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Dissertation

# The Relationship Between Post Traumatic Stress Disorder (PTSD) Symptoms and Career Outcomes of Army Enlisted Servicemembers

Jennifer N. Walters

RAND CORPORATION

Dissertation

# The Relationship Between Post Traumatic Stress Disorder (PTSD) Symptoms and Career Outcomes of Army Enlisted Servicemembers

Jennifer N. Walters

This document was submitted as a dissertation in September 2014 in partial fulfillment of the requirements of the doctoral degree in public policy analysis at the Pardee RAND Graduate School. The faculty committee that supervised and approved the dissertation consisted of Lisa S. Meredith (Chair), Paul Heaton, and Sarah O. Meadows.


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## Executive Summary

Post-Traumatic Stress Disorder (PTSD) has emerged as one of the signature wounds of the wars in Iraq and Afghanistan. Having provided more troop-years to these engagements than all the other services combined, the toll of PTSD has been especially burdensome for U.S. Army servicemembers. While the adverse mental and physical health outcomes associated with PTSD are well documented, the relationship between PTSD symptoms and military career milestones are often overlooked. This dissertation study endeavors to answer the question: To what extent do servicemembers with PTSD symptoms experience negative career outcomes?

Using deployment, self-reported Post Deployment Health Assessment (PDHA) survey, and demographic data, this study uses both logistic and duration regression to determine and describe the association between probable PTSD and Army servicemember career outcomes. Results suggest that servicemembers with probable PTSD are more likely to separate and less likely to promote compared to their similarly situated, healthy peers. Furthermore, on average, servicemembers with probable PTSD promote slower and separate faster compared to their healthy peers.

The study also investigates to what degree depressive symptoms and deployment-related injury influence career outcomes compared to PTSD symptoms. Because servicemembers often experience PTSD symptoms in conjunction with other health conditions, the study explores how combinations of these conditions influence time-to-promotion and time-to-separation. Results suggest that servicemembers with comorbidities face the most severe career consequences.

To address the observed career outcome patterns for servicemembers with probable PTSD, and to mitigate PTSD-related productivity losses, the study recommends an increase in the number of clinical health providers equipped to administer evidence-based treatment.

## Acknowledgements

I would first like to thank my committee members Lisa S. Meredith, Paul Heaton, and Sarah O. Meadows for their guidance and expertise, which has been instrumental throughout all stages of my dissertation. I would also to acknowledge the generous funding provided by both Project Air Force and Arroyo, without which this research on PTSD and career outcomes would not have been possible. I would also like to extend my appreciation to the Army G-1 office for sharing their expertise and insight regarding the Army promotion system, which was incredibly helpful during the formative stages of my dissertation.

On a more personal note, during my three years at the Pardee RAND Graduate School I have been so fortunate to be surrounded by incredible peers, some of whom have become my good friends. To Kun and Min, thank you for patiently explaining all of the math. To Caroline, thanks for coffee-laden study breaks that always lasted longer than intended. Shira, thank you for indulging my neuroses, keeping a sense of humor, and perhaps most importantly, hoarding extra cookies.

Above all, I want to thank my parents for encouraging me in all my past, present, and future endeavors. To my mother, for showing me true work ethic, grit, and positivity all my life. To my father, for steady reassurance and conviction in my abilities. To my brother, for never taking me too seriously. And to my bastion of support, Mike, for bearing with me.

## Table of Contents

## Abbreviations

| | |
|---|---|
| ACPERS | Army Civilian Personnel Database |
| AEA | Assignment Eligibility and Availability |
| AFHSC | Armed Forces Health Surveillance Center |
| AFQT | Armed Forces Qualification Test |
| ASCO | Assignment Consideration |
| AR | Army Regulation |
| AUDIT-C | Alcohol Use Disorders Identification Test |
| DALY | disability-adjusted life year |
| DMDC | Defense Manpower Data Center |
| DOD | Department of Defense |
| DSM | Diagnostic and Statistical Manual |
| IED | improvised explosive device |
| IMREPR | Immediate Reenlistment Prohibition |
| MEDPROS | Army's Medical Protection System |
| MOS | Military Occupation Specialty |
| MPARSN | Major Personnel Action Reason |

| | |
|---|---|
| NCO | non commissioned officer |
| OEF | Operation Enduring Freedom |
| OIF | Operation Iraqi Freedom |
| OND | Operation New Dawn |
| PEBD | Pay Entry Base Date |
| PDHA | Post Deployment Health Assessment |
| PDHRA | Post Deployment Health Re-Assessment |
| PEB | Physical Evaluation Board |
| PCL | Post Traumatic Stress Disorder Checklist |
| PC-PTSD | Primary Care Post Traumatic Stress Disorder Screen |
| PTSD | Post Traumatic Stress Disorder |
| RNKCRS | Military Rank Change Reason Code |
| RNKCTY | Military Rank Change Type Code |
| SFPARS | Suspension of Favorable Personnel Action |
| SPD | Separation Program Designator |
| TAPDB | Total Army Personnel Database |
| USAMC | US Army Medical Command |
| WEX | Work Experience File |

## CHAPTER ONE: INTRODUCTION

Post-traumatic stress disorder (PTSD) has emerged as one of the signature wounds of the wars in Iraq and Afghanistan. Many servicemembers return home to contend with PTSD symptoms as a result of combat-related stress and exposure to traumatic events. Between September 2001 and December 2011, the United States Army provided over 1.5 million troop-years to these engagements, more than all the other services combined.[1] With the largest number of deployed personnel, the Army has faced the largest the toll from PTSD compared to the other service branches.[2,3] While the adverse mental and physical health outcomes associated with PTSD are well documented —including depression, anxiety, and substance abuse as well as hypertension, obesity, and cardiovascular disease —the relationship between PTSD symptoms and military career milestones has received less attention.[4,5,6] With the latter in mind, this study endeavors to answer the question: To what extent do servicemembers with PTSD symptoms experience negative career outcomes? The importance of answering this question is two-fold. First, determination of an appreciable difference in career trajectories based on PTSD status will help bound the policy discussion on the real rather than perceived implications of PTSD. Second, establishing that PTSD symptoms bear on career outcomes creates an

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[1] Bonds, Timothy, Dave Baiocchi, and Laurie McDonald. Army Deployments to OIF and OEF. Rep. Santa Monica, CA: RAND Corporation, 2010. Web. <http://www.rand.org/pubs/documented_briefings/DB587>.

[2] "Occupational Outlook Handbook: Military Careers." *U.S. Bureau of Labor Statistics*. U.S. Bureau of Labor Statistics, 20 Dec. 2012. Web. 15 May 2013. <http://www.bls.gov/ooh/military/military-careers.htm>.

[3] "2011 Department of Defense Health Related Behaviors Survey of Active Duty Military Personnel." Department of Defense, Feb. 2013. Web. 15 May 2013. <http://www.murray.senate.gov/public/_cache/files/889efd07-2475-40ee-b3b0-508947957a0f/final-2011-hrb-active-duty-survey-report.pdf>.

[4] Zatzick, Douglas F. et al. Posttraumatic Stress Disorder and Functioning and Quality of Life Outcomes in a Nationally Representative Sample of Male Vietnam Veterans. *American Journal of Psychiatry 154:12, December 1997.*

[5] Kibler JL, Joshi K, Ma M. Hypertension in relation to posttraumatic stress disorder and depression in the US National Comorbidity Survey. Behav Med.2009;34:125–32.

[6] Bedi US, Arora R. Cardiovascular manifestations of posttraumatic stress disorder. J National Med Assoc. 2007;99:642–9.

impetus for the Army to better understand the primary drivers behind this phenomenon and to determine how it might intervene to alleviate adverse outcomes associated with symptoms.

## Research Objectives

The purpose of this study is to determine the extent to which there is an association between self-reported PTSD symptoms and Army servicemember career outcomes. The results of this study are intended to shed light on the Army promotion process and the ways in which PTSD symptoms may be shaping career outcomes, namely promotion to E-5 and separation prior to E-5.[7,8] To add depth, this study also examines differences in career outcomes for servicemembers with PTSD symptoms, deployment-related injuries, depressive symptoms, and comorbidities compared to those without any health conditions.

Given the observable nature and often work-related limitations associated with a physical injury, there may be compelling differences in how a less directly observable injury such as PTSD impacts a servicemember's career outcomes. Like PTSD symptoms, depressive symptoms are indicative of mental illness but may influence career outcomes differently. Comparison of a similar and a dissimilar condition, from a broad physical versus mental health perspective, will help contextualize the magnitude of the influence of each condition. Although the branch-specific results of this study may not be generalizable to other services, understanding the association between PTSD symptoms on Army servicemember career outcomes will provide an impetus for leaders of other service branches to explore the potential influence of PTSD symptoms on the careers of their servicemembers.

## Research Questions and Overview of Approach

The following research questions will guide the development and execution of this study's quantitative analysis:

- Question 1: What is the association between self-reported PTSD symptoms and servicemember career outcomes?
    - Sub-question: How does this association change when symptoms are attributed to the most recent versus the initial deployment?
- Question 2: How do career outcomes differ when servicemembers report injury or depressive symptoms compared to PTSD?
    - Sub-question: Compared to a single condition, what is the association between comorbidities and career outcomes?

To determine and describe the association between self-reported PTSD symptoms and Army servicemember career outcomes, this dissertation study uses self-reported Post Deployment Health Assessment (PDHA) survey data, Work Experience File (WEX) deployment data, and Total Army Personnel Database (TAPDB) demographic data to conduct both logistic regression and duration analysis. Through logistic regression, we trace the likelihood of major career outcomes —promotion to rank of sergeant (E-5) or separation prior to this rank —for servicemembers based on probable PTSD status in the period following their deployment exposure window. Through duration analysis, we predict the average time-to-event for promotion and separation based on probable PTSD status.

The study also explores career outcomes associated with depressive symptoms and deployment-related injury. Motivated by the supposition that these conditions conceivably differ in how they impact performance and how they are perceived by others, the results offer a quantitative comparison of their relative contribution to promotion and separation outcomes. Because servicemembers often experience PTSD symptoms in conjunction with depressive symptoms and injury, the study investigates how comorbidities influence time-to-promotion and time-to-separation compared to PTSD symptoms, depressive symptoms, and deployment-injury independently.

Finally, embracing a cost-benefit perspective, the study offers recommendations to Army policymakers to address the observed career outcome patterns for servicemembers with probable PTSD.

## Policy Relevance

Having identified a gap in the literature, this study explores the understudied and often overlooked relationship between PTSD symptoms and military careers. Via quantitative analysis, this study offers tractable results that can facilitate discussion on the potential stagnation of servicemember career trajectories when PTSD symptoms are reported. As such, this analysis may strengthen the impetus for thorough, long-term exploration of the primary drivers underlying the association between servicemember career outcomes and PTSD symptoms. Overall, the results of this analysis offer a vital exploratory step in mapping one of the most important potential adverse consequences of PTSD—career outcomes—for servicemembers returning from Iraq and Afghanistan.

## Organization of Monograph

This remainder of this dissertation monograph is organized into the following chapters:

2. Post Traumatic Stress Disorder
3. The Army Promotion System
4. Data
5. Descriptive Statistics
6. Methodology
7. Results
8. Conclusion and Policy Recommendations

## CHAPTER TWO: POST TRAUMATIC STRESS DISORDER

This chapter provides an overview of the key topics to be explored in this dissertation and establishes the foundation for the subsequent analysis presented in later chapters. We first present a brief history of PTSD, the way in which PTSD is assessed, factors that elevate risk for PTSD, and the prevalence of PTSD among servicemembers returning from Iraq and Afghanistan. Next, we discuss what is currently known about the potentially adverse influence of PTSD on performance. Finally, we conclude this chapter with a discussion of the general challenges associated with mental illness, including associated costs, stigma, and obstacles to high-quality mental healthcare services.

### Historical Perspective

Post-traumatic stress disorder, or PTSD, is a new name for an old condition: Military history dates PTSD-like symptoms to thousands of years ago, such as when Greek historian Herodotus in the 5th century B.C. reported that the Spartan commander Leonidas said that his battle-worn troops "had no heart for the fight and were unwilling to take their share of the danger."[9,10] In the American Civil War, servicemembers suffering from "irritable heart syndrome" or "exhausted heart" were often dismissed from service without treatment because they were believed to be weaker and less capable than their counterparts who did not seek treatment for or display symptoms. By the time of World War I, "shell shock" became the new name for what would later be called PTSD. Given the sheer number of such cases and the fact that the symptoms struck servicemembers indiscriminant of rank, experience, or demographic background, doctors began to explore the idea that shellshock symptoms were not the result of physiological brain damage. Instead, some hypothesized, the symptoms manifested due to severe emotional and psychological distress.

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[9]Bentley, Steve. "A Short History of PTSD: From Thermopylae to Hue Servicemembers Have Always Had A Disturbing Reaction To War." *Voice of Vietnam Veterans of America, Inc.* N.p., Apr. 2005. Web.

[10] Jones, Edgar, and Simon Wessely. *Shell Shock to PTSD: Military Psychiatry from 1900 to the Gulf War*. Hove: Psychology, 2005. 14. Print.

The World War II and Korean War eras ushered in more stringent screening systems designed to weed out servicemembers with a predisposition for "mental illness, neurosis, or maladjustment."[11] Nonetheless, a large number of servicemembers continued to experience PTSD symptoms, and, contrary to the military's expectations, many men who had been screened and deemed well equipped to handle the stresses of combat, hit their psychological breaking points.

The effects of PTSD on the cohort of Vietnam War veterans created substantial grassroots support – as well as political activitism[12] – for official medical recognition of PTSD. The largely unsympathetic public attitude towards Vietnam veterans suffering from PTSD, often remembered as a beleaguered generation who struggled (and, in some cases, continue to struggle) to re-enter American society, serves as a clear example of the long-term potential effects of stigma associated with PTSD and mental illness more broadly. According to the Institute of Medicine, Vietnam vets, among other servicemembers, receive the largest share of mental health services, including cognitive processing and prolonged exposure therapy.[13] While the body of psychiatric knowledge surrounding PTSD has dramatically progressed since the Vietnam era, the lingering association between PTSD and infirmity of constitution has remained relatively constant.

PTSD was first admitted into the Diagnostic and Statistical Manual of Mental Disorders (DSM) in 1952 under the name *gross stress reaction*, and, since then, the clinical definition of PTSD and its diagnostic criteria have both evolved considerably. At the beginning of the Gulf War in 1990, PTSD was still conceptualized as the result of direct first-hand trauma. After the conclusion of the war, the 1994 edition of the DSM (DSM-IV) reflected a more refined understanding of the gradations in trauma experience, which was defined as exposure to a "catastrophic event involving actual or threatened

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[11] Jones, Edgar, and Simon Wessely. *Shell Shock to PTSD: Military Psychiatry from 1900 to the Gulf War*. Hove: Psychology, 2005. 14. Print.

[12] Scott, Wilbur. "PTSD in DSM-III: A Case in the Politics of Diagnosis and Disease."*JSTOR*. University of California Press, Aug. 1990. Web. 28 Jan. 2013.

[13] Rosenberg, Tina. "For Veterans, a Surge of New Treatments for Trauma." *Opinionator For Veterans a Surge of New Treatments for Trauma Comments*. The New York Times, 26 Sept. 2012.

death or injury, or a threat to the physical integrity of him/herself *or others*."[14] For the first time, a clinical definition of PTSD included exposure to threats not only to the individual, but to his or her "battle buddies" and others. The 2013 edition of the DSM (DSM-V) went further, including in the definition of PTSD those servicemembers who experienced a *latent* response to a traumatic event.[15]

In Iraq and Afghanistan, the face of PTSD changed again. In the midst of an asymmetric war fought often with deadly improvised explosive devices (IED), the frontline of combat has become less defined and, unlike in previous U.S. military engagements, direct frontline combat is not necessarily the most dangerous place in a warzone.[16] The uncertainty surrounding and risk of injury or death involved in these theaters has contributed to the prevalence of PTSD symptoms for the most recent cohort of U.S. veterans. As the frontlines of combat have become less distinct with the evolution of asymmetric warfare abroad, our deployed forces have encountered a great breadth of traumatic stressors, including insurgent ambushes, firefights and IED attacks.

Understanding how deployed experiences are influencing an important dimension of servicemember lives—their military career outcomes—will help inform the decisions of Army leaders as they approach servicemember health and force management. The following section discusses the clinical definition of PTSD and how it is currently assessed.

## Clinical Perspective

Trauma is a central component of PTSD. According to the U.S. Department of Veteran Affairs, about 60 percent of men and 50 percent of women experience at least one trauma in their lives. Women are more likely to experience sexual assault and child sexual abuse, whereas men are more likely to experience accidents, physical assault, combat, disaster, and witness to death or injury. Experience of trauma, however, does not mean an individual will develop PTSD. About seven to eight percent of the population

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[14] "DSM Criteria for PTSD." *DSM-IV-TR Criteria for PTSD*. Department of Veterans Affairs, n.d. Web. 29 Jan. 2013. <http://www.ptsd.va.gov/professional/pages/dsm-iv-tr-ptsd.asp>.

[15] New Diagnostic Criteria for PTSD to Be Released: DSM-5. Department of Veterans Affairs, n.d. Web. 25 April 2013. <http://www.ptsd.va.gov/professional/pages/diagnostic_criteria_dsm-5.asp>.

[16] "Faces of the Fallen." The Washington Post, n.d. Web. 28 Jan. 2013. <http://apps.washingtonpost.com/national/fallen/>.

will have PTSD at some point in their lives, with women more likely to develop the condition than men (ten versus five percent). In a given year, about 5.2 million people suffer from PTSD in the United States.[17]

The Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM V or DSM-5) provides the clinical criteria for determining PTSD that underlie this analysis. The criteria for PTSD in the DSM-5, released in 2013, delineate a picture of what constitutes a traumatic event. Sexual assault is specifically mentioned as a traumatic event, as is the recurring exposure to trauma that first responders or police officers might experience. For example, first responders collecting body parts in a disaster or police officers processing details of child abuse are common examples of repeated or extreme indirect exposure to a traumatic event.

PTSD causes clinically significant distress or functional impairment in an individual's social interactions, work capacity, and ability to carry out his/her normal routine. This stress-related condition is *not* the result of another medical condition, medication, drugs, or alcohol, and must stem from a traumatic event that adheres to the clinical description. Although previously classified as an anxiety disorder, PTSD is currently classified in the trauma- or stress-related disorder category in the DSM-5, highlighting the recent emphasis on an individual's exposure and reaction to a specific traumatic event.[18]

Organizationally, the DSM-5 criteria separate the history of exposure to a traumatic event (referred to as Criterion A) from the symptom clusters (Criteria B through E, discussed further below). The diagnostic criteria identify the triggering event of PTSD as exposure to actual or threatened death, serious injury, or sexual violation. The traumatic event may arise from any of the following scenarios in which the individual:

- directly experiences the traumatic event
- witnesses the traumatic event in person

[17] PTSD: National Center for PTSD. "How Common is PTSD?" www.ptsd.va.gov/public/PTSD-overview/basics/how-common-is-ptsd.asp. 2014.
[18] American Psychiatric Associaiton. (2013). *Diagnostic and statistical manual of mental disorders*. (5th ed.). Washington, DC.

- learns that the traumatic event occurred to a close family member or close friend (with the actual or threatened death being either violent or accidental), or
- experiences first-hand repeated or extreme indirect exposure to aversive details of the traumatic event (not through media, pictures, television or movies unless work-related).

The DSM-5 groups behavior symptoms into four main clusters: Intrusion, Avoidance, Negative Alternations in Cognitions and Mood, and Alterations in Arousal and Reactivity.[19] Three additional PTSD criteria offer a more complete depiction of an individual's case of PTSD: Criterion F addresses the duration of symptoms; Criterion G evaluates the degree of functional significance; and Criterion H determines whether the symptoms are exclusive to PTSD or might occur due to other conditions with similar symptom presentations. We list the criteria in Table 2.1, and provide a basic definition. The paragraphs below the table briefly explain the characteristics of the symptom clusters, each of which corresponds to a unique diagnostic criterion. Using the Clinician-Administered PTSD Scale for DSM-5, a clinician or trained professional must administer the structured interview and assess the presence and severity of symptoms. A symptom is only considered present if it is rated as "moderate/threshold" or higher.[20] The DSM-5 diagnostic rule requires:[21]

- at least one Criterion B symptom
- at least one Criterion C symptom
- at least two Criterion D symptoms
- at least two Criterion E symptoms

---

[19] The DSM IV groups symptoms by the following clusters: (1) re-experiencing, (2) avoidance and numbing, and (3) increased arousal. In the DSM-5, re-experiencing was renamed intrusion, while avoidance and numbing are now two separate categories called avoidance and negative alterations in cognitions and mood. Increased arousal became alternations in arousal and reactivity.

[20] The respondent described a clinically significant problem. The problem satisfies the DSM-5 symptom criterion and would therefore count towards a PTSD diagnosis. The "moderate/threshold" rating requires a minimum frequency of experiencing the symptom at least two times per month or some of the time (20-30%) in addition to a minimum intensity of Clearly Present.

[21] Weathers, F.W., Blake, D.D., Schnurr, P.P., Kaloupek, D.G., Marx, B.P., & Keane, T.M. (2013). *The Clinician-Administered PTSD Scale for DSM-5 (CAPS-5)*.

- Criterion F is met (disturbance has lasted one month)
- Criterion G is met (disturbance cause either clinically significant distress or functional impairment).

Table 2.1 DSM-5 Symptom Clusters for PTSD (2013)[22]

| Symptom Cluster | 2013 | Basic Definition |
|---|---|---|
| Criterion B | Intrusion | Difficulty keeping memories of the traumatic event from surfacing |
| Criterion C | Avoidance | Evasion of triggers or stimuli that might cause memories of the traumatic event |
| Criterion D | Negative Alterations in Cognition and Mood | Changes in mood or mental state, which begin or worsen following the traumatic event |
| Criterion E | Alternations in Arousal and Reactivity | Significant changes in arousal and reactivity associated with the traumatic event |
| Criterion F | Duration | Persistence of symptoms for more than one month |
| Criterion G | Functional Significance | Significant symptom-related distress or functional impairment (e.g., social, occupational) |
| Criterion H | Exclusion | Disturbance is not due to medication, substances use, or other illness |

## Intrusion (Criterion B)

Intrusion symptoms, comprehensively, indicate that an individual is having difficulty keeping memories of the traumatic event from resurfacing. For a clinical PTSD diagnosis,

[22] "DSM Criteria for PTSD." *DSM-IV-TR Criteria for PTSD*. Department of Veterans Affairs, n.d. Web. 29 Jan. 2013. <http://www.ptsd.va.gov/professional/pages/dsm-iv-tr-ptsd.asp>.

an individual must experience at least one intrusion symptom. Symptoms categorized as "intrusion" cover a wide range and may include any of the following:

- recurrent, involuntary, and intrusive distressing memories of the traumatic event(s)
- recurrent distressing dreams in which the content and/or affect of the dream are related to the traumatic event(s)
- dissociative reactions (e.g., flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring
- intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event(s)
- marked physiological reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).

**Avoidance (Criterion C)**

Broadly, avoidance symptoms constitute behaviors that indicate evasion of triggers or stimuli that might cause memories of the traumatic event. For a clinical PTSD diagnosis, one of the following two symptoms must be exhibited after the occurrence of the traumatic event:

- avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s)
- avoidance of or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories thoughts, or feelings about or closely associated with the traumatic event(s).

**Negative Alterations in Cognition and Mood (Criterion D)**

Symptoms in this category cover changes in mood or mental state, which begin or worsen following the occurrence of the traumatic event. For a clinical diagnosis, at least two symptoms in this category must be exhibited:

- inability to remember an important aspect of the traumatic event(s)
- persistent and exaggerated negative beliefs or expectations about oneself, others, or the world.
- persistent, distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others
- persistent negative emotional state (e.g., fear, horror, anger, guilt, or shame)
- markedly diminished interest or participation in significant activities
- feelings of detachment or estrangement from others
- persistent inability to experience positive emotions (e.g., happiness, satisfaction, or loving feelings).

**Alternations in Arousal & Reactivity (Criterion E)**

Symptoms in this cluster include significant changes in arousal and reactivity associated with the traumatic event, changes that begin or worsen after the occurrence of the traumatic event. To satisfy Criterion E, at least two symptoms must be present:

- irritable behavior and angry outbursts (with little or no provocation) typically expressed as verbal or physical aggression toward people or objects
- reckless or self-destructive behavior
- hypervigilance
- exaggerated startle response
- problems with concentration
- sleep disturbance (e.g., difficulty falling or staying asleep or restless sleep).

**Duration (Criterion F)**

Persistence of symptoms (in Criteria B, C, D, and E) for more than one month.

**Functional Significance (Criterion G)**

Significant symptom-related distress or functional impairment (e.g., social, occupational).

### Exclusion (Criteria H)

Disturbance is not due to medication, substance use, or other illness.

Finally, there are two specifications concerning disassociation and onset of symptoms. The diagnostic criteria instruct health providers to specify whether, in addition to meeting the aforementioned criteria for diagnosis, an individual experiences high levels of either depersonalization or derealization in response to stimuli associated with the traumatic event. Further, although onset of symptoms may occur immediately after the event, the second specification stipulates that at least six months must have elapsed after the traumatic event before a full diagnosis can be met. Individuals who first display symptoms after six months are considered to have late-onset PTSD and will be classified as having *delayed expression* in a clinical diagnosis.

While the clinical criteria for PTSD are clearly defined, the factors that predispose servicemembers for PTSD are less so. The following section describes characteristics that, in general, increase the likelihood for PTSD. Additionally, research suggests, but has not conclusively proven, that many other factors may influence likelihood for PTSD.

## PTSD Risk Factors

In the general population, the estimated prevalence of PTSD is stable, at about 8 percent.[23] In contrast, prevalence rates for PTSD among military veterans vary and will continue to fluctuate due to dynamic combat threats. In a systematic literature review of prevalence estimates of PTSD among servicemembers previously deployed to OIF and OEF, most estimates range from 5 to 20 percent, with combat exposure being the only factor across studies consistently associated with PTSD.[24] According to the National

23 Kessler, R.C., Berglund, P., Demler, O., Jin, R., & Walters, E.E. (2005). Lifetime Prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Archives of General Psychiatry, 62, 593-602.

24 Ramchand, R., Schell, T. L., Karney, B. R., Osilla, K. C., Burns, R. M. and Caldarone, L. B. (2010), Disparate prevalence estimates of PTSD among service members who served in Iraq and Afghanistan: Possible explanations. J. Traum. Stress, 23: 59–68. doi: 10.1002/jts.20486

Institute of Health and the Mayo Clinic, the following factors may contribute to elevated risk for PTSD:[25, 26]

- being female
- experiencing intense or long-lasting trauma
- having experienced other trauma earlier in life
- having little or no social support after the traumatic event
- having other mental health problems, such as anxiety or depression
- lacking a good support system of family and friends
- having first-degree relatives with mental health problems, including PTSD
- having first-degree relatives with depression
- having been abused or neglected as a child.

Considering that these factors apply to the general population, certain risk factors may be more or less pronounced for military servicemembers. Although the epidemiological literature regarding PTSD among OIF and OEF veterans is somewhat limited since servicemembers are still returning home, several studies have explored the determinants of risk for PTSD in this cohort.

In a study using 2002-2008 VA data for Iraq and Afghanistan servicemembers, 21.8% of the 289,328 participants were diagnosed with PTSD. In terms of risk factors, active-duty veterans under the age of 25 had significantly higher rates of PTSD. Researchers also reported that greater combat risk was associated with higher risk for PTSD, and proxies for high combat exposure, such as being enlisted rather than being an officer, belonging to the Army rather than to other branches, and having more than one deployment, all are independently associated with higher risk for PTSD.[27] While factors that play significant roles in a servicemember's risk for PTSD, such as age at time of

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[25] Staff, Mayo Clinic. "Post Traumatic Stress Disorder." *Mayo Clinic*. Mayo Foundation for Medical Education and Research, 08 Apr. 2011. Web. 10 Nov. 2013.
[26] "Post-Traumatic Stress Disorder (PTSD)." *National Institute of Mental Health*. N.p., n.d. Web. 10 Nov. 2013.
[27] Seal KH, Metzler TJ, Gima KS, Bertenthal D, Maguen S, et al. (2009)Trends and risk factors for mental health diagnoses among Iraq and Afghanistan veterans using Department of Veterans Affairs health care, 2002–2008. Am J Public Health 99: 1651–1658.

trauma and Army job can easily be represented in analytic models, there are other factors that impact a servicemember's likelihood for PTSD that are more difficult to track.

For example, experts agree that social support and severity of PTSD symptoms are inversely related.[28, 29, 30] Like any self-reported attitude or experience, social support can be measured in a variety of ways. One proxy for social support that can be tracked over time is a servicemember's marital status. Among OIF and OEF veterans seen at VA facilities between 2001 and 2005, servicemembers who had never been married had the lowest risk of developing PTSD compared to married, divorced, separated, and widowed servicemembers.[31] Conversely, in a 2008 study examining correlates of PTSD among UK servicemembers deployed to Iraq, researchers found that single servicemembers experienced PTSD symptoms at significantly higher rates than married or cohabitating servicemembers.[32] In the same study, experiencing low morale within one's unit and poor social support were strongly associated with PTSD symptoms.[33]

While it can be argued that servicemembers exert a certain degree of control over their levels of social support, recent studies have suggested that factors entirely beyond an individual's control can contribute to PTSD risk as well. In a study examining the association between cortisol levels and risk factors for PTSD in adult offspring of Holocaust survivors, researchers found that low cortisol levels were significantly associated with both lifetime PTSD in the subjects and PTSD in their parents. Offspring with both parental PTSD and lifetime PTSD had the lowest cortisol levels of all study groups, suggesting that low cortisol levels may indicate predispositions for PTSD related

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[28] Brewin CR, Andrews B, Valentine JD. Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults.Journal of Consulting and Clinical Psychology. 2000;68:748–766.
[29] Ozer EJ, Best SR, Lipsey TL, Weiss DS. Predictors of posttraumatic stress disorder and symptoms in adults: A meta-analyses. Psychological Bulletin. 2003;129:52–73.
[30] Clapp JD, Beck JG. Understanding the relationship between PTSD and social support: The role of negative network orientation. Behaviour Research and Therapy. 2009;47:237–244.
[31] Seal, K. H., Bertenthal, D., Miner, C. R., Sen, S., & Marmar, C. (2007). Bringing the war back home: Mental health disorders among 103,788 U.S. veterans returning from Iraq and Afghanistan seen at Department of Veterans Affairs facilities. Archives of Internal Medicine,167, 476-482.
[32] Iversen, A. C., Fear, N. T., Ehlers, A., Hacker Hughes, J., Hull, L., Earnshaw, M., et al. (2008). Risk factors for post-traumatic stress disorder among UK armed forces personnel. Psychological Medicine, 38, 511-522
[33] Ibid.

to either parent trauma or individual state-characteristics.[34] In a longitudinal study of 1,085 men (mean age=19) in the Israeli Defense Force infantry, researchers conducted genetic analysis on the serotonin transporter gene 5-HTTLPR. Researchers found evidence to suggest that servicemembers with low-transcription genotypes manifested fewer PTSD symptoms when exposed to combat stress. However, researchers also found that threat-related attention biases tend to adjust after exposure to trauma, suggesting a servicemember's likelihood for developing PTSD may change throughout time regardless of genetic predisposition.[35] Study of the serotonin transporter gene among IDF servicemembers is just one of many endeavors to understand more about PTSD biomarkers;[36] however, while this information is promising and broadens the pathological scope of PTSD, it currently has limited practical use when analytically controlling for PTSD risk factors.

The following section characterizes the prevalence of PTSD among servicemembers returning from Iraq and Afghanistan, trends in servicemember attitude towards treatment, and the Department of Defense's (DoD's) health infrastructure to support servicemembers with PTSD.

## PTSD in the Current U.S. Military Cohort

In the post 9/11-era, PTSD is an area of particular interest for the U.S. military. As the wars in Afghanistan and Iraq have continued, a growing number of servicemembers have been exposed to combat trauma. To assess mental health problems following deployments, the DoD administers the Post-Deployment Health Assessment (PDHA) to servicemembers immediately upon their return. Ninety to120 days later, servicemembers complete the Post-Deployment Health Re-Assessment (PDHRA). According to a 2007 study, 20.3 percent of active duty U.S. servicemembers returning from Iraq (among a cohort of 88,235) were identified as needing mental health assessment and/or treatment,

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[34] Yehuda, Rachel et al. *Parental Posttraumatic Stress Disorder as a Vulnerability Factor for Low Cortisol Trait in Offspring of Holocaust Survivors. Arch Gen Psychiatry*. 2007;64:1040-1048.
[35] Wald, I. et al. "Attention to threats and combat-related posttraumatic stress symptoms: prospective associations and moderation by the serotonin transporter gene." JAMA Psychiatry. 2013; 70 (4): 401-8.
[36] Schmidt, Ulrike et al. "Biomarkers in Posttraumatic Stress Disorder: Overview and Implications for Future Research." Dis Markers. 2013; 35(1): 43–54.

based on their responses the PDHA and PDHRA.[37] Factors such as multiple deployments and barriers to treatment may influence the incidence and severity of PTSD in the OEF/OIF cohort of veterans.

As of December 2012, the United States military had deployed approximately 2.2 million troops in support of OEF/OIF.[38] Findings from the 2010 Joint Mental Health Advisory Team Survey also suggest that the prevalence of depression, anxiety, and acute stress among servicemembers has significantly increased since 2005.[39] The number of wounded U.S. troops has exceeded 16,000 and 32,000 in Afghanistan and Iraq, respectively.[40] However, taking into consideration the deployment-related mental health issues servicemembers are experiencing, the full impact of these wars on our troops has yet to be determined or fully understood. According to a 2008 RAND study that surveyed 1,965 OEF and OIF veterans, 14.5 percent of veterans returning from Iraq and Afghanistan met diagnostic criteria for PTSD. The Department of Veteran Affairs reports that for every 100 OEF and OIF veterans, 11 to 20 are suffering from PTSD, more than for the Gulf War (10 out of every 100) and less than for Vietnam (30 out of every 100). The RAND survey-based study also indicated that only 53 percent of veterans who met criteria for PTSD had sought help from a provider within a year prior to the survey. Fewer than half of those who did seek treatment received what RAND called "minimally adequate treatment" (defined by the duration and type of treatment received); even fewer servicemembers received high-quality, evidence-based care.[41]

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[37] Milliken, C. S., Auchterlonie, J. L., & Hoge, C. W. (2007). Longitudinal assessment of mental health problems among active and reserve component servicemembers returning from the Iraq war. *JAMA, 298,* 2141–2148. doi:10.1001/jama.298.18.2141

[38] National Research Council. *Returning Home from Iraq and Afghanistan: Assessment of Readjustment Needs of Veterans, Service Members, and Their Families*. Washington, DC: The National Academies Press, 2013.

[39] Operation Enduring Freedom 2010 Afghanistan / Joint Mental Health Advisory Team 7 (J-MHAT 7) ; Office of the Surgeon General, United States Army Medical Command and Office of the Command Surgeon, HQ USCENTCOM and Office of the Command Surgeon, US Forces Afghanistan (USFOR-A).

[40] (2013). Returning Home from Iraq and Afghanistan: Assessment of Readjustment Needs of Veterans, Service Members, and Their Families, The National Academies Press.

[41] Tanielian, Terry et al. Invisible Wounds of War: Psychological and Cognitive Injuries, Their Consequences, and Services to Assist Recovery. Santa Monica, CA: RAND Corporation, 2008.

Among those serving in the military, the stigma associated with PTSD can be especially burdensome. The results of a 2006 study suggest that servicemembers returning from deployment experience a strong stigma concerning disclosure of PTSD and other psychiatric problems.[42] The study also indicates that the most symptomatic servicemembers are also the most sensitive to such stigma. As a result, those servicemembers who need mental health treatment are ultimately the least likely to seek it, due to fear of stigmatization. In the decades preceding the formal diagnosis of PTSD, persons with chronic symptoms following a traumatic life event felt stigmatized by the assertion that an underlying character weakness or constitutional vulnerability was to blame for their symptoms, rather than the event itself. Feedback from Iraq and Afghanistan veterans today, however, suggests that the pre-1980 perception of those who suffer from PTSD has not changed. Servicemembers are particularly concerned that documentation of PTSD-related issues in their medical record will have a negative effect on the advancement of their military career.[43] Among a group of 150 OIF National Guard members who screened positive for PTSD, the likelihood of seeking behavioral health treatment was associated with a belief that treatment would harm one's career, despite the fact that most servicemembers in the survey believed treatment would help alleviate bothersome symptoms.[44]

Broadly, some evidence suggests that servicemembers are resistant to seeking treatment for PTSD due to their expectation that mental health issues will tarnish their personal and professional reputations. Servicemembers with career fields that require high-level security clearances, for example, may be especially unwilling to consult a mental health provider. Although the DoD has initiated programs to address service-related mental health issues, research suggests the effectiveness of these programs in specifically addressing stigma is limited.

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[42] Friedman, M. J. (2006). Posttraumatic stress disorder among military returnees from Afghanistan and Iraq. *American Journal of Psychiatry, 163(4),* 586–593.

[44] Stecker, T., Fortney, J., Hamilton, F., Sherbourne, C. D., & Ajzen, I. (2010). Engagement in mental health treatment among veterans return- ing from Iraq. *Patient Preferences and Adherence, 4,* 45–49.

In 2009 the DoD commissioned The Real Warrior Campaign (RWC), a large-scale multimedia program designed to promote resilience, facilitate recovery, and support the reintegration of returning servicemembers, veterans, and their families. In a 2011 study, RAND found that RWC goals are not clearly stated in campaign materials, leading to an inconsistent understanding of the RWC. To evaluate RWC website content, RAND assembled a panel of experts with experience in barriers to mental health care, including stigma, mental health in the military (PTSD, deployment psychology), effective media campaigns, media campaigns for servicemembers, and psychological resilience. While some panelists thought that the RWC mission was to raise awareness of mental health issues and provide information for referrals, others viewed it as an anti-stigma campaign whose main goal was reducing stigma around help-seeking.[45] Furthermore, much of the website content was not directly relevant to any of the campaign goals. RAND's content analysis of website articles directed at each target population found that between 34 percent and 73.6 percent of the articles directed at specific target populations did not explicitly support campaign goals (34 percent of the articles for active duty were not relevant; 56 percent for veterans; 62 percent for Guard and Reserve; 71 percent among health professionals; and 74 percent for families). According to Milliken et al., a recent congressionally mandated task force determined that the current DoD mental health system is "overburdened, understaffed, and under resourced."[46] Under current budget drawdowns, the near-future likelihood of increased funding for these programs to support their goals is low. As such, the DoD currently lacks a long-term systematic program that can efficaciously alleviate the stigma associated with PTSD for all servicemembers who need services.

> *"Many returning service members want to continue their military careers and worry that seeking behavioral health treatment, especially from DoD or*

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[45] Acosta, Joie, et al. "Assessment of the Content, Design, and Dissemination of the Real Warriors Campaign." The RAND Corporation, 2012. Web. 26 May 2013. <http://www.rand.org/pubs/technical_reports/TR1176>.

[46] Milliken, C. S., Auchterlonie, J. L., & Hoge, C. W. (2007). Longitudinal assessment of mental health problems among active and reserve component servicemembers returning from the Iraq War. *Journal of the American Medical Association, 298(18),* 2141–2148.

*VA may affect their future security clearance or assignments in the military."*[47]

The overarching purpose of this study is to first determine whether a significant relationship between self-reported PTSD symptoms and Army enlisted career outcomes exists, and if this relationship is observed, to provide motivation for further research to identify the drivers behind this phenomenon. This study's analytic model aims to investigate the magnitude of variation in servicemember career outcomes while controlling for observable factors associated with likelihood for promotion. Hypothetically, if two servicemembers—one with a positive PTSD screen and the other with a negative PTSD screen—have identical characteristics including performance records but different career outcomes, the servicemember with PTSD symptoms is experiencing the effects of PTSD that are unrelated to performance. Commander evaluations of servicemember performance (Enlisted Performance Reports) are highly subjective and private, imposing limitations on the feasibility of secondary data analysis of officer and enlisted performance as a control factor. However, reasonable proxies for performance exist in more objective and discrete ways such as performance actions. Performance actions, which are typically punitive, are documented in servicemembers' personnel files. Examples of performance actions include but are not limited to suspension of favorable personnel actions, major personnel actions, and assignment considerations (see Chapter Four: Data for in-depth explanation). The following section provides a summary of the findings in the literature regarding the adverse influence of PTSD on performance.

## Influence of PTSD on Performance

Although this study is focused on the direction and magnitude of the relationship between PTSD symptoms on *career outcomes* rather than the intermediate outcome of *performance*, it is important to discuss the extent to which experiencing PTSD symptoms might adversely influence a servicemember's performance. Unlike demographic characteristics, PTSD reasonably affects servicemember performance; therefore, it is

[47] Straits-Tröster, K. A., et al. (2011). "Developing community capacity to treat post-deployment mental health problems: A public health initiative." Psychological Trauma: Theory, Research, Practice, and Policy 3(3): 283-291.

important to control for a host of variables reasonably associated with performance so as not to misattribute career outcomes to intrinsic characteristics rather than poor PTSD-related performance. For this reason, throughout the monograph we often refer to the *association* between PTSD symptoms and career outcomes because it is not possible to fully disentangle the causal effect of PTSD on career outcomes from intrinsic characteristics that may also bear on the likelihood to report PTSD, performance, and career outcomes.

According to the literature, altered or diminished performance—and specifically memory and cognition—may be related to the experience of coping with PTSD symptoms. In a systematic review published by *The Journal of Neuropsychiatry and Clinical Neurosciences*, researchers determined that individuals with PTSD —veterans in particular –display signs of cognitive impairment compared to their peers who have sustained trauma but who do not have PTSD.[48] Furthermore, the study indicated that the severity of PTSD symptoms is positively correlated with the level of cognitive impairment. Most important, the systematic review addressed multiple studies that investigated the specific impact of PTSD on veteran cohorts from different wars. Because servicemember characteristics, type of trauma exposure, and time since exposure vary in each of the following studies, generalizability is somewhat limited.

Despite the demographic differences across generations of servicemembers, each having contended with unique deployment threats, PTSD symptoms have consistently produced adverse outcomes. In a 2008 study, Hart et al. compared World War II and Korean War POWs with PTSD only, those with PTSD and psychiatric comorbidities, and those without PTSD or psychiatric comorbidities. Researchers observed executive dysfunction with strong effect sizes on two neurological tests (Symbol Digit and Trails B) when comparing PTSD-only POWS with POWS who did not suffer from either PTSD or psychiatric comorbidities. From this study, researchers also suggested that higher IQ might confer a deterrent effect on the development of PTSD.[49] In a study of combat-

[48] Qureshi, Salah et al. Does PTSD Impair Cognition Beyond the Effect of Trauma? (The Journal of Neuropsychiatry and Clinical Neurosciences 2011; 23:16–28)
[49] Hart J Jr, Kimbrell T, Fauver P, et al: Cognitive dysfunctions associated with PTSD: evidence from world War II prisoners of war. J Neuropsychiatry Clin Neurosci 2008; 20:309–316

exposed Vietnam veterans, Gilbertson et al. observed that veterans with PTSD scored significantly lower on measures of verbal memory and attention but had higher executive dysfunction than combat veterans without PTSD. Veterans with PTSD also experienced greater executive dysfunction than those without. In the same study, veterans with PTSD were also compared to their identical twins with no combat exposure; interestingly, among the twin population, there were no significant differences in measures of verbal memory, attention, and executive function.[50] These results indicate that cognitive impairment stemming from PTSD may be hereditary in nature and may influence an individual's risk for PTSD given exposure to trauma.

Similarly, in a 2002 study, Vietnam veterans demonstrated significant attention impairment on the Digit Span and Continuous Performance Tests in addition to recall difficulties on the Auditory Verbal Learning Test compared to veterans without any mental disorders, even when controlling for substance abuse and symptom severity.[51] In a cohort of servicemembers exposed to trauma decades later, similar effects were observed. In a study examining memory and attention on Desert Storm veterans with PTSD compared to those without, Vasterling et al. found that those with PTSD had issues with sustained attention, learning, and visual memory, the severity of which was associated with PTSD symptom severity (especially re-experiencing and avoidance symptoms).[52]

Research suggests that, In addition to having a negative impact on mental sharpness, PTSD may degrade many aspects of physical health as well. In a nationally representative sample of male Vietnam veterans using archival data from the National Vietnam Veterans Readjustment Study, analysis revealed that veterans with PTSD were at a significantly higher risk than their counterparts without PTSD in four domains: physical

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[50] Gilbertson MW, Paulus LA, Williston SK, et al: Neurocogni- tive function in monozygotic twins discordant for combat exposure: relationship to posttraumatic stress disorder. J Ab- norm Psychol 2006; 115:484–495.

[51] Vasterling JJ, Duke LM, Brailey K, et al: Attention, learning and memory performances and intellectual resources in Vietnam veterans: PTSD and no disorder comparisons. Neuropsychology 2002; 16:5-14.

[52] Vasterling JJ, Brailey K, Constans JI, et al: Attention and memory dysfunction in posttraumatic stress disorder. Neuropsychology 1998; 12:125-133.

limitations, not working, compromised physical health, and diminished well-being.[53] A similar study focused on female Vietnam veterans found that women also suffer from a broad profile of functional impairment issues. Among female veterans with PTSD, nearly 75% reported limitations in physical functioning and were significantly more likely to suffer from panic disorder or major depression. After controlling for physical and psychiatric comorbidities, female veterans with PTSD had significantly increased likelihood for self-reported bed days, poorer physical health, and being currently not working.[54] Overall, examination of both the male and female Vietnam veteran cohorts substantiates the functional impairment related to PTSD.

With the potential consequences of PTSD in mind, we turn in the remainder of this chapter to a discussion of the negative implications of mental illness in general. Perhaps even more important than the mental and physical health consequences that PTSD poses is the potential for PTSD symptoms to brandish the label of mental illness. The following section reviews findings from the literature that illustrate that mental illness is associated with a wide range of negative implications, all of which could exacerbate the undesirable consequences of PTSD alone.

## Challenges Related to Mental Illness

> *"The mentally ill are believed to be unpredictable, irrational, dangerous, bizarre, incompetent, and unkempt, and these stereotypes have persisted and even strengthened from the 1950s to the present, along with a steady desire to keep social distance from such people."*[55]

We now discuss the challenges related to mental illness —including issues related to stigma, costs, and both access to and quality of mental health services —all of which can adversely impact servicemembers who suffer from PTSD.

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[53] Zatzick, Douglas F. et al. Posttraumatic Stress Disorder and Functioning and Quality of Life Outcomes in a Nationally Representative Sample of Male Vietnam Veterans. *American Journal of Psychiatry 154:12, December 1997.*

[54] Zatzick, Douglas F. et al. Post-Traumatic Stress Disorder and Functioning and Quality of Life Outcomes in Female Vietnam Veterans. Military Medicine 1997; 162, 10:661.

[55] Thoits, P. A. (2011). "Resisting the stigma of mental illness." Social Psychology Quarterly 74(1): 6-28.

Individuals who suffer from mental illness, which accounts for approximately 12 percent of all diseases and injuries worldwide,[56] encounter discrimination and prejudice at several institutional levels. In medicine, law, and media, the mentally ill are often portrayed in a negative light, which imposes significant limitations on their personal and professional development. More specifically, mental illness leads to a two-pronged disadvantage.[57] First, individuals must cope with the symptoms and disabilities associated with their mental illness, which may limit daily function and life goals. Second, the stigma associated with the mental illness heightens the difficulty they encounter in the pursuit of personal and professional goals. Furthermore, stigma can be either perceived or real, where perceived stigma is a reasonable expectation of adverse social judgment and real stigma operationalizes through discrimination.

In medicine, less money is allocated to research and development for treatment for psychiatric illnesses than to other health disorders and illnesses such as cancer and heart disease, which dominate the American public health agenda.[58] Furthermore, many psychiatrists opt out of the public health service system, depriving lower-income individuals of evidence-based care.[59] Health care practitioners tend to gravitate towards the private health sector where, on average, salary and benefits are higher than in the public health sector.[60] However, it is unclear whether mental illness has received less attention and fewer research and treatment dollars than the more publicly palatable medical conditions.[61]

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[56] "The World Health Report." *Mental Health Report: New Understanding, New Hope*. World Health Organization, 2001. Web.

[57] Corrigan, Patrick, Fred Markowitz, and Amy Watson. "Structural Level of Mental Illness Stigma and Discrimination." *Schizophrenia Bulletin* 30.3 (2004): 481-92. 2004. Web.

[58] Link, B.G., and Phelan, J.C. Conceptualizing Stigma. *Annual Review of Sociology,* 27:363-385, 2001.

[59] Corrigan, Patrick, Fred Markowitz, and Amy Watson. "Structural Level of Mental Illness Stigma and Discrimination." *Schizophrenia Bulletin* 30.3 (2004): 481-92. 2004. Web.

[60] Ibid.

[61] Link, Bruce and Jo Phelan. "Stigma and Its Public Health Implications." *The Lancet* 367 (2006): 528-29.

## Stigma of Mental Illness

Legally, the label of "mental illness" may create barriers to civil rights. For example, restrictions applied to the civil rights of those who are considered "mentally ill" are often greater than those imposed on persons deemed legally "incompetent." Burton conducted a study in which he analyzed statutes from all 50 states to determine the impact of mental illness compared to incompetence on five civil rights: voting, holding elective office, serving jury duty, parenting, and remaining married.[62] As of 1999, approximately one-third of states restricted the rights of an individual with a mental illness to hold elective office, participate in juries, and vote. Approximately 50 percent of states limited the right to remain married for individuals with mental illness. Forty percent of states placed restrictions on child custody for parents with mental illness. With regard to these statutes, "mental illness" is used as a general descriptor for individuals with a psychiatric disorder, while "incompetence" refers to a person's inability to meet a community standard of performance that would qualify him/her for the civil right. Thus, the point at which "mental illness" becomes "incompetence" and the civil rights that accompany both of those conditions seem to be unclear. Clarification of the interpretation of these separate conditions will require long and protracted legislative processes; thus, the conflation of incompetence and mental illness is likely to continue for the foreseeable future. It is important to note that labeling a person as "mentally ill" can also blur the difference between treated and untreated individuals. More specifically, some individuals who have been labeled "mentally ill" have not received treatment and therefore may have uncontrolled symptoms, while others have successfully completed treatment and have no functional impairment. In conclusion, the misapplication of the mental illness label can have lasting effects and the label itself can be difficult to shed.

The portrayal of mental illness in news media often revolves around danger and violence. In the early 1990s, studies indicated that over 80 percent of news stories related to mental illness included discussion of violence. While the focus on the

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[62] Burton, V.S. The consequences of official labels: A research note on rights lost by the mentally ill, mentally incompetent, and convicted felons. Community Mental Health Journal, 26.3 (1990): 267-276. Web.

interrelationship between violence and mental illness has lessened in recent years, studies estimate that one-third of mental-illness-related articles focus on violence. The vast majority of the remaining news related to mental illness highlights the negative characteristics associated with sufferers of mental illness, such as unpredictability and social detachment.[63] Finally, the lack of news coverage on individuals who recover from or cope well with mental illness is indicative of a negative social stereotype that casts mental illness in dark and sometimes lurid light.

Exposure to negative reporting can affect people's attitudes toward persons suffering from mental illness. In a 1996 experiment, Thornton and Wahl explored the effect of reading a newspaper article reporting a sensationalized, violent crime committed by a mental patient on attitudes towards sufferers of mental illness.[64] As part of the study design, some participants read articles intended to have a prophylactic effect on subsequent reading of the stigmatizing article. These articles addressed frequent misconceptions about mental illness and provided correct statistics about mental illness. By measuring their responses to the Community Attitudes Towards Mental Illness questionnaire, the authors observed harsher attitudes towards people with mental illness when readers did not read the prophylactic articles that contained corrective information regarding mental health statistics and media distortion.

## Cost of Mental Illness

The cost of mental illness—from a quality of life and financial perspective—is considerable, suggesting that an individual's reluctance to seek treatment may involve several factors beyond an expectation of negative social outcomes. The World Health Organization (WHO) estimates that neuropsychiatric disorders are the leading contributor to disability-adjusted life years (DALYS) in Canada and the U.S. (DALYs represent the total number of years lost to illness, disability, or premature death within a

[63] Corrigan, Patrick, Fred Markowitz, and Amy Watson. "Structural Level of Mental Illness Stigma and Discrimination." *Schizophrenia Bulletin* 30.3 (2004): 481-92. 2004. Web.

[64] Thornton, JoAnn, and Otto Wahl. "Impact of a Newspaper Article on Attitudes Towards Mental Health." *Journal of Community Psychology* 24 (n.d.): n. pag. George Mason University, Jan. 1996. Web.

given population). In fact, neuropsychiatric disorders contribute nearly twice as many DALYS as cardiovascular diseases and cancers.[65] While the individual bears the most obvious burden of mental illness, the economic impact of unaddressed mental illness is substantial in terms of lost work productivity, unemployment, and early retirement.[66] Individuals with mental illness, however, are often reluctant to seek treatment due to an expectation of reduced income while receiving disability benefits or decreased probability of promotions or raises in their salaries.[67,68]

Reluctance to seek treatment is reflected in the 2008 National Survey on Drug Use and Health (NSDUH), which indicated that only 58.7 percent of adults in the United States with a serious mental illness received treatment for a mental health problem.[69] According to the Substance Abuse and Mental Health Services Administration, 45.6 million American adults suffered from some form of mental illness, comprising nearly 20 percent of the adult population in the United States.[70] Out of the 45.6 million adults, only 38 percent reported any use of mental health services. Among the top reasons for not receiving mental health services when individuals had unmet mental health needs were 1) inability to afford the cost with or without insurance (50.1 percent); 2) belief that they could handle the problem without treatment (28.8 percent); and 3) not knowing where to go for services (16.2 percent).[71] All three reasons for unmet mental health needs tend to

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[65] "Leading Categories of Diseases/Disorders." *National Institute of Mental Health*. Web. 14 May 2013.

[66] Dewa, Carolyn, Ph.D. "An International Perspective on Worker Mental Health Problems: Who Bears the Burden and How Are Costs Addressed?" *Canadian Journal of Psychiatry*. University of Toronto, Center for Addiction and Mental Health, 2007. Web. 13 May 2013.

[67] Wang J, Adair CE, Patten SB (2006) Mental health and related disability among workers: a population-based study. Am J Ind Med 49:514–522

[68] Scheid TL (1999) Employment of individuals with mental disabilities: business response to the ADA's challenge. Behav Sci Law 17:73–91

[69] "Use of Mental Health Services and Treatment Among Adults." *National Institute of Mental Health*. Web. 14 May 2013.

[70] Substance Abuse and Mental Health Services Administration, Results from the 2011 National Survey on Drug Use and Health: Mental Health Findings, NSDUH Series H-45, HHS Publication No. (SMA) 12-4725. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2012.

[71] Substance Abuse and Mental Health Services Administration, Results from the 2011 National Survey on Drug Use and Health: Mental Health Findings, NSDUH Series H-45, HHS Publication No. (SMA) 12-4725. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2012.

compound one another, ultimately reducing both the individual's willingness and sense of exigency to seek treatment.

A tendency to self-assess and cope with varying levels of debilitation, potentially exacerbated by a lack of knowledge regarding mental health service options, points to a "gulf between public and professional beliefs about mental disorders."[72] Mental health professionals possess knowledge largely grounded on scientific evidence and expert consensus, whereas the public holds a range of beliefs based on personal/anecdotal experience, media reports, and the availability and consumption of expert knowledge and opinion. Compared to mental health literacy, the physical illness/injury literacy is consistent and concrete. An inclination to fall back on general belief systems regarding health when one is confronted with an unfamiliar mental health problem may be the reason for the disparity between the mental and physical health literacies. These general belief systems, which vary by individual, then become the "scaffold onto which specific knowledge (mental health literacy) is grafted," leading to vast inconsistencies in the conceptualization and understanding of mental health.[73]

## Access and Quality of Care Issues

According to the U.S. Department of Health and Human Services, as of 2013, nearly 91 million adults lived in areas in the U.S. where shortages of mental-health professionals made obtaining treatment difficult.[74] To qualify as a mental-health-professional shortage area, the ratio of psychiatrists to residents must be no greater than 1: 30,000.[75] Even with the advent of the Affordable Care Act (ACA), access to treatment remains limited. Although the ACA includes mental health care as one of its 10 essential benefits, meaning mental health care services must be included on the various plans

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[72] Jorm, A.F. "Mental Health Literacy: Public Knowledge and Beliefs about Mental Disorders." *British Journal of Psychiatry* 177 (n.d.): 396-401. 2000. Web. 18 May 2013. <http://bjp.rcpsych.org/content/177/5/396.full.pdf>.

[73] Ibid.

[74] Fields, Gary, and Jennifer Corbett Dooren. "For the Mentally Ill, Finding Treatment Grows Harder." The Wall Street Journal. 16 Jan. 2014. Web. 11 Apr. 2014. <http://online.wsj.com/news/articles/SB10001424052702304281004579218204163263142>.

[75] "Guidelines for Mental Health Health Professional Shortage Areas Designation."http://bhpr.hrsa.gov/shortage/hpsas/designationcriteria/mentalhealthhpsaguidelines.html. U.S. Department of Health and Human Services. Web. 14 Apr. 2014.

available for purchase on the public health care exchange, a 2013 study found that only about one-half of psychiatrists accept private insurance.[76] As such, availability of care is a major limiting factor for individuals suffering from mental health issues, and even when care is available, insurance policies may block access. Furthermore, diminished access to mental health care services is most salient among certain demographic groups. Older people (65 years and older), younger adults (18-24 years), and racial minorities have consistently lower rates of access to mental health care services.[77] Ultimately, these trends in discrimination and high-level policies are external forces from the perspective of the individual.

However, not all the factors limiting access to mental health care are beyond the scope of control of the individual or the individual's immediate support network. For instance, studies from several countries have consistently found that when a family member has displayed clear signs of a psychotic disorder, on average, more than a year elapses before the person displaying symptoms receives his/her initial assessment and treatment.[78] A 2005 survey study by Wang et al. found that people with mental disorders eventually contact treatment services, but they wait a significant amount of time before doing so. The study found that individuals with mood disorders and anxiety disorders waited an average of eight and nine years, respectively, prior to first contact.[79] In summary, a variety of obstacles—some outside and some within the control of the individual—can impede the way to mental health care access.

Ultimately, PTSD can potentially be a detriment to many dimensions of servicemember life, both intrinsically and extrinsically. The focus of this study is to

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[76] Bishop TF, Press MJ, Keyhani S, Pincus H. Acceptance of Insurance by Psychiatrists and the Implications for Access to Mental Health Care. *JAMA Psychiatry*.2014;71(2):176-181. doi:10.1001/jamapsychiatry.2013.2862.

[77] Jans, L., Stoddard, S. & Kraus, L. (2004). Chartbook on Mental Health and Disability in the United States. An InfoUse Report. Washington, D.C.: U.S. Department of Education, National Institute on Disability and Rehabilitation Research. Retrieved October 21, 2009, at http://www.infouse.com/disabilitydata/mentalhealth/.

[78] Black, K., Peters, L., Rui, Q., Milliken, H., Whitehorn, D., & Kopala, L. C. (2001). Duration of untreated psychosis predicts treatment outcome in an early psychosis program. Schizophrenia Research, 47, 215–222.

[79] Wang, P. S., Lane, M., Olfson, M., Pincus, H. A., Wells, K. B., & Kessler, R. C. (2005b). Twelve-month use of mental health services in the United States: Results from the National Comorbidity Survey Replication. Archives of General Psychiatry, 62, 629–640.

characterize the extent to which these negative consequences influence career outcomes. A secondary focus is to compare the association of PTSD with career outcomes to that of injury and depressive symptoms, which have their own associated challenges.

The next chapter focuses on the meaning of "career outcomes" in the Army. An enlisted servicemember's career has many stages. Some stages of a servicemember's career are arguably less sensitive to performance than others. The following chapter delineates these distinct career stages with respect to promotion. Detailed operational knowledge of the promotion system is necessary to understand the rationale for selecting a specific rank (E-5) due to the prerequisites and conditions that apply to promotion to this rank.

## CHAPTER THREE: THE ARMY PROMOTION SYSTEM

The factors that influence the promotion of Army enlisted members are numerous. As a servicemember progresses through his/her career, certain factors become more important relative to others. Progression from E-1 to E-4 is based largely on time in service, whereas advancement to E-5 and beyond is more competitive and based on merit and subjective performance evaluations. The following subsections describe conditions required for enlisted promotion consideration and delineate the determining factors of a promotion for Army enlisted members throughout various career phases. Figure 3.1 depicts the enlisted Army ranks in ascending order.

Figure 3.1 Army Enlisted Ranks


| E-2 | E-3 | E-4 | E-5 | E-6 | E-7 | E-8 | E-9 | Senior Enlisted Advisor |
|---|---|---|---|---|---|---|---|---|

* Private (PV1) has no insignia

Compared to the rules for the Army's officer promotion system, the rules for enlisted promotions are more formulaic and thresholds more clearly defined. The Department of the Army establishes on a monthly basis the total number of enlisted servicemembers to be promoted based on budget and force mix constraints. The number of allowable promotions is set according to military occupational specialty (MOS), meaning that enlisted servicemembers compete for promotions only against their peers working in the same MOS. Theoretically, this system provides for career progression that aligns with individuals' potential in an effort to recognize the best qualified servicemembers.

Additionally, the system is designed to preclude those servicemembers who are less productive or qualified from getting a promotion, thus providing an equitable but competitive career advancement environment for servicemembers.

Army leaders across all formations are responsible for applying the "select-train-promote" paradigm to support this system.[80] We will describe each of these steps in turn.

a) **SELECT:** NCOs lead, train and educate, care for servicemembers and equipment, and maintain and enforce standards. Selection for promotion to an NCO rank is based on a servicemember's potential to manage greater responsibilities. Commanders look to a NCO's record in these four roles as measurements of career success and regard them as indicative of a servicemember's capacity to embrace more responsibility and maintain high standards of performance.
b) **TRAIN:** By linking professional military education to the promotion system, the Army optimizes its selection of NCOs for the complexities of the current operational environment while reinforcing the benefits of a continuous and sequential enlisted development strategy. This established career trajectory offers a timeline that NCOs can use to pace their education, training, and job experiences, especially during periods of promotion eligibility.
c) PROMOTE: Servicemembers should be considered for promotion to higher ranks when they both demonstrate competency in their current rank and exhibit the potential to execute their roles effectively at the next higher rank. When evaluating for promotion, Army leaders focus on a finite array of competencies and attributes:
    a. the Army profession
    b. professional competence
    c. team building
    d. adaptability
    e. lifelong learning
    f. comprehensive fitness.

[80] Gerald Purcell, Army G-1.

Another important feature of the promotion system is the servicemember's zone of consideration–primary or secondary. A servicemember eligible for promotion is considered to be in the "primary zone" if he/she has a date of rate (DOR) that falls within the announced zone of consideration. Servicemembers who have demonstrated outstanding potential may pursue an accelerated promotion track and compete for advancement ahead of their peers; these servicemembers are considered to be in the "secondary zone." Relative to servicemembers eligible for promotion in the primary zone, secondary zone servicemembers have later DOR rates that fall outside the zone of consideration. In other words, the secondary zone consists of servicemembers who require a waiver for promotion consideration due to either time-in-grade (TIG) [81] or time-in-service (TIS), [82] whereas the primary zone consists of servicemembers of a specified grade when the servicemember's TIG and TIS do not require a waiver.

## Categories of Promotion

The Army divides its promotion into decentralized, semicentralized, and centralized categories. In this section, we describe important differences between these categories and the determining factors of promotion at each phase of an enlisted servicemember's career. This study will pay close attention to the relationship between self-reported PTSD symptoms and semicentralized promotions. More specifically, the study focuses on E-5 as it is the first semicentralized promotion and marks the transition from junior soldier to a non-commissioned officer with expanded leadership and responsibility roles.

### Decentralized Promotions

Overall, advancement to ranks within the decentralized promotion category is largely a function of time rather than merit or performance. For the rank of E-1, E-2, and E-3, company, troop, battery, and separate detachment commanders oversee servicemember promotion in a decentralized fashion. At these ranks, servicemembers promote based on TIS and TIG; administratively, promotions are automated through the

[81] The amount of time a servicemember has spent in service.
[82] The amount of time a servicemember has spent in a given grade (i.e. rank).

Army personnel database. For soldiers who have displayed exceptional performance, commanders may promote a percentage of servicemembers (typically no more than 20%) to E-2 and E-3 at an accelerated rate, while the percentage of servicemembers promoted to E-4 at an accelerated rate *cannot* exceed more than 20% of the unit's E-4 structure/requirements. Enlisted servicemembers may promote only within their primary MOS and zone.

A certain number of TIS and TIG requirements may be waived at each grade. Despite the fact that enlisted servicemembers from E-1 to E-4 must meet TIG and TIS requirements, satisfying these requirements alone will not necessarily result in a commander's authorization for promotion. For example, criminal activity or receiving a major personnel action may seriously jeopardize commander authorization.

*Advancement to Private E-2 (E-2).* Advancement to private (E-2) is automatic upon attainment of six months TIS and TIG (Table 3.1). The TIS requirement can be waived down to four months by the unit commander.

*Advancement to Private First Class (E-3) and Specialist (E-4).* Advancement to private first class is automatic upon attainment of twelve months TIS and four months TIG (Table 3.1). TIS and TIG can be waived to six months and two months, respectively.

Advancement to Specialist is automatic upon attainment of 24 months TIS and six months TIG. Early advancement is authorized upon completion of 18 months TIS and three months TIG. Servicemembers holding or training for PMOS in career management field (CMF) 18 or ranger school graduates with at least 12 months TIS may be promoted to SPC without regard to TIS and TIG waiver ceilings.

Table 3.1 Minimum TIG and TIS Requirements for Promotion within the Army[83]

| | **Time in Grade** | **TIG Waiverable Months** | **Time in Service** | **TIS Waiverable Months** |
|---|---|---|---|---|

83 "Department of the Army Pamphlet 600–25: U.S. Army Noncommissioned Officer Professional Development Guide." Headquarters, Department of the Army, 28 July 2008. Web. <http://www.apd.army.mil/pdffiles/p600_25.pdf>.

| | | | | |
|---|---|---|---|---|
| Private (E-2) | 6 months | NA | 6 months | 4 months |
| Private First Class (E-3) | 4 months | 2 months | 12 months | 6 months |
| Specialist (E-4) | 6 months | 3 months | 24 months | 18 months |
| Sergeant (E-5) | 8 months | 6 months | 3 years | 18 months |
| Staff Sergeant (E-6) | 10 months | 7 months | 6 years | 4 years |
| Sergeant First Class (E-7) | 4 years | 3 years | 6 years | NA |
| Master Sergeant (E-8) | 4 years | 3 years | 8 years | NA |
| Sergeant Major (E-9) | 4 years | 3 years | 10 years | NA |

## Semicentralized Promotions

This section is of particular importance as it includes the study's rank of interest—sergeant (E-5). The semicentralized promotion system is designed to fill authorized enlisted positions with the best-qualified servicemembers, assuming they meet basic eligibility requirements. Unit commanders will consider for promotion all servicemembers meeting the basic eligibility requirements on a monthly basis. Commanders of the grade Lieutenant Colonel or higher exercise promotion authority for recommending promotion to grades E-5 and E-6. On a monthly basis, commanders review servicemembers and identify those who have demonstrated both competence in their current rank and potential to serve in the next higher rank with expanded responsibilities. While commanders execute the decentralized component of the process by recommending servicemembers for promotion, Headquarters, Department of the Army (HQDA), executes the centralized component by determining the maximum allowable number of servicemembers within each MOS eligible for promotion. Ultimately, the promotion process at the E-5 and E-6 levels is two-tiered and requires a servicemember to secure a unit-level recommendation and Department of the Army-level selection. The semicentralized system is designed to maximize commander input while balancing promotion tempo with the changing needs of the Army.

After company commanders have submitted their recommendations, servicemembers face a promotion board in person. The promotion board—headed by the

battalion command sergeant major—validates the recommendations and forwards a yes/no vote to the headquarters-level promotion authority as to whether a servicemember should be integrated onto the promotion recommended list. Subsequently, the battalion commander provides the final approval and either confirms or denies the board's recommendation. Ultimately, a servicemember's inclusion on the recommended list for promotion is contingent upon the promotion authority rather than the board-validated vote. Once a servicemember is placed on the recommended list, servicemembers vie for promotion (within their MOS) based on their cumulative promotion points.

*Promotion Points and Recent Policy Changes.* Promotion points are awarded to servicemembers by category and scaled to the grade for which the servicemember is competing. As of June 2011, the updating of promotion points became automated through a system that tracks job-related achievements and training accomplishments. However, the system relies on each servicemember to keep his/her personnel record current. Without diligent and timely updates, servicemembers risk presenting an inaccurate reflection of their career records and associated promotion points. Through a confluence of data housed in the electronic military personnel office system (eMILPO) and the Army Training Requirements and Resources System (ATRRS), this automated promotion system generates a final promotion score. Table 3.2 presents the rubric utilized by the Army to tabulate promotion points.

Table 3.2 Point Paradigm for Semicentralized Promotions

| **Category** | **Sub-category** | **To Sergeant** | **To Staff Sergeant** |
|---|---|---|---|
| Awards | | 125 | 165 |
| Military Education | | 260 | 280 |
| | Warrior Leader Course (WLC) | 80 | |
| | WLC Commandant's List | 92 | |
| | WLC Distinguished Graduate | 104 | |
| | Advanced Leaders Course (ALC) | | 90 |
| | ALC Commandant's List | | 101 |
| | ALC Distinguished Graduate | | 112 |

| Category | Sub-category | To Sergeant | To Staff Sergeant |
|---|---|---|---|
| | Resident Training Courses | 78 | 84 |
| | Ranger/Special Forces/Sapper | 40 | 40 |
| | Servicemember Training Courses | 10 each | 10 ea |
| | Computer Based Training | 78 | 84 |
| Civilian Education | | 75 | 100 |
| | Degree Completion | 10 | 10 |
| | Technical Certification | 50 | 50 |
| | Defense Language Proficiency | 10 | 10 |
| Military Training | | 340 | 255 |
| | Combat Deployment Experience | 30 | 60 |
| | Weapon Qualification | 160 | 100 |
| | Physical Fitness Test | 160 | 100 |
| Total | | 800 points | 800 points |

* Sub-categories exceed maximum allowed points

*Command List Integration.* HQDA automatically integrates servicemembers onto the SGT and SSG promotion recommended lists when all of the following criteria are met even when the servicemember has not been recommended for inclusion on the promotion list and has not appeared before the promotion board:

(1) To SGT —

(a) 47 months TIS (to become eligible for promotion at 48 months)

(b) 11 months TIG (to become eligible for promotion at 12 months)

(c) Otherwise not ineligible for recommendation in accordance with this regulation

(d) Not otherwise denied by the CDR

(e) Servicemember must have a minimum of 90 days remaining service as of the month of integration onto the recommended list

(f) Must be graduates of SSD level-1. (See Table 3.3)

(2) To SSG —

(a) 83 months TIS (to become eligible for promotion at 84 months)

(b) 11 months TIG (to become eligible for promotion at 12 months)

(c) Graduate of the Warrior Leaders Course (WLC)

(d) Otherwise not ineligible in accordance with this regulation

(e) Not otherwise denied by the CDR

(f) Servicemember must have a minimum of 90 days remaining service as of the month of integration onto the recommended list; however, servicemembers must take action to meet the SRR for promotion if otherwise selected.

Unit commanders are authorized to deny integration onto the promotion recommended list; however, the commander must block a servicemember's name from the list no later than the 10th day of the month in which the servicemember is identified for automatic integration.

Servicemembers competing for the rank of SSG and SGT, having been integrated onto the promotion recommended list as a result of the Command List Integration process, will receive 14 and 39 promotion points, respectively. For the rank of SSG, passing the Aerobic Physical Fitness Test (AFPT) earns 15 points; therefore, the default of 14 points is set at this level to differentiate servicemembers who have entered the promotion pool via the Command List Integration versus the standard board process. By contrast, if a servicemember has received a commander's recommendation for promotion, the servicemember will compete with the number of promotion points he/she has accumulated up to that point rather than a default point score (14 or 39). No additional promotion points, regardless of training, qualifications, or special achievements, are granted unless the servicemember undergoes the formal board process.

*Advancement to E-5 and E-6.* Regarding enlisted personnel, this study is primarily interested in the impact of self-reported PTSD symptoms on the servicemember's TIG prior to attaining E-5. As briefly mentioned before, E-5 marks an enlisted member's transition to the non-commissioned ranks and a significant expansion of responsibilities and leadership. E-5 also signifies the rank at which servicemembers must compete for advancement through the semicentralized promotion process, which is more competitive and subjective than the decentralized process that governs junior enlisted promotions.

Understanding the basic requirements for promotion to E-5 is critical as they inform the natural cutoff points for promotion that will be closely observed in the data analysis section. For example, an E-4 seeking promotion to E-5 in the primary zone is required to have 36 months TIG, while an E-4 seeking promotion to E-5 in the secondary zone is only requires substantially less at 18 months. Regardless of promotion zone, E-4's are required to serve at least eight months TIG; however, waivers up to six months may be applied to this requirement. Servicemembers must also meet certain civilian and military education requirements and have at least 450 promotion points to be considered eligible for promotion to E-5.

To ensure that servicemembers are prepared to handle the unique duties and responsibilities they will face at each rank or career stage, the Army has established a professional military education system comprised of training programs commonly referred to as military education levels (MEL). Table 3.3 presents the required military education courses that servicemembers must complete as they progress through the NCO ranks. The rank at which servicemembers complete each MEL course may vary slightly depending on assignment, but the MELs must be completed in the specified sequence.

Structured Self Development Level I (SSD I) focuses on team-level and common leader and tactical skills. The Warrior Leaders Course, formerly called Primary Leadership Development Course (PLDC), is the first leadership course servicemembers attend as NCOs where they learn and hone skills to lead small groups of soldiers. The Advanced Leaders Course Common Core (ALC-CC), formerly known as the Basic Noncommissioned Officers Course (BNCOC), prepares NCOs to manage unit and subordinate elements for peace, wartime missions, and contingencies. SSD III emphasizes platoon level skills and dynamics and must be completed after ALC-CC but before the Senior Leaders Course. SSD Level IV revolves around battalion-level leadership and organization skills and highly recommended for senior NCOs who plan to assume duties as first sergeant. Finally, SSD V focuses on preparing senior NCOs for joint staff level positions. Both promotable master sergeants and sergeant majors who have completed the Sergeants Major Course are enrolled into SSD V.

Table 3.3[84] Military Education Levels in Ascending Order

| **Military Education Level Course** | **Rank** |
|---|---|
| Structured Self Development (Level I) | E-4 |
| Warrior Leaders Course | E-5 |
| Advanced Leaders Course Common Core | E-6 |
| Structured Self Development (level III) | E-7 |
| Senior Leaders Course | E-7 |
| Structured Self Development (level IV) | E-8 |
| Sergeants Major Course | E-9 |
| Structured Self Development (level V) | E-9 |

Note: There is no level III in the Structured Self Development series. NCOs attend the Advance Leaders Course in lieu of SSD III.

For advancement to Sergeant (E-6), the promotion requirements are more demanding but structurally similar to that of E-5. Servicemembers must have 72 months TIG when being considered in the primary zone and 48 months in the secondary zone. Servicemembers are also required to serve 10 months TIG, but waivers up to seven months are permissible to reduce TIG. Finally, 550 promotion points are required for eligibility to promote to E-6.

## Centralized Promotions

Servicemembers competing for promotion to the senior enlisted ranks face a centralized system through which the promotion board reviews servicemember career records. The board's five members prioritize servicemembers for promotion based off the "whole servicemember" concept rather than point-scoring, meaning board members comprehensively adjudicate a servicemember's qualifications for senior rank based on

[84] "Department of the Army Pamphlet 600–25: U.S. Army Noncommissioned Officer Professional Development Guide." Headquarters, Department of the Army, 28 July 2008. Web. <http://www.apd.army.mil/pdffiles/p600_25.pdf>.

his/her career record. More specifically, board members scrutinize the scope and variety of the servicemember's assignments, potential for performance in the senior rank, trends of efficiency, length of service and professional maturity, awards and commendations, civilian and military education levels (Table 3.3), integrity and character, and physical fitness. These areas of evaluation are not equally weighted and ostensibly viewed differently according to MOS. Ultimately, the board provides an assessment of the servicemember's demonstrated leadership, effectiveness, and potential for service at the next higher rank to meet the needs of the Army. Depending on an MOS's need for servicemembers in senior ranks and operational tempo, the qualities that prove to be particularly decisive in a servicemember's promotion may vary.

Following board review, servicemembers selected from promotion are integrated onto a promotion list and sequenced by MOS. On a monthly basis, HQDA determines the number of promotions required to meet the Army's targeted operational strength in each grade senior grade and MOS. Servicemembers who meet or exceed the announced sequence number are promoted effectively by the 1st of the following month. Ultimately, the goal of the centralized promotion system is to maintain both operational efficacy and efficiency in each MOS through well-matched leadership and management skills at the senior ranks.

Having described the Army enlisted promotion system, the following chapter explains how the study operationalized data from various sources to capture the time-to-promotion (E-5) or separation from the Army prior to E-5. To ensure consistent measurement of time-to-promotion or time-to-separation, a major effort of this study involved defining a clear algorithm of observable events extending from deployment start to career event, which is also discussed in the following chapter.

# CHAPTER FOUR: DATA

This chapter presents the characteristics of the various sources of data and defines the organization scheme used to construct a meaningful profile of variables for each servicemember. By combining data from the sources outlined below, the study constructed a rich and dynamic secondary dataset.

## Data Sources

A summary of the data sources and the variables used from each source are summarized in Table 4.1. These sources include the Defense Manpower Data Center's (DMDC) Work Experience File (WEX) and Active Duty Pay File, which provide career and deployment data; the Army's Medical Protection System (MEDPROS), which manages the Post Deployment Health Assessment (PDHA) survey data; and the Total Army Personnel Database (TAPDB), which provides administrative data about Army personnel.

### Defense Manpower Data Center (DMDC)

DMDC collects, archives, and maintains manpower, personnel, and financial databases for the DoD. The Work Experience File (WEX), which is generated from DMDC's Active Duty Military Personnel Master File, contains career records for active and reserve members serving after September 30, 1990.[85] DMDC also houses the Active Duty Pay File, which includes servicemember deployment history and notes the periods of time during which servicemembers qualified for Hostile Fire/Imminent Danger Pay. These data sources provide the essential deployment, promotion, and separation dates that enable the development of the study's key outcome variables.

### Medical Protection System (MEDPROS)

MEDPROS, which was developed by AMEDD to track immunization, deployability, and medical readiness data, is accessible to Army servicemembers through their Army

[85] Loughran, David S., Jacob Alex Klerman and Craig Martin. Activation and the Earnings of Reservists. Santa Monica, CA: RAND Corporation, 2006.

Knowledge Online (AKO) accounts.[86] Commanders at various levels are responsible for the use and implementation of MEDPROS to monitor unit/individual medical readiness. Through MEDPROS, the Army administers the PDHA and maintains the survey data. (See Appendix A for the 2003, 2008, and 2012 PDHA survey versions). The PDHA is a two-part comprehensive screening that is used to assess a servicemember's state of health following a deployment outside the continental United States (OCONUS) and to offer healthcare providers an opportunity to provide present and future medical care for deployment-related issues. The PDHA measures self-reported information regarding current physical and mental health in addition to exposure to toxins, viruses, and other foreign area threats. The PDHA form is to be completed within five to 30 days after departure from theater; however, disclosure of information is voluntary. PTSD items, in addition to other select items related to PTSD, function as explanatory variables in the analysis. Trauma items were used to construct a control variable.

### Total Army Personnel Database (TAPDB)

The TAPDB (also called the Integrated Total Army Personnel Database) contains data from several Army components: Active Officer Total Army Personnel Database-Active Officer (TAPDB-AO), Active Enlisted (TAPDB-AE), U.S. Army Reserve (TAPDB-R), Army National Guard (TAPDB-G) databases, and the Army Civilian Personnel Database (ACPERS). Maintained by the U.S. Army Personnel Command, the TAPDB extracts information from multiple databases and integrates standardized data files for each servicemember. A variety of demographic variables sourced from the TAPDB are used as control variables.

[86] Fish, Peter, MD, Major US Army. "The Army Medical System." *Army Medical Officer's Guide*. N.p.: Stackpole, 2014. 51. Print.

Table 4.1 Data Sources

| Source | Variable | Type | | |
|---|---|---|---|---|
| | | Outcome | Explanatory | Control |
| Work Experience File (WEX) | -Promotion date<br>-Separation date | X | | |
| Post Deployment Health Assessment (PDHA) | -PTSD symptom items | | X | |
| | -Depressive symptom items | | X | |
| | -Injury item | | X | |
| | -Trauma exposure items | | | X |
| Total Army Personnel Database (TAPDB) | -Race/ethnicity<br>-Sex<br>-Age<br>-Marital status<br>-Has children<br>-Education level<br>-Military occupation specialty<br>-Armed Forces Qualification Test score<br>-Rank/time-in-rank at deployment start | | | X |

## Dataset Derived for This Study

The sample for this study consists of 419,189 active-duty enlisted servicemembers who deployed to a combat zone or hazardous duty area at least once between November 2001 and December 2010, totaling 571,753 unique deployment records.[87]

[87] The number of unique deployments in the sample reflects the number of deployments on record for each servicemember in the Active Duty Pay File. If a servicemember's deployment was not recorded in the Active Duty Pay File, it did not appear in the analytic sample.

As of December 2011, 73 percent (up from 68 percent in 2008) of active-duty Army servicemembers had deployed to Iraq and/or Afghanistan in support of Operational Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF), where not-yet-deployed servicemembers are typically new to the service and still in training.[88] All servicemembers in this sample received Hostile Fire/Imminent Danger Pay while deployed; therefore, the study can confirm that all servicemembers were deployed to areas in which imminent threat of physical harm to U.S. military personnel due to civil insurrection, civil war, terrorism or wartime conditions existed.[89] Although the study cannot specify to which operational theater each servicemember deployed, only those troops earning this hostile fire/imminent danger pay in those areas associated with OIF or OEF are counted as deployed within DMDC's database.[90] For inclusion in the initial sample, servicemembers had to meet the following criteria:

- at least one completed deployment between November 2001 and December 2010 on record in DMDC's Active Duty Pay File
- completion of at least one PDHA (DD 2796) for a corresponding deployment between November 2001 and December 2010[91]

## Using PDHA Survey Data

While servicemembers currently answer most of the PDHA questions via an electronic survey, the PDHA also includes a confidential face-to-face interview with a healthcare professional. The results of this interview, paired with any referrals for follow-up medical care, are recorded on each servicemember's PDHA form. As the PDHA form

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[88] Bonds, Timothy, Dave Baiocchi, and Laurie McDonald. Army Deployments to OIF and OEF. Rep. Santa Monica, CA: RAND Corporation, 2010. Web. <http://www.rand.org/pubs/documented_briefings/DB587>.

[89] Iraq and Afghanistan are both considered Imminent Danger Pay areas along with their airspace

[90] Bonds, Timothy, Dave Baiocchi, and Laurie McDonald. Army Deployments to OIF and OEF. Rep. Santa Monica, CA: RAND Corporation, 2010. Web. <http://www.rand.org/pubs/documented_briefings/DB587>.

[91] It is likely that some deployed servicemembers failed to complete the PDHA, such as those who were seriously injured. This may introduce some bias, as severely injured servicemembers are more likely to experience PTSD as well as leave the military, especially on a disability status.

states, disclosure of information is voluntary, and healthcare will be furnished regardless of servicemember's decision to disclose survey responses; however, comprehensive care may not be possible if a servicemember has provided limited survey completion. Servicemembers complete PDHAs electronically through the Army's Medical Protection System (MEDPROS); the PDHAs are then forwarded to the Armed Forces Health Surveillance Center (AFHSC), which has functioned as the storing house for PDHA data since 2008.

For each servicemember in the sample, the study selected the (1) first deployment during the observation window[92] and (2) the most recent deployment before the servicemember's key promotion date (E-5) or separation date prior to E-5. Although for many servicemembers the first observable and most recent deployment are the same, the study provides a comparison of career outcomes when deployment of interest changes. In nearly all cases, PDHA survey completion dates directly matched servicemember deployment start dates as provided by the Active Duty Pay File**.** In the event that a servicemember completed multiple PDHA forms for the same deployment, the study selected the survey with the servicemember-reported deployment begin date closest to the Active Duty Pay File deployment start date. Deployment start dates on servicemember-completed PDHAs had to be within three months of the Active Duty Pay File deployment start date to be considered valid for use in the analytic database.

Some servicemembers in the sample completed deployments throughout their career that took place before the November 2001 to December 2010 timeframe. Information regarding these deployments, along with the associated PDHAs depending on the time of deployment,[93] is not included in the dataset. However, the study does control for whether a servicemember has a previous deployment within the observation window because a past deployment experience may moderate the experience of future deployments and their associated stressors and consequences.

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[92]For the purposes of this study, the observation window refers to period of time between October 2001 and December 2013. Deployments are no longer observed beyond December 2010 but career outcomes are observed until December 2013. Servicemembers who have not had a career outcome by this point are censored (See Chapter Five: Methodology).

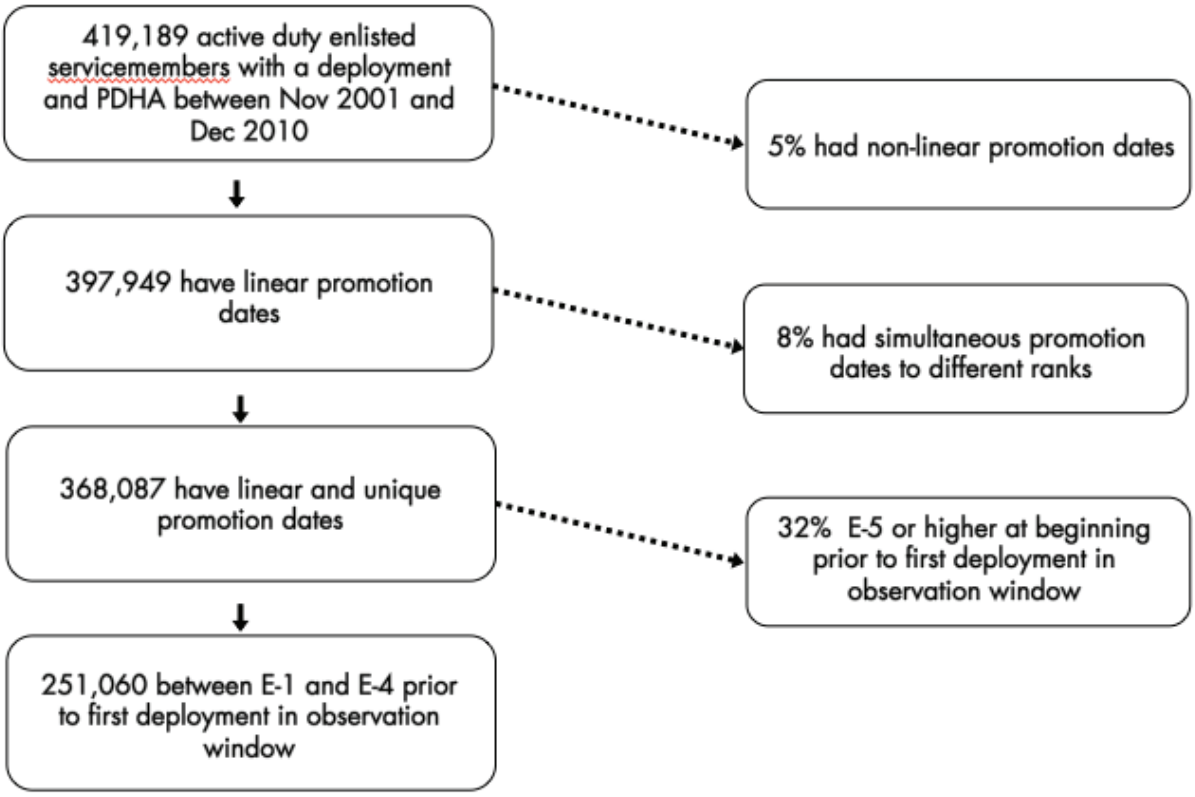
[93] The PDHA process has existed since 1998, but was not fully implemented until 2003 (Joint Chiefs of Staff, 2002).

Furthermore, it is important to note that some servicemembers will not complete the survey as their injuries obviate the need for survey completion. For these servicemembers with grave injuries, the trajectories of their military careers are no longer comparable to those of servicemembers who were able to complete the PDHA. The following section explains the logic of each inclusion rule in greater detail.

## Eligibility for Inclusion in Analytic Sample

Figure 4.1 broadly summarizes the steps taken to identify the 251,060 servicemembers who possess attributes critical to the study design and analysis.

Figure 4.1 Analytic Sample Selection Flow Chart




Although 419,189 servicemembers met the basic criteria for inclusion in the initial sample, further winnowing was required to exclude servicemembers with non-standard promotion patterns. According to the WEX promotion file, 21,240 servicemembers have non-linear promotion patterns, indicating a promotion jump to a higher rank before

promotion to a lower, preceding, rank. It is unclear whether these rank jumps are the result of true demotions or data imputation errors. For example, when a servicemember's promotion history file reports promotion to E-3, then E-5, and then E-4, it is possible that a soldier promoted to E-4 chronologically but experienced a demotion back to E-4, replacing the first E-4 promotion date with the demotion date. Additionally, 32,691 servicemember promotion files indicated simultaneous promotion to different ranks, indicating concurrent promotion to separate ranks on the same date.[94] Just under 3,000 (n=2,815) servicemember promotion history files met criteria for both non-linear and simultaneous promotions to different ranks. Ultimately, 368,073 servicemembers had chronological promotion files that adhere to the normal Army promotion pattern.

Among the remaining 368,073 servicemembers with valid promotion histories, some promotion histories are missing a promotion date to a given rank, but do have a date for promotion to the rank immediately preceding and following the missing promotion date. Rather than discard these servicemember promotion histories and lose valuable information, the study opted to include the promotion dates that are explicitly recorded on valid promotion histories. Consequently, there are instances in which a greater number of servicemembers occupy a higher rank than a lower rank, indicating that servicemembers were missing a promotion date for the lower rank. This could be due either to data error or to a servicemember bypassing a rank altogether, which at the junior ranks is not uncommon.[95,96] Ultimately, it is not possible to determine whether a

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[94] To explore the potential reasons for non-chronological promotion patterns, and more specifically to rule out performance-related demotions, the study conducted further analytic investigation. Among these servicemembers, the rate of positive PTSD screens (using either method) is not significantly different than that of the main analytic sample. Furthermore, similar proportions persist in the various career outcome categories and performance action categories. Negative performance actions (see Chapter Seven: Results) are not disproportionate across servicemembers with and without chronological promotion histories. These patterns suggest that the underlying characteristics of analytic sample servicemembers and servicemembers who were excluded due to their non-chronological promotion histories are not different.

[95] Data error at the WEX database level may have produced a substantial number of non-standard promotion histories. One possible reason for imputation or recordkeeping error is that servicemembers participating in training programs at the beginning of their career sometimes do not have a standard primary MOS. Lacking a critical identifier such as a MOS may degrade the tracking of rank progression.

[96]According to United States Army Recruiting Command Regulation 601-96, education level at time of recruitment/enlistment can play a role in a servicemember's initial rank. The Army may allow

servicemember has a missing promotion date or skipped a rank and therefore lacks a date for promotion to this particular rank. Fortunately, for servicemembers with standard promotion histories, missing promotion data are sparse at the NCO ranks—including the rank of interest E-5—and do not adversely impact the size of the sample. Table 4.2 summarizes the flow of promotions for servicemembers who have chronological promotion history files. The number of servicemembers who promote to each subsequent rank is reported across columns by count and percent of the original number who started at a given entry rank. For example, the "E-1" row reports that 195,571 servicemembers started at E-1 and 186,649 (95%) of them promoted to E-2.

servicemembers to enter at ranks higher than E-1 if the individual has a certain number of accredited college/university hours.

Table 4.2 Number and Percent of Servicemembers Promoted to Each Rank, Grouped by Entry Rank

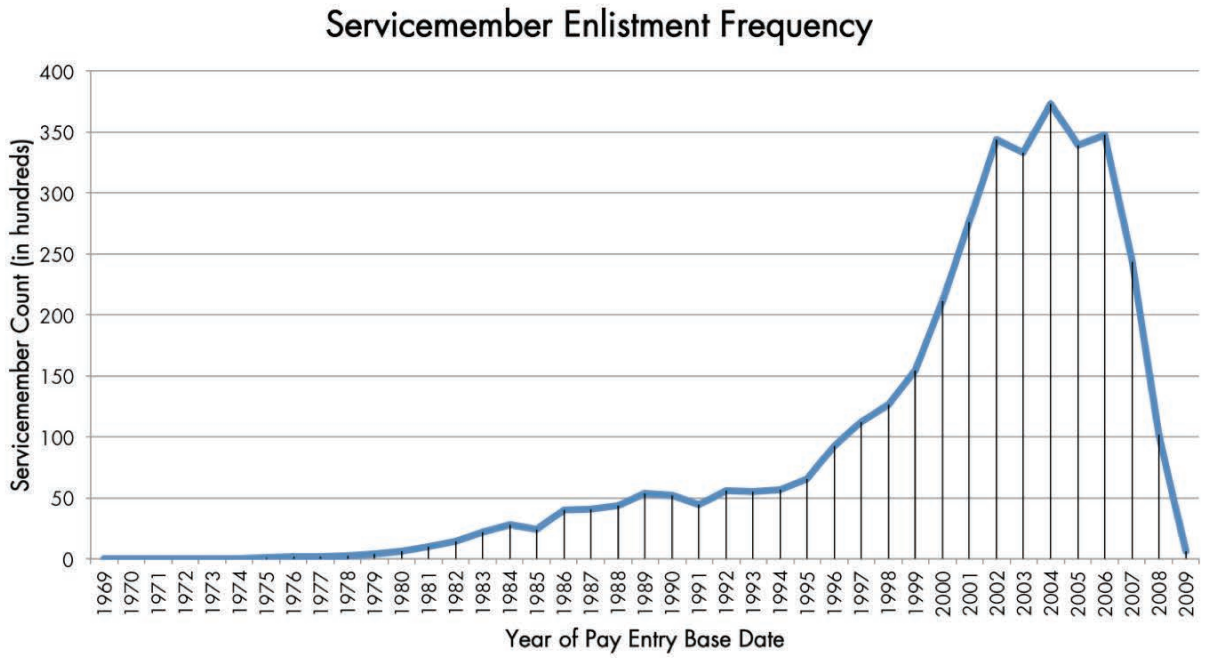
| **Entry Rank**[97] | **Number of SM** | **E-2** | **E-3** | **E-4** | **E-5** | **E-6** | **E-7** | **E-8** | **E-9** |
|---|---|---|---|---|---|---|---|---|---|
| E-1 | 195,571 | 186,649 (95.4%) | 190,055 (97.1%) | 188,568 (96.4%) | 118,467 (60.6%) | 64,766 (33.1%) | 299,09 (15.3%) | 7,436 (3.8%) | 977 (0.5%) |
| E-2 | 80,332 | | 78,545 98.7% | 79,022 98.4% | 53,436 66.5% | 28,629 35.6% | 13,113 16.3% | 3,671 4.6% | 588 0.7% |
| E-3 | 62,024 | | | 61,232 98.8% | 45,343 73.1% | 25,490 41.1% | 11,473 18.5% | 3,132 5.1% | 677 1.1% |
| E-4 | 24,883 | | | | 21,214 85.3% | 13,002 52.3% | 6,965 28.0% | 2,399 9.6% | 770 3.1% |
| E-5 | 4,143 | | | | | 3,295 79.5% | 2,502 60.4% | 1,730 41.8% | 812 19.6% |
| E-6 | 982 | | | | | | 870 88.6% | 768 78.2% | 617 62.8% |
| E-7 | 116 | | | | | | | 93 80.2% | 70 60.3% |
| E-8 | 19 | | | | | | | | 9 47.4% |
| E-9 | 3 | | | | | | | | |
| Number of Servicemembers | | | | | | 368,073 | | | |

Among servicemembers with standard promotion histories, military entry spanned from 1969 to 2009. At the start of data collection, 36 percent were already in the Army, and the remaining 64 percent joined during the data collection period. Pay Entry Base Date (PEBD), recorded in the TAPDB, is the date on which a servicemember effectively enlists in the Army as opposed to his/her entry rank promotion date, which necessarily occurs after the PEBD and may vary according to MOS or training requirements. Due to its uniformity regardless of MOS or training requirements, date of enlistment is used to

[97] Rank at which the servicemember's promotion history begins.

mark the beginning of service. Figure 4.2 displays the trend of enlistment among servicemembers with standard promotion histories.

Figure 4.2 Servicemember Enlistment Frequency, by Pay Entry Base Date



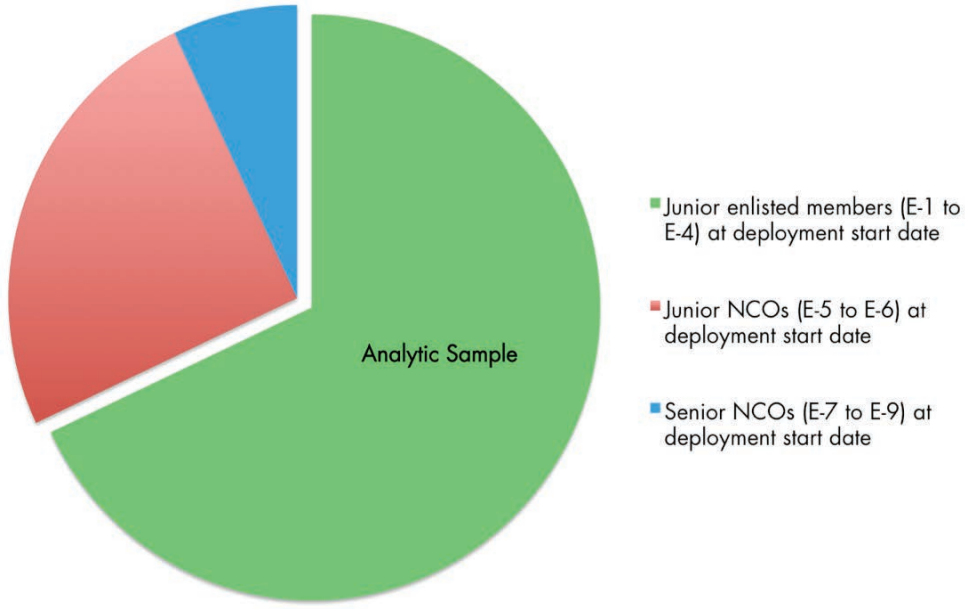

## Summary of Analytic Sample

In the context of this study design, it is critically important to identify servicemembers who have not reached the E-5 promotion milestone following deployment exposure. In the Army, promotion to sergeant marks the servicemember's transition from the ranks of junior enlisted to that of the non-commissioned officer (NCO). The work responsibilities in this rank increase significantly; sergeants are usually charged with the leadership of a team or squad and the direct counsel of these unit members. To this end, the eligibility criteria identified a group of servicemembers with reliable, chronological promotion histories who could still potentially reach E-5.

368,073 servicemembers who met the basic criteria for sample inclusion fit into either the junior enlisted or junior/senior NCO categories (Figure 4.3). To qualify as junior enlisted, the servicemember had to occupy the rank of E-1, E-2, E-3, or E-4 at the

time of their first deployment start date. Therefore, servicemembers are considered junior enlisted if they had not yet promoted to E-5 by the start of their first deployment after October 2001. Servicemembers who promoted to E-5 prior to their first deployment (junior and senior NCOs) in the observation window are not included in the analytic sample because they have already achieved the key promotion outcome (approximately 32 percent of servicemembers with chronological promotion outcomes). Figure 4.3 illustrates the breakdown of servicemembers by their rank at the time of their first deployment.

Figure 4.3 Servicemembers with Standard Promotion Histories and ≥1 Deployment and PDHA During Observation Window




**Demographic Covariates**

Data on age, sex, race/ethnicity, marital status, children (yes/no), civilian education level, and Armed Forces Qualification Test (AFQT) score, are time invariant. For servicemembers with multiple deployments, certain variables may change over time. For example, while a servicemember's AFQT remains constant, the marital status might change throughout the observation window. Responses to PDHA items are also dynamic

for soldiers who have more than one deployment on record. Servicemember responses to PDHA items related to trauma assessment were used to create binary indicator variables to control for the experience of trauma while deployed. Scrambled Social Security numbers are used to link covariates to the PDHA (explanatory) variables and career outcome (dependent) variables.

For this study design, using demographic covariates at the time of deployment is sufficient as the study is interested in controlling for factors that might influence a servicemember's trauma exposure experience during a given deployment. To that end, the study examines various career outcomes to determine the degree to which deployment-related trauma exposure and associated self-reported PTSD symptoms affect servicemembers' key career outcomes. To account for the varying points at which servicemembers start their first observable deployment, binary indicator covariates for rank and month-in-rank are used.[98] These covariates are referred as to "rank-month" indicator variables in this monograph.

### Event Phenomenon: Defining Deployment Exposure

The start date of servicemember deployment signifies the beginning of the exposure period, or the period in which the servicemember might experience a deployment-related trauma. Figure 4.4 and 4.5 depict notionally how the exposure period must precede the servicemember's career outcome, which includes promotion to E-5, separation from the Army, or continued service without having achieved promotion to E-5. The career event must follow the outset of the exposure period, and the exposure period must be contained within the observation window.

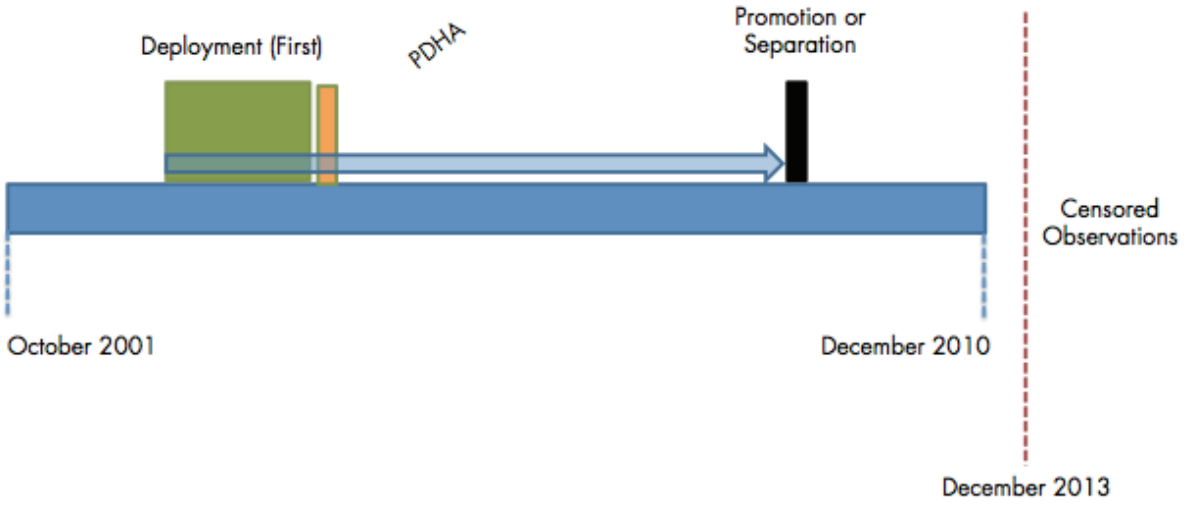
As Figures 4.4 and 4.5 show, deployments are observed between October of 2001 to December of 2010, while career outcomes are observed up until December 2013. Because the PDHA survey does not indicate the date of trauma, time-to-event is measured from deployment start date to capture the full period of time in which servicemembers risk exposure to trauma. In other words, this ensures that we include the

[98] Over 400 binary indicator variables were created to capture the variation in grade and time in that grade for servicemembers at the beginning of their first observable deployments. On average, less than 100 rank-month covariates produced significant estimates in the modeled regressions.

entire period that a servicemember is vulnerable to the risks or traumatic stressors of the deployed environment.

In this scenario for servicemembers with only one deployment during the observation window, notionally, we would observe the following event phenomenon: A servicemember is deployed, completes the PDHA, at which point, his/her health outcomes are measured (including PTSD symptoms). Subsequently, a promotion or separation is observed. The arrow, which represents time from deployment start date to the career outcome, depicts the time-to-event. Time-to-event is discussed in further detail in Chapter Six: Methodology and Chapter Seven: Results.

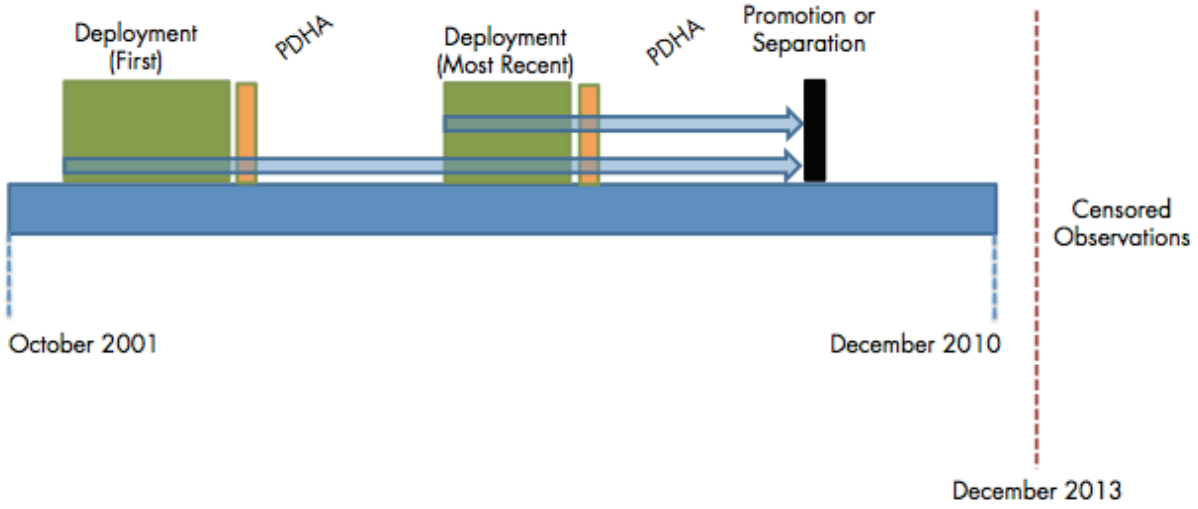
Figure 4.4 Single Deployment Servicemember Event Phenomenon




Alternatively, when a servicemember has multiple deployments, time-to-event is measured from the start of the first deployment to the separation or promotion and then from the start of the most recent deployment to that same point. Updating the PDHA to reflect the servicemember's most recent deployment, a separate set of regressions was run for PTSD symptoms attributed to the first and most recent deployment to determine if this distinction makes a difference with respect to career outcomes. To clarify, for servicemembers who only have one deployment, their first deployment is their most recent in the model. Making the distinction between first and most recent deployment was

motivated by the thought that PTSD symptoms may intensify or attenuate over time.

Figure 4.5 Multiple Deployment Servicemember Event Phenomenon




## Screening for PTSD: Features and Limitations of the PDHA

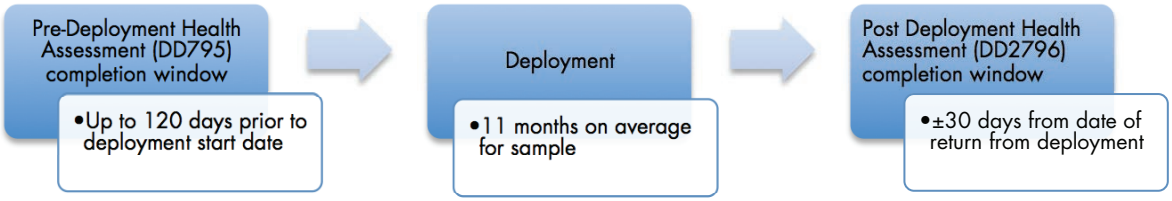
The Army Medical Department (AMEDD) documents clinical diagnoses of PTSD in servicemember records, which are confidential and unavailable to this study; therefore, this study makes use of self-reported PTSD item responses on the Post Deployment Health Assessment.[99] To receive an official PTSD diagnosis, a credentialed health care provider must evaluate a servicemember based on the current DSM clinical criteria. In addition to this psychological evaluation, a servicemember undergoes physical medical exams to rule out alternative causes for symptoms that might be incorrectly attributed to PTSD, such as substance/alcohol abuse, depression, or reactions to medication. While some individuals may experience PTSD latently and beyond six months following the traumatic event, others may report symptoms immediately.

Onset of latent symptoms presents a potential limitation in this analysis because the PDHA is administered within 30 days of the conclusion of deployment. Therefore, the association between PTSD symptoms and career outcomes is constrained by this time

[99] Rather than a clinical diagnosis, probable PTSD, which is determined by positive response cutoffs, is used.

frame.[100] Figure 4.6 provides a summary of the survey events leading up to and immediately following deployment.

Figure 4.6 Deployment-related Surveys Timeline




As Figure 4.6 suggests, only servicemembers who have been deployed complete the PDHA; therefore, by focusing on servicemembers who have completed the survey, the sample space for this study excludes soldiers who have never been deployed. Another useful aspect of focusing only on soldiers who have completed the PDHA, and who thus have been deployed, is the screening out of soldiers who did not pass the Pre-Deployment Health Assessment (DD 2795), which includes a mental health evaluation with credentialed health care providers.[101] Therefore, an opportunity exists for soldiers with predispositions for mental illness to be identified and subsequently not cleared for deployment.

[100] The PDHA and PDHRA may not capture the full range of PTSD symptoms if they intensify and attenuate beyond one and six months, respectively, after deployment. To this end, the study uses the PTSD item responses from the first and most recent deployment PDHA to explore if the relationship between PTSD symptoms and career outcomes changes over longer periods of time.
[101] "Pre-Deployment Background." *Deployment Support*. Deployment Health Clinical Center, Web. 14 May 2013. <http://www.pdhealth.mil/dcs/pre_deploy.asp>.

Despite the advantages of the PDHA, it is not a perfect instrument. For example, if servicemembers answer "no" to PDHA PTSD items to avoid further clinical follow-up, their symptoms will go undetected. Therefore, although there may be measurement error when using the PDHA, the policy recommendations and potentially policy changes will only apply to the population the instrument identifies.

Two widely used screening tools for active-duty servicemembers returning from combat deployment are the Primary Care Posttraumatic Stress Disorder Screen (PC-PTSD) and the Posttraumatic Stress Disorder Checklist (PCL). The PDHA's four PTSD-related items are derived from the PC-PTSD. According to an exhaustive instrument validation study conducted by Bliese at the Walter Reed Army Institute of Research and the U.S. Army Medical Research Unit—Europe, the overall diagnostic efficiency was virtually the same for both the PC-PTSD and PCL. Two "yes" answers to any the four questions or a "yes" to the avoidance item are comparable, rigorously validated methods for determining probable PTSD.[102] Specific details of the study and implications for the PC-PTSD items are discussed in the following sections. The four items from the PC-PTSD, all of which are included on the PDHA, are as follows:

Have you ever had any experience that was so frightening, horrible, or upsetting that, IN THE PAST MONTH, you…

a. Have had nightmares about it or thought about it when you did not want to?

□ Yes □ No

b. Tried hard not to think about it or went out of your way to avoid situations that remind you of it?

[102] Bliese, P. D., et al. (2008). "Validating the Primary Care Posttraumatic Stress Disorder Screen and the Posttraumatic Stress Disorder Checklist with servicemembers returning from combat." Journal of Consulting and Clinical Psychology 76(2): 272-281.

□ Yes □ No

c. Were constantly on guard, watchful, or easily startled?

□ Yes □ No

d. Felt numb or detached from others, activities, or your surroundings?

□ Yes □ No

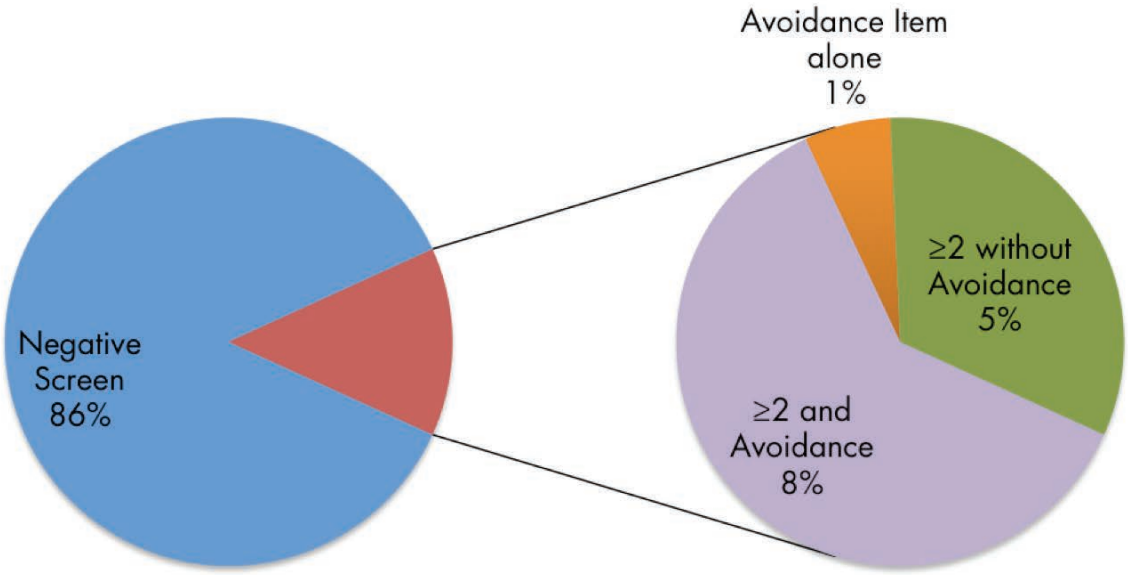
Approximately 13 percent of the sample satisfies criteria for probable PTSD based on the two-symptom screen. Alternatively, the avoidance item screen offers stricter criteria for probable PTSD, to which only 9 percent of the sample met criteria for a positive screen. While the avoidance criteria screen specification has comparable sensitivity and specificity (sensitivity=0.80 and specificity=0.84), the study ultimately selected the two-symptom screen specification (sensitivity=0.85 and specificity=0.71), as servicemembers who meet these criteria are experiencing a greater range of symptoms than.[103] Table 4.3 and Figure 4.7 report the number of servicemembers who met the two forms of screen criteria and illustrates the proportions of the analytic sample these servicemembers comprise, respectively.

Table 4.3 Servicemember Count, by PTSD Screen Status

| **≥2 PTSD Items** | **Avoidance Item** | **≥2 PTSD Items including Avoidance** |
|---|---|---|
| 31,975 (13%) | 23,021 (9%) | 20,890 (8%) |

[103] Bliese, P. D., et al. (2008). "Validating the Primary Care Posttraumatic Stress Disorder Screen and the Posttraumatic Stress Disorder Checklist with servicemembers returning from combat." Journal of Consulting and Clinical Psychology 76(2): 272-281.
See Appendix B for more detailed discussion PC-PTSD validation study discussion.

Figure 4.7 Visual Decomposition of Servicemember PTSD Screen Status




It is also important to note that, given the clinical significance of trauma when screening for PTSD, satisfaction of the PTSD status criteria in this analysis is *not* conditioned on trauma. Because the three PDHA trauma items limit the spectrum of possible deployment-related trauma exposures, conditioning on a positive response to these trauma items would potentially exclude servicemembers who were exposed to trauma unrelated to that described in the PDHA. For example, trauma stemming from sexual assault is not mentioned in the PDHA questions. In 2011 alone, there were over 3,000 sexual assaults reported within the DoD.[104] According to the 2012 Workplace and Gender Relations Survey of Active Duty Members, 6.1 percent of active-duty female servicemembers and 1.2 percent of active-duty male servicemembers experienced some form of unwanted sexual contact in the 12 months prior to being surveyed.[105] Ultimately,

[104] Department of Defense Annual Report on Sexual Assault in the Military." *Sexual Assault Prevention and Response Office*. Department of Defense, 2011. Web. 18 Mar. 2013. <http://www.sapr.mil/media/pdf/reports/Department_of_Defense_Fiscal_Year_2011_Annual_Report_on_Sexual_Assault_in_the_Military.pdf>.

105 Department of Defense Annual Report on Sexual Assault in the Military. Rep. Vol. 1. Washington D.C.: Department of Defense, 2013. Department of Defense Annual Report on Sexual Assault in the Military. Department of Defense Sexual Assault Prevention and Response, 15 Apr. 2013. Web. 4 Apr. 2014.

conditioning on trauma could potentially introduce bias to the analytic sample; trauma is, however, controlled for as a covariate in the model. If a servicemember answers "yes" to any one of these questions, the member is considered to have experienced trauma. The following are the three deployment/combat trauma questions from the PDHA.[106]

1) Did you encounter dead bodies or see people killed or wounded during this deployment? (Mark all that apply)
   □ No □ Yes (□ Enemy □ Coalition □ Civilian)

2) Were you engaged in direct combat where you discharged a weapon?
   □ No □ Yes (□ Land □ Sea □ Air)

3) During this deployment, did you ever feel that you were in great danger of being killed?
   □ No □ Yes

## Servicemember Career Outcome Categories

The following sections describe servicemember career outcome categories, including promotion and separation. The overarching separation category has been subdivided into performance and non-performance separation sub-categories based on Army explanations of each separation reason. The logic underpinning how the study categorizes separation reasons is also provided.

### Promotion

DMDC's WEX files reflect the date of each promotion; therefore, all servicemembers who have an E-5 promotion following the first observable deployment during the observation window are categorized as "Promoted." Servicemembers who

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<http://www.sapr.mil/public/docs/reports/FY12_DoD_SAPRO_Annual_Report_on_Sexual_Assault-VOLUME_ONE.pdf>.

[106] DD FORM 2796, JAN 2008.

have a Separation Program Designator (SPD) and do not have a date for promotion to E-5 are categorized as "Separated." For the purposes of this study, promotion to E-5 takes precedence over separation if the separation occurred prior to E-5. It is possible for servicemembers to have both an E-5 promotion date and SPD code on their TAPDB personnel record. Therefore, a servicemember cannot be in both the "Promoted" and "Separated" categories because if a servicemember has advanced to E-5 and qualifies as "Promoted," he/she will not be categorized as "Separated." Approximately half of the sample promoted to E-5. Table 4.4 provides a summary of the servicemember sample by career outcome category.

Table 4.4 Servicemember Career Outcome Percentages

| **Promoted to E-5** | **Separated (Performance and Non-performance)** | | **Neither Promoted nor Separated** |
|---|---|---|---|
| 51% | 36% | | 13% |
| | 32% | 4% | |

## Separation

SPD codes identify the reason for servicemember separation from active duty, which is documented on DD Form 214 (Certificate of Release or Discharge from Active Duty). Although SPD codes are indicative of the conditions on which the servicemember separated, some codes reveal defunct policies such as "Don't Ask, Don't Tell."[107] For the purpose of this study, SPD codes are grouped into two categories: performance-related and non-performance related. Unlike non-performance-related SPD reasons, which are linked to procedure or scenarios regarded as beyond the servicemember's purview, commanders can ostensibly influence the assignment of performance-related SPD codes. Performance-related SPD codes include reasons such as misconduct and weight control failure. Non-performance-related SPD codes include reasons such as completion of

[107] A small group of servicemembers in the analytic sample separated from the Army under SPD codes related to homosexuality.

required active service and disability. Table 4.5 presents the individual SPD codes by category. In terms of separation from Army service, this study estimates the association between self-reported PTSD symptoms on the likelihood of separation on the basis of performance- and non-performance-related reasons.

## Performance-related Separation

Overall, the performance-related separation reasons listed in Table 4.5 are associated with some form of punishment or disciplinary action. While some of these separation reasons (e.g., weight control failure and physical standards) are attached to clear guidelines, the majority of performance-related separation reasons rely upon commander assessment of servicemember performance bounded by Army directives. Regarding SPDs associated with obsolete policies, servicemembers faced disciplinary consequences for engaging in homosexual activity when "Don't Ask, Don't Tell" was an active DoD policy. Therefore, because separation on the basis of homosexuality required commander review and discretion, it falls into the performance-related separation category. Interdepartmental transfer, which indicates when an Army servicemember has transferred to another branch of the military, and civilian school attendance are the only positive performance-related separation reasons in the sample. Interdepartmental transfers, although typically initiated by the servicemember, require in-depth commander review of the servicemember's performance record. Ultimately, both Headquarters, Department of the Army, and the receiving branch must approve the interdepartmental transfer. Without strong performance records, approval of interdepartmental transfer or civilian school attendance are highly unlikely. The inclusion of positive separation reasons in an overwhelmingly negative pool of separation reasons has no impact on estimates because a marginal proportion of servicemembers in this sample received these positive, performance-related separation reasons.

## Non-performance-related Separation

Non-performance-related separation reasons stem from circumstances outside the control of the individual or from needs of the Army that dictate drawdown or reduction in force. In general, non-performance-related separation reasons describe scenarios in which servicemember performance is not associated with the separation, such as fulfilling active-duty service commitments. Furthermore, many of the non-performance-related separation reasons are due to disabilities that have been reviewed and documented by evaluation boards or Army healthcare providers. Family situations that warrant separation are also non-performance-related. "Failed Medical/Physical Procurement Status" is not tied to performance but rather indicates the discovery of an undiagnosed or recently developed health issue that would inhibit a servicemember's ability to meet physical or medical standards. "Insufficient Retainability" refers to situations in which a servicemember's remaining time on active duty precludes retention due to events like unit deactivation or base closure. In some cases, an Army mandate would demand that a certain number of troops be cut. To execute this mandate and satisfy Army needs, servicemembers may be separated by career field when demand for their skillset wanes or budget cuts demand adjustments to force mix; early release programs and reduction in force efforts are responsible for a substantial number of non-performance-related separations.

In summary, for the purpose of this study, performance-related reasons involve events that require commander assessment guided by Army regulations, which can play a significant role in the outcome of the assignment of the separation reason. Non-performance-related separation reasons emanate from Army capacity trends, events or conditions largely beyond the control of servicemembers; in these situations, commander assessment, if necessary, plays a procedural rather than decisionmaking role.

Table 4.5 Separation Reasons by Category

| **Performance Related Separation Reasons—Negative** |
|---|
| Fraudulent Entry |
| Erroneous Entry |
| Military Personnel Security Program108 |
| Conscientious Objector |
| Secretarial Authority |
| In Lieu of Trial by Court Martial |
| Misconduct (Civil Conviction) |
| Misconduct (Desertion) |
| Misconduct (Other) |
| Entry Level Performance and Conduct |
| Non-retention on Active Duty109 |
| Unsatisfactory Performance |
| Substandard Performance |
| Weight Control Failure |
| Physical Standards |
| Condition, Not a Disability |
| Homosexual Conduct (Acts) |
| Homosexual Conduct (Statement) |
| Homosexual Conduct (Marriage or Attempted Marriage) |
| Attend Civilian School** |
| Interdepartmental Transfer** |
| Personality Disorder |
| Non-performance Related Separation Reasons |
| Completion of Required Active Service |
| Early Release Program—Voluntary Separation Incentive or Special Separation Benefit |
| Reduction in Force |
| Insufficient Retainability (Economic Reasons) |
| Disability, Existed Prior to Service, PEB (Enhanced) |
| Disability, Excited Prior to Service, Medical Board (Enhanced) |

[108] According to DOD 5200.2-R, separation of a member when retention is clearly inconsistent with the interest of national security. As stated in Army Regulation 380-67, authority to make personnel security determinations that will result in an unfavorable administrative action such is limited to high-level DoD commanders and their designees (e.g. Secretary of the Army and/or designee).

[109] Involuntary discharge approved by recommendation of a board when servicemember is not recommended for continued active duty because of failure to meet minimum retention requirements

[110] Servicemember initiates and separates under the Voluntary Separation Incentive (VSI) Program or Special Separation Benefit (SSB) Program. VSI and SSB programs are designed to downsize the number of servicemembers who occupy surplus positions or have skills that the Army is deemphasizing in the force mix through voluntary separation by resignation, optional retirement, or voluntary early retirement.

| |
|---|
| Disability, Permanent (Enhanced) |
| Disability Temporary (Enhanced) |
| Disability, Other (Enhanced) |
| Disability, Permanent |
| Disability, Temporary |
| Disability, Aggravation |
| Disability, Other |
| Defective Enlistment Agreement |
| Surviving Family Member |
| Hardship |
| Parenthood or Custody of Minor Children |
| Failed Medical/Physical Procurement Standards |
| Pregnancy or Childbirth |

**Positive separation reason (See *Performance-related Separation)*

### Variation in Performance Assessment

Commanders and supervisors differ in their appraisal of performance, and if those differences are related to how commanders/supervisors assess the performance of servicemembers they perceive to suffer from PTSD, the estimated correlation between self-reported PTSD symptoms and career outcome will confound the effect of self-reported PTSD with the effect of commander assessment. Ultimately, it is difficult to disentangle the effect of PTSD on performance itself from the effect of commander assessment and to isolate the way in which these two factors influence a servicemember's key career outcomes. Consequently, this study takes a closer look at how one of the potential drivers of promotion and separation outcomes—the discretion of commanders and supervisors—might propagate and lead to systematic differences in career outcomes for servicemembers who have and have not self-reported PTSD symptoms.

## PTSD Status and Performance

To further examine patterns of commander discretion towards servicemembers who have self-reported PTSD, this study also estimates the impact of PTSD on the likelihood of receiving negative performance actions, which fall into objective and subjective categories. Trends in the distribution of subjective performance actions across servicemembers who have and have not self-reported PTSD symptoms may offer insight on

the presence of potential commander bias. Trends across the sample in the distribution of objective performance actions, which are explicitly negative and reflect a confirmed violation, will also help delineate a relationship between servicemember performance and self-reported PTSD. These relationships between self-reported PTSD and performance actions, both subjective and objective, will shed light on the reliability of the estimates of PTSD on career outcome and whether those estimates conflate the impact of commander assessment and PTSD.

Commanders regularly submit documentation of performance actions to the TAPDB, which is updated monthly. Table 4.6 presents all performance actions, by category, that appear in the sample.

Table 4.6 Performance Actions by Category

| **Objective Performance Actions—Negative** |
|---|
| *Suspension of Favorable Personnel Action (SFPARS)* |
| Security Violation |
| Army Physical Fitness Test Failure |
| Entry into Weight Control Program |
| *Major Personnel Action Reason (MPARSN)* |
| Deserter |
| In Lieu of Trial by Court Martial |
| Misconduct–Serious Offense—Absent Without Leave (AWOL) |
| Misconduct—Serious Offense—Desertion |
| *Military Rank Change Reason Code (RNKCRS)* |
| Soldiers Dropped from Rolls of Army |
| Failure to Complete Schooling |
| *Immediate Reenlistment Prohibition (IMREPR)* |
| Lost Time |
| Skill Qualification |
| Physical Readiness |
| Grade |
| Age |
| Individual Lost Qualification in Primary MOS |
| Weapons (failure to qualify weapon) |
| Weight |
| *Assignment Considerations (ASCO)* |
| Under Arrest, Confinement or Pending Military or Criminal Court Action |
| Assignment Restrictions for Convicted Sexual Assault Offender |
| Assignment Restrictions under the Lautenberg Amendment Apply |
| Under Investigation by Military or Criminal Investigative Activity |
| **Subjective Performance Actions–Negative** |
| *Suspension of Favorable Personnel Action Reason (SFPARS) aka FLAG* |
| Adverse Action |
| Elimination—Field Initiated (will be chaptered out of the Army) |
| Removal from a Selection List—Field Initiated |
| Removal from Selection List—Headquarters Initiated |
| HQDA Directed Reassignment (Adverse Action) |
| Commander Decision to Block Automatic Promotion to PV2, PFC, SPC |
| Punishment Phase |
| *Military Rank Change Reason Code (RNKCRS)* |
| Inefficiency |
| Misconduct |

| |
|---|
| Involuntary Reduction due to Unit Reorganization |
| Approved Discharge other than Honorable Condition |
| *Military Rank Change Type Code (RNKCTY)* |
| Reduction |
| *Immediate Reenlistment Prohibition (IMREPR)* |
| Field Bar to Reenlistment Approved Retirement |
| Field Bar to Reenlistment (no retirement benefits) |
| Department of the Army Bar to Reenlistment |
| Department of Army Bar to Reenlistment—Approved Retirement |
| Courts-Martial Conviction |
| Article 15 |
| Assignment Eligibility and Availability (AEA) |
| Permanently Ineligible for Future Assignment |
| Under Consideration for Elimination from Service |
| Ineligible for Assignment under the Lautenberg Amendment[16] |

It is important to recognize that servicemember performance is often measured by commander decisions and assessments. For example, the effects of PTSD may diminish performance, which commanders accordingly reflect in their assessments. Table 4.7 reports the servicemember count and percentage of the sample that received objective and subjective performance actions by PTSD status using the two-symptom screen.

Table 4.7 Servicemember Count by Performance Action Category and PTSD Status

| | Probable PTSD (% of group) | No Probable PTSD (% of group) |
|---|---|---|
| Objective | 13,129 (41.06%) | 90,137 (41.14%) |
| Subjective | 15,071 (47.13%) | 93,444 (42.65%) |

## Subset Analysis

As discussed in Chapter Two, PTSD can occur with comorbidities that may magnify the burden of PTSD itself. Among the general population, alcohol and drug abuse,

depression, and other anxiety disorders are frequently cited as the most prevalent conditions comorbid with PTSD.[111,112] Among the servicemember population, deployment events often lead to both injury and PTSD symptoms. To assess the impact of injury and depressive symptoms, the study again employs self-reported PDHA responses to investigate whether these conditions influence career outcomes differently. Motivated by the hypothesis that depressive symptoms and injury conceivably differ in how they are perceived by others and influence performance, the results of this subset analysis (n=102,453) offers a comparison of their relative contribution to promotion and separation outcomes. Table 4.8 reports the frequency of PTSD symptoms, depressive symptoms, and injury, and all possible condition combinations.

Table 4.8 Servicemember Percent and Count, by Health Status

| **Condition** | **Percent** | **Count** |
|---|---|---|
| Healthy | 73 | 74,407 |
| Injury | 15 | 15,158 |
| PTSD Symptoms | 11 | 11,323 |
| Depressive Symptoms | 8 | 8,337 |
| PTSD Symptoms × Depressive Symptoms | 3 | 3,061 |
| PTSD Symptoms × Injury | 3 | 3,053 |
| Injury × Depressive Symptoms | 2 | 2,472 |
| PTSD Symptoms × Injury × Depressive Symptoms | 1 | 1,259 |

## Injury and Depressive Symptoms

[111]Grinage, Bradley, M.D., University of Kansas School of Medicine–Wichita, Wichita, Kansas Am Fam Physician. 2003 Dec 15;68(12):2401-2409.
112 Kessler, Ronald et al. "Posttraumatic Stress Disorder in the National Comorbidity Survey." Arch Gen Psychiatry 52 (1995): 1048-060. Print.

To fall in the "Injury" category, a servicemember must have positively endorsed the following item:

Were you wounded, injured, assaulted or otherwise hurt during this deployment?
□ Yes □ No

To screen for depressive symptoms, the PDHA uses the Patient Health Questionnaire-2 (PHQ-2), which is the first two items of the commonly used PHQ-9, to evaluate the frequency of depressed mood and anhedonia over the past two weeks. A PHQ-3 score ranges from 0 to 6, but clinical research suggests that a cutoff score of 3 is the optimal cut point for screening purposes.

Over the PAST MONTH, have you been bothered by the following problems?
Little interest or pleasure in doing things (range 0-3):
□ Not at all □ Few or several days □ More than half the days □ Nearly every day

Feeling down, depressed, or hopeless (range 0-3):
□ Not at all □ Few or several days □ More than half the days □ Nearly every day

Due to changes in the survey during the observation window, only servicemembers who completed PDHAs after January 2008 have responses to the injury questions. Therefore, a subset analysis was conducted to compare the career outcomes of servicemembers who self-reported PTSD symptoms, injury, and/or depressive symptoms against those of their healthy peers. Comparison of the full and subsample to ensure subsample results could be extrapolated to the full sample is discussed in Chapter Seven: Results.

## Summary

The final analytic sample consisted of 251,060 active-duty Army junior enlisted members. All covariates other than PDHA response items were measured at the start of

deployment. The study uses PDHAs from both the first and most recent deployments in the observation window. This approach serves an important purpose by differentiating the potential influence of an initial trauma on career outcomes from that of the most recent deployment. Finally, the study identifies a group of servicemembers for a subset analysis. The subset analysis operationalizes additional PDHA health to determine the associations between injury, depressive symptoms, and comorbidities (including PTSD) and career outcomes. The following chapter provides more detail on career outcome categories and discusses key covariate descriptive statistics.

# CHAPTER FIVE: METHODOLOGY

The purpose of this chapter is to describe how the study approached the task of answering the research questions, that is, to measure the influence of PTSD symptoms on promotion and separation. To execute this task properly, we need to know how career outcomes would have occurred for servicemembers with PTSD had they not had PTSD. Because we cannot observe this, we infer this scenario based on the career outcome behavior of those servicemembers who did not have PTSD. However, because servicemembers who experience PTSD are reasonably different across a variety of underlying characteristics, we use regression modeling to control for as many observable differences as possible.

Through logistic regression modeling we are able to characterize a servicemember's likelihood to achieve a given career outcome based on probable PTSD status; however, this approach has its limitations in that some servicemembers' career outcomes are not observed by the end of the observation period. To overcome the issue of censoring, we use duration modeling to utilize the entire sample and determine the average of the predicted time-to-career outcome for servicemembers who do not have PTSD and then for the same servicemembers assuming they instead had PTSD.

Organizationally, the first section of this chapter describes how key variables were operationalized. Then, we proceed to the empirical regression models and statistical techniques employed to execute the data analysis. To determine the association between PTSD on career outcomes, the study utilized logistic regression analysis. To predict the average time to career outcomes based on PTSD status (and other health statuses), the study utilized duration modeling. Together, these approaches sketch a fuller picture of career outcome trends for servicemembers with probable PTSD.

## Measures

The following section includes an explanation of the outcome, explanatory, and control variables used in the analysis to measure key factors correlated to potential for exposure to PTSD, performance, and career outcomes. Table 5.1 provides the full list of variables.

Table 5.1 Summary of Variable Definitions Used for Analysis

| Variable Type | Variable | Operational Definition | WEX | PDHA | TAPDB |
|---|---|---|---|---|---|
| Outcome | E-5 promotion | 1 if has E-5 promotion date<br>*0 otherwise* | X | | |
| | Separation date | 1 if has SPD code and separation date at rank below E-5<br>*0 otherwise* | X | | |
| | Performance Actions | 1 if has ≥1 negative action codes after first deployment<br>*0 otherwise* | X | | |
| Explanatory | Probable PTSD | 1 if ≥2 symptoms are endorsed<br>*0 otherwise* | | X | |
| | Probable PTSD | 1 if Item 2 (Avoidance) is endorsed<br>*0 otherwise* | | X | |
| | Injury | 1 if PDHA Injury Item is endorsed<br>*0 otherwise* | | X | |
| | Probable Depression | 1 if PDHA Depressive Item Score ≥3 (Range: 0-6)<br>*0 otherwise* | | X | |
| Control | MOS Category | 1 if Combat Arms; Combat Service Support; Combat Support<br>*0 otherwise* | | | X |
| | AFQT Score | Range: 21-99 | | | X |
| | Sex | 1 if male<br>*0 otherwise* | | | X |
| | Race/ethnicity | 1 if Caucasian; African-American; Hispanic; Asian; Other<br>*0 otherwise* | | | X |

| Variable Type | Variable | Operational Definition | WEX | PDHA | TAPDB |
|---|---|---|---|---|---|
| | Age | Age at deployment start date<br>Range: 17-57 | | | X |
| | Marital Status | 1 if married; divorced; not married<br>*0 otherwise* | | | X |
| | Children | 1 if has any dependent children<br>*0 otherwise* | | | X |
| | Education level | 1 if has less than high school; high school equivalency; high school diploma; some college; associate's degree; undergraduate degree; post-undergraduate degree<br>*0 otherwise* | | | X |
| | Previous Deployment | 1 if has a previous deployment in observation window<br>*0 otherwise* | X | | |
| | Deployment Trauma | 1 if ≥1 PDHA trauma items endorsed<br>*0 otherwise* | | X | |

## Career Outcome Variables

To measure career outcomes, the study measures the amount of time between the start date of a servicemember's deployment (first or most recent if applicable) in the observation window to the date of the career outcome as documented on his/her WEX. The servicemember can have only one career outcome event, with promotion to E-5 taking precedence over an eventual separation from the Army. Regressions (logistic and duration) were executed to evidence the influence of probable PTSD for the following outcomes:

- promotion to E-5
- separation

- performance
- non-performance separations

### Negative Performance Actions

In addition to the career outcome variables, the study also conducts logistic regression analysis with negative performance actions as the outcome variable. For servicemembers with at least one negative performance action, whether subjective or objective in nature, binary indicator variables are coded as 1 for any negative performance.

### Explanatory Variables

This study uses four categories of PDHA items to capture the nature of servicemember post-deployment health: PTSD symptoms, depressive symptoms, exposure to trauma, and deployment-related injury. There are four PTSD symptom items, two depressive symptom items, and one deployment-related injury item.

Due to the design of this study, all servicemembers in the sample have completed at least one PDHA. A 2012 RAND study focused on a cohort of married active-duty Army servicemembers deployed between March 2003 and June 2010 found a 67 percent PDHA completion rate. In the case of serious injuries, PDHAs are not completed because the nature of the injury obviates the need for such an assessment.[113] However, a study by Hoge et al. found that across observable characteristics, deployed Army servicemembers who have not completed PDHA surveys are very similar to their counterparts who have completed PDHA surveys.[114] Despite this finding, there are potential drawbacks with using PDHA survey items as measures of health.

First, servicemembers may be reluctant to answer PDHA questions honestly due to perceived disincentives, such as referral for follow-up medical evaluation, delayed return home, or general detriment to their military career. The impact of such self-reporting bias

[113] In the event of a fatality, a PDHA is also obviated. Servicemember fatalities appear in the Casualty File, the official statistics database maintained to track OIF/OEF/OND casualties.
[114]Hoge, C. W., Auchterlonie, J. L., and Milliken, C. S., "Mental Health Problems, Use of Mental Healt h Services, and Attrition from Military Service After Returning from Deployment to Iraq or Afghanistan, " Journal of the American Medical Association, Vol. 295, No. 9, 2006, pp. 1023–1032.

may influence the study's estimates on the effect of PTSD. There may be servicemembers in the control group who have symptoms they did not report. Furthermore, in the absence of fear of negative consequences related to PTSD, more servicemembers may have reported symptoms, suggesting that the severity of the PTSD in this sample's self-reporters may be higher. Second, the PDHA measures the servicemember's self-reported health at the end of a deployment. For a condition like PTSD, symptoms may manifest many months or even years after the traumatic event.[115] Due to latency of symptoms, the PDHA survey may ultimately understate the association between PTSD and career outcomes in the sense that latent PTSD may adversely affect servicemember careers in the mid- to far-term future.[116] Overall, these limitations should be considered when interpreting estimates.

## Control Variables

This study includes a wide range of control variables that may influence career outcomes. Literature points to a strong connection between demographic characteristics and both performance and performance appraisal. For example, the workplace experiences of women and racial minorities may differ markedly from those of their white male counterparts, who comprise the majority of this study's sample.[117] Education has also been found to be positively correlated with self-, peer-, and supervisor-rated task performance.[118] With these correlations in mind, the study controls for sex, race/ethnicity (white, African-American, Hispanic, Asian, and other), and education level ranging from less than high school to post-undergraduate. As a measure of military training aptitude at time of entry to the Army, the study also controls for AFQT score.

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[115] McFarlane, A. C., "Posttraumatic Stress Disorder: A Model of the Longitudinal Course and the Role of Risk Factors," *Journal of Clinical Psychiatry,* Vol. 61 (suppl. 5), 2000, pp. 15–20.
[116] The Post Deployment Health Reassessment, mandated by the Assistant Secretary of Defense for Health Affairs in March 2005, is completed between 90 and 180 days following return from deployment. Although the PDHRA offers an expanded opportunity to capture latent symptoms, potential for selection bias still exists.
[117] There is some evidence that women and minorities may have more difficulty entering may be less likely to get promoted or promoted quickly (Lyness & Thompson, 1997; Powell, Butterfield, & Parent, 2002; Ragins, 1997). As a result, the career payoffs of educational investments may be weaker
[118] http://homepages.se.edu/cvonbergen/files/2013/01/How-Broadly-Does-Education-Contribute-to-Job-Performance.pdf

To account for the effect that age may have on a servicemember's experience of the stresses of deployment or a deployment-related traumatic event, the study controls for age at time of deployment.[119] To address family factors, which research suggests may confer bias in the workplace, the study controls for marital status and having children at the start date of each deployment.[120] Finally, recognizing that exposure to trauma differs across occupational tasks, the study controls for the three main categories of Army jobs: combat arms, combat support, and combat service support.

While the link between these demographic factors and performance and career outcomes is well corroborated by academic research, the same demographic factors are arguably related to a servicemember's likelihood to experience PTSD. Controlling for factors that affect a servicemember's likelihood to experience trauma—most notably MOS—is critical to grouping servicemembers by exposure risk. For instance, whether a soldier is sent out on a patrol that is involved in a firefight or IED blast is most likely related to a variety of environmental factors outside of his/her control such as shift assignment, schedules of coordinating units, weather, number of soldiers available for the task, etc. Therefore, controlling for MOS enables the study to conceptualize PTSD as an exogenous event in the servicemember's career. The study also controls for the experience of trauma based on the servicemember's responses to the PDHA deployment/combat related trauma questions. While controlling for a servicemember's negative performance record would be a useful way to measure baseline performance, these performance actions are potentially related to or caused by the PTSD symptoms.[121]

## Logistic Regression Analysis

To interpret the difference in probability to experience a career event in each time interval as the "effect" of probable PTSD, we would have to assume that the difference is fully explained by PTSD symptoms rather than other factors that could reasonably be

[119] The regression also includes control variables for age-squared and a log transformation of AFQT score.
[120] http://www-psych.stanford.edu/~ajordan/papers/Jordan%20&%20Zitek%20-%20Marital%20Status%20Bias%20in%20Perceptions%20of%20Employees.pdf
[121] Performance actions are operationalized as outcome variables in the same fashion as career outcomes in Chapter Seven: Results.

related to career outcomes. Practically, this assumption is not realistic, especially because not every servicemember has an equal risk of experiencing PTSD. An array of servicemember characteristics, such as MOS, previous combat/deployment experience, and predisposition towards risk and danger, will influence a servicemember's likelihood to experience trauma and report PTSD symptoms. Risk proclivity is also reasonably associated with a range of personality factors that influence performance and indirectly impact career outcomes. Ultimately, the empirical models face the threat of omitted variable bias. Omitted variable bias may be negatively or positively correlated with PTSD and career outcomes, making the direction of the bias also difficult to discern.

To this end, we control for a host of observable covariates that are potentially related to both PTSD symptoms and career outcomes. Controlling for factors plausibly related to preexisting risk preferences may mitigate endogeneity in the association of PTSD symptoms on career outcomes. While we cannot fully control for intrinsic personality differences, we have, to an extent, limited the potential for significant preexisting differences with respect to preference for risk through study design. The fact that all individuals in the sample have voluntarily enlisted in the Army, were eligible for deployment, and completed a deployment suggests a certain degree of similarity in preference for risk and danger.[122]

## Empirical Model

This study employs an empirical model that controls for a variety of characteristics, both time-varying and time invariant, that are potentially correlated with likelihood to experience trauma and the related inclination to self-report PTSD symptoms as well as career outcomes. The study estimates an equation of the following form:

Equation 5.1

[122] It is important to note that attrition prior to the beginning of the observation window may affect the composition of the sample. For example, servicemembers may have left the Army prior to entering this sample due to PTSD symptoms.

$$y_{it} = \beta_0 + \beta_1 * (\text{probable PTSD status})_i + \gamma_j * x_i + \epsilon_i$$

where,

- $y_{it}$ is a binary indicator for career outcome at time *t* for each servicemember *i*;
- $\beta_1$ is the estimated effect of PTSD symptoms on likelihood of career outcome;
- $(\text{PTSD Screen Status})_i$ is an indicator variable that characterizes probable PTSD status;
- $\gamma_j * x_{ji}$ is a set of covariates; and,
- $\epsilon_i$ is an error term.

Taking into account that servicemembers enter and exit the sample at different times, we first divided the observation window into five-month intervals, where the initial interval begins with the servicemember's deployment start date. The observation window is comprised of these intervals, starting at zero-to-five month interval and concluding at the ≥100 month interval. Because the exact date of exposure to trauma is unknown, a uniform standard for time since exposure had to be defined. Therefore, rather than starting the five-month intervals at the time of entry into the Army, we use deployment start date. Operating on the assumption that servicemembers face potential exposure to trauma once they are deployed, using deployment start date situates servicemembers in a similar exposure universe.

A series of regressions, one for each five-month interval, traces out the cumulative predicted probability of experiencing an event based on probable PTSD status. We repeated the series of logistic regressions for four events: promotion, separation, performance-related separation, and a non-performance-related separation. The dependent, career outcome variable was coded 1 if the event occurred in the observation window; if the event did not occur, it was coded as 0. This process was repeated for each career outcome. The following equation identifies the components of Equation 5.1 as they pertain to the cumulative probability, where $\rho$ represents the probability of a designated career outcome, $\beta_1$ is the coefficient on PTSD status, and $x$ is the

servicemember's dichotomous PTSD status.

$$\rho = \frac{e^{\beta_o + \beta_1 X}}{1 + e^{\beta_o + \beta_1 X}}$$

### Alternative Outcome Variable: Negative Performance Actions

Considering the relationship between performance and career outcomes, performance could be thought of as an intermediate outcome. To take a closer look at how this outcome behaves with respect to probable PTSD status, we apply the logistic regression approach to negative performance actions. A series of regressions report the likelihood of receiving a negative performance action for each five-month period following the start of deployment. For this component of the analysis, only the first deployment is utilized.

Given that the purpose of this analytic component is to compare the likelihood of receiving a negative performance action before and after a servicemember has been deployed, use of the first deployment start date is sufficient even for servicemembers with subsequent deployments. While multiple deployments certainly may affect a servicemember's likelihood of receiving a negative performance action, it is not possible to trace the behavior that results in a performance action to the stresses of a particular deployment. By contrast, PDHAs enable the tracing of self-reported PTSD symptoms to a particular deployment. For this reason, the study is able to conduct separate regression analysis for symptoms associated with the first and most recent deployments.

## Duration Analysis

To augment the career outcome trends depicted by the regression results, the study employs duration modeling (e.g. survival or event history analysis) to describe the timing of servicemember career events. With the duration regression, we are addressing the same research questions but are able to use the full sample and account for unobserved outcomes. With this approach, the outcome variable is now the time from deployment start date to the event of interest rather than a binary outcome.

The logic behind parametric duration models is that they adhere to particular hazard rates, or, in other words, the likelihood of the event of interest varies with time. In the case of promotions and separations, the risk of an event occurring over time (i.e. hazard rate) is *not* constant. For duration modeling to work, certain distributional assumptions are required. For the duration models estimated in this study, we specify the log-logistic distribution, which assumes a non-monotonic hazard rate. Upon inspection of the hazard rates for promotion and separation throughout the observation window, the log-logistic distribution accurately characterizes the underlying time-dependency of these events over time.

Overall, the use of duration modeling offers a more specialized and agile approach to determine how many months, on average, servicemembers take to reach an event rather than if the event simply occurs.

Theoretically, to estimate the effect of probable PTSD (or other health condition) on time to promotion or separation, it is important to specify the group over which the estimates apply. First, we generate the regression for all servicemembers irrespective of probable PTSD status, through which the coefficient on probable PTSD and covariates are determined. Then, we predict the mean time to promotion and separation for servicemembers who do not meet criteria for probable PTSD, or practically, the "healthy" servicemembers. Then we predict the mean time to promotion and separation, assuming these servicemembers had instead met criteria for probable PTSD. Using this approach, we are able to integrate counterfactual estimates over the characteristics of the non-symptomatic servicemembers. This approach also circumvents comparison of "healthy" servicemembers to probable PTSD servicemembers, who may differ in their underlying characteristics (See Chapter Six: Descriptive Statistics).

It is also possible that certain demographic characteristics interact to produce unique effects. The interaction of certain demographic characteristics, like race/ethnicity and gender for instance, may also influence time-to-event estimates. Controlling for the joint influence of certain servicemember characteristics through interaction terms helps account for variation in a servicemember's likelihood for probable PTSD and career outcomes.

## Measuring Time-to-Event

The first step in any application of duration analysis is to operationally define the time-to-event that is modeled. Date of promotion to E-5 or date of separation from the Army prior to the rank of E-5 provide specific, observed points in time that can be measured from deployment start date.

A common challenge with longitudinal data is right censoring, which occurs when individuals in the sample do not experience the event of interest. A key advantage of duration regression is its ability to handle right censoring. Table 5.2 summarizes the event logic for promotion and separation.

Table 5.2 Event Timeline

| **Event** | **Origin Time**[123] | **Failure Event** | **Censored** |
|---|---|---|---|
| E-5 Promotion | Deployment Start Date | Promotion to E-5 | Separation OR Dec 15, 2013 |
| Separation | Deployment Start Date | Separation | Promotion to E-5 OR Dec 15, 2013 |

## Updated Covariates at Start of Each Deployment

Another common feature of longitudinal data is time-varying covariates. Because the duration analysis executes separate models for the first and most recent deployments, the time-varying covariates are updated at the start date of the deployment of interest. The measurement frequency of time-varying control variables probably does not perfectly correspond to all changes. A divorce, for instance, may have bearing on a servicemember's time to promotion or separation, but this change would not be captured in the duration model if it occurred after the deployment start date. However, the change in marital status would be measured at the start date of the most recent, subsequent deployment.

[123] A useful feature of duration modeling is flexibility of origin time. A servicemember's origin time is the deployment start date, which can occur at any point before December 2010.

## Summary

Ultimately, logistic and duration modeling provide appropriate and complementary methodologies for characterizing the relationship between PTSD symptoms and career outcomes, controlling for cofounding factors. Having determined the likelihood for a career event over time, the duration models offer perhaps more tractable estimates that suggest whether PTSD shortens or delays career outcomes during the observation window.

# CHAPTER SIX: DESCRIPTIVE STATISTICS

This chapter presents the characteristics of the servicemembers in the sample. First, the proportion of servicemembers who meet probable PTSD criteria is presented by screen specification. The next section defines the time-varying and time-invariant variables, followed by a presentation of the descriptive statistics (Tables 5.1 and 5.2) for both the full sample and subsample of servicemembers with probable PTSD. The final section of the chapter includes a review of the discernable patterns and trends in servicemember characteristics across the first and most recent deployments.

## Frequency of Probable PTSD

The probable PTSD screen rates are somewhat higher for the most recent deployment PDHAs when compared to the rates for the first deployment PDHAs. When employing the two-symptom screen specification, 12.7 and 13.4 percent of servicemembers meet screen criteria for the first and most recent deployments, respectively. When employing the avoidance item screen, the rates are lower at 9.2 and 9.6 percent, respectively.

For the purpose of the descriptive statistics presented in the remainder of this chapter, the two-symptom screen specification is used to determine PTSD status.[124]

## Time-Invariant Variables

Because the study uses longitudinal data, select variables may change over time for the approximately 17 percent of servicemembers who deploy more than once during the observation window. However, the remaining 83 percent of servicemembers provide a single observation point, which counts as their first (and most recent) deployment.

Table 6.1 reports the means and standard deviations for key variables, separated into outcomes and covariate sub-categories, as measured at the start date of servicemembers' first deployment. As a result of the study design, career outcomes are mutually exclusive and can occur only once; therefore, the means of the career outcomes

[124] The results presented in Chapter Seven focus on probable PTSD determined by the two-symptom screen specification.

are time-invariant and presented with the variables associated with the first deployment.

## Time-Varying Variables

Table 6.2 presents the descriptive statistics for the full sample (n=251,060) but selects the most recent deployment rather than the first. Several variables have the potential to change over time for servicemembers who have more than one deployment. First, about 17 percent of servicemembers have new responses to PDHA PTSD items for each additional deployment. Table 6.2 reflects the percentage of servicemembers who have met positive screen criteria (on either specification method) based on their most recent PDHA survey items. Regarding demographic variables, age certainly increases over time, while marital status and children may change for servicemembers who have multiple deployments. Finally, deployment-related factors such as MOS (i.e. combat arms, combat service support, and combat support)[125] and responses to PDHA trauma items are subject to change.

[125] Combat arms career fields are directly involved in directing and conducting fighting. Combat support offers administrative and operational assistance to combat arms, which may include involvement in combat missions as necessary. Combat service support provides logistical and administrative support to the Army; these career fields are typically uninvolved in combat operations.

Table 6.1 Descriptive Statistics for First Deployment

| **Number of Observations** | Full Sample (N=251,060) | PTSD Subset (n=31,975) |
|---|---|---|
| **Variable** | % or Mean | % or Mean |
| **Outcomes** | | |
| E-5 Promotion | 50.7 | 45.4 |
| Separation | 36.1 | 40.6 |
| Non performance Separation | 32.6 | 35.4 |
| Performance Separation | 3.5 | 5.2 |
| **Covariates** | | |
| *Demographics* | | |
| Age | 23.245 (3.894) | 23.448 (3.954) |
| Male | 88.9 | 89.1 |
| Caucasian | 60.2 | 62.9 |
| African-American | 15.7 | 14.6 |
| Hispanic | 12.6 | 12.9 |
| Asian | 9.8 | 7.8 |
| Other race/ethnicity | 0.3 | 0.3 |
| Married at deployment start | 40.1 | 43.8 |
| Not married at deployment start | 57.4 | 53.5 |
| Divorced at deployment start | 2.0 | 3.1 |
| Has children at deployment start | 24.4 | 26.6 |
| Less than high school diploma | 1.4 | 1.6 |
| High school diploma equivalency | 17.4 | 19.8 |
| High school diploma | 73.9 | 71.7 |
| Some college | 2.7 | 3.0 |
| Associate's Degree | 1.8 | 1.7 |
| Undergraduate degree | 2.4 | 1.9 |
| Post-undergraduate degree | 0.1 | 0.2 |
| AFQT score | 58.311 (19.148) | 57.624 (18.723) |
| *Deployment Factors* | | |

| | | |
|---|---|---|
| Combat Arms MOS | 37.1 | 44.5 |
| Combat Service Support MOS | 39.4 | 35.6 |
| Combat Support MOS | 22.9 | 19.7 |
| Reported deployment trauma | 59.1 | 90.0 |

Table 6.2 Descriptive Statistics, Most Recent Deployment

| **Number of Observations** | Full Sample (N=251,060) | PTSD Subset (n=31,975) |
|---|---|---|
| **Variable** | % or Mean | % or Mean |
| | | |
| **Outcomes** | | |
| E-5 Promotion | 50.7 | 45.4 |
| Separation | 36.1 | 40.6 |
| Non performance separation | 32.6 | 35.4 |
| Performance separation | 3.5 | 5.2 |
| **Covariates** | | |
| *Demographics* | | |
| Age | 23.7 (3.9) | 23.8 (4.0) |
| Married at deployment start | 43.9 | 47.0 |
| Not married at deployment start | 53.3 | 49.9 |
| Divorced at deployment start | 2.7 | 3.1 |
| Has children at deployment start | 26.7 | 30.9 |
| *Deployment Factors* | | |
| Combat Arms MOS | 37.3 | 44.1 |
| Combat Service Support MOS | 39.2 | 35.9 |
| Combat Support MOS | 22.9 | 19.8 |
| Reported deployment trauma | 58.9 | 90.4 |
| Previously deployed[126] | 17.6 | 14.4 |

Overall, the descriptive statistics are similar even with the updated, time-varying information for the 17 percent of servicemembers who had an additional deployment prior to separation or promotion. A notable difference in trauma experience is observed between the full sample and PTSD subsample, which is discussed later in this chapter.

[126] The study accounts for the impact of previous deployment(s) on subsequent deployment(s) and experience(s) with a binary indicator variable for the approximately 17 percent of the sample with multiple deployments in the observation window.

## Patterns and Trends in Servicemember Characteristics

The following sections explore a variety of correlations that can be gleaned from the descriptive statistics. The focus of this section is to identify broad but important trends in servicemember characteristics that might be associated with the deployment experience, susceptibility to PTSD, and likelihood to achieve career outcomes.

## Patterns Across Time-Invariant Variables (Full Sample)

Several demographic factors, such as sex, race/ethnicity, AFQT score, and education level are time-invariant and therefore remain the same across first and most recent deployments. Although education level could theoretically change, the proportion of servicemembers in each category remained the same across first and most recent deployments. Over 90 percent of the sample has a high school (or high school equivalency program) level education. Nearly 90 percent of the sample is also male. 60 percent of the sample servicemembers are white, 16 percent are black, 13 percent are Hispanic, and nearly one percent is Asian. The average AFQT score is 58.3.[127]

## Patterns Across Time-Varying Variables (Full Sample)

This section presents the means of key time-varying variables, paying particular attention to how they change over time between the first and most recent deployment. This section also provides potential explanations for these changes in characteristics. Because servicemembers leave and join the sample at different times throughout the observation window, their characteristics are not measured at the same points in time; rather, we compare their characteristics from the beginning of the first and most recent deployments.

The time-varying demographic covariates such as marital status, having children, and MOS, remain fairly stable over time. Average servicemember age increases from 23.2 to 23.7 years (n=251,060). While the increase in the average age at the start of

[127] The Armed Forces Qualification Test (AFQT) is used to determine eligibility for each military service branch. The Army's minimum AFQT score for eligibility is 31. An AFQT score is actually a percentile score (ranging from 21 to 99) based off a composite point score from three ASVAB sections (Verbal Expression, Mathematical Knowledge, and Arithmetic Reasoning).

the most recent deployment appears marginal, it is important to remember that about 83 percent of the sample is comprised of servicemembers who have one deployment and only that age on record. For the servicemembers who completed more than one deployment (n=44,307) and therefore have multiple ages on record, the average age at the time of their first deployment is 22.4 ($\sigma$ =3.4) and the average at the time of their most recent deployment is 24.8 ($\sigma$ =3.5). By the time of their most recent deployment, these servicemembers are approximately 28 months older than they were at the start of their first deployment.

**Deployment Factors**

Considering that average deployment length for the sample is approximately 11 months and servicemembers are on average 28 months older at the time of their most recent deployment start date, it is reasonable that servicemembers would redeploy to theater approximately 17 months following return from their first deployment.[128] Typically, the Army strives to maintain a 2:1 ratio of servicemember BOG time ("boots on ground" or time spent in theater) to dwell time (time spent out of theater).[129] However, between 2003 and 2008, servicemembers experienced a highly active deployment tempo to maintain the number of soldiers the Army required for OIF/OEF theater operations, during which time the bog:dwell ratio approached 1:1.[130] The inferred average dwell time of 17 months is consistent with the deployment tempo between 2001 and 2010, some of which was characterized by a particularly fast-paced deployment schedule that drove the bog-to-dwell ratio between 2:1 and 1:1.

With respect to experiencing deployment trauma, the differences between first and last deployment are minor. Deployment trauma is determined by the servicemember's response to the trauma questions on the PDHA. The nearly identical proportion of servicemembers who reported deployment trauma suggests that the likelihood of

[128] Using deployment start and end dates for servicemembers in the analytic sample, the average deployment length is 10.857 months long ($\sigma$ =3.396, min=1 and max=36).
[129] Bog=time spent in deployed and dwell=time spent at home unit between deployments
[130] Bonds, Timothy, Dave Baiocchi, and Laurie McDonald. Army Deployments to OIF and OEF. Rep. Santa Monica, CA: RAND Corporation, 2010. Web.

sustaining a traumatic exposure is consistent for the servicemembers in the OIF/OEF/OND theaters. A significant change in the proportion of servicemembers who reported deployment trauma, for instance, might allude to differences in environmental and operational risks of the deployment environment.

Regarding MOS, servicemembers switch to another MOS category at marginal rates (combat arms increases by 0.2 percent while combat service support decreases by 0.2 percent) between their first and most recent deployment. It is possible that servicemembers have transitioned from one MOS to another within the same MOS. For example, a servicemember could switch from infantry to field artillery but would still remain in the combat arms MOS category. Because MOS categories broadly group Army jobs by skills, tasks, and associated risks, a marked change in the proportions of servicemembers of the three main MOS categories might suggest a changing level of operational risk or undesirability of certain Army jobs. Overall, this study's observation of consistent proportions of servicemembers in all three MOS categories suggests that career fields are stably manned across deployments even with some MOS transitions.

## Family-related Demographic Factors

Marital status and children, both time-varying variables, suggests an interesting difference between the first and most recent deployment. Overall, the proportion of married servicemembers increases from 40.1 to 43.9 percent from the first to most recent deployment.[131] The proportion of servicemembers who have children[132] increases by nearly 2.5 percent, from 24.2 to 26.7 percent. According to DoD figures, 31 percent of active-duty Army servicemembers between the ranks of E-1 and E-4 have children.[133]

[131] According to a DoD demographic assessment, 59.6 percent of Army enlisted members are married. Because the average servicemember in this sample is relatively young, the difference between the proportion of married servicemembers in the sample and the full Army enlisted population is expected.

[132] "Has children" indicates that the servicemember has at least one child; number of children is not specified

[133] On average, servicemembers are 25.1 years at the birth of their first child.

Overall, the average servicemember's upward trend in marriage and children across deployments is consistent with Army-wide enlisted member statistics.

### Patterns Across PTSD Status (Subsample)

Comparing the full sample and the subsample of servicemembers with probable PTSD, there are a handful of differences across servicemember characteristics. Servicemembers in the probable PTSD subsample are more likely to be Caucasian (63 versus 60 percent) and have a slightly lower average AFQT score than the full sample. Servicemembers with probable PTSD (where PTSD status is defined by the first deployment PDHA) are more likely to be married (44 versus 40 percent), have children (27 versus 24 percent), and work in a combat arms category (45 versus 37 percent). The difference between the proportion of servicemembers who have experienced deployment-related trauma in the full and subsample is significant, with approximately 59 percent of the full sample and 90 percent of the subsample having endorsed trauma on the PDHA.

By the most recent deployment (where PTSD status is defined by the most recent deployment PDHA), key differences between the full and subsample persist. More servicemembers in the PTSD subsample are married (47 versus 44 percent), have children (31 versus 27 percent), and work in combat arms (44 versus 37 percent). The percentage of servicemembers belonging to the PTSD subsample who have experienced trauma (90.4) is still substantially higher than that of the full sample. Nearly 15 percent of the servicemembers in the PTSD subsample have been previously deployed, which is slightly lower than the nearly 18 percent of the full sample that has been previously deployed.

## Summary

This chapter describes the characteristics of the average servicemember (full and probable PTSD sample) at the beginning of the first and most recent deployments. Across the full sample, descriptive statistics suggest that differences in demographic and deployment-related characteristics between the first and most recent deployment are marginal. Servicemembers who have more than one deployment are on average 28 months older, more likely to be married, and more likely to have children.

However, between the full sample and the PTSD subsample, small mean differences in characteristics, including race/ethnicity, marital status, and having children, are present. Most notably, servicemembers in the PTSD subsample have a different MOS distribution than that of the full sample. Servicemembers with PTSD are more likely to have worked in a combat arms MOS than the average servicemember from the full sample at the time of their first or most recent deployment. Accordingly, they are less likely to have worked in a combat service support or combat support MOS. The increased exposure risk that accompanies the combat arms occupations (i.e., infantry, combat engineer, field artillery, armor, combat aviation), which are characterized by direct participation in tactical combat, may be related to the high percentage of servicemembers reporting trauma in the PTSD subsample. The magnitude of these mean differences between the full and PTSD sample is consistent across the first and most recent deployments.

# CHAPTER SEVEN: RESULTS

## Overview

This chapter presents the regression estimates in four main sections. We begin with descriptive results. Second, the results of the regression and duration modeling for promotion and separation are presented. The career outcome data have been operationalized in two ways: while the regression curves express the probability of reaching a particular career event in successive periods of the observation window, the duration models report the predicted average time to a specific career event. Finally, the chapter concludes by reporting the average predicted time-to-event estimates for promotion and separation based not only on probable PTSD status but also that of injury, depressive symptoms, and comorbidity combinations. By comparing the time-to-event estimates for various conditions, this section offers a look into the relative associations between various deployment related health conditions and career outcomes.

## Career Outcome Patterns Across Screen Specification and Deployment

Table 7.1 reports the number of servicemembers with positive screens for probable PTSD across each career outcome category and deployment.

Table 7.1 Servicemembers with Probable PTSD, by Screen and Deployment

| **Screen Specification** | **Career Outcome** | **First** | **Most Recent** |
|---|---|---|---|
| | | **N (% of career outcome group)** | |
| ≥2 symptoms | Promotion to E-5 | 14,527 (11.4) | 15,337 (12.0) |
| | Separation | 12,970 (14.3) | 13,769 (15.2) |
| | Performance separation | 1,667 (18.8) | 1,729 (19.5) |
| | Non-performance separation | 11,303 (13.8) | 12,040 (14.7) |
| Avoidance Item | Promotion to E-5 | 10,446 (8.2) | 11,517 (8.6) |
| | Separation | 9,313 (10.3) | 9,925 (10.9) |
| | Performance separation | 1,230 (13.9) | 1,284 (14.5) |
| | Non-performance separation | 8,083 (9.9) | 8,641 (10.6) |

Because the two-symptom specification is more sensitive and includes more symptom clusters than the avoidance item specification, the study selected the former to determine which servicemembers have probable PTSD. Furthermore, the more sensitive screen can better identify the percent of servicemembers with true positive screens and servicemembers experiencing symptoms from at least two clinical symptom clusters. References to screen status for the remainder of the monograph imply use of the two-symptom specification.

Given that the two-symptom screen specification has higher sensitivity than the avoidance item specification, we observe a higher frequency of probable PTSD across all career outcome categories when this specification is used.[134] Furthermore, when the two-symptom screen is employed, we observe a larger range of probable PTSD frequencies across career outcome categories, whereas when the more stringent avoidance item screen specification is employed, the frequencies are more closely clustered together. Although the prevalence of probable PTSD across career outcomes varies somewhat by screen specification, the basic distribution of PTSD is the same.

Probable PTSD is more common among servicemembers who separate than those who promote. Among servicemembers who separated, probable PTSD is more common among performance-related separators than non-performance separators. This pattern is consistent across screen specification and deployment. However, it is important to remember that performance separations comprise a small number of the total separations. The higher frequency of probable PTSD within this career outcome category might suggest that symptoms are correlated with negative or punitive performance factors that lead up to separation.

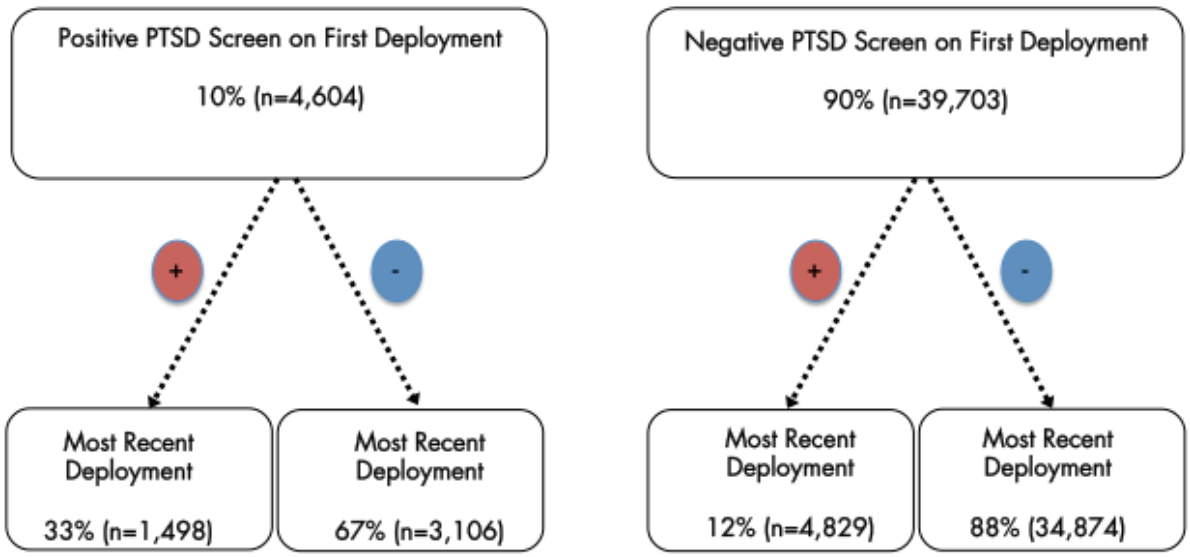
The descriptive results also shed light on the pattern of probable PTSD frequency based on the PDHA from the first compared to the most recent deployment. Irrespective of screen specification, servicemembers were more likely to screen positive for PTSD on their most recent deployment. Approximately 82.3 percent of the sample completed only one deployment (and PDHA) in the observation window. Therefore, the remaining 17.7

[134] See Appendix B for more discussion of PC-PTSD screen properties.

percent of servicemembers who had more than one deployment during the observation window account for the small increase in probable PTSD frequency.

Figure 7.1, which illustrates the positive screen rate for probable PTSD among multiple-deployment servicemembers, confirms that more servicemembers meet criteria for probable PTSD by the time of their most recent deployment than at the time of their first. Among servicemembers with multiple deployments who screened positive for probable PTSD on their first deployment, about one-third screened positive again on their most recent deployment. For multiple-deployment servicemembers who did not screen positive for PTSD on their first deployment, about 12 percent screened positive on the PDHA from their most recent deployment. Overall, these descriptive findings indicate that meeting criteria for probable PTSD is more common among servicemembers who have previously met criteria versus those who have not.

Figure 7.1 Trends in Probable PTSD for Multiple-Deployment Servicemembers




## The Association between Probable PTSD and Career Outcomes

This section uses two analytic approaches to characterize the association between career outcomes and probable PTSD. First, we report the likelihood to promote or separate in general based on probable PTSD status followed by results for performance

and non-performance separation. Then, looking across the full sample rather than only servicemembers who experience a defined career outcome, we use duration modeling to report time-to-event estimates for the two main career outcomes: promotion and separation. Finally, duration analysis using a subset of the sample addresses the relative contribution of PTSD symptoms, injury, and depressive symptoms on both time to promotion and separation.

**Probability of Career Outcomes: Probable PTSD versus Non-symptomatic**

The logistic regression results illustrate the probability of reaching a particular career outcome according to probable PTSD status during the specified observation window (October 2001 to December 2013). The probability of reaching a particular career outcome by the end of each five-month interval is calculated using Equation 5.1 (see Chapter Five: Methodology)

Assuming the variety of controls sufficiently addresses the potential of omitted-variable bias, the estimates can be practically interpreted as the difference in probability of achieving a particular career outcome between servicemembers with probable PTSD and their non-symptomatic peers. While the coefficient on the probable PTSD indicator is statistically significant in each unique regression,[135] the large sample size reaffirms that the divergent career outcome curves are statistically different. Figures 7.2, 7.3, 7.4, and 7.5 depict the cumulative probability across time for promotion, separation, non-performance separation, and performance separation based on probable PTSD status from servicemembers' first deployment PDHA. On each figure, a green line indicates the number of servicemembers who have not yet reached a career outcome. This number monotonically trends downward as servicemembers promote or separate throughout the observation window.

[135] Coefficient on probable PTSD is significant at the 0.05 or higher. Appendix C provides the coefficient values for each career outcome regression series.

Figure 7.2 **E-5 PROMOTION** Based on First Deployment PTSD Status

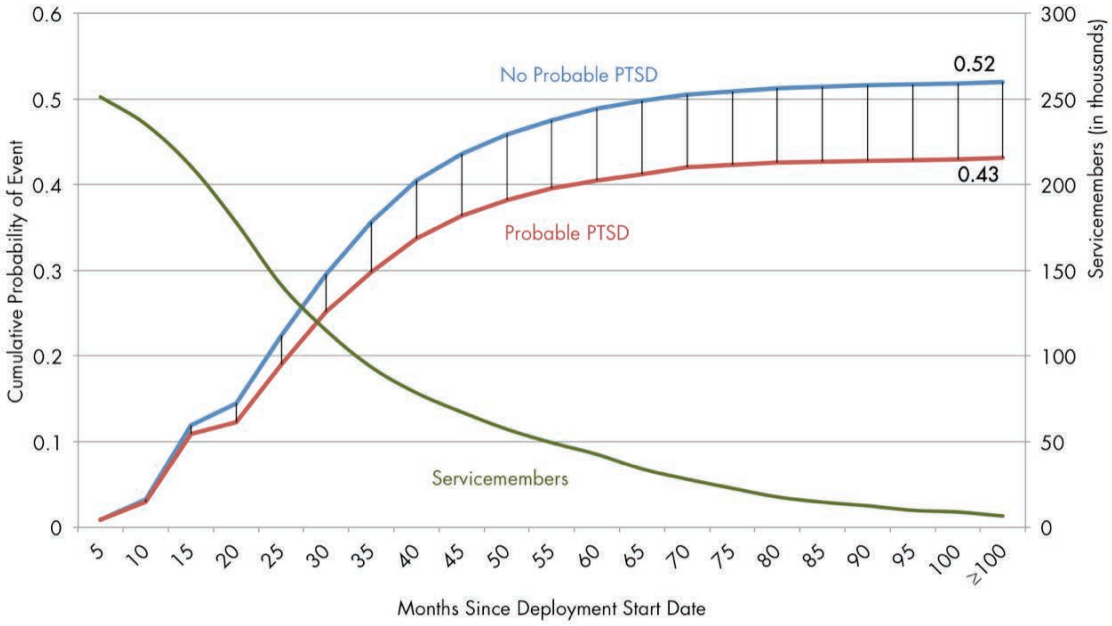



Figure 7.3 **TOTAL SEPARATION** Based on First Deployment PTSD Status

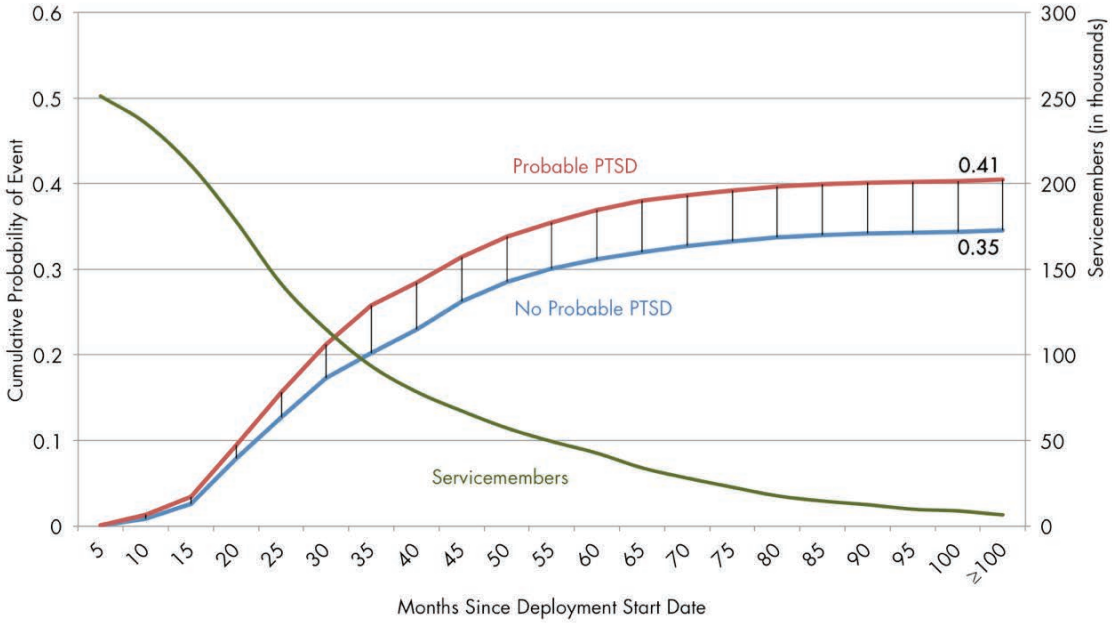


Figure 7.4 **NON-PERFORMANCE** Separation Based on First Deployment PTSD Status

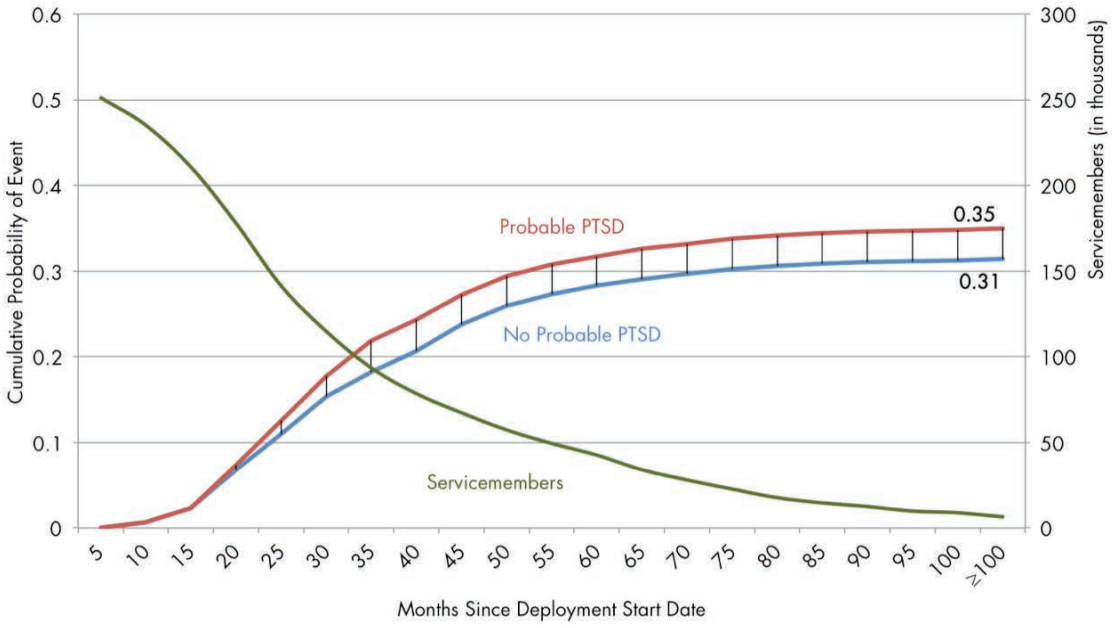
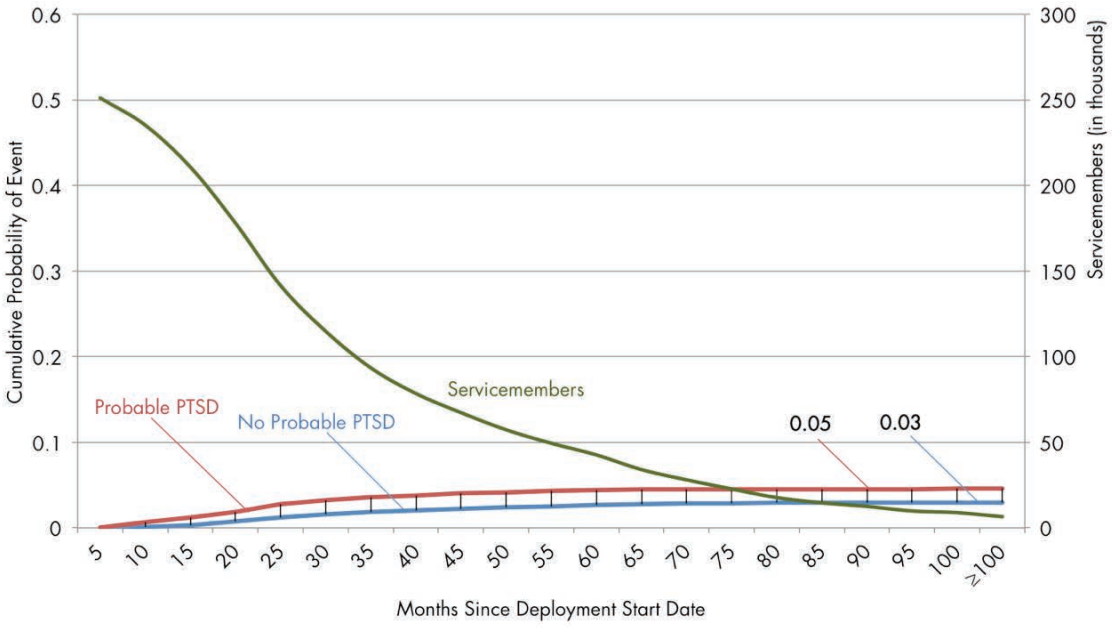



Figure 7.5 **PERFORMANCE** Separation Based on First Deployment PTSD Status



## Likelihood to Promote During the Observation Window

By the end of the observation window, servicemembers with probable PTSD have about a 42 percent probability of promoting to E-5, which is approximately nine percent lower than their non-symptomatic peers. The amount of time a servicemember takes to reach E-5 is largely a function of his/her rank and time-in-rank (i.e. time-in-grade) at the start of deployment.[136] We can infer from the observed trend in probabilities for promotion that PTSD symptoms begin to affect an appreciable difference for servicemembers with probable PTSD at around the 10-month mark. Until the 10-month point, the promotion rates for servicemembers with and without probable PTSD are practically equivalent. Beyond the 10-month point, the probability of promotion based on probable PTSD status starts to steadily diverge until the difference stabilize and plateaus around the 50-month mark.[137] Many studies indicate that PTSD symptoms, if untreated, tend to aggravate and worsen over time, which may contribute to the growing difference in probability for promotion between about the 10- and 50-month mark.[138] Additionally, the performance and behavior of servicemembers who are symptomatic of PTSD may also be more directly observable at their home base rather than in a deployed environment. In a deployed environment, it may be difficult to detect or differentiate PTSD symptoms from reaction to the daily rigors and stress of deployment, whereas in the servicemember's normal work environment PTSD symptoms might appear more pronounced.

According to Army "up-or-out" retention limit regulations, servicemembers must reach the rank of E-5 within eight years (96 months).[139] By the 96-month mark, fewer than five percent of the sample have not already experienced either a promotion or separation

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[136] A servicemember must have at least 36 months time-in-service and 8 months time-in-grade for promotion to E-5. However, a select group of servicemembers may promote early if they receive a time-in-grade or time-in-service waiver.

[137] The average time to E-5 promotion ranges between 4 and 4.5 years. Because servicemembers' time-to-event estimates are based on time since deployment start date rather than total time-in-service, we expect a stabilization of the difference in probability for promotion somewhere before the 48—54 month range.

[138] Schnurr, P. P., Friedman, M. J., Foy, D. W., Shea, M. T., Hsieh, F. Y., Lavori, P. W., et al. (2003). Randomized trial of trauma-focused group therapy for posttraumatic stress disorder: Results from a department of veterans affairs cooperative study. Arch Gen Psychiatry, 60(5), 481-489.

[139] The Army Leader Development Strategy stipulates limits on how long servicemembers can stay in their ranks without being promoted.

(indicated by the servicemember trendline); therefore, we can reasonably assume that these servicemembers have atypical circumstances that have allowed them to exceed the stipulated maximum time-in-service prior to E-5.

## Likelihood to Separate During the Observation Window

By the end of the observation window, servicemembers with probable PTSD have about a 41 percent probability of promoting to E-5, which is approximately six percent higher than their non-symptomatic peers. As with the promotion trends, there is no demonstrable difference in the probability of separation within the initial ten months of the observation window. Beyond this point, the difference in probability of separation increases to about six percent by the 50-month mark and remains stable until the end of the observation window. There are myriad reasons that could influence a servicemember's decision to separate, chief of which is the expectation of diminished health outcomes in an environment that aggravates PTSD symptoms. However, the regression results may also suggest a connection between a servicemember's likelihood to promote and the concomitant likelihood to separate. Apart from health reasons, the perception of diminished chances of promotion could also bear on a servicemember's rationale to separate.

## A Closer Look at Separation

In an effort to differentiate between separation reasons tied to performance from those unrelated to performance, the logistic regression process was replicated for both categories of separation. Servicemembers with probable PTSD have a greater likelihood of separating for performance or non-performance reasons, the latter of which comprises the majority of separations in general. Servicemembers with probable PTSD have a 35 percent likelihood of having a non-performance separation whereas their non-symptomatic peers have likelihood of 31 percent. With respect to performance separations, which only a small number of servicemembers experience, probable PTSD increases the likelihood of separation from three to five percent.

## Duration Results

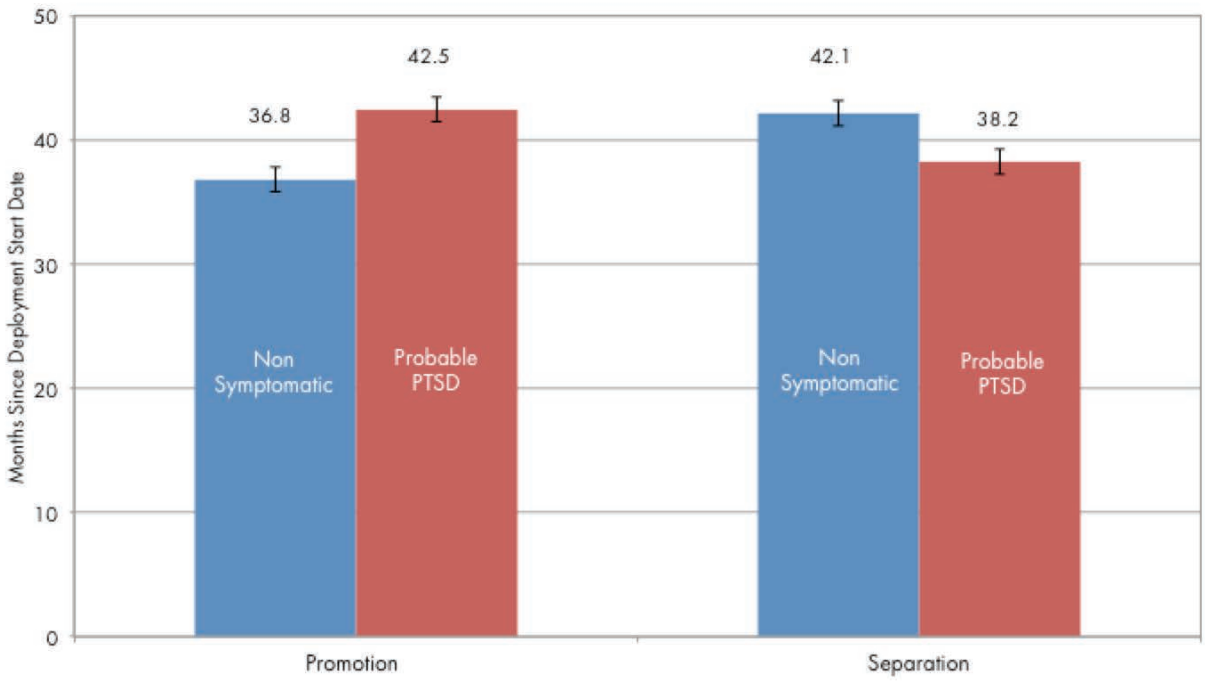
This section reports the results using duration analysis first for time-to-promotion and then for time-to-separation. As previously mentioned, duration analysis is ideal for modeling outcomes that we reasonably expect to observe; therefore, the study focused on promotion and separation in general rather than distinguishing between performance and non-performance separations. The rationale for decomposing separation into two categories is to more closely inspect separations that are possibly related to PTSD-related performance from those that are not. However, because so few servicemembers experience a performance-related separation (and those that do experience the separation at the end of the observation window), modeling this outcome is not an appropriate application of duration regression.

Duration regression also has implications for policy relevance. For example, a small difference in average time-to-event between symptomatic and non-symptomatic servicemembers might not be as actionable or exigent from a policymaking standpoint than a large difference in average time-to-event. Table 7.2 reports the time-to-event estimates for promotion and separation while Figure 7.6 offers a graph depiction.

Table 7.2 Average Predicted Time-to-Event

| | **Promotion** | **Separation** |
|---|---|---|
| Non-symptomatic | 36.8 (1.05) | 42.1 (1.03) |
| Probable PTSD | 42.5 (1.06) | 38.2 (1.04) |

Figure 7.6 Average Predicted Time-to-Promotion and Time-to-Separation (Months)




## Time to Promotion

According to the results (Figure 7.6), on average, servicemembers with probable PTSD promote to E-5 approximately six months slower than their healthy, non-symptomatic peers. Considering the average time to E-5 in the Army ranges between 4.5 and 5 years (54 to 60 months), six months would add a substantial amount of time-in-service. Given that promotion is linked to pay increases, the delay in promotion associated with probable PTSD has financial implications in addition to the career stagnation. These time-to-event estimates accord with the regression results: servicemembers with probable PTSD are less likely to promote, but when they do, promote slower.

## Time to Separation

Servicemembers with probable PTSD, on average, separate about four months sooner than their non-symptomatic peers. Again, the time-to-event estimates accord with the regression results: servicemembers with probable PTSD are more likely to promote, but when they do, separate sooner. When a servicemember separates, he/she presumably

must seek employment in the non-military sector, which incurs both administrative, time, and potentially personal costs. Furthermore, depending on the skill and training mix of separating servicemembers, the Army may encounter a variety of costs to counteract these separations. These costs are elaborated in Chapter Eight: Conclusion and Policy Recommendations.

Probable PTSD is associated with extended time to promotion by about six months. Conversely, probable PTSD is associated with shortened time to separation by about four months. While these results accord with intuition, they also support the logistic regression results. For servicemembers with probable PTSD, longer time to promotion aligns with a lower probability for promotion. Similarly, shorter time to separation aligns with a higher probability for separation.

## Subset Analysis

The previous sections of the chapter focused on a single health status—probable PTSD—this section turns to more multifaceted health statuses. Table 7.3 reports the number of servicemembers who meet criteria for probable PTSD, depressive symptoms, injury, and all possible combinations of these conditions. As described in Chapter Four: Data, due to the addition of the injury question to the PDHA in January 2008, a subset (N=102,453) of the full sample was used for this part of the analysis.[140]

### Comparing the Influence of PTSD Symptoms, Injury, and Depressive Symptoms

Having established the relationship between PTSD and career outcomes, this part of the study broadens the analysis to compare the influence of PTSD with other conditions, in particular, depressive symptoms and deployment-related injury. Duration estimates were calculated for probable PTSD, injury, and depressive symptoms alone in addition to all possible combinations of health conditions. Figures 7.7 and 7.8 depict the average

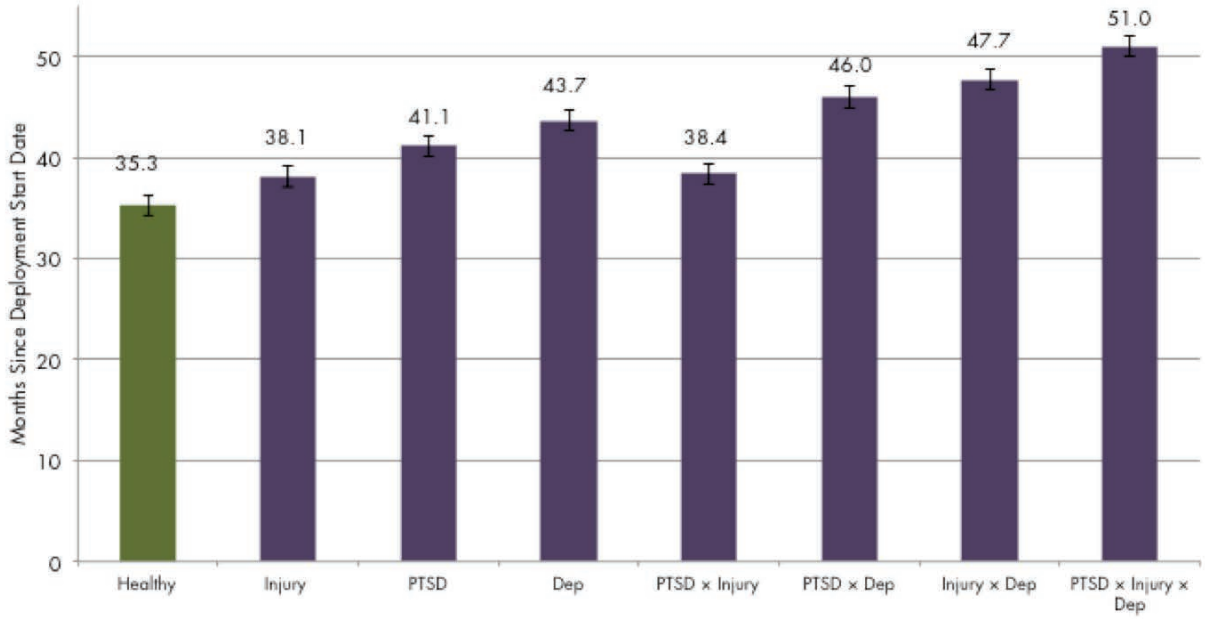
[140] To ensure that the subsample and full sample did not have significantly different patterns in career outcomes, we inspected the relationship between predicted average time to career event and PTSD status. This exercise confirmed that average time-to-event estimates for the subsample follow the same patterns as those of the full sample (i.e. PTSD shortens separation time, lengthens promotion time, and produces similar differences between the non-symptomatic and probable PTSD estimate).

predicted time-to-event estimates, illustrating the varying influences of each condition on promotion and separation.

Table 7.4 Average Predicted Time-to-Promotion (including comorbidities)

| **Condition** | **Mean (SE)** |
|---|---|
| Healthy | 35.3 (1.03) |
| Injury | 38.1 (1.04) |
| PTSD Symptoms | 41.1 (1.05) |
| Depressive Symptoms | 43.7 (1.05) |
| PTSD Symptoms × Injury | 38.4 (1.07) |
| PTSD Symptoms × Depressive Symptoms | 46.0 (1.07) |
| Injury × Depressive Symptoms | 47.7 (1.08) |
| PTSD Symptoms × Injury × Depressive Symptoms | 51.0 (1.09) |

Figure 7.7 Average Predicted Time-to-Promotion by Health Status (Months)




## The Influence of Comorbidities on Promotion

As shown in Figure 7.7, the average predicted time-to-promotion for the non-symptomatic or "healthy" group is about three years (35.3 months). Servicemembers with an injury, PTSD symptoms, and depressive symptoms all have longer estimates for time-to-promotion, with depressive symptoms adding the most time with respect to the non-symptomatic baseline. Next, looking at the scenarios in which these health conditions occur together, interesting findings emerge. When servicemembers experience both PTSD symptoms and injury (38.4), it appears that injury attenuates the time-to-promotion compared to the scenario in which PTSD symptoms are experienced independently (41.1 months).[141] This result suggests that the experience of a deployment-related injury in conjunction with PTSD symptoms is different from that of PTSD symptoms alone. Deployment-related injuries are probably outwardly visible and associated with combat.

[141] The difference in the average predicted time-to-promotion for injury alone and comorbid injury and PTSD symptoms is not statistically significant. However, the difference in average predicted time-to-promotion for injury alone and PTSD symptoms alone *is* statistically significant.

Furthermore, in the military, deployment-related injuries are associated with courage, heroism, or some form of meritorious action, which could conceivably be good for a servicemember's career and bear positively on a servicemember's outlook for promotion. In this sense, the combination of PTSD symptoms and injury might destigmatize or alleviate the experience of PTSD symptoms alone.

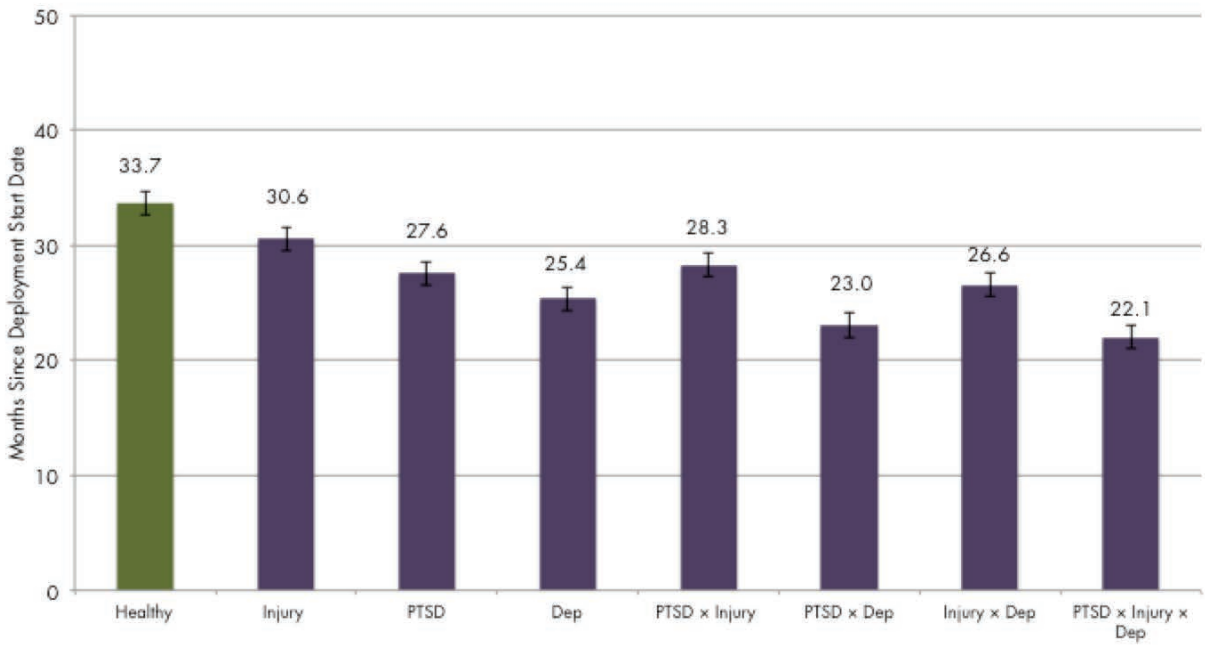
Alternatively, if PTSD is experienced in conjunction with depressive symptoms (46.0), the depressive symptoms seem to exacerbate the delay in promotion associated with PTSD symptoms alone (41.1). Although not the central focus of this study, the interaction of depressive symptoms and injury yields a worse time-to-promotion than if either condition is experienced independently. Finally, in the case of all three conditions experienced simultaneously, the time-to-promotion is the longest (51.0 months). In this worst-case scenario, it appears that the moderating effect of injury (observed with the combination of PTSD symptoms and injury) is overpowered by the interaction of all three conditions.

## Influence of Comorbidities on Separation

Table 7.5 Average Predicted Time-to-Separation (including comorbidities)

| **Condition** | **Mean (SE)** |
|---|---|
| Healthy | 33.7 (1.03) |
| Injury | 30.6 (1.04) |
| PTSD Symptoms | 27.6 (1.05) |
| Depressive Symptoms | 25.4 (1.05) |
| PTSD Symptoms × Injury | 28.3 (1.07) |
| PTSD Symptoms × Depressive Symptoms | 23.0 (1.07) |
| Injury × Depressive Symptoms | 26.6 (1.08) |
| PTSD Symptoms × Injury × Depressive Symptoms | 22.1 (1.08) |

Figure 7.8 Average Predicted Time-to-Separation by Health Status (Months)




In Figure 7.8, opposite the case of promotion, the adverse outcome is a shorter time-to-separation. The non-symptomatic group has an average time-to-separation is about three years (33.7 months). Injury, PTSD symptoms, and depressive symptoms independently behave similarly to the way they did when estimating time-to-promotion. Comparing these three conditions alone, depressive symptoms are associated with the shortest predicted average time-to-separation. Injury, as with promotion, marginally moderates time-to-separation; when PTSD symptoms are experienced with injury the time-to-separation is lower (28.3 months) than when PTSD symptoms are experienced alone (27.6 months). However, the difference between time-to-separation in these scenarios is not appreciable.

Depressive symptoms concomitant with PTSD symptoms (23.0 months) appear to be an impactful combination of health conditions, shortening time to separation more than depressive symptoms and PTSD symptoms would alone. Experiencing both depressive symptoms and injury together is worse than injury alone; however, both depressive symptoms and injury together are better than depressive symptoms alone, suggesting that injury may moderate depressive symptoms in this scenario. Finally, having

all three conditions, as with promotion, is the worst-case scenario with the shortest average predicted time-to-separation (22.1 months).

### The Influence of Comorbidities on Career Outcomes

Table 7.6 summarizes the relationships presented in the preceding sections. Overall, the duration models suggest that PTSD symptoms alone, and particularly coupled with depressive symptoms, have negative implications on promotion and separation.

Table 7.6 Summary of Duration Estimates

| What happens to promotion/separation time with _____ health condition compared to the "healthy" baseline? | | |
|---|---|---|
| Health Condition | Promotion | Separation |
| Injury | ↑ | ↓ |
| PTSD Symptoms | ↑ | ↓ |
| Depressive Symptoms | ↑ | ↓ |
| **Compared to promotion/separation time with just PTSD symptoms, what happens when depressive symptoms and injury occur with PTSD symptoms?** | | |
| PTSD and Depressive Symptoms | ↑ (more than with PTSD or depressive symptoms alone) | ↓ (less than with PTSD or depressive symptoms alone) |
| PTSD and Injury | ↓ (less than with just PTSD symptoms) | ↑ (less than with just PTSD symptoms) |
| PTSD, Depressive Symptoms, and Injury | ↑ (more than all other scenarios) | ↓ (more than all other scenarios) |

While depressive symptoms may confer an aggravating effect on other health conditions, the duration estimates provide evidence that injury may confer a mitigating effect. This pattern is particularly salient when comparing comorbid PTSD and depressive symptoms with comorbid injury and PTSD symptoms; with respect to PTSD symptoms alone, depressive symptoms yield longer time-to-event for promotion and shorter for separation while injury does just the opposite. In fact, with the exception of co-occurring

injury and depressive symptoms with respect to separation, depressive symptoms with any additional health condition make servicemembers worse off than if they experienced depressive symptoms alone. Finally, experiencing all three health conditions produces the least favorable promotion and separation estimates. This pattern suggests that the moderating effect of injury is not strong enough to overcome the exacerbating effect of depressive symptoms on PTSD symptoms.

## Discussion

While PTSD is recognized as a problem within the Army and DoD in general, the scope of PTSD and its consequences on servicemembers is, in concrete terms, relatively unknown. The results of this study provide trends that quantitatively describe the association between OIF/OEF/OND-era PTSD symptoms and career outcomes. Although these results cannot definitively identify PTSD as the singular and direct causal mechanism for these career outcome trends, they provide a thorough analytic foundation on which to further explore the drivers of these trends. The results characterize the association between probable PTSD and career outcomes in two dimensions—the probability to experience a separation or promotion during the observation period, and, the expected average time-to-promotion or separation. Overall, the results suggest that PTSD symptoms contribute to negative repercussions in another area beyond physical and social wellbeing, that is, a servicemember's career outlook.

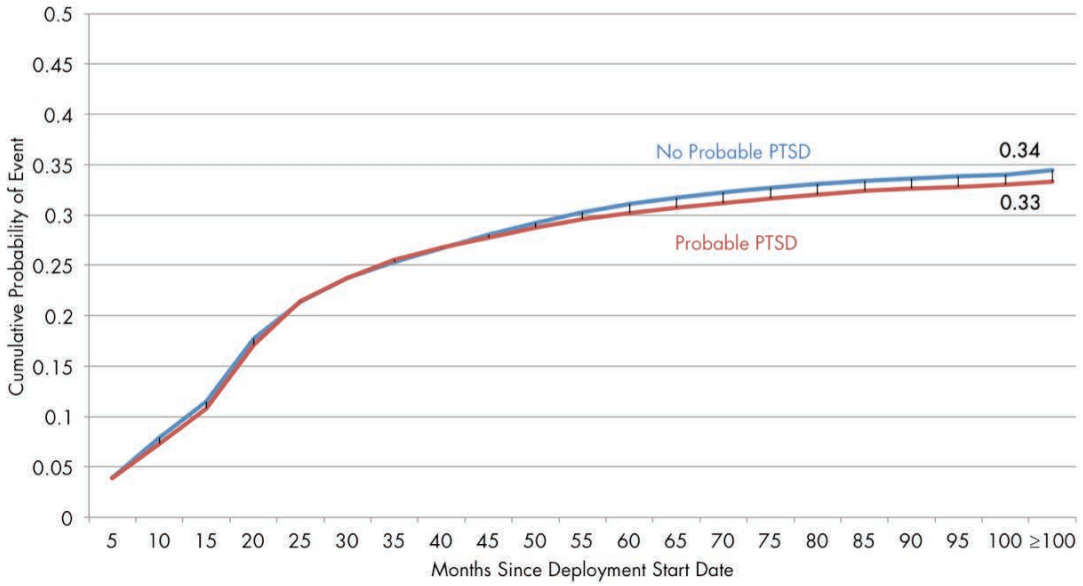
### Differences in Performance Across PTSD Status

Having established a difference in servicemember career outcomes based on PTSD status, this study then endeavored to determine whether servicemembers with probable PTSD are more likely to have negative performance actions compared to their non-symptomatic peers. To accomplish this step, servicemember performance actions were categorized into objective and subjective categories (See Chapter Four: Data) and used as outcome variables. Had the career outcome regression models controlled for performance actions, we risked underestimating the influence of PTSD because symptoms are reasonably correlated with both types of performance actions.

Applying the same logistic regression approach employed when modeling career outcomes, we can map the relationship between performance actions and probable PTSD status. To ensure the performance action is potentially related to deployment exposure, performance actions must have occurred after the start date of the first observable deployment. Performance actions—both objective and subjective—cover a wide swath of negative repercussions for servicemember violations that differ in reason and severity. The fact that one performance action is an automatic consequence due to a clear standard violation while the other requires a commander's assessment, allows us to infer whether leadership may be applying a bias to servicemembers with probable PTSD.

First, we are interested in determining to what extent the presence of PTSD symptoms influences a servicemember's likelihood to have at least one objective performance action on his/her record. Objective performance actions are prompted by violation of Army-stipulated guidelines, which do not rely on a commander's subjective assessment of the servicemember's performance or conduct. Figure 7.9 depicts the likelihood for objective performance action during the observation window.

Figure 7.9 Likelihood of Objective Performance Action, by Probable PTSD Status




Coefficient on probable PTSD is signficant at 5-percent beyond month 65

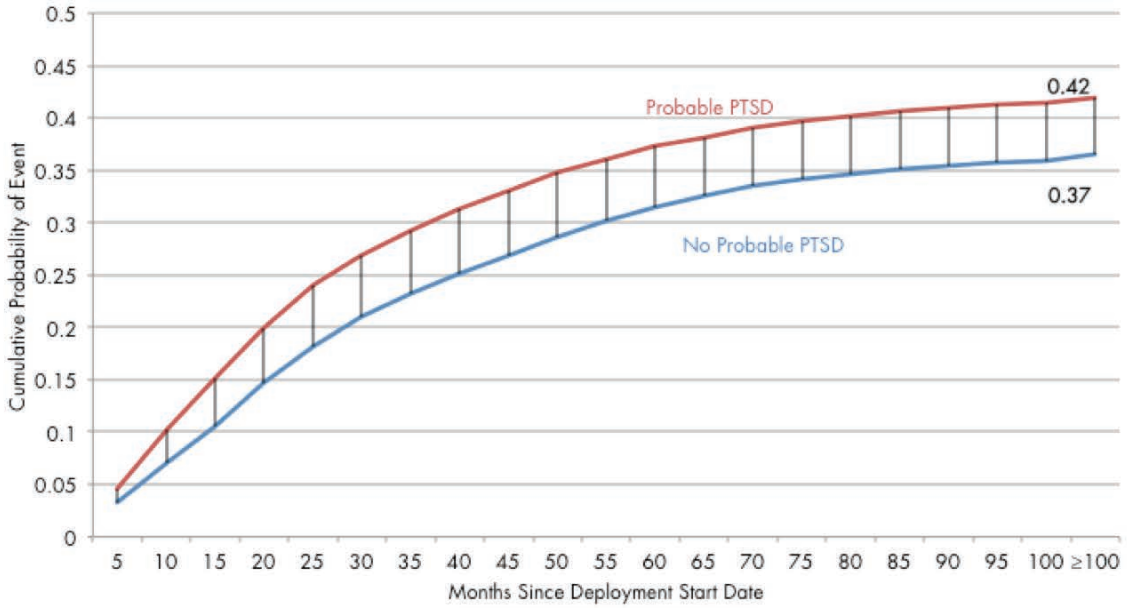
Although the coefficient on probable PTSD status is significant[142], the cumulative probability curves are nearly identical. Ultimately, servicemembers who are non-symptomatic have a likelihood of objective performance action just one percent higher than that of servicemembers with probable PTSD. To employ a specific example, we might anticipate servicemembers who experience PTSD symptoms to perform more poorly on the physical fitness test than their non-symptomatic peers, especially because studies show that PTSD is associated with diminished physical health outcomes (See Chapter Two).[143] However, the regression results suggest that PTSD symptoms are not contributing to a different rate of performance that would result in objective, disciplinary action.

This result sets the basis for interpretation of the likelihood of subjective performance actions, which would include but are not limited to charges such as misconduct, inefficiency, and Article 15, all of which commander review and input. Hypothetically, if likelihood of objective performance actions is essentially equal across probable PTSD status, it is reasonable to assume that servicemembers would have similar likelihoods for subjective performance actions as well. Therefore, in the event that subjective performance actions were substantially more probable for servicemembers with probable PTSD, we might infer commander assessments of these servicemembers are negatively biased.

Figure 7.10 indicates that performance actions are slightly more probable for servicemembers with probable PTSD, reversing the association we observed for objective performance actions. Servicemembers with probable PTSD are two percent more likely than non-symptomatic peers.

Figure 7.10 Likelihood of Subjective Performance Action, by Probable PTSD Status

[142] Coefficient on probable PTSD is significant at the 0.05 or higher. Appendix C provides the coefficient values for each career outcome regression series.
[143] Physical fitness test failures comprise the majority of objective performance actions.




Coefficient on probable PTSD is signficant at 1-percent level for all 5-month intervals

Having observed equal likelihoods of objective performance actions across the non- symptomatic and probable PTSD groups but unequal likelihoods for subjective performance actions, there is weak evidence to suggest that there may differences in how commanders assess servicemembers with probable PTSD differently than their non-symptomatic peers. However, this conclusion does not necessarily suggest the presence of discriminatory or biased assessment. Servicemembers with probable PTSD may, in fact, be more prone to subjective violations that require commander assessment. Additionally, the severity of the subjective violation for a servicemember with probable PTSD, on average, might be greater. In this sense, it is difficult to disentangle the influence of PTSD-related performance and a commander's assessment.

## Summary

While PTSD is recognized as a problem within the Army and DoD in general, the scope of PTSD and its consequences on servicemembers is, in concrete terms, relatively unknown. The results of this study provide trends that quantitatively describe the association between PTSD symptoms and career outcomes. Although these results cannot definitively identify PTSD as the singular and direct causal mechanism for these career outcome trends, they provide a thorough analytic foundation on which to further explore the drivers of these trends.

# CHAPTER EIGHT: CONCLUSION AND POLICY RECOMMENDATIONS

## Overview

In an effort to fill the void of research on how PTSD may affect military career trajectories, this dissertation explored the empirical association between self-reported PTSD symptoms and career outcomes among OIF/OEF-era Army enlisted servicemembers. The following section summarizes the key data-driven findings by corresponding research question, which are reviewed below:

***Question 1***: What is the association between self-reported PTSD symptoms and servicemember career outcomes?

Sub-question: How does this association change when symptoms are attributed to the most recent versus the initial deployment?

***Question 2***: How do career outcomes differ when servicemembers report injury or depressive symptoms compared to PTSD?

Sub-question: Compared to a single condition, what is the association between comorbidities and career outcomes?

## Key Findings

The study findings from analysis to understand the association between PTSD symptoms and career outcomes (Question 1) indicate that symptoms meeting a screen specification threshold indicative of probable PTSD negatively influence servicemember career outcomes. Servicemembers with probable PTSD have a lower likelihood of promoting to E-5 (nine percent less likely) and a higher likelihood of separation (six percent more likely). Compared to their non-symptomatic peers, the likelihood for separation is higher for servicemembers with probable PTSD irrespective of separation reason (non-performance or performance). Furthermore, to dive deeper into the relationship between PTSD symptoms and career outcomes, symptoms lengthen the average time to promotion and reduce the average time to separation by about six and four months, respectively.

Whether symptoms are attributed to the first or most recent deployment (Question 2) does not result in appreciable differences in the likelihood to promote or separate (for either performance and non-performance reasons). Table 8.1 summarizes the relationships between PTSD symptoms and career outcome based on the first and most recent deployment in terms of a servicemember's probability to experience a given career outcome.

Table 8.1 Associations Between PTSD Symptoms and Probability of Career Outcomes

| Compared to non-symptomatic servicemembers, are servicemembers with probable PTSD **more** or **less** likely to: | | |
|---|---|---|
| Career Outcome | First Deployment | Most Recent Deployment |
| Promote | Less | Less |
| Separate | More | More |
| Separate (Non-Performance) | More | More |
| Separate (Performance) | More | More |

As discussed in the literature review, previous studies have demonstrated the link between PTSD symptoms and diminished health outcomes. Although some studies cite specific conditions such as anxiety and hypertension as potential consequences of PTSD, others report less concrete health conditions such as "diminished well-being."[144,145] Beyond health outcomes, studies indicate that PTSD is associated with family strain,

[144] Bedi US, Arora R. Cardiovascular manifestations of posttraumatic stress disorder. J National Med Assoc.

[145] Zatzick, Douglas F. et al. Posttraumatic Stress Disorder and Functioning and Quality of Life Outcomes in a Nationally Representative Sample of Male Vietnam Veterans. *American Journal of Psychiatry 154:12, December 1997*

divorce, and unemployment.[146] In keeping[147] with the findings of these other studies, this study's findings suggest that PTSD symptoms contribute to another negative outcome, that is, stagnation of a servicemember's Army career. Filling a gap in the current literature, this part of the study's findings provides a specific example of one of the potential meanings of the broad general health indicator "diminished well-being." Furthermore, while literature suggests that PTSD symptoms may attenuate and intensify over time, this study did not find evidence to support that the relationship between PTSD symptoms and career outcomes from a servicemembers first deployment is significantly different from that of his/her most recent deployment.[148] Different study circumstances, such as a longer observation window or use of a clinical diagnosis rather than self-reported symptoms, might yield different results.

The findings from the analyses conducted to understand how career outcomes respond to self-reported injury and depressive symptoms compared to PTSD symptoms (Question 2) aligned with the expectation that each condition results in a different career outcome picture. The career outcomes associated with PTSD symptoms (longer time-to-promotion and shorter time-to-separation) are worse than those associated with injury but better than those with depressive symptoms. These findings provide insight into an understudied area of research as the relative contributions of depressive symptoms, PTSD, and injury to military career outcomes has not previously received quantitatively rigorous attention.

The findings from the analyses to determine the relationship between career outcomes and comorbidities (sub-question 2) supported the hypothesis that PTSD symptoms experienced in conjunction with other health conditions manifest differently in terms of their influence on career outcomes. Depressive symptoms delay time-to-promotion and expedite time-to-separation both independently and with PTSD. In contrast to

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[146] Tanielian et al. Invisible Wounds of War: Psychological and Cognitive Injuries, Their Consequences, and Services to Assist Recovery. Santa Monica, CA: RAND Corporation, 2008.
[147] Brady, Kathleen T et al. Comorbidity of Psychiatric Disorders and Posttraumatic Stress Disorder. Journal of Clinical Psychiatry, Vol 61, 2000, 22-32.
[148] Schnurr, P. P., Friedman, M. J., Foy, D. W., Shea, M. T., Hsieh, F. Y., Lavori, P. W., et al. (2003). Randomized trial of trauma-focused group therapy for posttraumatic stress disorder: Results from a department of veterans affairs cooperative study. Arch Gen Psychiatry, 60(5), 481-489

depressive symptoms, injury attenuates the influence of PTSD in the case of comorbid injury and PTSD symptoms. Although previous studies have indicated that depressive symptoms, PTSD symptoms, and injury often co-occur, the current literature is lacking in how these conditions behave, both independently and in combination with one another. From a career outlook perspective, the implications of these findings are especially important for servicemembers who suffer from both depressive and PTSD symptoms, especially as other studies have found that servicemembers with the most severe mental health condition symptoms (including PTSD and depression) are the most sensitive to stigma and least likely to seek treatment.[149] Pairing the findings of this study with conclusions drawn from literature, we can deduce that multiple health conditions—especially mental health conditions—result in functional impairment that is potentially coupled by stigma and resistance to seek treatment, all of which negatively contribute to a servicemember's career trajectory.

## Strengths and Limitations

Although this study was subject to some limitations, there were also a number of strengths that outweighed the constraints imposed by those limitations. In addition to counteracting the handful of limitations with statistical approach techniques and a large dataset, the findings of this study add value and fill gaps in the current literature. The following section outlines the strengths and challenges encountered through the design and execution of this study.

### Large Sample Size

Despite these data challenges, the large sample size limits the influence of outliers. The large sample size also provides the study with sufficient variation across the outcome variable and ample statistical power to accurately detect statistically significant differences between symptomatic and non-symptomatic servicemembers. Finally, a large sample size is more likely to be representative of the population of interest.

[149] Friedman, M. J. (2006). Posttraumatic stress disorder among military returnees from Afghanistan and Iraq. *American Journal of Psychiatry, 163(4),* 586–593.

### Time-Varying Covariates

Although time-varying covariates can create richer data, such data are also computationally and time-intensive. As a result of the longitudinal structure of the data, select variables may change over time. However, the study carefully accounted for potentially changing variables at the given observation points.

### Carry-Over Effects

With longitudinal data, there is a risk for the treatment (i.e., exposure to trauma) of the first period to influence the response variable in the follow-on period. This carry-over effect potentially applies to servicemembers who have completed multiple deployments. More specifically, the experience of the initial deployment may have an influence on the effect of a subsequent deployment on career outcomes. Despite this potential for carry-over effects, the logistic regression models depict no difference in likelihood for career outcomes when the first versus most recent PDHA is used.

### Censoring

At the conclusion of the observation window, a proportion of the sample has unobserved career outcomes. However, the study applied duration modeling to account for not observing the full range of servicemember outcomes.

### Survey Instrument Drawbacks

The PDHA's four PTSD items, drawn from the PC-PTSD, are *not* intended to diagnose but rather efficiently assess risk for PTSD. To this end, we can only infer the presence of clinically significant PTSD based on the psychometric properties of the survey instrument. The diagnostic accuracy of an instrument is a function of both sensitivity (e.g., the true positive rate) and specificity (e.g., the true negative rate), which are inversely related. The sensitivity and specificity of the PC-PTSD items stand in relation to the extended diagnostic criteria of the PCL. The two-symptom cutoff score for the PC-PTSD has a sensitivity of 0.91 and a specificity of 0.87, which is comparable to that of the PCL.

Because many servicemembers are deploying multiple times and repeatedly complete the PC-PTSD, the psychometric properties of this short survey may change over time with frequent exposure to the scale.[150] Additionally, despite being easy to administer, the PC-PTSD cannot differentiate between symptoms that would be classified as sub-threshold and those that would constitute as clinically significant.

## Policy Recommendations

Safeguarding the mental health of servicemembers is an instrumental part of the national responsibility to recruit, train, and maintain a mission-ready force. While most servicemembers return from deployment and gradually ease back into their lives, others must contend with ongoing adverse effects of PTSD on both their personal and professional lives. Today, many OIF- and OEF-era servicemembers rely on the DoD or VA to address the consequences of their deployment-related experiences, chief among which is PTSD. The following section frames the costs and benefits of PTSD treatment and discusses the assumptions under which treatment is cost-effective.

### Costs and Benefits of Evidence-Based Treatment

To address the influence of PTSD symptoms shown in the results, a cost-benefit sensitivity analysis of evidence-based treatment was conducted. With the influence of PTSD symptoms and the potential costs and benefits in mind, the study provides recommendations directed at Army policymakers.

Many modalities for PTSD treatment exist, including pharmacological and psychological approaches. RAND's Invisible Wounds study estimated cost-benefit models of evidence-based treatment using a three-month course of cognitive-behavioral sessions (i.e. prolonged exposure therapy[151,152]) paired with pharmacotherapy as the hypothetical

[150] Bliese, P. D., et al. (2008). "Validating the Primary Care Posttraumatic Stress Disorder Screen and the Posttraumatic Stress Disorder Checklist with servicemembers returning from combat." Journal of Consulting and Clinical Psychology 76(2): 272-281.

[151] Prolonged exposure therapy typically consists of 8-15, 90-minute long sessions during which the individual undergoing treatment recounts the traumatic memories aloud (either through imagination or virtual reality interface) and confronts situations or objects (triggers) related to the trauma that causes fear or anxiety. Over time, through a process called habituation, the PE therapy is intended to disentangle the distress from the traumatic memory and its associated triggers.

intervention. Based off TRICARE reimbursement data, RAND estimated that this course of evidence-based treatment, which includes visits with psychiatrists, primary care physicians, and drugs, on average costs $1,374.48 per servicemember.[153]

The cost of untreated PTSD, however, is estimated to be much higher. Another recent RAND study estimates that OIF/OEF veterans with probable PTSD earn about $7,800 less than their non-symptomatic peers in the four years following deployment.[154] Using this value as a proxy for lost productivity, which does not include the potential costs of PTSD to society such as homelessness, family strain, substance abuse, and suicide, the costs of untreated PTSD symptoms is potentially much higher than the cost of evidence-based treatment.

To draw a more practical picture, the study sample and key assumptions about treatment seeking and treatment response rates are used to scale the potential costs of treatment. Approximately 32,000 servicemembers screened positively for probable PTSD. According to a longitudinal study by Hoge et al. on active-duty Army servicemembers, 50 percent of servicemembers with probable PTSD ultimately receive a diagnosis. Among servicemembers who receive a clinical diagnosis, up to 40 percent express interest in treatment. With these assumptions in mind, it is reasonable to expect approximately 6,400 servicemembers both to meet criteria for a clinical diagnosis and to express interest in treatment. Assuming a 50-percent response to evidence-based treatment among these servicemembers, the estimated lost productivity when treatment is received is approximately $34 million, substantially less than the baseline lost productivity of approximately $50 million. Recognizing that the cost-benefit of treatment is sensitive to the treatment response rate,[155] Figure 8.1 depicts the anticipated lost productivity across

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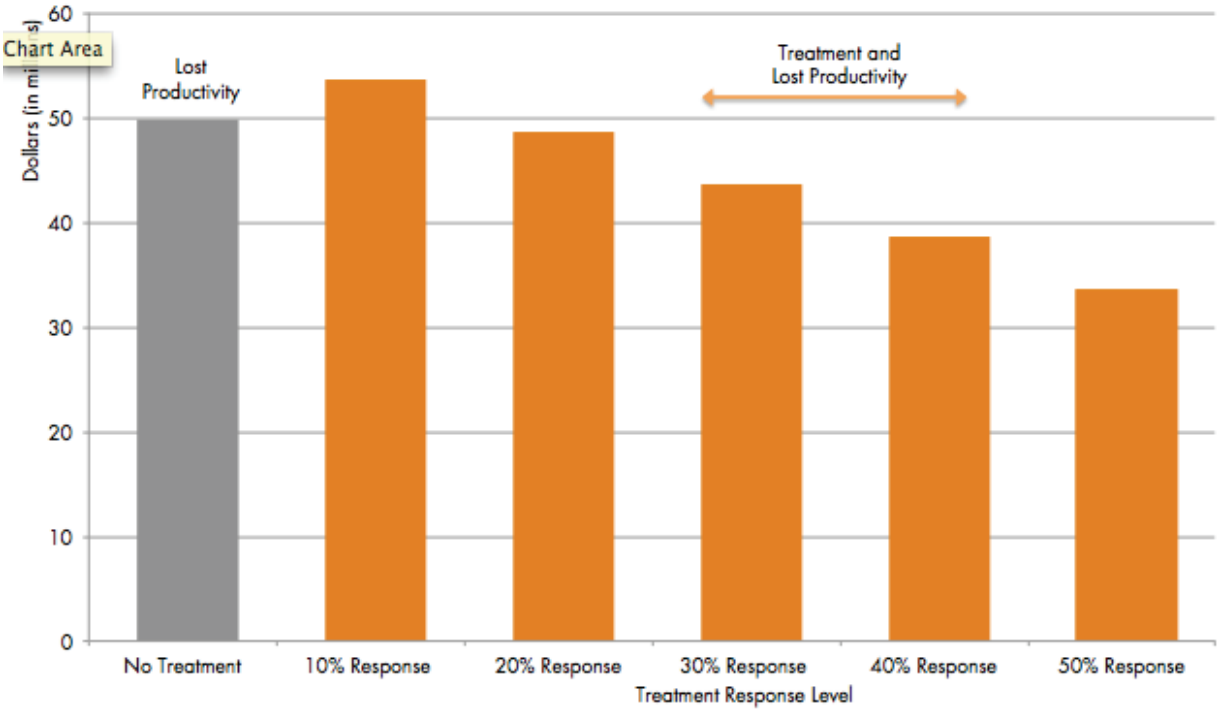
[152] Powers, M. B., et al. (2010). "A meta-analytic review of prolonged exposure for posttraumatic stress disorder." Clinical Psychology Review 30(6): 635-641.
[153] Tanielian et al. Invisible Wounds of War: Psychological and Cognitive Injuries, Their Consequences, and Services to Assist Recovery. Santa Monica, CA: RAND Corporation, 2008. http://www.rand.org/pubs/monographs/MG720.
[154] Loughran, David S. and Paul Heaton. Post-Traumatic Stress Disorder and the Earnings of Military Reservists. Santa Monica, CA: RAND Corporation, 2013. http://www.rand.org/pubs/technical_reports/TR1006.
[155] Treatment response refers to the degree to which servicemembers experience relief from symptoms. Higher levels of treatment response result in less productivity losses.

various levels of treatment response. However, literature suggests that evidence-based treatment is expected to reduce symptoms by 30 to 50 percent.[156] Although the assumptions used to construct Figure 8.1 could benefit from further research on the clinical effectiveness of evidence-based treatment in military populations, even a moderate range of treatment response could reduce productivity losses.

8.1 Projected Losses in Productivity Across Treatment Response Levels




**Preventing Early Separation May Increase Treatment Cost-effectiveness**

The potential benefit of treatment is much higher when the costs of separation are considered. As the results indicate, servicemembers with probable PTSD have a greater likelihood of separation compared to their non-symptomatic peers. There are myriad costs associated with a servicemember's separation. First, when a servicemember separates, the Army loses that servicemember's training, MOS-specific skills, and experience, which is associated with higher productivity. Second, if a servicemember with probable PTSD separates, he/she will incur administrative costs and time to transition to VA health care,

[156] Friedman, M. J. (2006). Posttraumatic stress disorder among military returnees from Afghanistan and Iraq. *American Journal of Psychiatry, 163(4),* 586–593.

during which his/her symptoms may aggravate. Finally, a recent RAND study estimates the costs of recruiting a high-quality servicemember at approximately $11,200 per year[157], excluding training costs. [158] Alternatively, the same study estimates that the cost of reenlisting a comparable servicemember via selective retention incentives ranges from approximately $11,900 to $15,700 per servicemember-year.[159]

Based on this study's findings and cost-benefit analysis, the following section presents recommendations directed at providing treatment for all servicemembers who need it, reducing obstacles to such treatment, and building an infrastructure that encourages servicemembers to seek services when necessary. Ultimately, these recommendations are intended to ameliorate the career and personal consequences of PTSD.

**Recommendation 1**

*Increase the number of professional health providers who are trained and certified to deliver evidence-based treatment*

Overall, the cost of evidence-based treatment pales in comparison to the estimated productivity losses of untreated PTSD and potential separation costs. Thus, from an economic perspective, this dissertation recommends that the Army might consider increasing the number of credentialed health professionals who are equipped to administer evidence-based care for PTSD symptoms. Increasing the number of evidence-based care providers will also accord with the findings of several academic, research, and military organizations. In 2013, the Institute of Medicine reported, "There is a growing demand for PTSD treatment in the DoD."[160] The DoD Mental Health Task Force reported similar findings, stating "DoD mental health staff does not have sufficient

[157] Assuming a four-year enlistment at $44,900, the implied person-year cost is $11,225.
[158] Asch, Beth J., Paul Heaton, James Hosek, Paco Martorell, Curtis Simon and John T. Warner. Cash Incentives and Military Enlistment, Attrition, and Reenlistment. Santa Monica, CA: RAND Corporation, 2010. http://www.rand.org/pubs/monographs/MG950.
[159] Assuming servicemembers has 2-6 years of service.
[160] Institute of Medicine. Treatment for Posttraumatic Stress Disorder in Military and Veteran Populations: Final Assessment. Washington, DC: The National Academies Press, 2014.

resources to provide evidence-based interventions," while RAND's Invisible Wounds report corroborated the specialized healthcare staff shortage with, "Required expansion in trained providers is several years overdue."[161, 162]

While recruiting and staffing providers with the necessary mental health credentials will entail certain fixed costs, given a significant increase in the scale of PTSD treatment across the DoD, the marginal cost of evidence-based care could potentially diminish over time. If the DoD expects the demand for PTSD treatment to continue growing, augmenting the cadre of providers is just one of the ways in which a greater number of servicemembers could receive high-quality treatment. The traditional treatment delivery method, person-to-person interaction, is the most cost-intensive and geographically limiting option. Telemedicine, for instance, offers a cost-effective alternative for treatment delivery that could remotely access a greater number of servicemembers.

To summarize, as the number of OIF/OEF veterans who could benefit from PTSD treatment grows, there is a commensurate need to increase treatment capacity. Aside from the potential economic benefit of evidence-based treatment and support of the academic and military communities for expanded mental health care staff, the DoD has a moral obligation to provide timely and high-quality healthcare for PTSD symptoms servicemembers developed in the course of their military service. Increasing the number of healthcare providers who can provide evidence-based care is critically important to supporting servicemember health; however, a variety of steps can encourage servicemembers to access these services, which the following recommendation addresses.

## Recommendation 2

*Reduce barriers to encourage servicemembers to seek treatment when needed*

[161] Department of Defense Task Force on Mental Health. (2007). An achievable vision: Report of the Department of Defense Task Force on Mental Health. Falls Church, VA: Defense Health Board.
[162] Tanielian et al. Invisible Wounds of War: Psychological and Cognitive Injuries, Their Consequences, and Services to Assist Recovery. Santa Monica, CA: RAND Corporation, 2008. http://www.rand.org/pubs/monographs/MG720.

Increasing capacity in high-quality, effective treatment is just one facet of ensuring access to care. Another important facet is to promote treatment seeking among the servicemembers themselves. Many servicemembers are hesitant or unwilling to seek mental health resources due to an expectation of stigma.[163] A study by Hoge et al. found that servicemembers who screened positive for probable PTSD disproportionately reported concerns over negative treatment if health services were accessed to address their mental health concerns, citing reasons such as "I would be seen as weak," and "my unit leadership might treat me differently."[164] In general, two broad strategies—education and fostering interaction with others who have experienced mental health problems—were found to be efficacious in reducing mental health care stigma. These strategies are commonly combined vis-à-vis programs through which individuals with mental health issues disseminate information and share their personal experiences. An exemplar of this combined approach is The National Alliance on Mental Illness "In Our Own Voice" Program, a large grassroots organization that advocates for access to mental health services through presentations, discussion groups, and support centers.[165]

Some programs target military and veteran populations specifically such as the National Center for PTSD's AboutFace website through which users can view videos of veterans sharing first-hand accounts of their PTSD-related experiences.[166] The Real Warriors Campaign, a Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE) initiative, offers similar multimedia services intended to promote resilience building, facilitate recovery, and support reintegration of returning servicemembers and their families. A 2011 RAND evaluation of The Real Warriors Campaign found that despite its myriad strengths, The Real Warriors Campaign could increase its clarity of goal communication to users to include raising expectations of

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[163] Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. N Engl J Med. 2004; 351(1): 13-22.
[164] Ibid.
[165] "National Alliance on Mental Illness In Our Own Voice" < http://www.nami.org/template.cfm?section=In_Our_Own_Voice>.
[166] "About Face - National Center for PTSD." <http://www.ptsd.va.gov/apps/aboutface/>.

positive outcomes for treatment seeking.[167] The efforts of AboutFace and The Real Warriors Campaign to engage servicemembers represent a growing trend to both accurately and positively portray the benefits of mental health services. Ultimately, to be optimally responsive to the evolving needs of the OIF/OEF veteran cohort, additional formal evaluations of these programs would be helpful in identifying the most effective and agile strategies.

Ultimately, reducing barriers to treatment will require commander participation. Recommendation 3 provides top-level suggestions to involve commanders in the process of both educating and encouraging servicemembers to access treatment when needed.

### Recommendation 3

*Formalize policies directed at leadership to provide uniform guidance on accessing mental health resources*

In addition to providing sufficient treatment capacity and encouraging servicemembers to seek treatment when needed, commanders can play a critical role to servicemembers who seek advice or guidance. Commanders should be regularly updated on the availability of mental health resources at facilities accessible to their troops so they can disseminate the necessary information. Furthermore, commanders would be most effective in dispensing treatment advice if they possess a functional knowledge of PTSD and its potential impact on performance. In addition, commanders would receive training on how to seamlessly integrate servicemembers who have received treatment back into units. Eventually, commanders should be equipped to provide informed guidance to troops who are experiencing significant psychological or emotional distress, for example when a servicemember considers treatment or returns to his/her unit following treatment.

Select DoD policies are already in place to address the potential of stigma when servicemembers approach leadership for guidance on mental health services. For example, DoD Instruction 6490.08 (2011) states, "Commanders must also reduce

[167] Rea Acosta, Joie, et al. "Assessment of the Content, Design, and Dissemination of the Real Warriors Campaign." The RAND Corporation, 2012. Web. 26 May 2013. <http://www.rand.org/pubs/technical_reports/TR1176>.

stigma through positive regard for those who seek mental health assistance to restore and maintain their mission readiness, just as they would view someone seeking treatment for any other medical issue." Expansion of these policies to include training seminars that enable leadership to better familiarize themselves with base-specific facilities as well as the needs of individuals experiencing PTSD may ease the process for servicemembers seeking mental health services while simultaneously reducing the potential for stigma.

### Recommendation 4

*Conduct additional research to better understand the needs of servicemembers currently experiencing or at-risk of developing PTSD symptoms*

The dissertation is intended as an exploratory study of the association between self-reported PTSD symptoms and servicemember career outcomes within the Army. Although the results of this study suggest that PTSD has negative implications for servicemember career outcomes, additional research will help policymakers understand the multifaceted ramifications of PTSD and how to potentially address these ramifications. The next section provides suggested areas of further research in the following order: servicemember risk for PTSD, the spectrum of PTSD symptoms, PTSD-related stigma, and efforts to minimize the impact of PTSD.

First and foremost, additional research is needed to map the landscape of pre-existing experiences that influence a servicemember's susceptibility to PTSD. For example, understanding how a trauma prior to military service influences the likelihood of developing PTSD after a deployment-related trauma could inform screening and resiliency building efforts. DoD resilience building programs, for example, can apply to both prevention (before exposure to stress) and treatment (recovering from the harmful effects of stress) but are backed by little empirical evidence of effectiveness.[168] Intrinsic personality factors might also influence a servicemember's risk for PTSD. Although

[168] Meredith, Lisa S., Cathy D. Sherbourne, Sarah J. Gaillot, Lydia Hansell, Hans V. Ritschard, Andrew M. Parker and Glenda Wrenn. Promoting Psychological Resilience in the U.S. Military. Santa Monica, CA: RAND Corporation, 2011.

personality factors are limited to self-assessment, these metrics would be helpful in developing an exposure risk profile for PTSD for pre-deployment servicemembers. A better understanding of the effect of deployments from other wars or conflicts, marked by their own unique environmental hazards and exposure types, could also further contextualize a servicemember's risk for PTSD.

Secondly, PTSD symptoms occur on a spectrum, ranging from sub-threshold symptoms to symptoms that constitute a clinical diagnosis. Although there is a growing body of research on the relationship between PTSD and functional impairment among military servicemembers,[169] less attention has been dedicated to the effect of sub-threshold symptoms on job performance. Sub-threshold symptoms are typically mild, masked, atypical, or brief symptoms that fall below the standardized diagnostic criteria. For the servicemembers in this sample, a positive PTSD screen indicates a need for further evaluation to make a diagnostic decision but the percent of servicemembers who would receive a formal PTSD diagnosis is unknown. While servicemembers who have been clinically diagnosed with PTSD may experience more immediately severe health and career consequences, the impact of sub-threshold symptoms may be more insidious and slowly revealed. To discern the relative effects of sub-threshold symptoms versus formal diagnoses on occupational outcomes, more research is required.

Third, the inclusion of a metric for stigma and senior commander ratings in similar, future analytic research would provide a valuable contribution to the current body of knowledge. The results of this study provide a foundation from which to explore the entangled effects of PTSD-related stigma and PTSD-related performance. Identifying suitable metrics for perceived and actual stigma, especially at the individual servicemember (as opposed to unit) level, is necessary to distinguish the effect of PTSD symptoms on performance from potential discrimination. To this end, data from formal evaluation performance ratings, which are used for promotion selection, would be highly useful in controlling for servicemember performance when examining trends in career

[169] Thomas JL, Wilk JE, Riviere LA, McGurk D, Castro CA, Hoge CW. Prevalence of Mental Health Problems and Functional Impairment Among Active Component and National Guard Soldiers 3 and 12 Months Following Combat in Iraq. *Arch Gen Psychiatry*.2010;67(6):614-623.

outcomes.

Finally, exploring the benefits of resiliency training prior to exposure to deployment exposure could potentially alleviate the impact of PTSD symptoms. When possible, focusing on prevention of a condition rather than diagnoses and treatment is preferable. In the case of PTSD, even a modest reduction in the number of servicemembers suffering from PTSD would preserve the health and readiness of servicemembers and alleviate the already overburdened military and VA healthcare systems.[170] Building resilience, often defined as the maintenance of normal functioning, especially in the face of adversity, is one method through which Army leaders have begun to focus prevention efforts. One example of resiliency building is the Comprehensive Soldier Fitness (CSF) Program, which provides tailored, online self-development tools based on each servicemember self-assessment of emotional, social, spiritual, and family strengths.[171]

Initial program evaluations of the CSF program revealed statistically significant increases in psychological health and resilience.[172] Utilizing such findings can help direct DoD funds into a portfolio of programs—both prevention and treatment—that will benefit servicemembers not just after exposure to trauma but also prior. Limited quantitative evidence regarding the effectiveness of resiliency-building programs calls for continued research in this area. Ultimately, increased attention on the sometimes overlooked area of PTSD mitigation may offer considerable benefit to future servicemembers, especially those who are particularly vulnerable to PTSD.

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[170] Institute of Medicine. *Returning Home from Iraq and Afghanistan: Assessment of Readjustment Needs of Veterans, Service Members, and Their Families*. Washington, DC: The National Academies Press, 2013.

[171] The CSF is comprised of four main components: 1) assessment of emotional, social, family, and spiritual fitness 2) individualized learning modules to improve fitness in these domains 3) formal resilience training and 4) training of Army master resilience restrainers (MRTs) to instill enhanced skills in their subordinates. An empirical evaluation of the train-the-trainer component of CSF revealed a statistically significant increase in psychological health and resilience. The study also found that training provided by MRTs is most effective among the 18-24 year old servicemembers who endorsed perceived support from Command and received training in a formal setting (e.g. classroom).

[172] Lester, Paul, P.D. Harms, Mitchel Herian, Dina Krasikova, and Sarah Beal. "Report #3: Longitudinal Analysis of the Impact of Master Resilience Training on Self-Reported Resilience and Psychological Health Data."*COMPREHENSIVE SOLDIER STRONG BODIES* (2011): n. pag. Department of the Army, Comprehensive Soldier Fitness. Web. <http://www.ppc.sas.upenn.edu/csftechreport3mrt.pdf>.

## Conclusion

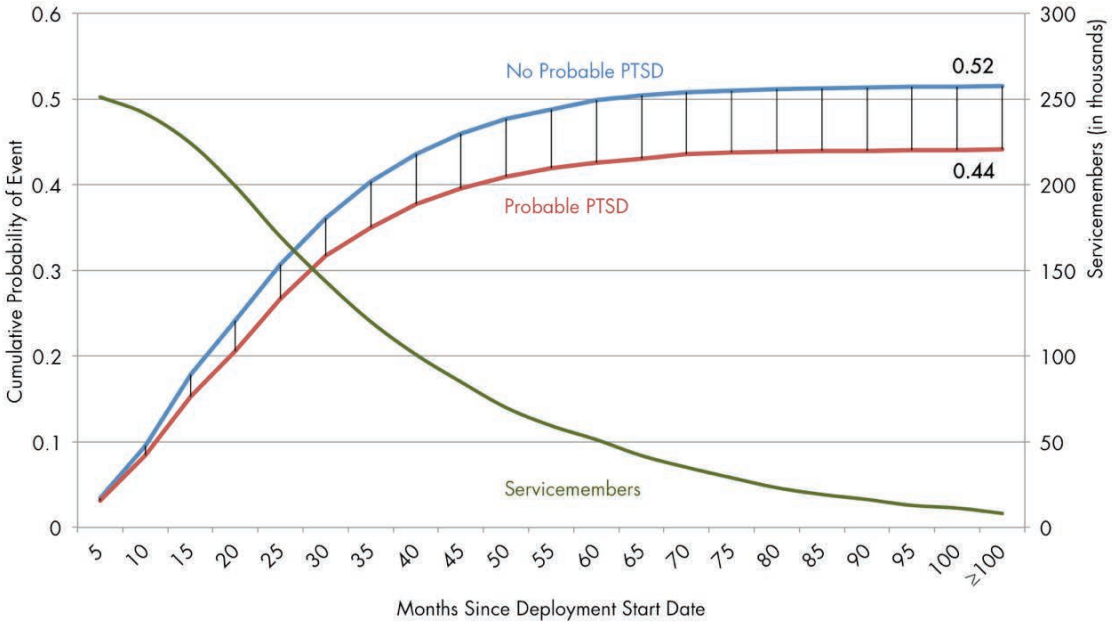
In the past decade, thousands of U.S. servicemembers have provided support to the wars in Iraq and Afghanistan, facing myriad risks unique to these deployed environments. Many have returned home to contend with yet another challenge: PTSD. For servicemembers suffering from symptoms, many dimensions of their lives may be negatively impacted. A variety of studies have already substantiated the relationship between PTSD and negative health outcomes, strain on families, and perceptions of stigma. This study adds to that body of research, highlighting another facet of servicemember life—their careers—potentially diminished by PTSD symptoms.

War and conflict will always produce trauma; in the past, efforts to treat PTSD have ranged from non-existent to suboptimal. Fortunately, for the cohort of veterans who have served in Iraq and Afghanistan, high-quality treatment of these servicemembers is viewed as a priority. Despite efforts to provide all servicemembers who require treatment with high-quality, evidence-based care, the infrastructure to support this goal is still lacking today. The findings and recommendations featured in this study add to the information policymakers have at their disposal as we continue to address the issue of PTSD and how it affects our servicemembers.

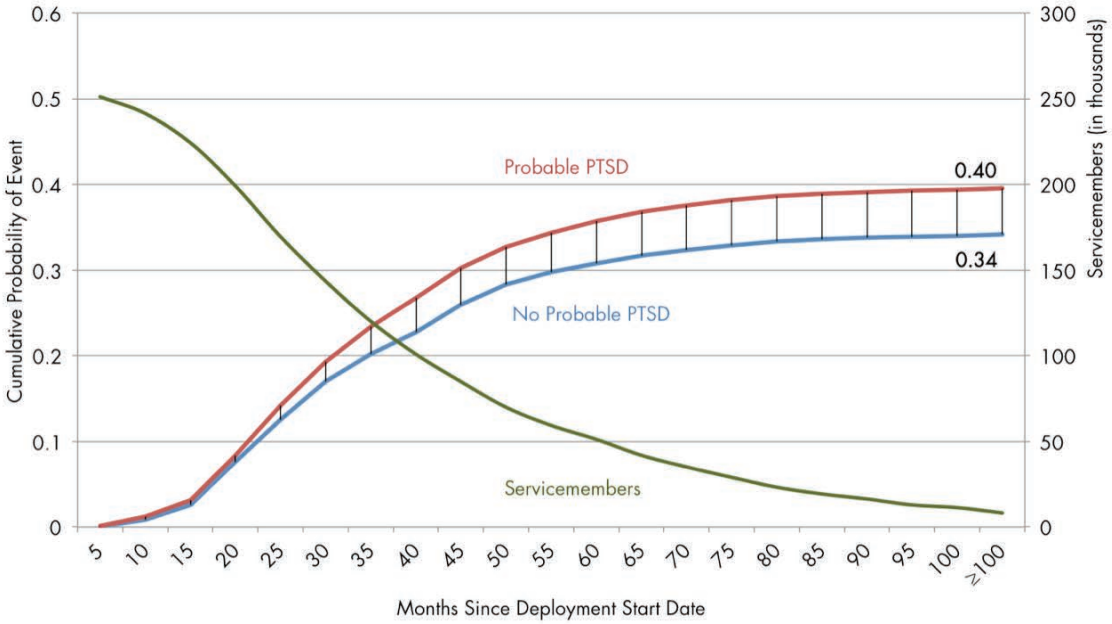
## Appendix A: Probability of Career Outcomes (Most Recent Deployment)

Because each deployment carries its own exposure risk, in addition to the supposition that a servicemember's first deployment may change the experiential nature of subsequent deployments, the study reports two sets of logistic regression estimates based on first and most recent deployments. The same stagnating effect on promotion and expediting effect on separation are observed when the PDHA from the first and most recent deployments are used.

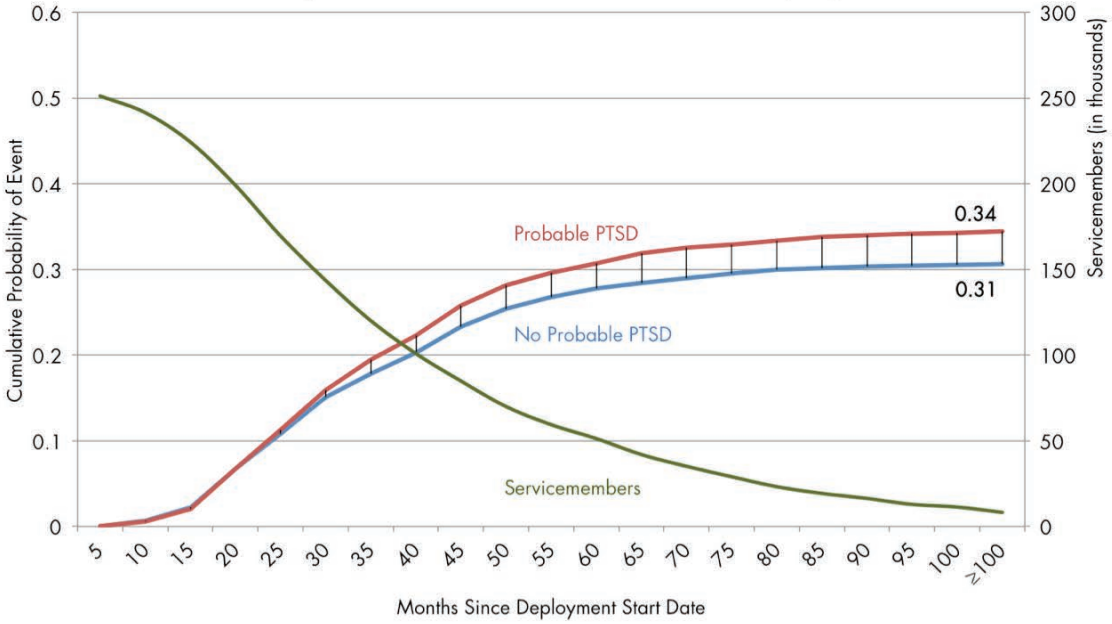
***E-5 Promotion*** Based on Most Recent Deployment PTSD Status



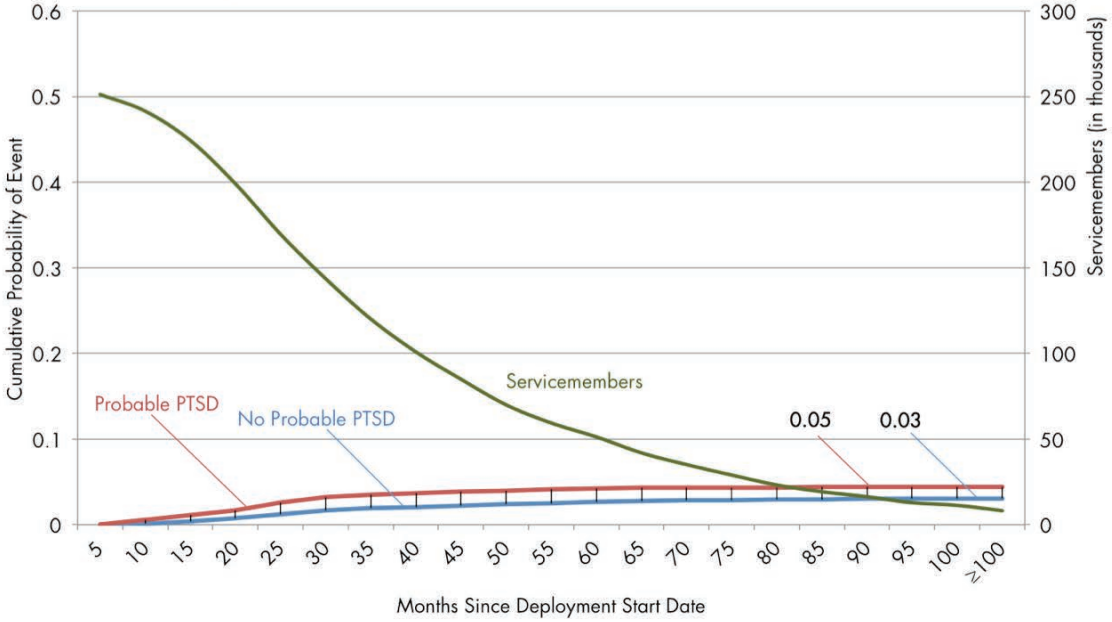
***Total Separation*** Based on Most Recent Deployment PTSD Status




***Non Performance*** Separation Based on Most Recent Deployment PTSD Status



***Performance Separation*** Based on Most Recent Deployment PTSD Status



## Appendix B: PC-PTSD Validation

To determine the diagnostic efficiency of the PC-PTSD and PCL as screening tools, a 2008 study by Bliese and Hoge used a population comprised of U.S. Army servicemembers returning from year-long combat deployments in Iraq. Because the demographic and deployment characteristics of these populations are similar, it is reasonable to assume the instrument validation results are generalizable to this study's servicemember sample. To determine probable PTSD status, the dissertation used the PC-PTSD questions featured on the PDHA. The following section provides more detail on the properties of the PC-PTSD and alternative cut-off points.

The area under the curve (AUC), calculated based on unweighted data, was estimated as a summary of the PC-PTSD test accuracy. Examining the weighted and unweighted diagnostic efficiency estimates, acceptable sensitivity and specificity was found for cutoff values of two and three "yes" responses, with two "yes" responses corresponding to higher sensitivity and three "yes" responses corresponding to high specificity. Additionally, through the use of both one- and two-parameter item response theory (IRT) models for dichotomous outcomes, the study determined the difficulty and discrimination levels of each of the four PC-PTSD questions.[173]

Regarding item discrimination, which indicates the extent to which a positive response on a particular item corresponds to a PTSD diagnosis, Item 2 (3.82 [2.70, 5.63]) was significantly higher than the discrimination parameters for both Item 3 (1.75 [1.33, 2.25]) and Item 4 (2.43 [1.82, 3.21]) but not significantly different from that of Item 1 (3.26 [2.38, 4.73]). IRT revealed that Item 2 uniquely has high discrimination and high difficulty, suggesting that Item 2 alone may be an efficient measure at differentiating those individuals with moderate vs. elevated PTSD levels. To explore the screen

efficiency of Item 2 alone, researchers used Item 2 as single-item screen on the instrument validation sample and determined an unweighted sensitivity of .80 and a

[173] Reise, S. P., & Waller, N. G. (2002). Item response theory for dichotomous assessment data. In F. Drasgow & N. Schmitt (Eds.), *Measuring and analyzing behavior in organizations: Advances in measurement and data analysis* (pp. 88–122). San Francisco: Jossey-Bass.

specificity of .84. Usefully, the single-item screen has a higher sensitivity than the .76 associated with the three "yes" responses in addition to a higher specificity than the .71 associated with the two "yes" responses. In this way, the Item-2 screen alone provides a viable alternative to the two and three item "yes" response cutoff.[174]

Overall, the Bliese and Hoge study indicated that the PC-PTSD has both reasonable sensitivity and specificity when an individual endorses either two or three items. Item 2—avoidance symptoms—proved to be the most discriminate item in the PC-PTSD, which also holds true for the PCL item corresponding to avoidance symptoms. At a cutoff value between 30 to 34, the PCL maintains specificity values at or near .90 while specificity values remain above .70. Although the PCL slightly outperforms the PC-PTSD in this cutoff range, the tradeoff in question volume may not be worth the marginal gains in sensitivity and specificity, especially for large-scale screening efforts such as post-deployment servicemember cohorts. For these types of screening efforts use of the brief PC-PTSD items is ideal, especially when a survey such as the PDHA is screening for symptoms related to multiple conditions. For example, integrating 17 PCL items with other screen questions related to depression, traumatic brain injury, and alcohol results in a lengthy survey, creating potential problems for survey specificity and increasing the likelihood that servicemembers will lose focus when answering screen questions.

By identifying servicemembers who have endorsed at least two PTSD screen items, this study offers a rigorous method for determining servicemembers with an elevated likelihood for a clinical PTSD diagnosis. However, given the high discrimination of Item 2—avoidance symptoms—this study also inspects the promotion outcomes of servicemembers who have answered positively to Item 2 exclusively. Although a more lenient criterion, the instrument validation study highlights the single-item screen potential of Item 2 as a viable alternative to the two-item response cutoff. Initially, the study uses both screen specifications to descriptively determine variation in career outcomes for servicemembers based on probable PTSD status. For the results presented in Chapter

[174] Bliese, P. D., et al. (2008). "Validating the Primary Care Posttraumatic Stress Disorder Screen and the Posttraumatic Stress Disorder Checklist with servicemembers returning from combat." Journal of Consulting and Clinical Psychology 76(2): 272-281.

Seven, the two-symptom screen was used as specification for probable PTSD status.

From a policy perspective, it is important to note that a one-item screen, if used practically in a military context, also increases the potential for triggering more in-depth psychological evaluation than a multi-item screen would. As a result, implementation costs increase and resources may be spread thin over a larger number of servicemembers than necessary. However, comparing servicemember promotion outcomes in this study will offer preliminary results that policymakers may consider when revising post-deployment screen specifications in the future.

# Appendix C: Regression Output

## First Deployment

### Probability of Promotion – (2-symptom screen specification)

| Variable | Estimate | Std. Error | Chi-Sqr | P-Value | Exp(Est) |
|---|---|---|---|---|---|
| Intercept | -1.061 | 0.1756 | 36.49 | <.0001 | 0.346 |
| Probable PTSD | -0.3567 | 0.0226 | 249.03 | <.0001 | 0.7 |
| Has children at deployment start | 0.1046 | 0.0207 | 25.54 | <.0001 | 1.11 |
| Experienced trauma | 0.2265 | 0.0155 | 213.47 | <.0001 | 1.254 |
| Service member spouse | 0.8648 | 0.0292 | 878.68 | <.0001 | 2.375 |
| Combat Arms MOS | -0.3911 | 0.016 | 598.72 | <.0001 | 0.676 |
| Less than high school diploma | -0.4146 | 0.0198 | 437.92 | <.0001 | 0.661 |
| Associates degree | 0.4211 | 0.0565 | 55.61 | <.0001 | 1.524 |
| Undergraduate degree | 0.483 | 0.0553 | 76.18 | <.0001 | 1.621 |
| Log (Age at deployment) | 0.2175 | 0.0558 | 15.22 | <.0001 | 1.243 |
| Not married at deployment start | -0.5225 | 0.0169 | 954.59 | <.0001 | 0.593 |
| African-American | 0.2694 | 0.0216 | 155.00 | <.0001 | 1.309 |
| Hispanic | 0.1841 | 0.0227 | 65.97 | <.0001 | 1.202 |
| Male | 0.2189 | 0.0256 | 73.12 | <.0001 | 1.245 |
| AFQT Quadratic Transform Capped | 0.894 | 0.044 | 412.75 | <.0001 | 2.445 |
| Rank(E4) - Deployed after 1 months | 0.3793 | 0.048 | 62.52 | <.0001 | 1.461 |
| Rank(E4) - Deployed after 2 months | 0.3611 | 0.0494 | 53.37 | <.0001 | 1.435 |
| Rank(E4) - Deployed after 3 months | 0.3795 | 0.0494 | 59.01 | <.0001 | 1.461 |
| Rank(E4) - Deployed after 4 months | 0.4759 | 0.0532 | 79.93 | <.0001 | 1.609 |
| Rank(E4) - Deployed after 5 months | 0.4256 | 0.0524 | 66.02 | <.0001 | 1.531 |
| Rank(E4) - Deployed after 6 months | 0.3302 | 0.0517 | 40.78 | <.0001 | 1.391 |
| Rank(E4) - Deployed after 7 months | 0.5025 | 0.0551 | 83.10 | <.0001 | 1.653 |
| Rank(E4) - Deployed after 8 months | 0.4924 | 0.0571 | 74.29 | <.0001 | 1.636 |
| Rank(E4) - Deployed after 9 months | 0.569 | 0.0596 | 91.28 | <.0001 | 1.767 |
| Rank(E4) - Deployed after 10 months | 0.3878 | 0.0615 | 39.81 | <.0001 | 1.474 |
| Rank(E4) - Deployed after 11 months | 0.603 | 0.0643 | 87.89 | <.0001 | 1.828 |
| Rank(E4) - Deployed after 12 months | 0.5064 | 0.0631 | 64.48 | <.0001 | 1.659 |
| Rank(E4) - Deployed after 13 months | 0.5359 | 0.0655 | 66.95 | <.0001 | 1.709 |
| Rank(E4) - Deployed after 14 months | 0.5125 | 0.067 | 58.55 | <.0001 | 1.669 |
| Rank(E4) - Deployed after 15 months | 0.5023 | 0.0724 | 48.09 | <.0001 | 1.653 |
| Rank(E4) - Deployed after 16 months | 0.5243 | 0.0746 | 49.37 | <.0001 | 1.689 |
| Rank(E4) - Deployed after 17 months | 0.6226 | 0.077 | 65.46 | <.0001 | 1.864 |

Rank E1 to E3 and some E4 dummy variables are excluded from the output

**Probability of Separation – (2-symptom screen specification)**

| Variable | Estimate | Std. Error | Chi-Sqr | P-Value | Exp(Est) |
|---|---|---|---|---|---|
| Intercept | -0.4519 | 0.0518 | 76.1921 | <.0001 | 0.636 |
| Probable PTSD | 0.245 | 0.0225 | 118.1167 | <.0001 | 1.278 |
| Has children at deployment start | -0.2274 | 0.0206 | 121.5599 | <.0001 | 0.797 |
| Experienced Trauma | -0.0927 | 0.0157 | 34.9149 | <.0001 | 0.912 |
| Service member spouse | -0.7775 | 0.0313 | 615.7697 | <.0001 | 0.460 |
| High school diploma | 0.4861 | 0.0441 | 121.4014 | <.0001 | 1.626 |
| Some college | 0.2801 | 0.0603 | 21.5996 | <.0001 | 1.323 |
| High school diploma equivalency | 0.3448 | 0.0413 | 69.8093 | <.0001 | 1.412 |
| Undergraduate degree | -0.3868 | 0.0698 | 30.7172 | <.0001 | 0.679 |
| Married at deployment start | 0.4676 | 0.0170 | 752.6711 | <.0001 | 1.596 |
| African-American | -0.2872 | 0.0248 | 134.0526 | <.0001 | 0.750 |
| Caucasian | 0.0683 | 0.0180 | 14.3155 | 0.0002 | 1.071 |
| Male | -0.4663 | 0.0251 | 345.3974 | <.0001 | 0.627 |
| AFQT Quadratic Transform | -0.4218 | 0.0510 | 68.3538 | <.0001 | 0.656 |
| AFQT Quadratic Transform Capped | -0.3438 | 0.1030 | 11.1385 | 0.0008 | 0.709 |
| Rank(E4) - Deployed after 4 months | -0.2127 | 0.0553 | 14.7745 | 0.0001 | 0.808 |
| Rank(E4) - Deployed after 9 months | -0.2183 | 0.0619 | 12.4418 | 0.0004 | 0.804 |
| Rank(E4) - Deployed after 11 months | -0.2549 | 0.0671 | 14.4371 | 0.0001 | 0.775 |

### Most Recent Deployment

**Probability of Promotion – (2-symptom screen specification)**

| Variable | Estimate | Std. Error | Chi-Sqr | P-Value | Exp(Est) |
|---|---|---|---|---|---|
| Intercept | -0.8705 | 0.1794 | 23.5362 | <.0001 | 0.419 |
| Probable PTSD | -0.2968 | 0.0221 | 179.8808 | <.0001 | 0.743 |
| Has children at deployment start | 0.1258 | 0.0209 | 36.1274 | <.0001 | 1.134 |
| Experienced Trauma | 0.2064 | 0.0157 | 173.5342 | <.0001 | 1.229 |
| Service member spouse | 0.8762 | 0.0296 | 873.5513 | <.0001 | 2.402 |
| Combat Service Support MOS | -0.4063 | 0.0162 | 625.9462 | <.0001 | 0.666 |
| Less than high school diploma | 0.187 | 0.0604 | 9.5983 | 0.0019 | 1.206 |
| High school diploma | -0.3722 | 0.0205 | 329.5286 | <.0001 | 0.689 |
| Associates degree | 0.3039 | 0.0563 | 29.1828 | <.0001 | 1.355 |
| Undergraduate degree | 0.6522 | 0.0544 | 143.8251 | <.0001 | 1.92 |
| Log (Age at deployment) | 0.2627 | 0.0565 | 21.6072 | <.0001 | 1.3 |
| Not married at deployment start | -0.4983 | 0.0172 | 837.8751 | <.0001 | 0.608 |
| African-American | 0.2595 | 0.022 | 139.3798 | <.0001 | 1.296 |
| Hispanic | 0.1867 | 0.0231 | 65.5113 | <.0001 | 1.205 |
| Other race | 0.4125 | 0.1408 | 8.5841 | 0.0034 | 1.511 |
| Male | 0.2287 | 0.0259 | 78.0436 | <.0001 | 1.257 |
| AFQT Quadratic Transform Capped | 0.8069 | 0.0448 | 323.8441 | <.0001 | 2.241 |
| Rank(E4) - Deployed after 5 months | -2.4429 | 1.0303 | 5.6215 | 0.0177 | 0.087 |
| Rank(E4) - Deployed after 6 months | -2.0769 | 0.5182 | 16.0646 | <.0001 | 0.125 |
| Rank(E4) - Deployed after 7 months | -2.0814 | 0.4619 | 20.3097 | <.0001 | 0.125 |
| Rank(E4) - Deployed after 8 months | -1.0715 | 0.2746 | 15.223 | <.0001 | 0.342 |
| Rank(E4) - Deployed after 9 months | 0.7845 | 0.1561 | 25.2449 | <.0001 | 2.191 |
| Rank(E4) - Deployed after 10 months | 1.2435 | 0.1351 | 84.6946 | <.0001 | 3.468 |
| Rank(E4) - Deployed after 11 months | 1.2641 | 0.1355 | 87.093 | <.0001 | 3.54 |
| Rank(E4) - Deployed after 13 months | 1.5726 | 0.1444 | 118.5893 | <.0001 | 4.819 |
| Rank(E4) - Deployed after 14 months | 1.376 | 0.1479 | 86.5034 | <.0001 | 3.959 |
| Rank(E4) - Deployed after 15 months | 1.6769 | 0.1553 | 116.5922 | <.0001 | 5.349 |

**Probability of Separation – (2-symptom screen specification)**

| Variable | Estimate | Std. Error | Chi-Sqr | P-Value | Exp(Est) |
|---|---|---|---|---|---|
| Intercept | 0.2721 | 0.1847 | 2.17 | 0.1406 | 1.313 |
| Probable PTSD | 0.2318 | 0.0221 | 110.45 | <.0001 | 1.261 |
| Has children at deployment start | -0.2286 | 0.0219 | 109.42 | <.0001 | 0.796 |
| Experienced Trauma | -0.0522 | 0.0159 | 10.83 | 0.001 | 0.949 |
| Service member spouse | -0.8053 | 0.0317 | 645.00 | <.0001 | 0.447 |
| Combat Service Support MOS | 0.2489 | 0.0163 | 232.81 | <.0001 | 1.283 |
| Less than high school diploma | -0.1742 | 0.0634 | 7.56 | 0.006 | 0.84 |
| High school diploma | 0.0982 | 0.0202 | 23.72 | <.0001 | 1.103 |
| Associates degree | -0.2844 | 0.0597 | 22.72 | <.0001 | 0.752 |
| Undergraduate degree | -0.6426 | 0.0593 | 117.32 | <.0001 | 0.526 |
| Log (Age at deployment) | -0.2089 | 0.058 | 12.95 | 0.0003 | 0.812 |
| Not married at deployment start | 0.4405 | 0.0175 | 636.13 | <.0001 | 1.554 |
| African-American | -0.315 | 0.0253 | 155.28 | <.0001 | 0.73 |
| Caucasian | 0.0789 | 0.0183 | 18.62 | <.0001 | 1.082 |
| Male | -0.4122 | 0.0257 | 256.34 | <.0001 | 0.662 |
| AFQT Quadratic Transform | -0.3166 | 0.0518 | 37.37 | <.0001 | 0.729 |
| AFQT Quadratic Transform Capped | -0.2758 | 0.1042 | 7.00 | 0.0081 | 0.759 |
| Rank(E4) - Deployed after 10 months | -1.3137 | 0.1574 | 69.68 | <.0001 | 0.269 |
| Rank(E4) - Deployed after 11 months | -1.1352 | 0.1511 | 56.44 | <.0001 | 0.321 |
| Rank(E4) - Deployed after 12 months | -1.3532 | 0.1635 | 68.53 | <.0001 | 0.258 |
| Rank(E4) - Deployed after 13 months | -1.2904 | 0.1646 | 61.48 | <.0001 | 0.275 |
| Rank(E4) - Deployed after 14 months | -1.4693 | 0.1743 | 71.07 | <.0001 | 0.23 |
| Rank(E4) - Deployed after 15 months | -1.4951 | 0.1785 | 70.14 | <.0001 | 0.224 |
| Rank(E4) - Deployed after 16 months | -1.1626 | 0.1905 | 37.24 | <.0001 | 0.313 |
| Rank(E4) - Deployed after 17 months | -1.5431 | 0.1944 | 63.01 | <.0001 | 0.214 |
| Rank(E4) - Deployed after 18 months | -1.0852 | 0.1747 | 38.59 | <.0001 | 0.338 |
| Rank(E4) - Deployed after 19 months | -0.5239 | 0.1202 | 19.00 | <.0001 | 0.592 |

## Duration Estimates

**Time-to-Promotion – (2-symptom screen specification)**

| Variable | Coefficient | Std. Err | Z Score | P>\|z\| | LCL | UCL |
|---|---|---|---|---|---|---|
| Probable PTSD | 0.15130 | 0.01380 | 10.96 | 0.00 | 0.12425 | 0.17836 |
| Log(Age at Deployment) | -0.11969 | 0.03319 | -3.61 | 0.00 | -0.18475 | -0.05463 |
| Hispanic | -0.10018 | 0.01331 | -7.53 | 0.00 | -0.12627 | -0.07409 |
| African-American | -0.07767 | 0.01289 | -6.03 | 0.00 | -0.10293 | -0.05242 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Not married at deployment start | -0.31599 | 0.04340 | -7.28 | 0.00 | -0.40105 | -0.23094 |
| Married at deployment start | -0.37171 | 0.04284 | -8.68 | 0.00 | -0.45568 | -0.28774 |
| Divorced at deployment start | -0.36733 | 0.04127 | -8.9 | 0.00 | -0.44822 | -0.28644 |
| Has children at deployment start | -0.19388 | 0.01203 | -16.12 | 0.00 | -0.21745 | -0.17030 |
| Less than high school diploma | -0.15615 | 0.04093 | -3.82 | 0.00 | -0.23637 | -0.07594 |
| High school diploma | 0.09126 | 0.02047 | 4.46 | 0.00 | 0.05114 | 0.13138 |
| High school diploma equivalency | 0.30533 | 0.02290 | 13.33 | 0.00 | 0.26045 | 0.35022 |
| Undergraduate degree | -0.13750 | 0.03358 | -4.09 | 0.00 | -0.20332 | -0.07168 |
| Rank(E4) - Deployed after 1 months | -0.10441 | 0.02843 | -3.67 | 0.00 | -0.16014 | -0.04868 |
| Rank(E4) - Deployed after 2 months | -0.10383 | 0.02894 | -3.59 | 0.00 | -0.16054 | -0.04711 |
| Rank(E4) - Deployed after 3 months | -0.14568 | 0.02955 | -4.93 | 0.00 | -0.20360 | -0.08775 |
| Rank(E4) - Deployed after 4 months | -0.18748 | 0.03109 | -6.03 | 0.00 | -0.24841 | -0.12655 |
| Rank(E4) - Deployed after 5 months | -0.21373 | 0.03153 | -6.78 | 0.00 | -0.27554 | -0.15193 |
| Rank(E4) - Deployed after 6 months | -0.20633 | 0.03140 | -6.57 | 0.00 | -0.26787 | -0.14480 |
| Rank(E4) - Deployed after 7 months | -0.30444 | 0.03230 | -9.43 | 0.00 | -0.36774 | -0.24113 |
| Rank(E4) - Deployed after 8 months | -0.26203 | 0.03363 | -7.79 | 0.00 | -0.32794 | -0.19613 |
| Rank(E4) - Deployed after 9 months | -0.28718 | 0.03488 | -8.23 | 0.00 | -0.35554 | -0.21882 |
| Rank(E4) - Deployed after 10 months | -0.39129 | 0.03619 | -10.81 | 0.00 | -0.46223 | -0.32036 |
| Rank(E4) - Deployed after 11 months | -0.40115 | 0.03699 | -10.85 | 0.00 | -0.47365 | -0.32866 |
| Rank(E4) - Deployed after 12 months | -0.40511 | 0.03929 | -10.31 | 0.00 | -0.48212 | -0.32809 |
| Rank(E4) - Deployed after 13 months | -0.50741 | 0.03948 | -12.85 | 0.00 | -0.58479 | -0.43004 |
| Rank(E4) - Deployed after 14 months | -0.48100 | 0.03931 | -12.24 | 0.00 | -0.55804 | -0.40396 |
| Rank(E4) - Deployed after 15 months | -0.48051 | 0.04094 | -11.74 | 0.00 | -0.56075 | -0.40027 |
| Rank(E4) - Deployed after 16 months | -0.47186 | 0.04390 | -10.75 | 0.00 | -0.55791 | -0.38581 |
| Rank(E4) - Deployed after 17 months | -0.47615 | 0.04288 | -11.11 | 0.00 | -0.56019 | -0.39212 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Experienced Trauma | -0.12404 | 0.00928 | -13.36 | 0.00 | -0.14223 | -0.10585 |
| Combat Arms MOS | -0.04162 | 0.01149 | -3.62 | 0.00 | -0.06415 | -0.01910 |
| Combat Service Support MOS | 0.19274 | 0.01159 | 16.64 | 0.00 | 0.17004 | 0.21545 |
| Male | 0.08252 | 0.01478 | 5.58 | 0.00 | 0.05355 | 0.11149 |
| AFQT score | -0.00493 | 0.00024 | -20.23 | 0.00 | -0.00541 | -0.00445 |
| Constant | 4.45495 | 0.12077 | 36.89 | 0.00 | 4.21825 | 4.69166 |

*Note: Rank E1 – E3 control variables were excluded from the output, but are part of the model

**Time-to-Separation – (2-symptom screen specification)**

| Variable | Coefficient | Std. Err | Z Score | P>\|z\| | LCL | UCL |
|---|---|---|---|---|---|---|
| Probable PTSD | -0.10167 | 0.01059 | -9.6 | 0.00 | -0.12242 | -0.08092 |
| Log(Age at Deployment) | 0.35697 | 0.02819 | 12.66 | 0.00 | 0.30172 | 0.41221 |
| African-American | 0.17463 | 0.01117 | 15.63 | 0.00 | 0.15274 | 0.19652 |
| Married at deployment start | 0.19507 | 0.00870 | 22.42 | 0.00 | 0.17802 | 0.21212 |
| Divorced at deployment start | 0.16163 | 0.02517 | 6.42 | 0.00 | 0.11231 | 0.21096 |
| Has children at deployment start | -0.01916 | 0.01087 | -1.76 | 0.08 | -0.04047 | 0.00215 |
| Undergraduate degree | 0.07675 | 0.03095 | 2.48 | 0.01 | 0.01610 | 0.13740 |
| Rank(E4) - Deployed after 3 months | -0.10517 | 0.02678 | -3.93 | 0.00 | -0.15766 | -0.05268 |
| Rank(E4) - Deployed after 4 months | -0.12971 | 0.02826 | -4.59 | 0.00 | -0.18509 | -0.07433 |
| Rank(E4) - Deployed after 5 months | -0.14853 | 0.02848 | -5.22 | 0.00 | -0.20435 | -0.09271 |
| Rank(E4) - Deployed after 6 months | -0.17828 | 0.02792 | -6.39 | 0.00 | -0.23300 | -0.12355 |
| Rank(E4) - Deployed after 7 months | -0.16990 | 0.03010 | -5.64 | 0.00 | -0.22889 | -0.11091 |
| Rank(E4) - Deployed after 8 months | -0.20387 | 0.03091 | -6.6 | 0.00 | -0.26444 | -0.14329 |
| Rank(E4) - Deployed after 9 months | -0.16821 | 0.03269 | -5.15 | 0.00 | -0.23229 | -0.10413 |
| Rank(E4) - Deployed after 10 months | -0.17395 | 0.03464 | -5.02 | 0.00 | -0.24183 | -0.10606 |
| Rank(E4) - Deployed after 11 months | -0.20021 | 0.03548 | -5.64 | 0.00 | -0.26975 | -0.13067 |
| Rank(E4) - Deployed after 12 months | -0.27033 | 0.03654 | -7.4 | 0.00 | -0.34194 | -0.19871 |
| Rank(E4) - Deployed after 13 months | -0.27194 | 0.03823 | -7.11 | 0.00 | -0.34686 | -0.19701 |
| Rank(E4) - Deployed after 14 months | -0.25267 | 0.03846 | -6.57 | 0.00 | -0.32805 | -0.17730 |
| Rank(E4) - Deployed after 15 months | -0.28545 | 0.04008 | -7.12 | 0.00 | -0.36400 | -0.20689 |
| Rank(E4) - Deployed after 16 months | -0.21672 | 0.04217 | -5.14 | 0.00 | -0.29937 | -0.13407 |
| Rank(E4) - Deployed after 17 months | -0.23935 | 0.04220 | -5.67 | 0.00 | -0.32207 | -0.15663 |
| Combat Arms MOS | -0.04290 | 0.00986 | -4.35 | 0.00 | -0.06223 | -0.02358 |
| Combat Service Support MOS | -0.03370 | 0.00975 | -3.46 | 0.00 | -0.05281 | -0.01458 |
| Male | 0.13410 | 0.01188 | 11.29 | 0.00 | 0.11082 | 0.15738 |
| AFQT score | 0.00029 | 0.00020 | 1.45 | 0.15 | -0.00010 | 0.00069 |
| Constant | 2.49370 | 0.08823 | 28.26 | 0.00 | 2.32076 | 2.66663 |

*Note: Rank E1 – E3 control variables were excluded from the output, but are part of the model

**Time-to-Promotion (with comorbidities)**

| Variable | Coefficient | Std. Err | Z Score | P>\|z\| | LCL | UCL |
|---|---|---|---|---|---|---|
| Log(Age at Deployment) | -0.19222 | 0.03505 | -5.48 | 0.00000 | -0.26092 | -0.12352 |
| Caucasian | -0.45311 | 0.14390 | -3.15 | 0.00200 | -0.73514 | -0.17108 |
| Married at deployment start | -0.12864 | 0.00854 | -15.07 | 0.00000 | -0.14537 | -0.11190 |
| Has children at deployment start | -0.08513 | 0.01030 | -8.27 | 0.00000 | -0.10531 | -0.06495 |
| Less than high school diploma | 0.18721 | 0.04474 | 4.18 | 0.00000 | 0.09952 | 0.27490 |
| High school diploma | 0.11143 | 0.01764 | 6.32 | 0.00000 | 0.07687 | 0.14600 |
| High school diploma equivalency | 0.28189 | 0.01904 | 14.8 | 0.00000 | 0.24457 | 0.31921 |
| Undergraduate degree | -0.23985 | 0.03049 | -7.87 | 0.00000 | -0.29962 | -0.18008 |
| Rank(E2) - Deployed after 6 months | 0.34561 | 0.03204 | 10.79 | 0.00000 | 0.28280 | 0.40842 |
| Rank(E2) - Deployed after 7 months | 0.33059 | 0.02718 | 12.17 | 0.00000 | 0.27733 | 0.38385 |
| Rank(E2) - Deployed after 8 months | 0.29663 | 0.02633 | 11.27 | 0.00000 | 0.24504 | 0.34823 |
| Rank(E3) - Deployed after 12 months | 0.16828 | 0.02773 | 6.07 | 0.00000 | 0.11393 | 0.22263 |
| Rank(E3) - Deployed after 13 months | 0.13858 | 0.02621 | 5.29 | 0.00000 | 0.08722 | 0.18994 |
| Rank(E3) - Deployed after 14 months | 0.10415 | 0.02387 | 4.36 | 0.00000 | 0.05736 | 0.15094 |
| Rank(E3) - Deployed after 15 months | 0.08743 | 0.02576 | 3.39 | 0.00100 | 0.03693 | 0.13792 |
| Rank(E3) - Deployed after 16 months | 0.09091 | 0.02554 | 3.56 | 0.00000 | 0.04084 | 0.14097 |
| Rank(E3) - Deployed after 17 months | 0.09473 | 0.02657 | 3.57 | 0.00000 | 0.04266 | 0.14681 |
| Rank(E3) - Deployed after 18 months | 0.09245 | 0.02844 | 3.25 | 0.00100 | 0.03670 | 0.14820 |
| Rank(E3) - Deployed after 19 months | 0.08743 | 0.03202 | 2.73 | 0.00600 | 0.02468 | 0.15018 |
| Rank(E3) - Deployed after 20 months | 0.11661 | 0.03402 | 3.43 | 0.00100 | 0.04994 | 0.18329 |
| AFQT score | -0.00429 | 0.00020 | -21.77 | 0.00000 | -0.00467 | -0.00390 |
| Combat Arms MOS | -0.00064 | 0.00956 | -0.07 | 0.94700 | -0.01938 | 0.01811 |
| Caucasian * Log of Age | 0.16290 | 0.04568 | 3.57 | 0.00000 | 0.07337 | 0.25243 |
| Combat Service Support MOS | 0.24499 | 0.00995 | 24.62 | 0.00000 | 0.22549 | 0.26449 |
| Has depression | 0.21347 | 0.02076 | 10.28 | 0.00000 | 0.17277 | 0.25416 |
| Probable PTSD | 0.15306 | 0.01528 | 10.01 | 0.00000 | 0.12311 | 0.18302 |
| Depression * Probable PTSD | -0.10174 | 0.04090 | -2.49 | 0.01300 | -0.18190 | -0.02158 |
| Injured | 0.07697 | 0.01236 | 6.23 | 0.00000 | 0.05274 | 0.10120 |
| Injured * Probable PTSD | -0.14587 | 0.03479 | -4.19 | 0.00000 | -0.21405 | -0.07769 |
| Injured * Depression * Probable PTSD | 0.16166 | 0.07585 | 2.13 | 0.03300 | 0.01299 | 0.31033 |
| Injured * Depression | 0.01133 | 0.04523 | 0.25 | 0.80200 | -0.07731 | 0.09997 |
| Constant | 4.15436 | 0.11349 | 36.61 | 0.00000 | 3.93193 | 4.37679 |

| | Coefficient | Std. Err | Z Score | P>\|z\| | LCL | UCL |
|---|---|---|---|---|---|---|
| Log (Age at Deployment) | -0.45775 | 0.03689 | -12.41 | 0.00000 | -0.53006 | -0.38544 |
| Caucasian | 0.41215 | 0.14888 | 2.77 | 0.00600 | 0.12035 | 0.70396 |
| Married at deployment start | 0.07005 | 0.00893 | 7.84 | 0.00000 | 0.05255 | 0.08756 |
| Has children at deployment start | 0.25655 | 0.01123 | 22.85 | 0.00000 | 0.23454 | 0.27856 |

**Time-to-Separation (with comorbidities)**

| | | | | | | |
|---|---|---|---|---|---|---|
| Less than high school diploma | 0.04496 | 0.04803 | 0.94 | 0.34900 | -0.04918 | 0.13911 |
| High school diploma | -0.04990 | 0.01965 | -2.54 | 0.01100 | -0.08842 | -0.01138 |
| High school diploma equivalency | -0.00046 | 0.02078 | -0.02 | 0.98200 | -0.04118 | 0.04026 |
| Undergraduate degree | 0.05414 | 0.03671 | 1.47 | 0.14000 | -0.01782 | 0.12610 |
| Rank(E2) - Deployed after 6 months | 0.07289 | 0.02922 | 2.49 | 0.01300 | 0.01563 | 0.13016 |
| Rank(E2) - Deployed after 7 months | 0.09752 | 0.02464 | 3.96 | 0.00000 | 0.04922 | 0.14582 |
| Rank(E2) - Deployed after 8 months | 0.16715 | 0.02409 | 6.94 | 0.00000 | 0.11993 | 0.21438 |
| Rank(E3) - Deployed after 12 months | 0.06676 | 0.02692 | 2.48 | 0.01300 | 0.01399 | 0.11953 |
| Rank(E3) - Deployed after 13 months | 0.08036 | 0.02577 | 3.12 | 0.00200 | 0.02985 | 0.13086 |
| Rank(E3) - Deployed after 14 months | 0.07941 | 0.02457 | 3.23 | 0.00100 | 0.03126 | 0.12757 |
| Rank(E3) - Deployed after 15 months | 0.04713 | 0.02591 | 1.82 | 0.06900 | -0.00365 | 0.09792 |
| Rank(E3) - Deployed after 16 months | 0.02132 | 0.02556 | 0.83 | 0.40400 | -0.02878 | 0.07141 |
| Rank(E3) - Deployed after 17 months | 0.05968 | 0.02650 | 2.25 | 0.02400 | 0.00775 | 0.11161 |
| Rank(E3) - Deployed after 18 months | -0.02094 | 0.02874 | -0.73 | 0.46600 | -0.07727 | 0.03540 |
| Rank(E3) - Deployed after 19 months | -0.06055 | 0.03113 | -1.95 | 0.05200 | -0.12155 | 0.00046 |
| Rank(E3) - Deployed after 20 months | -0.17696 | 0.03173 | -5.58 | 0.00000 | -0.23916 | -0.11476 |
| AFQT score | -0.00112 | 0.00021 | -5.44 | 0.00000 | -0.00152 | -0.00071 |
| Combat Arms MOS | -0.04899 | 0.01026 | -4.78 | 0.00000 | -0.06909 | -0.02889 |
| Caucasian * Log of Age | -0.17343 | 0.04734 | -3.66 | 0.00000 | -0.26622 | -0.08063 |
| Combat Service Support MOS | -0.00262 | 0.01032 | -0.25 | 0.80000 | -0.02285 | 0.01761 |
| Injured | -0.09645 | 0.01227 | -7.86 | 0.00000 | -0.12050 | -0.07240 |
| Has depression | -0.28294 | 0.01867 | -15.15 | 0.00000 | -0.31954 | -0.24633 |
| Probable PTSD | -0.19949 | 0.01562 | -12.77 | 0.00000 | -0.23011 | -0.16887 |
| Depression * Probable PTSD | 0.10260 | 0.03592 | 2.86 | 0.00400 | 0.03220 | 0.17299 |
| Injured * Probable PTSD | 0.12286 | 0.03366 | 3.65 | 0.00000 | 0.05688 | 0.18884 |
| Injured * Depression * Probable PTSD | -0.20952 | 0.06550 | -3.20 | 0.00100 | -0.33791 | -0.08114 |
| Injured * Depression | 0.14230 | 0.03959 | 3.59 | 0.00000 | 0.06472 | 0.21989 |
| Constant | 5.03748 | 0.11950 | 42.16 | 0.00000 | 4.80328 | 5.27169 |

## Appendix D: PDHA Survey Versions

Throughout OIF/OEF/OND, the DoD has made changes to the PDHA in an effort to better identify and address the health conditions stemming from deployments. In January 2008, the DoD added alcohol abuse screening and injury items, which are used in the subset analysis of this study. The DoD also changed the PDHA depressive symptom items in 2008, altering both the phraseology of the question and the response options. Three sample PDHAs are included below by chronological release date (2003, 2008, and 2012).

**This form must be completed electronically. Handwritten forms will not be accepted.**

## POST DEPLOYMENT HEALTH ASSESSMENT (PDHA)

**PRIVACY ACT STATEMENT**

This statement serves to inform you of the purpose for collecting personally identifiable information through the DD Form 2796, Post-Deployment Health Assessment (PDHA).

**AUTHORITY:** 10 U.S.C. 136, Under Secretary of Defense for Personnel and Readiness; 10 U.S.C. 1074f, Medical Tracking System for Members Deployed Overseas; DoDI 1404.10, DoD Civilian Expeditionary Workforce; DoDI 6490.02E, Comprehensive Health Surveillance, and E.O. 9397 (SSN), as amended.

**PURPOSE:** To obtain information from an individual in order to assess the state of the individual's health after deployment outside the United States, its territories and possessions as part of a contingency, combat, or other operation and to assist health care providers in identifying and providing present and future medical care to the individual. The information provided may result in a referral for additional health care that may include medical, dental, or behavioral health care or diverse community support services.

**ROUTINE USES:** Your records may be disclosed to other Federal and State agencies and civilian health care providers, as necessary, in order to provide medical care and treatment. Use and disclosure of you records outside of DoD may also occur in accordance with 5 U.S.C. 552a(b) of the Privacy Act of 1974, as amended, which incorporates the DoD "Blanket Routine Uses" published at: http://dpclo.defense.gov/privacy/SORNs/blanket_routine_uses.html. Any protected health information (PHI) in your records may be used and disclosed generally as permitted by the HIPAA Privacy Rule (45 CFR Parts 160 and 164), as implemented within DoD by DoD 6025.18-R. Permitted uses and discloses of PHI include, but are not limited to, treatment, payment, and healthcare operations.

**DISCLOSURE:** Voluntary. If you chose not to provide information, comprehensive healthcare services may not be possible or administrative delays may occur. HOWEVER, CARE WILL NOT BE DENIED.

**INSTRUCTIONS:** You are encouraged to answer all questions. You must at least complete the first portion on who you are and when and where you deployed. If you do not understand a question, please discuss the question with a health care provider.

### DEMOGRAPHICS

**Last Name** _____ **First Name** _____ **Middle Initial** ____

**Social Security Number** _____ **Today's Date** (*dd/mmm/yyyy*) _____

**Date of Birth** (*dd/mmm/yyyy*) _____ **Gender** O Male O Female

**Service Branch**
- O Air Force
- O Army
- O Navy
- O Marine Corps
- O Coast Guard
- O Civilian Expeditionary Workforce (CEW)
- O USPHS
- O Other Defense Agency List: _____

**Component**
- O Active Duty
- O National Guard
- O Reserves
- O Civilian Government Employee



**Pay Grade**

| | | |
|---|---|---|
| O E1 | O O1 | O W1 |
| O E2 | O O2 | O W2 |
| O E3 | O O3 | O W3 |
| O E4 | O O4 | O W4 |
| O E5 | O O5 | O W5 |
| O E6 | O O6 | |
| O E7 | O O7 | O Other |
| O E8 | O O8 | |
| O E9 | O O9 | |
| | O O10 | |

**Home station/unit:** _____

**Current contact information:**

Phone: _____
Cell: _____
DSN: _____
Email: _____
Address: _____
_____
_____

**Point of contact who can always reach you:**

Name: _____
Phone: _____
Email: _____
Address: _____
_____
_____

### PLEASE ANSWER ALL QUESTIONS BASED ON YOUR MOST RECENT DEPLOYMENT

**Date arrived theater** (*dd/mmm/yyyy*) _____ **Date departed theater** (*dd/mmm/yyyy*) _____

**Location of operation**
To what areas were you mainly deployed?
(Please list all that apply, including the number of months spent at each location.)

- O Country 1 _____ Time at location (*months*) _____
- O Country 2 _____ Time at location (*months*) _____
- O Country 3 _____ Time at location (*months*) _____
- O Country 4 _____ Time at location (months) _____
- O Country 5 _____ Time at location (months) _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**1. Overall, how would you rate your health during the PAST MONTH?**
O Excellent O Very Good O Good O Fair O Poor

**2. Compared to before this deployment, how would you rate your health in general now?**
O Much better now than before I deployed
O Somewhat better now than before I deployed
O About the same as before I deployed
O Somewhat worse now than before I deployed Please explain: _____
O Much worse now than before I deployed Please explain: _____

**3. How often did you smoke tobacco (for example cigarettes, cigars, pipe, or hookah) during your deployment?**
O Just about every day O Some days O Not at all

**4. Were you wounded, injured, assaulted or otherwise hurt during your deployment?** O Yes O No

If yes, are you still having any problems or concerns related to this event? O Yes O No

If yes, please explain: _____

**5. During your deployment:**
a. Did you ever feel like you were in great danger of being killed? O Yes O No
b. Did you encounter dead bodies or see people killed or wounded during this deployment? O Yes O No
c. Did you engage in direct combat where you discharged a weapon? O Yes O No

**6. How many times during your deployment did you visit a health care provider for a medical or dental health problem/concern?**
O No visits O 1 visit O 2-3 visits O 4-5 visits O 6 or more

**7. During this deployment did you receive care for combat stress or a mental health problem/concern?** O Yes O No

If yes, please explain: _____

**8. During this deployment, did you have to spend one or more nights in a hospital as a patient?** O Yes O No

Reason/dates: _____

**9. During the PAST MONTH, how difficult have physical health problems *(illness or injury)* made it for you to do your work or other regular daily activities?**
O Not difficult at all O Somewhat difficult O Very difficult O Extremely difficult



**10.a. During this deployment, did any of the following events happen to you?** (Mark all that apply)
(1) Blast or explosion (e.g., IED, RPG, EFP, land mine, grenade, etc.)? O Yes O No
If yes, please estimate your distance from the closest blast or explosion:
O Less than 25 meters (82 feet)
O 25-50 meters (82-164 feet)
O 50-100 meters (164-328 feet)
O More than 100 meters (328 feet)
(2) Vehicular accident/crash (any vehicle including aircraft)? O Yes O No
(3) Fragment wound or bullet wound?
a. Head or neck O Yes O No
b. Rest of body O Yes O No
(4) Other injury (e.g., sports injury, accidental fall, etc.)? O Yes O No

If yes to any of the above, please explain: _____

**10.b. As a result of any of the events in 10.a., did you receive a jolt or blow to your head that IMMEDIATELY resulted in:**
(1) Losing consciousness ("knocked out")? O Yes O No
If yes, for about how long were you knocked out?
O Less than 5 min O 5-30 min O more than 30 min
(2) Losing memory of events before or after the injury? O Yes O No
(3) Seeing stars, becoming disoriented, functioning differently, or nearly blacking out? O Yes O No

**10.c. How many total times during this deployment did you receive a blow or jolt to your head?**
(only answer if you had a yes to any of the questions on 10a.)
O 0 O 1 O 2 O 3 O more than 3 (list number of times) _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**11. During the PAST MONTH, how much have you been bothered by any of the following problems?**

| Symptom | Not bothered at all | Bothered a little | Bothered a lot |
|---|---|---|---|
| a. Stomach pain | O | O | O |
| b. Back pain | O | O | O |
| c. Pain in the arms, legs, or joints (knees, hips, etc.) | O | O | O |
| d. Menstrual cramps or other problems with your periods (Women only) | O | O | O |
| e. Headaches | O | O | O |
| f. Chest pain | O | O | O |
| g. Dizziness | O | O | O |
| h. Fainting spells | O | O | O |
| i. Feeling your heart pound or race | O | O | O |
| j. Shortness of breath | O | O | O |
| k. Pain or problems during sexual intercourse | O | O | O |
| l. Constipation, loose bowels, or diarrhea | O | O | O |
| m. Nausea, gas, or indigestion | O | O | O |
| n. Feeling tired or having low energy | O | O | O |
| o. Trouble sleeping | O | O | O |
| p. Trouble concentrating on things (such as reading a newspaper or watching television) | O | O | O |
| q. Memory problems | O | O | O |
| r. Balance problems | O | O | O |
| s. Noises in your head or ears (such as ringing, buzzing, crickets, humming, tone, etc.) | O | O | O |
| t. Trouble hearing | O | O | O |
| u. Sensitivity to bright light | O | O | O |
| v. Becoming easily annoyed or irritable | O | O | O |
| w. Fever | O | O | O |
| x. Cough lasting more than 3 weeks | O | O | O |
| y. Numbness or tingling in the hands or feet | O | O | O |
| z. Hard to make up your mind or make decisions | O | O | O |
| aa. Watery, red eyes | O | O | O |
| bb. Dimming of vision, like the lights were going out | O | O | O |
| cc. Skin rash and/or lesion | O | O | O |
| dd. Pain with urination, frequency of urination, or strong urge to urinate | O | O | O |
| ee. Bleeding gums, tooth pain, or broken tooth | O | O | O |



**12. a. Over the PAST MONTH, what major life stressors have you experienced that are a cause of significant concern or make it difficult for you to do your work, take care of things at home, or get along with other people (for example, serious conflicts with others, relationship problems, or a legal, disciplinary or financial problem)?**

O None or
O Please list and explain: _____

_____

_____

**b. Are you currently in treatment or getting professional help for this concern?**

O Yes O No

**13. What prescription or over-the-counter medications (including herbals/supplements) for sleep, pain, combat stress, or a mental health problem are you CURRENTLY taking?**

O Please list: _____

_____

O None

**14. a. How often do you have a drink containing alcohol?**
O Never O Monthly or less O 2-4 times a month O 2-3 times per week O 4 or more times a week

**b. How many drinks containing alcohol do you have on a typical day when you are drinking?**
O 1 or 2 O 3 or 4 O 5 or 6 O 7 to 9 O 10 or more

**c. How often do you have six or more drinks on one occasion?**
O Never O Less than monthly O Monthly O Weekly O Daily or almost daily

**15. Have you ever had any experience that was so frightening, horrible, or upsetting that, in the PAST MONTH, you:**

a. Have had nightmares about it or thought about it when you did not want to? O Yes O No
b. Tried hard not to think about it or went out of your way to avoid situations that remind you of it? O Yes O No
c. Were constantly on guard, watchful or easily startled? O Yes O No
d. Felt numb or detached from others, activities, or your surroundings? O Yes O No

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**16. Over the LAST 2 WEEKS, how often have you been bothered by the following problems?**

| | Not at all | Few or several days | More than half the days | Nearly every day |
|---|---|---|---|---|
| a. Little interest or pleasure in doing things | O | O | O | O |
| b. Feeling down, depressed, or hopeless | O | O | O | O |

**17. Are you worried about your health because you believe you were exposed to something in the environment while deployed?** O Yes O No

If yes, please explain: _____

**18. Do you think you were exposed to any chemical, biological, or radiological warfare agents during this deployment?** O Yes O No

If yes, please explain: _____

**19. Were you in a vehicle hit by a depleted uranium (DU) round; inside a destroyed vehicle that contained DU; or closely inspect such a vehicle?** O Yes O No O Don't know

If yes, please explain: _____

**20. Were you told to take medicines to prevent malaria?** O Yes O No

If yes, please indicate which medicines you took and whether you took all pills as directed. (Mark all that apply)

| Anti-malarial medications received | Took all pills? |
|---|---|
| O Chloroquine (Aralen®) | O Yes O No |
| O Doxycycline (Vibramycin®) | O Yes O No |
| O Malarone® | O Yes O No |
| O Mefloquine (Lariam®) | O Yes O No |
| O Primaquine | O Yes O No |
| O Other: _____ | O Yes O No |
| O Given pills but do not know drug name | O Yes O No |



**21. Were you bitten or scratched by an animal during your deployment?** O Yes O No

If yes, please explain what kind of animal was involved, your injury, and what happened:

_____

_____

**22. Would you like to schedule an appointment with a health care provider to discuss any health concern(s)?** O Yes O No

**23. Are you interested in receiving information or assistance for a stress, emotional or alcohol concern?** O Yes O No

**24. Are you interested in receiving assistance for a family or relationship concern?** O Yes O No

**25. Would you like to schedule a visit with a chaplain or a community support counselor?** O Yes O No

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

## Health Care Provider Only – Provider Review, Interview, Assessment, and Recommendations:

**Deployer reports arriving in theater on:** _____ **Deployer reports departing theater on:** _____

**1. Address concerns identified on deployer questions 1 and 2.**

| Deployer question | Not answered | Deployer indicated concern | Deployer's response or concern | Provider comments (if indicated) |
|---|---|---|---|---|
| Self health rating | O | O | | |
| Change in health post-deployment | O | O | | |

**2. Address wounds, injuries, assaults, etc., occurring during deployment as reported on deployer question 4.**

a. Did deployer mark that he/she is still having a problem or concern related to a wound, injury, or assault that occurred during their deployment?
- O Yes
- O No (*go to block 3)*
- O Not answered by deployer

b. Refer for evaluation?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O *Other reason (explain):* _____

**3. Deployment experiences as reported in deployer question 5. Consider in overall assessment; ask follow-up questions as indicated.**

| Deployer question | Not answered | Yes response | Provider comments (if indicated) |
|---|---|---|---|
| Danger of being killed | O | O | |
| Encountered bodies or saw people killed or wounded | O | O | |
| In direct combat and discharged weapon | O | O | |



**4. Address concerns identified on deployer questions 6 through 9.**

| Deployer question | Not answered | Deployer indicated concern | Deployer's response or concern | Provider comments (if indicated) |
|---|---|---|---|---|
| Health care visits during deployment | O | O | | |
| Care for combat stress/mental health | O | O | | |
| Hospitalized during deployment | O | O | | |
| Physical limitations/problems | O | O | | |

**5. Deployment injury and concussion risk assessment.**

a. Did deployer have an injury based on their responses to question 10.a.?
- O Yes
- O No (*go to block 6)*

b. Did deployer have a possible concussion based on their responses to questions 10.a. through 10.c.?
- O Yes
- O No (*go to block 6)*

c. Evaluate injury history and concussion-related experiences and symptoms.

Refer for evaluation?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O *Other reason (explain):* _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**6. Post-deployment general symptoms/health concerns.**

| List of symptoms reported as "Bothered a Lot" on Deployer Questions 11a. through 11ee. |
|---|
| |
| **List of symptoms reported as "Bothered a Little" on Deployer Questions 11a. through 11ee.** |
| |

| Physical symptom (PHQ-15) severity score for Deployer Questions 11a. through 11o. | | | | |
|---|---|---|---|---|
| | Minimal < 4 | Low 5 - 9 | Medium 10 - 14 | High ≥ 15 |
| Deployer's total | _____ | _____ | _____ | _____ |

a. Does deployer have evidence of high generalized post-deployment physical symptoms (a score of ≥ 15 on the PHQ-15 physical symptoms scale - deployer questions 11a. - 11o.) or is "bothered a lot" by specific symptoms listed in 11a. – 11ee.?
- O Yes
- O No
- O Not answered by deployer

b. Based on deployer's responses to deployer questions 11a. through 11ee. is a referral indicated?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O *Other reason (explain):* _____

**7. Major life stressor as reported on deployer question 12.**

a. Did deployer mark they have a concern or a difficulty with a major life stressor?
- O Yes Deployer's concern: _____
- O No (*go to block 8)*
- O Not answered by deployer

b. If yes, **ask** additional questions to determine level of problem: _____

c. Consider need for referral. Referral indicated?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O Other *reason (explain):* _____



**8. Self-reported history of prescription or over-the-counter medications as described on deployer question 13.**

| Deployer question | Not answered | Yes response | Deployer's response | Provider comments (if indicated) |
|---|---|---|---|---|
| Medications | O | O | | |

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**9. Alcohol use as reported in deployer question 14.**

a. Deployer's AUDIT-C screening score was _____. *(If score between 0-4 (men) or 0-3 (women) nothing required, go to block 10).* O Not answered

Number of drinks per week: _____ Maximum number of drinks per occasion: _____

Based on the AUDIT-C score and assessment of alcohol use, follow the guidance below:

| Alcohol Use Intervention Matrix | | |
|---|---|---|
| **Assess Alcohol Use** | **AUDIT-C Score Men 5 - 7 Women 4 - 7** | **AUDIT-C Score Men and Women ≥ 8** |
| Alcohol use WITHIN recommended limits:<br>Men: ≤ 14 drinks per week **OR** ≤ 4 drinks on any occasion<br>Women: ≤ 7 drinks per week **OR** ≤ 3 drinks on any occasion | Advise patient to stay below recommended limits | Refer if indicated for further evaluation AND conduct BRIEF counseling* |
| Alcohol use EXCEEDS recommended limits:<br>Men: > 14 drinks per week or > 4 drinks on any occasion<br>Women: > 7 drinks per week or > 3 drinks on any occasion | Conduct BRIEF counseling* AND consider referral for further evaluation | |

* **BRIEF** counseling**:** **B**ring attention to elevated level of drinking; **R**ecommend limiting use or abstaining; **I**nform about the effects of alcohol on health; **E**xplore and help/support in choosing a drinking goal; **F**ollow-up referral for specialty treatment, if indicated.

b. Referral indicated for evaluation?
O Yes (complete blocks 19 and 20)
O No Provide education/awareness as needed.
State reason if AUDIT-C score was 8+:
O *Already under care*
O *Already has referral*
O *No significant impairment*
O *Other reason (explain):* _____



**10. PTSD screening as reported in deployer question 15.**

a. Are two or more of the deployer's responses to questions 15a. through 15d. "yes?"
O Yes
O No *(go to block 11)*
O Not answered by deployer

b. If yes, ask additional questions to determine extent of problem: _____

c. Consider need for referral. Referral indicated?
O Yes (complete blocks 19 and 20)
O No
O *Already under care*
O *Already has referral*
O *No significant impairment*
O **Other** *reason (explain):* _____

**11. Depression screening as reported in deployer question 16.**

a. Did deployer mark "more than half the days" or "nearly every day" on question 16a. or 16b.?
O Yes
O No *(go to block 12)*
O Not answered by deployer

b. If yes, ask additional questions to determine extent of problem; briefly describe results: _____

c. Consider need for referral. Referral indicated?
O Yes (complete blocks 19 and 20)
O No
O *Already under care*
O *Already has referral*
O *No significant impairment*
O **Other** *reason (explain):* _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**12. Environmental and exposure concern/assessment as reported in deployer questions 17 and 18.**

a. Did deployer indicate a worry or possible exposure? O Yes O No (go to block 13)

| If yes, mark deployer's exposure concern(s) | |
|---|---|
| O Animal bites | O Paints |
| O Animal bodies (dead) | O Pesticides |
| O Chlorine gas | O Radar/Microwaves |
| O Depleted uranium | O Sand/dust |
| O Excessive vibration | O Smoke from burning trash or feces |
| O Fog oils (smoke screen) | O Smoke from oil fire |
| O Garbage | O Solvents |
| O Human blood, body fluids, body parts, or dead bodies | O Tent heater smoke |
| O Industrial pollution | O Vehicle or truck exhaust fumes |
| O Insect bites | O Chemical, biological, radiological warfare agent |
| O Ionizing radiation | O Other exposures to toxic chemicals or materials, such as ammonia, nitric acid, etc. Please list: |
| O JP8 or other fuels | |
| O Lasers | |
| O Loud noises | |

b. If yes, referral indicated?
- O Yes (complete blocks 19 and 20)
- O No (provide risk education)
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O *Other reason (explain):* _____

**13. Depleted uranium (DU) as reported in deployer question 19.**



a. Did deployer mark either "yes" or "don't know to questions 19?
- O Yes
- O No *(go to block 14)*

b. If yes, based on details of event and extent of exposure is referral to PCM for completion of DD Form 2872 (DU Questionnaire) and possible 24-hour urinalysis indicated?
- O Yes (complete blocks 19 and 20)
- O No (provide risk education)
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O Other *reason (explain):* _____

**14. Malaria prophylaxis review as reported in deployer question 20.**

Deployer reports having deployed to: _____

a. Deployment location required malaria prophylaxis? O Yes O No *(go to block 15)*

b. Did deployer receive anti-malarial prophylaxis AND report compliance? O Yes *(go to block 15)* O No

c. If no, determine need for prophylaxis. Prescription indicated?
- O Yes (complete blocks 19 and 20)
- O No (briefly state reason): _____

**15. Animal bite (rabies risk) as reported on deployer question 21.**

a. Did deployer mark "yes" on animal bite/scratch?
- O Yes
- O No *(go to block 16)*

b. If yes, based on details of event and care received is a referral and/or follow-up indicated?
Note: Rabies incubation period can be months to years. Rabies prophylaxis can begin at anytime.
- O Yes (complete blocks 19 and 20)
- O No (provide risk education)
  - O *Was appropriately treated*
  - O *Already under care*
  - O *Already has referral*
  - O *Situation was not a risk for rabies*
  - O Other *reason (explain):* _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**16. Suicide risk evaluation.**

a. **Ask** "Over the **PAST MONTH**, have you been bothered by thoughts that you would be better off dead or of hurting yourself in some way?"
- O Yes
- O No (go to block 17)

b. If 16.a. was yes, **ask:** "How often have you been bothered by these thoughts?"
- O Few or several days
- O More than half of the time
- O Nearly every day

c. If 16.a. was yes, **ask:** "Have you had thoughts of actually hurting yourself?"
- O Yes **(If yes, ask questions 16d. through 16g.)**
- O No (If no thoughts of self-harm, go to block 17)

d. **Ask** "Have you thought about how you might actually hurt yourself?"
- O Yes How? _____
- O No

e. **Ask** "There's a big difference between having a thought and acting on a thought. How likely do you think it is that you will act on these thoughts about hurting yourself or ending your life over the next month?"
- O Not at all likely
- O Somewhat likely
- O Very likely

f. **Ask** "Is there anything that would prevent or keep you from harming yourself?"
- O Yes What? _____
- O No

g. **Ask** "Have you ever attempted to harm yourself in the past?"
- O Yes How? _____
- O No

**h. Conduct further risk assessment** (e.g., interpersonal conflicts, social isolation, alcohol/substance abuse, hopelessness, severe agitation/anxiety, diagnosis of depression or other psychiatric disorder, recent loss, financial stress, legal disciplinary problems, or serious physical illness)

Comments: _____

**i.** Does deployer pose a current risk for harm to self?
- O Yes (complete blocks 19 and 20)
- O No



**17. Violence/harm risk evaluation.**

a. **Ask,** "Over the past month have you had thoughts or concerns that you might hurt or lose control with someone?"
- O Yes
- O No *(go to block 18)*

If yes, **ask** additional questions to determine extent of problem (target, plan, intent, past history) Comments: _____

b. Does member pose a current risk to others?
- O Yes (complete blocks 19 and 20)
- O No (briefly state reason): _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

| 18. Deployer issues with this assessment (mark as appropriate): |
|---|
| O Deployer declined to complete form |
| O Deployer declined to complete interview/assessment |

**Assessment and Referral: After review of deployer's responses and interview with the deployer, the assessment and need for further evaluation is indicated in blocks 19 through 22.**

| 19. Summary of provider's identified concerns needing referral < Mark all that apply> | Yes | No |
|---|---|---|
| a. None Identified O | | |
| b. Physical health | O | O |
| c. Dental health | O | O |
| d. Concussion | O | O |
| e. Mental health symptoms | O | O |
| f. Alcohol use | O | O |
| g. PTSD symptoms | O | O |
| h. Depression symptoms | O | O |
| i. Environment/work exposure | O | O |
| j. Depleted uranium | O | O |
| k. Malaria prophylaxis | O | O |
| l. Risk of self-harm | O | O |
| m. Risk of violence | O | O |
| n. Other, list: | O | O |



| 20. Recommended referral(s) < Mark all that apply even if deployer does not desire> | Within 24 hours | Within 7 days | Within 30 days |
|---|---|---|---|
| a. Primary Care, Family Practice, Internal Medicine | O | O | O |
| b. Behavioral Health in Primary Care | O | O | O |
| c. Mental Health Specialty Care | O | O | O |
| d. Dental | O | O | O |
| e. Other specialty care: | O | O | O |
| Audiology | O | O | O |
| Dermatology | O | O | O |
| OB/GYN | O | O | O |
| Physical Therapy | O | O | O |
| TBI/Rehab Med | O | O | O |
| Podiatry | O | O | O |
| Other, list | O | O | O |
| f. Case Manager / Care Manager | O | O | O |
| g. Substance Abuse Program | O | O | O |
| h. Immunization clinic | O | O | O |
| i. Laboratory | O | O | O |
| j. Other, list: | O | O | O |

**21. Comments**: _____
_____
_____
_____

**22. Address requests as reported on deployer questions 22 through 25.**

| Deployer question | Not answered | Yes response | Comments (if indicated) |
|---|---|---|---|
| Request medical appointment | O | O | |
| Request info on stress/emotional/alcohol | O | O | |
| Family/relationship concern assistance | O | O | |
| Chaplain/counselor visit request | O | O | |

| 23. Supplemental services recommended / information provided | |
|---|---|
| O Appointment Assistance | O Family Support |
| O Information on post-deployment blood specimen requirement | O Military One Source |
| O Contract Support: _____ | O TRICARE Provider |
| O Community Service: _____ | O VA Medical Center or Community Clinic |
| O Chaplain | O Vet Center |
| O Health Education and Information | O Other, list: |
| O Health Care Benefits and Resources Information | |
| O In Transition | |

**Provider's Name:** _____ Date (*dd/mmm/yyyy*) _____

Title: O MD or DO O PA O Nurse Practitioner O Adv Practice Nurse O IDMT O IDC O IDHS

**I certify that this review process has been completed.** **This visit is coded by V70.5 _ E**

**This form must be completed electronically. Handwritten forms will not be accepted.**

## POST-DEPLOYMENT HEALTH ASSESSMENT (PDHA)

### PRIVACY ACT STATEMENT

**AUTHORITY:** 10 U.S.C. 136, 1074f, 3013, 5013, 8013 and E.O. 9397.

**PRINCIPAL PURPOSE(S):** To assess your state of health after deployment in support of military operations and to assist military healthcare providers in identifying and providing present and future medical care you may need. The information you provide may result in a referral for additional healthcare that may include medical, dental or behavioral healthcare or diverse community support services.

**ROUTINE USE(S):** In addition to those disclosures generally permitted under 5 U.S.C. 552a(b) of the Privacy Act, to other Federal and State agencies and civilian healthcare providers, as necessary, in order to provide necessary medical care and treatment. Responses may be used to guide possible referrals.

**DISCLOSURE:** Voluntary. If not provided, healthcare WILL BE furnished, but comprehensive care may not be possible.

**INSTRUCTIONS:** Please read each question completely and carefully before entering your response or marking your selection. **YOU ARE ENCOURAGED TO ANSWER EACH QUESTION. ANSWERING THESE QUESTIONS WILL NOT DELAY YOUR RETURN HOME.** Withholding or providing inaccurate information may impair a healthcare provider's ability to identify health problems and refer you to appropriate sources for additional evaluation or treatment. If you do not understand a question, please ask for help.



### DEMOGRAPHICS

**Last Name** _____ **First Name** _____ **Middle Initial** _____

**Social Security Number** _____ **Today's Date** *(dd/mmm/yyyy)* _____

**Name of Your Unit during this Deployment** _____ **Date of Birth** *(dd/mmm/yyyy)* _____

**Gender**
- ○ Male
- ○ Female

**Service Branch**
- ○ Air Force
- ○ Army
- ○ Coast Guard
- ○ Marine Corps
- ○ Navy
- ○ GS Employee
- ○ Other

**Component**
- ○ Active Duty
- ○ National Guard
- ○ Reserves
- ○ Civilian Government Employee
- ○ Other

**Pay Grade**
- ○ E1
- ○ E2
- ○ E3
- ○ E4
- ○ E5
- ○ E6
- ○ E7
- ○ E8
- ○ E9
- ○ O1
- ○ O2
- ○ O3
- ○ O4
- ○ O5
- ○ O6
- ○ O7
- ○ O8
- ○ O9
- ○ O10
- ○ W1
- ○ W2
- ○ W3
- ○ W4
- ○ W5
- ○ Other

**Date of arrival in theater** *(dd/mmm/yyyy)* _____

**Date of departure from theater** *(dd/mmm/yyyy)* _____ **Name of Operation:** _____

**Location of Operation.** To what areas were you mainly deployed *(land-based operations for more than 30 days)*?
*(Please mark all that apply, including the number of months spent at each location.)*

- ○ Country 1 _____ Time at location *(months)* _____
- ○ Country 2 _____ Time at location *(months)* _____
- ○ Country 3 _____ Time at location *(months)* _____
- ○ Country 4 _____ Time at location *(months)* _____
- ○ Country 5 _____ Time at location *(months)* _____

**Occupational specialty during this deployment** *(MOS/AOC, NEC/NOBC, or AFSC)*: _____

**Combat specialty:** _____

**Current Contact Information:**

Phone: _____
Cell: _____
DSN: _____
Email: _____
Address: _____

**Point of Contact who can always reach you:**

Name: _____
Phone: _____
Email: _____
Mailing Address: _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Service Member's Social Security Number:**

1. **Overall, how would you rate your health during the PAST MONTH?**
   - ○ Excellent
   - ○ Very Good
   - ○ Good
   - ○ Fair
   - ○ Poor

2. **Compared to before this deployment, how would you rate your health in general now?**
   - ○ Much better now than before I deployed
   - ○ Somewhat better now than before I deployed
   - ○ About the same as before I deployed
   - ○ Somewhat worse now than before I deployed
   - ○ Much worse now than before I deployed

3. **During the past 4 weeks, how difficult have physical health problems** *(illness or injury)* **made it for you to do your work or other regular daily activities?**
   - ○ Not difficult at all
   - ○ Somewhat difficult
   - ○ Very difficult
   - ○ Extremely difficult

4. **During the past 4 weeks, how difficult have emotional problems** *(such as feeling depressed or anxious)* **made it for you to do your work, take care of things at home, or get along with other people?**
   - ○ Not difficult at all
   - ○ Somewhat difficult
   - ○ Very difficult
   - ○ Extremely difficult

5. **How many times were you seen by a healthcare provider** *(physician, PA, medic, corpsman, etc.)* **for a medical problem or concern during this deployment?**

6. **Did you have to spend one or more nights in a hospital as a patient during this deployment?**
   - ○ No
   - ○ Yes. Reason/dates:

SAMPLE

7. **Were you wounded, injured, assaulted or otherwise hurt during this deployment?**
   - ○ No ○ Yes

7a. **IF YES, are you still having problems related to this event?**
   - ○ No ○ Yes ○ Unsure

8. **For any of the following symptoms, please indicate whether you went to see a healthcare provider** *(physician, PA, medic, corpsman, etc.)*, **were placed on quarters** *(Qtrs)* **or given light/limited duty** *(Profile)*, **and whether you are still bothered by the symptom now.**

| Symptom | Sick Call? | | Qtrs/Profile? | | Still Bothered? | | Symptom | Sick Call? | | Qtrs/Profile? | | Still Bothered? | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No | Yes | No | Yes | No | Yes | | No | Yes | No | Yes | No | Yes |
| Fever | ○ | ○ | ○ | ○ | ○ | ○ | Dizzy, light headed, passed out | ○ | ○ | ○ | ○ | ○ | ○ |
| Cough lasting more than 3 weeks | ○ | ○ | ○ | ○ | ○ | ○ | Diarrhea | ○ | ○ | ○ | ○ | ○ | ○ |
| Trouble breathing | ○ | ○ | ○ | ○ | ○ | ○ | Vomiting | ○ | ○ | ○ | ○ | ○ | ○ |
| Bad headaches | ○ | ○ | ○ | ○ | ○ | ○ | Frequent indigestion/ heartburn | ○ | ○ | ○ | ○ | ○ | ○ |
| Generally feeling weak | ○ | ○ | ○ | ○ | ○ | ○ | Problems sleeping or still feeling tired after sleeping | ○ | ○ | ○ | ○ | ○ | ○ |
| Muscle aches | ○ | ○ | ○ | ○ | ○ | ○ | Trouble concentrating, easily distracted | ○ | ○ | ○ | ○ | ○ | ○ |
| Swollen, stiff or painful joints | ○ | ○ | ○ | ○ | ○ | ○ | Forgetful or trouble remembering things | ○ | ○ | ○ | ○ | ○ | ○ |
| Back pain | ○ | ○ | ○ | ○ | ○ | ○ | Hard to make up your mind or make decisions | ○ | ○ | ○ | ○ | ○ | ○ |
| Numbness or tingling in hands or feet | ○ | ○ | ○ | ○ | ○ | ○ | Increased irritability | ○ | ○ | ○ | ○ | ○ | ○ |
| Trouble hearing | ○ | ○ | ○ | ○ | ○ | ○ | Skin diseases or rashes | ○ | ○ | ○ | ○ | ○ | ○ |
| Ringing in the ears | ○ | ○ | ○ | ○ | ○ | ○ | Other *(please list)*: | ○ | ○ | ○ | ○ | ○ | ○ |
| Watery, red eyes | ○ | ○ | ○ | ○ | ○ | ○ | | | | | | | |
| Dimming of vision, like the lights were going out | ○ | ○ | ○ | ○ | ○ | ○ | | | | | | | |
| Chest pain or pressure | ○ | ○ | ○ | ○ | ○ | ○ | | | | | | | |

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Service Member's Social Security Number:**

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**9.a. During this deployment, did you experience any of the following events?** *(Mark all that apply)*

| | | |
|---|---|---|
| (1) Blast or explosion *(IED, RPG, land mine, grenade, etc.)* | ○ No | ○ Yes |
| (2) Vehicular accident/crash *(any vehicle, including aircraft)* | ○ No | ○ Yes |
| (3) Fragment wound or bullet wound above your shoulders | ○ No | ○ Yes |
| (4) Fall | ○ No | ○ Yes |
| (5) Other event *(for example, a sports injury to your head)*. Describe: | ○ No | ○ Yes |

**9.b. Did any of the following happen to you, or were you told happened to you, IMMEDIATELY after any of the event(s) you just noted in question 9.a.?** *(Mark all that apply)*

| | | |
|---|---|---|
| (1) Lost consciousness or got "knocked out" | ○ No | ○ Yes |
| (2) Felt dazed, confused, or "saw stars" | ○ No | ○ Yes |
| (3) Didn't remember the event | ○ No | ○ Yes |
| (4) Had a concussion | ○ No | ○ Yes |
| (5) Had a head injury | ○ No | ○ Yes |

**9.c. Did any of the following problems begin or get worse after the event(s) you noted in question 9.a.?** *(Mark all that apply)*

| | | |
|---|---|---|
| (1) Memory problems or lapses | ○ No | ○ Yes |
| (2) Balance problems or dizziness | ○ No | ○ Yes |
| (3) Ringing in the ears | ○ No | ○ Yes |
| (4) Sensitivity to bright light | ○ No | ○ Yes |
| (5) Irritability | ○ No | ○ Yes |
| (6) Headaches | ○ No | ○ Yes |
| (7) Sleep problems | ○ No | ○ Yes |

**9.d. In the past week, have you had any of the symptoms you indicated in 9.c.?** *(Mark all that apply)*

| | | |
|---|---|---|
| (1) Memory problems or lapses | ○ No | ○ Yes |
| (2) Balance problems or dizziness | ○ No | ○ Yes |
| (3) Ringing in the ears | ○ No | ○ Yes |
| (4) Sensitivity to bright light | ○ No | ○ Yes |
| (5) Irritability | ○ No | ○ Yes |
| (6) Headaches | ○ No | ○ Yes |
| (7) Sleep problems | ○ No | ○ Yes |



---

**10. Did you encounter dead bodies or see people killed or wounded during this deployment?** *(Mark all that apply)*
○ No ○ Yes ( ○ Enemy ○ Coalition ○ Civilian )

**11. Were you engaged in direct combat where you discharged a weapon?**
○ No ○ Yes ( ○ land ○ sea ○ air )

**12. During this deployment, did you ever feel that you were in great danger of being killed?**
○ No ○ Yes

**13. Have you ever had any experience that was so frightening, horrible, or upsetting that, IN THE PAST MONTH, you ....**

| | | |
|---|---|---|
| a. Have had nightmares about it or thought about it when you did not want to? | ○ No | ○ Yes |
| b. Tried hard not to think about it or went out of your way to avoid situations that remind you of it? | ○ No | ○ Yes |
| c. Were constantly on guard, watchful, or easily startled? | ○ No | ○ Yes |
| d. Felt numb or detached from others, activities, or your surroundings? | ○ No | ○ Yes |

**14. Over the PAST MONTH, have you been bothered by the following problems?**

| | Not at all | Few or several days | More than half the days | Nearly every day |
|---|---|---|---|---|
| a. Little interest or pleasure in doing things | ○ | ○ | ○ | ○ |
| b. Feeling down, depressed, or hopeless | ○ | ○ | ○ | ○ |

**15. Alcohol is occasionally available during deployments, e.g., R&R, port call, etc. Prior to deploying or during this deployment:**

a. Did you use alcohol more than you meant to? ○ No ○ Yes

b. Have you felt that you wanted to or needed to cut down on your drinking? ○ No ○ Yes

c. How often do you have a drink containing alcohol?
○ Never ○ Monthly or less ○ 2 to 4 times a month ○ 2 to 3 times a week ○ 4 or more times a week

d. How many drinks containing alcohol do you have on a typical day when you are drinking?
○ 1 or 2 ○ 3 or 4 ○ 5 or 6 ○ 7 to 9 ○ 10 or more

e. How often do you have six or more drinks on one occasion?
○ Never ○ Less than monthly ○ Monthly ○ Weekly ○ Daily

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Service Member's Social Security Number:**

| 16. Are you worried about your health because you were exposed to: *(Mark all that apply)* | No | Yes |
|---|---|---|
| Animal bites | ○ | ○ |
| Animal bodies *(dead)* | ○ | ○ |
| Chlorine gas | ○ | ○ |
| Depleted uranium *(If yes, explain)* _____ | ○ | ○ |
| Excessive vibration | ○ | ○ |
| Fog oils (smoke screen | ○ | ○ |
| Garbage | ○ | ○ |
| Human blood, body fluids, body parts, or dead bodies | ○ | ○ |
| Industrial pollution | ○ | ○ |
| Insect bites | ○ | ○ |
| Ionizing radiation | ○ | ○ |
| JP8 or other fuels | ○ | ○ |
| Lasers | ○ | ○ |
| Loud noises | ○ | ○ |
| Paints | ○ | ○ |
| Pesticides | ○ | ○ |
| Radar/Microwaves | ○ | ○ |
| Sand/dust | ○ | ○ |
| Smoke from burning trash or feces | ○ | ○ |
| Smoke from oil fire | ○ | ○ |
| Solvents | ○ | ○ |
| Tent heater smoke | ○ | ○ |
| Vehicle or truck exhaust fumes | ○ | ○ |
| Other exposures to toxic chemicals or materials, such as ammonia, nitric acid, etc.: *(If yes, explain)* _____ | ○ | ○ |



**17. Were you exposed to any chemicals or other hazard** *(industrial, environmental, etc.)* **that required you to seek immediate medical care?**

○ No ○ Yes

**18. Did you enter or closely inspect any destroyed military vehicles?**

○ No ○ Yes

**19. Do you think you were exposed to any chemical, biological, or radiological warfare agents during this deployment?**

○ No ○ Don't know ○ Yes, explain with date and location _____

_____

**20. This question assesses your personal risk for exposure to tuberculosis or other local infectious diseases. Would you say your INDOOR contact with local or 3rd country nationals was:**

○ None ○ Minimal *(less than 1 hour per week)* ○ Moderate *(1 or more hours per week, but not daily)* ○ Extensive *(at least 1 hour per day, every day)*

**21. Force Health Protection Measures. Please indicate which of the following items you used during this deployment and how often you used them.**

| | Daily | Most days | Some days | Never | Not available | Not required |
|---|---|---|---|---|---|---|
| DEET insect repellent applied to skin | ○ | ○ | ○ | ○ | ○ | ○ |
| Pesticide-treated uniforms | ○ | ○ | ○ | ○ | ○ | ○ |
| Eye protection *(not commercial sunglasses or prescription glasses)* | ○ | ○ | ○ | ○ | ○ | ○ |
| Hearing protection | ○ | ○ | ○ | ○ | ○ | ○ |
| N-95 or other respirator *(not gas mask)* | ○ | ○ | ○ | ○ | ○ | ○ |
| Pills to stay awake, like dexedrine | ○ | ○ | ○ | ○ | ○ | ○ |
| Anti-NBC meds | ○ | ○ | ○ | ○ | ○ | ○ |
| Pyridostigmine *(nerve agent pill)* | ○ | ○ | ○ | ○ | ○ | ○ |
| Nerve agent antidote injector | ○ | ○ | ○ | ○ | ○ | ○ |
| Seizure/convulsion antidote injector | ○ | ○ | ○ | ○ | ○ | ○ |
| NBC gas mask | ○ | ○ | ○ | ○ | ○ | ○ |
| MOPP over garments | ○ | ○ | ○ | ○ | ○ | ○ |

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**Service Member's Social Security Number:**

**22. Did you receive any vaccinations just before or during this deployment?**

- ○ Smallpox *(leaves a scar on the arm)*
- ○ Anthrax
- ○ Botulism
- ○ Typhoid
- ○ Meningococcal
- ○ Yellow Fever
- ○ Other, list: _____
- ○ No
- ○ Don't know

**23. Were you told to take medicines to prevent malaria?**

○ No ○ Yes

If YES, please indicate which medicines you took and whether you missed any doses. *(Mark all that apply)*

| Anti-malarial medications | Took All Pills |
|---|---|
| ○ Chloroquine (Aralen®) | ○ No ○ Yes |
| ○ Doxycycline (Vibramycin®) | ○ No ○ Yes |
| ○ Mefloquine (Lariam®) | ○ No ○ Yes |
| ○ Primaquine | ○ No ○ Yes |
| ○ Other : _____ | ○ No ○ Yes |

**24. Would you like to schedule a visit with a healthcare provider to further discuss your health concern(s)?** ○ No ○ Yes

**25. Are you currently interested in receiving information or assistance for a stress, emotional or alcohol concern?** ○ No ○ Yes

**26. Are you currently interested in receiving assistance for a family or relationship concern?** ○ No ○ Yes

**27. Would you like to schedule a visit with a chaplain or a community support counselor?** ○ No ○ Yes

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Service Member's Social Security Number:**

## Health Care Provider Only

**Post-Deployment Health Care Provider Review, Interview, and Assessment**

1. **Do you have any medical or dental problems that developed during this deployment?** ○ Yes ○ No
   If yes, are the problems still bothering you now? ○ Yes ○ No

2. **Are you currently on a profile (or LIMDU) that restricts your activities (light or limited duty)?** ○ Yes ○ No
   If yes: For what reason? _____ ○ NA
   Is your condition due to an injury or illness that occurred during the deployment? ○ Yes ○ No ○ NA
   Did you have similar problems prior to deployment? ○ Yes ○ No ○ NA
   If so, did your condition worsen during the deployment? ○ Yes ○ No ○ NA

3. **Ask the following behavioral risk questions. Conduct risk assessment as necessary.**
   a. Over the PAST MONTH, have you been bothered by thoughts that you would be better off dead or of hurting yourself in some way? ○ Yes ○ No
      IF YES, about how often have you been bothered by these thoughts? ○ A few days ○ More than half of the time ○ Nearly every day
   b. Over the PAST MONTH, have you had thoughts or concerns that you might hurt or lose control with someone? ○ Yes ○ No ○ Unsure

4. **If member reports YES or UNSURE responses to 3.a. or 3.b., conduct risk assessment.**
   a. Does member pose a current risk for harm to self or others? ○ No, not a current risk ○ Yes, poses a current risk ○ Unsure
   b. Outcome of assessment ○ Immediate referral ○ Routine follow-up referral ○ Referral not indicated



5. **Alcohol screening result**
   ○ No evidence of alcohol-related problems
   ○ Potential alcohol problem (positive response to either question 15.a. or 15.b. and/or AUDIT-C (questions 15.c.-e.) score of 4 or more for men or 3 or more for women).
   Refer to PCM for evaluation. ○ Yes ○ No

6. **During this deployment have you sought, or do you now intend to seek, counseling or care for your mental health?** ○ Yes ○ No

7. **Traumatic Brain Injury (TBI) risk assessment**
   ○ No evidence of risk based on responses to questions 9.a. - d.
   ○ Potential TBI with persistent symptoms, based on responses to question 9.d.
   Refer for additional evaluation. ○ Yes ○ No

8. **Tuberculosis risk assessment, based on response to question 20.**
   ○ Minimal risk
   ○ Increased risk
   Recommend tuberculosis skin testing in 60-90 days ○ Yes ○ No

9. **Depleted Uranium (DU) risk assessment, based on responses to question 16 (DU, Yes) or question 18 (Yes).**
   ○ No evidence of exposure to depleted uranium
   ○ Potential exposure to depleted uranium
   Refer to PCM for completion of DD Form 2872 and possible 24-hour urinalysis. ○ Yes ○ No

10. **Do you have any other concerns about possible exposures or events during this deployment that you feel may affect your health?** ○ Yes ○ No
    Please list your concerns: _____

11. **Do you currently have any questions or concerns about your health?** ○ Yes ○ No
    Please list your concerns: _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Service Member's Social Security Number:**

**Health Assessment**

After my interview/examination of the service member and review of this form, there is a need for further evaluation and follow-up as indicated below. (More than one may be noted for patients with multiple problems. Further documentation of the problem evaluation to be placed in service member's medical record.)

| 11. Identified Concerns | Minor Concern | Major Concern | Already Under Care | |
|---|---|---|---|---|
| | | | Yes | No |
| ○ Physical Symptom(s) | ○ | ○ | ○ | ○ |
| ○ Exposure Symptom(s) | ○ | ○ | ○ | ○ |
| ○ Environmental | ○ | ○ | ○ | ○ |
| ○ Occupational | ○ | ○ | ○ | ○ |
| ○ Combat or mission-related | ○ | ○ | ○ | ○ |
| ○ Depression symptoms | ○ | ○ | ○ | ○ |
| ○ PTSD symptoms | ○ | ○ | ○ | ○ |
| ○ Anger/Aggression | ○ | ○ | ○ | ○ |
| ○ Suicidal Ideation | ○ | ○ | ○ | ○ |
| ○ Social/Family Conflict | ○ | ○ | ○ | ○ |
| ○ Alcohol Use | ○ | ○ | ○ | ○ |
| ○ Other: _____ | ○ | ○ | ○ | ○ |

**13. Comments:**

| 12. Referral Information | Within 24 hours | Within 7 days | Within 30 days |
|---|---|---|---|
| a. Primary Care, Family Practice | ○ | ○ | ○ |
| b. Behavioral Health in Primary Care | ○ | ○ | ○ |
| c. Mental Health Specialty Care | ○ | ○ | ○ |
| d. Other specialty care: | | | |
| Audiology | ○ | ○ | ○ |
| Cardiology | ○ | ○ | ○ |
| Dentistry | ○ | ○ | ○ |
| Dermatology | ○ | ○ | ○ |
| ENT | ○ | ○ | ○ |
| GI | ○ | ○ | ○ |
| Internal Medicine | ○ | ○ | ○ |
| Neurology | ○ | ○ | ○ |
| OB/GYN | ○ | ○ | ○ |
| Ophthalmology | ○ | ○ | ○ |
| Optometry | ○ | ○ | ○ |
| Orthopedics | ○ | ○ | ○ |
| Pulmonology | ○ | ○ | ○ |
| Urology | ○ | ○ | ○ |
| e. Case Manager, Care Manager | ○ | ○ | ○ |
| f. Substance Abuse Program | ○ | ○ | ○ |
| g. Health Promotion, Health Education | ○ | ○ | ○ |
| h. Chaplain | ○ | ○ | ○ |
| i. Family Support, Community Service | ○ | ○ | ○ |
| j. Military OneSource | ○ | ○ | ○ |
| k. Other: _____ | ○ | ○ | ○ |
| l. No referral made ○ | | | |

**I certify that this review process has been completed.**
Provider's signature and stamp:

**This visit is coded by V70.5 _ E**

Date *(dd/mmm/yyyy)*

SAMPLE

**Ancillary Staff/Administrative Section**

| 14. Member was provided the following: | 15. Referral was made to the following healthcare or support system: |
|---|---|
| ○ Medical Threat Debrief | ○ Military Treatment Facility |
| ○ Health Education and Information | ○ Division/Line-based medical resource |
| ○ Health Care Benefits and Resources Information | ○ VA Medical Center or Community Clinic |
| ○ Appointment Assistance | ○ Vet Center |
| ○ Service member declined to complete form | ○ TRICARE Provider |
| ○ Service member declined to complete interview/assessment | ○ Contract Support: _____ |
| ○ Service member declined referral for services | ○ Community Service: _____ |
| ○ LOD | ○ Other: _____ |
| ○ Post-deployment blood specimen collected (if required) | ○ None |
| ○ Other: _____ | |

**This form must be completed electronically. Handwritten forms will not be accepted.**

## POST DEPLOYMENT HEALTH ASSESSMENT (PDHA)

**PRIVACY ACT STATEMENT**

This statement serves to inform you of the purpose for collecting personally identifiable information through the DD Form 2796, Post-Deployment Health Assessment (PDHA).

**AUTHORITY:** 10 U.S.C. 136, Under Secretary of Defense for Personnel and Readiness; 10 U.S.C. 1074f, Medical Tracking System for Members Deployed Overseas; DoDI 1404.10, DoD Civilian Expeditionary Workforce; DoDI 6490.02E, Comprehensive Health Surveillance, and E.O. 9397 (SSN), as amended.

**PURPOSE:** To obtain information from an individual in order to assess the state of the individual's health after deployment outside the United States, its territories and possessions as part of a contingency, combat, or other operation and to assist health care providers in identifying and providing present and future medical care to the individual. The information provided may result in a referral for additional health care that may include medical, dental, or behavioral health care or diverse community support services.

**ROUTINE USES:** Your records may be disclosed to other Federal and State agencies and civilian health care providers, as necessary, in order to provide medical care and treatment. Use and disclosure of you records outside of DoD may also occur in accordance with 5 U.S.C. 552a(b) of the Privacy Act of 1974, as amended, which incorporates the DoD "Blanket Routine Uses" published at: http://dpclo.defense.gov/privacy/SORNs/blanket_routine_uses.html. Any protected health information (PHI) in your records may be used and disclosed generally as permitted by the HIPAA Privacy Rule (45 CFR Parts 160 and 164), as implemented within DoD by DoD 6025.18-R. Permitted uses and discloses of PHI include, but are not limited to, treatment, payment, and healthcare operations.

**DISCLOSURE:** Voluntary. If you chose not to provide information, comprehensive healthcare services may not be possible or administrative delays may occur. HOWEVER, CARE WILL NOT BE DENIED.

**INSTRUCTIONS:** You are encouraged to answer all questions. You must at least complete the first portion on who you are and when and where you deployed. If you do not understand a question, please discuss the question with a health care provider.

### DEMOGRAPHICS

**Last Name** _____ **First Name** _____ **Middle Initial** ____

**Social Security Number** _____ **Today's Date** (*dd/mmm/yyyy*) _____

**Date of Birth** (*dd/mmm/yyyy*) _____ **Gender** O Male O Female

**Service Branch**
- O Air Force
- O Army
- O Navy
- O Marine Corps
- O Coast Guard
- O Civilian Expeditionary Workforce (CEW)
- O USPHS
- O Other Defense Agency List: _____

**Component**
- O Active Duty
- O National Guard
- O Reserves
- O Civilian Government Employee



**Pay Grade**

| | | |
|---|---|---|
| O E1 | O O1 | O W1 |
| O E2 | O O2 | O W2 |
| O E3 | O O3 | O W3 |
| O E4 | O O4 | O W4 |
| O E5 | O O5 | O W5 |
| O E6 | O O6 | |
| O E7 | O O7 | O Other |
| O E8 | O O8 | |
| O E9 | O O9 | |
| | O O10 | |

**Home station/unit:** _____

**Current contact information:**

Phone: _____
Cell: _____
DSN: _____
Email: _____
Address: _____
_____
_____

**Point of contact who can always reach you:**

Name: _____
Phone: _____
Email: _____
Address: _____
_____
_____

### PLEASE ANSWER ALL QUESTIONS BASED ON YOUR MOST RECENT DEPLOYMENT

**Date arrived theater** (*dd/mmm/yyyy*) _____ **Date departed theater** (*dd/mmm/yyyy*) _____

**Location of operation**
To what areas were you mainly deployed?
(Please list all that apply, including the number of months spent at each location.)

- O Country 1 _____ Time at location (*months*) _____
- O Country 2 _____ Time at location (*months*) _____
- O Country 3 _____ Time at location (*months*) _____
- O Country 4 _____ Time at location (months) _____
- O Country 5 _____ Time at location (months) _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**1. Overall, how would you rate your health during the PAST MONTH?**
O Excellent O Very Good O Good O Fair O Poor

**2. Compared to before this deployment, how would you rate your health in general now?**
O Much better now than before I deployed
O Somewhat better now than before I deployed
O About the same as before I deployed
O Somewhat worse now than before I deployed Please explain: _____
O Much worse now than before I deployed Please explain: _____

**3. How often did you smoke tobacco (for example cigarettes, cigars, pipe, or hookah) during your deployment?**
O Just about every day O Some days O Not at all

**4. Were you wounded, injured, assaulted or otherwise hurt during your deployment?** O Yes O No

If yes, are you still having any problems or concerns related to this event? O Yes O No

If yes, please explain: _____

**5. During your deployment:**
a. Did you ever feel like you were in great danger of being killed? O Yes O No
b. Did you encounter dead bodies or see people killed or wounded during this deployment? O Yes O No
c. Did you engage in direct combat where you discharged a weapon? O Yes O No

**6. How many times during your deployment did you visit a health care provider for a medical or dental health problem/concern?**
O No visits O 1 visit O 2-3 visits O 4-5 visits O 6 or more

**7. During this deployment did you receive care for combat stress or a mental health problem/concern?** O Yes O No

If yes, please explain: _____

**8. During this deployment, did you have to spend one or more nights in a hospital as a patient?** O Yes O No

Reason/dates: _____

**9. During the PAST MONTH, how difficult have physical health problems *(illness or injury)* made it for you to do your work or other regular daily activities?**
O Not difficult at all O Somewhat difficult O Very difficult O Extremely difficult



**10.a. During this deployment, did any of the following events happen to you?** (Mark all that apply)
(1) Blast or explosion (e.g., IED, RPG, EFP, land mine, grenade, etc.)? O Yes O No
If yes, please estimate your distance from the closest blast or explosion:
O Less than 25 meters (82 feet)
O 25-50 meters (82-164 feet)
O 50-100 meters (164-328 feet)
O More than 100 meters (328 feet)
(2) Vehicular accident/crash (any vehicle including aircraft)? O Yes O No
(3) Fragment wound or bullet wound?
a. Head or neck O Yes O No
b. Rest of body O Yes O No
(4) Other injury (e.g., sports injury, accidental fall, etc.)? O Yes O No

If yes to any of the above, please explain: _____

**10.b. As a result of any of the events in 10.a., did you receive a jolt or blow to your head that IMMEDIATELY resulted in:**
(1) Losing consciousness ("knocked out")? O Yes O No
If yes, for about how long were you knocked out?
O Less than 5 min O 5-30 min O more than 30 min
(2) Losing memory of events before or after the injury? O Yes O No
(3) Seeing stars, becoming disoriented, functioning differently, or nearly blacking out? O Yes O No

**10.c. How many total times during this deployment did you receive a blow or jolt to your head?**
(only answer if you had a yes to any of the questions on 10a.)
O 0 O 1 O 2 O 3 O more than 3 (list number of times) _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**11. During the PAST MONTH, how much have you been bothered by any of the following problems?**

| Symptom | Not bothered at all | Bothered a little | Bothered a lot |
|---|---|---|---|
| a. Stomach pain | O | O | O |
| b. Back pain | O | O | O |
| c. Pain in the arms, legs, or joints (knees, hips, etc.) | O | O | O |
| d. Menstrual cramps or other problems with your periods (Women only) | O | O | O |
| e. Headaches | O | O | O |
| f. Chest pain | O | O | O |
| g. Dizziness | O | O | O |
| h. Fainting spells | O | O | O |
| i. Feeling your heart pound or race | O | O | O |
| j. Shortness of breath | O | O | O |
| k. Pain or problems during sexual intercourse | O | O | O |
| l. Constipation, loose bowels, or diarrhea | O | O | O |
| m. Nausea, gas, or indigestion | O | O | O |
| n. Feeling tired or having low energy | O | O | O |
| o. Trouble sleeping | O | O | O |
| p. Trouble concentrating on things (such as reading a newspaper or watching television) | O | O | O |
| q. Memory problems | O | O | O |
| r. Balance problems | O | O | O |
| s. Noises in your head or ears (such as ringing, buzzing, crickets, humming, tone, etc.) | O | O | O |
| t. Trouble hearing | O | O | O |
| u. Sensitivity to bright light | O | O | O |
| v. Becoming easily annoyed or irritable | O | O | O |
| w. Fever | O | O | O |
| x. Cough lasting more than 3 weeks | O | O | O |
| y. Numbness or tingling in the hands or feet | O | O | O |
| z. Hard to make up your mind or make decisions | O | O | O |
| aa. Watery, red eyes | O | O | O |
| bb. Dimming of vision, like the lights were going out | O | O | O |
| cc. Skin rash and/or lesion | O | O | O |
| dd. Pain with urination, frequency of urination, or strong urge to urinate | O | O | O |
| ee. Bleeding gums, tooth pain, or broken tooth | O | O | O |



**12. a. Over the PAST MONTH, what major life stressors have you experienced that are a cause of significant concern or make it difficult for you to do your work, take care of things at home, or get along with other people (for example, serious conflicts with others, relationship problems, or a legal, disciplinary or financial problem)?**

O None or
O Please list and explain: _____

_____

_____

**b. Are you currently in treatment or getting professional help for this concern?**

O Yes O No

**13. What prescription or over-the-counter medications (including herbals/supplements) for sleep, pain, combat stress, or a mental health problem are you CURRENTLY taking?**

O Please list: _____

_____

O None

**14. a. How often do you have a drink containing alcohol?**
O Never O Monthly or less O 2-4 times a month O 2-3 times per week O 4 or more times a week

**b. How many drinks containing alcohol do you have on a typical day when you are drinking?**
O 1 or 2 O 3 or 4 O 5 or 6 O 7 to 9 O 10 or more

**c. How often do you have six or more drinks on one occasion?**
O Never O Less than monthly O Monthly O Weekly O Daily or almost daily

**15. Have you ever had any experience that was so frightening, horrible, or upsetting that, in the PAST MONTH, you:**

a. Have had nightmares about it or thought about it when you did not want to? O Yes O No
b. Tried hard not to think about it or went out of your way to avoid situations that remind you of it? O Yes O No
c. Were constantly on guard, watchful or easily startled? O Yes O No
d. Felt numb or detached from others, activities, or your surroundings? O Yes O No

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**16. Over the LAST 2 WEEKS, how often have you been bothered by the following problems?**

| | Not at all | Few or several days | More than half the days | Nearly every day |
|---|---|---|---|---|
| a. Little interest or pleasure in doing things | O | O | O | O |
| b. Feeling down, depressed, or hopeless | O | O | O | O |

**17. Are you worried about your health because you believe you were exposed to something in the environment while deployed?** O Yes O No

If yes, please explain: _____

**18. Do you think you were exposed to any chemical, biological, or radiological warfare agents during this deployment?** O Yes O No

If yes, please explain: _____

**19. Were you in a vehicle hit by a depleted uranium (DU) round; inside a destroyed vehicle that contained DU; or closely inspect such a vehicle?** O Yes O No O Don't know

If yes, please explain: _____

**20. Were you told to take medicines to prevent malaria?** O Yes O No

If yes, please indicate which medicines you took and whether you took all pills as directed. (Mark all that apply)

| Anti-malarial medications received | Took all pills? |
|---|---|
| O Chloroquine (Aralen®) | O Yes O No |
| O Doxycycline (Vibramycin®) | O Yes O No |
| O Malarone® | O Yes O No |
| O Mefloquine (Lariam®) | O Yes O No |
| O Primaquine | O Yes O No |
| O Other: _____ | O Yes O No |
| O Given pills but do not know drug name | O Yes O No |



**21. Were you bitten or scratched by an animal during your deployment?** O Yes O No

If yes, please explain what kind of animal was involved, your injury, and what happened:

_____

_____

**22. Would you like to schedule an appointment with a health care provider to discuss any health concern(s)?** O Yes O No

**23. Are you interested in receiving information or assistance for a stress, emotional or alcohol concern?** O Yes O No

**24. Are you interested in receiving assistance for a family or relationship concern?** O Yes O No

**25. Would you like to schedule a visit with a chaplain or a community support counselor?** O Yes O No

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

## Health Care Provider Only – Provider Review, Interview, Assessment, and Recommendations:

**Deployer reports arriving in theater on:** _____ **Deployer reports departing theater on:** _____

**1. Address concerns identified on deployer questions 1 and 2.**

| Deployer question | Not answered | Deployer indicated concern | Deployer's response or concern | Provider comments (if indicated) |
|---|---|---|---|---|
| Self health rating | O | O | | |
| Change in health post-deployment | O | O | | |

**2. Address wounds, injuries, assaults, etc., occurring during deployment as reported on deployer question 4.**

a. Did deployer mark that he/she is still having a problem or concern related to a wound, injury, or assault that occurred during their deployment?
- O Yes
- O No (*go to block 3)*
- O Not answered by deployer

b. Refer for evaluation?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O *Other reason (explain):* _____

**3. Deployment experiences as reported in deployer question 5. Consider in overall assessment; ask follow-up questions as indicated.**

| Deployer question | Not answered | Yes response | Provider comments (if indicated) |
|---|---|---|---|
| Danger of being killed | O | O | |
| Encountered bodies or saw people killed or wounded | O | O | |
| In direct combat and discharged weapon | O | O | |



**4. Address concerns identified on deployer questions 6 through 9.**

| Deployer question | Not answered | Deployer indicated concern | Deployer's response or concern | Provider comments (if indicated) |
|---|---|---|---|---|
| Health care visits during deployment | O | O | | |
| Care for combat stress/mental health | O | O | | |
| Hospitalized during deployment | O | O | | |
| Physical limitations/problems | O | O | | |

**5. Deployment injury and concussion risk assessment.**

a. Did deployer have an injury based on their responses to question 10.a.?
- O Yes
- O No (*go to block 6)*

b. Did deployer have a possible concussion based on their responses to questions 10.a. through 10.c.?
- O Yes
- O No (*go to block 6)*

c. Evaluate injury history and concussion-related experiences and symptoms.

Refer for evaluation?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O *Other reason (explain):* _____

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**Deployer's SSN (Last 4 digits):** _____

**6. Post-deployment general symptoms/health concerns.**

| List of symptoms reported as "Bothered a Lot" on Deployer Questions 11a. through 11ee. |
|---|
| |
| **List of symptoms reported as "Bothered a Little" on Deployer Questions 11a. through 11ee.** |
| |

| Physical symptom (PHQ-15) severity score for Deployer Questions 11a. through 11o. | | | | |
|---|---|---|---|---|
| | Minimal < 4 | Low 5 - 9 | Medium 10 - 14 | High ≥ 15 |
| Deployer's total | _____ | _____ | _____ | _____ |

a. Does deployer have evidence of high generalized post-deployment physical symptoms (a score of ≥ 15 on the PHQ-15 physical symptoms scale - deployer questions 11a. - 11o.) or is "bothered a lot" by specific symptoms listed in 11a. – 11ee.?
- O Yes
- O No
- O Not answered by deployer

b. Based on deployer's responses to deployer questions 11a. through 11ee. is a referral indicated?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O *Other reason (explain):* _____

**7. Major life stressor as reported on deployer question 12.**

a. Did deployer mark they have a concern or a difficulty with a major life stressor?
- O Yes Deployer's concern: _____
- O No (*go to block 8)*
- O Not answered by deployer

b. If yes, **ask** additional questions to determine level of problem: _____

c. Consider need for referral. Referral indicated?
- O Yes (complete blocks 19 and 20)
- O No
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O Other *reason (explain):* _____



**8. Self-reported history of prescription or over-the-counter medications as described on deployer question 13.**

| Deployer question | Not answered | Yes response | Deployer's response | Provider comments (if indicated) |
|---|---|---|---|---|
| Medications | O | O | | |

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**Deployer's SSN (Last 4 digits):** _____

**9. Alcohol use as reported in deployer question 14.**

a. Deployer's AUDIT-C screening score was _____. *(If score between 0-4 (men) or 0-3 (women) nothing required, go to block 10).* O Not answered

Number of drinks per week: _____ Maximum number of drinks per occasion: _____

Based on the AUDIT-C score and assessment of alcohol use, follow the guidance below:

| Alcohol Use Intervention Matrix | | |
|---|---|---|
| **Assess Alcohol Use** | **AUDIT-C Score Men 5 - 7 Women 4 - 7** | **AUDIT-C Score Men and Women ≥ 8** |
| Alcohol use WITHIN recommended limits:<br>Men: ≤ 14 drinks per week **OR** ≤ 4 drinks on any occasion<br>Women: ≤ 7 drinks per week **OR** ≤ 3 drinks on any occasion | Advise patient to stay below recommended limits | Refer if indicated for further evaluation AND conduct BRIEF counseling* |
| Alcohol use EXCEEDS recommended limits:<br>Men: > 14 drinks per week or > 4 drinks on any occasion<br>Women: > 7 drinks per week or > 3 drinks on any occasion | Conduct BRIEF counseling* AND consider referral for further evaluation | |

* **BRIEF** counseling**:** **B**ring attention to elevated level of drinking; **R**ecommend limiting use or abstaining; **I**nform about the effects of alcohol on health; **E**xplore and help/support in choosing a drinking goal; **F**ollow-up referral for specialty treatment, if indicated.

b. Referral indicated for evaluation?
O Yes (complete blocks 19 and 20)
O No Provide education/awareness as needed.
State reason if AUDIT-C score was 8+:
O *Already under care*
O *Already has referral*
O *No significant impairment*
O *Other reason (explain):* _____



**10. PTSD screening as reported in deployer question 15.**

a. Are two or more of the deployer's responses to questions 15a. through 15d. "yes?"
O Yes
O No *(go to block 11)*
O Not answered by deployer

b. If yes, ask additional questions to determine extent of problem: _____

c. Consider need for referral. Referral indicated?
O Yes (complete blocks 19 and 20)
O No
O *Already under care*
O *Already has referral*
O *No significant impairment*
O **Other** *reason (explain):* _____

**11. Depression screening as reported in deployer question 16.**

a. Did deployer mark "more than half the days" or "nearly every day" on question 16a. or 16b.?
O Yes
O No *(go to block 12)*
O Not answered by deployer

b. If yes, ask additional questions to determine extent of problem; briefly describe results: _____

c. Consider need for referral. Referral indicated?
O Yes (complete blocks 19 and 20)
O No
O *Already under care*
O *Already has referral*
O *No significant impairment*
O **Other** *reason (explain):* _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**12. Environmental and exposure concern/assessment as reported in deployer questions 17 and 18.**

a. Did deployer indicate a worry or possible exposure? O Yes O No (go to block 13)

| If yes, mark deployer's exposure concern(s) | |
|---|---|
| O Animal bites | O Paints |
| O Animal bodies (dead) | O Pesticides |
| O Chlorine gas | O Radar/Microwaves |
| O Depleted uranium | O Sand/dust |
| O Excessive vibration | O Smoke from burning trash or feces |
| O Fog oils (smoke screen) | O Smoke from oil fire |
| O Garbage | O Solvents |
| O Human blood, body fluids, body parts, or dead bodies | O Tent heater smoke |
| O Industrial pollution | O Vehicle or truck exhaust fumes |
| O Insect bites | O Chemical, biological, radiological warfare agent |
| O Ionizing radiation | O Other exposures to toxic chemicals or materials, such as ammonia, nitric acid, etc. Please list: |
| O JP8 or other fuels | |
| O Lasers | |
| O Loud noises | |

b. If yes, referral indicated?
- O Yes (complete blocks 19 and 20)
- O No (provide risk education)
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O *Other reason (explain):* _____

**13. Depleted uranium (DU) as reported in deployer question 19.**



a. Did deployer mark either "yes" or "don't know to questions 19?
- O Yes
- O No *(go to block 14)*

b. If yes, based on details of event and extent of exposure is referral to PCM for completion of DD Form 2872 (DU Questionnaire) and possible 24-hour urinalysis indicated?
- O Yes (complete blocks 19 and 20)
- O No (provide risk education)
  - O *Already under care*
  - O *Already has referral*
  - O *No significant impairment*
  - O Other *reason (explain):* _____

**14. Malaria prophylaxis review as reported in deployer question 20.**

Deployer reports having deployed to: _____

a. Deployment location required malaria prophylaxis? O Yes O No *(go to block 15)*

b. Did deployer receive anti-malarial prophylaxis AND report compliance? O Yes *(go to block 15)* O No

c. If no, determine need for prophylaxis. Prescription indicated?
- O Yes (complete blocks 19 and 20)
- O No (briefly state reason): _____

**15. Animal bite (rabies risk) as reported on deployer question 21.**

a. Did deployer mark "yes" on animal bite/scratch?
- O Yes
- O No *(go to block 16)*

b. If yes, based on details of event and care received is a referral and/or follow-up indicated?
Note: Rabies incubation period can be months to years. Rabies prophylaxis can begin at anytime.
- O Yes (complete blocks 19 and 20)
- O No (provide risk education)
  - O *Was appropriately treated*
  - O *Already under care*
  - O *Already has referral*
  - O *Situation was not a risk for rabies*
  - O Other *reason (explain):* _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

**16. Suicide risk evaluation.**

a. **Ask** "Over the **PAST MONTH**, have you been bothered by thoughts that you would be better off dead or of hurting yourself in some way?"
- O Yes
- O No (go to block 17)

b. If 16.a. was yes, **ask:** "How often have you been bothered by these thoughts?"
- O Few or several days
- O More than half of the time
- O Nearly every day

c. If 16.a. was yes, **ask:** "Have you had thoughts of actually hurting yourself?"
- O Yes **(If yes, ask questions 16d. through 16g.)**
- O No (If no thoughts of self-harm, go to block 17)

d. **Ask** "Have you thought about how you might actually hurt yourself?"
- O Yes How? _____
- O No

e. **Ask** "There's a big difference between having a thought and acting on a thought. How likely do you think it is that you will act on these thoughts about hurting yourself or ending your life over the next month?"
- O Not at all likely
- O Somewhat likely
- O Very likely

f. **Ask** "Is there anything that would prevent or keep you from harming yourself?"
- O Yes What? _____
- O No

g. **Ask** "Have you ever attempted to harm yourself in the past?"
- O Yes How? _____
- O No

**h. Conduct further risk assessment** (e.g., interpersonal conflicts, social isolation, alcohol/substance abuse, hopelessness, severe agitation/anxiety, diagnosis of depression or other psychiatric disorder, recent loss, financial stress, legal disciplinary problems, or serious physical illness)

Comments: _____

**i.** Does deployer pose a current risk for harm to self?
- O Yes (complete blocks 19 and 20)
- O No



**17. Violence/harm risk evaluation.**

a. **Ask,** "Over the past month have you had thoughts or concerns that you might hurt or lose control with someone?"
- O Yes
- O No *(go to block 18)*

If yes, **ask** additional questions to determine extent of problem (target, plan, intent, past history) Comments: _____

b. Does member pose a current risk to others?
- O Yes (complete blocks 19 and 20)
- O No (briefly state reason): _____

**This form must be completed electronically. Handwritten forms will not be accepted.**

**Deployer's SSN (Last 4 digits):** _____

| 18. Deployer issues with this assessment (mark as appropriate): |
|---|
| O Deployer declined to complete form |
| O Deployer declined to complete interview/assessment |

**Assessment and Referral: After review of deployer's responses and interview with the deployer, the assessment and need for further evaluation is indicated in blocks 19 through 22.**

| 19. Summary of provider's identified concerns needing referral < Mark all that apply> | Yes | No |
|---|---|---|
| a. None Identified O | | |
| b. Physical health | O | O |
| c. Dental health | O | O |
| d. Concussion | O | O |
| e. Mental health symptoms | O | O |
| f. Alcohol use | O | O |
| g. PTSD symptoms | O | O |
| h. Depression symptoms | O | O |
| i. Environment/work exposure | O | O |
| j. Depleted uranium | O | O |
| k. Malaria prophylaxis | O | O |
| l. Risk of self-harm | O | O |
| m. Risk of violence | O | O |
| n. Other, list: | O | O |



| 20. Recommended referral(s) < Mark all that apply even if deployer does not desire> | Within 24 hours | Within 7 days | Within 30 days |
|---|---|---|---|
| a. Primary Care, Family Practice, Internal Medicine | O | O | O |
| b. Behavioral Health in Primary Care | O | O | O |
| c. Mental Health Specialty Care | O | O | O |
| d. Dental | O | O | O |
| e. Other specialty care: | O | O | O |
| Audiology | O | O | O |
| Dermatology | O | O | O |
| OB/GYN | O | O | O |
| Physical Therapy | O | O | O |
| TBI/Rehab Med | O | O | O |
| Podiatry | O | O | O |
| Other, list | O | O | O |
| f. Case Manager / Care Manager | O | O | O |
| g. Substance Abuse Program | O | O | O |
| h. Immunization clinic | O | O | O |
| i. Laboratory | O | O | O |
| j. Other, list: | O | O | O |

**21. Comments**: _____
_____
_____
_____

**22. Address requests as reported on deployer questions 22 through 25.**

| Deployer question | Not answered | Yes response | Comments (if indicated) |
|---|---|---|---|
| Request medical appointment | O | O | |
| Request info on stress/emotional/alcohol | O | O | |
| Family/relationship concern assistance | O | O | |
| Chaplain/counselor visit request | O | O | |

| 23. Supplemental services recommended / information provided | |
|---|---|
| O Appointment Assistance | O Family Support |
| O Information on post-deployment blood specimen requirement | O Military One Source |
| O Contract Support: _____ | O TRICARE Provider |
| O Community Service: _____ | O VA Medical Center or Community Clinic |
| O Chaplain | O Vet Center |
| O Health Education and Information | O Other, list: |
| O Health Care Benefits and Resources Information | |
| O In Transition | |

**Provider's Name:** _____ Date (*dd/mmm/yyyy*) _____

Title: O MD or DO O PA O Nurse Practitioner O Adv Practice Nurse O IDMT O IDC O IDHS

**I certify that this review process has been completed.** **This visit is coded by V70.5 _ E**

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