

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
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1. REPORT DATE (DD-MM-YYYY) 30-06-2008		2. REPORT TYPE FINAL REPORT		3. DATES COVERED (From - To) JULY2007-JULY2008	
4. TITLE AND SUBTITLE A Descriptive Study of the Utilization of Behavioral Health Resources in the Fort Hood Catchment Area				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
				5d. PROJECT NUMBER	
6. AUTHOR(S) MUTZIG, LISA, K. MAJ/AN				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) CARL R. DARNALL ARMY MEDICAL CENTER 36000 DARNALL LOOP FORT HOOD, TX 76544				B. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) US Army Medical Department Center and School BLDG 2841 MCCS-HFB (Army-Baylor Program in Health and Business Administration) 3151 Scott Road, Suite 1411 Fort Sam Houston, TX 78234-6135				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S) 15-08	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT The purpose of this retrospective study was to determine the effect of beneficiary category, gender, venue of care and fiscal year quarter on a diagnosis of deployment related PTSD. The effects of mental illness problems are multigenerational, especially if not identified and treated early. It is important to seek help for PTSD because untreated PTSD can lead to more serious, chronic mental and physical illness (National Center for PTSD Factsheetb, n.d.). Early detection and treatment after a traumatic event may help prevent PTSD and its related co-morbidities from developing (Voges & Romney, 2003). This study supports the suspicion that mental health issues are a real problem for the Fort Hood population and that Fort Hood and the local network may not be able to continue to support the behavioral health demand at status quo. PTSD diagnosis in purchased care (PC) had remained constant from FY05-FY07, while the diagnosis of PTSD in direct care (DC) had quadrupled between FY05 and FY07, and the timing of PTSD diagnosis coincided with deployment rotations. Females were likely to be diagnosed with mental health issues, and males were likely to be diagnosed with substance abuse issues.					
15. SUBJECT TERMS behavioral health utilization, PTSD, space, staff					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 94	19a. NAME OF RESPONSIBLE PERSON Education Technician
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (Include area code) 210-221-6443

Running head: EFFECTS OF DEPLOYMENT ON THE UTILIZATION OF
BEHAVIORAL HEALTH RESOURCES

Graduate Management Project Proposal

A Descriptive Study of the Utilization of Behavioral Health Resources in the Fort Hood
Catchment Area

Major Lisa K. Mutzig

U.S. Army – Baylor University Graduate Program in Health Care Administration

July 15, 2008

20090210159

Disclaimer

The opinions expressed herein are those of the author and do not reflect the official policies of the U.S. Army Medical Command, Department of the Army, Department of Defense, Baylor University, or the U.S. Government.

Statement of Ethical Conduct in Research

The author declares no conflicts of interest or financial interests in any product or service mentioned in this article, including grants, employment, stock holdings, gifts, or honoraria. The confidentiality of individual members of the study population was protected at all times throughout the study.

Acknowledgments

I would like to thank the Managed Care Division staff at Carl R. Darnall Army Medical Center for providing me with expert assistance in gathering accurate and timely data for this project, especially Mr. Chuck Lauer and Mrs. Stephanie Laird. I would like to thank all those involved in preparing information slides about CRDAMC and its Behavioral Health Services for the Hospital Commander, the Installation Commander, the DAIG Team, and the GAO team. Thank you to the Librarian, Mrs. Newel, for helping me with my research, and thank you to all the people who suffered my endless questions. Thank you to LTC Weiss for sharing your Reserves research with me.

Abstract

The purpose of this retrospective study was to determine the effect of beneficiary category, gender, venue of care and fiscal year quarter on a diagnosis of deployment related PTSD. The effects of mental illness problems are multigenerational, especially if not identified and treated early. It is important to seek help for PTSD because untreated PTSD can lead to more serious, chronic mental and physical illness (National Center for PTSD Factsheet^b, n.d.). Early detection and treatment after a traumatic event may help prevent PTSD and its related co-morbidities from developing (Voges & Romney, 2003).

This study supports the suspicion that mental health issues are a real problem for the Fort Hood population and that Fort Hood and the local network may not be able to continue to support the behavioral health demand at status quo. PTSD diagnosis in purchased care (PC) had remained constant from FY05-FY07, while the diagnosis of PTSD in direct care (DC) had quadrupled between FY05 and FY07, and the timing of PTSD diagnosis coincided with deployment rotations. Females were likely to be diagnosed with mental health issues, and males were likely to be diagnosed with substance abuse issues.

The right size space for the R&R building for our current active duty population is 26,476 gross square feet for a population of users of 16,292, 32 providers and 8 support staff. The right size for a separate PTSD treatment facility is 24,711 gross square feet for 29 providers, 8 support, and 16,292 yearly users.

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Posttraumatic Stress Disorder and Mild Traumatic Brain Injury

Post traumatic stress disorder (PTSD) and Mild Traumatic Brain Injury (mTBI) have been identified by the Office of the Surgeon General United States Army Medical Command as significant issues negatively affecting soldiers and their families, and steps have been taken to address these issues, such as mandatory training of all Army personnel on PTSD and mTBI (Office of the Surgeon Multinational Force-Iraq and Office of the Surgeon General United States Army Medical Command, 2007). See Table 1 for specific Diagnostic and Statistical Manual of Mental Disorders, 4th ed. (DSM-IV) criteria for PTSD. The military population and sexual assault victims are at particular risk for PTSD because of the violent environment and multiple exposures to highly traumatic events (Goldman, Thomas, & David, 1998). The lifetime prevalence of PTSD in the general population is 1-14%, and is significantly higher in high-risk populations, such as the military. PTSD can occur at any age; onset is usually three months after trauma exposure; one-half of PTSD cases resolve within three months; and 80% of PTSD cases have co-morbid psychiatric diagnoses, most commonly obsessive-compulsive disorder (OCD), panic disorder (PD), agoraphobia, and major depression (Goldman, Thomas, & David). PTSD in Vietnam Veterans found an association with avoidant, schizoid or borderline personality, anxiety and depression (Nurse, 1999). See Table 2 for common co-morbidity lifetime prevalence rates. PTSD is the number one mental health problem among veterans returning from the conflicts in Iraq and Afghanistan (Prins, Kimerling, & Leskin, n.d.). LTC Charlotte Weiss, of the Office of the State Surgeon Texas Army and Air National Guard, under the authorization of MG Rodriguez, developed the Texas Military Forces Joint Mental Health Program. She used the Post-Deployment Health Reassessment (PDHRA) Survey DD Form

2900, as established by the pilot program at Fort Hood, on six Reserve battalions in support of Operation Iraq Freedom III (Apr06- Jan07) (Weiss, 2007). See Table 3 for prevalence rates of behavioral health issues found in the Texas Army and Air National Guard. As stated in the graduate management project by Dickinson, *Effects of Deployment on the Mental Health of Service Members at a U.S. Army Installation* (2005):

In a joint effort the Department of Defense and Veterans Health Administration developed the Clinical Practice Guideline for Post-Deployment Health Evaluation and Management. The purpose of the post-deployment health guideline is to strengthen the capacity to provide effective military health care for patients with post-deployment health concerns and to place responsibility for this care in the hands of primary care providers. The guideline has three basic components: screening, classification, and management. Patients are introduced into the post-deployment health clinical practice guideline through the screening process. Screening occurs before deployment, after deployment, and during outpatient clinic visits to identify whether health concerns for those visits are deployment-related. A patient identified as a post-deployment health patient is classified into one of three categories based on the deployment-related concern: (a) being asymptomatic but with a health concern, (b) having an identifiable diagnosis (e.g., poison ivy rash), or (c) having medically unexplained physical symptoms. Management of the patient is outlined according to the type of problem identified (Farley & Vernez, 2002; Post-Deployment Health Evaluation and Management Clinical Practice Guideline, 2001). The processes specified in the guideline for identifying and treating post-deployment health patients were designed for enhancing clinical care. On 1 August 2005, the Assistant Secretary of the Army for Manpower and Reserve Affairs selected Fort Hood as a PDHRA test site to help determine the planning factors for resources, assess the PDHRA instrument, determine referral rates, ascertain treatment requirements, and establish a time line in preparation for

Army-wide implementation. On 18 August, 2005 Fort Hood began the PDHRA as a pilot site for program implementation (p. 9).

Soldiers are not the only ones suffering the effects of PTSD. Their spouses and children suffer too. Results in Wani and Margoob's *Family study of adult PTSD patients in South Asia-Experience from Kashmir* (2006), revealed that 62% of family members of patients diagnosed with PTSD had some sort of psychiatric morbidity: PTSD (32.12%); major depressive disorder (19.45%), generalized anxiety disorder (4.52%), and adjustment disorder (2.26%). Copeland, Keeler, Angold, & Costello found in their longitudinal study of 1,420 children, that more than two-thirds of them experienced at least one traumatic event by the age of 16, and 13.4% of those children developed some symptoms of posttraumatic stress (2007). They concluded that multiple traumatic experiences in children have the strongest links to anxiety and depressive disorders. In another study, of those children who have been exposed to at least one traumatic event, 3 to 15% of girls and 1 to 6% of boys may develop PTSD (Hamblen, n.d.). Children of World War II's Holocaust have been reported to develop PTSD based off of parental experiences (Bower, 1996). During times of deployment, child neglect and maltreatment by civilian female spouses of enlisted US Army personnel increases three-fold, with physical abuse less common, but more severe (Stapleton, 2007). Misdiagnosed PTSD in children commonly shows as behavior disorders or Attention Deficit Hyperactivity Disorder (ADHD) (Nurse, 1999). Traumatized boys tend to display ADHD, behavior disorder and delinquency, while traumatized girls tend to display dissociation or depression. Traumatized patients could also be misdiagnosed as psychotic, paranoid schizophrenic or bipolar (Nurse). Three factors may contribute to the development of PTSD in children: the severity of the trauma; parental reaction to the trauma; and physical proximity to the event (Hamblen, n.d.). Very

young children tend to exhibit separation anxiety, avoidance of situations that resemble the trauma, sleep disturbances, and preoccupation with words or symbols related to the trauma. Small children may also developmentally regress and engage in posttraumatic play where they repeat themes of the trauma. Elementary school-aged children may not experience flashbacks or amnesia, but feel that they should have known the event was going to happen and often skew the timing of events. They exhibit posttraumatic play, reenactment, drawings, or verbalizations. PTSD in adolescents begins to more closely resemble PTSD in adults, but adolescents are more likely to exhibit impulsive and aggressive behaviors than children or adults. Children and adolescents exposed to traumatic events also may show fear, anxiety, depression, anger, aggression, sexually inappropriate behavior, self destructive behavior, feelings of isolation and stigma, poor self-esteem, difficulty trusting others, substance abuse, and problems with school performance. If left untreated, these children can continue to exhibit symptoms for years (Hamblen). Child abuse survivors tend to show dependent personality disorder, avoidant, schizoid or borderline personality, anxiety, and more severe depressive symptoms than veterans (Nurse, 1999).

TBI is caused by any injury to the brain from an external source (Department of Veterans Affairs, 2004). See Table 4 for diagnostic criteria for mild TBI and see Table 5 for common causes of TBI. Males outnumber females 2:1 for TBI; ages 15-35 are most at risk for TBI from Motor Vehicle Accidents (MVA); and about 50% of TBI cases are likely to be alcohol related. Recovery is gradual, lasting 18-36 months, with 80-85% of the recovery occurring in the first six months. The most commonly accepted lifetime prevalence is about 20% and these patients require ongoing medical care to manage their symptoms (Department of Veterans Affairs). The vast majority of survivors of moderate

TBI and severe TBI do not fully return to pre-injury cognitive state and may have negative conduct issues, while most survivors of mild TBI make a full recovery within three months. See Table 6 for frequency of post-concussion syndrome (PCS) symptoms following mTBI and in the general population. Treating these patients can be difficult because symptoms of TBI mimic those of other mental disorders. Medical complications during the acute rehabilitation period include: seizures, spasticity, neuroendocrine dysfunction, panhypopituitarism, gastrointestinal complications, hydrocephalus, heterotopic ossification, urinary incontinence, deep vein thrombosis and pulmonary edema. See Table 7 for co-morbidity prevalence rates for TBI. Because symptoms of TBI are vague, family members living with someone with TBI may not understand or know how to respond to the patient's lethargy, anger, emotional outbursts, disorganization, and/or passivity, and this can put stress on the family unit (Department of Veterans Affairs).

Seeking care and identifying the solutions to treating PTSD, mild TBI, and their related co-morbidities are critical for the sustainment of the United States Armed forces. The effects of these mental illness problems are multigenerational, especially if not identified and treated early. However, as a culture, the United States views mental illness as a weakness (Goldman, Thomas, & David, 1998), but, with the severity of current events, the Nation must be willing to change the cultural attitude towards mental health issues. As General Cody, Vice Chief of Staff of the Army, stated on his visit to Carl R. Darnall Army Medical Center on 14 August, 2007, "The real thing is to get the stigma out of [PTSD]" (General Cody, personal communication, August 14, 2007). Soldiers and families alike do not desire to address the issues of traumatic events for fear of retribution and shame (National Center for PTSD Factsheet^b, n.d.). "1 out of 5 people say they might not get help

because of what other people might think”, and “1 out of 3 people say they would not want anyone else to know they were in therapy” (National Center for PTSD Factsheet^b, n.d., ¶3).

But stigma related to behavioral health disorders does not only occur in the patient.

Providers have biases as well. Women diagnosed with a psychological disorder are more likely to seek health services than men, and are more likely to be targeted for treatment in primary care settings (Kimerling, Ouimette, & Wolfe, 2002). Male providers are significantly more likely to explore symptoms of depression and discuss a diagnosis with females compared to male patients (Kimerling, Ouimette, & Wolfe).

Health Care Utility Co-Morbidity Related to PTSD

Health care utility has been shown to increase in those diagnosed with PTSD and other trauma related diagnoses. The following passage is quoted from Kimerling, Ouimette, & Wolfe, (2002). *Gender and PTSD*, p. 273-274, and p. 277:

A 1998 study by Beckam et al. of 327 male combat veterans seeking trauma related mental health treatment assessed using standardized questionnaires and medical chart review found that veterans with PTSD suffered from more health conditions according to both physician and patient self report than did veterans without PTSD. A longitudinal study of a community sample of 605 older male veterans of World War II and the Korean War examined health status via physical exam and even after accounting for factors predictive of health status, PTSD symptoms were associated with an increased risk for onset of several categories of physician diagnosed medical problems common to older males: arterial, lower gastrointestinal, dermatological and musculoskeletal disorders (Schnurr, Spiro, & Paris, 2000). A follow-up study in 1997 of self reported data collected via a telephone survey of over 7000 Vietnam Veterans conducted by the Center for Disease Control in 1988, found that a lifetime diagnosis of PTSD was associated with an increased risk for heart and circulatory disorders, non sexually transmitted infectious diseases,

musculoskeletal disorders, digestive conditions, respiratory disorders, endocrine and metabolic conditions, and nervous system disorders. Another study of non veteran Australian firefighters found that subjects with PTSD suffered more cardiovascular, respiratory, musculoskeletal, and neurological symptoms than those without a history of PTSD (McFarlane, Atchison, Rafalowicz, & Papay, 1994). In a random sample of 1225 women subscribers of a large health maintenance organization, women who reported childhood maltreatment compared to those without abuse histories revealed significantly higher rates of physician diagnosed morbidity, including infectious diseases, pain disorders, and other illnesses such as hypertension, asthma, or skin disorder. The number of diagnoses increased with the number of traumas (p. 277).

See Table 8 for co-morbidity of medical conditions with PTSD. Co-morbidity of increased physical symptoms with PTSD diagnosed patients has also been demonstrated in general population samples from the United States, Israel, New Zealand, Canada and Germany (Kimerling, Ouimette, & Wolfe, 2002). The incidence of psychiatric disorders is approximately 15% in outpatient medical populations, and the incidence of emotional and psychiatric symptoms is approximately 40% (Goldman, Thomas, & David, 1998). Approximately 60% of psychiatric disorders are treated in primary care settings, while only 20-25% is treated by mental health professionals. A medical inpatient with a co-morbid psychiatric disorder incurs twice the cost of a patient with the same illness without a psychiatric disorder. A large number of consumers who use outpatient services quite often have anxiety, depressive, or somatoform disorders (Goldman, Thomas, & David). It is estimated that these high utilizers use two to three times the average outpatient services and ten times the specialty and inpatient services. It has been shown that mental health services integrated into medical services can markedly decrease medical costs and inappropriate

healthcare utilization by 30-70% (Goldman, Thomas, & David, 1998). See Table 9 for a listing of primary care setting advantages and challenges. Also, see Table 10 for a listing of common presenting complaints or problems of psychiatric disorder in the primary care setting. Issues affecting accurate diagnosis in the primary care setting include: hidden psychiatric problems since patients are not always forthcoming with information; differentiating medical from psychiatric disorders can be difficult at times; effect of gender, age, culture and personality; course of symptoms over time; and severity of symptoms. The challenges, advantages, training, and expertise levels and patient characteristics leads to the importance of a full psychiatric and medical screening at each appointment, as well as increased patient and physician education on symptomology (Goldman, Thomas, & David). See Table 11 for a list of commonly used psychiatric screening instruments in primary care.

Conditions that Prompted the Study

Now that the Post Deployment Health Reassessment (PDHRA) program has been in place for two years, an assessment of the types of care demanded by the population of Darnall and the network is needed to best allocate mental health resources. Efforts by the hospital administration and the local network have been made to provide necessary access to care through proper alignment of resources. The hospital command, as well as Great Plains Regional Command (GPRMC), needed someone to compile data on who is using what resources in which venue, to assess whether or not CRDAMC is meeting the needs of its population, and to determine which additional resources are needed, if any.

Statement of the Problem and Question

Major Dickinson's research explored whether or not the United States has an Army-at-Risk, or a Population-at-Risk. An Army-at-Risk implies that only the soldiers are at risk

for developing behavioral health issues based on their military experiences. However, soldiers do not live in a vacuum. They have families and friends who are also affected by the trauma the soldiers experience. Therefore, the United States has a Population-at-Risk for developing behavioral health issues related to deployments. This nation is likely to see an increase in the usage of mental health services as well as healthcare services in general, and it is important to identify and plan ahead for these resource demands. Resources must be aligned to treat PTSD, so it is vital to explore which Carl R. Darnall Medical Center (CRDAMC) and network enrolled beneficiaries are at risk.

Literature Review

Social Stigma of Behavioral Health Issues

Because most people do not seek care for PTSD, primary care providers need to know that “patients want primary care providers to acknowledge their traumatic experiences and responses” (Prins, Kimerling, & Leskin, n.d., p. 58). PTSD can be detected and effectively managed in the primary care setting by providing a Primary Care PTSD (PC-PTSD) screen to all patients. See Table 12 for a sample screening. Detecting PTSD is important because:

Exposure to traumatic stress is associated with increased health complaints, health service utilization, morbidity, and mortality. PTSD appears to be a key mechanism that accounts for the association between trauma and poor health. PTSD and exposure to traumatic experiences are associated with a variety of health-threatening behaviors, such as alcohol and drug use, risky sexual practices, and suicidal ideation and gestures. PTSD is associated with an increased number of both

lifetime and current physical symptoms, and PTSD severity is positively related to self-reports of physical conditions (Prins, Kimerling, & Leskin, n.d., p. 60).

The Iraq War Clinician Guide, from the Department of Veterans Affairs, National Center for PTSD, outlines what clinicians should know about what today's soldiers face and how to best treat them (Cozza, Benedek, Bradley, Grieger, Nam, & Waldrep, n.d.).

Coping and Treatment

Family members are the primary source of support for military members, and it is important for them to participate in behavioral health treatment (National Center for PTSD Factsheet^a, n.d.). Family members need to understand what the soldier is going through, and the soldier needs to understand how his or her actions are affecting the family. Recovering from PTSD is possible through an ongoing, gradual process which may lead to fewer and less intense reactions (Ruzek, n.d.). Positive coping actions include: learning about trauma and PTSD, talking to another person for support, talking to a doctor about trauma and PTSD, practicing relaxation methods, increasing positive distracting activities, calling a counselor for help, and taking prescribed medications to tackle PTSD. Negative coping actions include: use of alcohol or drugs, social isolation, anger, and continuous avoidance of addressing trauma. Recommended lifestyle changes include: taking control by calling about treatment and joining a PTSD support group, increasing contact with other survivors of trauma, reinvesting in personal relationships with family and friends, changing neighborhoods, refraining from alcohol and drug abuse, starting an exercise program, and starting to volunteer in the community. These changes may be difficult to start but can provide relief and recovery from PTSD (Ruzek, n.d.). It is important to seek help for PTSD because untreated PTSD can lead to more serious, chronic mental and physical illness

(National Center for PTSD Factsheet^b, n.d.). Seeking treatment earlier, rather than later, is better; however, if the symptoms automatically disappear, no treatment is necessary. Sometimes, though, symptoms persist for longer than three months and can cause problems with home and work. Treatments that are available include: cognitive-behavioral therapy (CBT), eye movement desensitization and reprocessing (EMDR), and medications, particularly selective serotonin reuptake inhibitors (SSRI). The cognitive-behavioral therapies of exposure therapy and cognitive restructuring seem to be the most solidly evidence-supported treatments for PTSD (Arehart-Treichel, 2001).

Population at Risk for Developing PTSD

As mentioned earlier, PTSD cannot occur without a traumatic event, but there are other factors that contribute to the development of PTSD. In situations of similar trauma types, like common combat experiences, greater duration or intensity of exposure to the trauma tends to increase the risk for PTSD (Stein, Jang, Taylor, Vernon, & Livesley, 2002). Other factors that raise the risk for developing PTSD are: female gender, low IQ, some pre-morbid personality characteristics like neuroticism, preexisting anxiety or depressive disorders, or a family history of anxiety or depressive disorders (Stein, et al.). The trauma exposure rate in 2001 in the general population varied between 40-80%, while the prevalence rate of PTSD in exposed individuals was only 8% (Seedat, Niehaus, & Stein, 2001). This evidence further supports a genetic link in PTSD symptoms. Shy or introverted people are more at risk for developing PTSD than extroverted people (Hammond, 2005). Another factor that puts people at risk for developing PTSD is whether or not they were a victim or a witness to a traumatic event (Voges, & Romney, 2003).

Why Detection and Treatment are Important

Early detection and treatment after a traumatic event may help prevent PTSD and its related co-morbidities from developing (Voges & Romney). Evidence links PTSD to increased physical problems as well, such as cardiovascular, gastrointestinal, and musculoskeletal disorders (Jankowski, n.d.). In Giller and Vermilyea's paper, *FDA Advisory Statement on PTSD*, they state from their research that "PTSD is associated with high levels of use of non-mental health services" (Giller & Vermilyea, n.d., ¶6). They also state that "hidden costs include medical costs for suicidal and parasuicidal behaviors as well as other somatoform and psychophysiological disorders commonly reported by trauma survivors" (Giller & Vermilyea, n.d., ¶6). Early diagnosis and treatment are cost effective, cutting treatment time for the correct diagnosis of PTSD to 1/3 of that of a misdiagnosis. Their research also reveals that "short-term specialized programs to treat PTSD were more cost effective and beneficial than either long-term specialized units or non-specialized programs" (Giller & Vermilyea, n.d., ¶14).

Purpose

The purpose of this retrospective study was to determine the effect of beneficiary category, gender, venue of care, and fiscal year quarter on a diagnosis of deployment related PTSD. By exploring which type of beneficiary broke the stigma barrier by seeking and receiving care for mental health issues that resulted in a diagnosis of PTSD, this study will help focus the behavioral health resource allocation in accordance with the population demographics and demand at Darnall in the hopes of maintaining an effective Military Force now and in the future.

Method

This retrospective study utilized a quantitative approach to determine which variables had an effect on a deployment related diagnosis of PTSD in active duty service members in the Fort Hood catchment area. The independent variables (X) were as follows:

X1 = Beneficiary Category Common (BEN CAT C): Dichotomous: 1 = active duty-dependent, 0 otherwise.

X2 = SEX: dichotomous: 1 = male, 0 = female

X3 = Venue of Care (VEN): Dichotomous: 1 = Direct Care, 0 = Purchased Care

X4 = Fiscal Year Quarter (FYQ): Categorical: 1 = FY05Q1, defined as fiscal months (FM) 1, 2 & 3; 2 = FY05Q2, defined as FMs 4, 5, & 6; 3 = FY05Q3, defined as FMs 7, 8, & 9; 4 = FY05Q4, defined as FMs 10, 11, 12; 5 = FY06Q1; 6 = FY06Q2; 7 = FY06Q3; 8 = FY06Q4; 9 = FY07Q1; 10 = FY07Q2; 11 = FY07Q3; 12 = FY07Q4. FM1 = October, FM2 = November, FM3 = December, FM4 = January, FM5 = February, FM6 = March, FM7 = April, FM8 = May, FM9 = June, FM10 = July, FM11 = August, FM12 = September
The dependent variable (Y) was defined as follows:

Y1 = Deployment related PTSD diagnosis (DR): Dichotomous: DR = 1, 0 if not deployment related.

These variables were selected based off the literature review and prior studies. Sponsor rank and age were not used because over 50% of the data for DC were missing. TBI and TBI related diagnoses were not included in the analysis because they were ill-defined. Education level, assigned unit, personality type, and previous trauma exposure were not available through this type of data pull. The data set included only those with a diagnosis of PTSD out of all the encounters that occurred from FY05 through FY07, both

on post and in the network. Number of encounters over total enrollees % was used to compare any changes across the years.

Null Hypothesis (H_0): Beneficiary category, gender, venue of care, and fiscal year quarter do not have an effect on a diagnosis of deployment related PTSD from FY 2005 to FY 2007.

Alternate Hypothesis (H_1): Beneficiary category, gender, venue of care, and fiscal year quarter do have an effect on a diagnosis of deployment related PTSD from FY 2005 to FY 2007.

Alternate Hypothesis (H_2): Active duty members will seek care for mental health issues that result in a deployment related PTSD diagnosis in purchased care rather than in direct care.

Analysis

Retrospective data from M2 were gathered and reviewed by the data mining experts in the Resource Management Division at CRDAMC for validity towards this study. The data were only as reliable as the accuracy in coding and the claims data CRDAMC received from the network. Personnel ID numbers randomly generated by M2 were used when analyzing the data to ensure no breach of ethics occurred during research and were not used in this report. Medical Diagnostic Categories (MDC) 19 (mental disorders), 20 (substance abuse disorders), and 21 (injuries and poisonings), were used because they are representative of behavioral health care needs demanded and provided by CRDAMC and the network and were most likely to capture PTSD diagnoses. Patients with the ICD-9 code 309.81 were categorized into the PTSD group. Patients with ICD-9 codes of v705 4 (pre-deployment), v705 5 (during deployment), and v705 6 (post deployment) were used to

analyze the relationships between diagnoses and deployment. ICD-9 diagnosis codes are used internationally and in the United States for billing purposes and have been used in the United States since 1980 (Goldman, Thomas, & David, 1998). The American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition* (DSM-IV) was published in 1994 in an attempt to provide reliable and valid mental disorder diagnoses in both clinical and research settings by using a standard set of ICD-9 codes and definitions for psychiatric disorders. The data analysis was performed using SPSS version 12.0. Descriptive statistics were computed on the dependent and independent variables (See Table 14).

Participants

The target population for this study was active duty Army service members who sought care and received treatment at CRDAMC or the network from Fiscal Year (FY) 2005 to FY 2007 for Behavioral Health services which resulted in a diagnosis of PTSD. Of the total beneficiary population during this time (404,000), there were a total of 13,417 diagnoses of PTSD, of which 2,702 of them were coded as deployment related. Of this number, no cases were excluded based on enrollment so that full utilization was captured. Included were those enrolled to CRDAMC, Civilian Prime, other MTFs, and NOT ENROLLED because these are the groups of beneficiaries most likely to seek care in the Fort Hood catchment area in the future either because they live there, are moving there or are passing through and are receiving care. See Table 15 and 16 for Fort Hood Catchment area demographics of those who sought and received care from FY 05-FY 07 in both DC and PC.

Procedure

Binary Logistic Regression was used to determine which independent variables significantly affect the dependent variable. Deployment related diagnoses were not captured in purchased care, therefore, the variable venue of care was taken out and only direct care patients were used ($n = 7178$). The independent variables used were: beneficiary category common (X1), gender (X2), and fiscal year quarter (X4). The dependent variable used was deployment related diagnosis of PTSD (Y1) in the direct care system.

Before analysis began, missing data and outliers were examined and the data set was complete. To ensure reliability of the results, outliers were removed ($n = 7098$). Pearson's r was used to determine correlation and degree of correlation between two variables. Deployment related PTSD was weakly correlated to all three independent variables (X1: $r = .133$, $p < .0001$; X2: $r = .153$, $p < .0001$; X4: $r = .310$, $p < .0001$). Because the dependent variable is dichotomous and non-metric, and the independent variables are non-metric, logistic regression was chosen as the appropriate test statistic for this study. Tolerance for all variables exceeded 0.1, so multicollinearity was not a problem. Kolmogorov-Smirnov test for normality was significant ($p < .0001$) for PTSD, indicating a non-normal distribution, which is not a problem when using logistic regression. Therefore, no data were transformed. See Table 13 for a listing of statistics and variables used per hypothesis.

Results

Regression results indicate the overall model fit of three predictors (beneficiary category, gender, and fiscal quarter) was questionable ($-2 \text{ Log Likelihood} = 7961.180$, Nagelkerke $R^2 = .250$.) The final model ($\chi^2 (6) = 2.544$, $p = .864$) differed greatly

from the constant model ($\chi^2(13) = 1435.719, p < .0001$). The model classified 62.4% of the cases correctly. Wald statistic for a diagnosis of deployment related PTSD was significant for all three variables. However, deployment related PTSD was not significant in FYQs1-4 (all of FY05), FYQ 8 (FY06, FM 10-12), FYQ10 (FY07, FM 4-6), and FYQ11 (FY07, FM 7-9). See Tables 17-19 for Goodness of Fit Indices, Classification Table, and Regression Coefficients.

Discussion

Reject the Null hypothesis because the independent variables did have a significant effect on the dependent variable across time. However, the model of beneficiary category, sex and fiscal quarter, while significant for contributing to a PTSD diagnosis, individually did not contribute largely to predicting a diagnosis for PTSD. This is not a good model fit and other variables should be considered. However, the population receiving care on post was almost 25% more likely to seek care for and receive a diagnosis of PTSD in FY07 than in FY05. The total number of PTSD diagnoses in DC and PC for FY05-FY07 by gender and beneficiary category are listed in Tables 20-25. This increase in the number of PTSD diagnoses may have been due to the more severe pathology brought on by the increased number of deployments or type and severity of trauma seen while deployed. Or perhaps the stigma barrier has been lessened and soldiers were less afraid to seek care.

Alternate Hypothesis (H_2): Active duty members will seek care for mental health issues that result in a deployment related PTSD diagnosis in purchased care rather than in direct care, could not be tested because purchased care does not record deployment related diagnoses the same way as direct care, if at all.

The overall expected increase in behavioral health resource utilization by all beneficiary groups between 2005 and 2007, with active duty family members using more than all other groups did not occur. The DC population has increased its utilization of BH services 1.28 times (about 22%) from FY05-FY07, while the PC population has decreased its utilization of BH services by 1.77 times (about 43%) from FY05-FY07. The DC population increased its BH utilization by 1.2 times (about 17%) from FY06-FY07. The PC population decreased its BH utilization by 1.35 times (about 25%) from FY05-FY06, and again by another 1.3 times (about 24%) from FY06-FY07. This was a steep and unexpected decrease of utilization by family members.

MDC 19 (mental health diagnoses) increased 5.7% in DC from FY05-FY06, and another 1.6% from FY06-FY07. A larger number was expected from FY06 to FY07, but perhaps the resources were not available to support the demand, therefore access did not increase. Instead, it seems DC beneficiaries turned to drugs and alcohol. Seeking treatment for substance abuse was highest among active duty males from May-August 2005, which was the four months after 1st CAV came home. Two other peaks occurred: one at the end of FY06, when 1st CAV deployed again, and another four months after 4ID came home in FY07. The DC population's drug and alcohol use remained relatively constant from FY05 to FY06, but the direct care population used drugs and alcohol 1.4 times more (an increase of 38%) from FY06 to FY07. The PC population for MDC 20 (substance abuse) had remained relatively constant over all three years. However, the group most likely to seek care in the network was active duty males treated for substance abuse greater than 100 miles away. This treatment was sought in alignment with 1st CAV and 4 ID deployment rotations. MDC 21 (Injuries) in the DC population steadily decreased 1.5 times each year

from FY05-FY07 for a total decrease of 51%! A more thorough investigation on the type of injuries diagnosed needs to be done to distinguish which policies and procedures were effective in decreasing injuries to the DC population. Injuries in the PC population decreased as well, but at a much slower rate, 15%. Again, more exploration is needed to determine the types of injuries that decreased.

The expected PTSD increase for all beneficiary categories and both sexes in this population because of the high operations tempo of deployments did not occur either. PTSD diagnosis in PC had remained constant from FY05-FY07, while the diagnosis of PTSD in DC had quadrupled between FY05 and FY07. PTSD was diagnosed 2.4 times as much (about 143%!) in the DC population from FY06-FY07. 4th ID came home beginning of FY07 from their 2nd 12 month deployment.

Deployment related diagnoses began being captured for the DC population at the end of FY05. As of yet, they are not captured for the network population. FY06 was the first full year of capturing deployment related diagnoses. DR diagnoses quadrupled from FY06-FY07. 4ID came home from their 2nd 12 month deployment beginning of FY 07. Deployment related diagnoses peaked with PTSD diagnoses. The first seven months after 1st Cavalry Division returned in FY05 and the month they deployed again in FY06 were the peak times for a diagnosis of PTSD in FY05 and FY06.

The increase in PC from FY05 to FY 06 for ADFM, Retirees and their families was necessary to allow Active Duty the access to care in the DC system in support of the war fighting mission, but from FY06 to FY07, the numbers show an obvious lack of resources on post, even for Active Duty. PC for AD grew 2.4 times (about 59%) from FY06 to FY07. PC for the other beneficiary categories decreased 1.04 times (about 4%) from FY06 to FY

07. In PC, AD BH utilization remained constant from FY05 to FY06, but increased by 8.2% from FY06 to FY07. 4ID came home beginning FY07. ADFM utilization remained constant from FY05 to FY07 in DC, remained constant in PC from FY05-FY06, and actually decreased in PCFY07 by 1.2 times. It seems that ADFMs are seeking and receiving less care than in the past. Perhaps the decrease could be indicative of an increase in the divorce rate, thereby decreasing the number of family members seeking care. The Retiree population utilized resources consistently in DC and PC from FY05-FY07. Retiree Family members and Other utilized resources consistently in DC and PC from FY05 to FY06, but used them 1.3 times less in FY07. This change could be related to Reserve units mobilizing through Fort Hood.

Males were 1.6 times (about 65%) more likely to be seen in the DC system. The % of male encounters per population enrolled remained constant in DC from FY05-FY06, with an increase of 9.5% in DC and 3.4% in PC FY07, possibly indicating a sicker DC population and not enough DC resources. Females were 1.8 times more likely to be seen in the PC system. The % of female encounters per population enrolled remained constant in DC and PC from FY05 to FY 06, and decreased by 16% from FY06 to FY07 in DC. The expected outcome was for the % seen to increase by 16% in PC for FY07, but instead, it decreased by 2.4%. This could be because females do not feel as comfortable accessing purchased care as they do direct care, because they left the area in FY07, or they divorced the service member. More research needs to be done as to why this unexpected decrease in female utilization for MDC's 19, 20, and 21 has occurred. If it was because they are less likely to seek the care on the network vs. direct care, then there is a strong possibility child abuse by the sponsor's spouse and family member suicides will increase. More research

needs to be done in this area. The MDC most related to deployment was substance abuse, then mental health diagnoses.

Study Limitations

This study is limited because it only captures those who sought *and* received care at Fort Hood or its surrounding catchment area. It does not capture: those who needed care, but did not seek it; those who sought it, but could not receive it due to access issues or unsupportive command climate; or those who sought and received care via alternative routes such as Army One Source, Chaplains, Churches, and any number of other avenues. The study also did not include important variables such as sponsor rank, age, deployment related diagnoses in purchased care, which unit they deployed with, how many deployments, childhood trauma, and family history of PTSD co-morbid illnesses. These variables would have given a more comprehensive assessment of the population and may contribute more to being at risk for PTSD than the variables in this study.

Expected Utility

This study can be used to predict behavioral health usage in the future by applying these past trends to future population sizes and demographics. See Figures 6-11 and Table 26. This study supports the suspicion that mental health issues are a real problem for the Fort Hood population and that Fort Hood and the local network may not be able to continue to support the behavioral health demand. The data and trend results from this study can be used to predict the number of providers and the amount of space needed on Fort Hood to support the Active Duty Service member and his family. Because the results revealed exponential growth of PTSD diagnosis in the active duty population, the predictions were limited to the active duty population. The question that the Army Medical Command has is,

“what is the right size providers and space needed to meet the behavioral health needs of today’s soldiers?” The dissection of this study’s data can at least provide a starting point for answering that very illusive question at Fort Hood.

Encounter Predictions

To predict a range of diagnoses of those who sought and were able to receive care in the future, the number of those with a diagnosis of PTSD was determined across FY05 thru FY07 for direct care (DC) and purchased care (PC) and plotted on a graph. Then the percent change of number of diagnoses was calculated per year. These two numbers were then averaged and applied to the previous year’s number of diagnoses, up to FY11. The trend line for FY05-FY07 was drawn on the graph and the trend line for the future FY08-FY11 estimations was drawn. This gave the likely range of future numbers of PTSD diagnoses.

Provider Predictions

Next, the number of providers needed to treat those with MDC 19, 20 and 21 diagnoses was estimated by using the Automated Staffing Assessment Model (ASAM) estimations and provider ratios, TRESA encounter data, and a prediction model based on encounters and providers available currently. Comparisons of the TDA requirements and authorizations were made to the ASAM and my prediction model to see where Fort Hood currently stands with the amount of providers to the amount of demand. Figure 12 shows the number of behavioral health specialists on-hand compared to TDA requirements and authorizations for FY07. For FY07, on-hand and TDA number of providers matches closely except for the number of administrative staff, which is almost double the TDA. Figure 13 shows the number of behavioral health specialists on-hand after successful

recruitment and hiring actions are complete compared to TDA requirements and authorizations for FY08. Two-thirds of the types of specialists being hired is double what the TDA allows because of the current demand on behavioral health services. To best allocate these total numbers of providers across Fort Hood, I did predictive calculations for the Department of Social Work (SW), the Department of Substance Abuse Services (DSAS), and the Resilience and Restoration (R&R) Center and a reliability check of my proposal model using Child and Adolescence Psychiatric Evaluations Services (CAPES) because ASAM and the TDA were complete and closely matched the actual numbers of current staff levels. Because there is no set TDA model for an R&R, TDA PARAs 523, 525, 526, and 527 were used to make an R&R model that is strictly for treating active duty members. If family members were to be included, then TDA PARA 522 would be added to the staffing model. SW, CAPES, and DSAS were succinctly defined in the TDA.

SW Providers

Proposed provider ratios per MTF population to care for were calculated for social workers because the provider per MTF population ratio was not indicated in ASAM. The ratio of providers to MTF population was obtained by taking the average number of encounters from TRESA (8883) for FY07 for MEPRS codes BFEA (Social work clinic) and BFE2 (SW Care manager program) and dividing by the average number of social workers available during the year (38). This gave the average number of encounters a year per social worker (234). Then, the percent of the MTF population seen by social work for FY07 was calculated as 5.25%. This number multiplied by the total eligible MTF population for FY08 (171,449) leads to an estimated 9003 total encounters for social work in FY 08. The 9003 estimated encounters for FY08 divided by the average 234 encounters

a year per social worker equals a needed 39 social workers for FY08 and one SW per 4452 MTF population. The same process applied to future FYs reveals 39 SW's needed through FY2011. There is a large discrepancy between these findings and what we are in the process of hiring. This could be because the sources for the calculations are not accurate, in which case, more research needs to be done to verify the data.

DSAS Providers

The same method was applied to the Department of Substance Abuse Services (DSAS). Proposed ratios were calculated for DSAS counselors because the provider per MTF population ratio was not indicated in ASAM. The ratio of providers to MTF population was obtained by taking the average number of encounters from TRESA (14,645) for FY07 for MEPRS code BFFA (Substance Abuse Clinic Rehab) and dividing by the average number of DSAS counselors available during the year (16). This gave the average number of encounters a year per DSAS counselor (915). Then, the percent of the MTF population seen by DSAS for FY07 was calculated as 8.66%. This number multiplied by the total eligible MTF population for FY08 (171,449) leads to an estimated 14,842 total encounters for DSAS in FY 08. The 14,842 estimated encounters for FY08 divided by the average 915 encounters a year per DSAS counselor equals a needed 16 DSAS counselors for FY08 and one counselor per 10,573 MTF population. The same process applied to future FYs revealed 17 DSAS counselors needed through FY2011. Like social workers, there is a large discrepancy between these findings and what we are in the process of hiring. This could be because the sources for the calculations are not accurate, in which case, more research needs to be done to verify the data. Also, these estimations are based purely on those who sought care and were able to receive it in the DC system. They do not

include those who were referred to the network because of access issues. To see a true picture of the DSAS demand, more research needs to be done into how many were referred and would have been seen in the DC system had the number of counselors and space been available to do so.

CAPES Providers Proposal Model Reliability Check

To check the reasonableness of the proposal model and discussion, proposed values were calculated for the CAPES department to compare the number of providers on-hand, against ASAM predictions, as well as the TDA Requirements and Authorizations. The ratio of providers to MTF population was obtained by taking the average number of encounters from TRESA (8229) for FY07 for MEPRS code BFCA (Child and Adolescent Psychiatric Evaluation Service) and dividing by the average number of providers available during the year (2). This gave the average number of encounters a year per provider (4115). Then, the percent of the MTF population seen by CAPES for FY07 was calculated as 4.86%. This number multiplied by the total eligible MTF population for FY08 (171,449) leads to an estimated 8340 total encounters for CAPES in FY 08. The 8340 estimated encounters for FY08 divided by the average 4115 encounters a year per provider equals a needed 2 CAPES providers for FY08 and one CAPES provider per 84,585 MTF population. When a third provider is added to the calculations, as the TDA allows, then, one CAPES provider is needed per 56,641 MTF population. This is very close to the 60,000 MTF population per provider that ASAM uses. The TDA authorizes three CAPES providers. ASAM predicts two, and the proposal model predicts 2-3 providers. Therefore, the proposal model is a reliable starting point for making staffing predictions.

R&R Providers Overall and for PTSD Only

Staffing for the R&R center is not as straight forward as the above three departments. The R&R is a conglomeration of providers and services under one roof for active duty soldiers. How the staffing model was originally decided for the R&R was not found, but the combination of TDA Paras 523, 525, 526 and 527 comes very close to the current staffing model of the R&R. The R&R currently has 32 providers. The TDA requirement is 20 and authorizations is 21 for providers. Providers include psychiatrists, clinical psychologists, social workers, licensed professional counselors, psychiatric nurse practitioners, and licensed clinical social workers. ASAM provider per MTF population ratios are only provided for the psychiatrists (18,000) and psychologists (9,000) which comes out to be 7 psychiatrists and 13 psychologists. We currently have 8 and 11. The ratio of providers to MTF population was obtained by taking the average number of encounters from TRESA (22,998) for FY07 for MEPRS code BFDY (Behavioral Health Expansion) and dividing by the average number of R&R providers available during the year (16). This gave the average number of encounters a year per provider (719). Then, the percent of the MTF population seen by the R&R for FY07 was calculated as 13.59%. This number multiplied by the total eligible MTF population for FY08 (171,449) leads to an estimated 23,308 total encounters for R&R in FY 08. The 23,308 estimated encounters for FY08 divided by the average 719 encounters a year per R&R provider equals a needed 32 R&R providers for FY08 and one provider per 5,287 MTF population. The same process applied to future FYs revealed 33 needed providers through FY2011. There is a large discrepancy between the proposed providers and the TDA requirements and authorizations, but the proposed and actual number of providers match. This being said, 13.59% of the MTF

population, all of which is active duty, was able to gain access to the R&R once they sought the care. If space and staffing stay the same, so does access. However, as shown earlier, the demand, as shown by the number of PTSD diagnoses, has grown exponentially in active duty soldiers both female and male from FY05 thru FY07. If this exponential pattern is used for estimates, instead of the linear pattern gotten by using weighted averages for projections, then it is feasible that the number of PTSD diagnoses will rise to over 20,000 for FY08! If 20,000 PTSD diagnoses occur in FY08, then 28 providers would be needed to treat PTSD alone. Using the same ratios of type of provider to total providers, that equals 7 psychiatrists (25% of the 29 total providers), 10 psychologists (34%), 5 PNPs (16%), 5 SWs (16%), and 2 LPCs (9%).

Space Predictions

From the above encounter and provider predictions, space predictions were made for the R&R and for a PTSD treatment facility. Table 27 provides a complete chart for FY08 of the space needed to treat all those diagnosed with MDC 19, 20, and 21 at the R&R with the ratio of providers above. Space was added for administrative staff not currently available but is allowed by the TDA. Also, space is allowed for chiefs of behavioral health services, psychiatry and psychology who do not counsel patients, all of which are not currently available, but are allowed on the TDA. Based on the same provider type assumptions for the R&R, space was predicted for the treatment of those with a diagnosis of PTSD. Table 28 provides a complete chart for FY08 of the space needed to treat only active duty individuals with a diagnosis of PTSD. The spacing needs were based off the above estimated diagnosed encounters and providers for PTSD.

The right size space for the R&R building for our current active duty population is 26,476 gross square feet for a population of users of 16,292, 32 providers and 8 support staff. The 16,292 users is purely an educated guess based off literature review that states 30% of returning soldiers suffer from PTSD. Therefore, to estimate maximum space, I took 30% of the AD MTF population to be served, since by now, most people have deployed at least once. The 16,292 users fall within the estimated range of those to be diagnosed with PTSD in FY08. These staff to user ratios equals about two patients a provider a day. This number will vary depending on type of treatment, patient acuity, and miscellaneous chores of the day. The number will likely be between two and seven patients per provider a day. Also group therapy will skew this number. The right size for the PTSD treatment facility is 24,711 gross square feet for 29 providers, 8 support, and 16,292 yearly users.

Currently, Fort Hood is building a PTSD treatment center that is 5,000 gross square feet. Table 29 shows what the behavioral health division currently has on hand and will have once hiring actions are successful. If this study's predictions are even closely accurate, then Fort Hood still needs more staff and space to care for its soldiers' mental health needs. Tables 30 & 31 and Figures 14-22 provide detailed and graphic information on the extent of the mental health problems related to deployment at Fort Hood that reaches into other parts of Texas and the United States.

Conclusion

The results of the study reveal a serious growing mental health problem at Fort Hood which is likely to be similar at other Army installations worldwide, especially those that deploy often. With the right size space and amount of providers to treat patients with PTSD, and patients who are at most risk for developing PTSD, the Army's fighting force

will survive. Without it, the Army's force will not, and we will have a population of high healthcare utilizers, homeless people, and generations to come of people with mental health issues that could have been prevented if only the Active Duty Service Member, whether full time Active Duty or Reserve Active Duty, had gotten the right care at the right time, by experts who know how to treat them. This would be a large up-front investment of time, money, and provider resources, but the early detection and treatment of PTSD and its co-morbid illnesses prevents much higher time, money and provider expense in the future. It makes sense to invest in mental health early if the true goal is to preserve the fighting force now and in the future, especially since, based off numerous personal anecdotes, so many of our soldiers join the military with previous traumatic childhoods that already place them at risk of mental illnesses.

Recommendations

A repeat of this study, with different variables, at all the other Army military treatment facilities to see the behavioral health utilization trends would help allocation of resources decisions Army wide. The active duty population lives in a repetitively traumatic world, and the military owes it to them and their families to provide a way to make the effects of the trauma less severe. Because recovery from PTSD is possible if done in a timely manner, emphasis needs to be placed on treatment for PTSD and its co-morbid diagnoses, not money compensation. All providers in Fort Hood's Direct Care system and the Network, as well as all unit commanders on post, family members, and any provider in the United States, should read *The Iraq War Clinician Guide*, from the Department of Veterans Affairs, National Center for PTSD, which outlines what clinicians should know about what today's soldiers face and how to best treat them (Cozza, Benedek, Bradley,

Grieger, Nam, & Waldrep, n.d.). One common screening tool for PTSD and its co-morbid diagnoses should be implemented in all clinics across post and in the network. Questions should be added that include: care sought for deployment related reasons, number of deployments, which deployments, type of trauma, length of deployment, family history of mental illness, any previous trauma experiences by type and date, any pre-existing mental illness, as well as demographics. All of these factors contribute to being at risk for PTSD and PTSD co-morbid diagnoses. Also, add to the survey brief screenings for depression, anxiety, sleep issues and suicide ideations. The screening could be done during vital signs and while the patient waits for the provider. If identified as at-risk, then the patient should be referred to mental health the same day to begin a treatment plan immediately. Another suggestion is to add at least one psychiatrist to every Primary Care clinic so that primary care providers can have immediate access to professional mental health consultation whenever they suspect mental conditions that need immediate follow-up. A program like the one suggested above is being done at Monroe clinic under a program called Re-engineering Systems of the Primary Care Treatment (of depression and PTSD) in the Military (RESPECT-MIL). Finally, mandatory mental health screening and treatment, as well as symptomology education classes for all returning deployed soldiers must be implemented no later than three months after returning, sooner for redeploying healthcare professionals. This allows time for the soldier to reintegrate into society and family, and it allows time for some PTSD issues to resolve and other PTSD issues to develop. Treatment and education should be on a daily outpatient basis, lasting at least two weeks long, conducted on all family members, not just the active duty member, and expanded for those with severe PTSD issues. Family members should be included because they need to know

how to deal with the mentally sick soldier. The soldier needs to realize they do have someone to turn to who understands what they are going through, and to whom they will not feel embarrassed or ashamed to talk about their thoughts and feelings.

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Table 1.

Diagnostic Criteria for Post Traumatic Stress Disorder

-
- A. The person has been exposed to a traumatic event in which both of the following was present:
- The person experienced, witnessed, or was confronted with an event or events that involved threatened death or actual or threatened serious injury or a threat to the physical integrity of self or others.
 - The person's response involved intense fear, helplessness, or horror (in children this may be expressed instead as disorganized or agitated behavior).
- B. The traumatic event is persistently re-experienced in one or more of the following ways:
- Recurrent and intrusive distressing recollections of the event including images, thoughts, or perceptions (in children repetitive play may occur in which themes or aspects of the trauma are expressed)
 - Recurrent, distressing dreams of the event (in children there may be frightening dreams without recognizable content)
 - Acting or feeling as if the traumatic event were recurring (including a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes including those that occur on awakening or when intoxicated) (in children trauma specific reenactment may occur)
 - Intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event
 - Physiological reactivity on exposure to external or internal cues that symbolize or resemble an aspect of the traumatic event.
- C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma) as indicated by three or more of the following:
- Efforts to avoid thoughts, feelings, or conversations associated with the trauma
 - Efforts to avoid activities, places, or people that arouse recollection of the trauma
 - Inability to recall an important aspect of the trauma
 - Markedly diminished interest or participation in significant activities
 - Feeling of detachment or estrangement from others
 - Restricted range of affect (eg, unable to have loving feelings)
 - Sense of shortened future (eg, does not expect to have a career, marriage, children, or normal life span).
- D. Persistent symptoms of increased arousal not present before the trauma and indicated by two or more of the following:
- Difficulty falling or staying asleep
 - Irritability or outbursts of anger
 - Difficulty concentrating
 - Hypervigilance
 - Exaggerated startle response.
- E. Duration of the disturbance is more than one month.
- F. The disturbance caused significant clinical distress or impairment in social, occupational, or other important areas of function.
-

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Note. Source: Retrieved from *Psychiatry for Primary Care Physicians*, p. 112.

Table 2.

Common PTSD Co-Morbidity Lifetime Prevalence Rates

Co-morbidity	Female	Male	Source
General Anxiety Disorder			
In Vietnam Veterans	5-15%	16-94%	Breslau, 1997
In General Population	21%	8%	Kulka, 1988
Social Phobia	26-28%	17-28%	Breslau, 1997
Panic Disorder (PD)	7-21%	7-28%	Breslau, 1997
Obsessive Compulsive Disorder (OCD)			
	13%	6-10%	Orsillo, 1996
Specific Phobia	36%	12-31%	Orsillo, 1996
Schizophrenia	unknown	10-16%	Gibson et al., 1999
Eating Disorder	25%	unknown	Lipschitz, 1999
Anti-Social Personality Disorder			
In Vietnam Veterans	unknown	12-15%	Orsillo, 1996
Depression			
In General Population	49%	48%	Kessler 1995
In Vietnam Veterans	42%	26%	Kulka, 1988
Dysthymia			
In General Population	23%	21%	Kessler, 1995
In Vietnam Veterans	33%	21%	Kessler, 1995
Mania			
In General Population	6%	12%	Kessler, 1995
In Vietnam Veterans	3%	6%	Kulka, 1988
Conduct Disorders	15%	43%	Kessler, 1995
Alcohol Substance Disorders	28%	52%	WHO 1990
Drug Substance Disorders	27%	35%	WHO 1990

Note. Source: Aggregated from Gender and PTSD (2002). Edited by Rachel Kimerling, Paige Ouimette, and Jessica Wolfe. p. 212-215. The source did not mention what type of Vietnam Veteran subjects was used.

Table 3.

Prevalence Rates by Issue of the Texas Army National Guard in Support of OIF III Apr 06-Jan 07

PTSD	38%
Depression	27%
Sleep Problems	26%
Relationships	22%
Anger	18%
Suicide	7%
Alcohol	4%
Other	2%

Note. N = 951. Source: Weiss, C. (2007, June). Texas military forces joint mental health program: Office of the State Surgeon Texas Army and Air National Guard. Unpublished. The data were collected via the PDHRA survey used at Fort Hood during visits to 6 different battalions from April 06-Jan07.

Table 4.

Diagnostic Criteria for Mild Traumatic Brain Injury (mTBI).

Diagnostic Criteria for Mild Traumatic Brain Injury

1. Traumatologically induce physiologic disruption of brain function as indicated by at least one of the following:
 - A. Any period of loss of consciousness
 - B. Any loss of memory for events immediately before or after the accident
 - C. Any alteration in mental state at the time of the accident
 - D. Focal neurologic deficits that may or may not be transient
 2. Severity of the injury does not exceed:
 - A. Loss of consciousness of 30 min
 - B. GCS score of 13-15 after 30 min
 - C. Post-traumatic amnesia of 24 hr
-

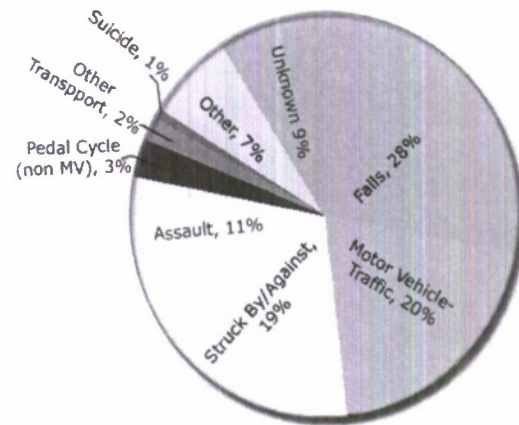
Note. Source: Retrieved from: Veterans Health Initiative: Traumatic Brain Injury (2004), pg 9. GCS is Glasgow Coma Scale, an objective scale used by the medical profession to determine the level of consciousness of a person.

Table 5.

Causes of Traumatic Brain Injury (TBI).

The leading causes of TBI are:

- Falls (28%);
- Motor vehicle-traffic crashes (20%);
- Struck by/against events (19%); and
- Assaults (11%).

**Falls**

- Falls are the leading cause of TBI; rates are highest for children ages 0 to 4 years and adults ages 75 years and older.

Motor Vehicle-Traffic Crashes

- Motor vehicle-traffic causes result in the greatest number of TBI-related hospitalizations.
- The rate of motor vehicle-traffic-related TBI is highest among adolescents ages 15 to 19 years.

Struck By/Against Events

- Struck by/against events, which include colliding with a moving or stationary object, are the third leading cause of TBI.
- Approximately 1.6 – 3.8 million sports- and recreation-related TBIs occur in the United States each year. Most of these are mild TBIs that are not treated in a hospital or emergency department.

Assaults

- Firearm use is the leading cause of death related to TBI.
- Nine out of 10 people with a firearm-related TBI die.
- Nearly two thirds of firearm-related TBIs are classified as suicidal in intent.

Blasts are a leading cause of TBI for active duty military personnel in war zones.

Note. Source: Retrieved from: <http://www.cdc.gov/ncipc/factsheets/tbi.htm>. webpage 1.

Table 6.

Frequency of Post Concussion Syndrome (PCS) Symptoms following mTBI and in the General Population

Frequency of PCS Symptoms following MTBI and in the General Population			
	MTBI PCS Symptom Frequency	Frequency in the General Population	PCS Increase after MHI
Symptom	Percent of Patients	Percent of People	Increase over base rate
Poor concentration	71%	14%	57%
Irritability	66%	16%	50%
Tired a lot more	64%	13%	51%
Depression	63%	20%	43%
Memory problems	59%	20%	39%
Headaches	59%	13%	46%
Anxiety	58%	24%	34%
Trouble thinking	57%	6%	51%
Dizziness	52%	7%	45%
Blurry or double vision	45%	8%	37%
Sensitivity to bright light	40%	14%	26%

Note. Source: Retrieved from: Veterans Health Initiative. Traumatic Brain Injury (2004), p. 24.

Table 7.

Common TBI Co-Morbidity Prevalence Rates

Co-morbidity	%	Source
Depression	25-50%	Jorge, Robinson, Arndt, Starkstein, Forrester, & Geisler, 1993
Suicide Risk	Increased	Yudofsky & Hales, 2002
Mania	4-10%	not listed
Anxiety	29%	Yudofsky & Hales, 2002
Post-traumatic psychosis	0.7-20%	Ahmed & Fuji, 1998

Note. Source: Veterans Health Initiative. Traumatic Brain Injury (2004), p. 92-93. Aggregated data from the reading.

Table 8.

Co-Morbidity of Medical Conditions with PTSD

<i>Sought treatment for and Diagnosed with:</i>	<i>% of patients meeting PTSD criteria</i>	<i>Kimerling's Source</i>
Gastrointestinal Disorders	36%	Irwin et al., 1996
Pain from Fibromyalgia	56%	Sherman, Turk & Okifuji, 2000
Chronic musculoskeletal pain in sample of male veterans in outpatient care for PTSD	Of those with PTSD, 80% had chronic pain	Beckam et al., 1997

Note. Source: Kimerling, R., Ouimette, P. & Wolfe, J. (2002). *Gender and PTSD*. Guilford Press. New York and London. Aggregated data from pages 288-292.

Table 9.

Primary Care Setting Advantages and Challenges for Providing Behavioral Health Care

Advantages

Strong patient-physician relationship
Ease of patient access to the care of a primary care physician
Comprehensive approach to the patient's medical and mental health disorders
More complete and intimate knowledge of a patient's family and psychosocial situation
Ability to diagnose and treat psychiatric disorders over an extended period of time

Challenges

Physician's level of expertise and comfort in assessing and making psychiatric diagnoses
Time constraints
Level of ancillary staff support
Availability of appropriate mental health consultants for referral
Restricted benefits by third party payors
Patient perceptions about primary care physician's attitudes and expertise in regards to mental disorders
Patient or family reluctance to accept psychiatric diagnosis or treatment recommendations

Note. Source: Retrieved from: Goldman, L.S., Thomas, N.W. & David, S.B. (1998). *Psychiatry for Primary Care Physicians: A Reference for Physicians on Assessing and Treating Mental Health Disorders for Adults*. American Medical Association. Chicago, Illinois. p. 21.

Table 10.

Common Presenting Complaints or problems of Psychiatric Disorders in the Primary Care Setting

Depressed mood/Anhedonia
Elevated, expansive, irritable mood
Anxiety, panic, fear, worry
Memory impairment
Unexplained physical symptoms
Drug and alcohol misuse
Sleep problems
Weight or eating problems
Sexual problem
Psychosis, disorganization, catatonia
Psychosocial problems
Coping with illness

Note. Source: Retrieved from: Goldman, L.S., Thomas, N.W. & David, S.B. (1998). *Psychiatry for Primary Care Physicians: A Reference for Physicians on Assessing and Treating Mental Health Disorders for Adults*. American Medical Association. Chicago, Illinois. p. 23.

Table 11.

Commonly Used Psychiatric Screening Instruments in Primary Care

Instrument	S/O ¹	Screens for	Sensi- tivity	Speci- ficity	Ques- tions	Cut-off score
General Health Questionnaire (GHQ-30)	S	Non-psychotic psychiatric illness	85%	80%	30	4-5
Beck Depression Inventory - II (BDI)	S	Depth of depression	92%	80%	21	14-Mild 21-Moderate 29-Severe
MAST	S	Alcohol abuse	50-80%	90%	25	4-5
CAGE	S/O	Alcohol abuse	70-85%	85%	4	2-3/4
Mini-Mental Status Exam (MMSE)	O	Dementia, delirium	87%	85%	10	23-24/30
Symptom-Driven Diagnostic System for Primary Care (SDDS-PC)	S	Alcohol abuse, depen- dence	62	98	16	1/2
		Generalized anxiety disorder	90	50		1/2
		Major depressive disorder	90	77		1/4
		Obsessive-compulsive disorder	65	73		1/4
		Panic disorder	78	80		1/4
		Suicidal ideation	69	82		1/2
PRIME-MD	S/O ²	Mood disorder	69	82	26	
		Anxiety disorder	94	53		
		Eating disorder	86	88		
		Alcohol abuse	81	91		
		Somatofarm disorder				

¹Self-report (S) vs. Observer-rated (O)²Patient self-report followed by physician's structured interview if patient screen is positive

Note. Source: Retrieved from: Goldman, L.S., Thomas, N.W. & David, S.B. (1998). *Psychiatry for Primary Care Physicians: A Reference for Physicians on Assessing and Treating Mental Health Disorders for Adults*. American Medical Association. Chicago, Illinois. p.34. MAST is the Michigan Alcohol Screening Test. CAGE is an acronym created by taking the first letter of the words Cut Down, Annoyed, Guilty, and Eye Opener, which are words imbedded in the short 4 question survey. PRIME-MD is the Primary Care Evaluation of Mental Disorders questionnaire commonly used in the primary care setting.

Table 12.

Sample PC-PTSD Screening Questions

In your life, have you had any experiences that were so frightening, horrible, or upsetting that, in the past month, you...

1. Have had nightmares about it or thought about it when you did not want to?
2. Tried hard not to think about it or went out of your way to avoid situations that reminded you of it?
3. Were constantly on guard, watchful, or easily startled?
4. Felt numb or detached from others, activities, or your surroundings?

Note. Endorsement of any three items is associated with a diagnostic accuracy of .85 (sensitivity .78; specificity .87) and indicates the need for additional assessment (Prins, A., Kimerling, R., & Leskin, G., n.d, p. 59).

Table 13.

Statistics and Variables Used Per Hypothesis

<i>Hypothesis</i>	<i>Variables</i>	<i>Statistic</i>
(H ₀): Beneficiary category, gender, Fiscal quarter and venue of care do not have an effect on a diagnosis of deployment related PTSD from FY 2005 to FY 2007.	X1, X2, X3, X4 Y1	Binary Logistic Regression
(H ₁): Beneficiary category, gender, Fiscal quarter and venue of care do Have an effect on deployment related PTSD diagnoses differently across all three years.	X1, X2, X3, X4 Y1	Binary Logistic Regression
(H ₂): Active duty members will seek care for mental health issues that result in a deployment related PTSD diagnosis in purchased care rather than in direct care.	X1, X3, Y1	Binary Logistic Regression

Note. Upon review of the data, deployment related PTSD was not captured in purchased care, so venue became direct care only.

Table 14.

Descriptive Statistics For PTSD Diagnosis

Variables	m^a	SD	r^b	p
Deployment Related PTSD (Y1)	.38	.484		
BEN CAT C (X1)	.95	.226	.133	.0001***
SEX (X2)	.89	.310	.153	.0001***
Fiscal Quarter (X4)	8.75	2.962	.310	.0001***

Note. N = 7098. a = the mean of the dichotomous variables. b = the correlation between deployment related PTSD and the independent variables. *p < .05, **p < .001, ***p < .0001.

Table 15.

*Population Demographics FY05-FY07 of those who sought and received care on**FT Hood (DC)*

	FY05	FY06	FY07
Active Duty (BEN CAT C 4)	52.2%	56.0%	64.6%
AD Family (BEN CAT C 1)	37.0%	34.7%	29.4%
Retirees (BEN CAT C 2)	2.0%	2.0%	1.4%
Retiree Family/ (BEN CAT C 3) Reserves/Guard/Other	8.7%	7.3%	4.5%
Male	63.7%	63.3%	69.3%
Female	36.3%	36.7%	30.7%
Mental Health Diagnoses (MDC19)	73.2%	77.4%	78.6%
Substance Abuse (MDC 20)	9.7%	9.4%	13.0%
Injuries/Poisonings (MDC 21)	17.2%	13.1%	8.4%
Deployment Related	0.3%	4.8%	19%
Not Deployment Related	99.7%	95.2%	81%
Fiscal Quarter 1 (Oct-Dec)	24.5%	20.4%	23.7%
Fiscal Quarter 2 (Jan-Mar)	24.7%	26.2%	27.4%
Fiscal Quarter 3 (Apr-Jun)	25.5%	25.5%	30.6%
Fiscal Quarter 4 (Jul-Sep)	25.3%	27.9%	18.1%*

Note. The whole month of September 2007 was not available when the data was pulled.

Table 16.

Population Demographics FY05-FY07 of those who sought and received care in FT Hood's Medical Network

	FY05	FY06	FY07
Active Duty (BEN CAT C 4)	3.2%	2.8%	6.8%
AD Family (BEN CAT C 1)	67.5%	68.5%	68.1%
Retirees (BEN CAT C 2)	5.7%	5.4%	4.6%
Retiree Family/ (BEN CAT C 3) Reserves/Guard/Other	23.5%	23.3%	20.5%
Male	38.3%	38.6%	40.1%
Female	61.7%	61.4%	59.9%
Mental Health Diagnoses (MDC19)	89.9%	90.5%	91.6%
Substance Abuse (MDC 20)	0.8%	0.7%	0.5%
Injuries/Poisonings (MDC 21)	9.2%	8.8%	7.9%
Deployment Related	not captured	not captured	not captured
Not Deployment Related	not captured	not captured	not captured
Fiscal Quarter 1 (Oct-Dec)	23.7%	22.7%	26.4%
Fiscal Quarter 2 (Jan-Mar)	24.5%	25.1%	29.2%
Fiscal Quarter 3 (Apr-Jun)	24.9%	25.6%	30.3%
Fiscal Quarter 4 (Jul-Sep)	25.8%	26.6%	13.9%*

Note. The whole month of September 2007 was not available when the data was pulled.

Table 17.

Classification Table^{a,b} for Binary Logistic Regression

Observed			Predicted		
			deployment related PTSD		
			non-deployment related PTSD	deployment related PTSD	Percentage Correct
Step 0	deployment related PTSD	non-deployment related PTSD	4431	0	100.0
		deployment related PTSD	2667	0	.0
	Overall Percentage				62.4

Note. a. Constant is included in the model. b. The cut value is .500

Table 18.

Goodness of Fit Model Summary^a for Binary LogisticRegression

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	7961.180 ^a	.183	.250

Note. a. Estimation terminated at iteration number 700 because maximum iterations has been reached. Final solution cannot be found.

Table 19.

Binary Logistic Regression Coefficients

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
Step 1	BENCATC(1)	-.941	.183	26.398	1	.000	.390	.272 .559
	SEX(1)	-.890	.109	66.444	1	.000	.410	.331 .508
	FYQ		156.284	11	.000			
	FYQ(1)	-700.829	1.406E151	.000	1	1.000	.000	.000 .
	FYQ(2)	-700.796	1.233E151	.000	1	1.000	.000	.000 .
	FYQ(3)	-700.816	1.133E151	.000	1	1.000	.000	.000 .
	FYQ(4)	-700.884	1.191E151	.000	1	1.000	.000	.000 .
	FYQ(5)	-1.187	.162	53.930	1	.000	.305	.222 .419
	FYQ(6)	-.254	.125	4.104	1	.043	.776	.607 .992
	FYQ(7)	-3.926	.508	59.766	1	.000	.020	.007 .053
	FYQ(8)	-.109	.100	1.189	1	.276	.896	.736 1.091
	FYQ(9)	.228	.090	6.380	1	.012	1.256	1.052 1.499
	FYQ(10)	.151	.087	2.990	1	.084	1.163	.980 1.380
	FYQ(11)	.153	.081	3.564	1	.059	1.165	.994 1.365
	Constant	-.136	.062	4.796	1	.029	.873	

Table 20.

Total number of PTSD diagnoses in Direct Care for FY05 by gender and beneficiary category.

		MDC		BEN CAT C		
MDC 19		19				
	Active Duty	Active-dep	Ret-sponsor	All Others	19 Total	
Female Visits	138	44	26	18		226
Male Visits	842	9	22	21		894
Total Sum of NUM VISITS	980	53	48	39		1120
		MDC		BEN CAT C		
MDC 20		20				20 Total
	Active Duty	Active-dep	Ret-sponsor	All Others		
Female Visits	0	0	0	0		0
Male Visits	7	0	0	1		8
Total Sum of NUM VISITS	7	0	0	1		8
		MDC		BEN CAT C		
MDC 21		21				21 Total
	Active Duty	Active-dep	Ret-sponsor	All Others		
Female Visits	0	0	0	0		0
Male Visits	5	0	0	0		5
Total Sum of NUM VISITS	5	0	0	0		5
Totals for MDC 19, 20, 21		Active Duty	Active-dep	Ret-sponsor	All Others	Grand Total
Female Visits	138	44	26	18		226
Male Visits	854	9	22	22		907
Total Sum of NUM VISITS	992	53	48	40		1133

Table 21.

Total number of PTSD diagnoses in Direct Care for FY06 by gender and beneficiary category.

MDC 19	MDC		BEN CAT C		19 Total
	Active Duty	Active-dep	Ret-sponsor	All Others	
Female Visits	173	26	20	17	236
Male Visits	1553	31	42	28	1654
Total Sum of NUM VISITS	1726	57	62	45	1890
MDC 20	MDC		BEN CAT C		20 Total
	Active Duty	Active-dep	Ret-sponsor	All Others	
Female Visits	0	0	0	0	0
Male Visits	6	0	0	0	6
Total Sum of NUM VISITS	6	0	0	0	6
MDC 21	MDC		BEN CAT C		21 Total
	Active Duty	Active-dep	Ret-sponsor	All Others	
Female Visits	0	0	0	0	0
Male Visits	1	0	0	0	1
Total Sum of NUM VISITS	1	0	0	0	1
Totals for MDC 19, 20,21	Active Duty	Active-dep	Ret-sponsor	All Others	Grand Total
Female Visits	173	26	20	17	236
Male Visits	1,560	31	42	28	1661
Total Sum of NUM VISITS	1,733	57	62	45	1897

Table 22.

Total number of PTSD diagnoses in Direct Care for FY07 by gender and beneficiary category.

		MDC		BEN CAT C		
		19				
MDC 19	Active Duty	Active-dep	Ret-sponsor	All Others	19 Total	
Female Visits	377	34	7	34	452	
Male Visits	5286	14	54	4	5358	
Total Sum of NUM VISITS	5663	48	61	38	5810	
		MDC		BEN CAT C		
		20				
MDC 20	Active Duty	Active-dep	Ret-sponsor	All Others	20 Total	
Female Visits	0	0	0	0	0	
Male Visits	17	0	0	0	17	
Total Sum of NUM VISITS	17	0	0	0	17	
		MDC		BEN CAT C		
		21				
MDC 21	Active Duty	Active-dep	Ret-sponsor	All Others	21 Total	
Female Visits	2	0	0	0	2	
Male Visits	1	1	0	0	2	
Total Sum of NUM VISITS	3	1	0	0	4	
Totals for MDC 19, 20,21		Active Duty	Active-dep	Ret-sponsor	All Others	Grand Total
Female Visits	379	34	7	34	454	
Male Visits	5,304	15	54	4	5377	
Total Sum of NUM VISITS	5,683	49	61	38	5831	

Table 23.

Total number of PTSD diagnoses and cost of care in Purchased Care for FY05 by gender and beneficiary category

	MDC		BEN CAT C		
		19			
MDC 19	Active Duty	Active-dep	Ret-sponsor	All Others	19 Total
Female Visits	11	1982	82	809	2884
Female Cost	\$697.14	\$153,277.09	\$4,878.53	\$47,528.72	\$206,381.48
Male Visits	27	366	358	122	863
Male Cost	\$7,481.26	\$29,714.40	\$17,466.90	\$9,622.04	\$64,284.60
Sum of NUM VISITS	38	2338	440	931	3747
Sum of Cost	\$8,178.40	\$182,991.49	\$22,345.43	\$57,150.76	\$270,666.08
	MDC		BEN CAT C		
		20			
MDC 20	Active Duty	Active-dep	Ret-sponsor	All Others	20 Total
Female Visits	0	7	0	1	8
Female Cost	\$0.00	\$7.00	\$0.00	\$60.00	\$67.00
Male Visits	0	0	1	0	1
Male Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Sum of NUM VISITS	0	7	1	1	9
Sum of Cost	\$0.00	\$7.00	\$0.00	\$60.00	\$67.00
	MDC		BEN CAT C		
		21			
MDC 21	Active Duty	Active-dep	Ret-sponsor	All Others	21 Total
Female Visits	0	12	0	3	15
Female Cost	\$0.00	\$501	\$0.00	\$162.70	\$663.56
Male Visits	0	5	1	0	6
Male Cost	\$0.00	\$191	\$70.13	\$0.00	\$260.73
Sum of NUM VISITS	0	17	1	3	21
Sum of Cost	\$0.00	\$691.46	\$70.13	\$162.70	\$924.29
Totals for MDC 19, 20, 21	Active Duty	Active-dep	Ret-sponsor	All Others	Grand Total
Female Sum Visits	11	2001	82	813	2907
Female Sum Cost	\$697.14	\$153,784.95	\$4,878.53	\$47,751.42	\$207,112.04
Male Sum Visits	27	361	360	122	870
Male Sum Cost	\$7,481.26	\$29,905.00	\$17,537.03	\$9,622.04	\$64,545.33
Total Sum of NUM VISITS	38	2,362	442	935	3777
Total Sum of Cost	\$8,178.40	\$183,689.95	\$22,415.56	\$57,373.46	\$271,657.37

Table 24.

Total number of PTSD diagnoses and cost of care in Purchased Care for FY06 by gender and beneficiary category

	MDC		BEN CAT C		19 Total
	Active Duty	Active-dep	Ret-sponsor	All Others	
MDC 19					
Female Visits	8	2198	51	669	2926
Female Cost	\$574.69	\$173,043.55	\$2,333.69	\$43,586.60	\$219,538.53
Male Visits	92	491	318	122	1023
Male Cost	\$8,583.33	\$48,111.27	\$16,872.43	\$8,795.51	\$82,362.54
Sum of NUM VISITS	100	2689	369	791	3949
Sum of Cost	\$9,158.02	\$221,154.82	\$19,206.12	\$52,382.11	\$301,901.07
	MDC		BEN CAT C		20 Total
	Active Duty	Active-dep	Ret-sponsor	All Others	
MDC 20					
Female Visits	0	0	0	0	0
Female Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Male Visits	4	0	0	0	4
Male Cost	\$265.20	\$0.00	\$0.00	\$0.00	\$265.20
Sum of NUM VISITS	4	0	0	0	4
Sum of Cost	\$265.20	\$0.00	\$0.00	\$0.00	\$265.20
	MDC		BEN CAT C		21 Total
	Active Duty	Active-dep	Ret-sponsor	All Others	
MDC 21					
Female Visits	0	0	0	0	0
Female Cost	\$0.00	\$0	\$0.00	\$0.00	\$0.00
Male Visits	0	0	0	0	0
Male Cost	\$0.00	\$0	\$0.00	\$0.00	\$0.00
Sum of NUM VISITS	0	0	0	0	0
Sum of Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Totals for MDC 19, 20, 21	MDC		BEN CAT C		Grand Total
	Active Duty	Active-dep	Ret-sponsor	All Others	
Female Sum Visits	8	2198	51	669	2926
Female Sum Cost	\$574.69	\$173,043.55	\$2,333.69	\$43,586.60	\$219,538.53
Male Sum Visits	96	491	318	122	1027
Male Sum Cost	\$8,848.53	\$48,111.27	\$16,872.43	\$8,795.51	\$82,627.74
Total Sum of NUM VISITS	104	2,689	369	791	3953
Total Sum of Cost	\$9,423.22	\$221,154.82	\$19,206.12	\$52,382.11	\$302,166.27

Table 25.

Total number of PTSD diagnoses and cost of care in Purchased Care for FY07 by gender and beneficiary category

		MDC		BEN CAT C		
		19		19 Total		
MDC 19	Active Duty	Active-dep	Ret-sponsor	All Others		
Female Visits	218	1520	18	441	2197	
Female Cost	\$16,173.52	\$118,605.94	\$736.28	\$20,418.25	\$155,933.99	
Male Visits	963	412	274	89	1738	
Male Cost	\$76,334.32	\$39,669.48	\$14,077.03	\$7,006.02	\$137,086.85	
Sum of NUM VISITS	1181	1932	292	530	3935	
Sum of Cost	\$92,507.84	\$158,275.42	\$14,813.31	\$27,424.27	\$293,020.84	
		MDC		BEN CAT C		
		20		20 Total		
MDC 20	Active Duty	Active-dep	Ret-sponsor	All Others		
Female Visits	0	0	0	0	0	
Female Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Male Visits	0	0	0	0	0	
Male Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Sum of NUM VISITS	0	0	0	0	0	
Sum of Cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
		MDC		BEN CAT C		
		21		21 Total		
MDC 21	Active Duty	Active-dep	Ret-sponsor	All Others		
Female Visits	0	2	0	0	2	
Female Cost	\$0.00	\$143	\$0.00	\$0.00	\$142.74	
Male Visits	1	0	0	0	1	
Male Cost	\$1,060.02	\$0	\$0.00	\$0.00	\$1,060.02	
Sum of NUM VISITS	1	2	0	0	3	
Sum of Cost	\$1,060.02	\$142.74	\$0.00	\$0.00	\$1,202.76	
Totals for MDC 19, 20, 21		Active Duty	Active-dep	Ret-sponsor	All Others	Grand Total
Female Sum Visits		218	1522	18	441	2199
Female Sum Cost		\$16,173.52	\$118,748.68	\$736.28	\$20,418.25	\$156,076.73
Male Sum Visits		964	412	274	89	1739
Male Sum Cost		\$77,394.34	\$39,669.48	\$14,077.03	\$7,006.02	\$138,146.87
Total Sum of NUM VISITS		1,182	1,934	292	530	3938
Total Sum of Cost		\$93,567.86	\$158,418.16	\$14,813.31	\$27,424.27	\$294,223.60

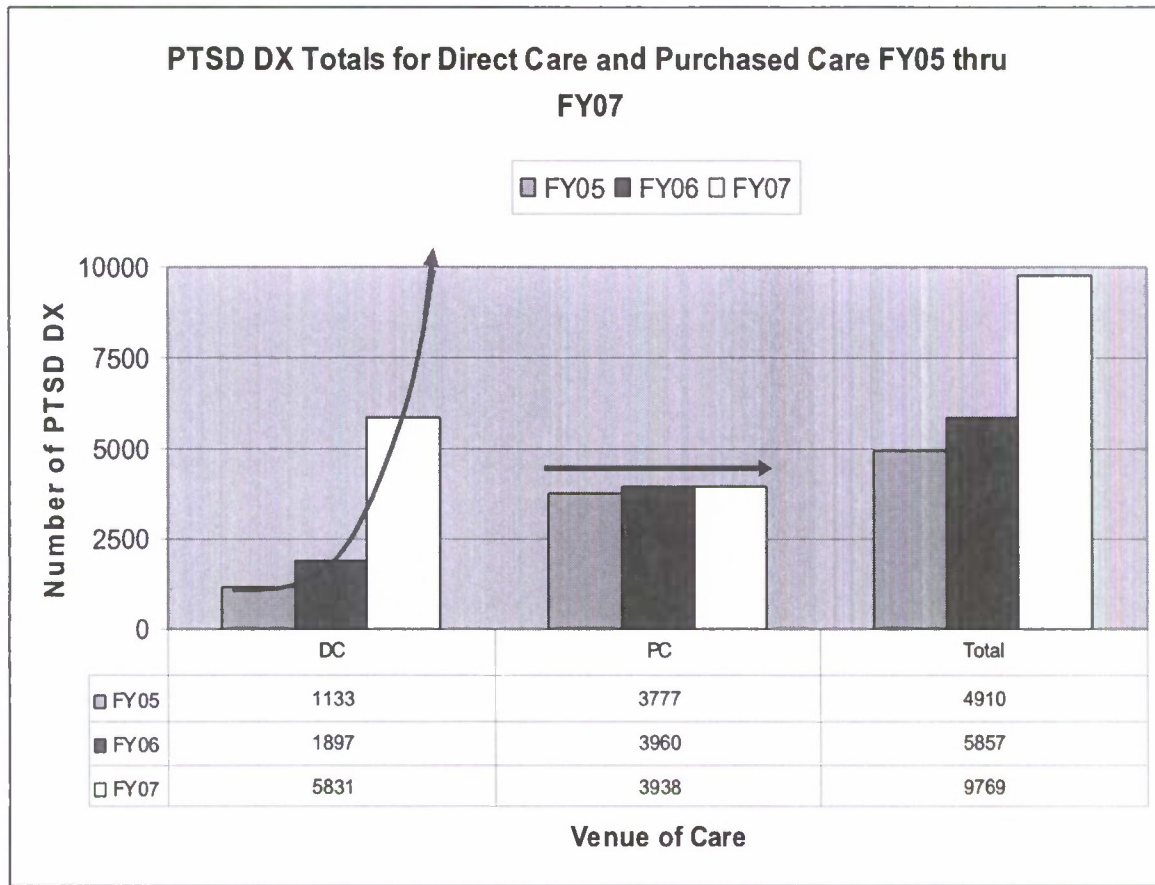


Figure 1. PTSD diagnosis totals for DC and PC for FY05-FY07. The exponential growth of a DX of PTSD in DC supports the hypothesis that it is due to deployment because the purchased care population, who generally does not deploy, remained constant over the years.

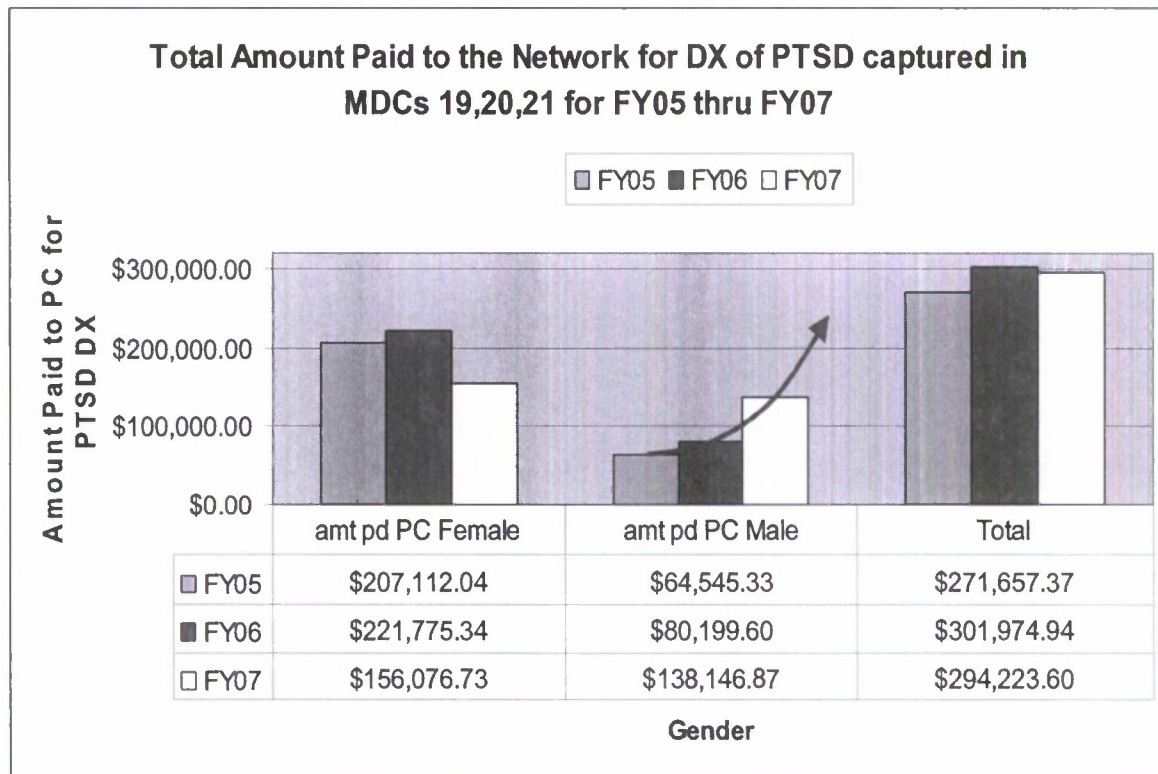


Figure 2. Total amount paid to purchased care (PC) for a PTSD diagnosis captured in MDC 19, 20 and 21 by gender for FY05-FY07.

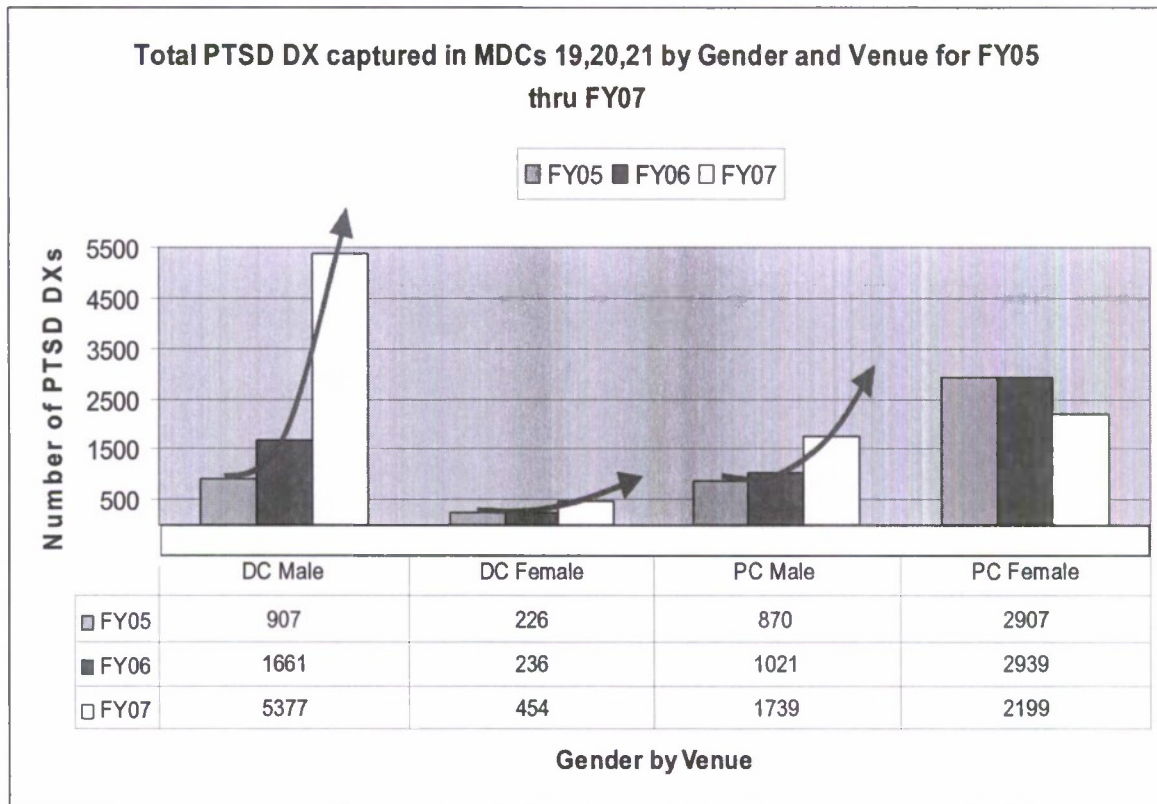


Figure 3. Total PTSD diagnoses captured in MDC 19, 20, and 21 by gender and venue of care for FY05-FY07.

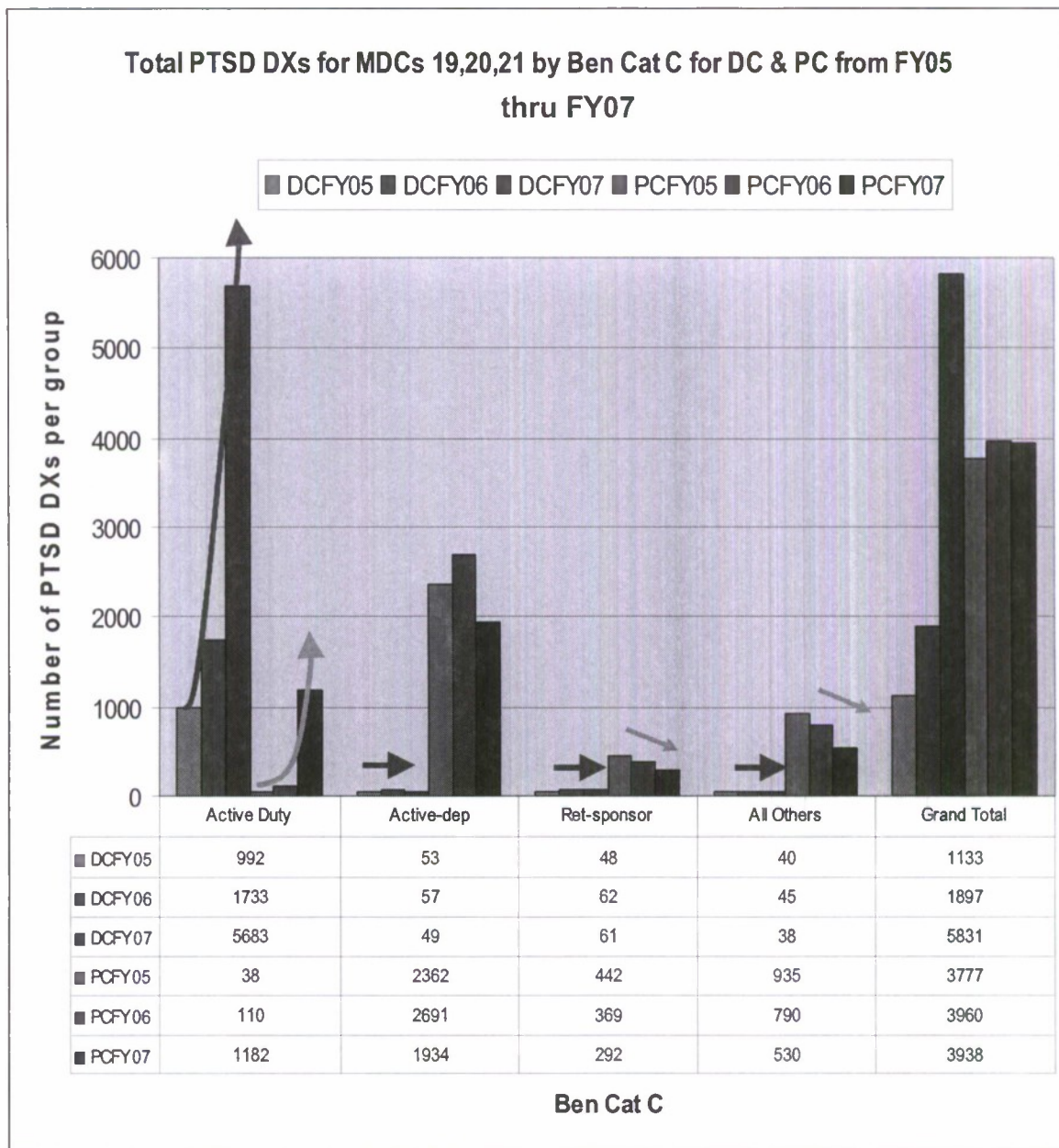


Figure 4. Total PTSD diagnoses for MDC 19, 20, and 21 by beneficiary category and venue of care.

PTSD DX by MDC 19, Ben Cat C and Sex for FY05 thru FY07

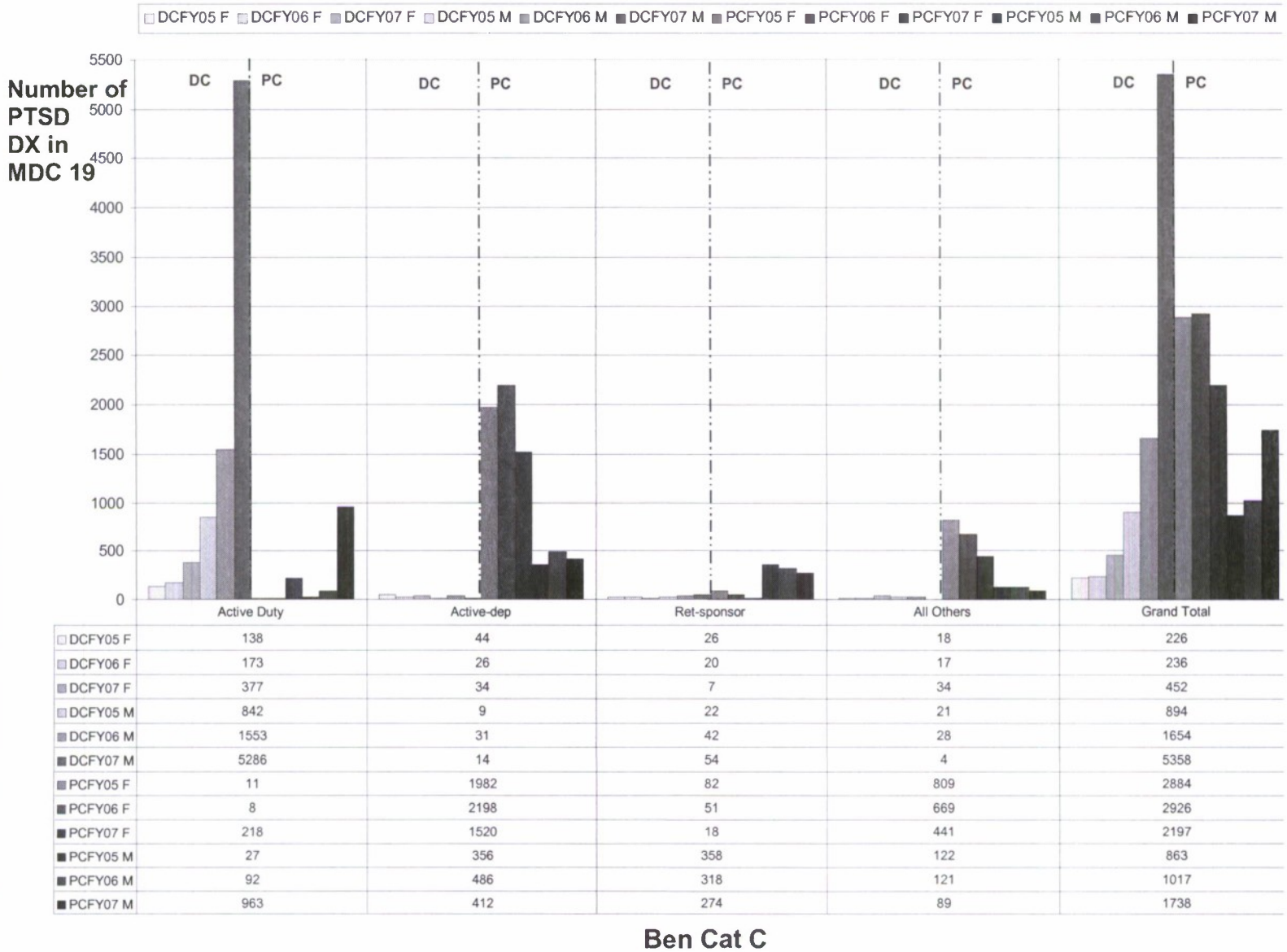


Figure 5. PTSD diagnoses in MDC 19 by beneficiary category and gender for FY05-FY07.

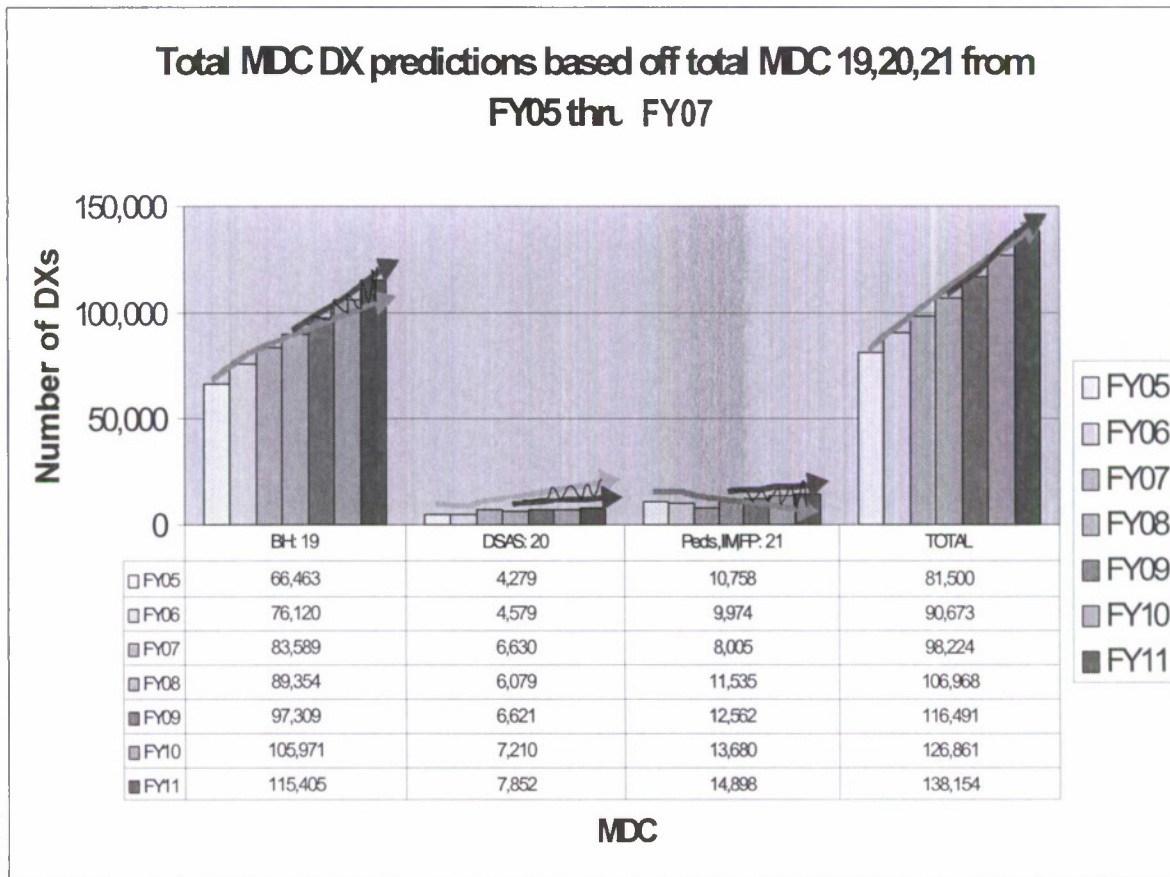


Figure 6. Total MDC diagnosis predictions based off total MDC 19, 20, and 21 from FY05-FY07. Orange arrows represent the actual trend and blue arrows represent the predicted trend based off weighted averages.

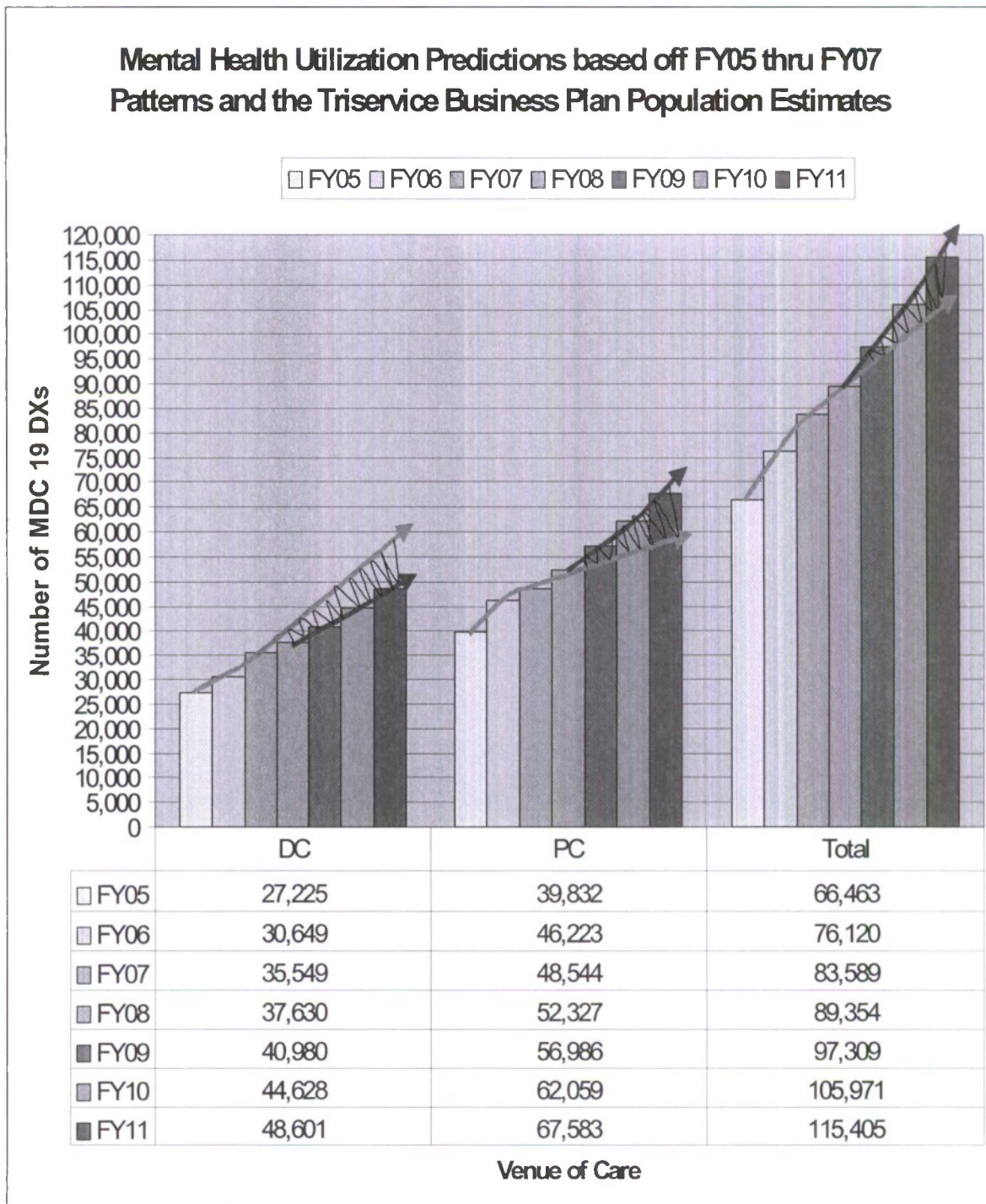


Figure 7. Mental health utilization predictions based off FY05-FY07 patterns and the Triservice Business Plan population estimates. Orange arrows represent the actual trend and blue arrows represent the predicted trend based off weighted averages.

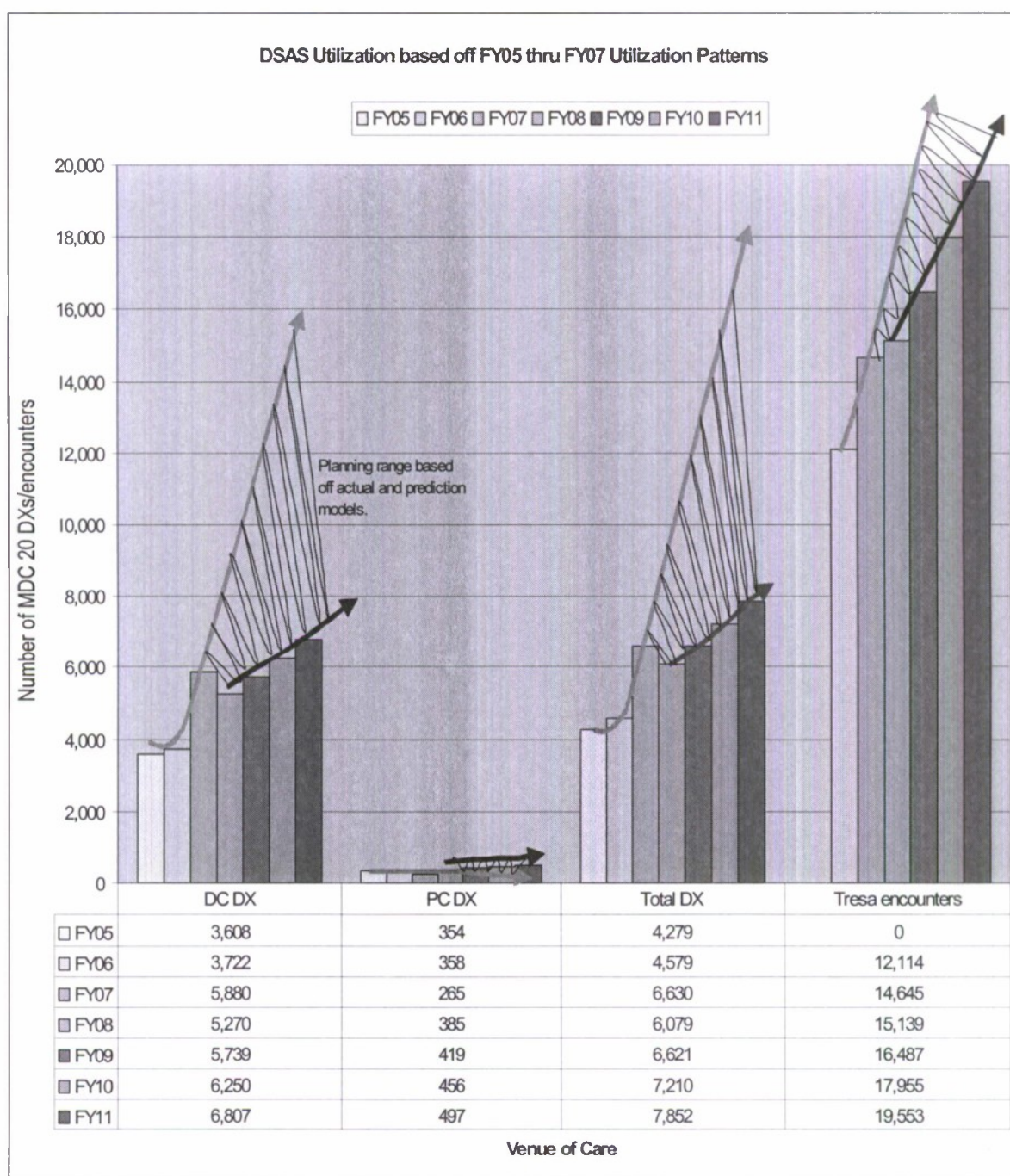


Figure 8. Direct Care substance abuse utilization predictions based off FY05-FY07 patterns and the Tri-Service Business Plan population estimates. Orange arrows represent the actual trend and blue arrows represent the predicted trend based off weighted averages.

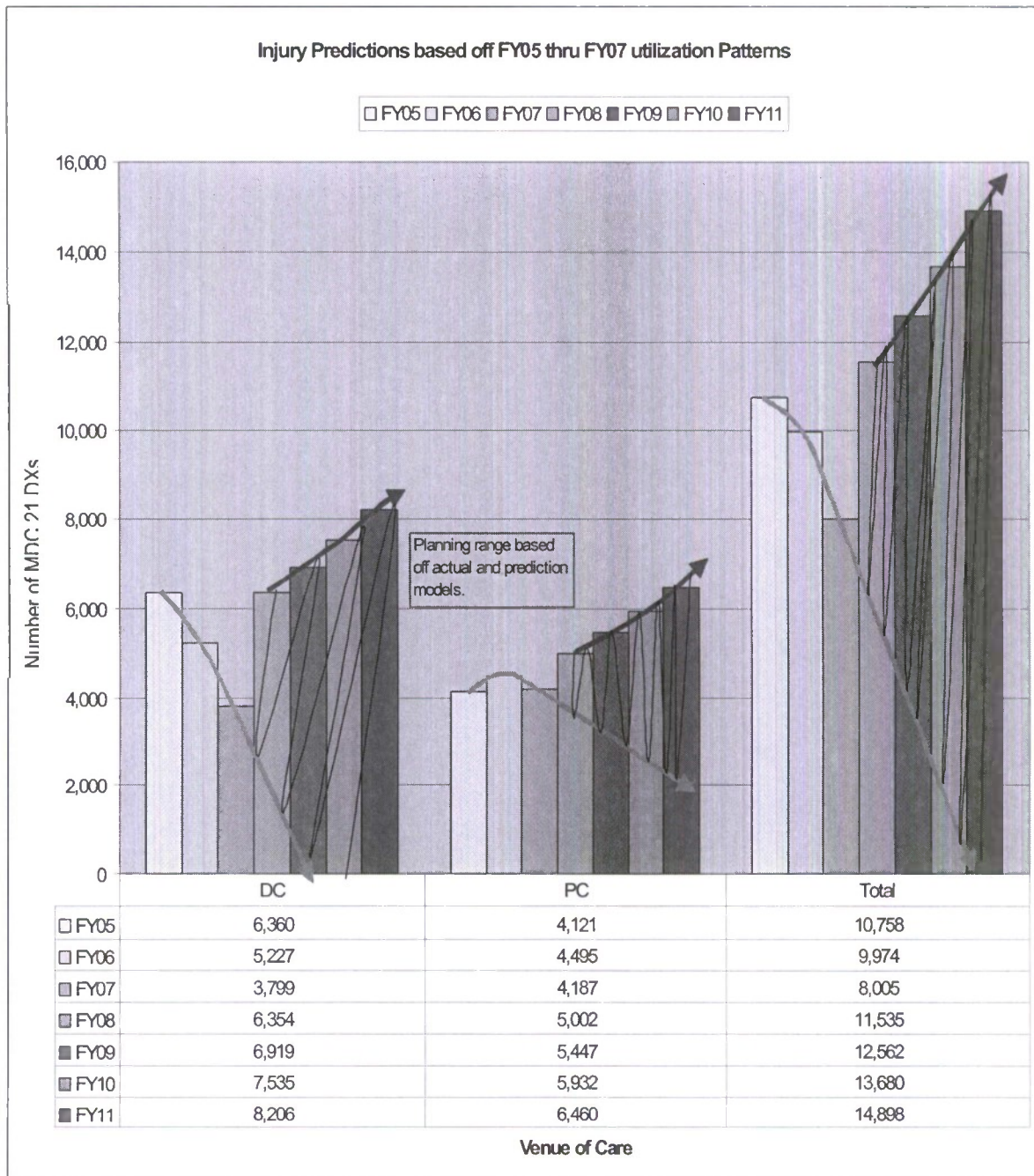


Figure 9. Direct Care injury utilization predictions based off FY05-FY07 patterns and the Tri-Service Business Plan population estimates. Orange arrows represent the actual trend and blue arrows represent the predicted trend based off weighted averages.

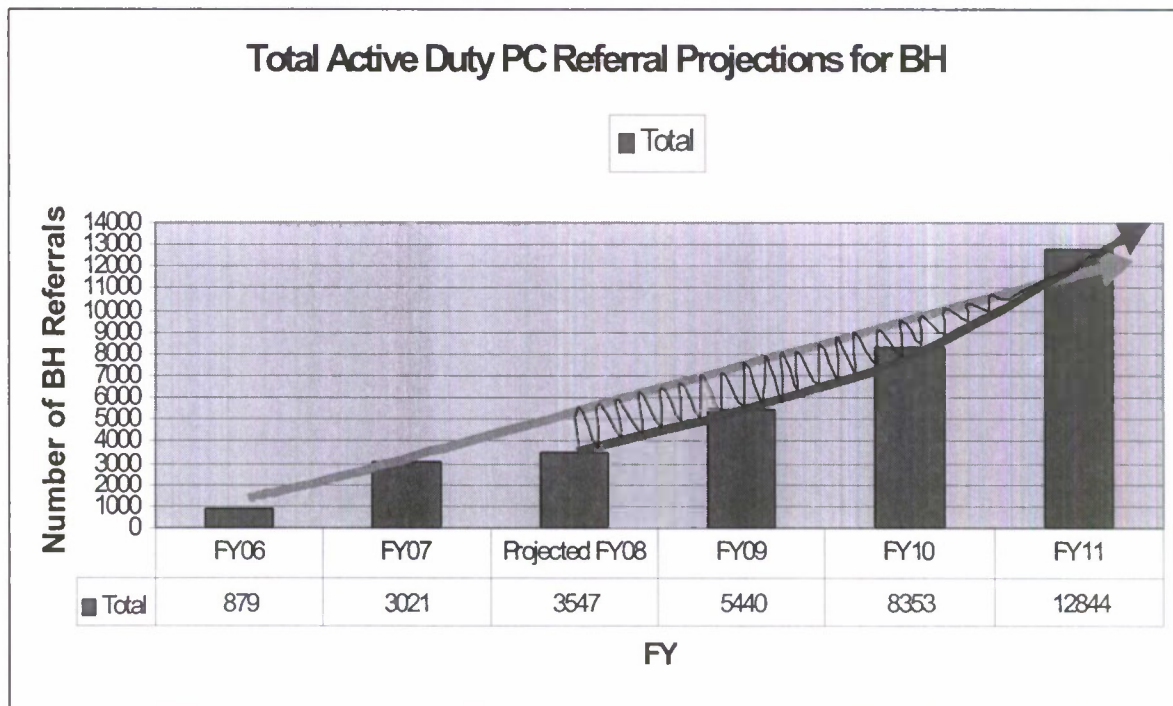


Figure 10. Total active duty purchased care referral projections for behavioral health. The source for the FY06-FY08 numbers came from the Behavioral Health Division Department of the Army Inspector General slides. Orange arrows represent the actual trend and blue arrows represent the predicted trend based off weighted averages.

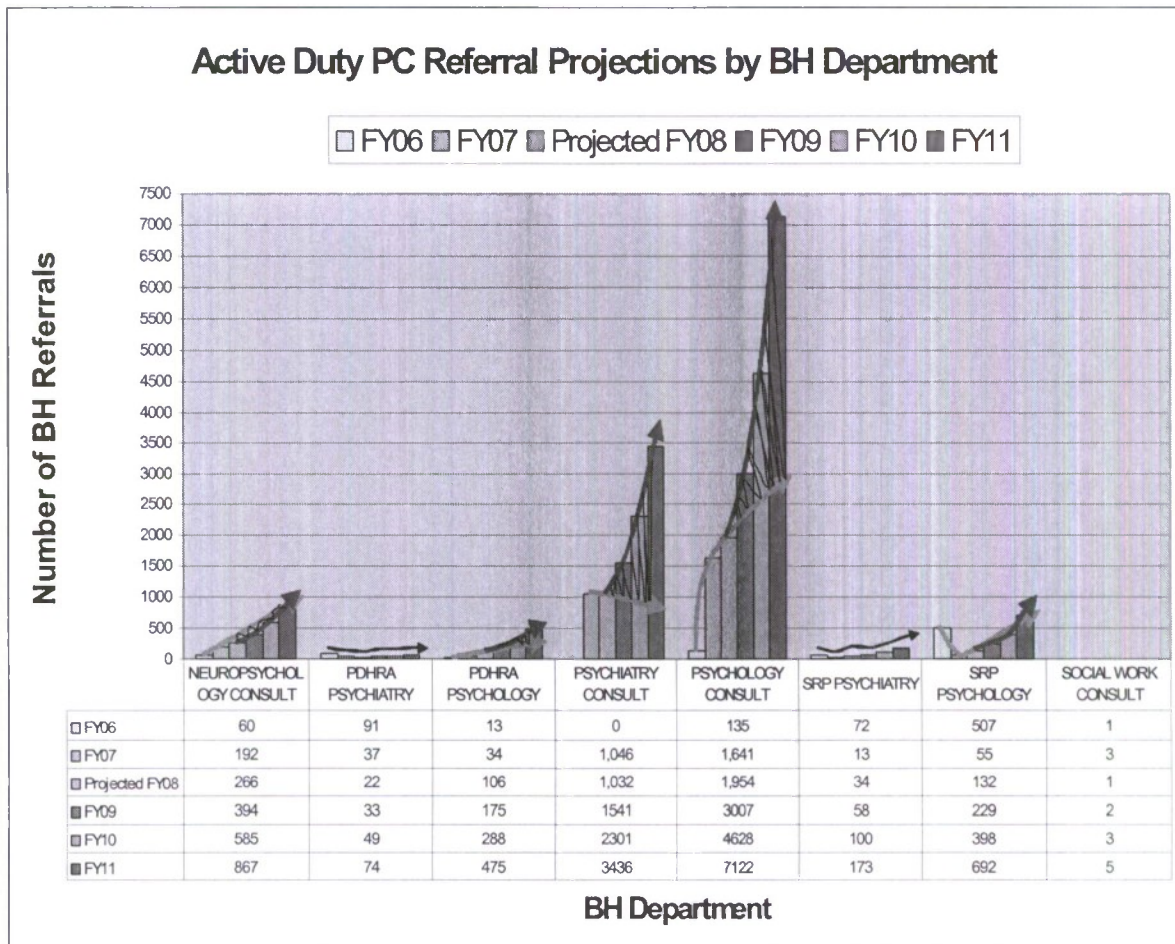


Figure 11. Active duty purchased care projections by behavioral health department. The source for the FY06-FY08 numbers came from the Behavioral Health Division Department of the Army Inspector General slides. Orange arrows represent the actual trend and blue arrows represent the predicted trend based off weighted averages.

Table 26.

MDC 19, 20, and 21 diagnosis and encounter predictions based off past trends.

FY06	DC	PC	TOTAL	Percent Delta	DC DX#	PC DX#	TOT DX#	Tresa encs
MDC	% SEEN IN EACH CATEGORY							
BH: 19	73.2%	89.9%	81.6%	18.6%	27,225	39,832	66,463	
DSAS: 20	9.7%	0.8%	5.3%	91.8%	3,608	354	4,279	not avail
Peds,IM,FP: 21	17.1%	9.3%	13.2%	45.6%	6,360	4,121	10,758	
TOTAL	100.0%	100.0%	100.0%	0.0%	37,193	44,307	81,500	
FY06								
MDC	% SEEN IN EACH CATEGORY		TOTAL	percent	DC DX	PC DX	TOT DX	Tresa encs
BH: 19	77.4%	90.5%	84.0%	14.5%	30,649	46,223	76,120	
DSAS: 20	9.4%	0.7%	5.1%	92.6%	3,722	358	4,579	12,114
Peds,IM,FP: 21	13.2%	8.8%	11.0%	33.3%	5,227	4,495	9,974	
TOTAL	100.0%	100.0%	100.0%	0.0%	39,598	51,075	90,673	
FY07								
MDC	% SEEN IN EACH CATEGORY		TOTAL	percent	DC DX	PC DX	TOT DX	Tresa encs
BH: 19	78.6%	91.6%	85.1%	14.2%	35,549	48,544	83,589	
DSAS: 20	13.0%	0.5%	6.8%	95.2%	5,880	265	6,630	14,645
Peds,IM,FP: 21	8.4%	7.9%	8.2%	6.0%	3,799	4,187	8,005	
TOTAL	100.0%	100.0%	100.0%	0.0%	45,228	52,996	98,224	
FY08								
MDC	% SEEN IN EACH CATEGORY		TOTAL		DC DX	PC DX	TOT DX	Est enc
BH: 19	76.4%	90.7%	83.5%		37,630	52,327	89,354	
DSAS: 20	10.7%	0.7%	5.7%		5,270	385	6,079	15,139
Peds,IM,FP: 21	12.9%	8.7%	10.8%		6,354	5,002	11,535	
TOTAL	100.0%	100.0%	100.0%		49,254	57,714	106,968	
FY09								
MDC	% SEEN IN EACH CATEGORY		TOTAL		DC DX	PC DX	TOT DX	Est enc
19	76.4%	90.7%	83.5%		40,980	56,996	97,309	
20	10.7%	0.7%	5.7%		5,739	419	6,621	16,487
21	12.9%	8.7%	10.8%		6,919	5,447	12,562	
TOTAL	100.0%	100.0%	100.0%		53,639	62,862	116,491	
FY10								
MDC	% SEEN IN EACH CATEGORY		TOTAL		DC DX	PC DX	TOT DX	Est enc
19	76.4%	90.7%	83.5%		44,628	62,069	105,971	
20	10.7%	0.7%	5.7%		6,250	466	7,210	17,955
21	12.9%	8.7%	10.8%		7,535	5,932	13,680	
TOTAL	100.0%	100.0%	100.0%		58,414	68,447	126,861	
FY11								
MDC	% SEEN IN EACH CATEGORY		TOTAL		DC DX	PC DX	TOT DX	Est enc
19	76.4%	90.7%	83.5%		48,001	67,533	115,405	
20	10.7%	0.7%	5.7%		6,807	497	7,852	19,553
21	12.9%	8.7%	10.8%		8,206	6,460	14,888	
TOTAL	100.0%	100.0%	100.0%		63,014	74,540	138,154	

Note. Orange toned colors indicate completed fiscal years, green indicates the current fiscal year, and blue tones indicate future fiscal years.

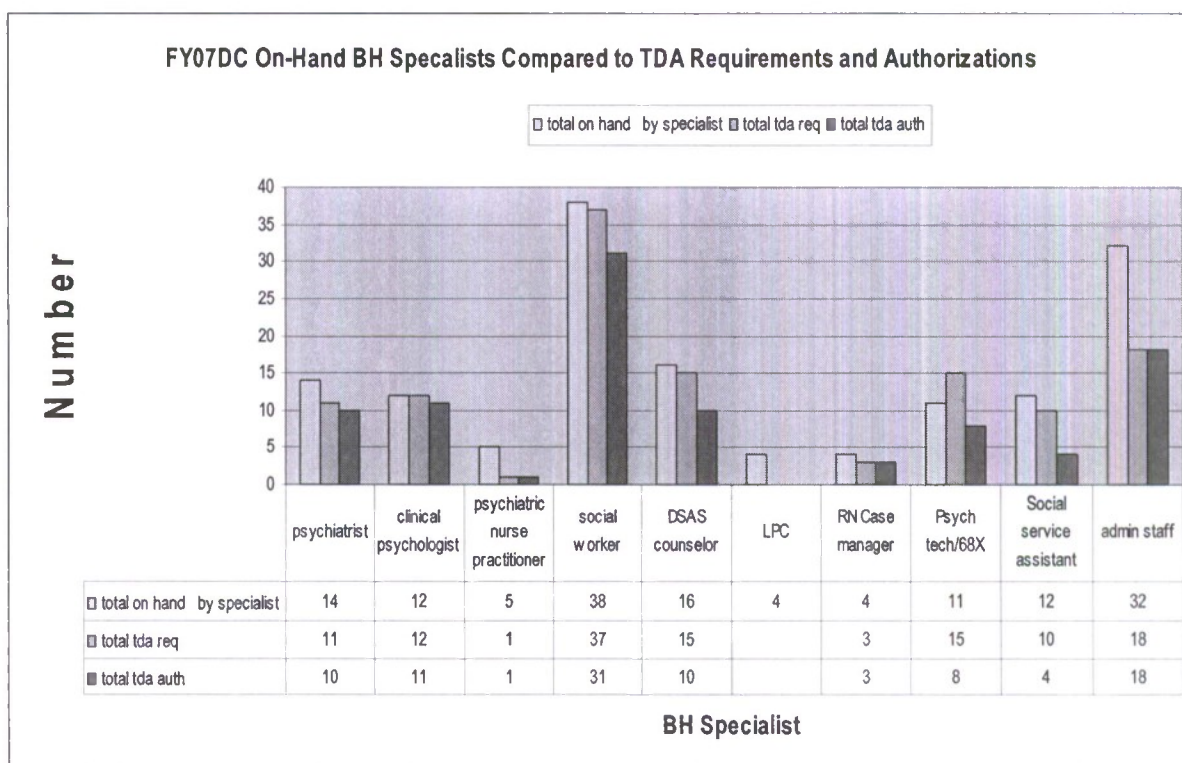


Figure 12. Fort Hood's FY07 on-hand behavioral health specialist compared to TDA requirements and authorizations.

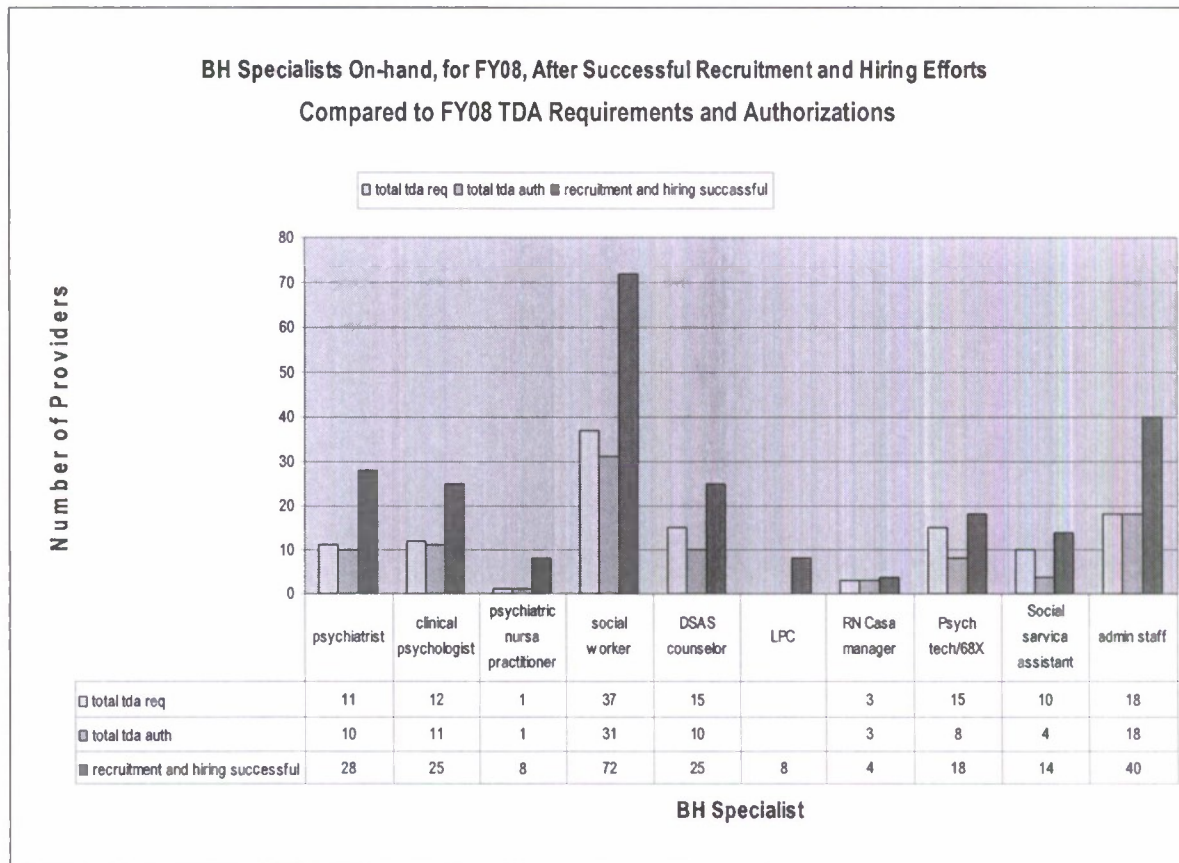


Figure 13. FY 08 Behavioral Health (BH) specialists on-hand after successful hiring actions.

Table 27. Space Predictions for R&R Facility for FY08.

	Room Code	Authorized m ²	nef	planning range	estimated staff	seats	nef for 85% of seats	nef for 0% of seats	nef for reg seats	nef for handicapped seats	total nef for waiting area seats
Reception Area											
Clinic Waiting	WRC01	0.57	00	Minimum. Provide three seats per each projected FTE provider. Provide 10nef for 85% of the seats and 25nef for 5% of the seats.	32	80	10	25	1450.2	120	1579.2
Reception	RECP1	13.01	140	Minimum. Provide 140nef for the first eight providers. Increase 90 nef for each increment of four providers over the initial eight.	32	1120	300	1480			
Public Toilets				outpatient visits less than 100,000 annually: outpatient visits per yr/ 250 work days = yr/ 20 * (1 toilet per 10 inpt beds) outpatient visits between 100,000 and 350,000 annually: outpatient visits per yr/ 250 work days = yr/ 40 * (1 toilet per 10 inpt beds) outpatient visits more than 350,000 annually: outpatient visits per yr/ 250 work days = yr/ 80 * (1 toilet per 10 inpt beds)	est output visits per year	0 inpatient beds	toilets				
					23,000	0	0				
						0	0				
						0	0				
Patient Areas					est staff #	est % specialist	est # specialist	nef per specialist			
Psychiatrist office	OFOC1	13.01	140	one per projected FTE psychiatrist. See also residency program section.	32	25%	0	1120			
Psychologist office	OFOC1	13.01	140	one per projected FTE psychiatrist. See also residency program section.		34%	11	1923			
Nurse Practitioner office	OFOC1	13.01	140	one per projected FTE nurse practitioner counseling patients.		10%	5	717			
Licensed professional counselor	OFOC1	13.01	140	one per projected FTE nurse clinician.		0%	3	493			
Social worker office	OFOC1	13.01	140	one per FTE social worker.		16%	5	717			
Technician office	OFA01 OFA02	11.15	120	Standard furniture-1 per projected FTE tech (MH & SW) System furniture assume one per provider. ASAM and TDA do not define for NPN, LPC, and SW, so an average of 1 was used gotten from 1.2 per psychiatrist and 0.75 per psychologist.	est staff #	# of technicians	nef for techs				
					32	32	3640				
group therapy	OPMH1	18.58	200	one per clinic with less than or equal to three psychiatrists/psychologists. two per clinic with more than three psychiatrists/psychologists.	# psychiatrists+ologists	# grp therapy rm	nef grp therapy				
					10	2	480				
Biofeedback room	OPMH3	13.04	150	if in clinic concept of operations	in concept?	nef for Biofbk rm					
					yes	100					
psychological testing	OPMH2	0.20	100	if in clinic concept of operations	in concept?	nef for psych test					
					yes	100					
patient toilets	TLTF2	18.08	200	female. Minimum. 2 wc, 2 lav, 1 dc. Provide 30 nef per additional fixture plus an additional 10nef for each handicapped fixture.	est staff	# pt toilets	additional fixture	additional handi	female		
					32	3	30	15	215		
	TLTM2	10.50	200	male. Minimum. 1 wc, 1 urinal, 2 lav, 1 dc. Use 10nef for urinals. Provide one if more than three providers are assigned to the department. Provide two if more than nine providers are assigned to the department. Provide three if more than 10 providers are assigned to the dept. Provide a maximum of 3 water closets within a single department.		urinals	10		male	215	
									nef pt toilet	436	
Staff and Admin Areas					nef						
NCOIC/LPO/LPO/SMT office	OFA01 OFA02	11.15	120	one per clinic		120					
Chief BH Services			120	one per clinic if separate from above provider count and not seeing pts.		120					
Chief Psychiatry			120	one per clinic if separate from above provider count and not seeing pts.		120					
Chief Psychology dept			120	one per clinic if separate from above provider count and not seeing pts.		120					
administrative cubicle	OFA03	5.57	80	per projected FTE requiring a dedicated work space but not a private office. See section 2.1. Cubicle systems furniture.	Projected FTE	nef					
					0	480					
secretary				rules not specified in TDA or HFP manual. Assume 1 per chief and desk numbers obtained from current TOA since no current staff in these and no ASAM model.	# FTE cubicle staff	nef					
					4	240					
					1	60					
					2	120					
					1	60					
records storage	MRS01 MRS02	11.15	120	Minimum. Fixed storage shelving. See section 2.5 for increase in size. outpt records room nef = (projected # records)/(linear feet conversion factor) (0.004 per linear foot, shelf factor). From the bene pop to be served, project # of non-MEDICARE eligible pt records that require file space. use a linear ft conversion factor of 10 records per linear foot for non-MEDICARE pts. This space is only necessary if not completely using electronic records. For MEDICARE eligible pts, use 0 linear ft.	projected # reco equale # unique encounters	linear feet conversion non-MEDICARE	linear feet conversion MEDICARE	nef per linear ft	bene pop to be served	set nef for records non-MEDICARE	set nef for records MEDICARE minimum nef
					16,292	10	8	0.00	54,300	81.15	122.16 126
forms/furniture storage	SRS01	0.20	100	one per clinic	nef	100					
Copy Room	SRS01	0.20	100	for copier/telex/mailbox distribution		100					
conference room	CRA01 CRA02 CRA03	23.23 27.07 37.10	250 390 400	Minimum use CRA01. One per department with 9-12 officers or officer equivalents. provide 1 CRA02 with 13 to 10 FTE officers or equivs. provide 1 CRA03 with > 10 FTE officers or equivs.	est staff	> 10 officers	13 to 10 officers	0 to 12 officers			
					32	480					
staff lounge	SL001	13.01	140	Minimum.		140					
staff toilets	TLTU1	4.05	50	1 water closet and one lavatory if there are 10 or more staff, otherwise combine with other departments. 1 water closet per 15 staff, round up at 0, split 50/50.	est staff	# staff toilets	lavatory	nef staff toilet			
					32	2	1 each water closet	107			
Commo Room	COMC1	10.22	110	one information system closet per 10,000 gross sf.	Gross sf	Commo rm sf					
					10007	210					
Common Areas					total facility nef	# janitor closets	nef for janitor				
Janitor closet	JANC1	3.7	40	one per 10,000 nef	14746	1	60				
Drinking fountains				1 standard and 1 handicapped per 100 staff. One per floor	est staff	# fountain sets					
					32	0.32	1				
net to gross (tab 1.3)					net/gross of ratio	nef	gross sf				
					1.35	14,740	19,987				
mechanical equip space				net/gross ratios are for ambulatory health care facility.	net/gross of ratio	gross sf					
electric space					14.50%	2,887					
building circulation					2%	398					
hall areas					10%	2,088					
					1.50%	299					
Total Gross Square Footage for R&R Facility FY08											20,478
						Right Size Staff	providers				32
						Right Size Support	support				87
						Estimated Number of users for R&R FY08	yearly users				10,262
							pts/yr/provider				600
							pts/mo/provider				42
							pts/day/provider				2

Table 28. Space Predictions for PTSD Treatment Facility for FY08.

Room Code	Authorized m ²	nef	planning range	estimated staff	seats	nef for 85% of seats	nef for 5% of seats	nef for reg seats	nef for handicapped seats	total nef for waiting area seats
Reception Areas										
Clinic Waiting	WRC01	5.57	60 Minimum. Provide three seats per each projected FTE provider. Provide 16nef for 85% of the seats and 25nef for 5% of the seats.	28	87	10	25	1322.4	108.78	1431.18
Reception	RECP1	13.01	140 Minimum. Provide 140nef for the first eight providers. Increase 60 nef for each increment of four providers over the initial eight.	est staff 8	nef for 1st 8	nef for rest	total nef for reception			
				29	1120	315	1435			
Public Toilets			substant visits less than 100,000 annually: outpt visits per yr/250 work days x yr/20 x (1 toilet per 16 inpt beds) outpt visits between 100,000 and 350,000 annually: outpt visits per yr/250 work days x yr/40 x (1 toilet per 16 inpt beds) outpt visits more than 350,000 annually: outpt visits per yr/250 work days x yr/80 x (1 toilet per 16 inpt beds)	est output visits per year	8 inpatient beds	toilets				
				28,000	8	4				
					8	8				
					8	8				
Patient Areas				est staff 8	est % specialist	est 8 specialist	nef per specialist			
Psychiatrist office	OFDC1	13.01	140 one per projected FTE psychiatrist. See also residency program section.	29	25%	7	1015			
Psychologist office	OFDC1	13.01	140 one per projected FTE psychologist. See also residency program section.		34%	10	1388			
Nurse Practitioner office	OFDC1	13.01	140 one per projected FTE nurse practitioner counseling patients.		18%	6	666			
Licensed professional counselor	OFDC1	13.01	140 one per projected FTE nurse clinician.		9%	3	365			
Social worker office	OFDC1	13.01	140 one per FTE social worker.		18%	6	650			
Technician office	OFA01 OFA02	11.15	120 Standard furniture-1 per projected FTE tech (MH & SW) System furniture assume one per provider. ASAM and TDA do not define for NPN, LPC, and SW, so an average of 1 was used gotten from 1.2 per psychiatrist and 0.75 per psychologist.	est staff 8	8 of technicians	nef for techs				
				28	29	3488				
group therapy	OPMH1	18.58	200 one per clinic with less than or equal to three psychiatrists/psychologists. two per clinic with more than three psychiatrists/psychologists.	8 psychiatrists+ologists	8 grp therapy rm	nef grp therapy				
				17	2	400				
Biobedroom room	OPMH3	13.04	150 if in clinic concept of operations	In concept?	nef for 8 to 16 dbk rm					
				yes	150					
psychological testing	OPMH2	6.29	100 if in clinic concept of operations	In concept?	nef for psych test					
				yes	100					
patient toilets	TLFTF2	18.58	200 female. Minimum: 2 wc, 2 lav, 1 dc. Provide 30 nef per additional fixture plus an additional 18nef for each handicapped fixture.	est staff	8 pt toilets	additional fixture	additional handi	female		
				28	3	30	18	216		
	TLTM2	18.58	200 male. Minimum: 1 wc, 1 urinal, 2 lav, 1 dc. Use 10nef for urinals. Provide one if more than three providers are assigned to the department. Provide two if more than nine providers are assigned to the department. Provide three if more than 18 providers are assigned to the dept. Provide a maximum of 3 water closets within a single department.		urinals	10		216		
								nef pt toilet		
								438		
Staff and Admin Areas				nef						
NCOIC/LPO/LPO/SMT office	OFA01 OFA02	11.15	120 one per clinic	120						
Chief BH Services			120 one per clinic if separate from above provider count and not seeing pts.	120						
Chief Psychiatry			120 one per clinic if separate from above provider count and not seeing pts.	120						
Chief Psychology dept			120 one per clinic if separate from above provider count and not seeing pts.	120						
administrative cubicles	OFA03	8.57	60 per projected FTE requiring a dedicated work space but not a private office. See section 2.1. Cubicle systems furniture.	Projected FTE	nef					
				8	480					
secretary			rules not specified in TOA or HFP manual. Assume 1 per chief and desk numbers obtained from current TOA since no current staff in these and no ASAM model.	8 FTE cubicle staff	nef					
Med SPT Asst				4	240					
Med Data Tech				1	60					
Social Services Assistant				2	120					
				1	60					
records storage	MRS01 MRS02	11.15	120 Minimum. Fixed storage shelving. See section 2.5 for increase in size. outpt records room nef = (projected 8 records)/(linear feet conversion factor) (0.06 sf per linear feet, shelf factor). From the bene pop to be served, project 8 of non-MEDICARE eligible pt records that require file space. use a linear ft conversion factor of 10 records per linear foot for non-MEDICARE pts. This space is only necessary if not completely using electronic records. For MEDICARE eligible pts, use 8 linear ft.	projected 8 reco	linear test	linear test	nef per linear ft	bene pop	est nef for	est nef for
				equals 8 unique	conversion	conversion		to be	reco	reco
				encounters	non-MEDICARE	MEDICARE		served	non-MEDICARE	MEDICARE
				16,292	18	8	0.05	64,398	81.16	122.16 120
forms/literature storage	SR501	6.26	100 one per clinic	nef						
Copy Room	SR501	6.26	100 for copier/fax/mailbox distribution	100						
conference room	CRA01 CRA02 CRA03	23.23 27.87 37.16	250 Minimum use CRA01. One per department with 8-12 officers or officer equivalents. 500 provide 1 CRA02 with 13 to 18 FTE officers or equivs. 400 provide 1 CRA03 with > 18 FTE officers or equivs.	est staff	> 18 officers	13 to 18 officers	8 to 12 officers			
				29	400					
staff lounge	SL001	13.01	140 Minimum.	140						
staff toilets	TLTU1	4.85	80 1 water closet and one lavatory if there are 10 or more staff, otherwise combine with other departments. 1 water closet per 15 staff, round up at .8, split 50/50.	est staff	8 staff toilets	lavatory	nef staff toilet			
				20	2	1 each	87			
						water closet				
Commo Room	COMC1	10.22	110 one information system closet per 10,000 gross sf.	Gross sf	Commo rm sf					
Common Areas				16588	284					
Janitor closet	JANC1	3.7	40 one per 10,000 nef	total facility nef	8 janitor closets	nef for janitor				
				13783	1	68				
Drinking fountains			1 standard and 1 handicapped per 100 staff. One per floor	est staff	8 fountain sets					
				29	0.20	1				
net to gross (tab 1.3)				net/gross sf ratio	nef	gross sf				
				1.35	13,783	18,588				
mechanical equip space			nef/gross ratios are for ambulatory/healthcare facility.	net/gross sf ratio	gross sf					
electric space				14.50%	2,694					
building circulation				2%	372					
hall areas				15%	2,767					
				1.90%	278					
Total Gross Square Footage for PTSD Facility FY08				Gross SF	24,711					
Right Size Staff				Right Size Support	28					
Estimated Number of users for PTSD FY08				yearly users	16,292					
				pts/yr/provider	562					
				pts/mol/provider	47					
				pts/day/provider	2					

Table 29.

Behavioral Health Staff by Specialty On-hand to TDA Comparison.

	BH Division total on hand by specialist	BH Division total tda req	BH Division total tda auth	as of March 08 accepted	recruiting	total after recruitment and hiring s
psychiatrist	14	11	10	2	12	28
clinical psychologist	12	12	11	0	13	25
psychiatric nurse practitioner	5	1	1	0	3	8
social worker	38	37	31	7	27	72
BFE2 SWS Care MNGR Prog						
BFEA Social Work Clinic						
DSAS counselor	16	15	10	7	2	25
LPC	4			0	4	8
RN Case manager	4	3	3	0	0	4
Psych tech/68X	11	15	8	0	7	18
Social service assistant	12	10	4	0	2	14
admin staff	32	18	18	0	8	40
child psychiatrist	1	2	1	0	0	1

Table 30.

FY07 Direct Care PTSD deployment and non-deployment related diagnoses by MDC, SEX, and BEN CAT C.

FY07DC PTSD Deployment and non-deployment Related DX by MDC, SEX, and BEN CAT C													
Count of NUM VISITS RAW		BEN C DR											
MDC	SEX	AD FMBR		AD FMBR		RET		RET Total		RET FMBR/Other		RET FMBR/Other Total	
		DR	non-DR	DR	non-DR	DR	non-DR	DR	non-DR	DR	non-DR	DR	non-DR
19: Mental Health	female	3	30	33		7		7		6	22	28	94
	male	2	11	13	24	16		40		1	3	4	2074
19: Mental Health Total		5	41	46	24	23		47		7	25	32	2168
20: Substance Related	male											7	10
20: Substance Related Total												7	10
21: Injuries and Poisonings	female												2
	male		1	1									1
21: Injuries and Poisonings Total			1	1									3
Grand Total		5	42	47	24	23		47		7	25	32	2175

FY06DC PTSD Deployment and non-deployment Related DX by MDC, SEX, and BEN CAT C													
Count of NUM VISITS RAW		BEN C DR											
MDC	SEX	AD FMBR		AD FMBR		RET		RET Total		RET FMBR/Other		RET FMBR/Other Total	
		DR	non-DR	DR	non-DR	DR	non-DR	DR	non-DR	DR	non-DR	DR	non-DR
19: Mental Health	female		28	28	2	19		21		16		16	26
	male	2	31	33	4	31		35		5	21	26	445
19: Mental Health Total		2	59	61	6	50		56		5	37	42	471
20: Substance related	female									1		1	
	male											2	6
20: Substance related Total										1		1	6
21: injuries and poisonings	male												1
21: injuries and poisonings Total													1
Grand Total		2	59	61	6	50		56		5	38	43	473

FY05DC PTSD Deployment and non-deployment Related DX by MDC, SEX, and BEN CAT C													
Count of NUM VISITS RAW		BEN C DR											
MDC	SEX	AD FMBR		AD FMBR		RET		RET Total		RET FMBR		RET FMBR/AD	
		DR	non-DR	DR	non-DR	DR	non-DR	DR	non-DR	DR	non-DR	DR	non-DR
19: mental health	female	1	42	43	18	18		14		14		115	115
	male		9	9	20	20		17		4		623	627
19: mental health Total		1	51	52	38	38		31		31		738	742
20: substance related	male							1		1		5	5
20: substance related Total								1		1		5	5
21: injuries and poisonings	male											2	2
21: injuries and poisonings Total												2	2
Grand Total		1	51	52	38	38		32		32		745	749

Table 31.

FY07 Purchased Care PTSD deployment and non-deployment related diagnoses by MDC, SEX, and BEN CAT C.

FY07PC PTSD Deployment and non-deployment Related DX by MDC, SEX, and BENCAT C									
Count of NUM VISITS RAW		BEN CAT C DR							
		AD FMBR	AD FMBR	RET	RET Total	RET FMBR	RET FMBR	AD	AD Total
MDC	SEX	non-DR	non-DR	non-DR		non-DR		non-DR	
19: Mental Health	female	828	828	18	18	273	273	122	122
	male	222	222	146	146	60	60	505	505
19: Mental Health Total		1050	1050	164	164	333	333	627	627
21: Injuries and poisonings	female	2	2						
	male							3	3
21: Injuries and poisonings Total		2	2					3	3
Grand Total		1052	1052	164	164	333	333	630	630

FY06PC PTSD Deployment and non-deployment Related DX by MDC, SEX, and BENCAT C									
Count of NUM VISITS RAW		BEN CAT C DR							
		AD FMBR	AD FMBR	RET	RET Total	RET FMBR	RET FMBR	AD	AD Total
MDC	SEX	non-DR	non-DR	non-DR		non-DR		non-DR	
19: Mental Health	female	1107	1107	29	29	387	387	4	4
	male	263	263	198	198	82	82	49	49
19: Mental Health Total		1370	1370	227	227	469	469	53	53
20: Substance Related	male							2	2
20: Substance Related Total								2	2
21: Injuries and poisonings	female	8	8					3	3
21: Injuries and poisonings Total		8	8					3	3
Grand Total		1378	1378	227	227	469	469	58	58

FY05PC PTSD Deployment and non-deployment Related DX by MDC, SEX, and BENCAT C									
Count of NUM VISITS RAW		BEN CAT C DR							
		AD FMBR	AD FMBR	RET	RET Total	RET FMBR	RET FMBR	AD	AD Total
MDC	SEX	non-DR	non-DR	non-DR		non-DR		non-DR	
19: Mental Health	female	960	960	41	41	458	458	4	4
	male	191	191	186	186	79	79	28	28
19: Mental Health Total		1151	1151	227	227	537	537	32	32
20: Substance related	female	4	4			1	1		
	male			1	1				
20: Substance related Total		4	4	1	1	1	1		
21: Injuries and poisonings	female	8	8			3	3		
	male	5	5	1	1				
21: Injuries and poisonings Total		13	13	1	1	3	3		
Grand Total		1168	1168	229	229	541	541	32	32

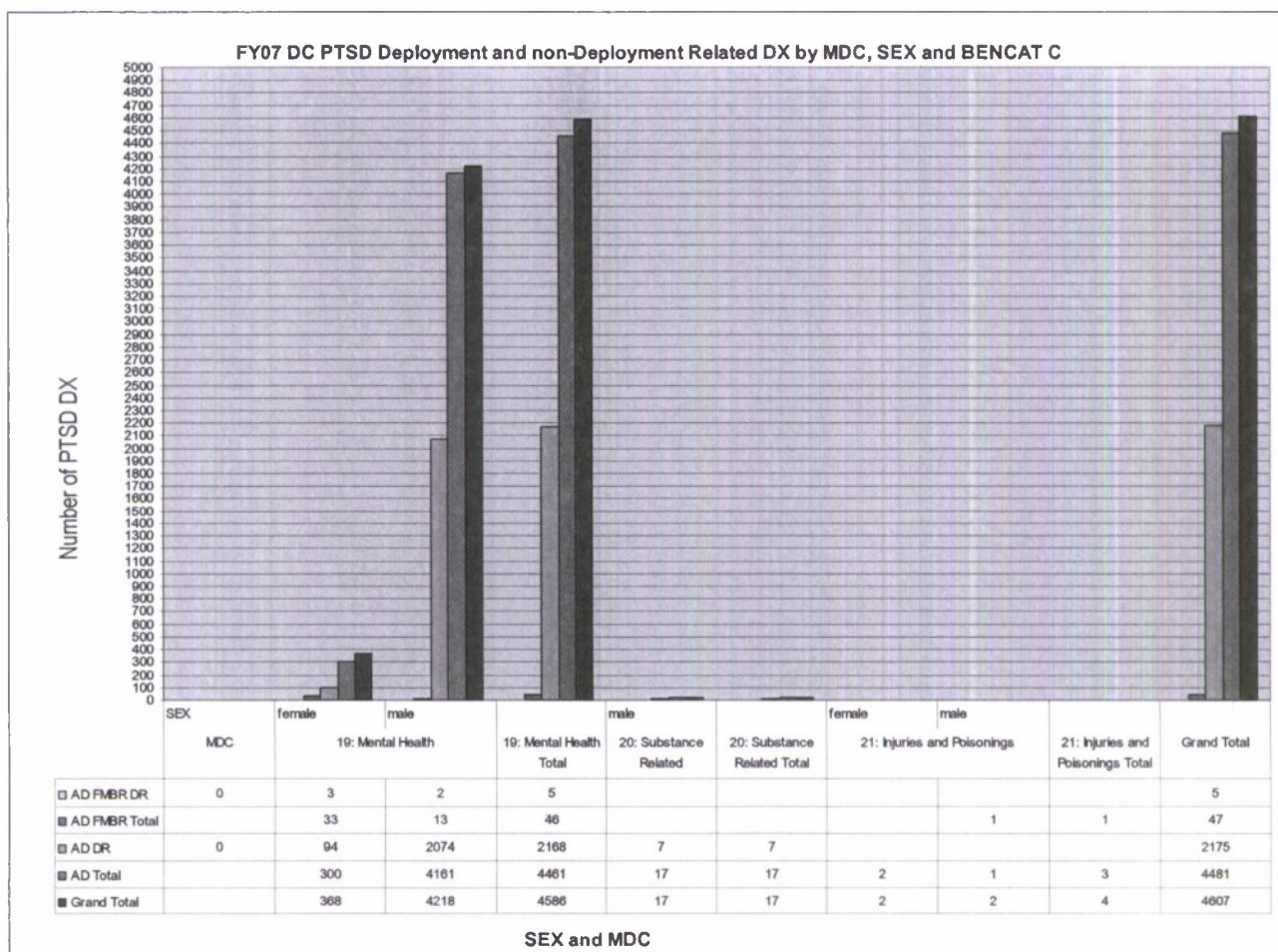


Figure 14. FY07 Direct Care PTSD deployment and non-deployment related diagnoses by MDC, SEX, and BEN CAT C.

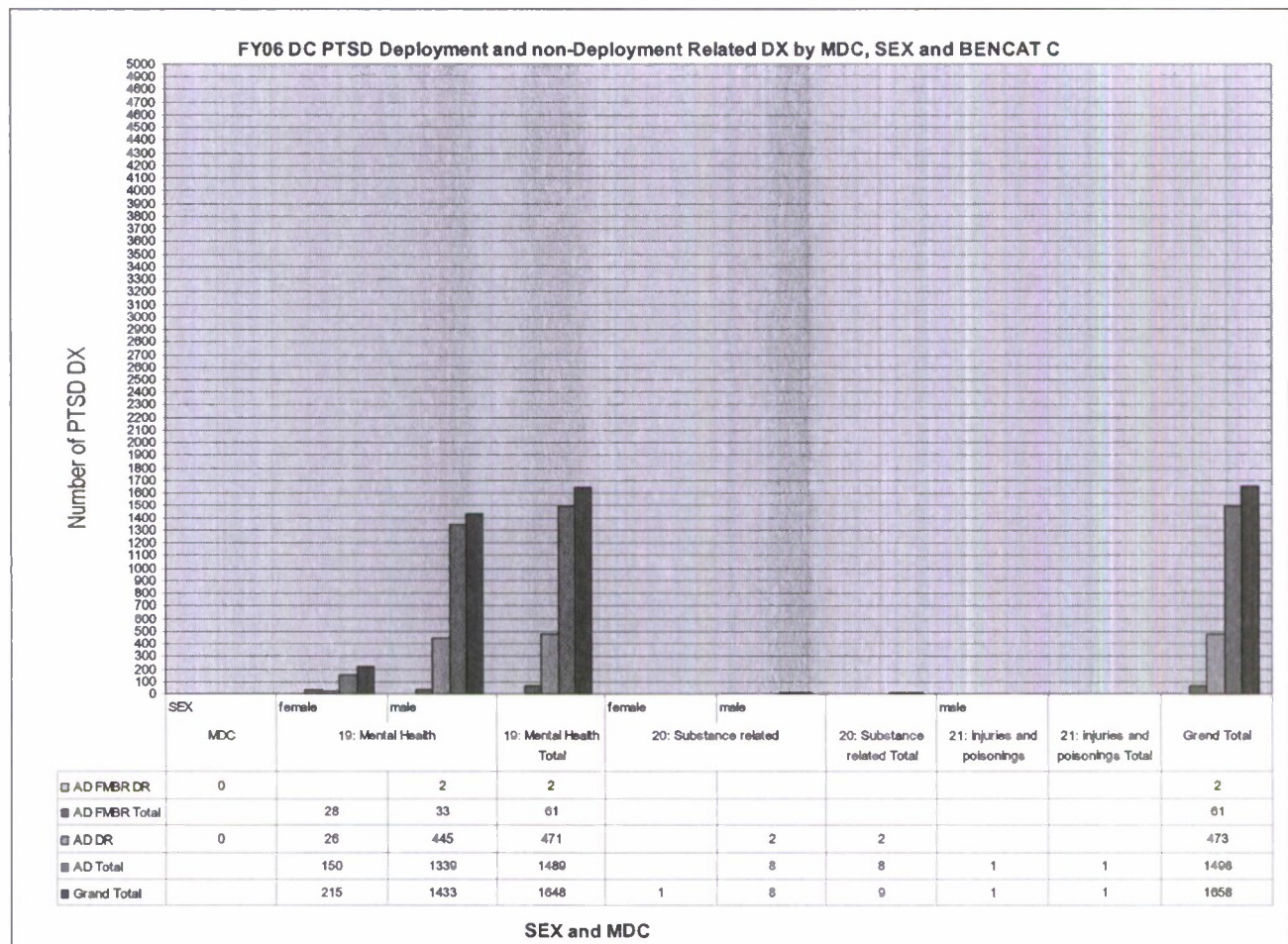


Figure 15. FY06 Direct Care PTSD deployment and non-deployment related diagnoses by MDC, SEX, and BEN CAT C. This graph is on the same scale as the previous graph to emphasize the growth in PTSD DX from year to year.

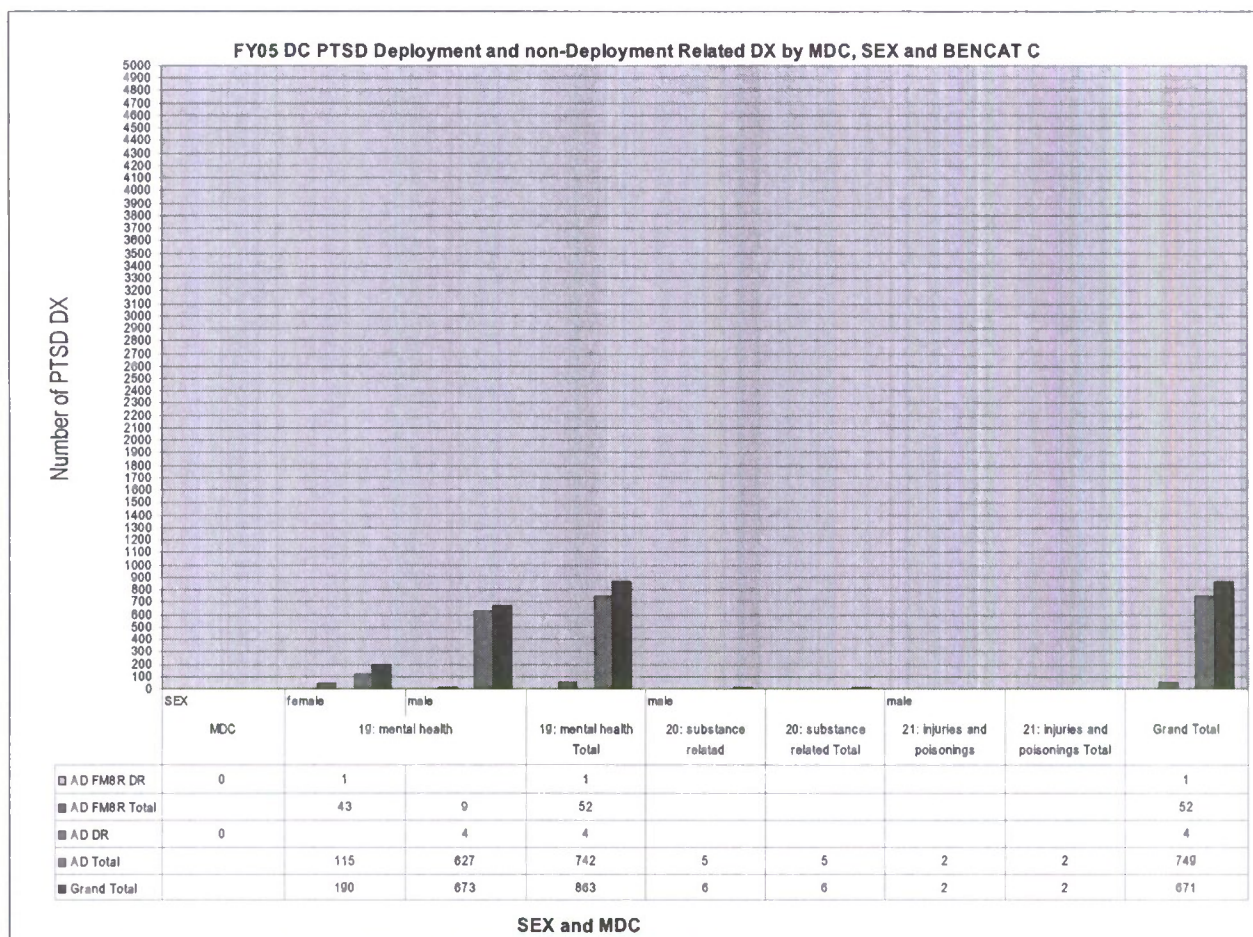


Figure 16. FY05 Direct Care PTSD deployment and non-deployment related diagnoses by MDC, SEX, and BEN CAT C. This graph is on the same scale as the previous graph to emphasize the growth in PTSD DX from year to year.

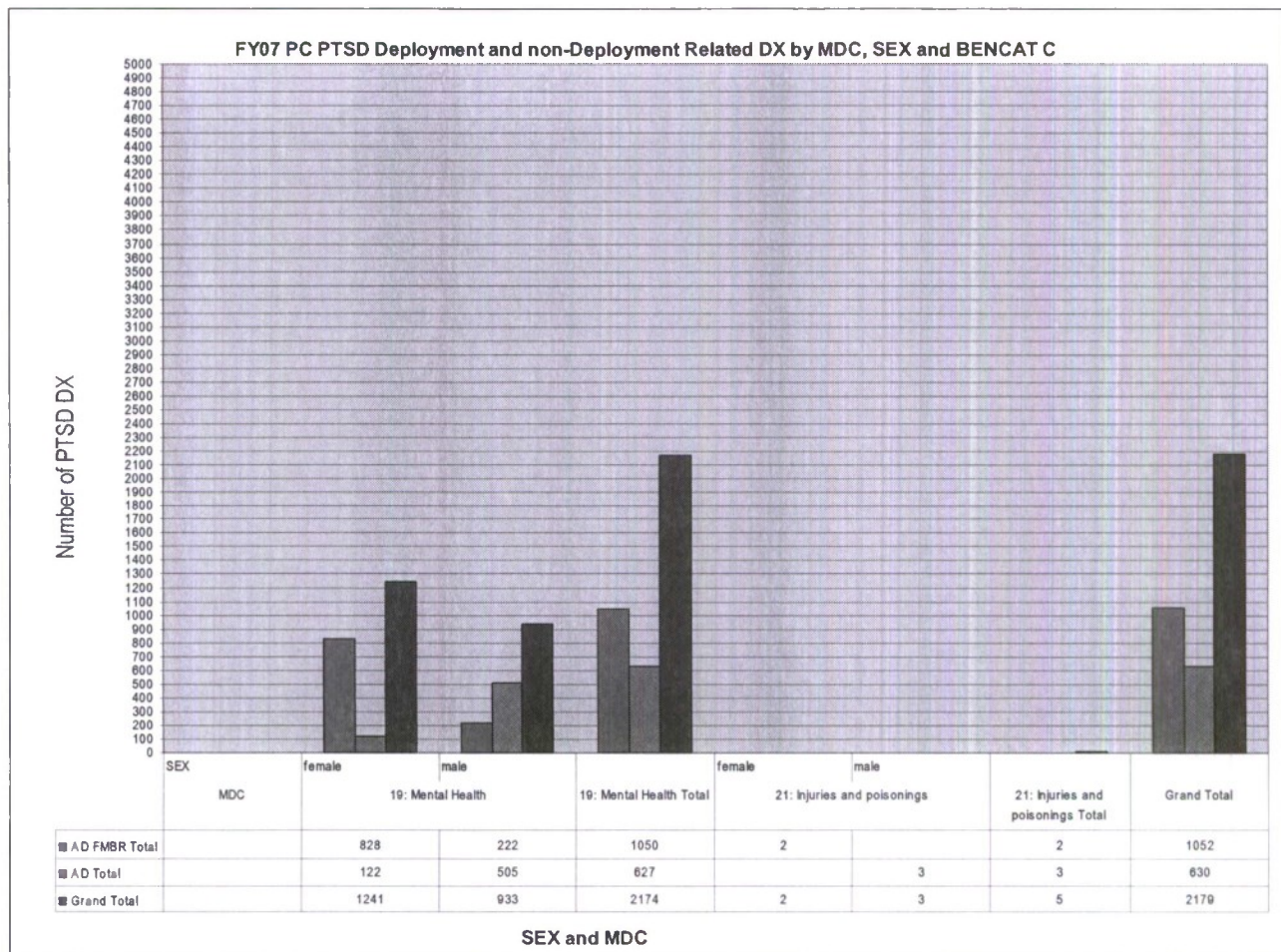


Figure 17. FY07 Purchased Care PTSD non-deployment related diagnoses by MDC, SEX, and BEN CAT C. This graph is on the same scale as the previous graph to emphasize the growth in PTSD DX from year to year. Also notice there are no deployment related diagnoses because the network does not capture that data.

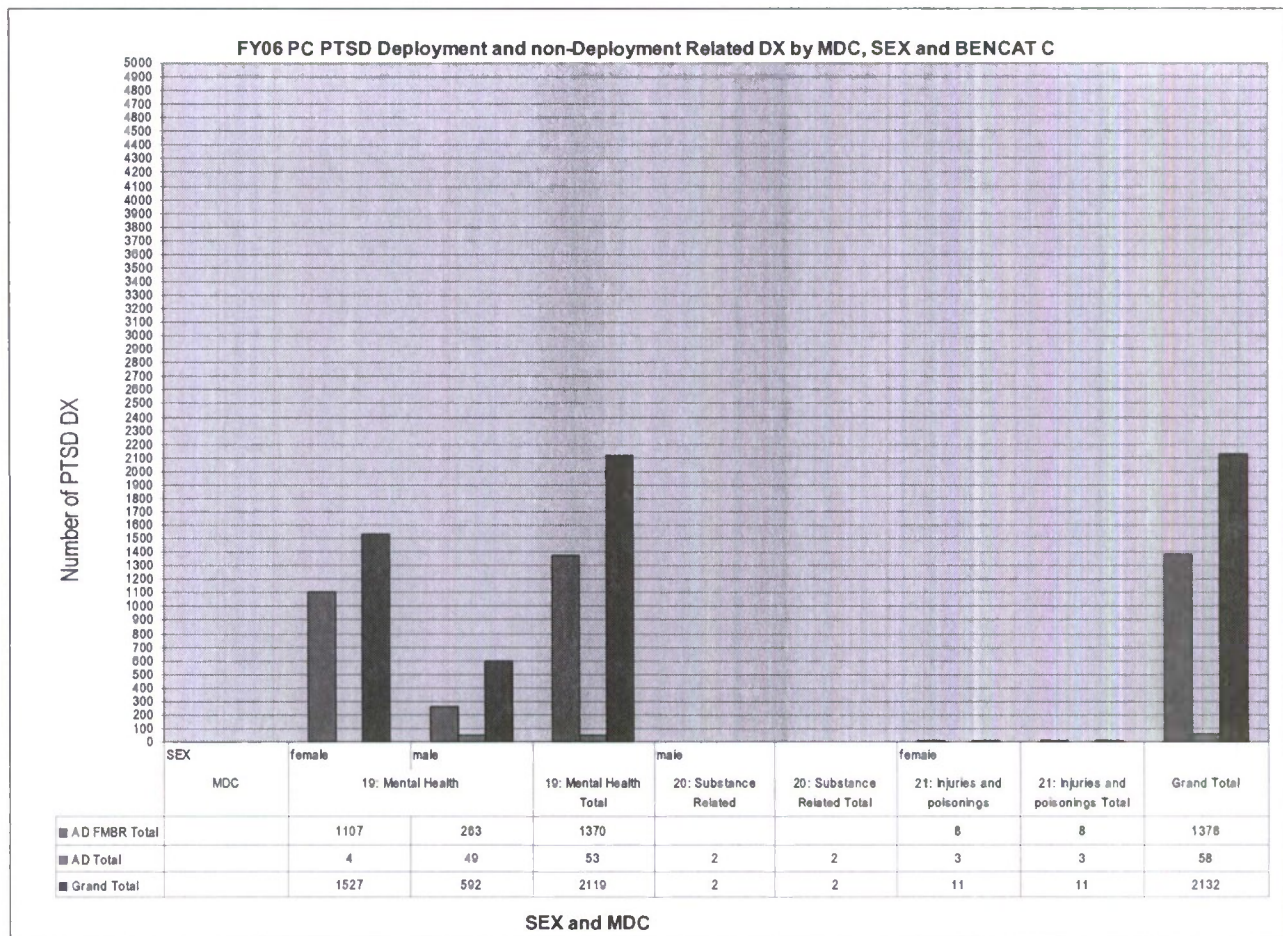


Figure 18. FY06 Purchased Care PTSD non-deployment related diagnoses by MDC, SEX, and BEN CAT C. This graph is on the same scale as the previous graph to emphasize the growth in PTSD DX from year to year. Also notice there are no deployment related diagnoses because the network does not capture that data.

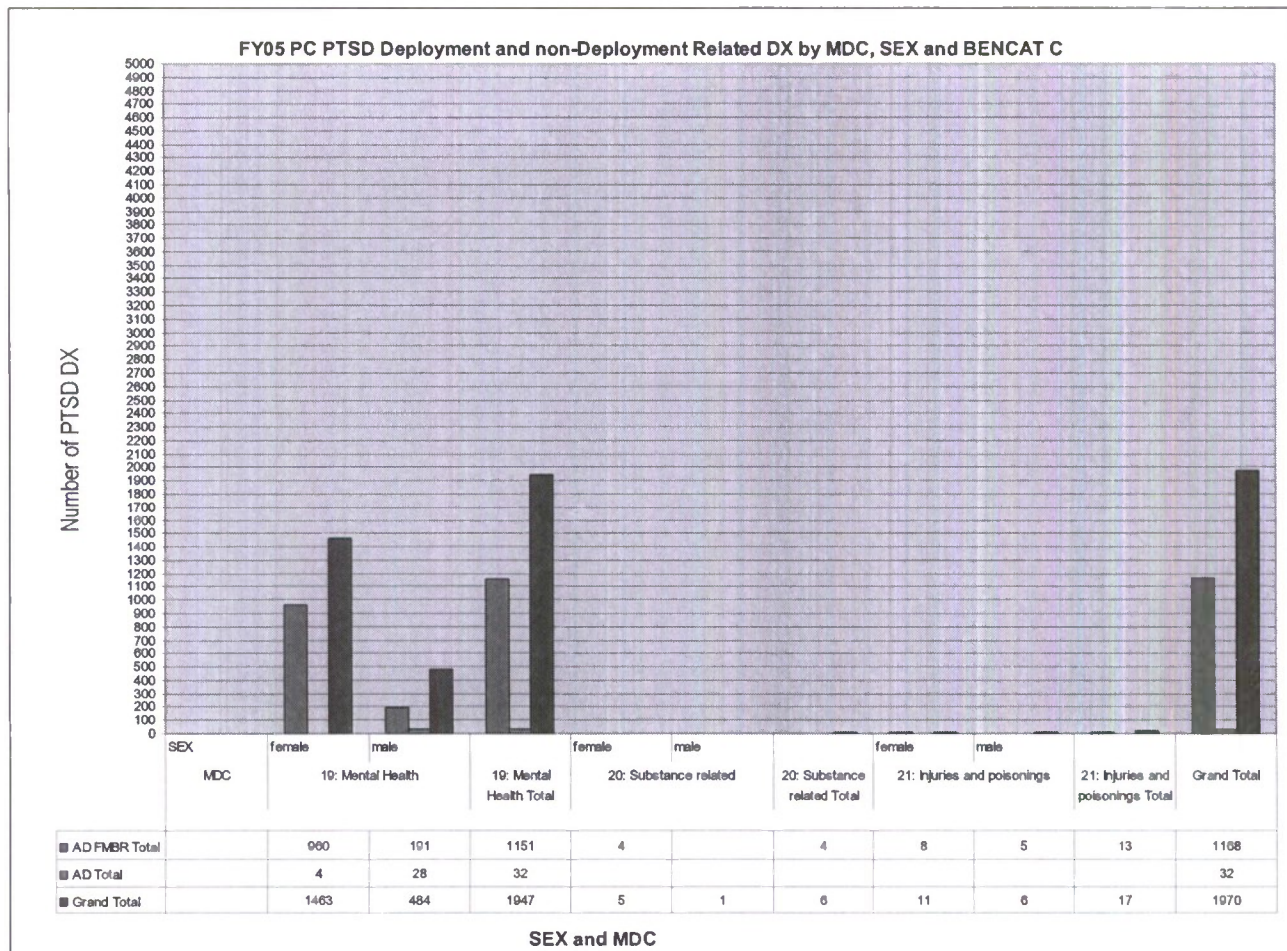


Figure 19. FY05 Purchased Care PTSD non-deployment related diagnoses by MDC, SEX, and BEN CAT C. This graph is on the same scale as the previous graph to emphasize the growth in PTSD DX from year to year. Also, notice there are no deployment related diagnoses because the network does not capture that data.

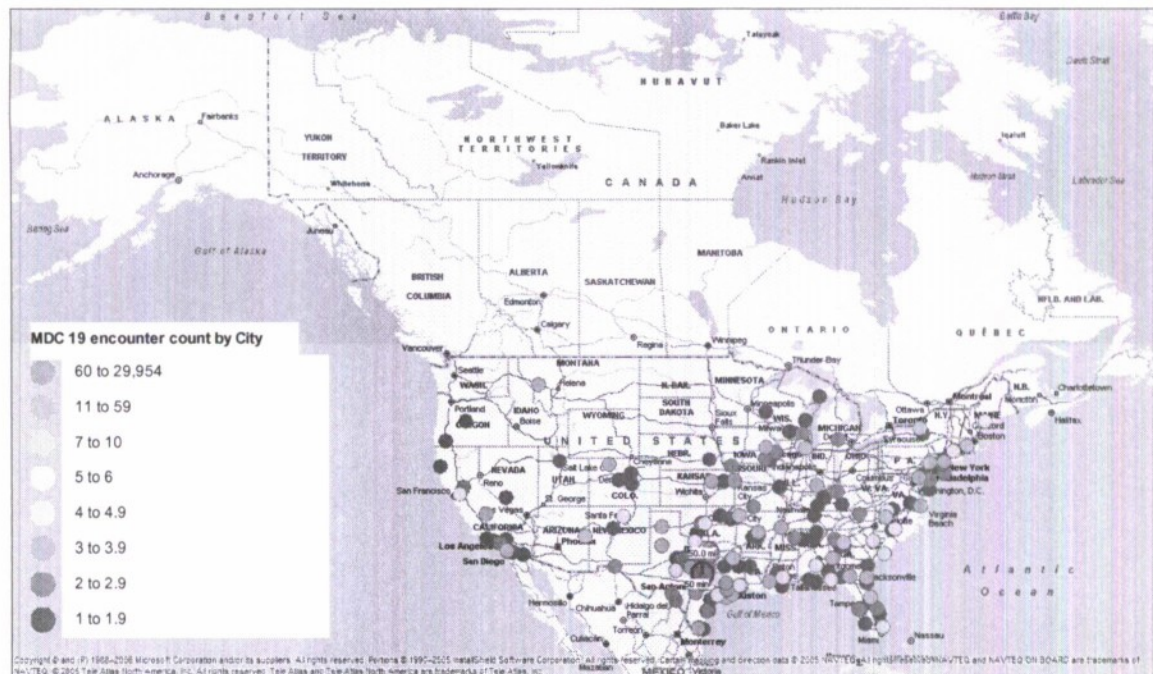


Figure 20. Unique cities where MDC 19 (Mental Health) diagnoses were made on beneficiaries in the Fort Hood area FY07.

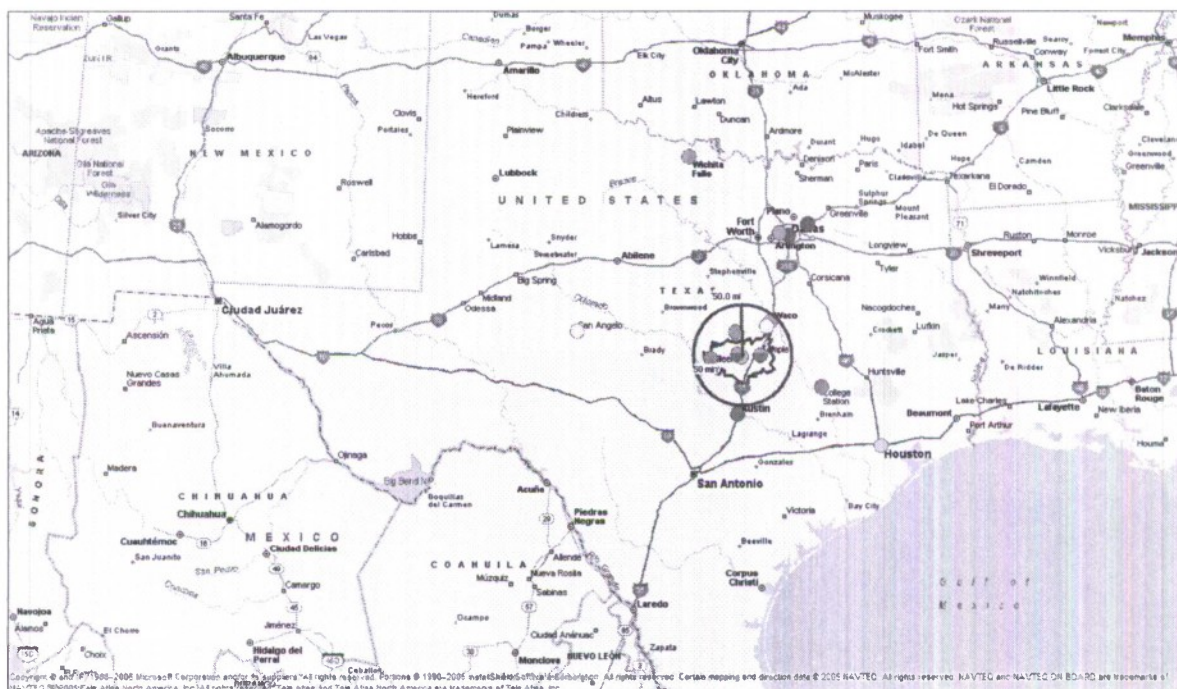
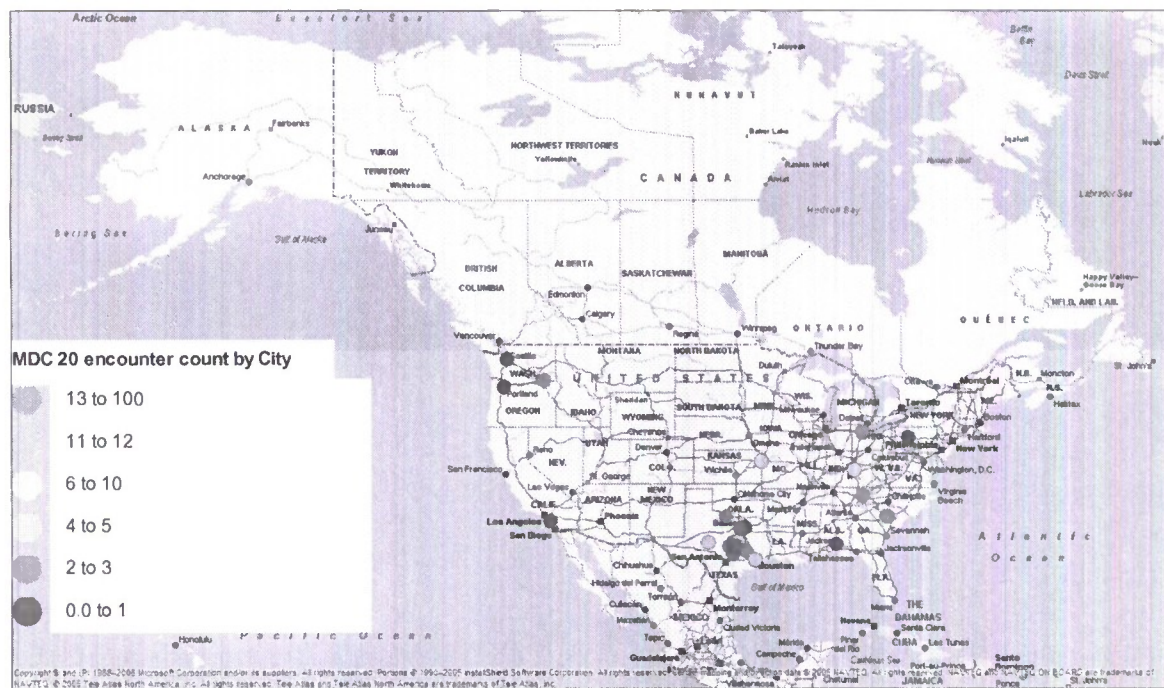


Figure 21. Unique cities where MDC 20 (Substance Related) diagnoses were made on beneficiaries in the Fort Hood area FY07.

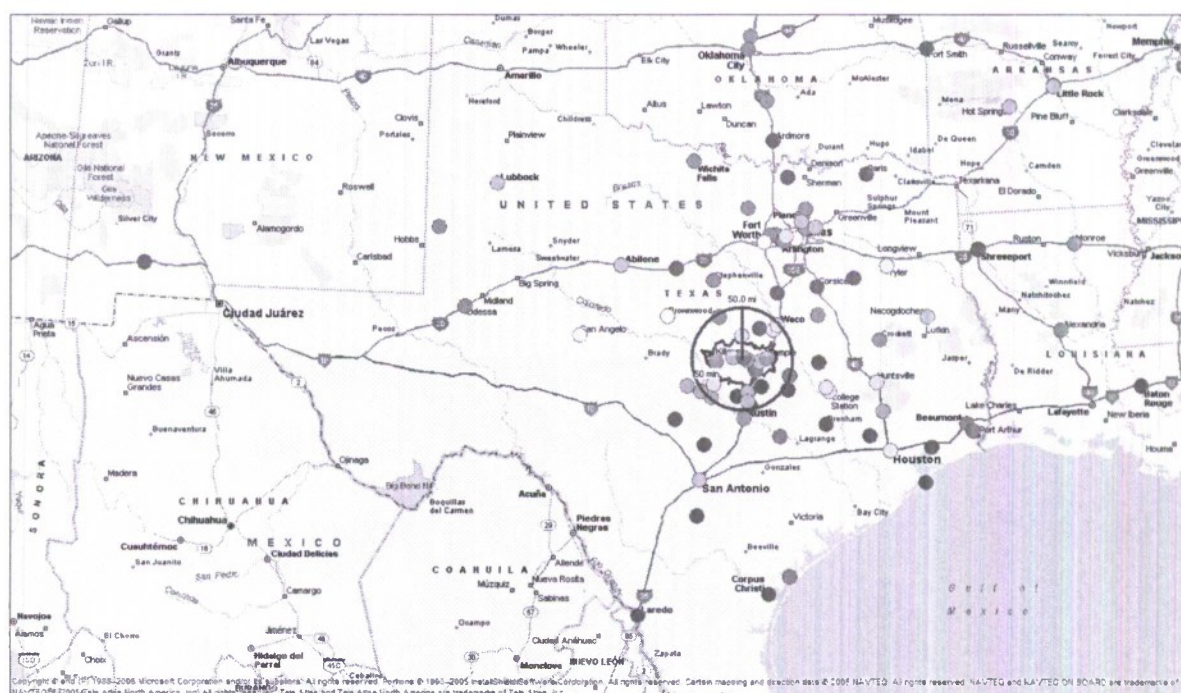
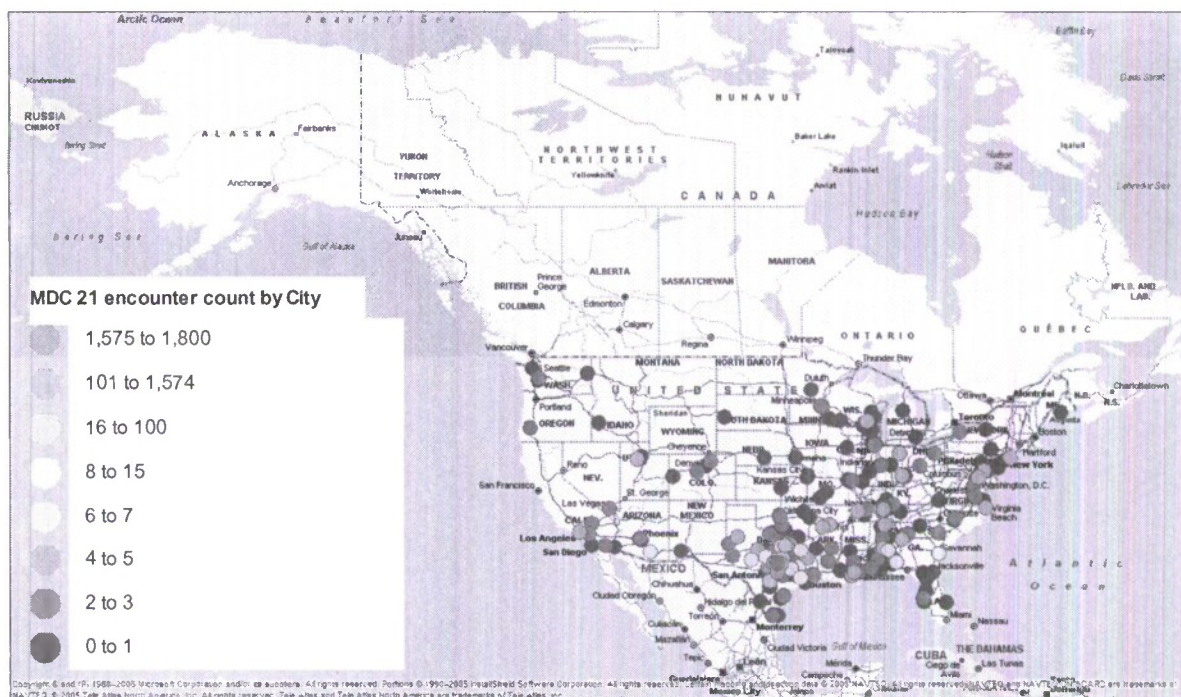


Figure 22. Unique cities where MDC 21 (Injuries and Poisonings) diagnoses were made on beneficiaries in the Fort Hood area FY07.