



JULY 2013

Volume 20  
Number 7

# MSMR

## MEDICAL SURVEILLANCE MONTHLY REPORT



### *Mental Health Issue*

- 
- PAGE 2** Editorial: the mental health of our deploying generation  
*Richard F. Stoltz, PhD*
- 
- PAGE 4** Summary of mental disorder hospitalizations, active and reserve components, U.S. Armed Forces, 2000-2012
- 
- PAGE 12** Surveillance Snapshot: anxiety disorders, active component, U.S. Armed Forces, 2000-2012
- 
- PAGE 13** Mental disorders and mental health problems among recruit trainees, U.S. Armed Forces, 2000-2012  
*Patrick Monahan, MD, MPH; Zheng Hu, MS; Patricia Rohrbeck, DrPH, MPH, CPH*
- 
- PAGE 19** Surveillance Snapshot: mental disorder hospitalizations among recruit trainees, U.S. Armed Forces, 2000-2012
- 
- PAGE 20** Malingering and factitious disorders and illnesses, active component, U.S. Armed Forces, 1998-2012
- 
- PAGE 25** Surveillance Snapshot: conditions diagnosed concurrently with insomnia, active component, U.S. Armed Forces, 2003-2012
- 
- SUMMARY TABLES AND FIGURES**
- 
- PAGE 26** Deployment-related conditions of special surveillance interest
-

| Report Documentation Page                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                    |                                     |                                                           | Form Approved<br>OMB No. 0704-0188                  |                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------|-----------------------------------------------------------|-----------------------------------------------------|---------------------------------|
| Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. |                                    |                                     |                                                           |                                                     |                                 |
| 1. REPORT DATE<br><b>JUL 2013</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                    | 2. REPORT TYPE                      |                                                           | 3. DATES COVERED<br><b>00-00-2013 to 00-00-2013</b> |                                 |
| 4. TITLE AND SUBTITLE<br><b>Medical Surveillance Monthly Report (MSMR)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                    |                                     |                                                           | 5a. CONTRACT NUMBER                                 |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                                           | 5b. GRANT NUMBER                                    |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                                           | 5c. PROGRAM ELEMENT NUMBER                          |                                 |
| 6. AUTHOR(S)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                    |                                     |                                                           | 5d. PROJECT NUMBER                                  |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                                           | 5e. TASK NUMBER                                     |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                                           | 5f. WORK UNIT NUMBER                                |                                 |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)<br><b>Armed Forces Health Surveillance Center, 11800 Tech Road, Suite 220 (MCAF-CS), Silver Spring, MD, 20904</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                    |                                     |                                                           | 8. PERFORMING ORGANIZATION REPORT NUMBER            |                                 |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |                                     |                                                           | 10. SPONSOR/MONITOR'S ACRONYM(S)                    |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                                           | 11. SPONSOR/MONITOR'S REPORT NUMBER(S)              |                                 |
| 12. DISTRIBUTION/AVAILABILITY STATEMENT<br><b>Approved for public release; distribution unlimited</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                    |                                     |                                                           |                                                     |                                 |
| 13. SUPPLEMENTARY NOTES<br><b>Vol 20, Number 7, July 2013</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                    |                                     |                                                           |                                                     |                                 |
| 14. ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                    |                                     |                                                           |                                                     |                                 |
| 15. SUBJECT TERMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                    |                                     |                                                           |                                                     |                                 |
| 16. SECURITY CLASSIFICATION OF:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     | 17. LIMITATION OF ABSTRACT<br><b>Same as Report (SAR)</b> | 18. NUMBER OF PAGES<br><b>29</b>                    | 19a. NAME OF RESPONSIBLE PERSON |
| a. REPORT<br><b>unclassified</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | b. ABSTRACT<br><b>unclassified</b> | c. THIS PAGE<br><b>unclassified</b> |                                                           |                                                     |                                 |

## The Mental Health of Our Deploying Generation

Richard F. Stoltz, PhD (CAPT, USN)

There's a famous saying that "the only victor in war is medicine." History has provided us with ample lessons learned from previous wars, just as military medicine is benefiting from knowledge gained from the last 12 years of persistent warfare. These lessons have led to an unprecedented understanding of how best to respond, implement and deliver mental health services – on and off the battlefield.

More than 2.6 million service members of the active component, National Guard and Reserve have deployed – many repeatedly – in support of combat operations in Iraq and Afghanistan over the last 12 years. It is well recognized that exposure to combat can increase the risk of developing mental health conditions. Although the majority of service members who have deployed will not develop depression, anxiety, or post-traumatic stress disorder (PTSD), everyone who has deployed will change to some degree and, once home,

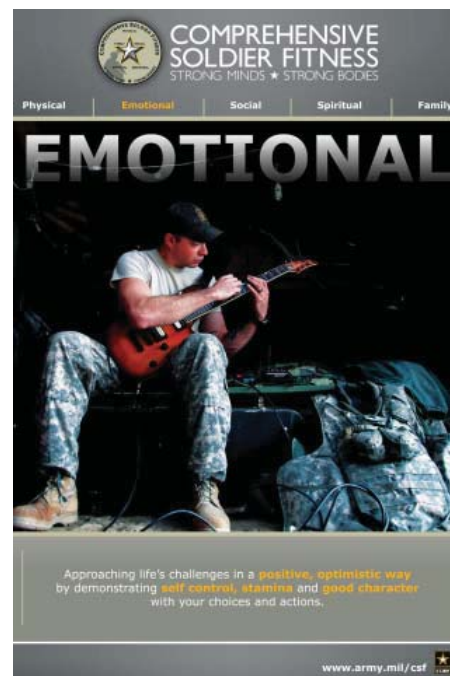
will find a new "normal" in a fairly quick amount of time.

For some service members, though, it doesn't work that way. Some combat veterans have witnessed gruesome events. They might have seen their best efforts fail to prevent their friends from being killed or wounded by improvised explosive device (IED) explosions or other hostile fire. They have had to come to terms with the fact that any person, including women and children, could be their enemy. Even more disturbing, they may have been involved in the accidental deaths of innocent civilians including children.

Sometimes the reality of what these service members have experienced is indescribable and usually unimaginable to those who have not been to war and witnessed its horrors. When many service members return from deployments, they are confused and fearful and they experience high levels of depression, anxiety, or symptoms of PTSD they do not fully understand.

Many troubled service members desperately want to sleep better at night but can't. They long to feel more inner peace and to not repeatedly revisit memories of past horrific experiences. They yearn to be better spouses, better parents, and better friends, but aren't sure how to make that happen. They may experience an increase in alcohol abuse but have trouble cutting back. All of this might be exacerbated by physical injuries and various traumas from previous deployments.

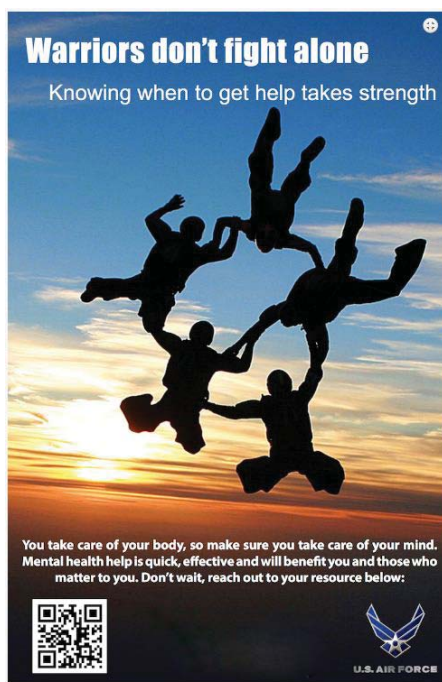
Some service members may try to convince themselves that their problems are not serious in order to justify their decision to avoid seeking professional help. They search for ways to block an awareness of their inner malaise. This may work temporarily, but any relief is usually short lived, thwarting their ability to heal. Others may want professional help but fear it will harm

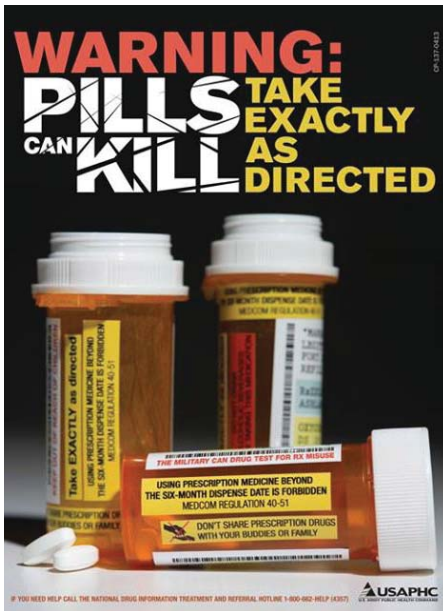


their careers or they will be perceived as weak by those closest to them. Many who take the courageous step to receive treatment are pleased with the results.

Whether that assistance involves social support, education, group therapy, mind-body medicine, virtual reality, hypnosis, spiritual counseling, cognitive behavioral therapy, mindfulness, meditation, or other interventions, it is imperative to recognize that the best treatment for some may not be the best treatment for others and sometimes it takes a while to figure this out.

It's equally important to understand that what service members' minds needed to do to increase their chances of survival in combat is the opposite of what their minds will need to do to heal. In the combat setting blocking out inner turmoil and remaining fully alert to one's dangerous environment is critical. In safe settings it is important to find ways to work through troubling thoughts and feelings that war





often generates. In combination with therapy it's often helpful for service members to share their combat experiences with other veterans who've had similar experiences. Exercise, good nutrition and healthy sleep are also beneficial.

There is still much to learn about how best to help service members who are experiencing highly treatable conditions such as PTSD, depression, anxiety and substance abuse. Major efforts by the military health care system have increased treatment resources and access to care. Initiatives undertaken to promote help-seeking behavior for mental health concerns have gained significant traction and enabled many to receive help. Our knowledge and skill in implementing multiple, evidence-based treatment modalities continue to improve. Ongoing research on optimum ways to assist and treat service members has greatly intensified over the last several years and is already showing promising results.

This month's edition of the *MSMR* highlights the stark reality that "war is hell." Forceful and intense physical and mental stress is a natural result. If "the lessons of the last war are almost always ignored in the next war..." as historian Eric T. Dean, Jr. implies, then the last 12 years could very

well result in long-term mental health disabilities for thousands of heroes who have courageously ventured into harm's way.<sup>1</sup>

Though our military and civilian health care system has a much broader understanding of the common struggles endured after a decade of unconventional warfare, the journey is not yet complete. The demand to continuously improve our knowledge and methods to effectively prepare, screen, diagnose and treat service members with mental health concerns will

persist long after all of our nation's heroes have returned home.

*Author Affiliation: Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE) (Capt Stoltz).*

## REFERENCES

1. Dean ET Jr. *Shook over hell: post-traumatic stress, Vietnam, and the Civil War*. Cambridge, MA: Harvard University Press; 1997: 35.



# YOU HURT. WE HELP.



## Psychological and Emotional Well-Being

Your job isn't easy. You're asked to do things most people can't do, be in situations most people can't handle or make decisions most people couldn't fathom. These challenges may place a big toll on you. Yet, to be successful in the Navy and Marine Corps, you have to be resilient and psychologically strong. That's where the Health Promotion and Wellness Department of the Navy and Marine Corps Public Health Center can help. We have the resources and tools to help you navigate stress and strengthen your resilience so you can perform at your best. If you or someone you know is in crisis, please call the Military Crisis Line for confidential support at 1-800-273-TALK (8255) and Press 1.



To learn how our programs can help keep you fit for service and improve your overall health, visit us at [WWW.MED.NAVY.MIL/SITES/NMCPHC/HEALTH-PROMOTION](http://WWW.MED.NAVY.MIL/SITES/NMCPHC/HEALTH-PROMOTION)

NAVY AND MARINE CORPS PUBLIC HEALTH CENTER  
PREVENTION AND PROTECTION START HERE



# Summary of Mental Disorder Hospitalizations, Active and Reserve Components, U.S. Armed Forces, 2000-2012

Mental disorders are the leading cause of hospital bed days and the second leading cause of medical encounters for active component service members in the U.S. military. Mental disorder-related hospitalizations among military members have increased in both number and duration since 2006; mental disorders are the only illness/injury category for which hospitalization rates have markedly increased during the first 11 years of the Iraq and Afghanistan wars. Between 2000 and 2012, 159,107 active component service members experienced 192,317 mental disorder hospitalizations. There were approximately 87 percent more mental disorder-related hospitalizations in 2011 (n=21,646) than in 2000 (n=11,604); in 2012, this number declined slightly (n=21,360). The overall increase since 2006 was largely due to sharp increases in hospitalizations for post-traumatic stress disorder (PTSD), depression, alcohol abuse and dependence, and adjustment disorder (% increases in hospitalizations, 2006-2012: PTSD: 192%; depression: 66%; alcohol abuse and dependence: 110%; adjustment disorder: 52%). Similar rates of increase occurred among members of the reserve component. The percentage of mental disorder hospitalization records with a second (concurrent) mental disorder diagnosis increased during the surveillance period; more than half of all service members hospitalized for a mental disorder had a second mental disorder diagnosis documented during the same hospitalization.

Mental disorders account for more hospitalizations of U.S. service members than any other major diagnostic category.<sup>1,2</sup> Mental disorder-related hospitalizations among military members have increased in both number and duration since 2006;<sup>3</sup> in addition, mental disorders are the only illness/injury category for which hospitalization rates have increased during the Iraq and Afghanistan wars.<sup>4</sup>

The public health impact and occupational burden associated with mental disorder-related hospitalizations is considerable; for example, attrition rates for service members within six months of a mental disorder-related hospitalization are four times higher than those for hospitalization for other injuries or illness<sup>5</sup> and the risk of dying from suicide is greatly

elevated in active component service members who have been hospitalized for a mental disorder.<sup>6</sup>

This report documents the number and length of mental disorder-related hospitalizations in the active and reserve components of the U.S. Armed Forces during the past 13 years. The frequencies of co-occurring mental disorder diagnoses are also examined.

## METHODS

The surveillance period was 1 January 2000 to 31 December 2012. The surveillance population included all individuals who served in the active and reserve (Reserve and Guard) components of the U.S. Armed Services at any time during the surveillance

period. Endpoints of analyses were mental disorder-related hospitalizations; for analysis purposes, these were defined by hospitalization records with primary (first-listed) diagnoses of a mental disorder or a diagnosis of suicidal ideation. For summary purposes, mental disorder-related hospitalizations were grouped into twelve categories: adjustment disorders, alcohol abuse and dependence, substance abuse and dependence, anxiety, post-traumatic stress disorder (PTSD), depression, bipolar disorder, personality disorders, schizophrenia, other psychoses, other mental health disorders and suicidal ideation (**Table 1**). Hospitalizations with suicidal ideation as the primary diagnosis are summarized only from 2006 forward as the diagnostic code for suicidal ideation was not added to the International Classification of Diseases (ICD-9-CM) until October 2005. An individual could be counted in more than one mental disorder category. All unique hospitalization records were summarized; an individual could be counted multiple times if that individual had multiple mental disorder-related hospitalization records occurring on different days.

Some analyses were performed only for the subset of the six most frequent mental disorder hospitalizations (i.e., hospitalizations for adjustment disorder, alcohol abuse and dependence, bipolar disorder, depression, PTSD, and substance abuse and dependence). For these six categories of mental disorder-related hospitalization, the percentages of mental disorder-related hospitalizations with another mental disorder diagnosis in diagnostic positions two through eight in the same hospitalization record were calculated.

## RESULTS

During the 13-year surveillance period, 159,107 active component service members experienced a total of 192,317 mental disorder hospitalizations. Annual numbers of mental disorder-related

**TABLE 1.** Mental disorder categories and diagnostic codes (ICD-9-CM)

| Diagnostic category                   | ICD-9 codes                                                                                                                                                      |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ICD-9 mental disorders                |                                                                                                                                                                  |
| Adjustment disorders                  | 309.0x-309.9x (excluding 309.81)                                                                                                                                 |
| Anxiety disorders                     | 300.0x, 300.2x, 300.3                                                                                                                                            |
| Post-traumatic stress disorder (PTSD) | 309.81                                                                                                                                                           |
| Bipolar disorder                      | 296.0x, 296.1x, 296.4x, 296.5x, 296.6x, 296.7, 296.8x                                                                                                            |
| Depressive disorders                  | 296.20-296.35, 296.90, 300.4, 311.xx, 301.6, 301.7, 301.81, 301.82, 301.83, 301.84, 301.89, 301.9                                                                |
| Personality disorders                 | 301.0, 301.10, 301.11, 301.12, 301.13, 301.20, 301.21, 301.22, 301.3, 301.4, 301.50, 301.51, 301.59, 301.6, 301.7, 301.81, 301.82, 301.83, 301.84, 301.89, 301.9 |
| Schizophrenia                         | 295.xx                                                                                                                                                           |
| Other psychotic disorders             | 293.81, 293.82, 297.0x-297.3x, 297.8, 297.9, 298.0, 298.1, 298.2, 298.3, 298.4, 298.8, 298.9                                                                     |
| Alcohol abuse/dependence disorders    | 303.xx, 305.0x, 291.81, 291.0                                                                                                                                    |
| Substance abuse/dependence disorders  | 304.xx, 305.2x-305.9x (excluding 305.1)                                                                                                                          |
| Other mental health disorder          | Any other code between 290-319 (excluding 305.1, 299.xx, 315.xx, 317.xx-319.xx)                                                                                  |
| Suicidal ideation                     | V62.84                                                                                                                                                           |

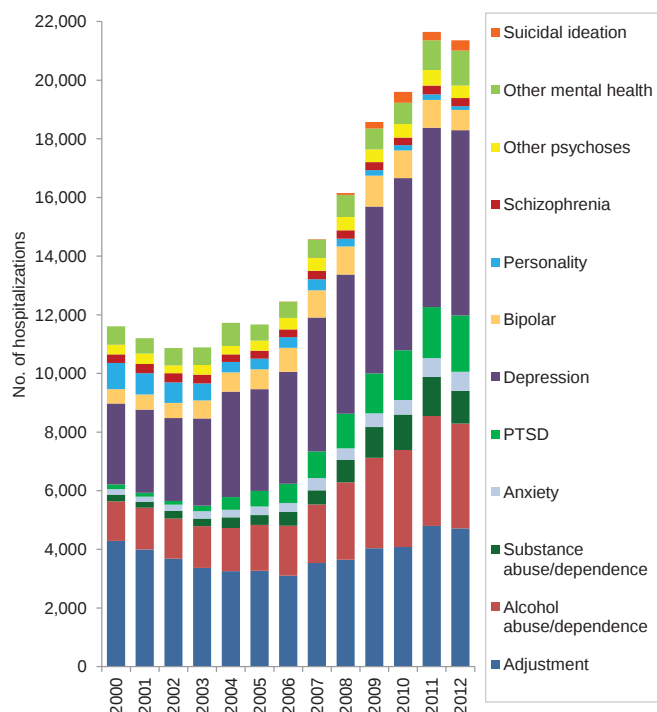
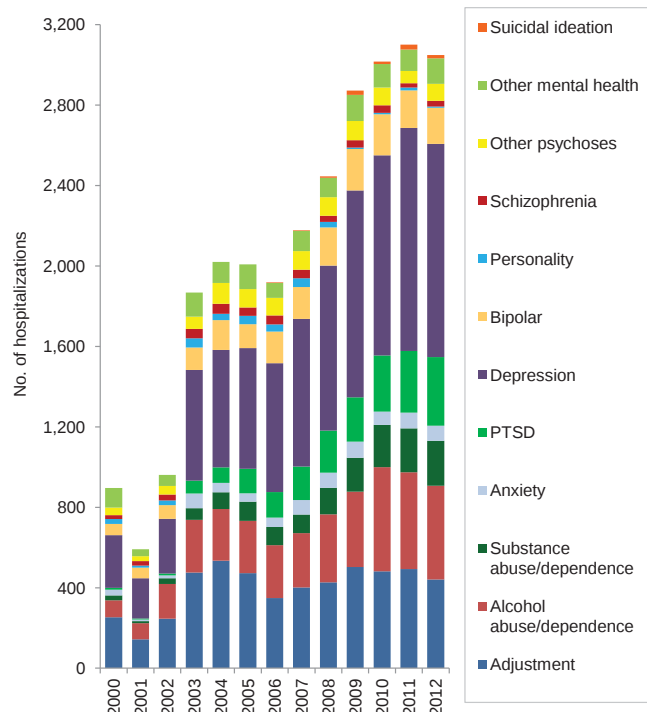
hospitalizations remained fairly stable from 2000 through 2006 and then monotonically increased through 2011 and stabilized in 2012 (**Figure 1**). There were approximately 87 percent more mental disorder-related

hospitalizations in 2011 (n=21,646) than in 2000 (n=11,604); in 2012, this number declined slightly (n=21,360) (**Figure 1**). The overall increase since 2006 was largely due to sharp increases in hospitalizations

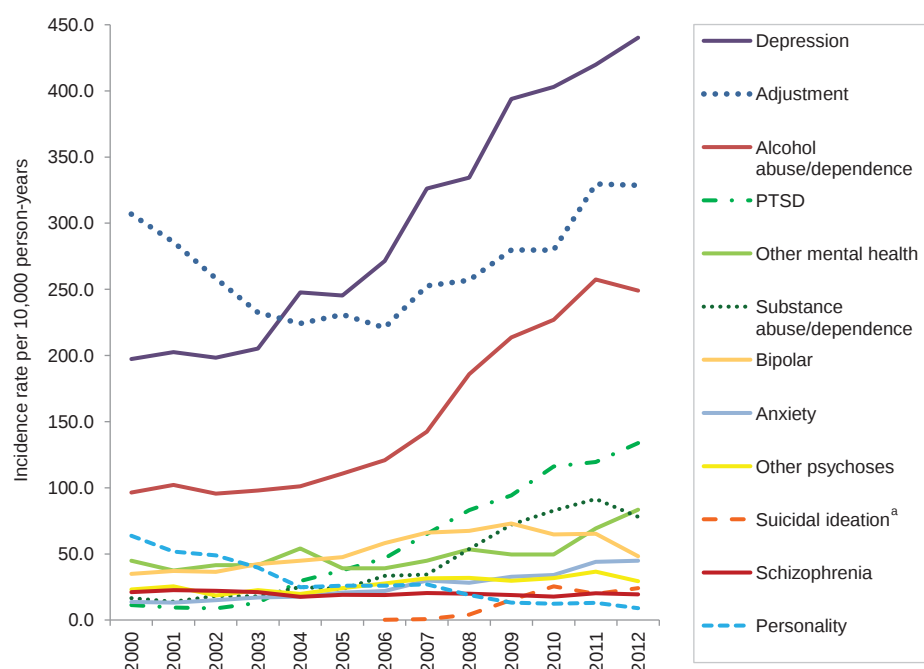
for PTSD, depression, alcohol abuse and dependence, and adjustment disorder (% increases in hospitalizations, 2006-2012: PTSD: 192%; depression: 66%; alcohol abuse and dependence: 110%; adjustment disorder: 52%) (**Figure 1**).

During the same period, 22,456 reserve component service members experienced a total of 26,925 mental disorder hospitalizations. The number of mental disorder-related hospitalizations almost doubled from 2002 (n=961) to 2003 (n=1,868) and then remained relatively stable through 2006. As in the active component, annual numbers of mental disorder-related hospitalizations after 2006 increased each year through 2011; between 2006 (n=1,919) and 2011 (n=3,101), mental disorder-related hospitalizations increased by approximately 62 percent (**Figure 2**).

In active component service members, during each year from 2000 to 2003, there were more hospitalizations for adjustment disorders than any other category of mental disorders; however, during each year from 2004 to 2012, there were more hospitalizations for depression than any other category of mental disorders (**Figure 1**). In 2000,

**FIGURE 1.** Number of mental disorder hospitalizations by category, active component, U.S. Armed Forces, 2000-2012**FIGURE 2.** Number of mental disorder hospitalizations by category, reserve component, U.S. Armed Forces, 2000-2012

**FIGURE 3.** Incidence rates of mental disorder hospitalizations by category, active component, U.S. Armed Forces, 2000-2012



<sup>a</sup>The diagnostic code for suicidal ideation (V62.84) was not available until October 2005  
PTSD=post-traumatic stress disorder

hospitalization rates for adjustment disorders were higher than for any other mental disorder category (306.8 per 10,000 person-years [p-yrs]); in 2004, hospitalization rates for depression (247.8 per 10,000 p-yrs) exceeded those of adjustment disorder (224.2

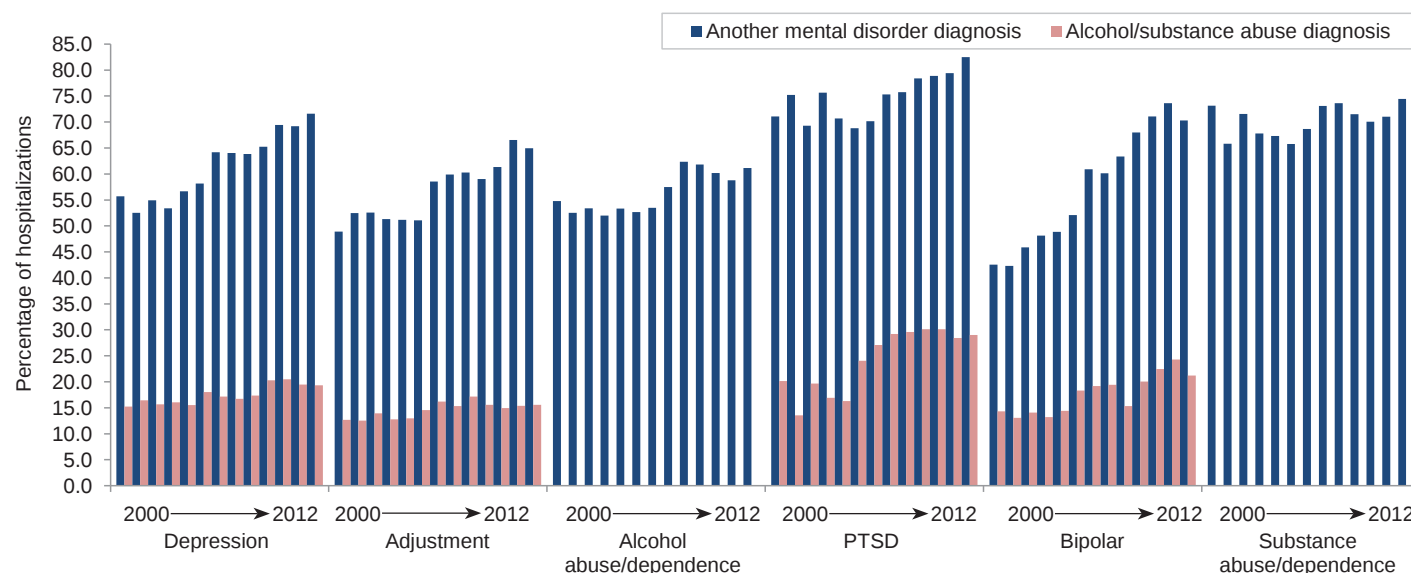
per 10,000 p-yrs). Hospitalization rates for depression continued to increase through 2012 and remained higher than rates in any other mental disorder category (**Figure 3**).

Among reserve component service members, there were more hospitalizations

for depression than for adjustment disorders in every year of the surveillance period (**Figure 2**).

The mean and median length of mental disorder-related hospitalizations varied substantially by mental disorder category (**data not shown**). Between 2000 and 2012, hospitalizations for schizophrenia had the longest median lengths of any mental disorder-related hospitalizations, although the median length for these hospitalizations declined over the course of the time period (median length in 2000: 19 days versus median length in 2012: 10 days). In contrast, both mean and median lengths of hospitalizations for alcohol abuse and dependence and PTSD increased between 2009 and 2012. The annual mean length of hospitalizations where alcohol abuse and dependence was the primary diagnosis increased from 9 days in 2009 to 12 days in 2012; similar increases in median length were also observed (2009: 4 days; 2012: 6 days). The largest increase in length of hospitalization was observed for PTSD-related hospitalizations; the length of PTSD-related hospitalizations increased from a mean of 10 days and median length of 6 days in 2000 to a mean length of 17 days and a median length of 9 days in 2012. Mean and median lengths of hospitalization for other categories of mental disorder-related hospitalizations remained relatively stable over the 13-year period (**data not shown**).

**FIGURE 4.** Percentage of mental disorder hospitalizations for the six most common conditions with another mental disorder diagnosis and with an alcohol/substance abuse diagnosis, active component, U.S. Armed Forces, 2000-2012



**TABLE 2.** Frequencies of diagnoses in other diagnostic positions (dx2-dx8) for mental disorder hospitalizations, active component, U.S. Armed Forces, 2000-2012

| Frequency of ICD-9-CM codes in the secondary diagnostic position (dx2)   |       |             |                                                         |                          |             |                                                              |                            |             |                                                    |
|--------------------------------------------------------------------------|-------|-------------|---------------------------------------------------------|--------------------------|-------------|--------------------------------------------------------------|----------------------------|-------------|----------------------------------------------------|
| Adjustment                                                               |       |             |                                                         | Alcohol abuse/dependence |             |                                                              | Substance abuse/dependence |             |                                                    |
| No.                                                                      | Code  | Description | No.                                                     | Code                     | Description | No.                                                          | Code                       | Description |                                                    |
| 1                                                                        | 4,980 | V6284       | Suicidal ideation                                       | 1,257                    | 3051        | Nondependent tobacco use disorder                            | 403                        | 30401       | Opioid type dependence continuous use              |
| 2                                                                        | 3,310 | 3019        | Unspecified personality disorder                        | 1,188                    | 311         | Depressive disorder NEC                                      | 328                        | 30400       | Opioid type dependence unspec use                  |
| 3                                                                        | 2,523 | 30500       | Nondependent alcohol abuse                              | 1,036                    | V6284       | Suicidal ideation                                            | 276                        | 311         | Depressive disorder NEC                            |
| 4                                                                        | 1,620 | V622        | Other occupational circumstances/<br>maladjustment      | 921                      | 30981       | PTSD                                                         | 262                        | 2920        | Drug withdrawal                                    |
| 5                                                                        | 1,548 | V6110       | Unspec counseling for marital/partner<br>problems       | 777                      | 30391       | Other/unspecified alcohol<br>dependence; continuous drinking | 256                        | 30500       | Nondependent alcohol abuse                         |
| 6                                                                        | 1,469 | 3051        | Nondependent tobacco use disorder                       | 689                      | 29181       | Alcohol withdrawal                                           | 249                        | 30981       | PTSD                                               |
| 7                                                                        | 1,328 | V6229       | Career choice problem                                   | 641                      | 30390       | Other/unspecified alcohol dependence                         | 224                        | 30390       | Other/unspecified alcohol dependence               |
| 8                                                                        | 1,303 | 30183       | Borderline personality disorder                         | 549                      | 29620       | Major depressive affective disorder;<br>single episode       | 186                        | 3051        | Nondependent tobacco use disorder                  |
| 9                                                                        | 944   | 30390       | Other/unspecified alcohol dependence                    | 444                      | 30000       | Anxiety state unspecified                                    | 165                        | 30000       | Anxiety state unspecified                          |
| 10                                                                       | 850   | 30981       | PTSD                                                    | 422                      | 4019        | Unspecified essential hypertension                           | 159                        | V6284       | Suicidal ideation                                  |
| Frequency of ICD-9-CM codes in the 3rd-8th diagnostic position (dx3-dx8) |       |             |                                                         |                          |             |                                                              |                            |             |                                                    |
| Adjustment                                                               |       |             |                                                         | Alcohol abuse/dependence |             |                                                              | Substance abuse/dependence |             |                                                    |
| No.                                                                      | Code  | Description | No.                                                     | Code                     | Description | No.                                                          | Code                       | Description |                                                    |
| 1                                                                        | 5,444 | V6229       | Career choice problem                                   | 3,971                    | 3051        | Nondependent tobacco use disorder                            | 1,303                      | 3051        | Nondependent tobacco use disorder                  |
| 2                                                                        | 5,034 | 3051        | Nondependent tobacco use disorder                       | 1,777                    | 4019        | Unspecified essential hypertension                           | 609                        | 30981       | PTSD                                               |
| 3                                                                        | 4,913 | V622        | Other occupational circumstances/<br>maladjustment      | 1,523                    | 30981       | PTSD                                                         | 462                        | 311         | Depressive disorder NEC                            |
| 4                                                                        | 3,525 | V6110       | Unspecified counseling for marital/<br>partner problems | 1,418                    | 311         | Depressive disorder NEC                                      | 419                        | 30000       | Anxiety state unspecified                          |
| 5                                                                        | 2,049 | 3019        | Unspecified personality disorder                        | 1,383                    | V6229       | Career choice problem                                        | 402                        | V6229       | Career choice problem                              |
| 6                                                                        | 1,279 | V602        | Inadequate material resources                           | 1,052                    | V6110       | Unspecified counseling for marital/<br>partner problems      | 389                        | 33829       | Other chronic pain                                 |
| 7                                                                        | 1,250 | V625        | Legal circumstances                                     | 986                      | V622        | Other occupational circumstances/<br>maladjustment           | 290                        | 7242        | Lumbago                                            |
| 8                                                                        | 1,178 | V6289       | Other psychological/physical stress                     | 954                      | 30000       | Anxiety state unspecified                                    | 279                        | V622        | Other occupational circumstances/<br>maladjustment |
| 9                                                                        | 1,132 | 30500       | Nondependent alcohol abuse                              | 654                      | 53081       | Esophageal reflux                                            | 261                        | 3019        | Unspecified personality disorder                   |
| 10                                                                       | 1,129 | 30183       | Borderline personality disorder                         | 615                      | 3019        | Unspecified personality disorder                             | 242                        | 4019        | Unspecified essential hypertension                 |
| NEC=Not elsewhere classified;PTSD=post-traumatic stress disorder         |       |             |                                                         |                          |             |                                                              |                            |             |                                                    |

NEC=Not elsewhere classified;PTSD=post-traumatic stress disorder

### Characteristics of the six most frequent mental disorder related hospitalizations

Between 2000 and 2012, the six most frequent primary diagnoses for mental disorder-related hospitalizations among active component military members were as follows: depression (n=55,586),

adjustment disorder (n=49,790), alcohol abuse and dependence (n=28,645), PTSD (n=11,033), bipolar disorder (n=9,808), and substance abuse and dependence (n=8,059).

In general, greater than 50 percent of mental disorder-related hospitalizations had a co-occurring mental disorder

diagnosis in a secondary diagnostic position in the same hospitalization record. Overall, the percentages of co-occurring mental disorder diagnoses increased between 2000 and 2012 for every category of mental disorder-related hospitalization (**Figure 4**). PTSD hospitalizations had the highest percentage of co-occurring mental

**TABLE 2. Continued.** Frequencies of diagnoses in other diagnostic positions (dx2-dx8) for mental disorder hospitalizations, active component, U.S. Armed Forces, 2000-2012

| Frequency of ICD-9-CM codes in the secondary diagnostic position (dx2)   |       |       |                                                                           |            |       |                                                          |         |       |                                                          |
|--------------------------------------------------------------------------|-------|-------|---------------------------------------------------------------------------|------------|-------|----------------------------------------------------------|---------|-------|----------------------------------------------------------|
| PTSD                                                                     |       |       |                                                                           | Depression |       |                                                          | Bipolar |       |                                                          |
|                                                                          | No.   | Code  | Description                                                               | No.        | Code  | Description                                              | No.     | Code  | Description                                              |
| 1                                                                        | 867   | 311   | Depressive disorder NEC                                                   | 6,370      | V6284 | Suicidal ideation                                        | 644     | V6284 | Suicidal ideation                                        |
| 2                                                                        | 813   | V6284 | Suicidal ideation                                                         | 3,781      | 30981 | PTSD                                                     | 605     | 30981 | PTSD                                                     |
| 3                                                                        | 521   | 30500 | Nondependent alcohol abuse                                                | 2,472      | 30500 | Nondependent alcohol abuse                               | 389     | 30500 | Nondependent alcohol abuse                               |
| 4                                                                        | 519   | 29620 | Major depressive affective disorder; single episode                       | 1,840      | 30000 | Anxiety state unspecified                                | 320     | 3051  | Nondependent tobacco use disorder                        |
| 5                                                                        | 513   | 30390 | Other/unspecified alcohol dependence                                      | 1,704      | 3019  | Unspecified personality disorder                         | 311     | 30390 | Other/unspecified alcohol dependence                     |
| 6                                                                        | 479   | V705  | Health examination                                                        | 1,561      | 30390 | Other/unspecified alcohol dependence                     | 244     | 3019  | Unspecified personality disorder                         |
| 7                                                                        | 332   | 29633 | Major depressive affective disorder recurrent episode; severe degree      | 1,192      | 3051  | Nondependent tobacco use disorder                        | 230     | V622  | Other occupational circumstances/ maladjustment          |
| 8                                                                        | 282   | 29690 | Unspecified episodic mood disorder                                        | 950        | 30183 | Borderline personality disorder                          | 206     | 30183 | Borderline personality disorder                          |
| 9                                                                        | 206   | 30000 | Anxiety state unspecified                                                 | 834        | 3009  | Unspecified nonpsychotic mental disorder                 | 174     | 30000 | Anxiety state unspecified                                |
| 10                                                                       | 203   | 29630 | Major depressive affective disorder recurrent episode; unspecified degree | 738        | 3004  | Dysthymic disorder                                       | 123     | 30590 | Other mixed/unspecified drug abuse                       |
| Frequency of ICD-9-CM codes in the 3rd-8th diagnostic position (dx3-dx8) |       |       |                                                                           |            |       |                                                          |         |       |                                                          |
| PTSD                                                                     |       |       |                                                                           | Depression |       |                                                          | Bipolar |       |                                                          |
|                                                                          | No.   | Code  | Description                                                               | No.        | Code  | Description                                              | No.     | Code  | Description                                              |
| 1                                                                        | 1,733 | 3051  | Nondependent tobacco use disorder                                         | 5,988      | 3051  | Nondependent tobacco use disorder                        | 1,160   | 3051  | Nondependent tobacco use disorder                        |
| 2                                                                        | 801   | V6229 | Career choice problem                                                     | 3,320      | V6229 | Career choice problem                                    | 691     | V622  | Other occupational circumstances or maladjustment        |
| 3                                                                        | 681   | V705  | Health examination of defined subpopulations                              | 3,218      | V622  | Other occupational circumstances or maladjustment        | 616     | V6229 | Career choice problem                                    |
| 4                                                                        | 641   | 4019  | Unspecified essential hypertension                                        | 3,026      | 30981 | Posttraumatic stress disorder                            | 499     | 30981 | Posttraumatic stress disorder                            |
| 5                                                                        | 623   | V1552 | Personal history of traumatic brain injury                                | 2,453      | V6110 | Unspecified counseling for marital and partner problems  | 356     | 3019  | Unspecified personality disorder                         |
| 6                                                                        | 603   | V622  | Other occupational circumstances or maladjustment                         | 1,999      | 3019  | Unspecified personality disorder                         | 303     | 4019  | Unspecified essential hypertension                       |
| 7                                                                        | 547   | 30500 | Nondependent alcohol abuse unspecified drinking behavior                  | 1,852      | V6284 | Suicidal ideation                                        | 271     | 30500 | Nondependent alcohol abuse unspecified drinking behavior |
| 8                                                                        | 543   | 33829 | Other chronic pain                                                        | 1,720      | 30500 | Nondependent alcohol abuse unspecified drinking behavior | 268     | V6110 | Unspecified counseling for marital and partner problems  |
| 9                                                                        | 542   | 30000 | Anxiety state unspecified                                                 | 1,581      | 4019  | Unspecified essential hypertension                       | 267     | 30183 | Borderline personality disorder                          |
| 10                                                                       | 538   | 311   | Depressive disorder not elsewhere classified                              | 1,522      | 30183 | Borderline personality disorder                          | 257     | V1541 | Personal history of physical abuse                       |
| NEC=Not elsewhere classified;PTSD=post-traumatic stress disorder         |       |       |                                                                           |            |       |                                                          |         |       |                                                          |

NEC=Not elsewhere classified; PTSD=post-traumatic stress disorder

disorder diagnoses (77.3%); this percentage increased every year between 2006 and 2012 (2006: 70.2%; 2012: 82.5%). Overall, PTSD hospitalizations also had the highest percentage of co-occurring diagnoses related to alcohol or substance abuse or dependence (2000-2012: 27.8%); this proportion increased every year between 2004

(16.3%) and 2010 (30.1%), and then slightly declined (2011: 28.5%; 2012: 29.0%) (**Figure 4**).

Among hospitalizations for each of the six most frequent primary diagnoses of mental disorder, suicidal ideation was listed as one of the top three most frequent co-occurring diagnoses except for

hospitalizations for substance abuse and dependence, for which it was listed as the tenth most frequent co-occurring diagnosis (**Table 2**).

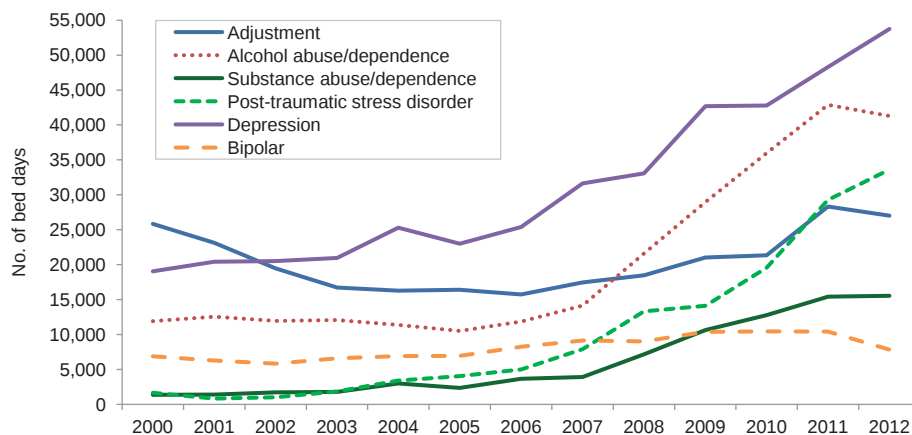
With the exception of hospitalizations for alcohol abuse and dependence, hospitalization rates for each of the six selected mental disorders were highest in the Army;

**TABLE 3.** Incident counts and incidence rates of mental disorder hospitalizations, active component, U.S. Armed Forces, 2000-2012

|                                                             | Adjustment |                   |      | Alcohol abuse/<br>disorder |                   |      | Substance abuse/<br>disorder |                   |      | PTSD   |                   |      | Depression |                   |      | Bipolar |                   |      |
|-------------------------------------------------------------|------------|-------------------|------|----------------------------|-------------------|------|------------------------------|-------------------|------|--------|-------------------|------|------------|-------------------|------|---------|-------------------|------|
|                                                             | No.        | Rate <sup>a</sup> | RR   | No.                        | Rate <sup>a</sup> | RR   | No.                          | Rate <sup>a</sup> | RR   | No.    | Rate <sup>a</sup> | RR   | No.        | Rate <sup>a</sup> | RR   | No.     | Rate <sup>a</sup> | RR   |
| Total                                                       | 49,790     | 268.3             |      | 28,645                     | 154.3             |      | 8,059                        | 43.4              |      | 11,033 | 59.4              |      | 55,586     | 299.5             |      | 9,808   | 52.8              |      |
| Service                                                     |            |                   |      |                            |                   |      |                              |                   |      |        |                   |      |            |                   |      |         |                   |      |
| Army                                                        | 25,147     | 378.1             | 1.00 | 13,468                     | 202.5             | 1.00 | 5,507                        | 82.8              | 1.00 | 7,592  | 114.1             | 1.00 | 28,427     | 427.4             | 1.00 | 4,875   | 73.3              | 1.00 |
| Navy                                                        | 9,929      | 220.0             | 0.58 | 4,651                      | 103.0             | 0.51 | 740                          | 16.4              | 0.20 | 939    | 20.8              | 0.18 | 9,623      | 213.2             | 0.50 | 1,924   | 42.6              | 0.58 |
| Air Force                                                   | 8,474      | 189.3             | 0.50 | 5,934                      | 132.5             | 0.65 | 948                          | 21.2              | 0.26 | 874    | 19.5              | 0.17 | 11,939     | 266.7             | 0.62 | 1,880   | 42.0              | 0.57 |
| Marine Corps                                                | 5,699      | 236.9             | 0.63 | 3,501                      | 145.6             | 0.72 | 683                          | 28.4              | 0.34 | 1,569  | 65.2              | 0.57 | 4,571      | 190.0             | 0.44 | 940     | 39.1              | 0.53 |
| Coast Guard                                                 | 541        | 105.6             | 0.28 | 1,091                      | 212.9             | 1.05 | 181                          | 35.3              | 0.43 | 59     | 11.5              | 0.10 | 1,026      | 200.2             | 0.47 | 189     | 36.9              | 0.50 |
| Sex                                                         |            |                   |      |                            |                   |      |                              |                   |      |        |                   |      |            |                   |      |         |                   |      |
| Male                                                        | 38,885     | 245.1             | 1.00 | 25,297                     | 159.4             | 1.00 | 7,196                        | 45.4              | 1.00 | 9,200  | 58.0              | 1.00 | 41,726     | 263.0             | 1.00 | 7,464   | 47.0              | 1.00 |
| Female                                                      | 10,905     | 404.7             | 1.65 | 3,348                      | 124.3             | 0.78 | 863                          | 32.0              | 0.71 | 1,833  | 68.0              | 1.17 | 13,860     | 514.4             | 1.96 | 2,344   | 87.0              | 1.85 |
| Race/ethnicity                                              |            |                   |      |                            |                   |      |                              |                   |      |        |                   |      |            |                   |      |         |                   |      |
| White, non-Hispanic                                         | 31,732     | 272.5             | 1.00 | 20,444                     | 175.6             | 1.00 | 6,472                        | 55.6              | 1.00 | 7,469  | 64.1              | 1.00 | 36,815     | 316.2             | 1.00 | 6,838   | 58.7              | 1.00 |
| Black, non-Hispanic                                         | 8,426      | 264.4             | 0.97 | 3,401                      | 106.7             | 0.61 | 593                          | 18.6              | 0.33 | 1,319  | 41.4              | 0.65 | 8,227      | 258.2             | 0.82 | 1,427   | 44.8              | 0.76 |
| Other                                                       | 9,632      | 258.3             | 0.95 | 4,800                      | 128.7             | 0.73 | 994                          | 26.7              | 0.48 | 2,245  | 60.2              | 0.94 | 10,544     | 282.8             | 0.89 | 1,543   | 41.4              | 0.70 |
| Males age                                                   |            |                   |      |                            |                   |      |                              |                   |      |        |                   |      |            |                   |      |         |                   |      |
| <20                                                         | 8,963      | 628.2             | 1.00 | 1,270                      | 89.0              | 1.00 | 422                          | 29.6              | 1.00 | 220    | 15.4              | 1.00 | 4,950      | 346.9             | 1.00 | 822     | 57.6              | 1.00 |
| 20-24                                                       | 19,129     | 364.1             | 0.58 | 10,555                     | 200.9             | 2.26 | 3,162                        | 60.2              | 2.03 | 3,228  | 61.4              | 3.98 | 18,336     | 349.0             | 1.01 | 3,525   | 67.1              | 1.16 |
| 25-29                                                       | 6,249      | 186.6             | 0.30 | 5,852                      | 174.7             | 1.96 | 2,097                        | 62.6              | 2.12 | 2,787  | 83.2              | 5.40 | 8,936      | 266.8             | 0.77 | 1,575   | 47.0              | 0.82 |
| 30-34                                                       | 2,480      | 106.6             | 0.17 | 3,005                      | 129.2             | 1.45 | 840                          | 36.1              | 1.22 | 1,464  | 62.9              | 4.08 | 4,451      | 191.3             | 0.55 | 751     | 32.3              | 0.56 |
| 35-39                                                       | 1,309      | 65.4              | 0.10 | 2,479                      | 123.8             | 1.39 | 417                          | 20.8              | 0.70 | 895    | 44.7              | 2.90 | 2,990      | 149.3             | 0.43 | 451     | 22.5              | 0.39 |
| 40-49                                                       | 719        | 51.5              | 0.08 | 1,990                      | 142.6             | 1.60 | 241                          | 17.3              | 0.58 | 591    | 42.4              | 2.75 | 1,928      | 138.2             | 0.40 | 315     | 22.6              | 0.39 |
| 50+                                                         | 36         | 32.6              | 0.05 | 146                        | 132.4             | 1.49 | 17                           | 15.4              | 0.52 | 15     | 13.6              | 0.88 | 135        | 122.4             | 0.35 | 25      | 22.7              | 0.39 |
| Females age                                                 |            |                   |      |                            |                   |      |                              |                   |      |        |                   |      |            |                   |      |         |                   |      |
| <20                                                         | 3,322      | 1,155.2           | 1.00 | 295                        | 102.6             | 1.00 | 76                           | 26.4              | 1.00 | 225    | 78.2              | 1.00 | 2,173      | 755.6             | 1.00 | 312     | 108.5             | 1.00 |
| 20-24                                                       | 5,178      | 533.7             | 0.46 | 1,604                      | 165.3             | 1.61 | 389                          | 40.1              | 1.52 | 766    | 78.9              | 1.01 | 6,004      | 618.8             | 0.82 | 1,043   | 107.5             | 0.99 |
| 25-29                                                       | 1,410      | 235.5             | 0.20 | 666                        | 111.3             | 1.08 | 228                          | 38.1              | 1.44 | 369    | 61.6              | 0.79 | 2,769      | 462.6             | 0.61 | 511     | 85.4              | 0.79 |
| 30-34                                                       | 563        | 158.1             | 0.14 | 312                        | 87.6              | 0.85 | 86                           | 24.1              | 0.91 | 193    | 54.2              | 0.69 | 1,351      | 379.3             | 0.50 | 224     | 62.9              | 0.58 |
| 35-39                                                       | 287        | 106.9             | 0.09 | 202                        | 75.2              | 0.73 | 49                           | 18.3              | 0.69 | 162    | 60.3              | 0.77 | 884        | 329.3             | 0.44 | 150     | 55.9              | 0.52 |
| 40-49                                                       | 135        | 69.8              | 0.06 | 256                        | 132.3             | 1.29 | 30                           | 15.5              | 0.59 | 114    | 58.9              | 0.75 | 643        | 332.4             | 0.44 | 99      | 51.2              | 0.47 |
| 50+                                                         | 10         | 50.7              | 0.04 | 13                         | 65.9              | 0.64 | 5                            | 25.4              | 0.96 | 4      | 20.3              | 0.26 | 36         | 182.6             | 0.24 | 5       | 25.4              | 0.23 |
| Ever deployed prior to mental disorder hospitalization      |            |                   |      |                            |                   |      |                              |                   |      |        |                   |      |            |                   |      |         |                   |      |
| No                                                          | 34,477     | 310.0             | 1.00 | 12,865                     | 115.7             | 1.00 | 3,370                        | 30.3              | 1.00 | 1,660  | 14.9              | 1.00 | 28,375     | 255.2             | 1.00 | 4,777   | 43.0              | 1.00 |
| Yes                                                         | 9,831      | 132.1             | 0.43 | 9,513                      | 127.9             | 1.11 | 2,915                        | 39.2              | 1.29 | 6,637  | 89.2              | 5.98 | 14,658     | 197.0             | 0.77 | 2,086   | 28.0              | 0.65 |
| No. of deployments prior to mental disorder hospitalization |            |                   |      |                            |                   |      |                              |                   |      |        |                   |      |            |                   |      |         |                   |      |
|                                                             | No.        | %                 |      | No.                        | %                 |      | No.                          | %                 |      | No.    | %                 |      | No.        | %                 |      | No.     | %                 |      |
| 0 (never deployed)                                          | 35,401     | 78.3              |      | 13,063                     | 57.9              |      | 3,433                        | 54.1              |      | 1,858  | 21.9              |      | 29,217     | 66.6              |      | 4,997   | 70.5              |      |
| 1                                                           | 6,703      | 14.8              |      | 5,868                      | 26.0              |      | 2,039                        | 32.1              |      | 3,445  | 40.6              |      | 9,254      | 21.1              |      | 1,404   | 19.8              |      |
| 2                                                           | 2,189      | 4.8               |      | 2,403                      | 10.6              |      | 623                          | 9.8               |      | 1,988  | 23.4              |      | 3,590      | 8.2               |      | 468     | 6.6               |      |
| 3+                                                          | 939        | 2.1               |      | 1,242                      | 5.5               |      | 253                          | 4.0               |      | 1,204  | 14.2              |      | 1,814      | 4.1               |      | 214     | 3.0               |      |

<sup>a</sup>Rate per 10,000 person-years  
RR=Rate ratio; PTSD=post-traumatic stress disorder

**FIGURE 5.** Number of bed days for mental disorder hospitalizations by selected categories, active component, U.S. Armed Forces, 2000-2012



the Coast Guard's hospitalization rate for alcohol abuse and dependence was slightly higher than the Army's (RR: 1.05) (Table 3). Females were more likely to be hospitalized for adjustment disorders, PTSD, depression, and bipolar disorder and relatively less likely to be hospitalized for alcohol and substance abuse or dependence than males. Both males and females less than 20 years of age had the highest hospitalization rates for adjustment disorder. Hospitalization rates for alcohol and substance abuse and dependence were highest in males and females between the ages of 20 and 29. Hospitalization rates for PTSD peaked for males in the 25-29 age group; for females, rates were highest in those 20-24 years of age. For males, hospitalization rates for depression and bipolar disorder were highest in those 20-24 years of age, while these hospitalization rates were highest in the youngest females (Table 3).

Almost 80 percent of service members hospitalized for adjustment disorder had never deployed prior to their hospitalizations; on the other hand, only 21.9 percent of those hospitalized with PTSD as the primary diagnosis had never deployed. Overall, those who had deployed at least once prior to their mental disorder-related hospitalization had lower hospitalization rates for adjustment disorder, depression and bipolar disorder and higher hospitalization rates for alcohol and substance abuse and dependence and PTSD compared to those who had never deployed (Table 3).

During the 13-year surveillance period, active component members were hospitalized for a total of 1,262,172 days (3,458 cumulative person-years) for treatment of these six mental disorders. The annual number of hospital bed days for treatment of mental disorders remained fairly stable until 2006; from 2006 through 2012, the annual bed days increased for every disorder except bipolar disorder (Figure 5). The annual number of hospital bed days associated with a primary diagnosis of PTSD, depression and alcohol abuse and dependence increased the most dramatically after 2006.

#### EDITORIAL COMMENT

This report documents continued increases in the numbers of mental disorder-related hospitalizations among U.S. military members since 2006; the increases overall are largely due to sharp rises in hospitalizations in recent years for PTSD, depression, alcohol abuse and dependence, and adjustment disorders.

The increases in mental disorder-related hospitalizations documented in this report are cause for concern for several reasons; among these is the demonstrated association between psychiatric hospitalization and risk of suicide. The association between suicidal ideation and psychiatric hospitalization is well documented. In an analysis of psychiatric hospitalizations

in U.S. Navy enlisted personnel, Booth-Kewley and Larson demonstrated a strong association between suicidal ideation and hospitalization for adjustment disorder.<sup>7</sup> Other studies in military populations have demonstrated similar associations between suicide ideation and other mental disorders.<sup>8</sup> This report demonstrated that suicidal ideation is a frequent co-occurring diagnosis in many mental disorder-related hospitalizations.

While the median duration of all cause hospitalizations has remained stable since 2003, median durations of hospitalizations vary significantly by diagnostic category.<sup>2</sup> This report documents continued increases in mean and median hospitalization lengths for certain mental disorders, specifically, hospitalizations for PTSD and alcohol abuse and dependence. Many service members with a mental disorder-related hospitalization had a diagnosis for another mental disorder in the same record; among active component members, 77 percent of service members hospitalized for PTSD had another mental disorder diagnosis in the same record. Approximately 28 percent of the PTSD hospitalizations had additional diagnoses of alcohol or substance abuse and dependence. The comorbidity of PTSD and alcohol misuse has been increasingly recognized not only in Iraq and Afghanistan veterans but in veterans of other conflicts.<sup>9-11</sup> The increasing durations of mental disorder-related hospitalizations may be due, in part, to the challenges of providing care to service members presenting with multiple and complex mental disorder diagnoses.

The findings of this report reflect increased hospitalization rates of clinically significant mental disorders, such as PTSD, among veterans of one or more combat deployments. However, it is also noteworthy that a significant proportion of mental disorder-related hospitalizations occurred in service members who had never deployed. For example, almost 8 out of 10 service members hospitalized for adjustment disorder had not deployed prior to their hospitalization. This finding may be related to the observation that hospitalization rates for some mental disorders

are highest in the youngest (and least experienced) service members (i.e., <20 years).

The findings of this report should be interpreted in light of several limitations. This report included hospitalizations in fixed military treatment facilities or those hospitalizations paid for by the Military Health System (MHS). It did not include hospitalizations that occurred in the combat theater, aboard ships, during field exercises; however, the rate calculations did include the person-time for the individuals in these locations. Therefore, hospitalization rates for mental disorders are likely underestimated.

Similarly, while this report summarized records of mental disorder-related hospitalizations in reserve members, only hospitalizations that occurred in a military medical facility or were paid for by the MHS were captured. Many, if not most, reserve members have alternate means of receiving medical care (i.e., private medical insurance); therefore, this report likely greatly underestimates the number of mental disorder-related hospitalizations in members of the reserve component.

## REFERENCES

1. Armed Forces Health Surveillance Center. Absolute and relative morbidity burdens attributable to various illnesses and injuries, U.S. Armed Forces, 2012. *MSMR*. 2012 Apr;20(4):5-10.
2. Armed Forces Health Surveillance Center. Hospitalizations among members of the active component, U.S. Armed Forces, 2012. *MSMR*. 2012 Apr;20(4):11-17.
3. Armed Forces Health Surveillance Center. Hospitalizations for mental disorders, active components, U.S. Armed Forces, January 2000-December 2009. *MSMR*. 2010 Nov;17(1):14-16.
4. Armed Forces Health Surveillance Center. Signature scars of the long war. *MSMR*. 2013 Apr;20(4):2-4.
5. Hoge CW, Toboni HE, Messer SC, Bell N, Amoroso P, Orman DT. The occupational burden of mental disorders in the U.S. military: psychiatric hospitalizations, involuntary separations, and disability. *Am J Psychiatry*. 2005 Mar; 162(3):585-591.
6. Luxton DD, Trofimovich L, Clark LL. Suicide risk among U.S. service members after psychiatric hospitalization, 2001-2011. *Psychiatr Serv*. 2013; 64(7): 626-629.
7. Booth-Kewley S, Larson GE. Predictors of psychiatric hospitalization in the Navy. *Mil Med*. 2006; 170(1):87-93.
8. Bossarte R, Knox K, Piegari R, Altieri J, Kemp J, Katz I. Prevalence and characteristics of suicide ideation and attempts among active military and veteran participants in a National Health Survey. *Am J Public Health*. 2012;102:S38-40.
9. Jacobson IG, Ryan MA, Hooper TI, et al. Alcohol use and alcohol-related problems before and after military combat deployment. *JAMA*. 2008;300(6):663-675.
10. Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *New Engl J Med*. 2004;351(1):13-22.
11. Seal KH, Bertenthal D, Miner CR, Sen S, Marmar C. Bringing the war back home: mental health disorders among 103,788 US veterans returning from Iraq and Afghanistan seen at Department of Veterans Affairs facilities. *Arch Intern Med*. 2007;167(5):476-482.

**REAL WARRIORS.**

**REAL BATTLES.**

**REAL STRENGTH.**

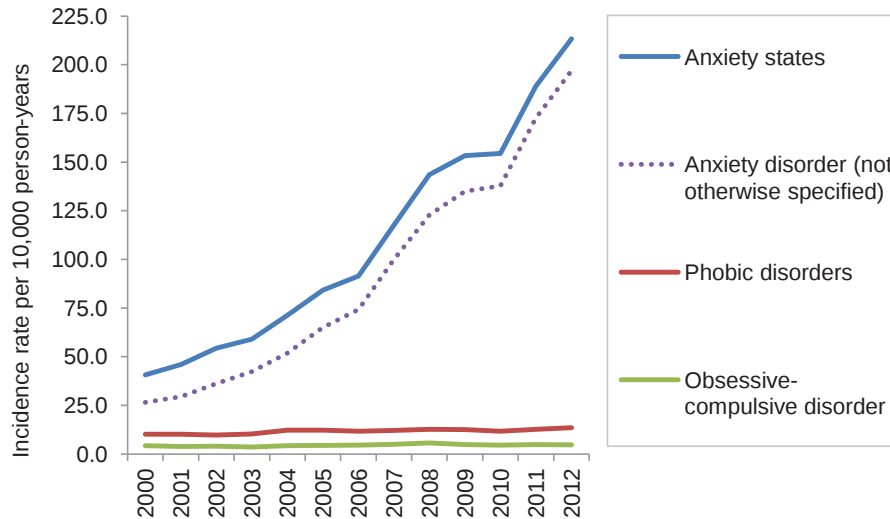
**REACHING OUT MAKES A REAL DIFFERENCE.**

Discover real stories of courage in the battle against combat stress.  
Call Toll Free 866-966-1020 ★ [www.realwarriors.net](http://www.realwarriors.net)

**REAL WARRIORS • REAL BATTLES  
REAL STRENGTH**

## Surveillance Snapshot: Anxiety Disorders, Active Component, U.S. Armed Forces, 2000-2012

**FIGURE.** Incidence rates of anxiety disorder by subcategories, active component, 2000-2012



<sup>a</sup>Anxiety disorder (not otherwise specified) is a subcategory of the anxiety states category.

Anxiety disorders are categorized into several diverse types based on their cause or the focus of the anxiety. The three subcategories that comprise anxiety disorders as described previously (page 5) are anxiety states, phobic disorders, and obsessive compulsive disorder. During the surveillance period (2000-2012), among active component service members the annual incidence rates of the anxiety states category increased 425 percent (rate difference [RD]: 172.7), phobic disorders increased by 32.7 percent (RD: 3.3), and obsessive compulsive disorders increased by 9.8 percent (RD: 0.4) (**Figure**). Anxiety disorder (not otherwise specified [NOS]), a subset of the anxiety states category, had the highest overall incidence rate (92.0 per 10,000 p-yrs), and largest percent increase (424.9%) among all 5-digit codes that make-up the anxiety disorder category.

The diagnosis of anxiety disorder NOS is used when the patient's anxiety or phobia do not meet the formal criteria for a specific anxiety disorder, but the symptoms are significant enough to be disruptive or distressing to the individual.<sup>1-2</sup> Furthermore, this diagnosis may be used if the symptoms have not persisted long enough. The diagnostic criteria for a diagnosis of generalized anxiety disorder diagnosis specify that the symptoms must have lasted for more than six months).<sup>1</sup> Therefore, it is not surprising that this diagnosis is the incident (first) code recorded for a majority of individuals diagnosed with anxiety. Further analysis to clarify the final, more specific anxiety disorder diagnosis is warranted.

1. The Mayo Clinic. Anxiety. Found at: <http://www.mayoclinic.com/health/anxiety/DS01187/DSECTION=symptoms>. Accessed on: 23 July 2013.

2. Maier W, Buller R, Sonntag A, Heuser I. Subtypes of panic attacks and ICD-9 classification. *Eur Arch Psychiatr Neurol Sci.* 1986;235:361-366.

# Mental Disorders and Mental Health Problems Among Recruit Trainees, U.S. Armed Forces, 2000-2012

Patrick Monahan, MD, MPH (Col, USAF); Zheng Hu, MS; Patricia Rohrbeck, DrPH, MPH, CPH (Maj, USAF)

Annual counts and rates of incident diagnoses of mental disorders or mental health problems have increased in the U.S. military active component since 2000, but less is known about recruit trainees. From 2000 to 2012, 49,999 active component recruit trainees were diagnosed with at least one mental disorder, and 7,917 had multiple mental disorder diagnoses. Annual incidence rates of at least one mental disorder decreased by approximately 37.4 percent over the last 13 years. Approximately 80.5 percent of all incident mental disorder diagnoses were attributable to adjustment disorders, depression, and “other” mental disorders. Rates of incident mental disorder diagnoses were higher in females than males. Even though the Army had the highest overall incidence rates of mental disorders, the Air Force had slightly higher rates for adjustment disorder, and the Navy had higher rates of alcohol abuse-related disorders, post-traumatic stress disorder (PTSD), anxiety, other psychoses, and personality disorders. These findings document differences in the mental disorders experienced by recruit trainees compared to members of the active component of the U.S. military overall. Continued focus on detection and treatment of mental health issues during basic training is warranted.

Mental disorders account for significant morbidity, health care utilization, disability, and attrition from military service.<sup>1</sup> A recent descriptive epidemiological study of mental disorders and mental health problems in the active component between 2000 and 2011 showed that, for most categories of mental disorders, rates of incident diagnoses were highest among the youngest (and thus most junior) service members.<sup>2</sup> Crude incidence rates of adjustment disorders, post traumatic stress disorder (PTSD), personality disorders, “other” mental disorders, schizophrenia, and other psychoses were higher among the youngest (less than 20 years of age) group of service members.<sup>2</sup> Also, a significant proportion of mental health problems related to life circumstances occurred in the first six months of service members’ military service.<sup>2</sup>

Psychiatric disorders are among the top ten causes of conditions that existed

before service and of disability discharges each year.<sup>3</sup> Existing prior to service (EPS) medical conditions are defined as those verified to have existed before the recruit began military service and if the complications leading to discharge arose no more than 180 days after the recruit trainee began duty.<sup>3</sup> Approximately five percent of all new active duty enlistees (excluding U.S. Air Force recruit trainees) are discharged within six months of enlistment due to complications of medical conditions that existed prior to service.<sup>4</sup> Mental disorder reasons for EPS discharge vary by service: psychiatric causes accounted for the most EPS discharges in the Army (29.1%) and the Marine Corps (43.9%) between 2007 and 2011, while the percentage in the Air Force for that period was 0.4 percent.<sup>5</sup> The most common causes of hospitalizations within the first year of service from 2005 to 2010 were neurotic or personality disorders (16.7%) and other psychoses (5.9%).<sup>5</sup>

Few studies have evaluated military personnel longitudinally after a diagnosis of a mental disorder. Hoge et al.<sup>6</sup> demonstrated that, among a military cohort in the 1990s, 47 percent of those hospitalized for the first time with a mental disorder left military service within six months; this proportion was significantly higher than that for any one of 15 other disease categories. While five to six percent of Air Force recruit trainees have historically experienced emotional difficulties that result in referral for psychological evaluation,<sup>7</sup> one study in Air Force recruit trainees found that only 58 percent of those referred for mental health evaluation and returned to duty ultimately graduated from basic military training;<sup>8</sup> the most common reason for discharge was EPS (26%) followed by continued mental health problems (21%). Another study in Air Force recruit trainees showed an annual mental disorder-related separation rate of 4.2 percent; adjustment disorders and depressive disorders were the most frequent diagnoses related to recommendation for separation.<sup>9</sup>

This report summarizes counts, rates, and trends of incident mental disorder-specific diagnoses (ICD-9-CM: 290.0-319.0) among active component U.S. recruit trainees over a 13-year surveillance period. It also summarizes counts, rates, and trends of incident “mental health problems” (documented with mental health-related V-codes) among active component U.S. recruit trainees during the same time period.

## METHODS

The surveillance period was 1 January 2000 to 31 December 2012. The surveillance population included all individuals who entered basic training in the U.S. Armed Forces at the grades of E1 to E4 at any time during the surveillance period. Recruit trainees were followed for their service specific basic training periods

ranging from 6 to 10 weeks; recruit trainees who had to repeat all or a portion of their basic training period were excluded. No surveillance was conducted for recruit trainees during any follow-on training such as Advanced Individual Training (AIT) or other jobs requiring technical training. Coast Guard data prior to 2007 was incomplete and thus excluded from the report.

All data used to determine incident mental disorder-specific diagnoses and mental health problems were derived from records routinely maintained in the Defense Medical Surveillance System. These records document both ambulatory encounters and hospitalizations of active component members of the U.S. Armed Forces in fixed military and civilian (if reimbursed through the Military Health System) treatment facilities.

For surveillance purposes, mental disorders were ascertained from records of medical encounters that included mental disorder-specific diagnoses (ICD-9-CM 290-319, the entire mental disorders section of the ICD-9-CM coding guide) in the first or second diagnostic position; diagnoses of pervasive developmental disorder (ICD-9-CM: 299.xx), specific delays in development (ICD-9-CM: 315.xx), and mental retardation (ICD-9-CM: 317.xx-319.xx) were excluded from the analysis. Diagnoses of mental health problems were ascertained from records of health care encounters that included V-coded diagnoses indicative of psychosocial or behavioral health issues in the first or second diagnostic position.

For summary purposes, mental disorder-specific diagnoses indicative of adjustment reaction, substance abuse, anxiety disorder, PTSD, or depressive disorder were grouped into categories defined by Seal et al.<sup>10</sup> and previously reported in the *MSMR*<sup>11</sup> with two modifications as follows: depressive disorder, not elsewhere classified (ICD-9-CM: 311) was included in the depression category instead of the other mental diagnoses category. Also, alcohol abuse and dependence diagnoses and substance abuse and dependence diagnoses were treated as two discrete categories. Diagnoses indicative of personality disorder or other psychotic disorders were grouped using the categories developed by the Agency for Healthcare Research and Quality (AHRQ).<sup>12</sup>

A case of schizophrenia was defined as an active component service member with at least one hospitalization or four outpatient encounters that were documented with schizophrenia-specific diagnoses (ICD-9-CM: 295). V-coded diagnoses indicative of mental health problems were grouped into five categories using previously published criteria.<sup>13</sup>

Each incident diagnosis of a mental disorder (ICD-9-CM: 290-319) or a mental health problem (selected V-codes) was defined by a hospitalization with an indicator diagnosis in the first or second diagnostic position; two outpatient visits within 180 days documented with indicator diagnoses (from the same mental disorder or mental health problem-specific category) in the first or second diagnostic positions; or a single outpatient visit in a psychiatric or mental health care specialty setting (defined by Medical Expense and Performance Reporting System [MEPRS] code: BF) with an indicator diagnosis in the first or second diagnostic position. As described previously, the case definition for schizophrenia required four outpatient encounters.

Service members who were diagnosed with more than one mental disorder during the surveillance period were considered incident cases in each category in which they fulfilled the case-defining criteria. Service members could be incident cases only once in each mental disorder-specific category. Only service members with no

incident mental disorder-specific diagnoses (ICD-9-CM: 290-319) during the surveillance period were eligible for inclusion as cases of incident mental health problems (selected V-codes).

## RESULTS

During the 13-year surveillance period, 49,999 or 2.4 percent of all active component recruit trainees were diagnosed with at least one mental disorder; of these individuals, 7,917 (15.8%) were diagnosed with mental disorders in more than one diagnostic category (**Table 1**). Overall, there were 59,419 incident diagnoses of mental disorders in all diagnostic categories.

Among active component recruit trainees, annual rates of incident diagnoses of at least one mental disorder decreased by approximately 37.0 percent during the period (incident diagnoses of at least one mental disorder, by year: 2000:  $n=4,933$ , rate=159.8 cases per 1,000 person-years [p-yrs]; 2012:  $n=2,695$ , rate=100.7 per 1,000 p-yrs) (**Figure 1**).

Over the entire period, approximately 80.5 percent of all incident mental disorder diagnoses were attributable to adjustment disorders ( $n=30,253$ ; 50.9%), depression ( $n=9,177$ ; 15.4%), and other mental disorders ( $n=8,383$ ; 14.1%); relatively few incident diagnoses were attributable to schizophrenia ( $n=253$ ; 0.4%), substance abuse and dependence related disorders

**TABLE 1.** Incident diagnoses and incidence rates of mental disorders (ICD-9-CM: 290-319), recruit trainees, U.S. Armed Forces, 2000-2012

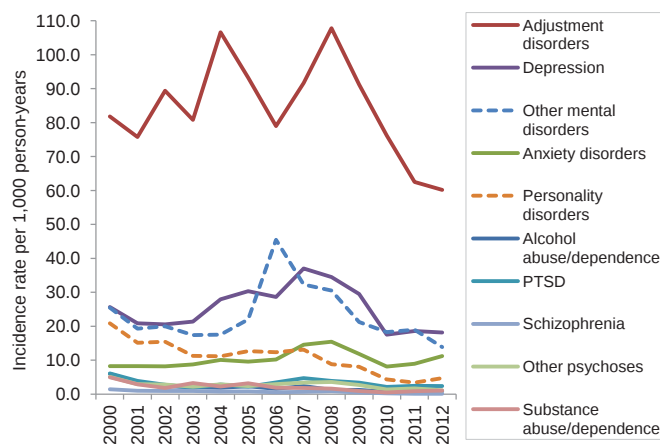
| Category <sup>a</sup>                      | No.    | Rate <sup>b</sup> | % of total population |
|--------------------------------------------|--------|-------------------|-----------------------|
| Adjustment disorders                       | 30,253 | 84.5              | 1.4                   |
| Alcohol abuse and dependence               | 763    | 2.1               | 0.0                   |
| Anxiety                                    | 3,705  | 10.3              | 0.2                   |
| Depression                                 | 9,177  | 25.6              | 0.4                   |
| Post-traumatic stress disorder (PTSD)      | 1,181  | 3.3               | 0.1                   |
| Personality disorders                      | 3,943  | 11.0              | 0.2                   |
| Schizophrenia                              | 253    | 0.7               | 0.0                   |
| Substance abuse and dependence             | 768    | 2.1               | 0.0                   |
| Other psychoses                            | 993    | 2.8               | 0.1                   |
| Other mental disorders                     | 8,383  | 23.3              | 0.4                   |
| >1 category of mental disorder             | 7,917  | 22.0              | 0.4                   |
| Any mental disorder diagnosis <sup>c</sup> | 49,999 | 139.1             | 2.4                   |

<sup>a</sup>An individual may be a case within a category only once per lifetime (censored person-time)

<sup>b</sup>Rate per 1,000 person-years

<sup>c</sup>At least one reported mental disorder diagnosis

**FIGURE 1.** Incidence rates of mental disorder diagnoses by category, recruit trainees, U.S. Armed Forces, 2000-2012



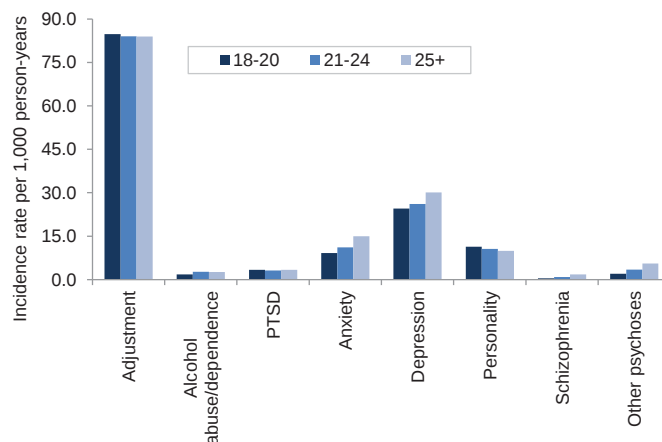
( $n=768$ ; 1.3%), and alcohol abuse and dependence ( $n=763$ ; 1.3%) (**Table 1**).

Crude rates of incident diagnoses of all mental disorders decreased during the surveillance period – particularly after 2009. Throughout the entire period, crude incidence rates for adjustment disorders were significantly higher compared to any other mental disorder category. The crude incidence rates for adjustment disorders fluctuated between 81.8 per 1,000 p-yrs (in 2000) to 107.8 per 1,000 p-yrs (in 2008), but declined steadily after 2009; annual rates were lower each year after 2010 than in any of the previous 11 years (**Figure 1**).

Crude incidence rates for “other” mental disorders increased sharply from 2005 to 2006, but then declined from 2006 through 2012. The crude incidence rates for depression gradually increased from 2003 through 2007, but continuously decreased after 2007. In contrast, crude incidence rates of diagnoses of personality disorders declined steadily during the surveillance period, and crude incidence rates for anxiety, schizophrenia, other psychoses, PTSD, and alcohol and substance abuse-related disorders were relatively stable or declined during the period (**Figure 1**).

In general, rates of incident mental disorder diagnoses remained steady with increasing age, except for anxiety disorders, depression, schizophrenia, and other psychoses, which had higher rates in individuals age 25 and above compared to younger recruit trainees (**Figures 2**). In contrast,

**FIGURE 2.** Incidence rates of mental disorder diagnoses by selected categories and age group, recruit trainees, U.S. Armed Forces, 2000-2012

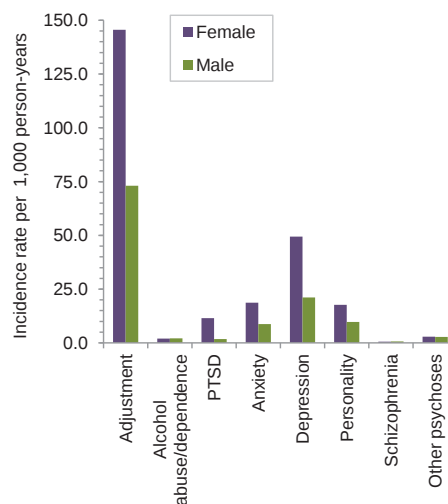


crude incidence rates of personality disorders were lower in individuals age 25 and above compared to younger trainees. Crude incidence rates of adjustment, anxiety, and personality disorders as well as depression were approximately twice as high among females as males, and crude incidence rates of PTSD were 5.6 times higher among females (females: 11.5 per 1,000 p-yrs; males: 1.7 per 1,000 p-yrs) (**Figure 3**).

Overall incidence rates of mental disorders were higher in the Army (169.2 per 1,000 p-yrs) and lower in the Marine Corps (92.6 per 1,000 p-yrs) than in any of the other Services. Army incidence rates increased from 2002 through 2004, peaked in 2004 and 2008, and steadily decreased from 2008 through the end of the period. Among the services, overall incidence rates were the second highest in the Air Force (145.7 per 1,000 p-yrs); annual rates in the Air Force sharply decreased from 2006 through 2010 but slightly increased in 2012 (**Figure 4**).

Among Navy recruit trainees, there were peaks in annual incidence rates in 2000 (220.11 per 1,000 p-yrs) and 2007 (194.3 per 1,000 p-yrs); annual rates in the Navy gradually declined from 2007 through 2011 and then increased in 2012. Among Marine Corps recruit trainees, annual incidence rates remained relatively steady from 2000 through 2009 and then slowly declined from 2009 through 2012. The 2012 rate among Marine Corps trainees (45.8 per 1,000 p-yrs) was the lowest

**FIGURE 3.** Incidence rates of mental disorder diagnoses by selected categories and gender, recruit trainees, U.S. Armed Forces, 2000-2012

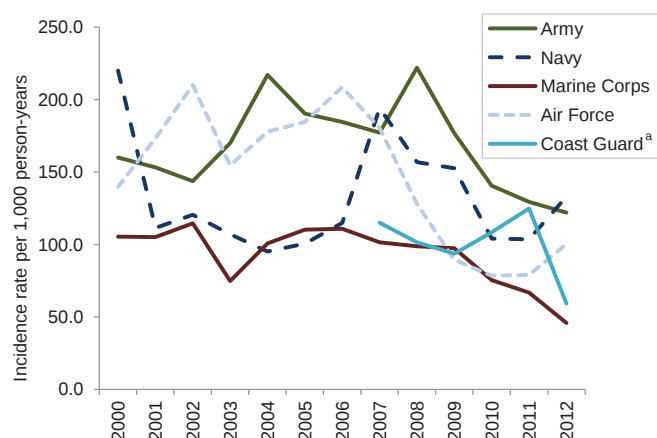


annual rate among any Service during the surveillance period.

Among Coast Guard recruit trainees, annual incidence rates from 2007 through 2011 slowly increased, then sharply declined in 2012 (59.2 per 1,000 p-yrs) (**Figure 4**).

Even though Army recruit trainees had the highest overall incidence rates of mental disorders, Air Force trainees had slightly higher rates of adjustment disorders; rates of adjustment disorder diagnoses were more than twice as high in the Army and the Air Force as in the other services. Rates of depression diagnoses were higher among recruit trainees of the Army and Navy than

**FIGURE 4.** Incidence rates of mental disorder diagnoses by service, recruit trainees, U.S. Armed Forces, 2000-2012



<sup>a</sup>Data was not complete for the Coast Guard until 2007

the other services; and compared to their counterparts, Navy trainees had the highest rates of alcohol abuse-related disorders, PTSD, anxiety, personality disorders, and other psychoses. The crude incidence rate of personality disorders in the Navy was 5.8 times higher than the Army and 2.6 times higher than the Marine Corps (Figure 5).

During the surveillance period, there were 11,273 incident reports of mental health problems (documented with V-codes) or 0.5 percent among all active component recruit trainees who were not diagnosed with a mental disorder (ICD-9-CM: 290-319). During the period, nearly 98.9 percent of all incident reports of mental health problems were related to life circumstances (e.g., failure to adjust, marital problems, financial difficulties, bereavement, acculturation difficulties) (n=11,145) (Table 2).

Rates of any mental health problems (as reported with V-codes) were relatively stable during the period with a small peak in 2006, but decreasing since 2007 and then stabilized (Figure 6). Compared to rates of any mental health problem, any mental disorder diagnosis rates were consistently higher (139.1 per 1,000 p-yrs compared to 31.4 per 1,000 p-yrs) (Tables 1, 2, Figure 6). Of note, rates of any mental disorder diagnoses decreased from 2008 through 2010 and have been relatively stable since (Figure 6).

Rates of mental health problems related to life circumstances declined from 2000 to 2004 (28.6 per 1,000 p-yrs), increased to a sharp peak in 2006 (44.7 per 1,000

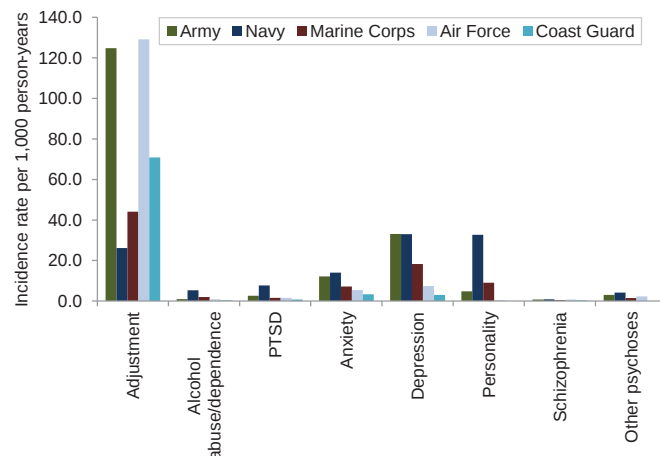
p-yrs), and then declined sharply through 2008 (19.8 per 1,000 p-yrs). This category remained stable since 2008. The crude incidence rate of life circumstance-related problems was more than 54 percent lower in the last year (2012: 19.9 per 1,000 p-yrs) compared to the first year of the period (2000: 44.1 per 1,000 p-yrs) (data not shown).

Among mental health problems, the Coast Guard had the highest rate of life circumstance-related diagnoses, which was 20.6 times higher than the Army, 17.0 times higher than the Marine Corps, and 3.7 times higher than the Air Force (Figure 7).

## EDITORIAL COMMENT

This report provides a comprehensive overview of incident diagnoses of mental

**FIGURE 5.** Incidence rates of mental disorder diagnoses by selected categories and service, recruit trainees, U.S. Armed Forces, 2000-2012



disorders and reports of mental health problems among active component recruit trainees of the U.S. Armed Forces during the last 13 years. The report reiterates and reemphasizes previously reported findings regarding mental disorders/problems among U.S. military members. This report, however, illuminates differences between mental disorders/mental health problems of recruit trainees compared to those of active component service members in general.

There are unique and inherently stressful physical and mental challenges associated with the introduction of civilians to military environments and the commencement of basic military (recruit) training. Even though a majority (over 90%) of recruit trainees go through their training without a mental disorder incident, some present with mental health-related

**TABLE 2.** Incident diagnoses and rates of mental health problems (V-codes) among those without mental disorder diagnoses (ICD-9-CM: 290-319), recruit trainees, U.S. Armed Forces, 2000-2012

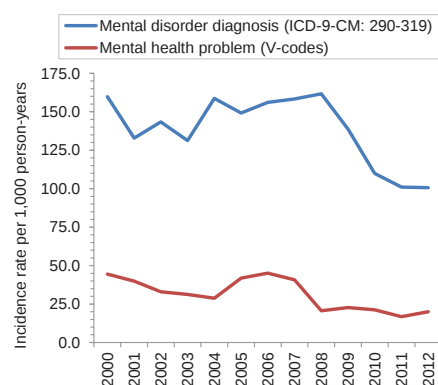
| Category <sup>a</sup>                   | No.    | Rate <sup>b</sup> | % of total population |
|-----------------------------------------|--------|-------------------|-----------------------|
| Partner relationship                    | 42     | 0.1               | 0.0                   |
| Family circumstance                     | 73     | 0.2               | 0.0                   |
| Maltreatment related                    | 7      | 0.0               | 0.0                   |
| Life circumstance problem               | 11,145 | 31.1              | 0.5                   |
| Mental, behavioral, and substance abuse | 30     | 0.1               | 0.0                   |
| >1 type of V-code                       | 24     | 0.1               | 0.0                   |
| Any V-code <sup>c</sup>                 | 11,273 | 31.4              | 0.5                   |

<sup>a</sup>An individual may be a case within a category only once per lifetime (censored person-time)

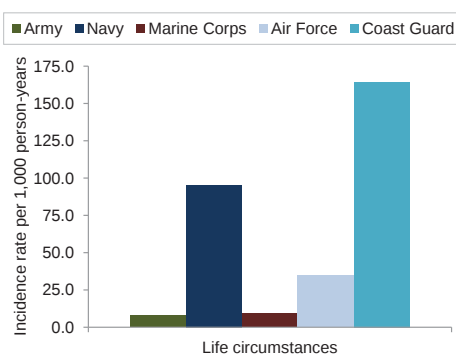
<sup>b</sup>Rate per 1,000 person-years

<sup>c</sup>At least one reported mental health problem (V-coded)

**FIGURE 6.** Incidence rates of any mental disorder diagnosis or any mental health problem, recruit trainees, U.S. Armed Forces, 2000-2012



**FIGURE 7.** Incidence rates of mental health problems by category and service, recruit trainees, U.S. Armed Forces, 2000-2012



problems that could result in discharges from military service either during basic training or during their first duty assignments. As a result, early psychological evaluations and increased access to mental health services during the basic training period may help retain otherwise motivated and qualified service men and women.

The natures and magnitudes of mental disorders and related problems in military basic training should be interpreted with consideration that the majority of recruit trainees are 25 years of age or younger. In this regard, the Centers for Disease Control and Prevention (CDC) reported that mental disorders are chronic health conditions that may interfere with healthy development and continue to cause problems into adulthood.<sup>14</sup> Based on the National Research Council and Institute of Medicine report, an estimated 13 to 20 percent of children in the U.S. experience a mental

health disorder in a given year.<sup>14</sup> This large and growing problem of mental disorders in the adolescent U.S. population will affect military service when young and otherwise healthy adults are recruited and present for basic training; mental disorder-related problems may re-surface during the basic training period. In the U.S. adolescent population, the most common mental disorders are attention deficit hyperactivity disorder (ADHD), disruptive behavioral disorders such as oppositional defiant disorder and conduct disorder, autism spectrum disorders, mood and anxiety disorders including depression, substance use disorders, and Tourette syndrome.<sup>14</sup> In this study cohort, adjustment disorders, depression, other mental disorders, anxiety, and personality disorders were the most common diagnoses. These findings suggest that mental disorders and mental health problems in active component recruit trainees partially reflect the patterns observed in the adolescent U.S. population.

The findings of this report are consistent with previously identified age-related risks in the active component U.S. Armed Forces. For most categories of mental disorders and mental health problems, rates of incident diagnoses were highest among the youngest (and thus likely most junior) service members. Since recruit trainees are the youngest and most junior of all military members and new to the military environment, they may not perceive stigmas and/or fears of negative impacts on their military careers when seeking mental health care. As a result, and in comparison to active component (older and higher ranking) service members, recruit trainees may be more likely to seek mental health care than those who are older.

Other findings of this report are different from previous reports identifying mental disorder-related risks in the active component U.S. Armed Forces. Of note, rates of mental disorders and mental health problems among recruit trainees have either declined or remained stable over the past 13 years, whereas the majority of the same mental disorder outcomes have increased among active component service members.<sup>2</sup> In both populations, adjustment disorders had the highest incidence rate compared to other mental disorders, yet when compared to the active component population,

the rate was twice as high in recruit trainees. The higher rate in trainees may be the result of individuals experiencing a stressful, fast-paced, and intense environment such as basic training for the first time in their lives. In both populations, females experience higher incidence rates of mental disorders compared to males. Although this relationship applies to all mental disorder categories in recruit trainees, active component males have higher incidence rates than females for alcohol and substance abuse-related disorders and PTSD.<sup>2</sup> Alcohol and substance use is prohibited in basic training, and since it is a strictly monitored environment, the incidence rates are among the lowest compared to other mental disorders. As a result, alcohol and substance abuse problems are not common in the basic training population. Similarly, PTSD is often associated with deployments and is therefore more likely to occur among active component service members than recruit trainees. When comparing the impact of service affiliation on mental disorder incidence, service members in the Army had consistently higher rates than any of the other Services over the past 12 years; all Services showed increasing trends.<sup>2</sup> Among recruit trainees, service affiliation does not present a clearly observable trend, which may be due to the variation in and changes to training content and length over the past 13 years. Incidence rates for mental disorders by Service in recruit trainees have fluctuated, and in recent years Army, Marine Corps, and Coast Guard show decreasing trends, while Navy and Air Force rates show increasing trends.

There are significant limitations to this report that should be considered when interpreting the results. For example, incident cases of mental disorders and mental health problems were ascertained from ICD-9-CM coded diagnoses that were reported on standardized administrative records of outpatient clinic visits and hospitalizations. Such records are not completely reliable indicators of the numbers and types of mental disorders and mental health problems that actually affect military members. For example, the numbers reported here are underestimates to the extent that affected service members did not seek care or received care that is not routinely documented in records that were used for this analysis; that mental disorders and

mental health problems were not diagnosed or reported on standardized records of care; and/or that some indicator diagnoses were miscoded or incorrectly transcribed on the centrally transmitted records. On the other hand, some conditions may have been erroneously diagnosed or miscoded as mental disorders or mental health problems (e.g., screening visits). Additionally, no prior medical history was available, so each initial mental disorder encounter was considered an incident diagnosis even though some mental disorder-related conditions may have existed prior to service.

Finally, as with most health surveillance-related analyses among U.S. military members, this report relies on data in the Defense Medical Surveillance System (DMSS). The DMSS integrates records of nearly all medical encounters of active component members in fixed (i.e., not deployed or at sea) military medical facilities. Administrative medical record systems, like DMSS, enable comprehensive surveillance of medical conditions of interest through identification of likely cases; such cases are identified by using surveillance case definitions that are based entirely or in part on indicator ICD-9-CM codes. Other considerations in the construction of surveillance case definitions include the clinical setting in which diagnoses of interest are made (e.g., hospitalization, relevant specialty clinic), frequency and timing of indicator diagnoses, and the priority with which diagnoses of interest are reported (e.g., first listed versus others).

*Author affiliations: Uniformed Services University of the Health Sciences (Col Monahan); Armed Forces Health Surveillance Center (Maj Rohrbeck, Ms Hu)*

## REFERENCES

1. Hoge CW, Toboni HE, Messer SC, Bell N, Amoroso P, Orman DT. The occupational burden of mental disorders in the U.S. military: psychiatric hospitalizations, involuntary separations, and disability. *Am J Psychiatry*. 2005;162(3):585-591.
2. Armed Forces Health Surveillance Center. Mental disorders and mental health problems, active component, U.S. Armed Forces, 2000-2011. *MSMR*. 2012;19(6):11-17.
3. Accession Medical Standards Analysis & Research Activity, Attrition & Morbidity Data for FY 2011 Accessions, Annual Report 2012:76.
4. Niebuhr DW, Powers TE, Li Y, Millikan AM. Morbidity and attrition related to medical conditions in recruits. In: Lenhart MK, ed. *Textbooks of*

*Military Medicine: Recruit Medicine*. Washington, DC: Government Printing Office; 2006:59-79.

5. Accession Medical Standards Analysis & Research Activity, Attrition & Morbidity Data for FY 2011 Accessions, Annual Report 2012:77.

6. Hoge CW, Lesikar SE, Guevara R, et al. Mental disorders among U.S. military personnel in the 1990s: association with high levels of health care utilization and early military attrition. *Am J Psychiatry*. 2002;159(9):1576-1583.

7. Cigrang JA, Todd S, Carbone EG, Fiedler E. Mental health attrition from Air Force basic military training. *Mil Med*. 1998;163:834-838.

8. Carbone EG, Cigrang JA, Todd SL, Fiedler ER. Predicting outcome of military basic training for individuals referred for psychological evaluation. *Journal Pers Assess*. 1999;72(2):256-265.

9. Englert DR. Mental health evaluations of U.S. Air Force basic military training and technical training students. *Mil Med*. 2003;168(11):904-910.

10. Seal KH, Bertenthal D, Miner CR, Sen S, Marmar C. Bringing the war back home: mental

health disorders among 103 788 US veterans returning from Iraq and Afghanistan seen at Department of Veterans Affairs facilities. *Arch Intern Med*. March 12, 2007;167(5):476-482.

11. Armed Forces Health Surveillance Center. Relationships between the nature and timing of mental disorders before and after deploying to Iraq/Afghanistan, active component, U.S. Armed Forces, 2002-2008. *MSMR*. 2009;16(2):2-6.

12. Agency for Healthcare Research and Quality. Found at: [http://meps.ahrq.gov/data\\_stats/download\\_data/pufs/h120/h120\\_icd9codes.shtml](http://meps.ahrq.gov/data_stats/download_data/pufs/h120/h120_icd9codes.shtml). Accessed on: August 6, 2013.

13. Garvey Wilson A, Messer S, Hoge C. U.S. military mental health care utilization and attrition prior to the wars in Iraq and Afghanistan. *Soc Psychiatry Psychiatr Epidemiol*. 2009;44(6):473-481.

14. Center for Disease Control Features: Children's Mental Health - New Report. Found at: <http://www.cdc.gov/Features/ChildrensMentalHealth/> Published May 17, 2013. Updated May 21, 2013. Accessed July 23, 2013.

**REAL Warriors**

**REAL BATTLES**

**REAL STRENGTH**

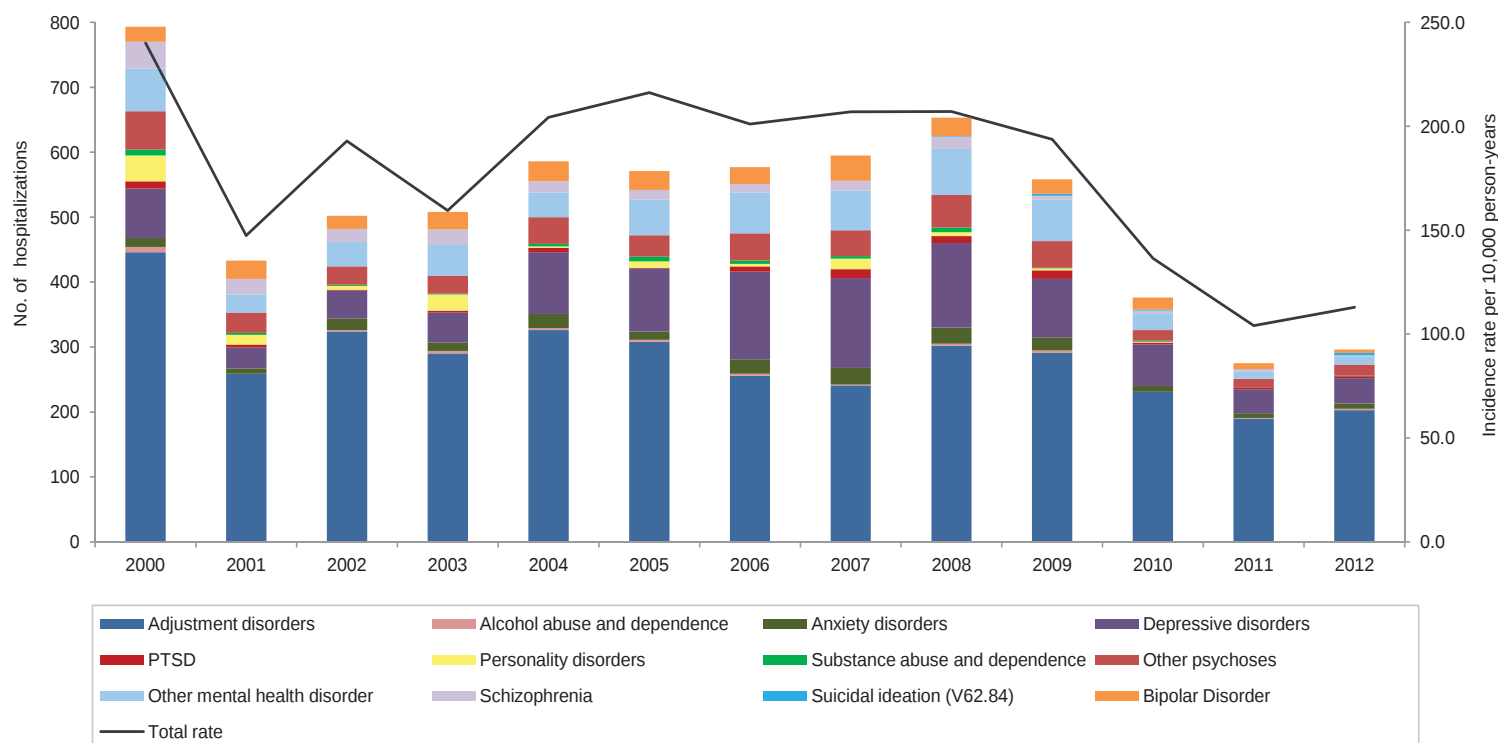
**REACHING OUT MAKES A REAL DIFFERENCE.**

Discover real stories of courage in the battle against combat stress.  
 Call Toll Free 866-966-1020 ★ [www.realwarriors.net](http://www.realwarriors.net)

**REAL Warriors • REAL BATTLES**  
**REAL STRENGTH**

# Surveillance Snapshot: Mental Disorder Hospitalizations Among Recruit Trainees, U.S. Armed Forces, 2000-2012

**FIGURE .** Hospitalizations for mental disorders among recruit trainees,<sup>a</sup> 2000-2012



<sup>a</sup>Recruit trainees are defined as active component members of the Army, Navy, Air Force, Marine Corps, or Coast Guard with a rank of E1 to E4 who served at one of nine basic training locations during a service-specific training period following a first-ever personnel record.

<sup>b</sup>The ICD-9 code for suicidal ideation was not available before 2005

During the 13-year surveillance period (2000-2012), there were 6,723 hospitalizations for mental disorders among U.S. Armed Forces recruit trainees (**Figure**). On average, 517 recruit trainees were hospitalized yearly due to a mental disorder. The highest number and rate of mental disorder-related hospitalizations were in 2000 ( $n=793$ ; 240.1 per 10,000 person-years [p-yrs]) and the lowest number and rate were in 2011 ( $n=275$ ; 104.0 per 10,000 p-yrs). From 2008 to 2012 there was a 45.5 percent decrease in the rate of mental disorder-related hospitalizations.

Adjustment disorder was the most commonly recorded mental disorder diagnosis associated with a hospitalization among recruit trainees (average: 282 per year), while depressive disorder was the second most common diagnosis (average: 79 per year).

# Malingering and Factitious Disorders and Illnesses, Active Component, U.S. Armed Forces, 1998-2012

Malingering refers to the intentional fabrication or exaggeration of mental or physical symptoms by a person who is motivated by external incentives (e.g., avoiding military duty, work, or incarceration, obtaining financial compensation, or procuring drugs). Factitious disorders and illnesses are similar to malingering with respect to the fabrication of symptoms; however, these individuals seek to assume “sick roles” (e.g., hospitalization, medical evaluation, treatment). During the 15-year surveillance period, 5,311 service members had at least one health care encounter during which a provider recorded a diagnosis of malingering or factitious illness in the first diagnostic position of the administrative record of the encounter. Over 80 percent of the subject service members had only one such encounter and most (83.9%) of the diagnoses were for malingering. There were higher (unadjusted) rates of these diagnoses among recruit trainees, those under age 20, and junior enlisted service members. Trends in these diagnoses during the surveillance period and the small numbers of diagnoses made during deployment do not suggest a discernible correlation between malingering and factitious illness and deployment to combat theater.

Malingering refers to the intentional fabrication or exaggeration of mental or physical symptoms by a person who is motivated by external incentives such as avoiding military duty, other work, or incarceration, obtaining financial compensation, evading criminal prosecution, or procuring drugs.<sup>1,2</sup> Malingering is not classified as a mental illness; however, it may be a behavioral expression of some mental illnesses – predominantly personality disorders, schizophrenia, and substance abuse.<sup>2</sup>

Malingering has long been associated with military conscription and service and is considered an offense under the U.S. military's criminal justice system particularly if the offense is committed during time of war.<sup>3</sup> There may be serious legal consequences for service members who receive malingering diagnoses, and clinicians who make such diagnoses may be required to defend their diagnoses in courts of law. As such, military health care

providers are challenged not only to detect but also to formally diagnose malingering.

Factitious disorders and illnesses (e.g., Munchausen syndrome, hospital addiction syndrome, Ganster's syndrome) are similar to malingering with respect to the fabrication of symptoms; however, they differ regarding the intents of those affected. Persons with factitious illnesses are not seeking external gains; rather, they seek to assume “sick roles” (e.g., hospitalization, medical evaluation, treatment). Unlike malingering, factitious illnesses are considered mental disorders.

A recent study of malingering and factitious illness in a subset population of the U.S. Armed Forces reported a prevalence of approximately one such diagnosis per 28,000 outpatient medical encounters.<sup>4</sup> The objectives of this *MSMR* report were to characterize the natures and quantify incident counts, and incidence rates and trends of diagnoses of malingering and of factitious illness among all members of

the active component of the U.S. Armed Forces from several years prior to the start of the current war through the war period. Numbers and rates of diagnoses occurring in a combat theater of operations and of repeat diagnoses were also summarized.

## METHODS

The surveillance period was January 1998 through December 2012. The surveillance population included all individuals who served in the active component of the U.S. Army, Navy, Air Force, Marine Corps, or Coast Guard at any time during the surveillance period. The Defense Medical Surveillance System (DMSS), the source of the diagnostic and demographic information for this analysis, maintains electronic records of all actively serving U.S. military members' hospitalizations and ambulatory visits in U.S. military and civilian (contracted/purchased care through the Military Health System) medical facilities worldwide. The DMSS also maintains records of medical encounters of service members deployed to southwest Asia/Middle East (as originally documented in the Theater Medical Data Store [TMDS]).

For this analysis DMSS was searched to identify all records of medical encounters that included primary (first-listed) or secondary (second-listed) diagnoses of malingering or factitious illness. Diagnoses of interest were identified by relevant diagnostic codes of the International Classification of Diseases, 9th Revision (ICD-9-CM) (**Table 1**). Of note, the code for malingering (V65.2), like all other V-coded diagnoses, refers to circumstances or conditions – other than current illnesses or injuries – that cause persons to encounter the health care system (e.g., medical examinations, immunizations, health concerns, health education, counseling).

Only one incident diagnosis per person was used to estimate incident counts

**TABLE 1.** ICD-9-CM codes for malingering and factitious disorders and illnesses

| ICD-9-CM code | Description                                                                                                                        |
|---------------|------------------------------------------------------------------------------------------------------------------------------------|
| V65.2         | Person feigning illness (malingering)                                                                                              |
| 300.16        | Factitious disorder with predominantly psychological signs and symptoms (compensation neurosis, Ganser's syndrome)                 |
| 300.19        | Other/unspecified factitious illness/factitious disorder (with predominantly physical signs and symptoms)                          |
| 301.51        | Chronic factitious illness with physical symptoms (hospital addiction syndrome, multiple operations syndrome, Munchausen syndrome) |

and incidence rates; counts and rates of primary and secondary diagnoses were analyzed separately. For each individual, a diagnosis that occurred during deployment (TMDS) was prioritized above a diagnosis outside of a combat theater; likewise, a diagnosis occurring during a hospitalization was prioritized above a diagnosis occurring during an ambulatory medical encounter.

The Medical Expense and Performance Reporting System (MEPRS) codes in the DMSS indicate the health care specialty (e.g., primary care, psychiatry, mental health) associated with each encounter. The settings (i.e., types of clinics) in which incident diagnoses were recorded were ascertained by searching the records of medical encounters occurring at fixed (e.g., not deployed or at sea) military medical facilities.

## RESULTS

### Primary (first-listed) diagnoses

During the 15-year surveillance period, there were 5,311 primary (first-listed) incident diagnoses of malingering and of factitious illness; the overall incidence rate during the period was 2.48 diagnoses per 10,000 person-years (p-yrs) (Table 2). Three percent (n=164) of diagnoses were recorded during deployments; of the remaining 5,147 diagnoses, 7.0 percent were made during hospitalizations

and 93.0 percent during ambulatory visits. Incidence rates of diagnoses sharply increased from 1998 to 2000, sharply decreased from 2001 to 2003, and then gradually increased from 2004 to 2011. Both the lowest (1998) and highest (2000) annual rates during the period were during pre-war years (Figure 1).

The majority (83.9%; n=4,456) of incident diagnoses of interest were for malingering. Of the remaining diagnoses, 8.0 percent, 4.5 percent, and 3.6 percent were for factitious illness (physical),

**TABLE 2.** Incident counts and incidence rates of malingering and factitious disorders and illnesses by demographic and military characteristics, active component, U.S. Armed Forces, 1998-2012

|                                               | Primary diagnostic position |                   | Secondary diagnostic position |                   | Primary and secondary diagnostic positions |                   |
|-----------------------------------------------|-----------------------------|-------------------|-------------------------------|-------------------|--------------------------------------------|-------------------|
|                                               | No.                         | Rate <sup>a</sup> | No.                           | Rate <sup>a</sup> | No.                                        | Rate <sup>a</sup> |
| Total                                         | 5,311                       | 2.48              | 2,527                         | 1.19              | 7,838                                      | 3.67              |
| During deployment <sup>b</sup>                | 164                         | 0.08              | 65                            | 0.03              | 229                                        | 0.11              |
| Not during deployment                         | 5,147                       | 2.41              | 2,462                         | 1.15              | 7,609                                      | 3.56              |
| Inpatient                                     | 360                         | 0.17              | 369                           | 0.17              | 729                                        | 0.34              |
| Outpatient                                    | 4,787                       | 2.24              | 2,093                         | 0.98              | 6,880                                      | 3.22              |
| ICD-9 breakdown                               |                             |                   |                               |                   |                                            |                   |
| V65.2 Person feigning illness (malingering)   | 4,456                       | 2.08              | 2,308                         | 1.08              | 6,764                                      | 3.16              |
| 300.16 Factitious disorder (psychological)    | 192                         | 0.09              | 42                            | 0.02              | 234                                        | 0.11              |
| 300.19 Factitious illness (physical)          | 425                         | 0.20              | 127                           | 0.06              | 552                                        | 0.26              |
| 301.51 Factitious illness (physical; chronic) | 238                         | 0.11              | 50                            | 0.02              | 288                                        | 0.13              |
| Sex                                           |                             |                   |                               |                   |                                            |                   |
| Male                                          | 4,496                       | 2.46              | 2,112                         | 1.15              | 6,608                                      | 3.61              |
| Female                                        | 815                         | 2.64              | 415                           | 1.34              | 1,230                                      | 3.98              |
| Race/ethnicity                                |                             |                   |                               |                   |                                            |                   |
| White, non-Hispanic                           | 3,398                       | 2.53              | 1,561                         | 1.16              | 4,959                                      | 3.69              |
| Black, non-Hispanic                           | 1,003                       | 2.69              | 516                           | 1.39              | 1,519                                      | 4.08              |
| Hispanic                                      | 470                         | 2.21              | 236                           | 1.11              | 706                                        | 3.32              |
| Asian/Pacific Islander                        | 141                         | 1.72              | 64                            | 0.78              | 205                                        | 2.50              |
| Other/Unknown                                 | 299                         | 2.37              | 150                           | 1.19              | 449                                        | 3.56              |
| Age                                           |                             |                   |                               |                   |                                            |                   |
| <20                                           | 1,408                       | 8.88              | 550                           | 3.46              | 1,958                                      | 12.34             |
| 20-24                                         | 2,276                       | 3.27              | 1,146                         | 1.64              | 3,422                                      | 4.91              |
| 25-29                                         | 782                         | 1.67              | 435                           | 0.93              | 1,217                                      | 2.60              |
| 30-34                                         | 360                         | 1.13              | 186                           | 0.58              | 546                                        | 1.71              |
| 35-39                                         | 283                         | 1.03              | 125                           | 0.46              | 408                                        | 1.49              |
| Military status                               |                             |                   |                               |                   |                                            |                   |
| Recruit                                       | 989                         | 23.09             | 280                           | 6.54              | 1,269                                      | 29.63             |
| Active duty (non-recruit)                     | 4,322                       | 2.06              | 2,247                         | 1.08              | 6,569                                      | 3.14              |

factitious illness (physical-chronic), and factitious disorder (psychologic), respectively (**Table 2**).

When diagnoses of malingering and factitious illness were considered together, the overall incidence rate was slightly higher (7.3%) among females than males; however, in 8 of the 15 years of the surveillance period, annual rates were higher among males (**data not shown**). Overall incidence rates of diagnoses of malingering and factitious illness were notably higher among the youngest service

members, a pattern reflected in the higher rates for recruit trainees (23.1 per 10,000 p-yrs) and junior enlisted members. Compared to their respective counterparts, rates were also highest among soldiers, those in armor/motor transport occupations, the unmarried, and the least educated (**Table 2**).

During the surveillance period, annual rates of diagnoses of malingering and factitious illness among recruits more than tripled between 1998 (15.17 per 10,000 p-yrs) and 2000 (50.24 per 10,000

p-yrs), and then sharply and steadily decreased (by 82%) from 2000 to 2007 (9.04 per 10,000 p-yrs) (**Figure 2**).

Throughout the period, annual rates were much higher among recruits than more seasoned members of the active component; even so, annual crude rates among non-recruit active component members increased by 56 percent from the beginning to the end of the surveillance period (1998: 1.16 per 10,000 p-yrs; 2012: 1.81 per 10,000 p-yrs) (**Figure 2**). Of note, despite the relatively high rates of diagnoses among recruits, they accounted for less than one-fifth (18.6%) of all incident diagnoses among active component members overall.

Of the 5,311 primary (first-listed) incident diagnoses of malingering and factitious illness, 4,359 (82.1%) were recorded in fixed military treatment facilities and included MEPRS codes that identified the clinical settings in which the incident diagnoses were made. Of encounters documented with MEPRS codes during which incident diagnoses were made, 42.9 percent were in psychiatric or mental health care specialty settings; 30.2 percent were in primary care settings; 13.3 percent were in audiology clinics; 3.1 percent were in emergency medical clinics; and 2.8 percent were in neurology clinics (**data not shown**).

Of the 5,311 individuals who received primary (first-listed) diagnoses, 82.5 percent (n=4,380) had only one encounter during which a diagnosis of malingering or factitious illness was recorded (**data not shown**). During the 15-year period overall, the records of 7,320 encounters had malingering or factitious illness-specific ICD-9-CM codes listed as primary diagnoses.

## Secondary (second-listed) diagnoses

During the period, there were 2,527 service members whose records documented at least one secondary (second-listed) diagnosis, but no primary (first-listed) diagnosis, of malingering or factitious illness (**Table 2**). The overall incidence rate of secondary diagnoses was 1.19 per 10,000 p-yrs. The proportions,

**TABLE 2. Continued.** Incident counts and incidence rates of malingering and factitious disorders and illnesses by demographic and military characteristics, active component, U.S. Armed Forces, 1998-2012

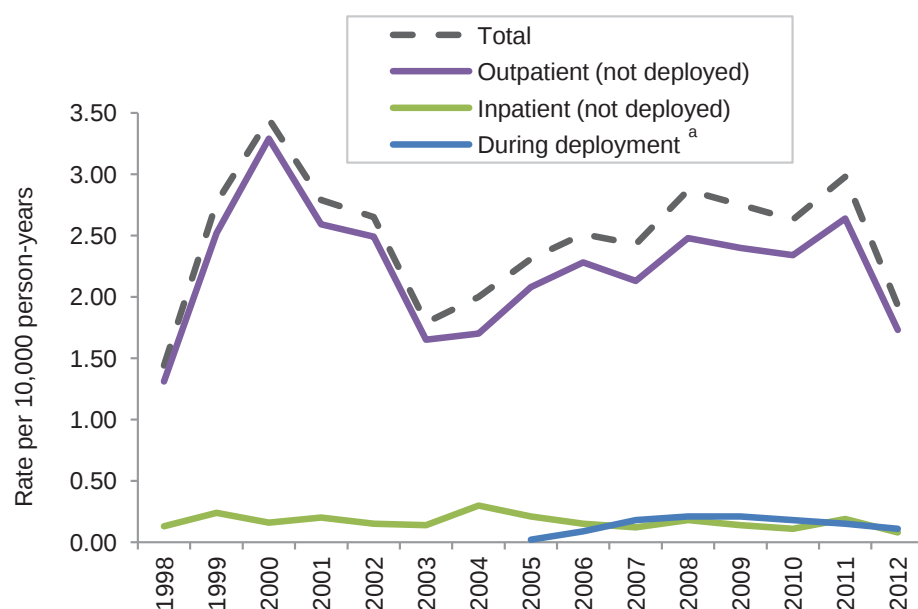
|                              | Primary diagnostic position |                   | Secondary diagnostic position |                   | Primary and secondary diagnostic positions |                   |
|------------------------------|-----------------------------|-------------------|-------------------------------|-------------------|--------------------------------------------|-------------------|
|                              | No.                         | Rate <sup>a</sup> | No.                           | Rate <sup>a</sup> | No.                                        | Rate <sup>a</sup> |
| <b>Service</b>               |                             |                   |                               |                   |                                            |                   |
| Army                         | 2,911                       | 3.83              | 1,379                         | 1.82              | 4,290                                      | 5.65              |
| Navy                         | 1,212                       | 2.31              | 611                           | 1.16              | 1,823                                      | 3.47              |
| Air Force                    | 435                         | 0.84              | 225                           | 0.43              | 660                                        | 1.27              |
| Marine Corps                 | 703                         | 2.56              | 291                           | 1.06              | 994                                        | 3.62              |
| Coast Guard                  | 50                          | 0.86              | 21                            | 0.36              | 71                                         | 1.22              |
| <b>Rank</b>                  |                             |                   |                               |                   |                                            |                   |
| Junior enlisted              | 4,359                       | 4.64              | 2,095                         | 2.23              | 6,454                                      | 6.87              |
| Senior enlisted              | 828                         | 0.98              | 392                           | 0.46              | 1,220                                      | 1.44              |
| Junior officer               | 83                          | 0.39              | 30                            | 0.14              | 113                                        | 0.53              |
| Senior officer               | 41                          | 0.30              | 10                            | 0.07              | 51                                         | 0.37              |
| <b>Occupation</b>            |                             |                   |                               |                   |                                            |                   |
| Combat-specific <sup>c</sup> | 761                         | 2.88              | 380                           | 1.44              | 1,141                                      | 4.32              |
| Armor/motor transport        | 529                         | 5.63              | 211                           | 2.24              | 740                                        | 7.87              |
| Repair/engineering           | 1,237                       | 1.97              | 661                           | 1.05              | 1,898                                      | 3.02              |
| Communications/intelligence  | 1,056                       | 2.18              | 493                           | 1.02              | 1,549                                      | 3.20              |
| Healthcare                   | 255                         | 1.46              | 139                           | 0.79              | 394                                        | 2.25              |
| Other                        | 1,473                       | 2.99              | 643                           | 1.31              | 2,116                                      | 4.30              |
| <b>Marital status</b>        |                             |                   |                               |                   |                                            |                   |
| Married                      | 1,839                       | 1.57              | 949                           | 0.81              | 2,788                                      | 2.38              |
| Single                       | 3,317                       | 3.77              | 1,506                         | 1.71              | 4,823                                      | 5.48              |
| Other                        | 150                         | 1.77              | 70                            | 0.83              | 220                                        | 2.60              |
| Unknown                      | 5                           | 2.07              | 2                             | 0.83              | 7                                          | 2.90              |
| <b>Education</b>             |                             |                   |                               |                   |                                            |                   |
| < High school                | 133                         | 7.38              | 32                            | 1.77              | 165                                        | 9.15              |
| High school                  | 4,466                       | 3.04              | 1,997                         | 1.36              | 6,463                                      | 4.40              |
| Some college                 | 296                         | 1.33              | 124                           | 0.56              | 420                                        | 1.89              |
| College                      | 159                         | 0.67              | 69                            | 0.29              | 228                                        | 0.96              |
| Graduate                     | 44                          | 0.33              | 10                            | 0.08              | 54                                         | 0.41              |
| Other/unknown                | 213                         | 3.56              | 295                           | 4.94              | 508                                        | 8.50              |

<sup>a</sup>Rate per 10,000 person-years

<sup>b</sup>Deployment data was not available before 2005

<sup>c</sup>Infantry, artillery, combat engineering

**FIGURE 1.** Incidence rates of primary (first-listed) diagnoses of malingering and factitious disorder and illnesses, active component, U.S. Armed Forces, 1998-2012



<sup>a</sup>Deployment data was not available before 2005

incidence rates, trends, and demographic and military characteristics of service members with secondary diagnoses were similar to those with primary (first-listed) diagnoses.

Of the 2,527 secondary (second-listed) incident diagnoses of malingering and factitious illness, 2,150 (85.1%) were recorded during encounters in fixed military treatment facilities and included MEPRS codes that identified the clinical settings in which the diagnoses were made. Of encounters documented with MEPRS codes during which secondary incident diagnoses were made, 46.1 percent were in a psychiatric or mental health care specialty settings; 23.0 percent were in primary care health facilities; 8.6 percent were in audiology clinics; 8.3 percent were in family practice clinics; and 3.7 percent were in emergency medical clinics (data not shown).

Of the 2,527 individuals with only secondary (second-listed) diagnoses, 71.6 percent (n=1,809) had only one encounter with a diagnosis of malingering or factitious illness (data not shown). During the 15-year period, the records of 4,181 encounters had malingering or factitious

illness-specific ICD-9-CM codes listed in the second diagnostic position.

Among the 2,527 service members whose records contained a secondary (second-listed) incident diagnosis of malingering or factitious illness, half (52.8%) had primary diagnoses of mental disorders during the same encounters; these mental disorder diagnoses documented adjustment reactions (21.4% of the 2,527), drug or alcohol use disorders (7.0%), personality disorders (6.4%), and depressive disorders (4.6%). Other primary diagnoses on records that included secondary incident diagnoses of malingering or factitious illness were documentations of examinations or screenings (17.5%), musculoskeletal disorders (15.2%), hearing loss or other auditory problems (3.4%), abdominal symptoms or gastrointestinal disorders (3.3%), and headache or migraine (2.0%) (data not shown).

#### EDITORIAL COMMENT

During the 15-year surveillance period, 5,311 service members had at least one health care encounter during

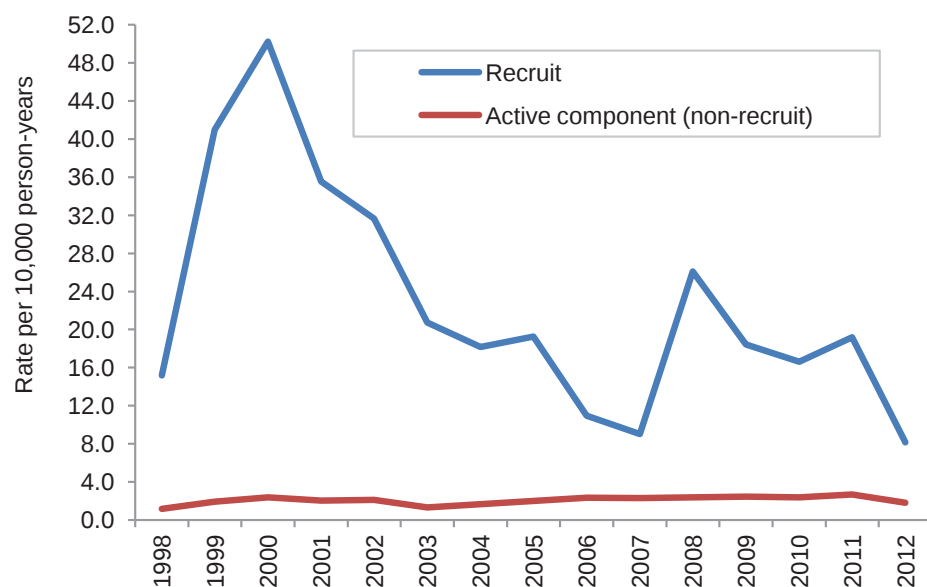
which a provider recorded a diagnosis of malingering or factitious illness in the first diagnostic position of the administrative record of the encounter. Over 80 percent of the subject service members had only one such encounter.

Most (83.9%) of the diagnoses were for malingering; the remainder were for the three different diagnoses of factitious illness. This proportion is similar to that found in a similar analysis reporting on the same diagnostic codes.<sup>4</sup> This report documents much higher crude (unadjusted) rates of diagnoses of malingering and factitious illness among recruit trainees, those under age 20, and junior enlisted service members. These diagnoses may be higher in these populations for several reasons. Adjustment disorder is common among recruits<sup>5,6</sup> and malingering may be a response to an inability to adjust to the stress of the military environment. Recruits, younger, and junior ranked service members may not fully recognize the legal consequences of malingering or may not have as much invested in a military career compared to older, higher ranking service members. Finally, in some cases, the malingering V-coded diagnosis may be used in recruit settings to support individual's/cadre's cases for administrative discharges (e.g., failure to adapt to the stresses of military life).

Based on the incidence rate trends of malingering and factitious illness it is not apparent that there was an increase in these diagnoses in relation to the start or duration of the conflicts in Iraq and Afghanistan. Similarly, given the plausibility that feigned illness might be more common in stressful circumstances, it is of interest that only 229 service members were diagnosed (primary or secondary diagnostic position) with malingering or factitious illness while deployed to combat zones in Southwest Asia during the period of 2005 through 2012.

The interpretation of the findings of this analysis should consider a number of factors and limitations that introduce uncertainty into the estimates of the incidence of malingering and factitious illness. First, persons who feign illness usually do

**FIGURE 2.** Incidence rates of primary (first-listed) diagnoses of malingering and factitious disorder and illnesses by military status, active component, U.S. Armed Forces, 1998-2012



so by reporting or otherwise displaying symptoms suggestive of ill health. Symptoms are, by definition, human experiences that are known to health care providers only through the patient's report or behaviors. Providers attempt to identify a cause for a patient's reported symptoms through a search for objective evidence that will confirm the presence and nature of ill health. Such evidence includes abnormalities detected during physical examination (signs) or manifest in the results of ancillary evaluations such as laboratory testing, imaging procedures (e.g., radiographs, magnetic resonance imaging, ultrasound), and other diagnostic measures. Many illnesses and injuries require such additional evaluation before a diagnosis can be determined. As a result, much uncertainty attends to symptoms whose cause is not deducible from the physical examination that is usually performed at the time of a patient's first health care encounter. In general, providers should be loath to render a diagnosis of malingering or factitious illness before supplementary evaluation of the patient's symptoms can be accomplished. On the other hand, there are patients for whom malingering

is suspected from the very start because of factors such as inconsistent reporting of symptoms, implausible symptoms, apparent secondary gain, or a history of previous malingering or factitious illness. In general, however, the diagnosis of malingering or factitious illness is most secure after other disorders have been excluded. In that context, it is plausible that some of the diagnoses captured in this analysis were premature and possibly inaccurate.

Second, the fact that the vast majority of the service members identified in this analysis received the relevant diagnoses only once suggests that either 1) many of the initial diagnoses were subsequently abandoned by health care providers as inaccurate; 2) many service members given the diagnosis were made aware of the serious implications of malingering and did not attempt to feign illness again; or 3) many service members who truthfully reported symptoms of uncertain etiology simply recovered from a real, unexplained ailment that was initially labeled as due to malingering. Because this analysis did not attempt to clarify these uncertainties, the findings in this report should be regarded as most descriptive of the use

of the diagnoses of malingering and factitious illness. The true incidences of malingering and factitious illness are less clear. A recently published study suggests that service members suspected to be feigning illness should be referred to mental health professionals for more rigorous assessment.<sup>4</sup> The finding in this analysis that the most common setting for initial diagnoses of malingering and factitious illness was in psychiatric or mental health facilities indicates that such referrals have been commonplace.

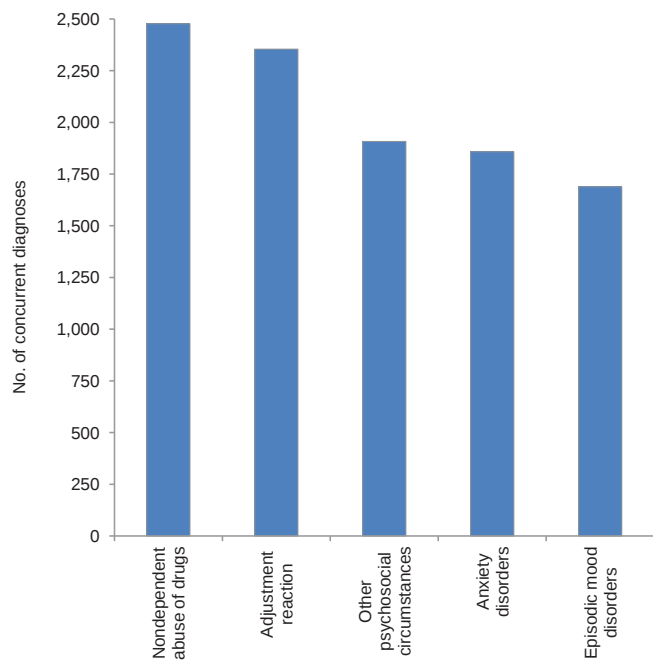
Malingering is defined by the feigning of illness for some secondary gain. This analysis did not permit identification of the presumed motivations of those service members diagnosed as malingerers. Nevertheless, it was noteworthy that the rates of these diagnoses were highest among recruit trainees, new, mostly young service members who may experience difficulties in adjusting to the rigors and stresses of training in an unfamiliar setting. Finally, the lack of correlation between these diagnoses and the war period and the small number of service members diagnosed within a theater of operation suggests that malingering and factitious illness diagnoses are not common among active component service members despite the prospect of deployment to a combat theater.

## REFERENCES

1. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Health Disorders [DSM-IV-TR], Ed 4. Washington, DC, American Psychiatric Association, 2000.
2. Adetunji BA, Basil B, Mathews M, Williams A, Osinowo T, Oladinni O. Detection and management of malingering in a clinical setting. *Primary Psychiatry*. 2006;13(1):61-69.
3. Uniform Code of Military Justice. Art 115. Malingering.
4. Lande RG, Williams LB. Prevalence and characteristics of military malingering. *Mil Med*. 2013;178(1):50-54.
5. Armed Forces Health Surveillance Center. Mental disorders and mental health problems, recruit trainees, U.S. Armed Forces, 2000-2012. *MSMR*. July 2013;20(7):20-25.
6. Armed Forces Health Surveillance Center. Surveillance snapshot: mental health hospitalizations among recruit trainees, U.S. Armed Forces, 2000-2012. *MSMR*. July 2013;20(7):26.

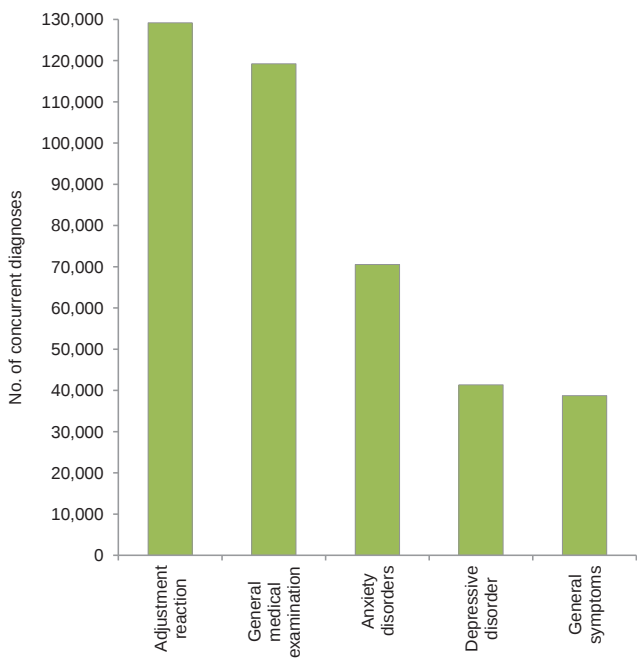
# Surveillance Snapshot: Conditions Diagnosed Concurrently with Insomnia, Active Component, U.S. Armed Forces, 2003-2012

**FIGURE 1a.** Most common conditions diagnosed concurrently with insomnia during hospitalization,<sup>a</sup> active component, U.S. Armed Forces, 2003-2012



<sup>a</sup>Total number of insomnia hospitalizations=6,350

**FIGURE 1b.** Most common conditions diagnosed concurrently with insomnia during ambulatory visits,<sup>a</sup> active component, U.S. Armed Forces, 2003-2012



<sup>a</sup>Total number of insomnia ambulatory visits=807,827

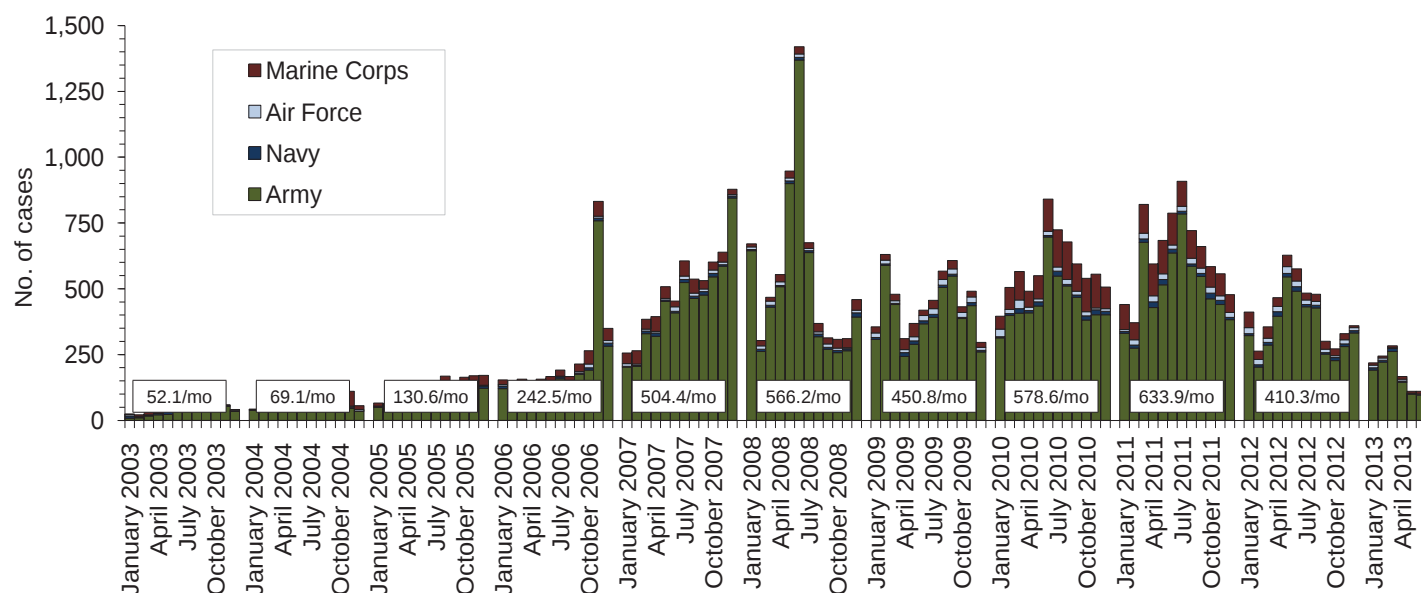
Insomnia is regarded as the most common sleep disorder in adults in the United States and the incidence of insomnia has been shown to be increasing in military members. A previous *MSMR* report documented that incidence rates of insomnia increased substantially between 2000 and 2009 (2000: 7.2 per 10,000 p-yrs; 2009: 135.8 per 10,000 p-yrs).<sup>1</sup>

Insomnia has been shown to be both a precipitant and a consequence of numerous comorbid medical diagnoses; the most frequent comorbid diagnoses are mental disorders.

1. Armed Forces Health Surveillance Center. Insomnia, active component, U.S. Armed Forces, January 2000-December 2009. *Medical Surveillance Monthly Report*. 2010;17(5):12-15.

# Deployment-Related Conditions of Special Surveillance Interest, U.S. Armed Forces, by Month and Service, January 2003-June 2013 (data as of 18 July 2013)

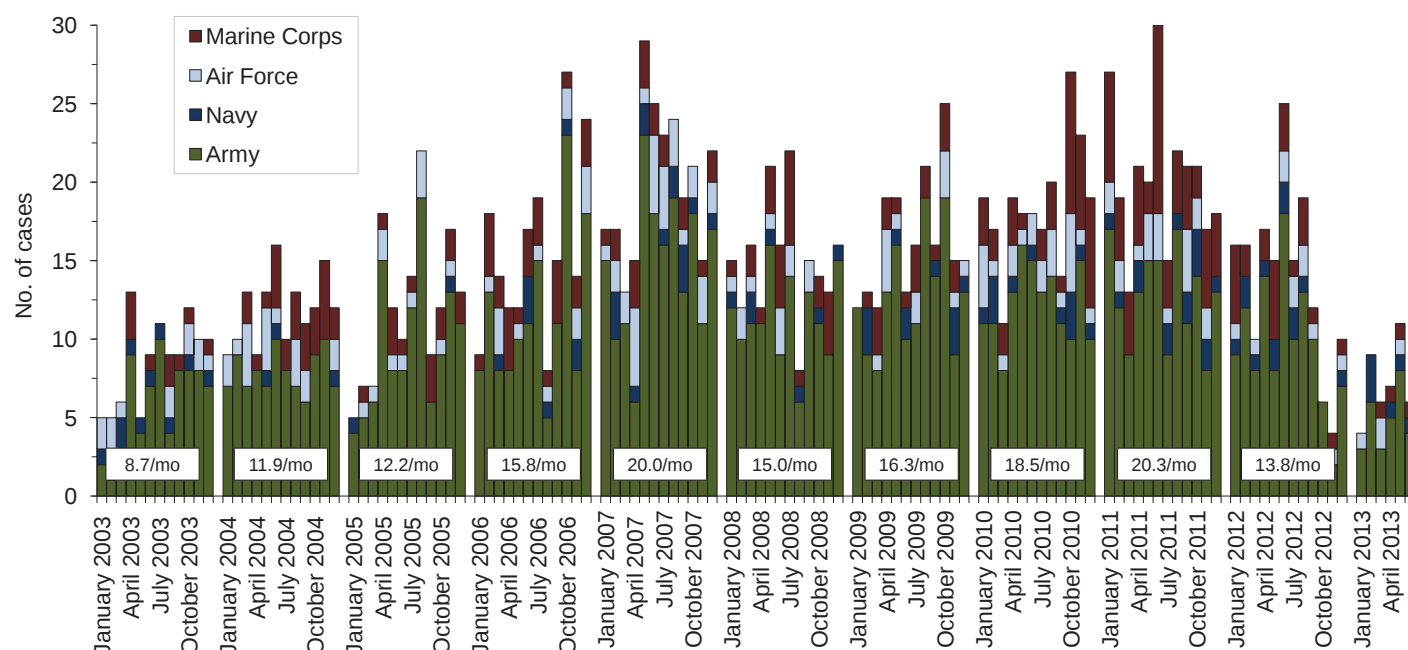
Traumatic brain injury (ICD-9: 310.2, 800-801, 803-804, 850-854, 907.0, 950.1-950.3, 959.01, V15.5\_1-9, V15.5\_A-F, V15.52\_0-9, V15.52\_A-F, V15.59\_1-9, V15.59\_A-F)<sup>a</sup>



Reference: Armed Forces Health Surveillance Center. Deriving case counts from medical encounter data: considerations when interpreting health surveillance reports. *MSMR*. Dec 2009; 16(12):2-8.

<sup>a</sup>Indicator diagnosis (one per individual) during a hospitalization or ambulatory visit while deployed to/within 30 days of returning from OEF/OIF. (Includes in-theater medical encounters from the Theater Medical Data Store [TMDS] and excludes 4,163 deployers who had at least one TBI-related medical encounter any time prior to OEF/OIF).

Deep vein thrombophlebitis/pulmonary embolus (ICD-9: 415.1, 451.1, 451.81, 451.83, 451.89, 453.2, 453.40 - 453.42 and 453.8)<sup>b</sup>

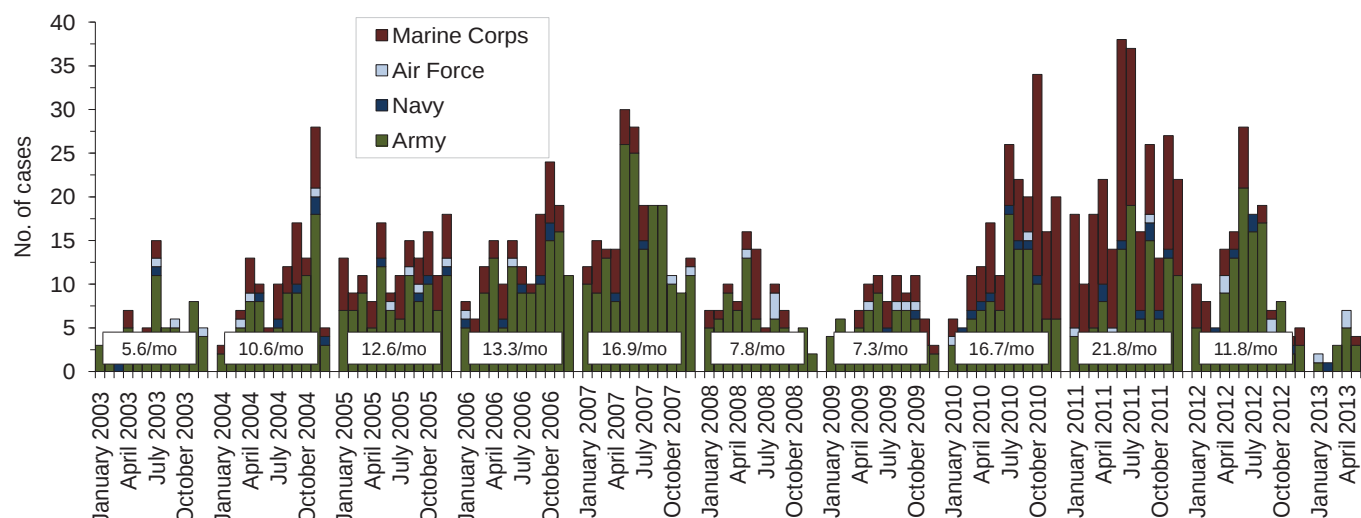


Reference: Isenbarger DW, Atwood JE, Scott PT, et al. Venous thromboembolism among United States soldiers deployed to Southwest Asia. *Thromb Res*. 2006;117(4):379-83.

<sup>b</sup>One diagnosis during a hospitalization or two or more ambulatory visits at least 7 days apart (one case per individual) while deployed to/within 90 days of returning from OEF/OIF.

# Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003-June 2013 (data as of 18 July 2013)

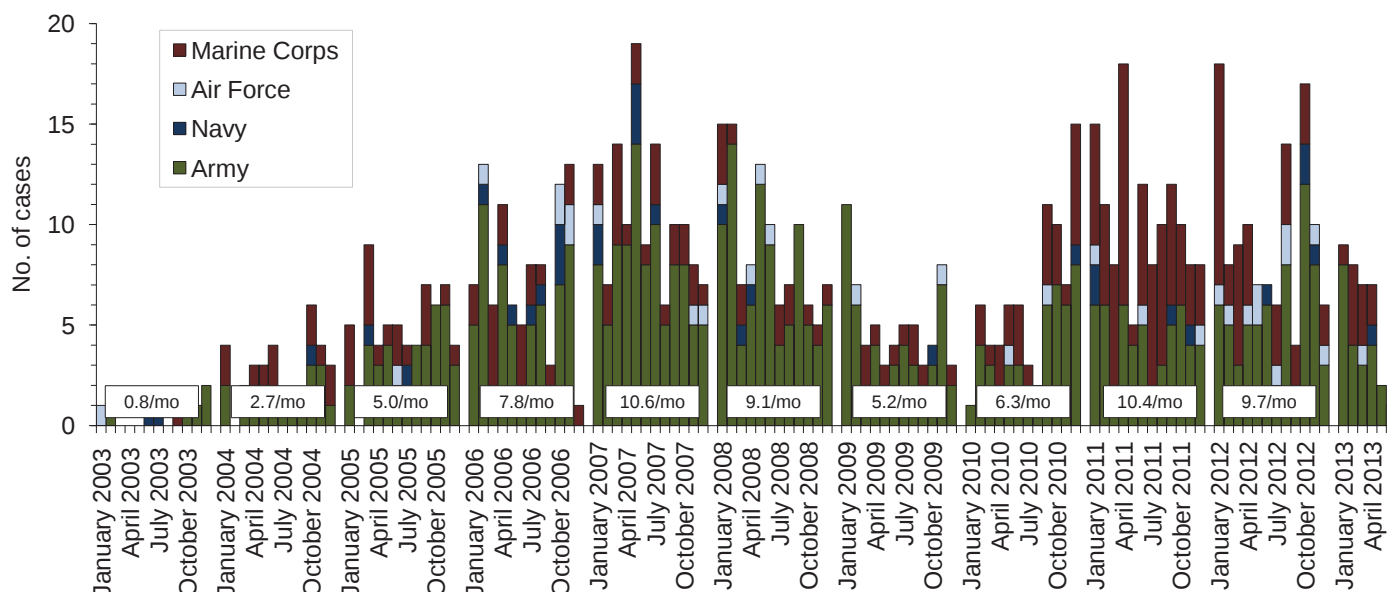
Amputations (ICD-9-CM: 887, 896, 897, V49.6 except V49.61-V49.62, V49.7 except V49.71-V49.72, PR 84.0-PR 84.1, except PR 84.01-PR 84.02 and PR 84.11)<sup>a</sup>



Reference: Army Medical Surveillance Activity. Deployment-related condition of special surveillance interest: amputations. Amputations of lower and upper extremities, U.S. Armed Forces, 1990-2004. *MSMR*. Jan 2005;11(1):2-6.

<sup>a</sup>Indicator diagnosis (one per individual) during a hospitalization while deployed to/within 365 days of returning from OEF/OIF/OND.

Heterotopic ossification (ICD-9: 728.12, 728.13, 728.19)<sup>b</sup>



Reference: Army Medical Surveillance Activity. Heterotopic ossification, active components, U.S. Armed Forces, 2002-2007. *MSMR*. Aug 2007; 14(5):7-9.

<sup>b</sup>One diagnosis during a hospitalization or two or more ambulatory visits at least 7 days apart (one case per individual) while deployed to/within 365 days of returning from OEF/OIF/OND.

## Medical Surveillance Monthly Report (MSMR)

Armed Forces Health Surveillance Center  
11800 Tech Road, Suite 220 (MCAF-CS)  
Silver Spring, MD 20904

### Director, Armed Forces Health Surveillance Center

CAPT Kevin L. Russell, MD, MTM&H, FIDSA (USN)

### Editor

Francis L. O'Donnell, MD, MPH

### Writer-Editor

Denise Olive Daniele, MS

Catherine W. Mitchem

### Contributing Editor

John F. Brundage, MD, MPH

Leslie L. Clark, PhD, MS

Capt Bryant Webber, MD (USAF)

### Data Analysis

Gi-Taik Oh, MS

Kerri A. Dorsey, MPH

Xiaosong Zhong, MS

Stephen B. Taubman, PhD

### Editorial Oversight

CAPT Sharon L. Ludwig, MD, MPH (USCG)

COL William P. Corr, MD, MPH (USA)

Joel C. Gaydos, MD, MPH

Mark V. Rubertone, MD, MPH

THE MEDICAL SURVEILLANCE MONTHLY REPORT (MSMR), in continuous publication since 1995, is produced by the Armed Forces Health Surveillance Center (AFHSC). The *MSMR* provides evidence-based estimates of the incidence, distribution, impact and trends of illness and injuries among United States military members and associated populations. Most reports in the *MSMR* are based on summaries of medical administrative data that are routinely provided to the AFHSC and integrated into the Defense Medical Surveillance System for health surveillance purposes.

All previous issues of the *MSMR* are available online at [www.afhsc.mil](http://www.afhsc.mil). Subscriptions (electronic and hard copy) may be requested online at [www.afhsc.mil/msmrSubscribe](http://www.afhsc.mil/msmrSubscribe) or by contacting AFHSC at (301) 319-3240. E-mail: [msmr.afhsc@amedd.army.mil](mailto:msmr.afhsc@amedd.army.mil)

Submissions: Instructions to authors are available at [www.afhsc.mil/msmr](http://www.afhsc.mil/msmr).

All material in the *MSMR* is in the public domain and may be used and reprinted without permission. Citation formats are available at [www.afhsc.mil/msmr](http://www.afhsc.mil/msmr)

Opinions and assertions expressed in the *MSMR* should not be construed as reflecting official views, policies, or positions of the Department of Defense or the United States Government.

Follow us:



[www.facebook.com/AFHSCPAGE](http://www.facebook.com/AFHSCPAGE)



<http://twitter.com/AFHSCPAGE>

ISSN 2158-0111 (print)

ISSN 2152-8217 (online)

