been triggered or exacerbated leading to the index hospitalization for suicide-related reasons (87; 183). This highlights the clinical importance of assessing acute stressors among individuals reporting difficulties problems with functioning.



## **CHAPTER 5: Conclusions**

The increasing problem of suicide in the U.S. military is one that continues to raise concern among military leadership, researchers, and clinical care providers. Efforts have been focused on better understanding the epidemiology of suicide in the military, crafting suicide prevention and risk assessment programs, and treating individuals who have serious thoughts of wanting to die or make an attempt to take their own lives. Despite the best efforts, there is still much to be learned about suicide, in particular about those who survive a suicide attempt and those who have suicide ideation severe enough to warrant psychiatric inpatient care. To address the stated research gap, this dissertation study involved a retrospective review of 955 randomly selected medical records of military personnel admitted for psychiatric hospitalization due to suicide ideation and/or suicide attempt between 2001 and 2006. The major objective of the research was to examine suicide status (ideation versus attempt) differences in terms of demographic, military service, psychiatric, and hospitalization related characteristics with special attention given to the role of gender. While the study offers a better understanding of these characteristics, it also sheds light on specific clinical practice implications as well.

### **LIMITATIONS**

One of the limitations of the study is related to the lack of standardization within the Essentris electronic medical documentation system. While the study's coding template was standardized with categorical options for the coders to choose from, the EMRs of patients often presented conflicting or ambiguous information given the lack of a standardized template for providers. There are several pages in the EMR in which medical providers entered data in a "free-text" format and these pages were carefully

reviewed by study coders. However, without a standardized systematic recording of patient information, much room is left for omission of important clinical information.

In terms of findings for this study, it is not perfectly clear if the absence of information means that the provider never collected the information in the first place or whether the information was collected but not adequately or accurately documented in the EMR. In other words, EMRs capture information documented by various providers based on their unique understanding of the patients' self-report. Because the information for this study was collected retrospectively from EMRs, the author had to rely exclusively on the information that medical providers recalled and chose to document in their patients' medical charts. Often, medical documentation errors are to be expected and this study cannot determine the validity and reliability of the information documented in the patients' records, which is a common challenge for retrospective chart reviews (146).

If a medical provider did not inquire about or enter information needed for the variables coded in this study, the information remained unknown. There was also the expectation that some patients likely either over-reported or under-reported on psychiatric symptomatology and history as a means of impression management – particularly due to possible perceptions on adverse legal, economic, military career, and psychiatric care consequences of their disclosure. While it was not possible to control for such reporting, the EMR provided objective data in terms of diagnoses and mental status exams.

Another study limitation is related to the generalizability and external validity of the data. The service members whose EMRs were used to provide the research data for this study comprised a distinct sample of active-duty, reserve, and National Guard members across all armed services. The sample was one of convenience, based on

inpatient psychiatric admissions to the Walter Reed Army Medical Center in Washington D.C. As such, this sample may not be representative of all U.S. military members across the Department of Defense (DoD) or all American adults. Additionally, geographic characteristics may limit external validity, as the facility was, at the time, solely an Army hospital. Further, there were Air Force and Navy medical treatment facilities within less than a 15-mile radius, impacting the number of Air Force, Navy, Marine Corps and Coast Guard members in the sample. Also, the imbalance of men and women in the U.S. armed forces may limit generalizability as the stressors faced by men and women in civilian workplaces may not be accurately reflected by those reflected in this sample. Finally, it is important to remember that the results from this study are not generalizable to service members with other mental health issues. The military is a relatively healthy population and recruitment standards usually disqualify those with serious mental health conditions before they come on active duty. Hoge and colleagues found that the majority of service members who were noted as having mental health risk following deployment remained on active duty in the year following that index deployment (94). This is in comparison to the large percentage of the present study sample recommended for medical evaluations board or administrative separation.

Next, the inter-rater reliability for the factors coded within this study ranged from 0.53 to 1.00. Therefore, one additional limitation of the study is related to the *moderate* agreement between coders on specific study variables. Since the presentation of the preliminary data in this manuscript, the coding template was amended to include more drop-down menus than free-flow text entry options to reduce variance during coding efforts. However, the initial entries made earlier in the data collection phase were

impacted by not having these drop down records. Additionally, coders were expected to extract some of the data based on free-flow text. This method of data collection may have had an impact on the data because of the lack of standardization in the EMR.

Retrospective chart reviews, while a robust source of data for epidemiological studies can be impacted by the quality of record keeping at the original time of entry. Moreover, data extractors may have difficulty with free-entry text in terms of interpretive agreement (190). Within the present study, the EMR is predominantly a free-text record, with multiple assessments and clinical notes entered by clinical staff. Although not directly examined, agreement between the clinical staff may have indirectly impacted data extraction by coders as well. For example, if one clinician assessed and documented suicide attempt history, while another documented there was no prior history, then the data extraction could have been impacted.

Within the Chi-Square analyses, there were multiple independent observations based upon factors present within the sample's EMRs. Additionally, a large number of statistical predictors were analyzed within the logistic regression models. As multiple predictors or variables are examined, the likelihood of a Type I error occurs, making it possible for a null hypothesis to be incorrectly rejected. The result would be a false positive finding. However, *a priori* power analyses determined the sample size was adequate to handle multiple predictors of suicide group status for the original aims as discussed within the methods. It is important to recognize though that within the logistic regression, the predictors entered within the model are all associated with increased suicide risk. Such empirical support would make it appropriate to include such risk indicators in the model.



Finally, the EMR did not include information from assessment measures for inclusion in the current study. Such useful tools would include the Beck Depression Inventory or Beck Hopelessness Scale as a means of assessing severity of depression and presence of suicidal thinking. While this information was not readily available in the EMR, each patient was interviewed by social workers, psychiatric nurses, and attending medical providers which collectively provided a comprehensive picture of functioning and symptoms at the time of hospitalization.

### **STRENGTHS**

Suicide prevention efforts are a significant endeavor in the U.S. military and will be at the forefront of clinical research for the foreseeable future. This study focused solely on a military sample, providing insight on the characteristics of service members requiring psychiatric hospitalization due to severe suicide ideation or a recent suicide attempt. Given the increasing need for understanding suicide in the context of military service, this study makes a timely contribution to the broader DoD suicide prevention efforts by shedding light on the characteristics of military personnel who make suicide attempts and also a generally neglected group – i.e., those service members with suicide ideation severe enough to warrant psychiatric care.

Understanding the differences between service members hospitalized for suicide ideation versus those hospitalized for a recent suicide attempt may potentially advance the development and empirical testing of unique assessment and treatment strategies targeted at the needs of these two groups of highly vulnerable patients. To date, the DoD has paid close attention to the characteristics of military personnel who die by suicide as reflected by the DoD Suicide Event Report publications. Yet minimal data exists on

those who attempt suicide and even less exists on those with suicide ideation requiring psychiatric hospitalization.

Moreover, research on gender differences and possible disparities in psychiatric care received by male and female service members as well as civilians continues to be sparse. This dissertation is the among the first studies aimed at advancing the scientific understanding of gender as it relates to the presentation of suicidal service members and the psychiatric care they receive during the sensitive time of inpatient hospitalization. The findings of this study can serve as the foundation for planning future studies on gender differences among military suicidal personnel.

Finally, the findings of this dissertation study have important policy, practice, and research implications for military suicide prevention – more specifically suicide prevention among a highly vulnerable sample of psychiatric inpatients admitted following suicide-related events. Given the large sample size, adequate power was available to test the study’s hypotheses. Findings suggest that the application of a “one-size-fits-all” approach to suicide intervention may be worth further consideration and discussion. For instance, why is it that those admitted for suicide ideation versus suicide attempts are receiving a similar “dose” of treatment as measured by length of psychiatric hospitalization? Questions such as this are not answered by this dissertation but can serve as the basis for future research to advance our clinical care for suicidal service members admitted for inpatient care.

## **RECOMMENDATIONS AND IMPLICATIONS**

Given the ongoing efforts to reduce the frequency of suicide in the military continued vigilance in developing realistic methods for a concise assessment of risk

indicators and risk factors is critical. This dissertation identified variance in the level of documentation on critical areas of focus for a comprehensive risk assessment, when examined by suicide status group. With the increasing problem of suicide in the U.S. military over the past decade, researchers, clinical practitioners, and policy makers must continue to pay attention to suicide deaths but also to suicide-related thoughts and behavior.

### **Research Recommendations**

Studies such as this dissertation can provide useful information about patient characteristics, which can then be translated into best adapting and evaluating interventions for psychiatric inpatients admitted following suicide-related events. This information may then be integrated into clinical pilot studies aimed at treating suicidal patients in the acute treatment phase following hospitalization. Further research recommendations include assessment of risk indicators noted in this project by gender and suicide status group. It is recommended more attention be given to the different adjustment issues faced by suicide status group to determine if prevention efforts should be tailored by gender. This study indicated that women and men differed in terms of military adjustment stressors. The lacking documentation on suicide attempt history and trauma exposure among the suicide ideation group would be an area of continued focus to determine if this continues to occur, even with the new clinical practice guidelines.

In terms of recent clinical practice guidelines and each service's suicide prevention program implementation, systematic program reviews may be used to ensure clinicians are conducting accurate and comprehensive risk assessments for suicidal patients. Suicide assessment and prevention requires vigilance; adhering to existing

recommendations will allow clinicians to identify potential shortcomings or creative strategies to improve upon existing policy.

### **Policy Recommendations**

In terms of policy, a number of issues can be considered. First, there is a need for a mandated system-wide clinical training for inpatient staff. Providing physicians, social workers, psychologists, and psychiatric nurses with targeted training on the required documentation practices for suicidal patients is no small endeavor, but it is crucial in addressing this problem. By taking the time to methodically and systematically implement standardized assessment and training, the management of suicidal patients will be supported at all levels of care (outpatient, intensive outpatient, inpatient).

Since the beginning of this dissertation study, the DoD has continued to implement policies for suicide prevention and managing suicidal patients. The DoD and Veterans Administration issued a joint Clinical Practice Guideline for assessing and managing suicidal patients in 2013. The five goals of this guideline include two content areas that were noted in this dissertation as potential areas for improvement. These include: timely assessment and diagnostic clarification for psychiatric and co-morbid disorders that require treatment in conjunction with the suicidal behaviors. The clinical practice guideline recognizes that the inpatient setting allows for more intense assessment than an outpatient setting, but in the case of this dissertation, many variables were missed in the documentation process. This guideline offers an opportunity to improve this shortcoming, if implemented. As these changes are new to DoD, it is recommended that regular process improvement evaluations are conducted to ensure comprehensive assessment of suicide risk is occurring at all levels.

Additionally, the data from this dissertation indicates that there is no consistent set of variables that best differentiates among those hospitalized for suicide ideation versus suicide attempt. This may be viewed as either 1) there is no consistency in comparing individuals hospitalized for suicide behavior or 2) simply that the documentation of relevant factors leading to suicide-related psychiatric hospitalizations is not adequate. If a service member dies by suicide, a law enforcement investigation is conducted that examines career, social, interpersonal, legal and medical/psychiatric factors that may have been involved with the decedents' decision to take their own lives. While the DoDSER collects information on stressors and factors impacting a subset of suicidal military personnel who have attempted suicide, the DoDSER is not mandated for all suicide-related events (i.e., ideation and attempts receiving outpatient and/or inpatient care) among all the services. Policies on required documentation fields for psychiatric inpatients – particularly those admitted for suicide-related events, will advance surveillance efforts and guide clinical and research endeavors focused on military suicide prevention.

Another important consideration is regarding the standardization of assessment and history taking for those hospitalized for suicide related reasons. Each military service utilizes its own standards and methods for obtaining this information and how it is documented within a mental health or medical record. As the military transitions to an integrated military healthcare system, best practices for healthcare are among the goals noted within the Military Health System Governance Report (65). A recommendation from this author would be to strongly consider best practices between services in the assessment and documentation and implement a singular program. This would allow for

portability between services and facilities and would better facilitate assessment of compliance with standards.

### **Clinical Recommendations**

The scientific literature has consistently shown that suicidal individuals who are psychiatrically hospitalized are at an increased risk for suicide (22; 160). Further, as noted by Joiner (103), a trajectory towards suicide for an individual who may have intense suicide ideation may be a form of mental preparation for a future suicide attempt or suicide. Therefore, there is a critical need for the early identification and treatment of individuals presenting with suicide ideation or suicide attempts to address the cognitive sensitization that may occur for individuals as they contemplate or plan their own suicide. This type of early treatment can be offered in an inpatient setting as soon as an individual with a recent suicide-related event is identified and admitted for care.

Despite these recent efforts, there remains an absence of systematic surveillance efforts within inpatient psychiatric settings and a lack of trained staff members who are knowledgeable about the most appropriate suicide event documentation practices while integrating the correct usage of suicide nomenclature. Overall, psychiatric inpatient facilities can benefit greatly from the implementation of standard documentation templates to be used for their suicidal patients. For example, using a standardized checklist to assess for past suicide-related ideation and behaviors as well as psychiatric hospitalizations may provide a comprehensive plan of action for admitted patients and also guide the decision making process for the timing and the rationale associated with discharges from the inpatient unit. Furthermore, such standard documentation practices

will allow for a more enhanced delivery of care, which can be tailored to the unique treatment needs of each admitted patient.

## **CLOSING**

Many changes have occurred in terms of our understanding of suicide as researchers, policy makers, and leaders look to reduce the occurrence of suicide behaviors in the military. This dissertation identified possible areas for future clinical focus and standardized documentation of risk factors and indicators. By understanding the factors contributing to an individual's suicidal crisis, we can continue to battle suicide among U.S. service members. While retrospective chart reviews may have inherent limitations, the examination of data related to inpatient admission for suicide ideation or suicide attempt provided a glimpse of various factors for each of the military patients. The study identified the need for standardization in the assessment of suicide history and historical factors that may contribute to increased suicide risk. Such knowledge provides a timely contribution to our understanding of this unique and critically important sub-population of the U.S. military.

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## TABLES

Table 1. Summary of Characteristics Associated with Suicide Group Status as Compared by Gender

<b>Characteristic</b>	<b>Men</b>	<b>Women</b>
<b>Axis I Diagnoses</b>		
AD w/ MDEC	SA > SI	SA > SI
AD w/ DM	SA < SI	SA = SI
<b>Axis II Diagnoses</b>		
BPD	SA = SI	SA = SI
PD-NOS	SA > SI	SA = SI
Deferred dx on Axis II	SA = SI	SA = SI
<b>Military Adjustment Stressors</b>		
Difficult Adjustment to Military Life	SA = SI	SI > SA
Difficult Adjustment to End of Service	SA = SI	SA = SI
<b>Documented Trauma History</b>		
Childhood Sexual Abuse	SA = SI	SA = SI
Adult Domestic Violence Trauma	SA > SI	SA = SI
Other [Undifferentiated] Trauma	SA < SI	SA = SI



Table 2. Demographics and military service characteristics of sample (N = 955)

<b>Characteristic</b>	<b>M</b>	<b>SD</b>	<b>Range</b>
<b>Age (in years)</b>	26.3	8.0	17-60
	<b>n</b>	<b>%</b>	
Gender			
Men	657	68.8	
Women	298	31.2	
Race			
African American	200	21.0	
Caucasian	615	64.4	
Hispanic	52	5.4	
Other	88	9.2	
Marital Status			
Divorced/Separated/Widowed	148	15.5	
Married	343	35.9	
Not Married	464	48.6	
Service Branch			
Air Force	128	13.4	
Army	661	69.2	
Coast Guard	12	1.3	
Marine Corps	60	6.3	
Navy	94	9.8	
Rank			
E1-E4	666	69.7	
E5-E6	186	19.5	
E7-E9	43	4.5	
O1-O3	40	4.2	
O4-O6	18	1.9	
W1-W5	1	0.1	
Unknown	1	0.1	

Table 3. Psychiatric, hospitalization and disposition characteristics (N = 955).

Characteristic	M	SD (Range)
Length of psychiatric hospitalization (in days)	8.79	9.98 (1 - 108)
	<b>n</b>	<b>%</b>
Commonly Documented Axis I Diagnostic Categories		
Adjustment Disorders	421	44.1
Anxiety Disorders	144	15.1
Mood Disorders	390	40.8
Substance-related Disorders	228	23.8
Other categories	43	4.5
No Diagnosis	52	5.4
Most Frequent Axis I Diagnoses (Primary)		
Adjustment Disorder with Mixed Disturbance of Emotion and Conduct	252	26.4
Adjustment Disorder with Depressed Mood	104	10.9
Alcohol Abuse	81	8.5
Alcohol Dependence	110	11.5
Bipolar Disorder	41	4.3
Dysthymic Disorder	71	7.4
Major Depressive Disorder	241	25.2
Post-traumatic Stress Disorder	84	8.8
Most Frequent Axis II Related Diagnoses		
Axis II Diagnosis	240	25.1
Borderline Personality Disorder	62	25.8

Personality Disorder Not Otherwise Specified	151	62.9
Other personality disorders	27	11.3
Axis II Traits Noted	199	20.9
Cluster A Traits	23	11.6
Cluster B Traits	142	71.4
Cluster C Traits	34	17.1
Diagnosis deferred	115	12.0
No Diagnosis	401	42.0
Disposition		
Discharge Home	28	2.9
Discharge Other Locations	96	10.1
Partial Hospitalization Program	22	2.3
Recommended for Administrative Separation	286	29.9
Recommended for Medical Evaluation Board	137	14.3
Return to Full Duty	370	38.7
Unknown	16	1.7

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Table 4. Comparison of Suicide Attempt versus Suicide Ideation Admission Groups on Sample Demographic and Military Service Characteristics (N = 955)

Characteristic	Suicide Attempt (n = 421)		Suicide Ideation (n = 534)		Statistics	
	M	SD	M	SD	t (df)	p
Age	25.64	7.24	26.83	8.46	-2.312 (953)	0.021**
	n	%	n	%	$\chi^2$	p
Sex					16.220 (1)	.000***
Men	261	62.0	396	74.2	16.220 (1)	.000***
Women	160	38.0	138	25.8	16.220 (1)	.000***
Race						
Black	92	21.9	108	20.2	.377 (1)	.539
Hispanic	22	5.2	30	5.6	.070 (1)	.791
White	271	64.4	344	64.4	.000 (1)	.987
Other	36	8.6	52	9.7	.396 (1)	.529
Marital Status						
Divorced/Separated/ Widowed	61	14.5	87	16.3	.584 (1)	.445
Married	152	36.1	191	35.8	.012 (1)	.914
Not Married	208	49.4	256	47.9	.203 (1)	.653
Military Service						
Air Force	52	12.4	76	14.2	.717 (1)	.397
Army	296	70.3	365	68.4	.423 (1)	.515
Coast Guard	6	1.4	6	1.1	.173 (1)	.678
Marine Corps	25	5.9	35	6.6	.152 (1)	.697
Navy	42	10.0	52	9.7	.015 (1)	.902
Military Pay Grade						
E1-E4	301	71.5	365	68.4	1.103 (1)	.294
E5-E6	84	20.0	102	19.1	.109 (1)	.742
E7-E9	15	3.6	28	5.2	1.546 (1)	.214
O1-O3	12	2.9	28	5.2	3.359 (1)	.067
O4-O6	9	2.1	9	1.7	.261 (1)	.610

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Table 5. Comparison of Suicide Attempt versus Suicide Ideation Admission Groups on Psychiatric Diagnoses (N = 955)

Characteristic	Suicide Attempt (n = 421)		Suicide Ideation (n = 534)		Statistics	
	M	SD	M	SD	t (df)	
Number of Axis I Diagnoses	1.40	.74	1.45	.86	-.882	.38
					(953)	
	n	%	n	%	$\chi^2$	p
Axis I Diagnostic Categories (DSM)						
Adjustment Disorders	194	46.1	227	42.5	1.218 (1)	.270
Anxiety Disorders	54	12.8	90	16.9	2.982 (1)	.084
Mood Disorders	167	39.7	223	41.8	.427 (1)	.514
Substance-related Disorders	102	24.2	126	23.6	.052 (1)	.820
No Axis I Diagnosis	21	5.0	31	5.8	.305 (1)	.581
Axis I Diagnoses						
AD w/ DM	36	8.6	68	12.7	4.245 (1)	.039*
AD w/ MDEC	135	32.1	117	21.9	12.501(1)	.000***
Alcohol Abuse	37	8.8	44	8.2	.091 (1)	.762
Alcohol Dependence	47	11.2	63	11.8	.093 (1)	.761
Bipolar Disorder	17	4.0	24	4.5	.119 (1)	.730
Dysthymic Disorder	32	7.6	39	7.3	.030 (1)	.862
Major Depressive Disorder	94	22.3	147	27.5	3.374 (1)	.066
PTSD	34	8.1	50	9.4	.486 (1)	.486
Axis I Comorbidity						
One Diagnosis	252	59.9	309	57.9	.386 (1)	.54
Two Diagnoses	121	28.7	135	25.3	1.437 (1)	.23
Three or More Diagnoses	29	6.9	59	11.0	4.871 (1)	.03*
Axis II Diagnoses						
BPD	36	8.6	26	4.9	5.258 (1)	.022*
PD-NOS	81	19.2	70	13.1	6.648 (1)	.010**
Other Personality Disorder	6	1.4	17	3.2	3.097 (1)	.078
Diagnosis deferred	40	9.5	75	14.0	4.589 (1)	.032*
No Diagnosis	169	40.1	231	43.3	.939 (1)	.333

---

*Note.* The Axis I and Axis II categories reflect major diagnostic categories in the Diagnostic and Statistical Manual of Mental Disorders, Version IV –Text Revision (DSM).

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Note. BPD = Borderline Personality Disorder; PD-NOS = Personality Disorder Not Otherwise Specified

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Table 6. Comparison of Suicide Attempt versus Suicide Ideation Admission Groups on Documented Suicide Attempt History (N = 955)

Characteristic	Suicide Attempt (n = 421)		Suicide Ideation (n = 534)		Statistics	
	n	%	n	%	$\chi^2$ (df)	p
Suicide Attempt History						
None	236	56.0	290	54.3	.291 (1)	.589
One	95	22.6	96	18.0	3.097 (1)	.078
Two or more	73	17.3	89	16.7	.076 (1)	.783
Unknown or Not Indicated in EMR	17	4.0	59	11.0	15.796 (1)	.000***

\*\*\* p < .001

Table 7. Comparison of Suicide Attempt versus Suicide Ideation Admission Groups on Documented Trauma History (N = 955)

Characteristic	Suicide Attempt (n = 421)		Suicide Ideation (n = 534)		Statistics	
	n	%	n	%	$\chi^2$	p
Childhood Trauma History						
Childhood neglect	34	8.1	27	5.1	3.590(1)	.058
Childhood physical abuse	83	19.7	131	24.5	3.141(1)	.076
Childhood sexual abuse	86	20.4	80	15.0	4.862(1)	.027*
Domestic violence	52	12.4	50	9.4	2.203(1)	.138
Other childhood trauma	22	5.2	25	4.7	.149(1)	.700
Adulthood trauma history						
Combat exposure	40	9.5	53	9.9	.048(1)	.826
Death of close person	51	12.1	82	15.4	2.064(1)	.151
Domestic violence	14	3.3	5	0.9	6.891(1)	.009**
Emotional abuse	71	16.9	87	16.3	.056(1)	.813
Motor vehicle accident	13	3.1	10	1.9	1.479(1)	.224
Physical abuse	19	4.5	18	3.4	.825(1)	.364
Pregnancy loss	8	1.9	8	1.5	.231(1)	.631
Robbery	0	0	2	0.4	1.580(1)	.209
Sexual assault	24	5.7	19	3.5	2.513(1)	.113
Other (unidentified)	28	6.7	56	10.5	4.318(1)	.038*
Documented Trauma History						
No Documented Trauma	180	42.8	234	43.8	.109(1)	.742
One Documented Trauma	104	24.7	119	22.3	.769(1)	.380
Two Documented Traumas	58	13.8	94	17.6	2.575(1)	.109
Three or More Traumas	79	18.8	87	16.3	1.002(1)	.317



Table 8. Comparison of Suicide Attempt versus Suicide Ideation Admission Groups on Military Adjustment Stressors (N = 126)

Characteristic	Suicide Attempt (n = 56)		Suicide Ideation (n = 70)		Statistics	
	n	%	n	%	$\chi^2$ (df)	p
Military Adjustment Life Stressors Documented						
Adjustment to Military Life	19	4.5	41	7.7	4.005 (1)	.045*
Pending Administrative Separation, Retirement or Medical Evaluations Board	37	8.8	29	5.4	4.126 (1)	.042*

Note: A total of 126 cases had a documented military-specific psychosocial stressor, annotated under Axis IV.

Table 9. Comparison of Suicide Attempt versus Suicide Ideation Admission Groups on Length of Psychiatric Hospitalization and Disposition (N = 955)

Characteristic	Suicide Attempt (n = 421)		Suicide Ideation (n = 534)		Statistics	
	M	SD	M	SD	t (df)	p
Length of Hospitalization*	9.4	12.13	8.3	7.84	1.677 (928)	.09
Disposition at Discharge	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b><math>\chi^2</math></b>	<b>p</b>
Discharge to home	8	1.9	20	3.7	2.816 (1)	.093
Partial Hospitalization Program	12	2.9	10	1.9	1.000 (1)	.317
Recommend administrative separation	135	32.1	151	28.3	1.611 (1)	.204
Recommend medical evaluations board	61	14.5	76	14.2	.013 (1)	.910
Return to full duty status	150	35.6	220	41.2	3.076 (1)	.079
Other discharge locations	45	10.7	51	9.6	.337 (1)	.561
Unknown disposition	10	2.4	6	1.1	2.239 (1)	.135

\*Note 1: Length of Hospitalization was unknown for 8 SA records and 17 SI records.  
 Note 2: Disposition “other discharge locations” included (e.g., release to law enforcement, First Sergeant for other than duty reasons)

Table 10. Comparison of Demographic, Military Service and Psychiatric Characteristics Based on Reason for Admission and Accounting for Suicide Attempt History

Characteristic	Suicide Attempt	Suicide Ideation with Prior SA	Suicide Ideation with No Prior SA	Statistics
	(n = 404)	(n = 185)	(n = 290)	
	n (%)	n (%)	n (%)	$\chi^2$ (df)
Axis I Diagnostic Categories (DSM)				
Adjustment Disorders	185 (45.8)	68 (36.8)	140 (48.3)	6.417 (2)*
Anxiety Disorders	52 (12.9)	35 (18.9)	45 (15.5)	3.721 (2)
Mood Disorders	161 (39.9)	85 (45.9)	114 (39.3)	2.433 (2)
Substance-related Disorders	98 (24.3)	55 (29.7)	56 (19.3)	6.861 (2)*
No Axis I Diagnosis	19 (4.7)	8 (4.3)	17 (5.9)	.703 (2)
Axis I Diagnoses				
AD w/ DM	34 (8.4)	17 (9.2)	39 (13.4)	4.933 (2)
AD w/ MDEC	128 (31.7)	43 (23.2)	69 (23.8)	7.241(2)*
Alcohol Abuse	36 (8.9)	20 (10.8)	19 (6.6)	2.762 (2)
Alcohol Dependence	44 (10.9)	30 (16.2)	24 (8.3)	7.239 (2)*
Bipolar Disorder	16 (4.0)	11 (5.9)	12 (4.1)	1.271 (2)
Dysthymic Disorder	31 (7.7)	13 (7.0)	18 (6.2)	.554 (2)
Major Depressive Disorder	92 (22.8)	58 (31.4)	75 (26.2)	4.945 (2)
PTSD	32 (7.9)	23 (12.4)	24 (8.3)	3.426 (2)
Axis II Diagnoses				
BPD	34 (8.4)	19 (10.3)	7 (2.4)	13.933 (2)***
PD-NOS	78 (19.3)	30 (16.2)	28 (9.7)	12.124 (2)**
Other Personality Disorder	4 (1.0)	6 (3.2)	10 (3.4)	5.575 (2)
Diagnosis deferred	39 (9.7)	22 (11.9)	46 (15.9)	6.104 (2)*
No Diagnosis	161	74	129	1.685 (2)

(39.9) (40.0) (44.5)

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Note: Subsample size (n = 879) differed from overall study sample (N = 955) due to unknown suicide attempt history

\*  $p < .05$  \*\*  $p < .10$  \*\*\*  $p < .01$

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Table 11. Predictors of suicide group status with a focus on gender (n = 955)

Predictor	B (S.E.)	AOR-1 (95% CI)	B (S.E.)	AOR-2 (95% CI)
AD w/ MDEC	-.299 (.163)	.74 (.54 – 1.02)	-.298 (.163)	.74 (.54 - 1.02)
AD w/ DM	.318 (.286)	1.37 (.85 – 2.21)	.326 (.244)	1.39 (.86 – 2.24)
BPD	-.356 (.221)	.70 (.40 – 1.23)	-.237 (.291)	.79 (.45 - 1.40)
PD-NOS	-.491 (.200)	.61* (.41 - .91)	-.506 (.201)	.60* (.41 - .89)
Deferred Axis II	.301 (.221)	1.35 (.88 – 2.08)	.268 (.222)	1.31 (.85 – 2.02)
Difficult Military Adjustment	.644 (.300)	1.90* (1.06 – 3.42)	.605 (.302)	1.83* (1.01 – 3.31)
Difficulty Adapting to End of Military Service	-.397 (.280)	.67 (.39 – 1.16)	-.406 (.280)	.67 (.39 - 1.16)
Childhood Sexual Abuse History	-.246 (.188)	.78 (.54 – 1.13)	-.113 (.195)	.89 (.61 – 1.31)
Adult Domestic Violence History	-1.237 (.599)	.29* (.09 - .94)	-1.174 (.600)	.31* (.10 – 1.00)
Uncategorized Lifetime Trauma History	.656 (.260)	1.93* (1.16 – 3.21)	.650 (.261)	1.92* (1.15 – 3.20)
Age (in years)	.015 (.009)	1.02 (1.00 – 1.03)	.014 (.009)	1.01 (1.00 - 1.03)
History of Prior Suicide Attempt	.054 (.146)	1.06 (.79 – 1.41)	.050 (.147)	1.05 (.79 – 1.40)
Gender			-.426 (.159)	.65 ** (.48 - .87)

Adjusted Odds Ratio (AOR)-1- Age, history of prior suicide attempt (reference group 1 = Yes) added to model

AOR-2- Age, history of prior suicide attempt (reference group 1 = Yes), gender

(Reference group 1 = women) added to model

\*  $p < .05$ ; \*\*  $p < .01$

Note 1. AD w/ MDEC = Adjustment Disorder with Mixed Disturbance in Emotion and Conduct; AD w/ DM = Adjustment Disorder with DM; BPD = Borderline Personality Disorder; PD-NOS = Personality Disorder Not Otherwise Specified

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Table 12. Association between Significant Predictors and Suicide Status Group, Examined by Gender (N = 955).

Predictor	Men (n = 657)			Women (n = 298)		
	Suicide Attempt (n = 261) n (%)	Suicide Ideation (n = 396) n (%)	AOR-1 (95% CI)	Suicide Attempt (n = 160) n (%)	Suicide Ideation (n = 138) n (%)	AOR-1 (95% CI)
AD w/ MDEC	78* (29.9)	91 (23.0)	.95 (.58-1.23)	57*** (35.6)	26 (18.8)	.45** (.25-.82)
AD w/ DM	19 (7.3)	53* (13.4)	1.83 (1.00 - 3.37)	17 (10.6)	15 (10.9)	.83 (.36 – 1.91)
BPD	11 (4.2)	8 (2.0)	.46 (.17 – 1.20)	25 (15.6)	18 (13.0)	1.05 (.50 – 2.20)
PD-NOS	53* (20.3)	56 (14.1)	.57* (.36 – .91)	28 (17.5)	14 (10.1)	.57 (.26 – 1.28)
Deferred dx on Axis II	31 (11.9)	62 (15.7)	1.19 (.72– 1.95)	9 (5.6)	13 (9.4)	1.92 (.75 – 4.92)
Difficult Adjustment to Military Life	16 (6.1)	31 (7.8)	1.23 (.63 – 2.40)	3 (1.9)	10* (7.2)	5.29* (1.33 – 20.94)
Difficult Adjustment to End of Service	22 (8.4)	23 (5.8)	.75 (.39 - 1.44)	15 (9.4)	6 (4.3)	.46 (.15– 1.36)
Childhood Sexual Abuse	30 (11.5)	34 (8.6)	.81 (.47- 1.41)	56 (35.0)	46 (33.3)	.95 (.55 – 1.64)
Adult Domestic Violence	7* (2.7)	2 (0.5)	.12 (.01 - .1.02)	7 (4.4)	3 (2.2)	.57 (.13– 2.44)
Other Lifetime Trauma	16 (6.1)	43* (10.9)	2.14* (1.13 – 4.03)	12 (7.5)	13 (9.4)	1.73 (.68 – 4.41)
Documented History of SA	105 (41.5)	127 (36.2)	.77 (.67 – 1.35)	63 (41.7)	58 (46.8)	1.27 (.75 – 2.13)

AOR-1 – Controlled for age, history of prior suicide attempt (reference group 1 = YES)

\*  $p < .05$ ; \*\*  $p < .01$ , \*\*\*  $p < .001$

Note. AD w/ MDEC = Adjustment Disorder with Mixed Disturbance in Emotion and Conduct; AD w/ DM = Adjustment Disorder with DM; BPD = Borderline Personality Disorder; PD-NOS = Personality Disorder Not Otherwise Specified

## Electronic Medical Record – Coding Template

**Walter Reed Survey**

1. Review Date:

2a. Coder ID:

2b. 2nd Coder ID:

3. Subject ID:

4. Year of Birth:

5. Age at time of Admission:

6. Sex:

7. Marital Status:

8. Ethnicity:

9. Employment Status:

10. Religious Affiliation:

11. Education Level:

Brief Case Summary:

Figure 1. Demographics.



### Military Service Information

12. Is subject a dependent?

13. Number of Months of Military Service

14. Branch of Military Service

15. Training Status

16. Military Rank

18. Total Number of Career Deployments

Most Recent Deployment History

19. Location:

20. Combat:

21. DH1StartYear

22. DH1EndYear

Second Most Recent Deployment History

23. Location:

24. Combat:

25. DH2StartYear

26. DH2EndYear

Third Most Recent Deployment History

27. Location:

28. Combat:

29. DH3StartYear

30. DH3EndYear

7. Pay Grade

Figure 2. Military Service Information

### Suicide Behavior Information

31. Reason for Admission

- Suicide Ideation
- Suicide Attempt
- Adjustment Reaction
- MDD
- Dysthymic Disorder
- Adjustment Disorder
- Comorbid
- Unknown
- N/A

33. Status of Attempt

- First Attempt
- Second Attempt
- Third Attempt
- Fourth Attempt or Beyond
- Unknown
- N/A

34. Primary Trigger for Suicide

- Anniversary of Stressful Event
- Interpersonal Problems
- Legal Difficulties
- Financial Difficulties
- Physical Problems
- Exacerbation of Psychiatric Symptoms
- Occupational Stressors
- Substance Abuse
- Other
- No Identifiable Trigger
- Unknown
- N/A

35. Secondary Trigger(s) of Suicide (Please Check ALL that apply):

<input type="checkbox"/> Anniversary of Stressful Event	<input type="checkbox"/> Occupational Stressors
<input type="checkbox"/> Interpersonal Problems	<input type="checkbox"/> Substance Usage
<input type="checkbox"/> Legal Difficulties	<input type="checkbox"/> Other
<input type="checkbox"/> Physical Problems (e.g. Pain)	<input type="checkbox"/> No Identifiable Triggers
<input type="checkbox"/> Exacerbation of Psychiatric Symptoms	<input type="checkbox"/> Unknown
	<input type="checkbox"/> NA

32. Method of Suicide

- Burning
- Drowning
- Electrocution
- Firearm
- Hanging
- Jumping
- Overdosing
- Poisoning
- Slashing Wrists or Throat
- Starving
- Suffocation by Carbon Monoxide
- Suffocation by Plastic Bag
- Suicide by Antagonizing Another
- Suicide by Initiating Accident
- Other
- Unknown
- N/A

34A. If Substance Abuse was selected Only:

Type of Substance

- alcohol
- Stimulants
- Narcotics
- Hallucinogens
- Marijuana
- Multiple Substances
- Unknown
- N/A

If multiple substances were used:  
Most Common Substance:

35A. If Substance Usage was Checked, checked all that apply

<input type="checkbox"/> Alcohol	<input type="checkbox"/> Hallucinogens
<input type="checkbox"/> Stimulants	<input type="checkbox"/> Marijuana
<input type="checkbox"/> Narcotics	<input type="checkbox"/> Multiple Substances
<input type="checkbox"/> Unknown	<input type="checkbox"/> NA

35B. If multiple substances were used:  
Most Common Substance:

Figure 3. Suicide Behavior Information

**Lethality of Suicide (Lethality Scales)**

36. Drugs	No damage Minimal medical consequences or treatment Some injury - emergency room or outpatient treat. Injury sufficient for hospitalization Major systemic effects Fully conscious and alert Conscious but sleepy Lethargic - intellectual functioning fine Lethargic with diminution in intellectual ability Obtunded - awake but little more Asleep but easily aroused Comatose - withdraw from pain, reflexes intact Comatose - no withdrawel, most reflexes intact Comatose - most reflexes absent, no resp. depress. Comatose - all reflexes absent, resp. depression Death Does not apply Unknown	42. Hanging	No damage Simple rope burns More extensive injuries (out-patient treatment) Hospitalization and resuscitation required Paralysis or other spinal cord injury Death Does not apply Unknown
38. Immolation	No damage First Degree Burns Second Degree Burns Third degree burns under 20% of body area Third degree burns between 20 and 60% of body Third degree burns over 69% of body area Death Does not apply Unknown	37. Shooting	No damage Flesh wounds with powder burns Bullet lodged in extremity - minor bleeding Bullet in abdomen or chest - major bleeding Bullet to head area Death Does not apply Unknown
40. Cutting	Surface scratches, none or minor bleeding Moderate bleeding, simple wound care required Bleeding of major vessel, no transfusion, out-care Extensive blood loss, vitals intact, in-pat. care Extensive blood loss with shock, insult to vitals Death Does not apply Unknown	39. Drowning	No damage Conscious - some respiratory distress Conscious - min. to mod. efforts at resuscitation Conscious - extensive efforts at resuscitation Unconscious - massive efforts at resuscitation Death Does not apply Unknown
		41. Jumping	Minor bruises only Sprains or minor injuries Extremities fractured Major bone and/or tendon damage in multiple areas Major change to vitals - paralysis expected Death Does not apply Unknown

Figure 4. Lethality Scales

Suicide Intent Scale Items		
43. Seriousness of Attempt	Did not seriously attempt to end life Uncertain about seriousness to end life Seriously attempted to end life Unknown N/A	43. Attitude toward living/dying Did not want to die Components of wanting and not wanting to die Wanted to die Unknown N/A
45. Degree of Premeditation	None; Impulsive Suicide contemplated for three or less hours prior Suicide contemplated for more than 3 hours prior Unknown N/A	46. Isolation Somebody present Somebody nearby or in visual or vocal contact No one nearby or in visual or vocal contact Unknown N/A
47. Timing	Intervention is probable Intervention is not likely Intervention is highly unlikely Unknown N/A	48. Degree of Precautions No precautions Passive precautions Active precautions (locked door) Unknown N/A
49. Acting to Get Help	Notified potential helper regarding attempt Contacted but did not specifically notify for help Did not contact or notify potential helper Unknown N/A	50. Final Acts in Anticipation of Death None Thought about or made some arrangements Made definite plans or completed arrangements Unknown N/A
51. Active Preparation for Attempt	None Minimal to moderate Extensive Unknown N/A	52. Suicide Note Absence of note Note written, but torn up, or thought about Presence of note Unknown N/A
53. Overt Communication of Intent Before the Attempt	None Equivocal communication Unequivocal communication Unknown N/A	

Figure 5. Suicide Intent Scale

### Psychiatric History Information

Has the subject had any prior psychiatric diagnosis or hospitalizations?

54. Prior DSM Diagnoses

Axis I: a:  b:  c:  d:  e:

Axis II: a:  b:  c:  d:  e:

Axis III: a:  b:  c:  d:  e:

Axis IV: a:  b:  c:  d:  e:

Axis V:

55. History of Substance Use/Abuse Substance(s)

Prior Psychiatric Hospitalizations

56. Total Number of Prior Psychiatric Hospitalizations

57. Reason (most recent):  58. Year (most recent):  59. Number of days (most recent):

60. Reason (2nd recent):  61. Year (2nd recent):  62. Number of days (2nd recent):

63. Reason (3rd recent):  64. Year (3rd recent):  65. Number of days (3rd recent):

66. Prior Pharmacotherapy - List all prior Psychiatric Medications:

Figure 6. Psychiatric History Information (Part 1 of 2).

Prior Psychotherapy

Most Recent

67. Begin Dat  68. End Dat  69. Setting:  Inpatient  
 Outpatient  
 Unknown  
 N/A

70. Form:  Individual  
 Group  
 Couples or Family  
 Unknown  
 N/A

71. Type:  Cognitive-Behavioral  
 Psychodynamic  
 Other  
 Unknown  
 N/A

72. Frequen

73. Provider Credent  Psychologist (Ph.D.)  
 Psychiatrist (M.D.)  
 Social Worker (LCSW or MSW)  
 Other  
 Unknown  
 N/A

Next Recent

74. Begin Da  75. End Dat  76. Setting:  Inpatient  
 Outpatient  
 Unknown  
 N/A

77. Format  Individual  
 Group  
 Couples or Family  
 Unknown  
 N/A

78. Type  Cognitive-Behavioral  
 Psychodynamic  
 Other  
 Unknown  
 N/A

79. Frequency

80. Provider Credentials  Psychologist (Ph.D.)  
 Psychiatrist (M.D.)  
 Social Worker (LCSW or MSW)  
 Other  
 Unknown  
 N/A

Figure 7. Psychiatric History Information (Part 2 of 2).

### Trauma History

Check if History is unknown - otherwise fill out trauma history  Unknown Trauma History

Check if Trauma history is known to be none  No Trauma History

81. Adult Assault - Physical- Start Year

82. Adult Assault - Physical - End Year

83. Adult Assault - Sexual - Start Year

84. Adult Assault - Sexual - End Year

85. Childhood Trauma - Start Year

86. Childhood Trauma - End Year

87. Domestic Violence (Childhood) - Start Year

88. Domestic Violence (Childhood) - End Year

89. Neglect (childhood) - Start Year

90. Neglect (childhood) - End Year

91. Physical Abuse (childhood) - Start Year

92. Physical Abuse (childhood) - End Year

93. Sexual Abuse (Childhood) - Start Year

94. Sexual Abuse (childhood) - End Year

95. Unspecified (childhood trauma) - Start year

96. Unspecified (childhood trauma) - End Year

97a. Domestic Violence - Start Year

97b. Domestic Violence - End Year

98a. Emotional or Psychological Abuse - Start year

98b. Emotional or Psychological Abuse - End Year

99. Military Combat Service - Start Year

100. Military combat Service - End Year

101. Natural Disaster - Latest Year

102. Natural Disaster - Other Year(s)

103. Pregnancy Loss - Latest Year

104. Pregnancy Loss - Other Years

105. Robbery - Latest Year

106. Robbery - Other Years

107. Serious Motor Vehicle Crash - Latest Year

108. Serious Motor Vehicle Crash - Other Years

109. Unexpected Death of Close Friend or Relative - Latest Year

110. Unexpected Death of Close Friend or Relative -Other Years

111. Other Traumatic Experience - Year

112. Other Traumatic Experience Description1:

113. Previous Suicide Attempt(s)

114. Number of previous attempts

115. Year(s) of previous attempt

116. Method of Previous Attempt

Family History of Mental Disorder  Check if Family History is Unknown

117. Relative 1:

118. Diagnosis for Rel. 1:

119. Relative 2:

120. Diagnosis for Rel. 2:

Family History of Fatal Suicide  Check if Family History is Unknown

121. Relative 1:

122. Relative 2:

Family History of Non- Fatal Suicide  Check if Family History is Unknown

Figure 8. Trauma History

### Index Hospitalization Information

Period of Hospitalization  Check if Info is Unknown

125. Year:  126. Month:  127. Season:  128. Number of Days:

1 2 3 4 5 6 7 8 9 10 11 12 Unknown

Spring Summer Fall Winter Unknown N/A

Click to calculate estimate of Days

Proximity to Sept. 11, 2001 Terrorist Attacks on World Trade Center and Pentagon:

129. Number of Days prior to event:  0 130. Number of days after event:  0

Proximity to Oct. 7, 2001 Commencement of Operation Enduring Freedom in Afghanistan:

131. Number of Days prior to event:  0 132. Number of days after event:  0

Proximity to Mar. 20, 2003 Commencement of Operation Iraqi Freedom in Iraqs:

133. Number of Days prior to event:  0 134. Number of days after event:  0

135. Substances found in Drug Test when admitted:

Figure 9. Index Hospitalization Information



### Treatments Provided

Check if it is Unknown which treatments were provided

136. Number of Sessions of Group Psychotherapy

137. Number of Sessions of Individual Psychotherapy

139. Pharmacotherapy - Medication List

140. Other - please specify

141. Outcome of Hospitalization

- Return to Full Duty Status
- Recommended for Administrative Separation
- Recommended for Medical Board Review
- Discharge Home
- Discharge Other Locations
- Partial Hospitalization Program
- Unknown
- N/A

142. DSM Diagnoses (Admission)

Axis I: a:  b:  c:  d:  e:

Axis II: a:  b:  c:  d:  e:

Axis III: a:  b:  c:  d:  e:

Axis IV: a:  b:  c:  d:  e:

Axis V:

143. DSM Diagnoses (Discharge)

Axis I: a:  b:  c:  d:  e:

Axis II: a:  b:  c:  d:  e:

Axis III: a:  b:  c:  d:  e:

Axis IV: a:  b:  c:  d:  e:

Axis V:

Figure 10. Treatments Provided/Disposition/Outcomes

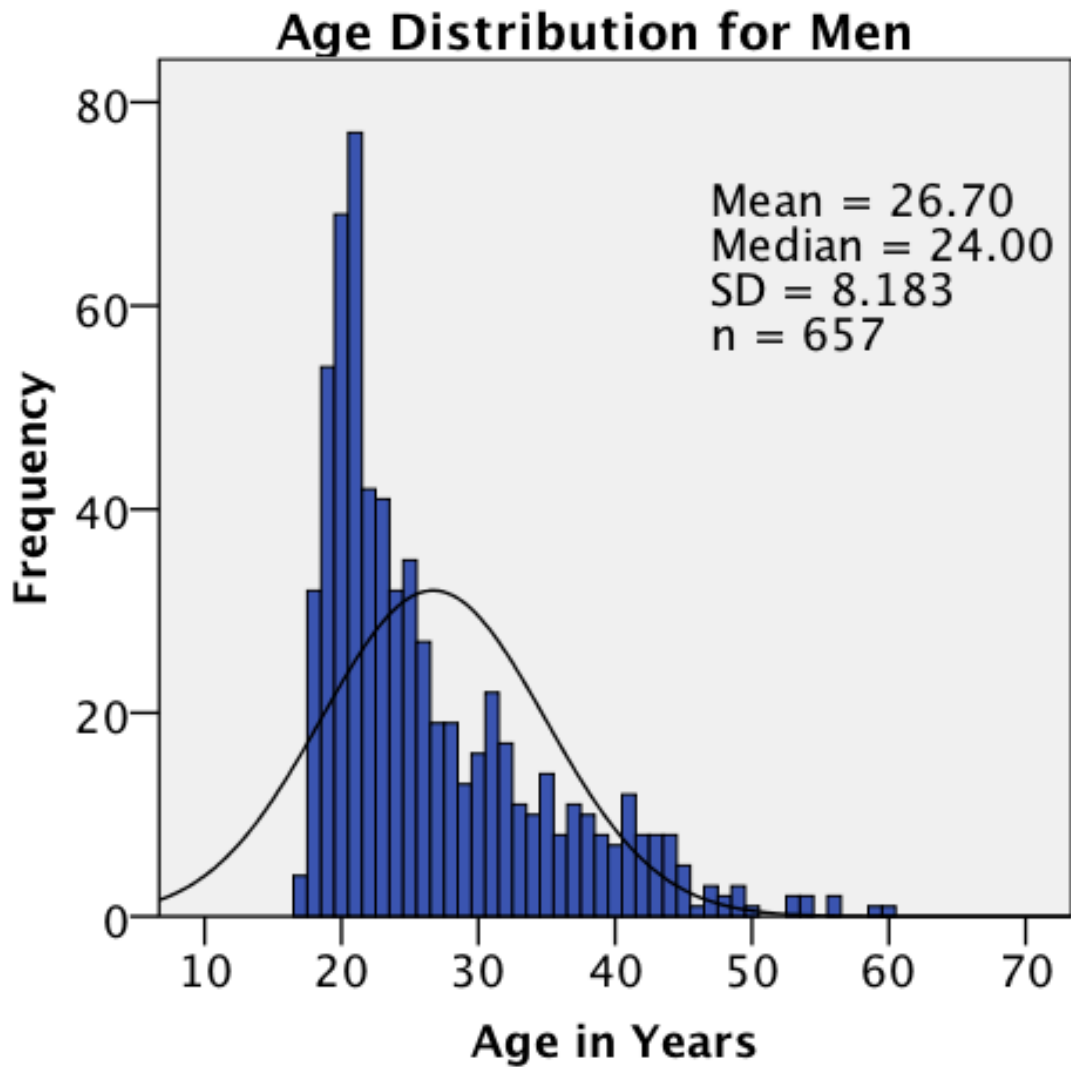


Figure 11. Age Distribution for Men Psychiatrically Hospitalized Due to Suicide Attempt (n = 657)

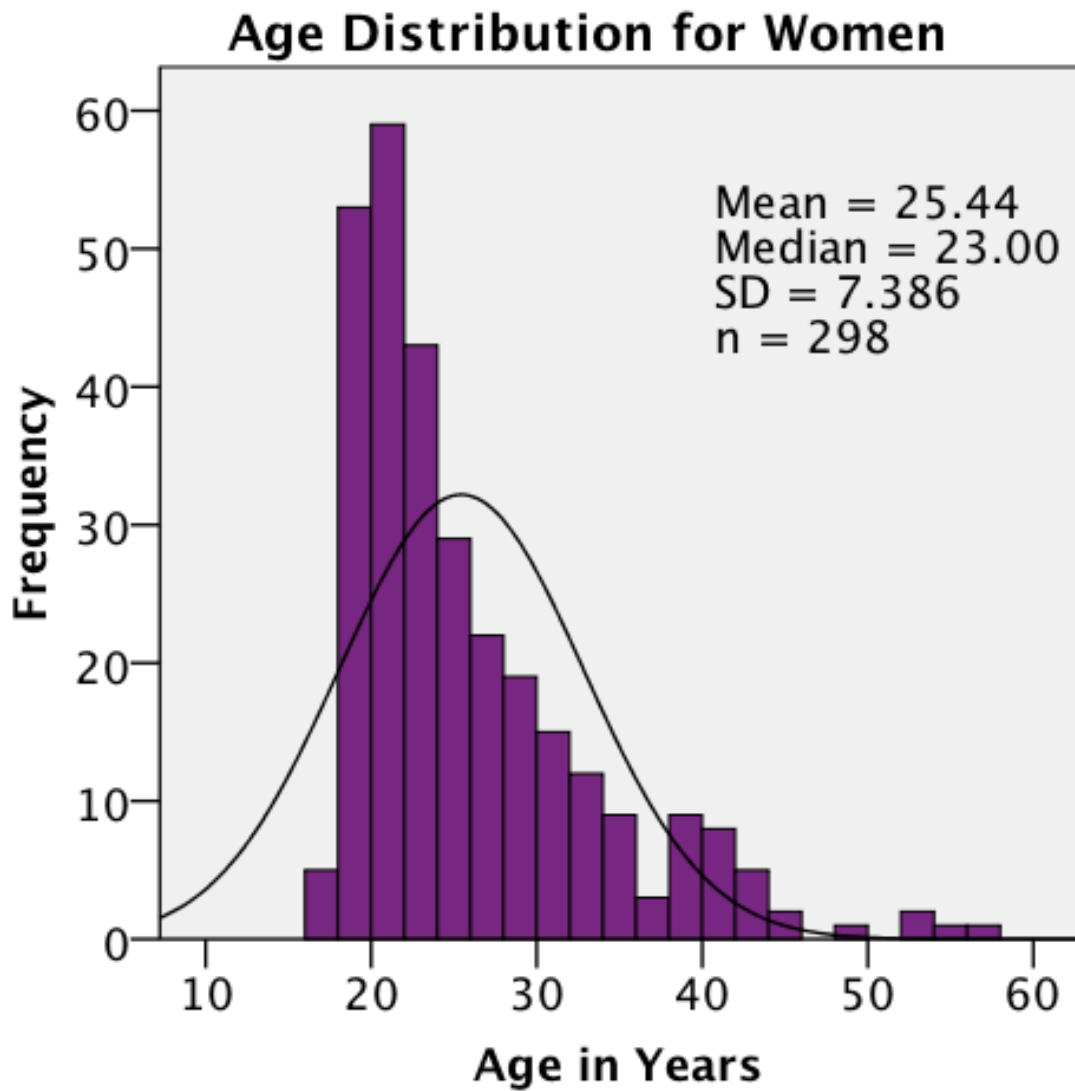


Figure 12. Age Distribution for Women Psychiatrically Hospitalized Due to Suicide Ideation or Suicide Attempt (n = 298)