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## *Annual Summary Issue*

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## “Military Importance”: What Does It Mean and Can It Be Assessed Objectively?

**66** Importance” describes a thing, action, circumstance, or idea that has a strong effect on the course of events or the nature of things. As such, things that are “militarily important” should have strong – and possibly measurable – effects on the courses of military events (e.g., training activities, combat operations) or the natures of military things (e.g., health and operational capabilities of military members; quality of medical care). In principle, assessments of “military importance” should guide, at least in part, the prioritization of military medical health care practices, policies, training, and research initiatives – and allocations of resources to support them.

In recent years, the Department of Defense – often, at the direction of the U.S. Congress or in collaboration with other federal agencies – has established or continued to support clinical and research centers, institutes, agencies, task forces, and programs focused on medical conditions, syndromes, and health threats considered “militarily important.” Such conditions have included deployment-related psychological disorders, including post-traumatic stress disorder (PTSD); suicide; traumatic brain injury; traumatic extremity injuries and amputations; vision, hearing and balance disorders; diseases that are preventable by vaccinations; adverse events of vaccines; effects of chemical and biological weapons; and various naturally occurring infectious diseases, including malaria, dengue, shigellosis, HIV-1 infection, meningococcal disease, and “emerging” infectious diseases. While all of these conditions affect or threaten current or future military members, it is not clear if, why, or how they were considered more militarily important than others.

Inevitably, “military importance” is a subjective assessment because the perceived importance of a condition or threat depends on the perspective, knowledge, experience, and values of the observer and on the context in which importance is judged. Consider, for example, that the “most important” condition to an injured

or seriously ill service member, his family, and his close friends is the condition that currently threatens his health, his future, and his overall sense of well-being; to a commander in combat, it is the condition or threat that most affects his unit’s operational effectiveness; to a hospital administrator, it is the condition that demands the most resources for evaluation, treatment, and rehabilitation; to the medical researcher, special interest advocate, politician, investigative journalist, or military public affairs officer, it is the condition or threat (actual or hypothesized) that corresponds to his area of expertise, his constituents’ current interest, popular attention, and so on.

Because of rapid advances in knowledge and technologies related to conditions and threats of military interest, military leaders often seek the advice of “subject matter experts.” In general, subject matter experts earn their specialized knowledge and professional reputations through years of focused study, research, teaching, and practice in their fields of expertise. However, because of their rigorous focus on their specialty areas, they may have relatively little knowledge, interest, or experience in other areas (including military operations). In deference to their expert knowledge and professional status, recommendations of subject matter experts regarding military policy, practice, research, and resource priorities may be accepted without objective and systematic consideration of the “military importance” of the conditions or threats of interest relative to all others.

Given the challenges of setting military medical priorities during periods of declining resources, increasing demand for services, and worldwide political and military instability, it is reasonable to wonder how or if “military importance” might be better integrated into decision making.

### Determinants of “military importance”

Based on recent experience and published reports, we have identified four

general determinants of the “military importance” of medical conditions, military activities, or exposures that degrade or threaten the health, safety, and senses of well-being of U.S. military members and the capabilities of the Military Health System to care for them (**Figure 1**). If objective measures of the determinants of military importance were available, the relative importance of various conditions could be assessed systematically. Such assessments might enhance the “situational awareness” of military medical leaders and help guide their planning, policy making, and resource allocation decision making.

*Costs to the military health system:* Each episode of an illness or injury of a military member is associated with health care costs, e.g., due to medical evacuation or other medically-indicated travel; clinical evaluation, treatment, and rehabilitation; disability determination and compensation; and so on. In general, illnesses and injuries that are very common among military members are more costly than those that are rare; those that require hospitalizations are more costly than those treated in ambulatory settings; those with long clinical courses are more costly than those with shorter courses; those that require more invasive or multiple procedures for diagnosis, treatment, and rehabilitation are more costly than those with pathognomonic clinical presentations and short, self-limited clinical courses; and so on.

*Effects on military operations and training:* Illnesses and injuries can degrade the operational capabilities of affected service members and their units; the effects depend, for example, on the status (e.g., grade, occupational specialty, leadership role) of the affected service member; the type and status of the service member’s unit and operational setting (e.g., combat versus peacetime); and the nature, severity, and duration of acute effects, related disabilities, and rehabilitation. For example, medical conditions that require hospitalizations, convalescence “in quarters,” or medical evacuations from operational

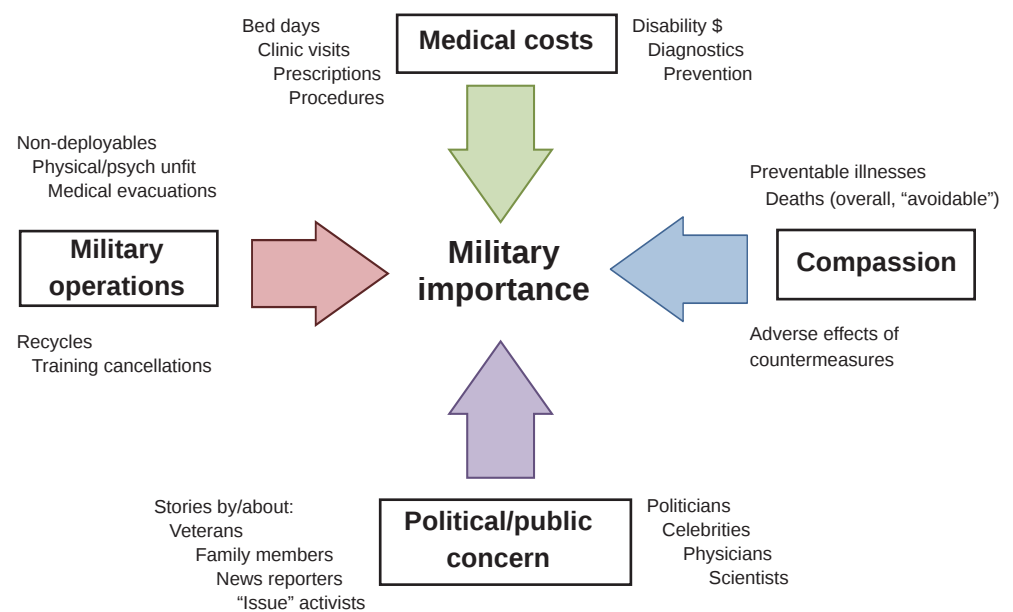
or training missions completely remove affected individuals from their units and operational duties; if such conditions occur in large numbers, they cause large amounts of lost duty time. Of particular note, illnesses and injuries that affect many members of mission critical units (e.g., deployed air crews, recruit training centers) in short periods of time can disrupt operational and training missions more than similar numbers of cases more widely distributed across military units, locations, and time periods.

*Compassion, empathy, humanitarian concerns:* Medical professionals are generally motivated and specifically trained to relieve suffering, minimize disabilities, and preserve the lives of those for whom they care – to the extent of their knowledge and abilities and regardless of the costs. Also, military commanders and other leaders are responsible for and trained to protect the well-being of those whom they lead. Thus, from the standpoints of “frontline” military health care providers and unit leaders, any medical condition that causes pain, disability, or threatens the life of a service member under their care or supervision is inherently very “militarily important.”

In addition, many individuals not in active military service (e.g., family members, military veterans, anti-war advocates) have enormous compassion for and concern regarding the current and future welfare of those affected by military-related illnesses and injuries – particularly those that are clinically severe and permanently disabling (e.g., spinal cord injury, amputation, blindness). When such conditions are directly (e.g., bullet/shrapnel wounds) or hypothetically (e.g., Gulf War illnesses) related to military equipment, substances, activities, or experiences, they are considered inherently militarily important.

*Concerns of the popular press, politicians, senior military leaders, celebrities:* In the past, and to an increasing degree more recently (e.g., due to wider uses of internet and “social media” networks for information propagation), cases, clusters, or groups of medical conditions among current military members or veterans have been reported as, or alleged to be, unexplained, alarming, military service-related, or otherwise deserving of immediate high-level attention. When such reports

**FIGURE 1.** Determinants of military importance and potentially measurable correlates (selected)



or allegations are reported in the popular press (especially at the national level), they often gain the public advocacy support of politicians, celebrities, and individuals or groups of outspoken physicians or scientists. Senior military leaders must be concerned when there is widespread or high level political interest in a military medical issue; as such, such issues are inherently “militarily important.”

Given these determinants of military importance, most, if not all, medical conditions, activities, or exposures would be considered “militarily important” by at least some observers, based on past, current, or hypothesized future circumstances. However, if all conditions and threats could plausibly be considered militarily important, then such importance would not be a useful criterion for establishing priorities for military medical programs – unless the relative importance of various conditions and health threats could objectively be assessed.

Over the past 17 years, the *MSMR* has periodically described in a quantitative manner the annual impact of various illnesses and injuries on the active component of the U.S. Armed Forces. The impact has been depicted in terms of numbers of individuals affected, hospitalizations, outpatient encounters, health care burdens,

lost duty time, and deaths. These reports provide comprehensive and objective overviews of the relative influence of various conditions on the physical and psychological health of military members and on their availability for service with their units – and the relative burdens of various conditions on the military health system.

In the future, military medical leaders and other decision makers will be constantly challenged to balance diminishing resources with: increasing demands for medical services by diverse beneficiary populations; increasingly expensive preventive, diagnostic, therapeutic, and rehabilitative interventions; increasing and more diverse concerns of “special interest” advocates, politicians, and the popular media; and increasing social, political, and military instability throughout the world. Given these constraints, it will be difficult to maintain situational awareness regarding the relative military importance of various conditions and health threats. Objective correlates of determinants of military importance – such as those provided by the *MSMR* annual reports referred to above – may be useful to help prioritize and guide force health protection policy decisions, clinical practice initiatives, military medical research agendas, and the distribution of military medical resources.

# Absolute and Relative Morbidity Burdens Attributable to Various Illnesses and Injuries, U.S. Armed Forces, 2011

Perceptions of the relative “importance” of various conditions in military populations often determine the natures, extents, and priorities for resources for primary, secondary, and tertiary prevention activities. However, perceptions of the importance of conditions are inherently subjective; hence, they may have weak relationships with objective measures of their impacts on health, fitness, military operational effectiveness, health care costs, and so on.

Several classification systems and morbidity measures have been developed to quantify the “public health burdens” that are attributable to various illnesses and injuries in defined populations and settings.<sup>1</sup> Not surprisingly, different classification systems and morbidity measures lead to different rankings of illness and injury-specific public health burdens.<sup>2</sup>

For example, in a given population and setting, the illnesses and injuries that account for the most hospitalizations are likely different from those that account for the most outpatient medical encounters; and the illnesses and injuries that account for the most medical encounters overall likely differ from those that affect the most individuals, have the most debilitating or long-lasting effects, and so on.<sup>2</sup> Thus, in a given population and setting, the classification system or measure that is used to quantify condition-specific morbidity burdens determines to a large extent the conclusions that may be drawn regarding the relative “importance” of various conditions – and, in turn, the resources that may be indicated to prevent or minimize their impacts.

This annual summary uses a standard disease classification system (slightly modified for use among U.S. military members) and several health care burden measures to quantify the impacts of various illnesses and injuries among members of the U.S. Armed Forces in 2011.

## METHODS

The surveillance period was 1 January to 31 December 2011. 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 any time during the surveillance period. For this analysis, all inpatient and outpatient medical encounters of all active component members during 2011 were summarized according to the primary (first-listed) diagnosis (if reported with an ICD-9-CM code between 001 and 999).

For summary purposes, all illness and injury-specific diagnoses (as defined by the ICD-9-CM) were grouped into 139 burden of disease-related conditions and 25 categories based on a modified version of the classification system developed for the Global Burden of Disease (GBD) Study.<sup>1</sup> In general, the GBD system groups diagnoses with common pathophysiologic or etiologic bases and/or significant international health policymaking importance. For our purposes, we disaggregated some diagnoses that are grouped into single categories in the GBD system (e.g., mental disorders) to increase the military relevance of the results. We also categorized injuries by the affected anatomic sites rather than the causes because external causes of injuries are incompletely reported in military outpatient records.

The “morbidity burdens” attributable to various “conditions” were estimated based on the total number of medical encounters attributable to each condition (with a limit of one encounter per individual per condition per day); total service members affected by each condition (i.e., individuals with at least one medical encounter for the condition during the year); total bed days during hospitalizations for each condition, and total number of lost duty days due to each condition. This fourth measure, added to the report this year, represents the days of work time

lost due to hospitalizations plus one day for each “sick in quarters” disposition and one-half day for each “limited duty” disposition that resulted from ambulatory visits for the condition of interest.

The results of this year’s summary differ from previous annual summaries of morbidity burdens published in the MSMR for several reasons. First, there were additional modifications made to the GBD classification system so that there are now distinct major categories for “blood disorders” and “metabolic and immunity disorders.” Obesity has been reclassified to “nutritional disorders”; “endocrine disorders” now specifies some thyroid disorders. Several back disorders were reclassified from “injuries” to “musculoskeletal disorders.” Newly promulgated ICD-9 codes were incorporated into the ascertainment of health care encounters. In conjunction with the reloading and modernization of the data in the Defense Medical Surveillance System, approximately 740,000 outpatient diagnoses of “other ill-defined conditions” (ICD-9-CM: 799.89) were removed from the analysis because that code has been used to document prescription refills rather than medical encounters for current illnesses or injuries.

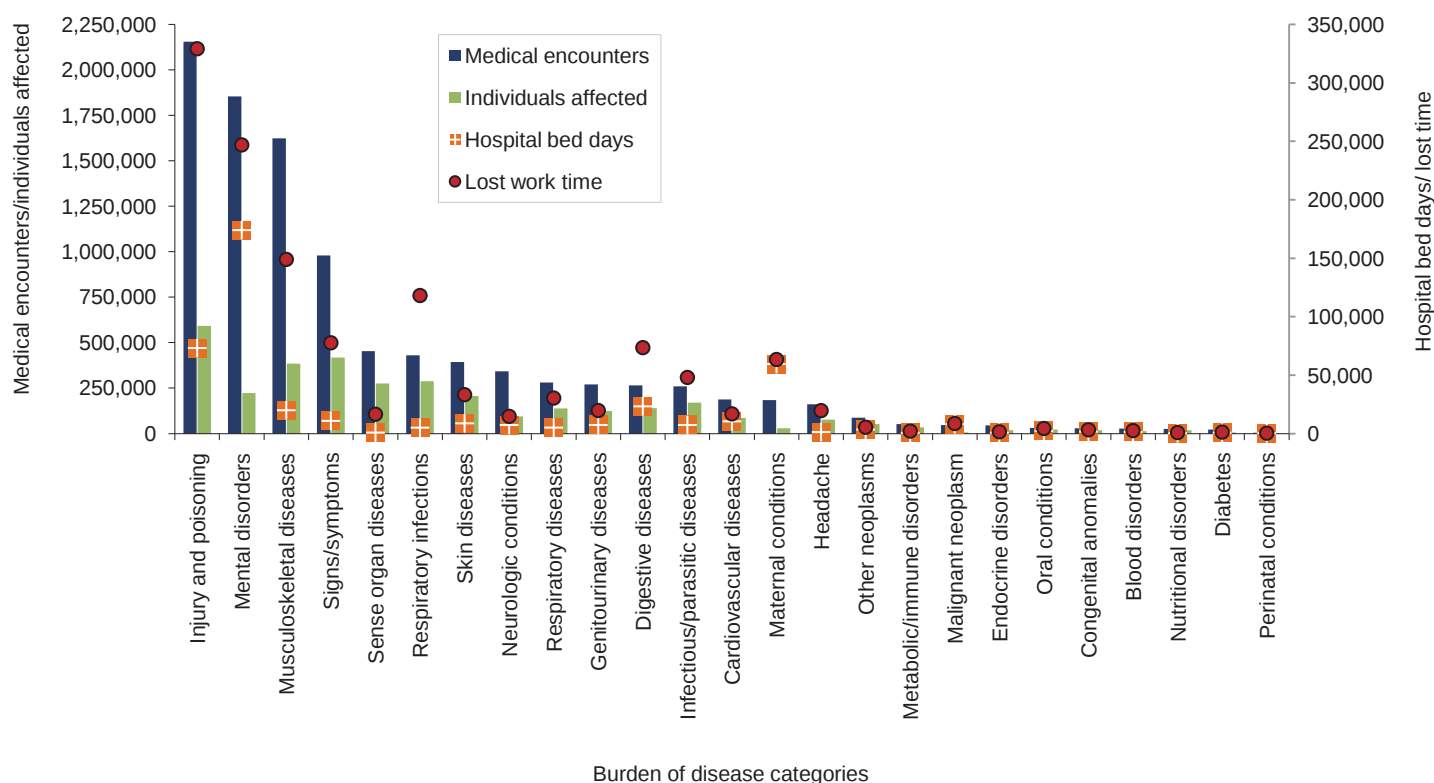
## RESULTS

### Morbidity burden, by category:

In 2011, more service members (n=592,028) received medical care for injuries than any other morbidity-related category. In addition, injuries accounted for more medical encounters than any other morbidity category (n=2,154,169) and more than one-fifth (21.1%) of all medical encounters overall (**Figure 1**).

Mental disorders accounted for more hospital bed days than any other morbidity category (n=174,005) and two-fifths (40.1%) of all hospital bed days. Together, injuries and mental disorders accounted

**FIGURE 1.** Medical encounters<sup>a</sup>, individuals affected<sup>b</sup>, hospital bed days<sup>c</sup>, and lost work time<sup>d</sup>, by burden of disease category, active component, U.S. Armed Forces, 2011



<sup>a</sup>Major categories and conditions defined in the Global Burden of Disease Study

<sup>b</sup>Medical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition)

<sup>c</sup>Individuals with at least one hospitalization or ambulatory visit for the condition

<sup>d</sup>A measure of lost work time due to bed days, convalescence, and one-half day for each ambulatory visit that resulted in limited duty

for more than half (57.0%) of all hospital bed days and nearly two-fifths (39.3%) of all medical encounters (**Figure 1**).

Of note, maternal conditions (including pregnancy complications and delivery) accounted for a relatively large proportion of all hospital bed days (n=59,502; 13.7%) but relatively few (n=183,457; 1.8%) medical encounters overall (**Figure 1**).

#### Medical encounters, by condition:

In 2011, the four burden of disease-related conditions that accounted for the most medical encounters – “other back problems”, “all other musculoskeletal diseases”, “all other signs and symptoms” and injuries of the “arm and shoulder” – accounted for more than one-fourth (25.6%) of all illness and injury-related medical encounters overall. Moreover, the ten conditions that accounted for the most medical encounters accounted for one-half

(50.0%) of all illness and injury-related medical encounters overall (**Figure 2**). In general, the conditions that accounted for the most medical encounters were predominantly musculoskeletal disorders (e.g., back), injuries (e.g., arm/shoulder, knee, foot/ankle), and substance abuse and other mental disorders (e.g., anxiety, adjustment, mood disorders) (**Table 1, Figure 2**).

#### Individuals affected, by condition:

In 2011, more service members received medical care for upper respiratory infections than for any other specific condition (**Table 1**). Of the 10 conditions that affected the most service members, two were musculoskeletal disorders and three were injuries (arm/shoulder, knee, and foot/ankle). Of note, more individuals were affected by unspecified (“all other”) musculoskeletal disorders (e.g., disorders of “other” joints, muscles, tendons, soft

tissues) than by musculoskeletal conditions affecting the back (**Table 1**).

#### Hospital bed days, by condition:

In 2011, substance abuse and mood disorders accounted for nearly one-quarter (24%) of all hospital days (**Table 1, Figure 3**). Together, four mental disorders (substance abuse, mood, anxiety, adjustment reaction) and two pregnancy and delivery-related conditions (delivery, pregnancy complications) accounted for one-half (50.3%) of all hospital bed days (**Table 1, Figure 3**). One-sixth (16.9%) of all hospital bed days were attributable to injuries and poisonings.

#### Lost duty days, by condition:

No single condition accounted for more than 7 percent of all lost duty days. Together, the four conditions with the most lost duty days (upper respiratory infections,

**TABLE 1.** Health care burdens attributable to various diseases and injuries, U.S. Armed Forces, 2011

| Major category condition <sup>a</sup>    | Medical encounters <sup>b</sup> |       | Individuals affected <sup>c</sup> |       | Bed days |       |
|------------------------------------------|---------------------------------|-------|-----------------------------------|-------|----------|-------|
|                                          | No.                             | Rank  | No.                               | Rank  | No.      | Rank  |
| <b>Injury and poisoning</b>              |                                 |       |                                   |       |          |       |
| Arm and shoulder                         | 490,357                         | (4)   | 148,339                           | (9)   | 5,910    | (18)  |
| Knee                                     | 485,954                         | (5)   | 149,008                           | (8)   | 2,336    | (31)  |
| Foot and ankle                           | 376,982                         | (10)  | 149,457                           | (7)   | 6,850    | (16)  |
| Leg                                      | 176,638                         | (18)  | 69,559                            | (19)  | 11,440   | (10)  |
| Unspecified injury                       | 161,125                         | (21)  | 100,937                           | (14)  | 1,223    | (45)  |
| Hand and wrist                           | 142,426                         | (24)  | 72,563                            | (18)  | 2,150    | (33)  |
| Head and neck                            | 105,936                         | (27)  | 64,130                            | (21)  | 13,716   | (8)   |
| Back and abdomen                         | 94,971                          | (29)  | 57,714                            | (26)  | 7,474    | (15)  |
| Other complications                      | 43,543                          | (43)  | 22,291                            | (47)  | 13,265   | (9)   |
| Environmental                            | 30,135                          | (51)  | 23,115                            | (46)  | 1,436    | (38)  |
| All other injury                         | 19,207                          | (63)  | 11,956                            | (60)  | 2,549    | (29)  |
| Other injury                             | 17,123                          | (67)  | 11,146                            | (61)  | 267      | (84)  |
| Poisoning, drugs                         | 5,263                           | (89)  | 3,379                             | (82)  | 4,038    | (25)  |
| Poisoning, nondrug                       | 4,509                           | (93)  | 3,191                             | (83)  | 503      | (68)  |
| <b>Mental disorders</b>                  |                                 |       |                                   |       |          |       |
| Anxiety                                  | 475,546                         | (6)   | 68,672                            | (20)  | 28,738   | (4)   |
| Substance abuse dis                      | 395,021                         | (7)   | 36,276                            | (36)  | 53,589   | (1)   |
| Adjustment                               | 385,122                         | (8)   | 89,563                            | (15)  | 26,456   | (5)   |
| Mood                                     | 377,334                         | (9)   | 61,996                            | (23)  | 51,694   | (2)   |
| Other mental dis                         | 146,775                         | (23)  | 57,021                            | (27)  | 2,915    | (28)  |
| Tobacco dependence                       | 33,575                          | (49)  | 21,178                            | (48)  | 0        | (139) |
| Psychotic                                | 23,234                          | (58)  | 3,007                             | (84)  | 9,128    | (11)  |
| Personality                              | 11,609                          | (75)  | 3,410                             | (80)  | 1,076    | (47)  |
| Somatoform                               | 6,191                           | (87)  | 1,880                             | (94)  | 409      | (75)  |
| <b>Musculoskeletal diseases</b>          |                                 |       |                                   |       |          |       |
| Other back problems                      | 837,471                         | (1)   | 201,190                           | (4)   | 8,271    | (14)  |
| Other musculoskel dis                    | 712,298                         | (2)   | 243,638                           | (3)   | 8,926    | (12)  |
| Other knee dis                           | 37,133                          | (47)  | 15,728                            | (57)  | 1,722    | (36)  |
| Other shoulder dis                       | 17,621                          | (65)  | 8,576                             | (64)  | 241      | (87)  |
| Osteoarthritis                           | 15,284                          | (69)  | 8,529                             | (65)  | 742      | (59)  |
| Rheumatoid arthritis                     | 3,705                           | (97)  | 1,167                             | (98)  | 37       | (118) |
| <b>Signs and symptoms</b>                |                                 |       |                                   |       |          |       |
| Other signs/symptoms                     | 575,183                         | (3)   | 281,678                           | (1)   | 5,418    | (20)  |
| Abdomen and pelvis                       | 222,643                         | (14)  | 131,931                           | (10)  | 2,347    | (30)  |
| Respiratory and chest                    | 180,969                         | (16)  | 105,995                           | (12)  | 3,089    | (27)  |
| <b>Sense organ diseases</b>              |                                 |       |                                   |       |          |       |
| Refraction/accom                         | 196,430                         | (15)  | 149,972                           | (6)   | 2        | (137) |
| Other sense organ dis                    | 179,003                         | (17)  | 111,422                           | (11)  | 802      | (56)  |
| Hearing disorders                        | 61,504                          | (36)  | 36,679                            | (35)  | 23       | (122) |
| Glaucoma                                 | 14,285                          | (70)  | 8,495                             | (66)  | 18       | (126) |
| Cataracts                                | 1,694                           | (112) | 888                               | (103) | 5        | (134) |
| <b>Respiratory infections</b>            |                                 |       |                                   |       |          |       |
| Upper resp infections                    | 331,253                         | (11)  | 243,773                           | (2)   | 794      | (57)  |
| Lower resp infections                    | 64,416                          | (35)  | 40,122                            | (32)  | 4,206    | (23)  |
| Otitis media                             | 34,858                          | (48)  | 26,771                            | (42)  | 75       | (109) |
| <b>Skin diseases</b>                     |                                 |       |                                   |       |          |       |
| Other skin diseases                      | 282,867                         | (12)  | 152,641                           | (5)   | 8,682    | (13)  |
| Contact dermatitis                       | 56,612                          | (38)  | 41,666                            | (31)  | 71       | (111) |
| Sebaceous gland dis                      | 54,509                          | (39)  | 32,872                            | (39)  | 26       | (120) |
| <b>Neurologic conditions</b>             |                                 |       |                                   |       |          |       |
| Organic sleep dis                        | 231,805                         | (13)  | 61,350                            | (24)  | 617      | (62)  |
| Other neurologic cond                    | 81,274                          | (31)  | 30,249                            | (40)  | 5,114    | (21)  |
| Mononeuritis, limbs                      | 16,390                          | (68)  | 7,809                             | (67)  | 271      | (83)  |
| Epilepsy                                 | 8,597                           | (83)  | 2,607                             | (87)  | 827      | (54)  |
| Multiple sclerosis                       | 3,670                           | (98)  | 662                               | (106) | 478      | (71)  |
| Parkinson disease                        | 293                             | (133) | 65                                | (131) | 2        | (136) |
| <b>Respiratory diseases</b>              |                                 |       |                                   |       |          |       |
| Allergic rhinitis                        | 98,351                          | (28)  | 46,658                            | (28)  | 46       | (114) |
| Other respiratory dis                    | 67,131                          | (34)  | 37,379                            | (34)  | 4,119    | (24)  |
| Chronic sinusitis                        | 45,112                          | (42)  | 34,108                            | (37)  | 277      | (81)  |
| Asthma                                   | 39,359                          | (45)  | 17,783                            | (52)  | 439      | (74)  |
| COPD                                     | 31,394                          | (50)  | 25,453                            | (44)  | 221      | (94)  |
| <b>Genitourinary diseases</b>            |                                 |       |                                   |       |          |       |
| Other genitourinary dis                  | 162,160                         | (19)  | 88,736                            | (16)  | 3,633    | (26)  |
| Female genital pain                      | 28,479                          | (53)  | 16,262                            | (56)  | 399      | (76)  |
| Kidney stones                            | 24,061                          | (56)  | 8,892                             | (63)  | 1,228    | (44)  |
| Menstrual disorders                      | 23,248                          | (57)  | 14,613                            | (59)  | 591      | (66)  |
| Other breast disorders                   | 20,227                          | (62)  | 10,562                            | (62)  | 454      | (72)  |
| Nephritis/nephrosis                      | 8,250                           | (85)  | 2,267                             | (89)  | 1,021    | (49)  |
| Benign prostatic hyper                   | 3,262                           | (101) | 2,218                             | (91)  | 40       | (115) |
| <b>Digestive diseases</b>                |                                 |       |                                   |       |          |       |
| Other digestive dis                      | 125,508                         | (25)  | 62,670                            | (22)  | 14,166   | (7)   |
| Other gastroent/colitis                  | 75,161                          | (33)  | 60,595                            | (25)  | 940      | (51)  |
| Esophagus disease                        | 40,129                          | (44)  | 25,739                            | (43)  | 1,073    | (48)  |
| Inguinal hernia                          | 14,078                          | (72)  | 6,096                             | (73)  | 616      | (63)  |
| Appendicitis                             | 6,188                           | (88)  | 3,381                             | (81)  | 5,906    | (19)  |
| Cirrhosis of the liver                   | 2,072                           | (109) | 1,379                             | (97)  | 78       | (106) |
| Peptic ulcer disease                     | 1,752                           | (111) | 1,053                             | (102) | 507      | (67)  |
| <b>Infectious and parasitic diseases</b> |                                 |       |                                   |       |          |       |
| Other infect/para dis                    | 158,815                         | (22)  | 103,911                           | (13)  | 4,635    | (22)  |
| Unspec viral infection                   | 45,233                          | (41)  | 38,915                            | (33)  | 274      | (82)  |
| STDs                                     | 24,465                          | (55)  | 17,931                            | (51)  | 668      | (60)  |
| Diarrheal diseases                       | 17,728                          | (64)  | 15,366                            | (58)  | 1,239    | (43)  |
| Chlamydia                                | 8,953                           | (80)  | 7,534                             | (68)  | 14       | (129) |
| Hepatitis B and C                        | 3,173                           | (102) | 1,065                             | (101) | 28       | (119) |
| Tuberculosis                             | 753                             | (118) | 378                               | (115) | 76       | (108) |
| Malaria                                  | 420                             | (126) | 133                               | (125) | 240      | (90)  |
| Bacterial meningitis                     | 228                             | (135) | 73                                | (129) | 100      | (104) |
| Intest nematode infect                   | 226                             | (136) | 185                               | (122) | 17       | (127) |
| Tropical cluster                         | 191                             | (137) | 64                                | (132) | 38       | (117) |
| <b>Cardiovascular diseases</b>           |                                 |       |                                   |       |          |       |
| Other cardiovasc dis                     | 87,974                          | (30)  | 43,841                            | (29)  | 6,338    | (17)  |
| Essential hypertension                   | 79,667                          | (32)  | 42,301                            | (30)  | 240      | (88)  |
| Ischemic heart disease                   | 8,936                           | (81)  | 3,437                             | (79)  | 1,464    | (37)  |
| Cerebrovascular dis                      | 8,581                           | (84)  | 2,224                             | (90)  | 1,786    | (35)  |
| Inflammatory                             | 1,199                           | (115) | 472                               | (110) | 595      | (65)  |
| Rheumatic heart dis                      | 519                             | (123) | 391                               | (112) | 38       | (116) |

<sup>a</sup>Major categories and conditions defined in the Global Burden of Disease study<sup>1</sup>

<sup>b</sup>Medical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition)

<sup>c</sup>Individuals with at least one hospitalization or ambulatory visit for the condition

**TABLE 1.** Health care burdens attributable to various diseases and injuries, U.S. Armed Forces, 2011

| Major category condition <sup>a</sup>                             | Medical encounters <sup>b</sup> |       | Individuals affected <sup>c</sup> |       | Bed days |       |
|-------------------------------------------------------------------|---------------------------------|-------|-----------------------------------|-------|----------|-------|
|                                                                   | No.                             | Rank  | No.                               | Rank  | No.      | Rank  |
| <b>Maternal conditions</b>                                        |                                 |       |                                   |       |          |       |
| Pregnancy compl                                                   | 112,531                         | (26)  | 24,387                            | (45)  | 18,759   | (6)   |
| Delivery                                                          | 59,012                          | (37)  | 18,977                            | (50)  | 39,169   | (3)   |
| Ectopic/miscarriage/abortion                                      | 9,120                           | (78)  | 4,090                             | (78)  | 826      | (55)  |
| Puerperium compl                                                  | 2,723                           | (105) | 1,795                             | (95)  | 667      | (61)  |
| Other maternal dis                                                | 71                              | (138) | 36                                | (136) | 81       | (105) |
| <b>Headache</b>                                                   |                                 |       |                                   |       |          |       |
| Headache                                                          | 161,322                         | (20)  | 76,362                            | (17)  | 1,312    | (41)  |
| <b>Other neoplasms</b>                                            |                                 |       |                                   |       |          |       |
| Other neoplasms                                                   | 51,013                          | (40)  | 32,954                            | (38)  | 2,124    | (34)  |
| Benign skin neoplasm                                              | 20,984                          | (60)  | 16,784                            | (53)  | 10       | (133) |
| Lipoma                                                            | 9,883                           | (76)  | 6,282                             | (72)  | 77       | (107) |
| Uterine leiomyoma                                                 | 4,827                           | (91)  | 2,195                             | (92)  | 1,320    | (40)  |
| <b>Metabolic and immunity disorders</b>                           |                                 |       |                                   |       |          |       |
| Lipoid metabolism dis                                             | 38,209                          | (46)  | 28,624                            | (41)  | 20       | (125) |
| Other metabolic dis                                               | 12,965                          | (73)  | 6,944                             | (71)  | 503      | (69)  |
| Immunity disorders                                                | 1,007                           | (117) | 249                               | (120) | 136      | (100) |
| <b>Malignant neoplasms</b>                                        |                                 |       |                                   |       |          |       |
| Lymphoma/myeloma                                                  | 8,969                           | (79)  | 777                               | (104) | 1,016    | (50)  |
| Other mal neoplasms                                               | 6,722                           | (86)  | 1,138                             | (100) | 1,398    | (39)  |
| Melanoma/skin cancer                                              | 5,022                           | (90)  | 2,286                             | (88)  | 169      | (96)  |
| Leukemia                                                          | 4,360                           | (94)  | 233                               | (121) | 1,257    | (42)  |
| Testicular cancer                                                 | 3,887                           | (96)  | 730                               | (105) | 293      | (80)  |
| Breast cancer                                                     | 3,506                           | (99)  | 387                               | (113) | 108      | (102) |
| Colon/rectum cancers                                              | 3,020                           | (103) | 276                               | (117) | 887      | (52)  |
| Brain                                                             | 2,980                           | (104) | 261                               | (119) | 602      | (64)  |
| Thyroid                                                           | 2,198                           | (108) | 540                               | (109) | 375      | (78)  |
| Prostate cancer                                                   | 1,857                           | (110) | 347                               | (116) | 241      | (86)  |
| Mouth/oropharynx                                                  | 1,523                           | (113) | 180                               | (123) | 167      | (97)  |
| Trachea,bronchus,lung                                             | 733                             | (119) | 91                                | (128) | 222      | (93)  |
| Pancreas cancer                                                   | 528                             | (122) | 33                                | (137) | 443      | (73)  |
| Bladder cancer                                                    | 374                             | (127) | 106                               | (126) | 49       | (112) |
| Cervix uteri cancer                                               | 370                             | (128) | 37                                | (135) | 10       | (132) |
| Liver cancer                                                      | 359                             | (129) | 44                                | (133) | 158      | (98)  |
| Ovary cancer                                                      | 345                             | (131) | 70                                | (130) | 104      | (103) |
| Stomach cancer                                                    | 304                             | (132) | 42                                | (134) | 375      | (77)  |
| Esophagus cancer                                                  | 285                             | (134) | 13                                | (139) | 144      | (99)  |
| Corpus uteri cancer                                               | 25                              | (139) | 13                                | (138) | 12       | (131) |
| <b>Endocrine disorders</b>                                        |                                 |       |                                   |       |          |       |
| Other endocrine dis                                               | 17,565                          | (66)  | 7,362                             | (70)  | 240      | (89)  |
| Hypothyroidism                                                    | 14,147                          | (71)  | 7,521                             | (69)  | 20       | (124) |
| Other thyroid disorders                                           | 12,956                          | (74)  | 5,268                             | (75)  | 502      | (70)  |
| <b>Oral conditions</b>                                            |                                 |       |                                   |       |          |       |
| Other oral conditions                                             | 29,170                          | (52)  | 21,042                            | (49)  | 2,260    | (32)  |
| Dental caries                                                     | 700                             | (120) | 618                               | (108) | 14       | (130) |
| Periodontal disease                                               | 691                             | (121) | 638                               | (107) | 16       | (128) |
| <b>Congenital anomalies</b>                                       |                                 |       |                                   |       |          |       |
| Other congenital anomalies                                        | 26,341                          | (54)  | 16,519                            | (54)  | 1,210    | (46)  |
| Congenital heart dis                                              | 2,300                           | (107) | 1,144                             | (99)  | 234      | (91)  |
| Other circulatory anomalies                                       | 1,140                           | (116) | 413                               | (111) | 229      | (92)  |
| <b>Blood disorders</b>                                            |                                 |       |                                   |       |          |       |
| Other blood disorders                                             | 9,764                           | (77)  | 4,605                             | (77)  | 874      | (53)  |
| Other non-deficiency anemias                                      | 8,845                           | (82)  | 5,096                             | (76)  | 331      | (79)  |
| Iron-deficiency anemia                                            | 4,310                           | (95)  | 2,193                             | (93)  | 123      | (101) |
| Hereditary anemias                                                | 3,429                           | (100) | 2,858                             | (85)  | 47       | (113) |
| Other deficiency anemias                                          | 462                             | (124) | 263                               | (118) | 0        | (138) |
| <b>Nutritional disorders</b>                                      |                                 |       |                                   |       |          |       |
| Overweight, obesity                                               | 20,980                          | (61)  | 16,433                            | (55)  | 245      | (85)  |
| Other nutritional dis                                             | 4,528                           | (92)  | 2,835                             | (86)  | 4        | (135) |
| Protein-energy malnutrition                                       | 359                             | (130) | 92                                | (127) | 22       | (123) |
| <b>Diabetes mellitus</b>                                          |                                 |       |                                   |       |          |       |
| Diabetes mellitus                                                 | 21,516                          | (59)  | 5,708                             | (74)  | 790      | (58)  |
| <b>Conditions arising during the perinatal period<sup>d</sup></b> |                                 |       |                                   |       |          |       |
| Other perinatal anom                                              | 2,346                           | (106) | 1,413                             | (96)  | 74       | (110) |
| Low birth weight                                                  | 1,408                           | (114) | 383                               | (114) | 23       | (121) |
| Birth asphyxia/trauma                                             | 450                             | (125) | 176                               | (124) | 183      | (95)  |

<sup>a</sup>Major categories and conditions defined in the Global Burden of Disease study<sup>1</sup><sup>b</sup>Medical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition)<sup>c</sup>Individuals with at least one hospitalization or ambulatory visit for the condition<sup>d</sup>Conditions affecting newborns erroneously coded on service members medical records

substance abuse disorders, other back problems and mood disorders) accounted for 24 percent all lost duty days (**Table 1, Figure 4**).

#### Relationships between health care burden indicators:

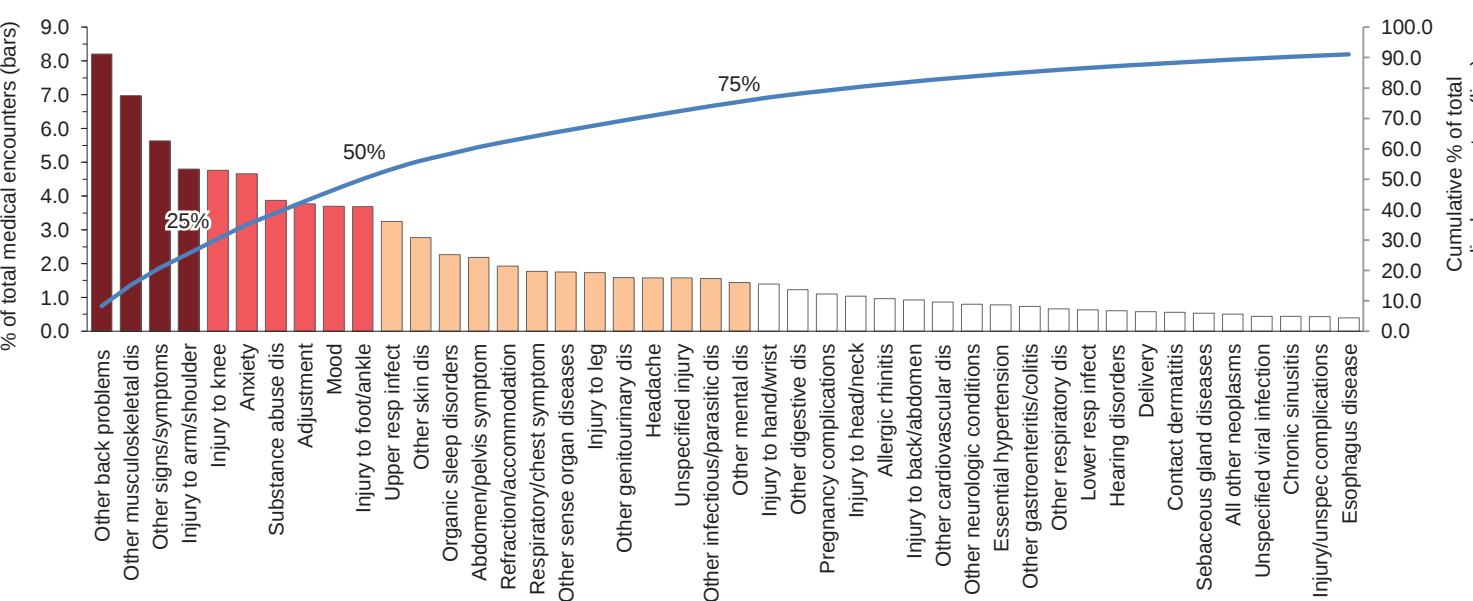
There was a strong correlation between the number of medical encounters attributable to various conditions and the number of individuals affected by the conditions ( $r=0.88$ ). For example, the three leading causes of medical encounters were among the four conditions that affected

the most individuals (**Table 1**). There was also a strong relationship between lost duty days attributable to conditions and medical encounters attributable to ( $r=0.85$ ) the same conditions. For example, of the 10 conditions that resulted in the most lost duty, seven were among the top ten leading causes of medical encounters. In contrast, there were not strong relationships between the hospital bed days attributable to conditions and either the numbers of individuals affected by ( $r=0.23$ ) or medical encounters attributable to ( $r=0.48$ ) the

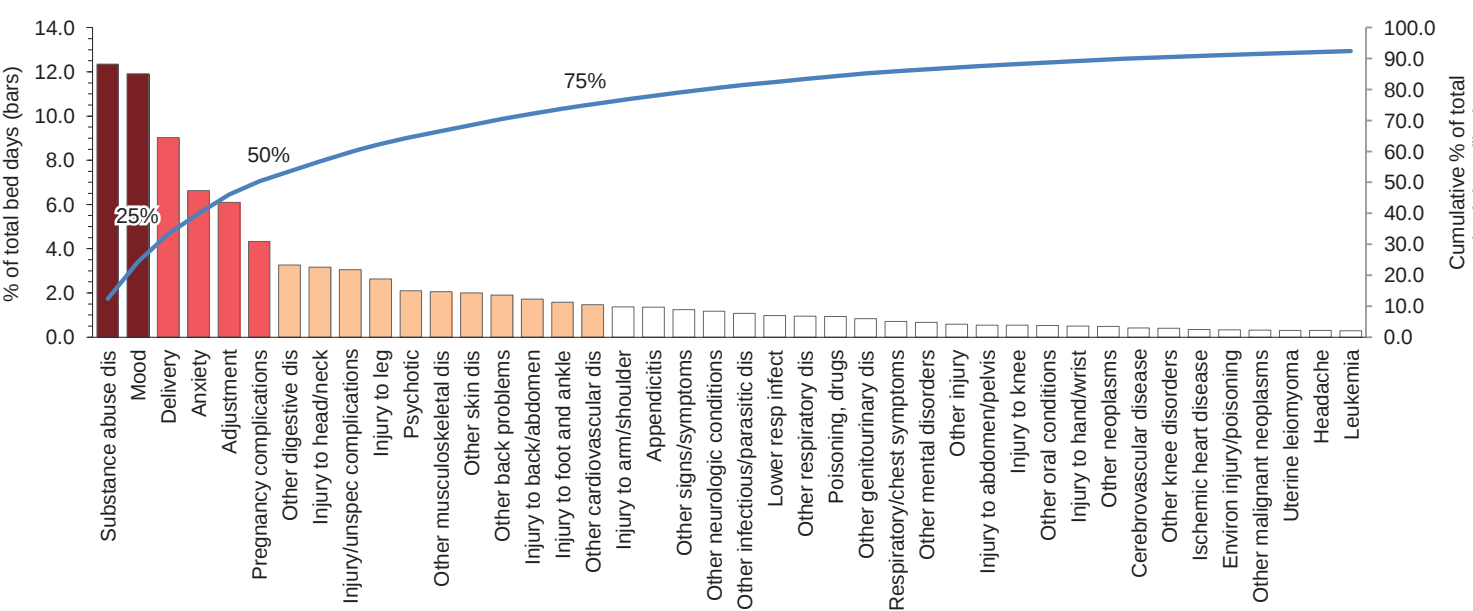
same conditions. For example, delivery and substance abuse disorders were among the top three sources of hospital bed days; however, these conditions affected relatively few service members (**Table 1**).

Finally, four conditions were among the top 15 in relation to all four burden measures: adjustment disorder, "all other musculoskeletal diseases", "other back problems" and "all other skin diseases." Another five conditions were among the top 20 in relation to all burden measures: three injuries (arm/shoulder, foot/ankle,

**FIGURE 2.** Percentage and cumulative percentage distribution, burden categories that accounted for the most medical encounters among U.S. service members, 2011



**FIGURE 3.** Percentage and cumulative percentage distribution, burden categories that accounted for the most hospital bed days among U.S. service members, 2011



and leg), anxiety disorder, and “all other signs and symptoms” (Table 1).

**EDITORIAL COMMENT**

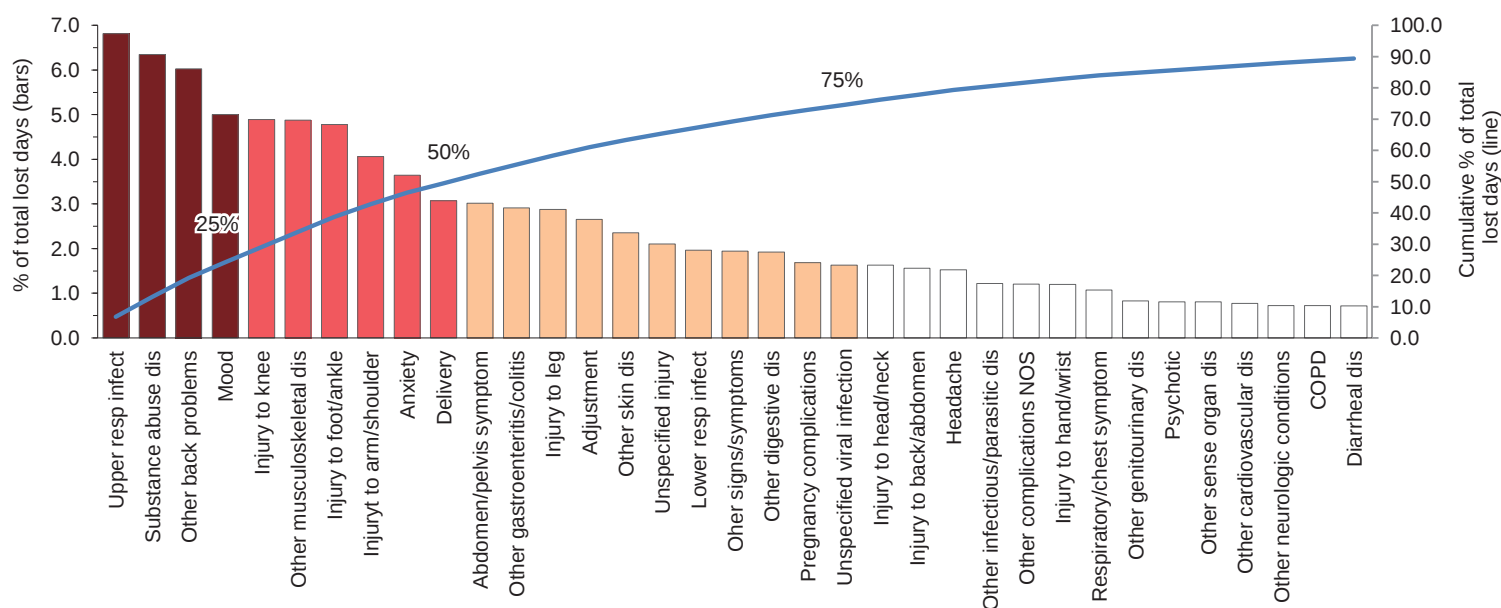
This report reiterates the major findings of prior annual reports regarding morbidity and health care burdens among U.S.

military members. In particular, the report documents that a majority of the morbidity and health care burden that affects U.S. military members is attributable to remarkably few (i.e., less than 8%) of the 139 burden of disease-defining conditions considered in the analysis.

In 2011 as in prior years, musculoskeletal disorders (particularly of the back),

injuries (particularly of the shoulder, knee and ankle), mental disorders (particularly substance abuse, and disorders of mood, anxiety, and adjustment), and pregnancy and delivery-related conditions accounted for relatively large proportions of the morbidity and health care burdens that affected U.S. military members. For example, in 2011, substance abuse, mood, anxiety, and

**FIGURE 4.** Percentage and cumulative percentage distribution, burden categories that accounted for the most lost days among U.S. service members, 2011



adjustment disorders accounted for 622 person-years of lost duty due to hospitalization, convalescence, and limited duty dispositions; together, these four mental disorders and two pregnancy/delivery-related conditions accounted for more than one-half of all hospital bed days among active component members. Of note in this regard, since 2005, there has been a steep increase in hospital bed days due to mental disorders; in sharp contrast, bed days related to pregnancy and delivery have been remarkably stable since 2001.

Also, in 2011, ten burden of disease-defined conditions accounted for more than one-half of all illness and injury-related medical encounters of active component members. The ten conditions that accounted for the most medical encounters overall included four mental disorders (anxiety, substance abuse, adjustment, and mood), three anatomic site-defined injuries (arm/shoulder; knee, and foot/ankle), and two musculoskeletal disorders (back and disorders of “other” joints, muscles, tendons, soft tissues).

Throughout military history, mental disorders (including substance abuse disorders), injuries and musculoskeletal

disorders of the back have been leading causes of morbidity and lost duty time among service members.<sup>3-7</sup> As noted many times in the past, the prevention, treatment, and rehabilitation of back problems and joint injuries, and the detection, characterization, and management of mental disorders – including substance abuse and deployment stress-related disorders, e.g., PTSD – should have the highest priorities for military medical research, public health, and force health protection programs.

In summary, this analysis, like those of recent years, documents that a relatively few illnesses and injuries account for most of the morbidity and health care burdens that affect U.S. military members. Illnesses and injuries that account for disproportionately large morbidity and health care burdens should be targeted to determine their susceptibilities to primary, secondary, and tertiary prevention efforts and given high priorities for prevention resources.

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# Hospitalizations Among Members of the Active Component, U.S. Armed Forces, 2011

This report documents the frequencies, rates, trends, and distributions of hospitalizations of active component members of the U.S. Armed Forces during calendar year 2011. Summaries are based on standardized records of hospitalizations at U.S. military and non-military (reimbursed care) medical facilities worldwide. For this report, primary (first-listed) discharge diagnoses are considered indicative of the primary reasons for hospitalizations; summaries are based on the first three digits of ICD-9-CM codes used to report primary discharge diagnoses. Hospitalizations not routinely documented with standardized, automated records (e.g., during deployments, field training exercises, shipboard) are not centrally available for health surveillance purposes and thus are not included in this report.

## Frequencies, rates, and trends:

In 2011 there were 99,412 reports of hospitalizations of active component

members of the U.S. Army, Navy, Air Force, Marine Corps, and Coast Guard; 27 percent of the hospitalizations were in non-military facilities (**Table 1, Figure 1**). The hospitalization rate (all causes) was 68.2 per 1,000 service members per year. The annual hospitalization rate (all causes) was higher during 2011 compared to the previous years (overall hospitalization rate minimum: 54.9 per 1,000 person-years [p-yrs], 2006; maximum: 68.2 per 1,000 p-yrs, 2011) (**Figure 1**).

## Hospitalizations, by illness and injury categories:

As in prior years, in 2011 three diagnostic categories accounted for more than one-half (54.5%) of all hospitalizations of active component members: mental disorders (21.9%), pregnancy and delivery-related conditions (19.8%), and injuries and poisonings (12.8%) (**Table 1**). In contrast to 2007 and 2009, in 2011 there were more hospitalizations for mental disorders than for any other major category of illnesses or injuries (per the ICD-9-CM).

From 2007 to 2011, numbers of hospitalizations increased in 15 and decreased in two major categories of illnesses and injuries. The largest percentage increases between 2007 and 2011 were for “other” or V-coded hospitalizations (primarily orthopedic aftercare and rehabilitation following a previous illness or injury) (hosp diff, 2007-2011: +1,592; +66.3%) and for mental disorders (hosp diff, 2007-2011: +7,623; +54.0%). The only percentage decreases during the same period were for the skin and subcutaneous tissue (hosp diff, 2007-2011: -171; -7.3%) and injury and poisoning (hosp diff, 2007-2011: -354; -2.7%) categories (**Table 1**).

## Hospitalizations, by gender:

In 2011, the hospitalization rate (all causes) was more than two times higher among females than males (hospitalization rate, overall: females: 162.0 per 1,000 p-yrs; males: 52.3 per 1,000 p-yrs); however, pregnancy and delivery accounted for 57.8

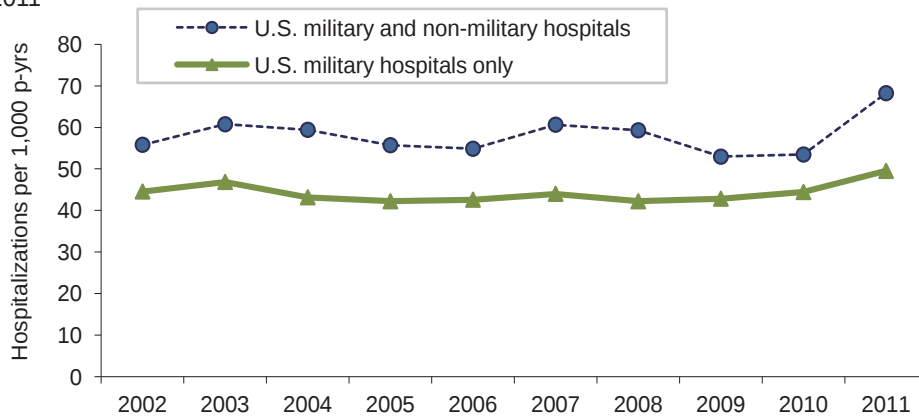
**TABLE 1.** Hospitalizations, ICD-9-CM major diagnostic categories, active component, U.S. Armed Forces, 2007, 2009, and 2011

| Major diagnostic category (ICD-9-CM)                            | 2007   |                   |      | 2009   |                   |      | 2011   |                   |      |
|-----------------------------------------------------------------|--------|-------------------|------|--------|-------------------|------|--------|-------------------|------|
|                                                                 | No.    | Rate <sup>a</sup> | Rank | No.    | Rate <sup>a</sup> | Rank | No.    | Rate <sup>a</sup> | Rank |
| Mental disorders (290-319)                                      | 14,112 | 10.1              | (2)  | 15,339 | 10.4              | (2)  | 21,735 | 14.9              | (1)  |
| Pregnancy and delivery (630-679, relevant V-codes) <sup>b</sup> | 18,326 | 13.1 (91.4)       | (1)  | 16,009 | 10.9 (76.4)       | (1)  | 19,722 | 13.5 (93.6)       | (2)  |
| Injury and poisoning (800-999)                                  | 13,095 | 9.4               | (3)  | 10,063 | 6.8               | (3)  | 12,741 | 8.7               | (3)  |
| Digestive system (520-579)                                      | 7,520  | 5.4               | (5)  | 7,001  | 4.8               | (4)  | 9,049  | 6.2               | (4)  |
| Musculoskeletal system/connective tissue (710-739)              | 7,643  | 5.5               | (4)  | 6,721  | 4.6               | (5)  | 7,885  | 5.4               | (5)  |
| Signs, symptoms, ill-defined conditions (780-799)               | 4,410  | 3.1               | (6)  | 4,033  | 2.7               | (6)  | 4,916  | 3.4               | (6)  |
| Other (V01-V82, except pregnancy-related)                       | 2,402  | 1.7               | (10) | 2,387  | 1.6               | (10) | 3,994  | 2.7               | (7)  |
| Respiratory system (460-519)                                    | 2,966  | 2.1               | (7)  | 3,268  | 2.2               | (7)  | 3,090  | 2.1               | (8)  |
| Circulatory system (390-459)                                    | 2,645  | 1.9               | (9)  | 2,483  | 1.7               | (8)  | 3,027  | 2.1               | (9)  |
| Genitourinary system (580-629)                                  | 2,831  | 2.0               | (8)  | 2,483  | 1.7               | (9)  | 3,002  | 2.1               | (10) |
| Nervous system (320-389)                                        | 1,782  | 1.3               | (13) | 1,755  | 1.2               | (13) | 2,429  | 1.7               | (11) |
| Neoplasms (140-239)                                             | 2,024  | 1.4               | (12) | 1,821  | 1.2               | (12) | 2,238  | 1.5               | (12) |
| Skin and subcutaneous tissue (680-709)                          | 2,353  | 1.7               | (11) | 1,984  | 1.4               | (11) | 2,182  | 1.5               | (13) |
| Infectious and parasitic diseases (001-139)                     | 1,342  | 1.0               | (14) | 1,119  | 0.8               | (14) | 1,546  | 1.1               | (14) |
| Endocrine, nutrition, immunity (240-279)                        | 830    | 0.6               | (15) | 804    | 0.5               | (15) | 1,005  | 0.7               | (15) |
| Congenital anomalies (740-759)                                  | 337    | 0.2               | (16) | 309    | 0.2               | (17) | 469    | 0.3               | (16) |
| Hematologic disorders (280-289)                                 | 318    | 0.2               | (17) | 326    | 0.2               | (16) | 382    | 0.3               | (17) |
| Total                                                           | 84,936 | 60.7              |      | 77,905 | 53.0              |      | 99,412 | 68.2              |      |

<sup>a</sup>Rates are expressed as hospitalizations per 1,000 p-yrs

<sup>b</sup>Rate of pregnancy and delivery-related hospitalizations among females only (in parentheses)

**FIGURE 1.** Rate of hospitalization by year, active component, U.S. Armed Forces, 2002-2011



percent of all hospitalizations of females. The rate of hospitalizations for conditions not related to pregnancy and delivery was almost one-third (30.6%) higher among females (68.4 per 1,000 per year) than males (**data not shown**).

Hospitalization rates were higher among males than females for injuries and poisonings (male:female [m:f], rate ratio [RR]: 1.45; rate difference [RD]: 2.8 per 1,000 p-yrs), musculoskeletal system/connective tissue disorders (m:f, RR: 1.13; RD: 0.6 per 1,000 p-yrs), and skin and subcutaneous tissue disorders (m:f, RR: 1.64; RD: 0.6 per 1,000 p-yrs). Hospitalization rates were similar among males and females for circulatory disorders (m:f, RR: 1.09; RD: 0.2 per 1,000 p-yrs) and respiratory diseases (m:f, RR: 1.03; RD: 0.1 per 1,000 p-yrs). Hospitalization rates were higher among females than males for the other 12 major disease-specific categories. Of these 12 categories, the largest absolute differences in hospitalization rates between females and males were for genitourinary disorders (RD: 6.2 per 1,000 p-yrs), mental disorders (RD: 4.3 per 1,000 p-yrs), and neoplasms (RD: 3.4 per 1,000 p-yrs) (**data not shown**).

Relationships between age and hospitalization rates significantly varied across illness- and injury-specific categories (**Figure 2**). For example, among both males and females, hospitalization rates sharply increased with age for neoplasms, circulatory, genitourinary, and musculoskeletal system/connective tissue disorders; rates decreased with age for mental disorders; and rates were generally stable across age groups for infectious and parasitic diseases,

digestive disorders, and injuries and poisonings (**Figure 2**).

#### Most frequent diagnoses:

In 2011, seven diagnoses (at the 3-digit level of the ICD-9-CM) each accounted for more than 1,400 hospitalizations among males: adjustment reactions (n=5,503), episodic mood disorders (n=4,142), intervertebral disc disorders (n=2,305), alcohol dependence syndrome (n=2,150), acute appendicitis (n=2,096), symptoms involving the respiratory system (n=1,495), and other cellulitis and abscess (n=1,442). These seven diagnoses accounted for 30 percent of all hospitalizations of males in 2011 (**Table 2**).

In 2011, pregnancy and delivery-related conditions accounted for 58 percent of all hospitalizations of females (**Table 3**). Other than pregnancy and delivery-related diagnoses, leading causes of hospitalizations of females were adjustment reactions (n=1,359), episodic mood disorders (n=1,158), uterine leiomyoma (n=541), depressive disorder (n=338), acute appendicitis (n=324), and intervertebral disc disorders (n=295). These six diagnoses accounted for 28 percent of all hospitalizations (not related to pregnancy/delivery) of females (**Table 3**).

#### Mental health conditions:

In 2011 mental disorders accounted for more hospitalizations of U.S. service members than any other major category of diagnoses (**Table 1**). Adjustment reactions (including post-traumatic stress disorder)

and episodic mood disorders were associated with more hospitalizations among active component members than any other specific condition (at the 3-digit level); together, these two conditions accounted for 15 percent and 17 percent of all hospitalizations of males and females (excluding pregnancy and delivery-related), respectively (**Tables 2,3**).

#### Injuries and poisonings:

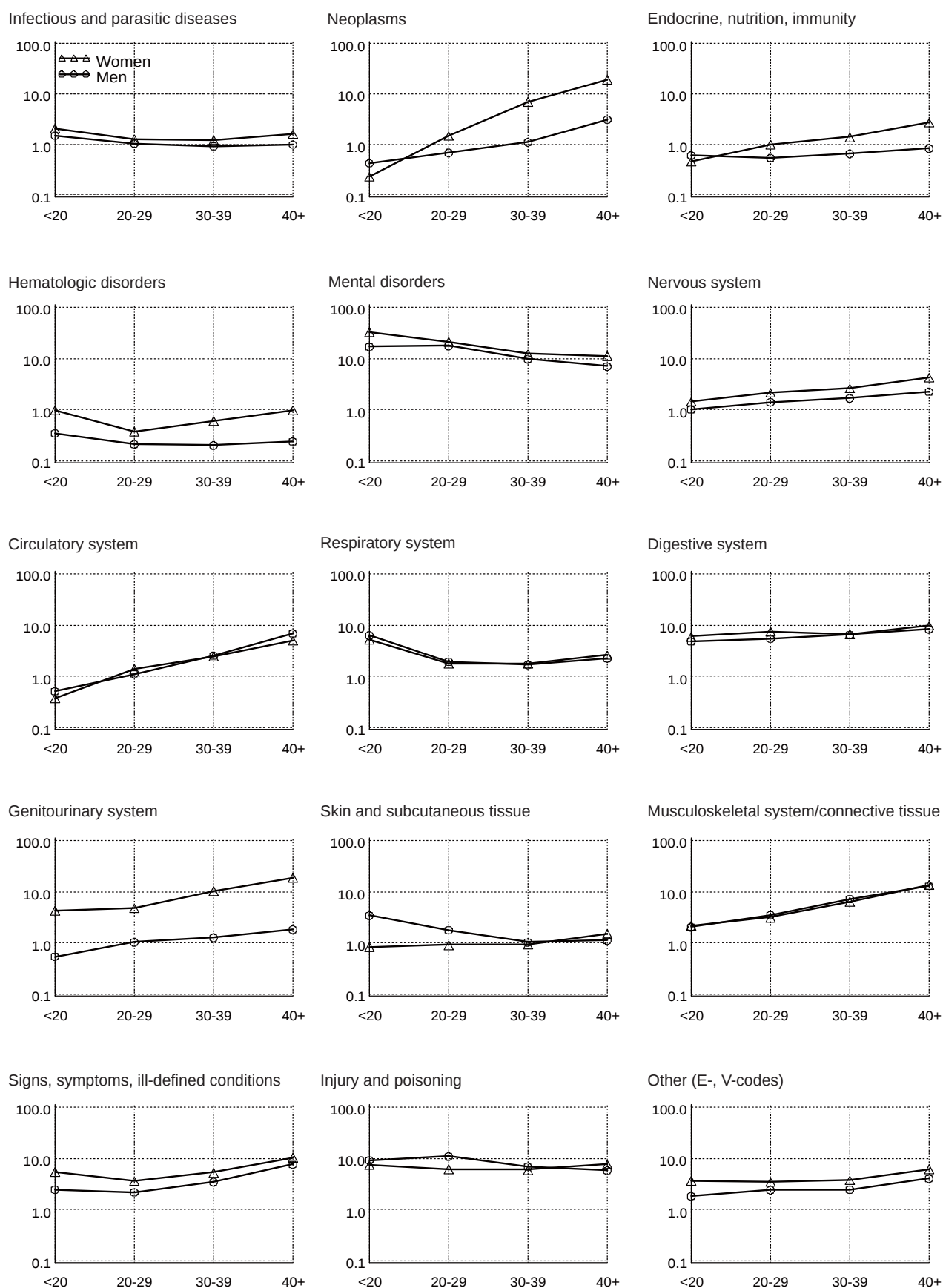
As in the past, in 2011, injuries and poisonings were a leading cause of hospitalizations of U.S. military members (**Table 1**). Of all injuries and poisonings that resulted in hospitalizations in U.S. military medical facilities (n=9,286), approximately one in seven (n=1,367; 14.7%) were reported as “intentionally inflicted” (e.g., enemy weapons; suicide gestures/attempts; fights, assaults, legal interventions) of which the majority (n=851; 62.3%) were reported as “battle casualties” (**Table 4**). Of all “unintentional” injuries and poisonings that resulted in hospitalizations in U.S. military facilities (n=7,885), approximately two-thirds (63.2%) were considered caused by falls and miscellaneous (n=2,011), complications of medical or surgical care (n=1,626), or guns and explosives (n=1,350) (**Table 4**).

Among males, injury and poisoning-related hospitalizations were most often related to complications of medical and surgical procedures and fractures of face, ankle, or leg bones (**Table 2**). Among females, injury and poisoning-related hospitalizations were most often related to complications of medical and surgical procedures, poisonings (analgesics, antipyretics, antirheumatics, psychotropic agents), and ankle fractures (**Table 3**).

#### Durations of hospitalizations:

Since 2002, the median durations of hospitalizations (all causes) have been stable (3 days), but the durations of the longest hospitalizations have increased (**Figure 3**). In 2011 as in previous years, medians and ranges of durations of hospitalizations significantly varied across major diagnostic categories. For example, median lengths of hospitalizations varied from two days (e.g., musculoskeletal system/connective tissue

**FIGURE 2.** Rate (per 1,000 p-yrs) of hospitalization by major diagnostic categories, by age and gender, active component, U.S. Armed Forces, 2011



**TABLE 2.** Most frequent diagnoses during hospitalization by major diagnostic category, males, active component, U.S. Armed Forces, 2011

| Diagnostic category (ICD-9-CM codes) ♂               | No.    | %    |
|------------------------------------------------------|--------|------|
| <b>Infectious and parasitic diseases (001 - 139)</b> | 1,267  |      |
| Intestinal infections due to other organisms         | 212    | 16.7 |
| Meningitis due to enterovirus                        | 187    | 14.8 |
| Septicemia                                           | 184    | 14.5 |
| Ill-defined intestinal infections                    | 122    | 9.6  |
| Viral and chlamydial infection                       | 76     | 6.0  |
| <b>Neoplasms (140 - 239)</b>                         | 1,304  |      |
| Malignant neoplasm of prostate                       | 88     | 6.7  |
| Malignant neoplasm of thyroid gland                  | 84     | 6.4  |
| Malignant neoplasm of brain                          | 80     | 6.1  |
| Malignant neoplasm of testis                         | 72     | 5.5  |
| Malignant neoplasm of colon                          | 45     | 3.5  |
| <b>Endocrine, nutrition, immunity (240 - 279)</b>    | 749    |      |
| Disorders of fluid electrolyte and acid-base balance | 242    | 32.3 |
| Diabetes mellitus                                    | 225    | 30.0 |
| Overweight, obesity and other hyperalimentation      | 60     | 8.0  |
| Nontoxic nodular goiter                              | 47     | 6.3  |
| Thyrotoxicosis with or without goiter                | 43     | 5.7  |
| <b>Hematologic disorders (280 - 289)</b>             | 272    |      |
| Diseases of white blood cells                        | 94     | 34.6 |
| Other diseases of blood and blood-forming organs     | 52     | 19.1 |
| Purpura and other hemorrhagic conditions             | 38     | 14.0 |
| Aplastic anemia                                      | 24     | 8.8  |
| Other and unspecified anemias                        | 24     | 8.8  |
| <b>Mental disorders (290 - 319)</b>                  | 17,819 |      |
| Adjustment reaction                                  | 5,503  | 30.9 |
| Episodic mood disorders                              | 4,142  | 23.2 |
| Alcohol dependence syndrome                          | 2,150  | 12.1 |
| Depressive disorder not elsewhere classified         | 1,209  | 6.8  |
| Nondependent abuse of drugs                          | 1,037  | 5.8  |
| <b>Nervous system (320 - 389)</b>                    | 1,924  |      |
| Pain, not elsewhere classified                       | 354    | 18.4 |
| Organic sleep disorders                              | 289    | 15.0 |
| Epilepsy                                             | 219    | 11.4 |
| Migraine                                             | 161    | 8.4  |
| Other conditions of brain                            | 93     | 4.8  |
| <b>Circulatory system (390 - 459)</b>                | 2,620  |      |
| Cardiac dysrhythmias                                 | 558    | 21.3 |
| Acute pulmonary heart disease                        | 314    | 12.0 |
| Acute myocardial infarction                          | 185    | 7.1  |
| Other forms of chronic ischemic heart disease        | 174    | 6.6  |
| Other venous embolism and thrombosis                 | 149    | 5.7  |
| <b>Respiratory system (460 - 519)</b>                | 2,655  |      |
| Pneumonia organism unspecified                       | 857    | 32.3 |
| Pneumothorax                                         | 202    | 7.6  |
| Deviated nasal septum                                | 169    | 6.4  |
| Other diseases of lung                               | 161    | 6.1  |
| Chronic disease of tonsils and adenoids              | 157    | 5.9  |

| Diagnostic category (ICD-9-CM codes) ♂                         | No.    | %    |
|----------------------------------------------------------------|--------|------|
| <b>Digestive system (520 - 579)</b>                            | 7,502  |      |
| Acute appendicitis                                             | 2,096  | 27.9 |
| Dentofacial anomalies including malocclusion                   | 582    | 7.8  |
| Cholelithiasis                                                 | 491    | 6.5  |
| Diseases of pancreas                                           | 428    | 5.7  |
| Diseases of esophagus                                          | 417    | 5.6  |
| <b>Genitourinary system (580 - 629)</b>                        | 1,442  |      |
| Calculus of kidney and ureter                                  | 445    | 30.9 |
| Acute renal failure                                            | 245    | 17.0 |
| Other disorders of male genital organs                         | 167    | 11.6 |
| Urethral stricture                                             | 105    | 7.3  |
| Other disorders of kidney and ureter                           | 73     | 5.1  |
| <b>Skin and subcutaneous tissue (680 - 709)</b>                | 1,978  |      |
| Other cellulitis and abscess                                   | 1,442  | 72.9 |
| Pilonidal cyst                                                 | 164    | 8.3  |
| Cellulitis and abscess of finger and toe                       | 116    | 5.9  |
| Other disorders of skin and subcutaneous tissue                | 50     | 2.5  |
| Other hypertrophic and atrophic conditions of skin             | 36     | 1.8  |
| <b>Musculoskeletal system/connective tissue (710 - 739)</b>    | 6,857  |      |
| Intervertebral disc disorders                                  | 2,305  | 33.6 |
| Disorders of muscle ligament and fascia                        | 578    | 8.4  |
| Spondylosis and allied disorders                               | 490    | 7.1  |
| Osteoarthritis and allied disorders                            | 431    | 6.3  |
| Other and unspecified disorders of back                        | 428    | 6.2  |
| <b>Congenital anomalies (740 - 759)</b>                        | 365    |      |
| Other congenital musculoskeletal anomalies                     | 91     | 24.9 |
| Anomalies of bulbus cordis, cardiac septal closure             | 43     | 11.8 |
| Other congenital anomalies of digestive system                 | 33     | 9.0  |
| Other congenital anomalies of heart                            | 32     | 8.8  |
| Other congenital anomalies of circulatory system               | 30     | 8.2  |
| <b>Signs, symptoms, and ill-defined conditions (780 - 799)</b> | 3,915  |      |
| Symptoms involving respiratory system                          | 1,495  | 38.2 |
| General symptoms                                               | 1,213  | 31.0 |
| Other symptoms involving abdomen and pelvis                    | 510    | 13.0 |
| Symptoms involving head and neck                               | 174    | 4.4  |
| Symptoms involving digestive system                            | 146    | 3.7  |
| <b>Injury and poisoning (800 - 999)</b>                        | 11,410 |      |
| Other complications of procedures not elsewhere classified     | 972    | 8.5  |
| Fracture of ankle                                              | 580    | 5.1  |
| Complications peculiar to certain specified procedures         | 511    | 4.5  |
| Fracture of face bones                                         | 474    | 4.2  |
| Fracture of tibia and fibula                                   | 453    | 4.0  |
| <b>Other (V01-V82, except pregnancy-related)</b>               | 3,199  |      |
| Encounter for other and unspecified procedures, aftercare      | 1,008  | 31.5 |
| Observation, evaluation for suspected conditions not found     | 500    | 15.6 |
| Convalescence and palliative care                              | 422    | 13.2 |
| Care involving use of rehabilitation procedures                | 396    | 12.4 |
| Other orthopedic aftercare                                     | 385    | 12.0 |

**TABLE 3.** Most frequent diagnoses during hospitalization by major diagnostic category, females, active component, U.S. Armed Forces, 2011

| Diagnostic category (ICD-9-CM codes)                 | ♀ | No.   | %    |
|------------------------------------------------------|---|-------|------|
| <b>Infectious and parasitic diseases (001 - 139)</b> |   | 279   |      |
| Intestinal infections due to other organisms         |   | 48    | 17.2 |
| Septicemia                                           |   | 47    | 16.8 |
| Meningitis due to enterovirus                        |   | 43    | 15.4 |
| Ill-defined intestinal infections                    |   | 29    | 10.4 |
| Viral and chlamydial infection                       |   | 21    | 7.5  |
| <b>Neoplasms (140 - 239)</b>                         |   | 934   |      |
| Uterine leiomyoma                                    |   | 541   | 57.9 |
| Malignant neoplasm of thyroid gland                  |   | 51    | 5.5  |
| Malignant neoplasm of female breast                  |   | 45    | 4.8  |
| Benign neoplasm of ovary                             |   | 43    | 4.6  |
| Malignant neoplasm of ovary,other uterine adnexa     |   | 23    | 2.5  |
| <b>Endocrine, nutrition, immunity (240 - 279)</b>    |   | 256   |      |
| Disorders of fluid electrolyte and acid-base balance |   | 68    | 26.6 |
| Nontoxic nodular goiter                              |   | 58    | 22.7 |
| Overweight, obesity and other hyperalimentation      |   | 35    | 13.7 |
| Thyrotoxicosis with or without goiter                |   | 31    | 12.1 |
| Diabetes mellitus                                    |   | 15    | 5.9  |
| <b>Hematologic disorders (280 - 289)</b>             |   | 110   |      |
| Iron deficiency anemias                              |   | 39    | 35.5 |
| Other and unspecified anemias                        |   | 19    | 17.3 |
| Purpura and other hemorrhagic conditions             |   | 14    | 12.7 |
| Diseases of white blood cells                        |   | 14    | 12.7 |
| Hereditary hemolytic anemias                         |   | 10    | 9.1  |
| <b>Mental disorders (290 - 319)</b>                  |   | 3,916 |      |
| Adjustment reaction                                  |   | 1,359 | 34.7 |
| Episodic mood disorders                              |   | 1,158 | 29.6 |
| Depressive disorder not elsewhere classified         |   | 338   | 8.6  |
| Alcohol dependence syndrome                          |   | 227   | 5.8  |
| Anxiety, dissociative and somatoform disorders       |   | 226   | 5.8  |
| <b>Nervous system (320 - 389)</b>                    |   | 505   |      |
| Migraine                                             |   | 97    | 19.2 |
| Pain, not elsewhere classified                       |   | 84    | 16.6 |
| Epilepsy                                             |   | 60    | 11.9 |
| Other conditions of brain                            |   | 35    | 6.9  |
| Multiple sclerosis                                   |   | 22    | 4.4  |
| <b>Circulatory system (390 - 459)</b>                |   | 407   |      |
| Acute pulmonary heart disease                        |   | 80    | 19.7 |
| Cardiac dysrhythmias                                 |   | 76    | 18.7 |
| Other venous embolism and thrombosis                 |   | 31    | 7.6  |
| Hemorrhoids                                          |   | 25    | 6.1  |
| Other and ill-defined cerebrovascular disease        |   | 18    | 4.4  |
| <b>Respiratory system (460 - 519)</b>                |   | 435   |      |
| Pneumonia organism unspecified                       |   | 86    | 19.8 |
| Asthma                                               |   | 49    | 11.3 |
| Chronic disease of tonsils and adenoids              |   | 46    | 10.6 |
| Acute tonsillitis                                    |   | 26    | 6.0  |
| Other diseases of lung                               |   | 24    | 5.5  |

| Diagnostic category (ICD-9-CM codes)                            | ♀ | No.    | %    |
|-----------------------------------------------------------------|---|--------|------|
| <b>Digestive system (520 - 579)</b>                             |   | 1,547  |      |
| Acute appendicitis                                              |   | 324    | 20.9 |
| Cholelithiasis                                                  |   | 224    | 14.5 |
| Dentofacial anomalies including malocclusion                    |   | 213    | 13.8 |
| Other and unspecified noninfectious gastroenteritis and colitis |   | 77     | 5.0  |
| Diseases of pancreas                                            |   | 71     | 4.6  |
| <b>Genitourinary system (580 - 629)</b>                         |   | 1,560  |      |
| Disorders of menstruation and other abnormal bleeding           |   | 283    | 18.1 |
| Infections of kidney                                            |   | 192    | 12.3 |
| Pain, other symptoms associated with female genital organs      |   | 178    | 11.4 |
| Noninflammatory disorders of ovary fallopian tube               |   | 155    | 9.9  |
| Other disorders of breast                                       |   | 135    | 8.7  |
| <b>Pregnancy and delivery (630 - 679, relevant V-codes)</b>     |   | 19,722 |      |
| Trauma to perineum and vulva during delivery                    |   | 4,984  | 25.3 |
| Other indications for care or intervention related to labor     |   | 1,624  | 8.2  |
| Other conditions complicating pregnancy                         |   | 1,468  | 7.4  |
| Abnormality of organs and soft tissues of pelvis                |   | 1,400  | 7.1  |
| Hypertension complicating pregnancy, childbirth                 |   | 1,360  | 6.9  |
| <b>Skin and subcutaneous tissue (680 - 709)</b>                 |   | 204    |      |
| Other cellulitis and abscess                                    |   | 116    | 56.9 |
| Pilonidal cyst                                                  |   | 18     | 8.8  |
| Other hypertrophic and atrophic conditions of skin              |   | 11     | 5.4  |
| Erythematous conditions                                         |   | 10     | 4.9  |
| Other disorders of skin and subcutaneous tissue                 |   | 10     | 4.9  |
| <b>Musculoskeletal system/connective tissue (710 - 739)</b>     |   | 1,028  |      |
| Intervertebral disc disorders                                   |   | 295    | 28.7 |
| Other derangement of joint                                      |   | 87     | 8.5  |
| Other and unspecified disorders of back                         |   | 81     | 7.9  |
| Other disorders of bone and cartilage                           |   | 70     | 6.8  |
| Spondylosis and allied disorders                                |   | 59     | 5.7  |
| <b>Signs, symptoms, ill-defined conditions (780 - 799)</b>      |   | 1,001  |      |
| General symptoms                                                |   | 286    | 28.6 |
| Other symptoms involving abdomen and pelvis                     |   | 263    | 26.3 |
| Symptoms involving respiratory system                           |   | 239    | 23.9 |
| Symptoms involving head and neck                                |   | 60     | 6.0  |
| Symptoms involving digestive system                             |   | 48     | 4.8  |
| <b>Injury and poisoning (800 - 999)</b>                         |   | 1,331  |      |
| Other complications of procedures not elsewhere classified      |   | 198    | 14.9 |
| Complications peculiar to certain specified procedures          |   | 104    | 7.8  |
| Poisoning by analgesics antipyretics and antirheumatics         |   | 93     | 7.0  |
| Poisoning by psychotropic agents                                |   | 86     | 6.5  |
| Fracture of ankle                                               |   | 75     | 5.6  |
| <b>Other (V01-V82, except pregnancy-related)</b>                |   | 795    |      |
| Observation and evaluation for suspected conditions not found   |   | 267    | 33.6 |
| Encounter for other and unspecified procedures and aftercare    |   | 185    | 23.3 |
| Convalescence and palliative care                               |   | 101    | 12.7 |
| Care involving use of rehabilitation procedures                 |   | 54     | 6.8  |
| Other orthopedic aftercare                                      |   | 51     | 6.4  |

**TABLE 4.** Injury and poisoning hospitalizations<sup>a</sup> by causal agent<sup>b</sup>, active component, U.S. Armed Forces, 2011

| Cause                                            | No.   | %    |
|--------------------------------------------------|-------|------|
| Unintentional                                    | 7,885 | 84.9 |
| Fall and miscellaneous                           | 2,011 | 21.7 |
| Complications of medical/surgical care           | 1,626 | 17.5 |
| Guns, explosives (includes accidents during war) | 1,350 | 14.5 |
| Land transport                                   | 959   | 10.3 |
| Poisons and fire                                 | 649   | 7.0  |
| Athletics                                        | 436   | 4.7  |
| Environmental                                    | 320   | 3.4  |
| Machinery, tools                                 | 262   | 2.8  |
| Air transport                                    | 245   | 2.6  |
| Water transport                                  | 27    | 0.3  |
| Intentional                                      | 1,367 | 14.7 |
| Battle casualty                                  | 851   | 9.2  |
| Self-inflicted                                   | 416   | 4.5  |
| Non-battle, inflicted by other                   | 100   | 1.1  |
| Missing/invalid code                             | 34    | 0.4  |

<sup>a</sup>Hospitalizations in U.S. military medical facilities only  
<sup>b</sup>Causal agents were determined by codes IAW STANAG 2050

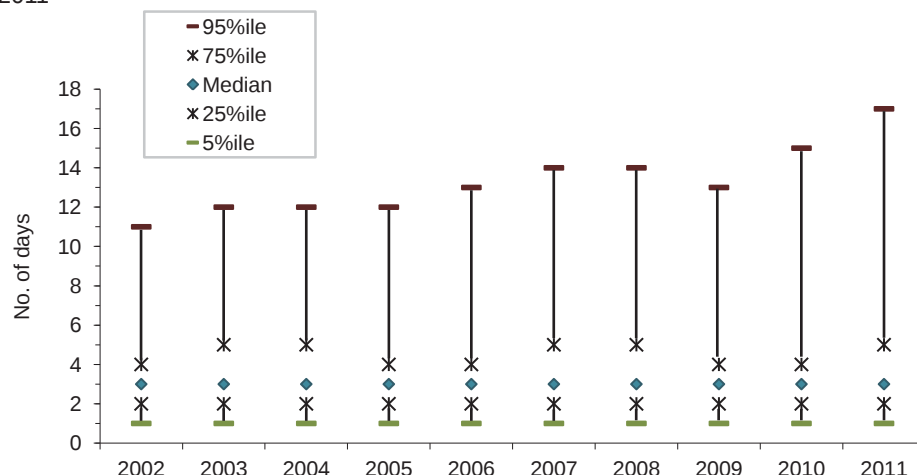
Injuries and poisonings were the second leading cause of hospitalizations in the Marine Corps, the third leading cause in the Army and Navy, and the fifth leading cause in the Air Force and Coast Guard. The hospitalization rate for injuries and poisonings was slightly higher among soldiers (12.6 per 1,000 p-yrs) than Marines (12.2 per 1,000 p-yrs) and more than twice as high among

soldiers and Marines than among members of the other Services (Table 5).

#### EDITORIAL COMMENT

In 2011, for every 15 active component service members, there was one hospitalization for any cause; for every

**FIGURE 3.** Length of hospital stay, by year, active component, U.S. Armed Forces, 2002–2011

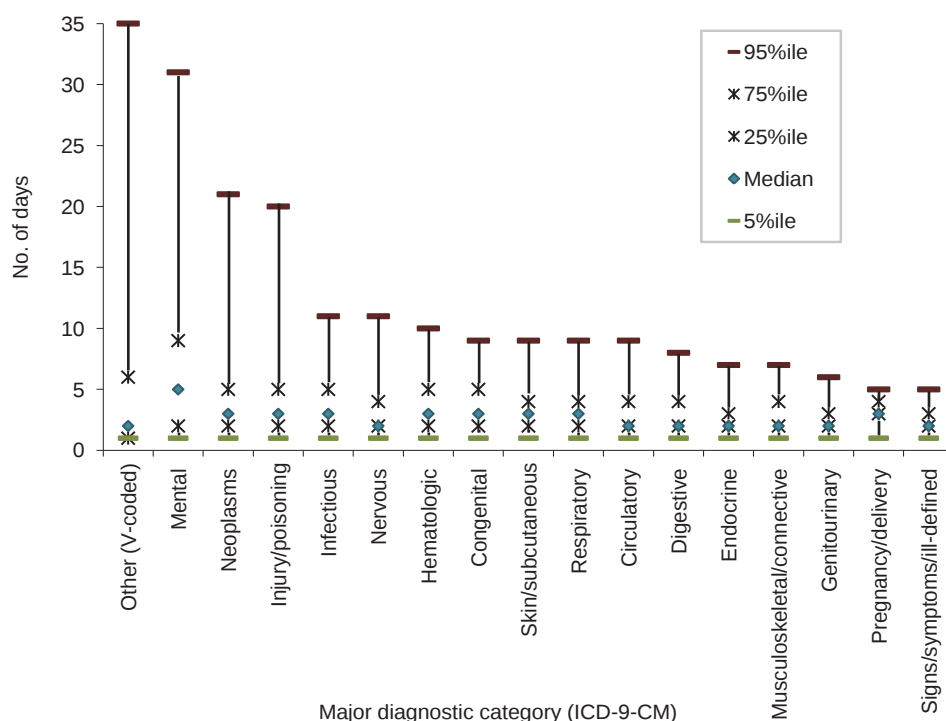


disorders; signs, symptoms, and ill-defined conditions) to five days (i.e., mental disorders). For most diagnostic categories, fewer than five percent of hospitalizations exceeded 9 days, but approximately five percent of mental disorder-related hospitalizations exceeded 31 days and five percent of “other” or V-coded hospitalizations (primarily orthopedic aftercare and rehabilitation following a previous illness or injury) exceeded 35 days (Figure 4).

#### Hospitalizations by service:

Among members of the Navy, Air Force, and Coast Guard, pregnancy and delivery-related conditions accounted for more hospitalizations than any other category of illnesses or injuries; however, among members of the Army and Marine Corps, mental disorders were the leading cause of hospitalizations. The crude hospitalization rate for mental disorders in the Army was approximately 70% higher than in the Marine Corps and more than twice as high than in the other Services (Table 5).

**FIGURE 4.** Length of hospital stay by major diagnostic category, active component, U.S. Armed Forces, 2011



**TABLE 5.** Hospitalizations by service and ICD-9-CM diagnostic category, active component, U.S. Armed Forces, 2011

| Major diagnostic category (ICD-9-CM)                            | Army   |                   | Navy   |                   | Air Force |                   | Marine Corps |                   | Coast Guard |                   |
|-----------------------------------------------------------------|--------|-------------------|--------|-------------------|-----------|-------------------|--------------|-------------------|-------------|-------------------|
|                                                                 | No.    | Rate <sup>a</sup> | No.    | Rate <sup>a</sup> | No.       | Rate <sup>a</sup> | No.          | Rate <sup>a</sup> | No.         | Rate <sup>a</sup> |
| Mental disorders (290 - 319)                                    | 13,003 | 23.1              | 3,066  | 9.5               | 2,797     | 8.5               | 2,606        | 13.0              | 263         | 6.3               |
| Pregnancy and delivery (630-679, relevant V-codes) <sup>b</sup> | 7,452  | 13.2(97.8)        | 4,786  | 14.9(91.6)        | 5,358     | 16.3(85.4)        | 1,749        | 8.7(128.0)        | 377         | 9.0(65.5)         |
| Injury and poisoning (800 - 999)                                | 7,075  | 12.6              | 1,626  | 5.1               | 1,467     | 4.5               | 2,454        | 12.2              | 119         | 2.8               |
| Digestive system (520 - 579)                                    | 4,264  | 7.6               | 1,622  | 5.1               | 1,854     | 5.6               | 1,115        | 5.5               | 194         | 4.6               |
| Musculoskeletal system/connective tissue (710 - 739)            | 3,951  | 7.0               | 1,122  | 3.5               | 1,778     | 5.4               | 887          | 4.4               | 147         | 3.5               |
| Signs, symptoms, ill-defined conditions (780 - 799)             | 2,625  | 4.7               | 870    | 2.7               | 973       | 3.0               | 409          | 2.0               | 39          | 0.9               |
| Other (V01-V82, except pregnancy-related)                       | 2,156  | 3.8               | 689    | 2.1               | 497       | 1.5               | 587          | 2.9               | 65          | 1.6               |
| Circulatory system (390 - 459)                                  | 1,590  | 2.8               | 515    | 1.6               | 602       | 1.8               | 257          | 1.3               | 63          | 1.5               |
| Respiratory system (460 - 519)                                  | 1,568  | 2.8               | 414    | 1.3               | 515       | 1.6               | 552          | 2.7               | 41          | 1.0               |
| Genitourinary system (580 - 629)                                | 1,501  | 2.7               | 537    | 1.7               | 635       | 1.9               | 279          | 1.4               | 50          | 1.2               |
| Nervous system (320 - 389)                                      | 1,296  | 2.3               | 399    | 1.2               | 445       | 1.4               | 256          | 1.3               | 33          | 0.8               |
| Neoplasms (140 - 239)                                           | 1,026  | 1.8               | 483    | 1.5               | 516       | 1.6               | 166          | 0.8               | 47          | 1.1               |
| Skin and subcutaneous tissue (680 - 709)                        | 959    | 1.7               | 363    | 1.1               | 332       | 1.0               | 497          | 2.5               | 31          | 0.7               |
| Infectious and parasitic diseases (001 - 139)                   | 708    | 1.3               | 268    | 0.8               | 267       | 0.8               | 265          | 1.3               | 38          | 0.9               |
| Endocrine, nutrition, immunity (240 - 279)                      | 573    | 1.0               | 148    | 0.5               | 183       | 0.6               | 93           | 0.5               | 8           | 0.2               |
| Congenital anomalies (740 - 759)                                | 207    | 0.4               | 93     | 0.3               | 111       | 0.3               | 55           | 0.3               | 3           | 0.1               |
| Hematologic disorders (280 - 289)                               | 174    | 0.3               | 64     | 0.2               | 74        | 0.2               | 66           | 0.3               | 4           | 0.1               |
| Total                                                           | 50,128 | 88.9              | 17,065 | 53.1              | 18,404    | 51.9              | 12,293       | 61.1              | 1,522       | 36.4              |

<sup>a</sup>Rate expressed as hospitalizations per 1,000 p-yrs of service<sup>b</sup>Rate of pregnancy and delivery-related hospitalizations among females only (in parentheses)

18 members, there was one hospitalization for a condition not related to pregnancy and delivery. Hospitalization rates for all causes among active component members increased in 2011 compared to the past decade. As in the past, in 2011, mental disorders, pregnancy and delivery-related conditions, and injuries and poisonings accounted for more than one-half of all hospitalizations of active component members. Since 2007, hospitalizations for mental disorders increased by more than 50 percent; during the same period, hospitalizations for injuries and poisonings slightly decreased.

The recent sharp increase in hospitalizations for mental disorders likely reflects the effects of many factors including repeated deployments and prolonged exposures to combat stresses; increased awareness and concern regarding threats to mental health among unit commanders and other front line supervisors, service members and their families, and medical care providers; increased screening for and detection of mental disorders after combat-related service and other traumatizing experiences; and decreasing stigmas and

removal of barriers to seeking and receiving mental disorder diagnoses and care.

There are limitations to this summary that should be considered when interpreting the results. For example, the scope of this report is limited to members of the active components of the Services. Many reserve component members were hospitalized for illnesses and injuries while serving on active duty in 2011; these hospitalizations are not accounted for in this report. Also, many injury and poisoning-related hospitalizations occur in non-military hospitals; in most cases, the “external causes” of such injuries and poisonings are not reported on standardized records. If there are significant differences in the causes of injuries and poisonings that resulted in hospitalizations in U.S. military and non-military hospitals, the summary of external causes of injuries requiring hospital treatment reported here (Table 4) could be misleading. Also, this summary is based on primary (first-listed) discharge diagnoses only; in many hospitalized cases, there are multiple underlying conditions. For example, military members who are wounded in combat or injured in motor vehicle accidents may have multiple

injuries and complex medical and psychological complications. In such cases, only the first-listed discharge diagnosis would be accounted for in this report. Even with these and other limitations, this report provides useful and informative insights regarding the natures, rates, and distributions of the most serious illnesses and injuries that affect active component military members.

In 2011, adjustment reactions (including post-traumatic stress disorder), mood disorders, and intervertebral disc disorders were among the leading causes of hospitalizations of both male and female service members. In recent years, attention at the highest levels of the U.S. military and significant resources have been focused on detecting, diagnosing, and treating mental disorders – especially those related to long and repeated deployments and combat stresses. In addition, the findings of this and other surveillance reports suggest that military medical research, force health protection, and clinical practice efforts should focus on improving the prevention, treatment, and rehabilitation of back disorders among U.S. military members.

# Ambulatory Visits Among Members of the Active Component, U.S. Armed Forces, 2011

This report documents frequencies, rates, trends, and characteristics of ambulatory visits of active component members of the U.S. Armed Forces during calendar year 2011. Ambulatory visits of U.S. service members in fixed military and non-military (reimbursed through the Military Health System) medical treatment facilities are documented with standardized, automated records. These records are routinely archived for health surveillance purposes in the Defense Medical Surveillance System which is the source of data for this report. Ambulatory visits that are not routinely and completely documented with standardized electronic records (e.g., during deployments, field training exercises, at sea) are not included.

For this report, all records of ambulatory visits of active component members of the Army, Navy, Air Force, Marine Corps and Coast Guard in 2011 were categorized according to the first three digits of the primary (first-listed) diagnosis code

(per International Classification of Diseases, 9th revision, clinical modifications [ICD-9-CM]).

## Frequencies, rates, and trends:

During 2011, there were 19,845,248 reported ambulatory visits of active component service members (**Table 1**). The crude annual rate (all causes) was 13,621 visits per 1,000 service members; thus, on average, each service member had more than 13 ambulatory encounters during the year (**Table 1**). The rate of documented ambulatory visits in 2011 was 1.4 percent higher than in 2010 and 70.7 percent higher than in 2002 (**Figure 1**).

In 2011, approximately four of every nine (46.0%) ambulatory visits were for “other contact with health services” (**Table 1**). This category (indicated by “V-codes” of the ICD-9-CM) includes health care not related to a current illness or injury; such care includes counseling, immunizations, deployment-related health assessments,

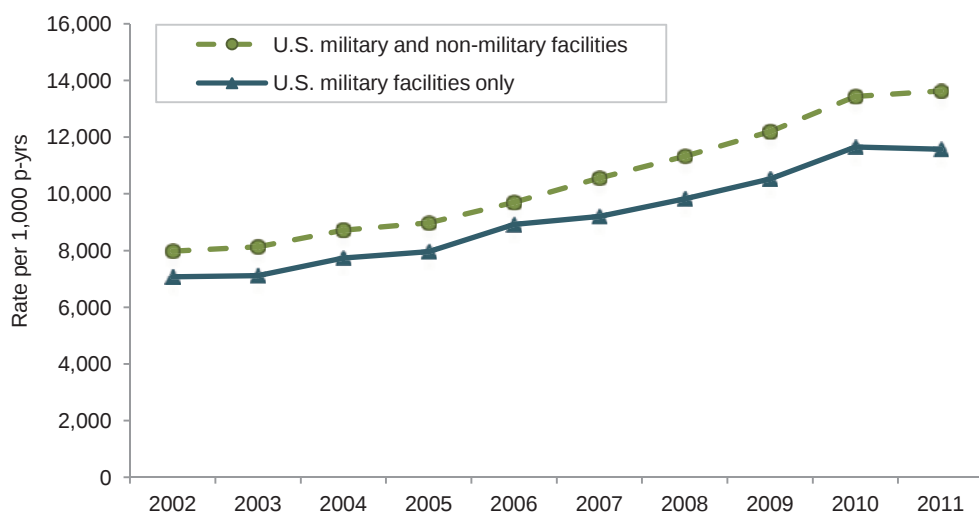
routine and special medical examinations (e.g., periodic, occupational, retirement) and therapeutic and rehabilitative treatments for previously diagnosed illnesses or injuries (e.g., physical therapy). In 2011, four “V-coded” diagnoses accounted for the majority of the visits in this category: general medical examination (including deployment health assessments) (32.3%), care involving use of rehabilitation procedures (15.8%), encounters for administrative purposes (8.7%), and special investigations and examinations (including vision, dental, and gynecological exams) (6.9%) (**Tables 2,3**).

In 2011, there were 10,708,188 documented ambulatory visits for illnesses and injuries (ICD-9-CM: 001-999 (including relevant pregnancy V-codes). The crude annual rate of illness- and injury-related visits was 7.3 visits per person per year (p-yr). The rate of ambulatory visits for illnesses and injuries in 2011 was 10.9 percent higher than in 2009 and 26.1 percent higher than in 2007 (**Table 1**).

**TABLE 1.** Ambulatory visits, ICD-9-CM diagnostic categories, active component, U.S. Armed Forces, 2007, 2009, and 2011

| Major diagnostic category (ICD-9-CM)                 | 2007       |                |      | 2009       |                |      | 2011       |                |      |
|------------------------------------------------------|------------|----------------|------|------------|----------------|------|------------|----------------|------|
|                                                      | No.        | No. per person | Rank | No.        | No. per person | Rank | No.        | No. per person | Rank |
| Other (V01-V82, except pregnancy-related)            | 6,613,517  | 4.72           | (1)  | 8,188,669  | 5.57           | (1)  | 9,137,060  | 6.27           | (1)  |
| Musculoskeletal system/connective tissue (710 - 739) | 1,905,083  | 1.36           | (2)  | 2,331,134  | 1.58           | (2)  | 2,883,999  | 1.98           | (2)  |
| Mental disorders (290 - 319)                         | 946,187    | 0.68           | (4)  | 1,506,671  | 1.02           | (3)  | 1,890,111  | 1.30           | (3)  |
| Signs, symptoms, ill-defined conditions (780 - 799)  | 843,060    | 0.60           | (5)  | 1,002,164  | 0.68           | (5)  | 1,101,063  | 0.76           | (4)  |
| Injury and poisoning (800 - 999)                     | 973,575    | 0.70           | (3)  | 1,011,236  | 0.69           | (4)  | 991,465    | 0.68           | (5)  |
| Nervous system (320 - 389)                           | 750,223    | 0.54           | (6)  | 893,523    | 0.61           | (6)  | 984,929    | 0.68           | (6)  |
| Respiratory system (460 - 519)                       | 727,487    | 0.52           | (7)  | 840,868    | 0.57           | (7)  | 684,583    | 0.47           | (7)  |
| Skin and subcutaneous tissue (680 - 709)             | 383,913    | 0.27           | (8)  | 408,289    | 0.28           | (8)  | 404,782    | 0.28           | (8)  |
| Pregnancy and delivery (630 - 679, relevant V-codes) | 350,141    | 0.25           | (9)  | 366,308    | 0.25           | (9)  | 381,581    | 0.26           | (9)  |
| Genitourinary system (580 - 629)                     | 263,650    | 0.19           | (11) | 291,530    | 0.20           | (11) | 299,770    | 0.21           | (10) |
| Digestive system (520 - 579)                         | 286,560    | 0.20           | (10) | 296,577    | 0.20           | (10) | 299,754    | 0.21           | (11) |
| Infectious and parasitic diseases (001 - 139)        | 255,544    | 0.18           | (12) | 279,740    | 0.19           | (12) | 240,330    | 0.16           | (12) |
| Circulatory system (390 - 459)                       | 173,348    | 0.12           | (13) | 186,951    | 0.13           | (13) | 193,528    | 0.13           | (13) |
| Endocrine, nutrition, immunity (240 - 279)           | 136,187    | 0.10           | (14) | 145,348    | 0.10           | (14) | 153,997    | 0.11           | (14) |
| Neoplasms (140 - 239)                                | 121,389    | 0.09           | (15) | 135,683    | 0.09           | (15) | 141,036    | 0.10           | (15) |
| Congenital anomalies (740 - 759)                     | 27,883     | 0.02           | (16) | 29,525     | 0.02           | (16) | 29,830     | 0.02           | (16) |
| Hematologic disorders (280 - 289)                    | 20,314     | 0.01           | (17) | 24,997     | 0.02           | (17) | 27,430     | 0.02           | (17) |
| Total                                                | 14,778,061 | 10.55          |      | 17,939,213 | 12.19          |      | 19,845,248 | 13.62          |      |

**FIGURE 1.** Rate of ambulatory visits by year, by clinic type, active component, U.S. Armed Forces, 2002-2011



#### Ambulatory visits, by diagnostic categories:

In 2011, three major diagnostic categories accounted for the majority (54.9%) of all illness- and injury-related ambulatory visits among active component service members: musculoskeletal system/connective tissue disorders (26.9%), mental disorders (17.7%), and “signs, symptoms and ill-defined conditions” (10.3%) (**Table 1**).

From 2007 to 2011, there were increases in numbers of visits in all major diagnostic categories except respiratory system and infectious and parasitic diseases (**Table 1**). The largest percentage increases from 2007 to 2011 were for mental disorders (change in ambulatory visits, 2007-11: +943,924; +99.8%), and musculoskeletal system/connective tissue disorders (change in ambulatory visits, 2007-11: +978,916; +51.4%) (**Table 1**).

Over the past five years, the relative distributions of ambulatory visits by diagnostic categories of the ICD-9-CM remained fairly stable with a few exceptions. In relation to visits attributable to each of the 17 illness- and injury-related categories, between 2007 and 2011, injuries and poisonings decreased in rank order from third to fifth. Four categories increased in rank order: mental disorders (fourth to third), “signs, symptoms, and ill-defined conditions” (fifth to fourth), and genitourinary system (11th to 10th) (**Table 1**).

#### Ambulatory visits, by gender:

In 2011, males accounted for three-fourths (75.3%) of all illness- and injury-related visits; however, the annual crude rate was nearly twice as high among females (12.6 visits/p-yr) as among males (6.5 visits/p-yr). Excluding pregnancy and delivery-related visits (which accounted for 14.4% of all non-V-coded ambulatory visits among females), the non-V-coded ambulatory visit rate among females was 10.7 visits/p-yr. As in the past, rates were higher among females than males for every illness- and injury-related category (**Figure 2**).

The same three illness- and injury-specific diagnoses (at the 3-digit level of the ICD-9-CM) accounted for the most ambulatory visits among males and females (**Tables 2,3**). For each of the most frequently reported illness- or injury-specific diagnoses, the crude rate was approximately 50 percent higher among females than males: other/unspecified disorders of joints (rates [per 1,000 p-yrs], female: 836.3; male: 546.2; female:male rate ratio [RR]: 1.53); adjustment reaction (rates, female: 654.6; male: 439.0; RR: 1.49); and other/unspecified disorders of the back (rates, female: 613.9; male: 414.7; RR: 1.48). Three other specific diagnoses that were among the ten most frequently reported among both males and females were anxiety disorders, general symptoms, and disorders

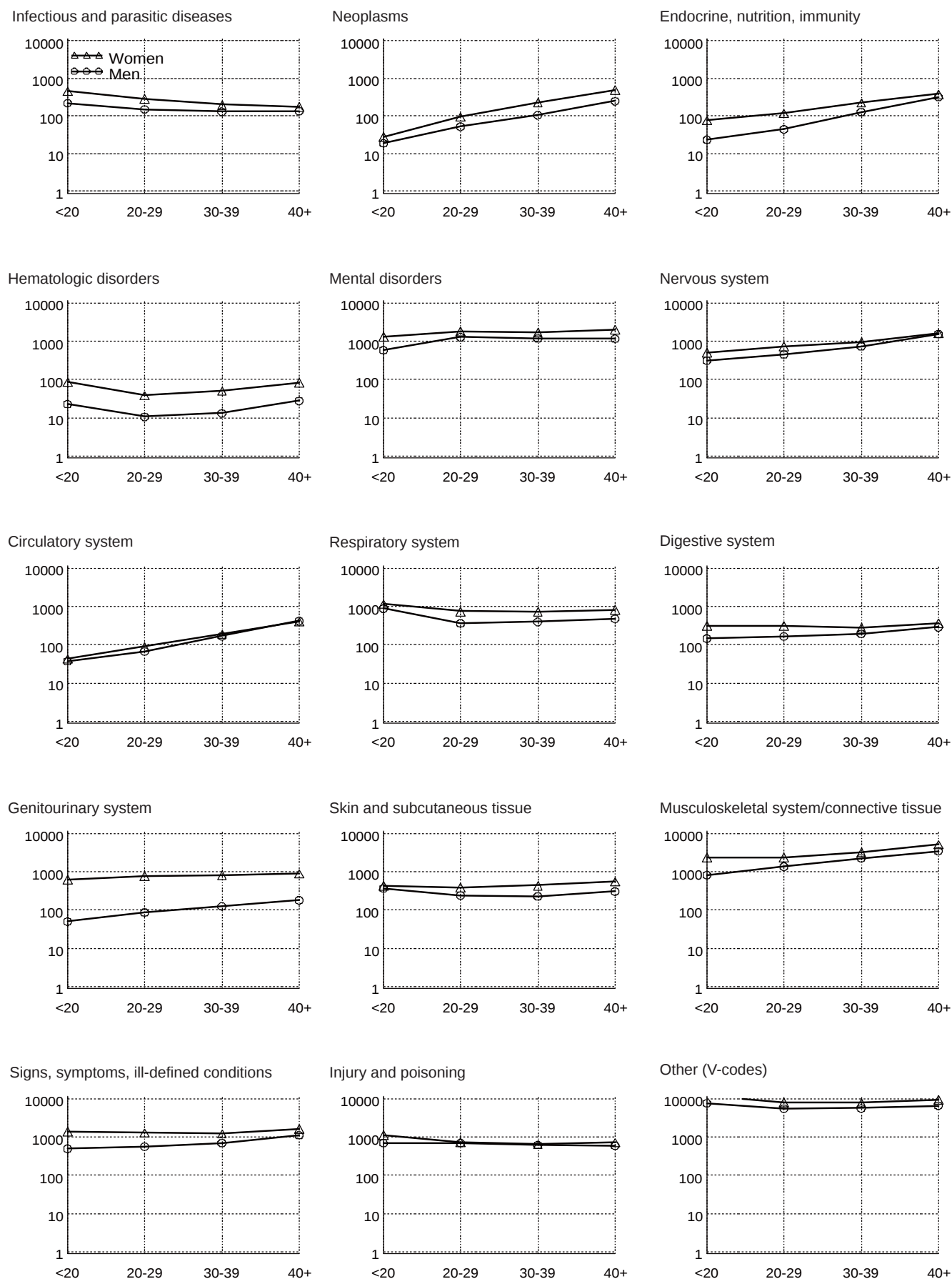
of refraction and accommodation. Three mental disorders among males (adjustment reaction, alcohol dependence syndrome, and anxiety disorders) and three among females (adjustment reaction, episodic mood disorders, and anxiety disorders) were among the ten most frequently reported illness- or injury-specific diagnoses during ambulatory encounters (**Tables 2,3**). Of note, “organic sleep disorders” was the fourth most frequent illness- or injury-specific primary diagnosis during ambulatory visits of males (**Table 2**).

Across diagnostic categories, relationships between age and ambulatory visit rates were generally similar among males and females (**Figure 2**). For example, among both males and females, ambulatory visit rates for neoplasms and circulatory disorders were more than 10 times higher among those 40 or older than those younger than 20 years old; in contrast, clinic visit rates for injuries and poisonings and infectious and parasitic diseases were generally lower among the oldest compared to younger service members. As in the past, clinic visit rates for genitourinary disorders were fairly stable across all age groups among females, but increased with age among males (**Figure 2**).

#### Dispositions after ambulatory visits:

Approximately 58.0 percent of all illness- and injury-related visits resulted in “duty without limitations” dispositions (**Figure 3**). Only one in 30 (3.1%) illness- and injury-related visits resulted in “convalescence in quarters” dispositions. The illness- and injury-related diagnostic categories with the highest proportions of “convalescence in quarters” or “limited duty” dispositions were diseases of the respiratory system (23.9%), injuries and poisonings (21.8%), diseases of the digestive system (20.2%), infectious and parasitic diseases (19.0%), and musculoskeletal system/connective tissue disorders (17.9%). Musculoskeletal system/connective tissue disorders and injuries and poisonings accounted for nearly two-thirds (63.7%) of all “limited duty” dispositions; diseases of the respiratory system accounted for nearly one-third (31.0%) of all “convalescence in quarters”

**FIGURE 2.** Rate (per 1,000 p-yrs) of ambulatory visits by major diagnostic categories, by age and gender, active component, U.S. Armed Forces, 2011



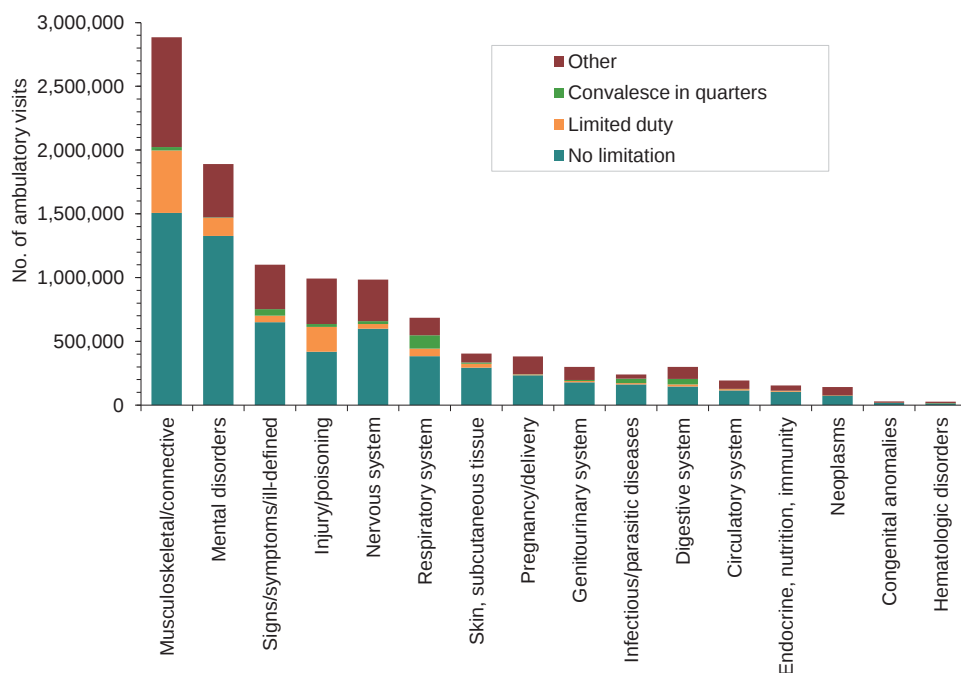
**TABLE 2.** Most frequent diagnoses during ambulatory visits by major diagnostic category, males, active component, U.S. Armed Forces, 2011

| Diagnostic category (ICD-9-CM codes)                      | ♂ | No.       | %    | Diagnostic category (ICD-9-CM codes)                        | ♂ | No.       | %    |
|-----------------------------------------------------------|---|-----------|------|-------------------------------------------------------------|---|-----------|------|
| <b>Infectious and parasitic diseases (001 - 139)</b>      |   | 184,071   |      | <b>Digestive system (520 - 579)</b>                         |   | 234,179   |      |
| Other diseases due to viruses and chlamydiae              |   | 40,079    | 21.8 | Other/unspecified noninfectious gastroenteritis/colitis     |   | 56,345    | 24.1 |
| Viral and chlamydial infection                            |   | 36,345    | 19.7 | Diseases of esophagus                                       |   | 34,466    | 14.7 |
| Dermatophytosis                                           |   | 28,381    | 15.4 | Gastrointestinal hemorrhage                                 |   | 15,252    | 6.5  |
| Streptococcal sore throat and scarlet fever               |   | 11,317    | 6.1  | Inguinal hernia                                             |   | 14,089    | 6.0  |
| Intestinal infections due to other organisms              |   | 11,302    | 6.1  | Gastritis and duodenitis                                    |   | 12,912    | 5.5  |
| <b>Neoplasms (140 - 239)</b>                              |   | 107,107   |      | <b>Genitourinary system (580 - 629)</b>                     |   | 131,359   |      |
| Benign neoplasm of skin                                   |   | 17,389    | 16.2 | Other disorders of male genital organs                      |   | 25,986    | 19.8 |
| Neoplasm of uncertain behavior of other/unspecified sites |   | 15,901    | 14.8 | Calculus of kidney and ureter                               |   | 22,050    | 16.8 |
| Neoplasms of unspecified nature                           |   | 10,746    | 10.0 | Other disorders of urethra and urinary tract                |   | 14,347    | 10.9 |
| Lipoma                                                    |   | 9,334     | 8.7  | Orchitis and epididymitis                                   |   | 10,029    | 7.6  |
| Other malignant neoplasms of lymphoid/histiocytic tissue  |   | 4,167     | 3.9  | Male infertility                                            |   | 9,438     | 7.2  |
| <b>Endocrine, nutrition, immunity (240 - 279)</b>         |   | 119,054   |      | <b>Skin and subcutaneous tissue (680 - 709)</b>             |   | 315,578   |      |
| Disorders of lipid metabolism                             |   | 35,989    | 30.2 | Other cellulitis and abscess                                |   | 56,135    | 17.8 |
| Diabetes mellitus                                         |   | 19,745    | 16.6 | Diseases of hair and hair follicles                         |   | 46,018    | 14.6 |
| Overweight, obesity and other hyperalimentation           |   | 14,977    | 12.6 | Contact dermatitis and other eczema                         |   | 45,470    | 14.4 |
| Testicular dysfunction                                    |   | 9,885     | 8.3  | Diseases of sebaceous glands                                |   | 36,043    | 11.4 |
| Acquired hypothyroidism                                   |   | 7,844     | 6.6  | Diseases of nail                                            |   | 16,349    | 5.2  |
| <b>Hematologic disorders (280 - 289)</b>                  |   | 17,209    |      | <b>Musculoskeletal system/connective tissue (710 - 739)</b> |   | 2,276,865 |      |
| Other and unspecified anemias                             |   | 4,353     | 25.3 | Other and unspecified disorders of joint                    |   | 680,788   | 29.9 |
| Diseases of white blood cells                             |   | 3,116     | 18.1 | Other and unspecified disorders of back                     |   | 516,879   | 22.7 |
| Hereditary hemolytic anemias                              |   | 2,646     | 15.4 | Intervertebral disc disorders                               |   | 152,740   | 6.7  |
| Purpura and other hemorrhagic conditions                  |   | 2,170     | 12.6 | Peripheral enthesopathies and allied syndromes              |   | 142,756   | 6.3  |
| Other diseases of blood and blood-forming organs          |   | 1,689     | 9.8  | Other disorders of soft tissues                             |   | 137,006   | 6.0  |
| <b>Mental disorders (290 - 319)</b>                       |   | 1,513,917 |      | <b>Congenital anomalies (740 - 759)</b>                     |   | 22,358    |      |
| Adjustment reaction                                       |   | 547,197   | 36.1 | Certain congenital musculoskeletal deformities              |   | 5,811     | 26.0 |
| Alcohol dependence syndrome                               |   | 199,226   | 13.2 | Other congenital musculoskeletal anomalies                  |   | 3,462     | 15.5 |
| Anxiety, dissociative and somatoform disorders            |   | 187,972   | 12.4 | Congenital anomalies of the integument                      |   | 2,936     | 13.1 |
| Episodic mood disorders                                   |   | 150,790   | 10.0 | Other congenital anomalies of limbs                         |   | 2,866     | 12.8 |
| Nondependent abuse of drugs                               |   | 138,610   | 9.2  | Congenital anomalies of urinary system                      |   | 1,036     | 4.6  |
| <b>Nervous system (320 - 389)</b>                         |   | 803,223   |      | <b>Signs, symptoms, ill-defined conditions (780 - 799)</b>  |   | 821,132   |      |
| Organic sleep disorders                                   |   | 219,298   | 27.3 | General symptoms                                            |   | 200,532   | 24.4 |
| Disorders of refraction and accommodation                 |   | 155,977   | 19.4 | Symptoms involving respiratory system                       |   | 156,352   | 19.0 |
| Pain, not elsewhere classified                            |   | 45,204    | 5.6  | Other symptoms involving abdomen and pelvis                 |   | 97,979    | 11.9 |
| Hearing loss                                              |   | 44,548    | 5.5  | Symptoms involving digestive system                         |   | 75,363    | 9.2  |
| Disorders of conjunctiva                                  |   | 36,641    | 4.6  | Symptoms involving head and neck                            |   | 63,545    | 7.7  |
| <b>Circulatory system (390 - 459)</b>                     |   | 163,965   |      | <b>Injury and poisoning (800 - 999)</b>                     |   | 835,816   |      |
| Essential hypertension                                    |   | 70,695    | 43.1 | Sprains and strains of ankle and foot                       |   | 79,742    | 9.5  |
| Hemorrhoids                                               |   | 17,954    | 10.9 | Sprains and strains of knee and leg                         |   | 78,826    | 9.4  |
| Cardiac dysrhythmias                                      |   | 14,899    | 9.1  | Sprains and strains of shoulder and upper arm               |   | 61,559    | 7.4  |
| Varicose veins of other sites                             |   | 5,573     | 3.4  | Sprains and strains of other/unspecified parts of back      |   | 52,977    | 6.3  |
| Other forms of chronic ischemic heart disease             |   | 4,678     | 2.9  | Injury other and unspecified                                |   | 51,785    | 6.2  |
| <b>Respiratory system (460 - 519)</b>                     |   | 518,899   |      | <b>Other (V01-V82, except pregnancy-related)</b>            |   | 7,337,618 |      |
| Acute upper respiratory infections, unspecified sites     |   | 121,671   | 23.4 | General medical examination                                 |   | 2,497,567 | 34.0 |
| Allergic rhinitis                                         |   | 72,384    | 13.9 | Care involving use of rehabilitation procedures             |   | 1,163,857 | 15.9 |
| Acute pharyngitis                                         |   | 62,743    | 12.1 | Encounters for administrative purposes                      |   | 637,078   | 8.7  |
| Chronic sinusitis                                         |   | 32,894    | 6.3  | Special investigations and examinations                     |   | 440,035   | 6.0  |
| Asthma                                                    |   | 28,875    | 5.6  | Other persons seeking consultation                          |   | 333,420   | 4.5  |

**TABLE 3.** Most frequent diagnoses during ambulatory visits by major diagnostic category, females, active component, U.S. Armed Forces, 2011

| Diagnostic category (ICD-9-CM codes)                      | ♀ | No.     | %    | Diagnostic category (ICD-9-CM codes)                        | ♀ | No.       | %    |
|-----------------------------------------------------------|---|---------|------|-------------------------------------------------------------|---|-----------|------|
| <b>Infectious and parasitic diseases (001 - 139)</b>      |   | 56,259  |      | <b>Digestive system (520 - 579)</b>                         |   | 65,575    |      |
| Viral and chlamydial infection                            |   | 14,607  | 26.0 | Other noninfectious gastroenteritis and colitis             |   | 18,681    | 28.5 |
| Candidiasis                                               |   | 7,556   | 13.4 | Functional digestive disorders not elsewhere classified     |   | 9,071     | 13.8 |
| Other diseases due to viruses and chlamydiae              |   | 6,209   | 11.0 | Diseases of esophagus                                       |   | 6,685     | 10.2 |
| Dermatophytosis                                           |   | 4,718   | 8.4  | Gastritis and duodenitis                                    |   | 4,724     | 7.2  |
| Herpes simplex                                            |   | 3,921   | 7.0  | Gastrointestinal hemorrhage                                 |   | 2,773     | 4.2  |
| <b>Neoplasms (140 - 239)</b>                              |   | 33,929  |      | <b>Genitourinary system (580 - 629)</b>                     |   | 168,411   |      |
| Benign neoplasm of skin                                   |   | 5,394   | 15.9 | Pain/other symptoms of female genital organs                |   | 28,604    | 17.0 |
| Uterine leiomyoma                                         |   | 4,834   | 14.2 | Disorders of menstruation, abnormal bleeding                |   | 23,514    | 14.0 |
| Neoplasm of uncertain behavior of other/unspecified sites |   | 3,711   | 10.9 | Other disorders of urethra and urinary tract                |   | 20,906    | 12.4 |
| Malignant neoplasm of female breast                       |   | 3,599   | 10.6 | Inflammatory disease of cervix vagina and vulva             |   | 18,184    | 10.8 |
| Neoplasms of unspecified nature                           |   | 2,623   | 7.7  | Other disorders of breast                                   |   | 12,772    | 7.6  |
| <b>Endocrine, nutrition, immunity (240 - 279)</b>         |   | 34,943  |      | <b>Pregnancy and delivery (630 - 679, relevant V-codes)</b> |   | 381,581   |      |
| Acquired hypothyroidism                                   |   | 6,330   | 18.1 | Normal pregnancy                                            |   | 125,524   | 32.9 |
| Overweight, obesity and other hyperalimentation           |   | 6,208   | 17.8 | Conditions complicating preg, childbirth, puerperium        |   | 38,873    | 10.2 |
| Ovarian dysfunction                                       |   | 3,036   | 8.7  | Other complications of pregnancy                            |   | 33,778    | 8.9  |
| Thyrotoxicosis with or without goiter                     |   | 2,631   | 7.5  | Postpartum care and examination                             |   | 27,990    | 7.3  |
| Disorders of fluid electrolyte and acid-base balance      |   | 2,525   | 7.2  | Care or intervention related to labor and delivery n        |   | 13,330    | 3.5  |
| <b>Hematologic disorders (280 - 289)</b>                  |   | 10,221  |      | <b>Skin and subcutaneous tissue (680 - 709)</b>             |   | 89,204    |      |
| Other and unspecified anemias                             |   | 3,637   | 35.6 | Diseases of sebaceous glands                                |   | 18,502    | 20.7 |
| Iron deficiency anemias                                   |   | 2,822   | 27.6 | Contact dermatitis and other eczema                         |   | 13,290    | 14.9 |
| Purpura and other hemorrhagic conditions                  |   | 1,020   | 10.0 | Other cellulitis and abscess                                |   | 10,145    | 11.4 |
| Diseases of white blood cells                             |   | 865     | 8.5  | Diseases of hair and hair follicles                         |   | 7,635     | 8.6  |
| Hereditary hemolytic anemias                              |   | 824     | 8.1  | Other disorders of skin and subcutaneous tissue             |   | 6,467     | 7.2  |
| <b>Mental disorders (290 - 319)</b>                       |   | 376,194 |      | <b>Musculoskeletal system/connective tissue (710 - 739)</b> |   | 607,134   |      |
| Adjustment reaction                                       |   | 137,868 | 36.6 | Other and unspecified disorders of joint                    |   | 176,134   | 29.0 |
| Episodic mood disorders                                   |   | 63,338  | 16.8 | Other and unspecified disorders of back                     |   | 129,309   | 21.3 |
| Anxiety, dissociative and somatoform disorders            |   | 60,110  | 16.0 | Other disorders of soft tissues                             |   | 47,968    | 7.9  |
| Depressive disorder not elsewhere classified              |   | 37,828  | 10.1 | Nonallopathic lesions not elsewhere classified              |   | 38,282    | 6.3  |
| Alcohol dependence syndrome                               |   | 21,574  | 5.7  | Peripheral enthesopathies and allied syndromes              |   | 33,233    | 5.5  |
| <b>Nervous system (320 - 389)</b>                         |   | 181,706 |      | <b>Signs, symptoms, ill-defined conditions (780 - 799)</b>  |   | 279,931   |      |
| Disorders of refraction and accommodation                 |   | 41,718  | 23.0 | Other symptoms involving abdomen and pelvis                 |   | 52,662    | 18.8 |
| Migraine                                                  |   | 26,321  | 14.5 | General symptoms                                            |   | 46,172    | 16.5 |
| Organic sleep disorders                                   |   | 13,045  | 7.2  | Symptoms involving respiratory system                       |   | 38,799    | 13.9 |
| Pain, not elsewhere classified                            |   | 11,244  | 6.2  | Symptoms involving digestive system                         |   | 31,394    | 11.2 |
| Disorders of conjunctiva                                  |   | 10,268  | 5.7  | Other abnormal histological/immunological findings          |   | 24,994    | 8.9  |
| <b>Circulatory system (390 - 459)</b>                     |   | 29,563  |      | <b>Injury and poisoning (800 - 999)</b>                     |   | 155,649   |      |
| Essential hypertension                                    |   | 9,262   | 31.3 | Sprains and strains of ankle and foot                       |   | 17,693    | 11.4 |
| Hemorrhoids                                               |   | 4,012   | 13.6 | Sprains and strains of knee and leg                         |   | 17,180    | 11.0 |
| Cardiac dysrhythmias                                      |   | 3,077   | 10.4 | Sprains and strains of other and parts of back              |   | 12,911    | 8.3  |
| Varicose veins of lower extremities                       |   | 2,179   | 7.4  | Sprains and strains of shoulder and upper arm               |   | 8,426     | 5.4  |
| Other venous embolism and thrombosis                      |   | 1,058   | 3.6  | Injury other and unspecified                                |   | 8,173     | 5.3  |
| <b>Respiratory system (460 - 519)</b>                     |   | 165,684 |      | <b>Other (V01-V82, except pregnancy-related)</b>            |   | 1,799,442 |      |
| Acute upper respiratory infections                        |   | 38,869  | 23.5 | General medical examination                                 |   | 452,536   | 25.1 |
| Allergic rhinitis                                         |   | 26,251  | 15.8 | Care involving use of rehabilitation procedures             |   | 282,517   | 15.7 |
| Acute pharyngitis                                         |   | 21,944  | 13.2 | Special investigations and examinations                     |   | 190,948   | 10.6 |
| Chronic sinusitis                                         |   | 12,889  | 7.8  | Encounters for administrative purposes                      |   | 160,986   | 8.9  |
| Asthma                                                    |   | 11,569  | 7.0  | Other persons seeking consultation                          |   | 108,965   | 6.1  |

**FIGURE 3.** Ambulatory visits in relation to reported dispositions, by diagnostic category, active component, U.S. Armed Forces, 2011



dispositions – more than twice as many (n=104,108) as any other disease category (Figure 3).

#### EDITORIAL COMMENT

In the past five years, the distribution of illness- and injury-related ambulatory visits in relation to their reported primary causes has remained fairly stable. Of note, however, from 2007 to 2011, the numbers of visits that were documented with diagnostic codes indicating mental disorders nearly doubled. Thus, in 2011, mental disorders accounted for approximately 18 percent of all illness- and injury-related

diagnoses reported on standardized records of ambulatory encounters.

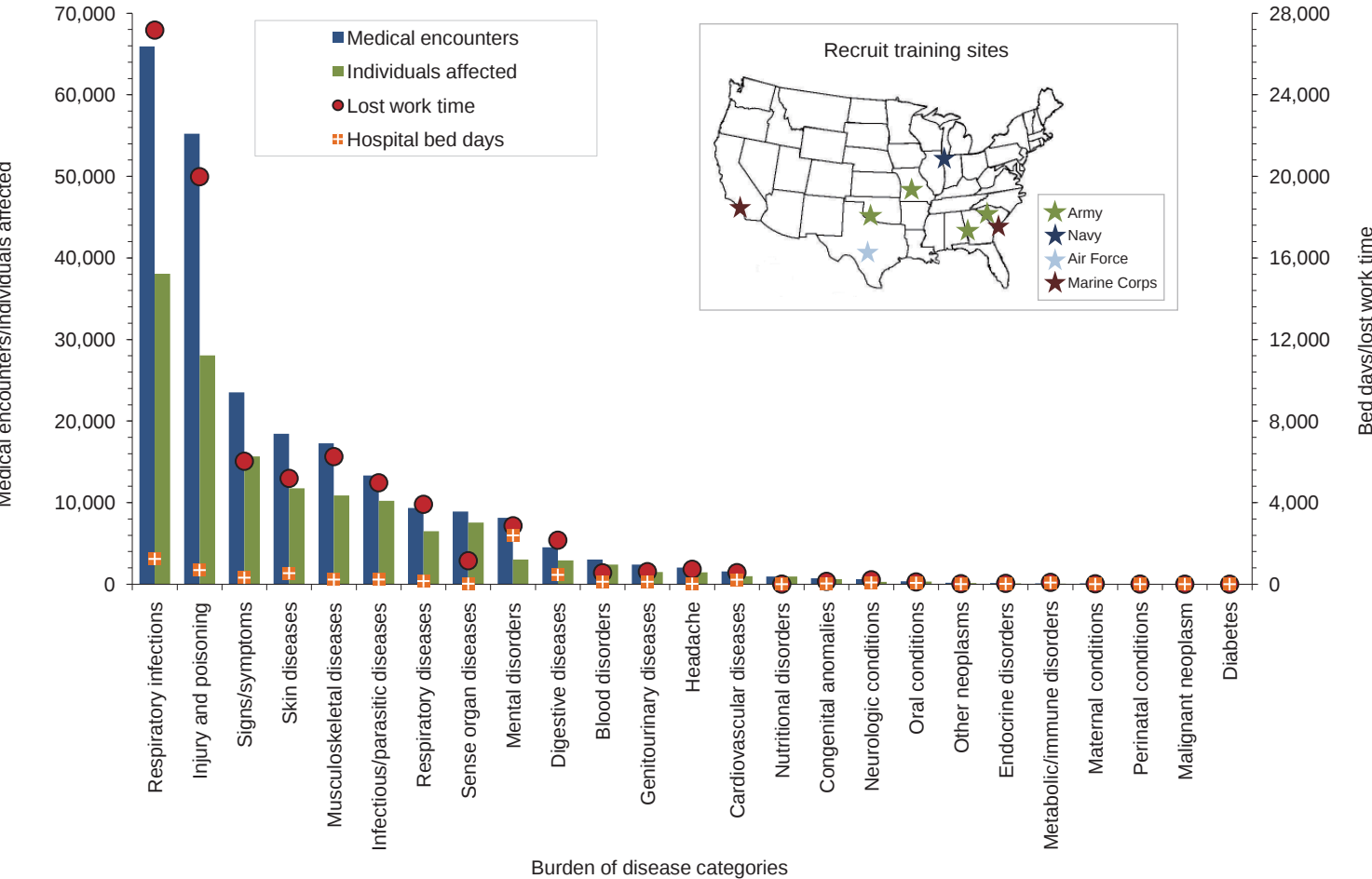
Between 2007 and 2011, the relative ranking of injuries and poisonings as primary causes of ambulatory visits declined. However, the military operational impacts of various conditions cannot be assessed by numbers of attributable ambulatory visits alone. For example, in 2011 injuries and poisonings accounted for approximately one of every 20 ambulatory visits overall but one in 10 ambulatory visits with duty-limiting dispositions. Of particular note in relation to injuries and musculoskeletal conditions, in 2011 as in the past, joint and back injuries/back pain accounted for extraordinarily large numbers of ambulatory visits

and lost duty time; resources should be focused on preventing, treating, and rehabilitating back pain/injuries among active component members.

The findings of this report should be interpreted with consideration of several limitations. For example, ambulatory care that is delivered by unit medics and at deployed (including in Afghanistan, Iraq, and at sea) medical treatment facilities may not be documented on standardized, automated records and thus not archived in the Defense Medical Surveillance System (the source of data for this report). In turn, this summary does not reflect the experience of active component military members overall to the extent that the natures and rates of illnesses and injuries vary among those who are deployed and not deployed. Also, this summary is based on first-listed (primary) diagnosis codes reported on ambulatory visit records. As a result, the summary discounts morbidity related to comorbid and complicating conditions. Also, the accuracy of reported diagnoses likely varies across conditions, care providers, treatment facilities, and clinical settings. While specific diagnoses during specific encounters may not be reliable, summaries of the frequencies, natures, and trends of ambulatory encounters among active component members overall are informative and potentially useful. For example, the relatively large and sharply increasing numbers of ambulatory visits for mental disorders in general, and the large numbers of visits for organic sleep disorders among men, reflect patterns of responses by the Military Health System to the effects of combat and deployment-related stresses on active force members.

# Surveillance Snapshot: Illness and Injury Burdens Among U.S. Military Recruit Trainees, 2011

Medical encounters, individuals affected, hospital bed days, and lost work time<sup>a</sup>, by burden of disease category<sup>b</sup>, among recruit trainees<sup>c</sup>, active component, U.S. Armed Forces, 2011

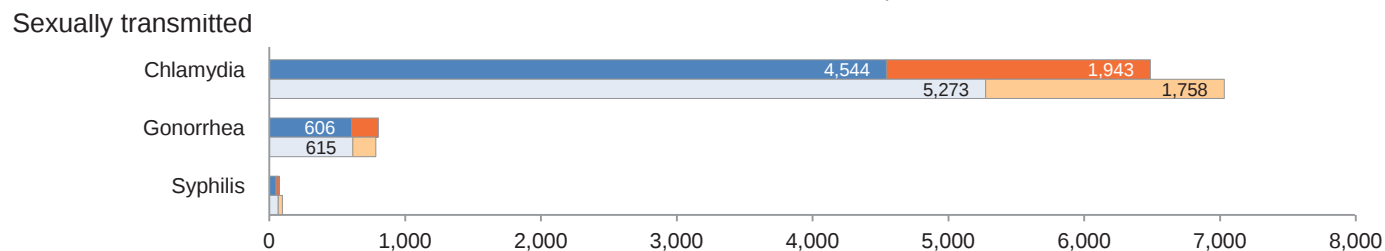
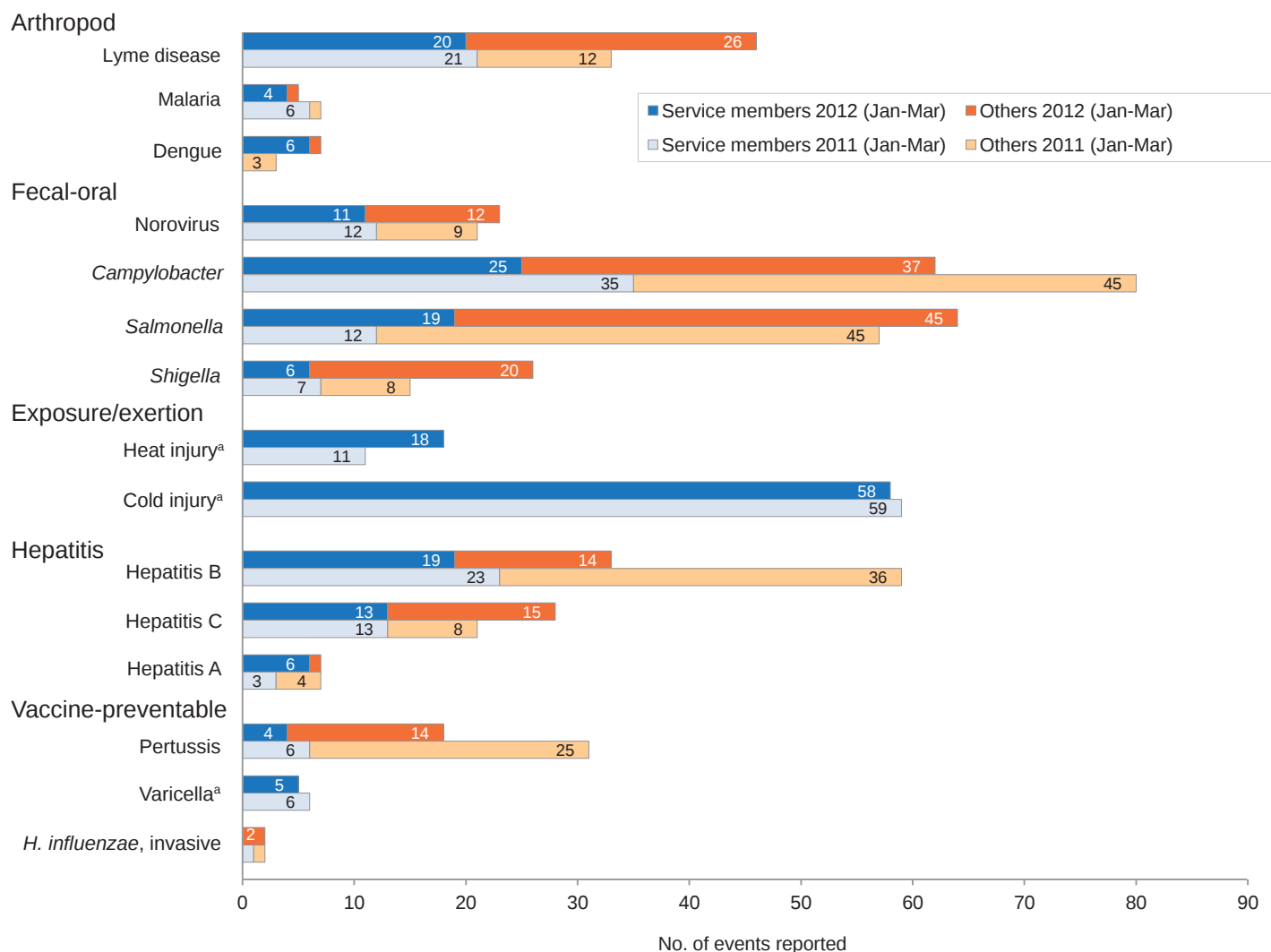


<sup>a</sup>A measure of lost work time due to bed days, convalescence, and one-half day for each ambulatory visit that resulted in limited duty  
<sup>b</sup>Burden of disease categories are the same as those used for analyses of morbidity burdens in the active components overall (see pagew 4-9).  
<sup>c</sup>Recruit trainees are defined as active component members of the Army, Navy, Air Force, or Marine Corps with a rank of E1 to E4 who served at one of eight basic training locations (inset) during a service-specific training period following a first-ever personnel record.

# Sentinel Reportable Medical Events, Service Members and Other Beneficiaries of the U.S. Military Health System, First Calendar Quarter, 2012 Versus 2011

Department of Defense policy mandates the reporting of cases of 67 different diseases and injuries whose occurrence may represent a significant threat to public health and military operations. The chart below depicts the numbers of cases of selected conditions which were reported through service-specific electronic reporting systems. For each condition, the bars represent the numbers of cases among service members and among other health care beneficiaries (retirees, family members) during the first quarters of 2012 and 2011.

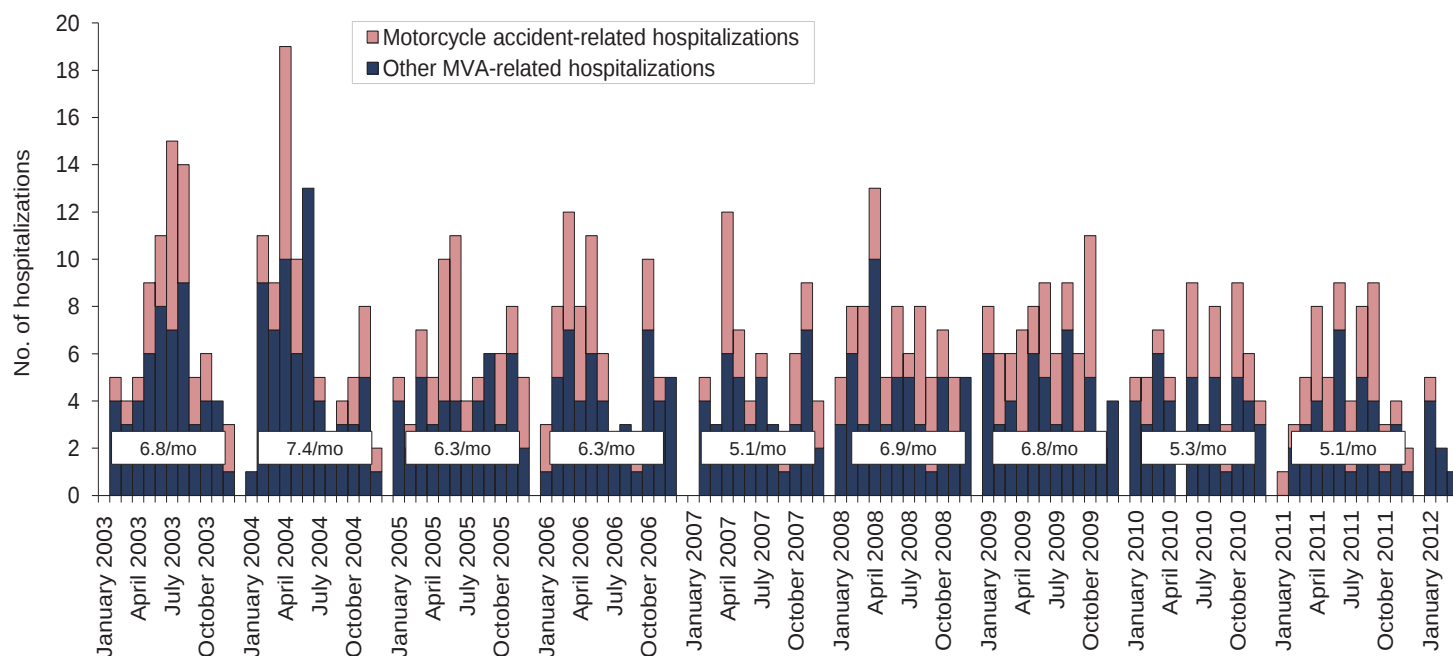
The 18 conditions shown were selected on the basis of the frequency of their occurrence or the availability of preventive interventions. The occurrence of all reportable conditions will be summarized annually in the *MSMR*. The current reportable events guidelines can be viewed at <http://www.afhsc.mil/reportableEvents>. A new revision to these guidelines, to be called the Armed Forces Reportable Medical Events Guidelines and Case Definitions, is expected to be published in 2012.



<sup>a</sup>Only service member cases are reportable

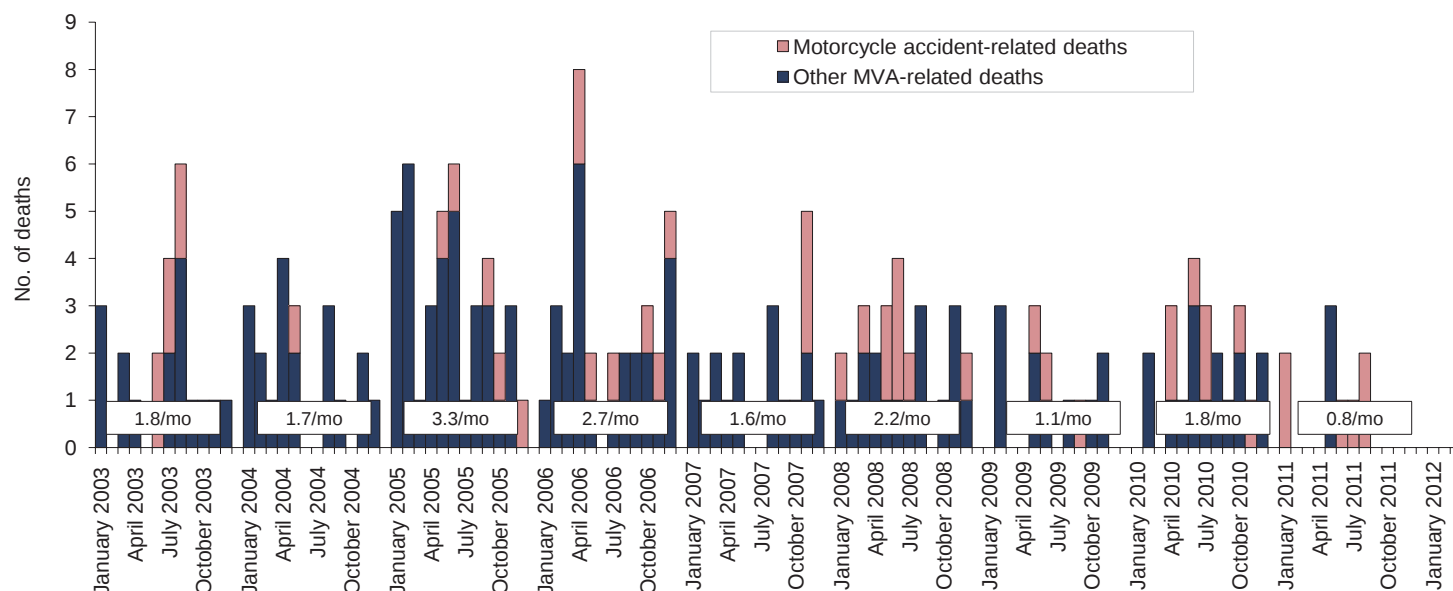
# Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003-March 2012 (data as of 1 May 2012)

Hospitalizations outside of the operational theater for motor vehicle accidents occurring in non-military vehicles (ICD-9-CM: E810-E825; NATO Standard Agreement 2050 (STANAG): 100-106, 107-109, 120-126, 127-129)



Note: Hospitalization (one per individual) while deployed to/within 90 days of returning from OEF/OIF/OND. Excludes accidents involving military-owned/special use motor vehicles. Excludes individuals medically evacuated from CENTCOM and/or hospitalized in Landstuhl, Germany within 10 days of another motor vehicle accident-related hospitalization.

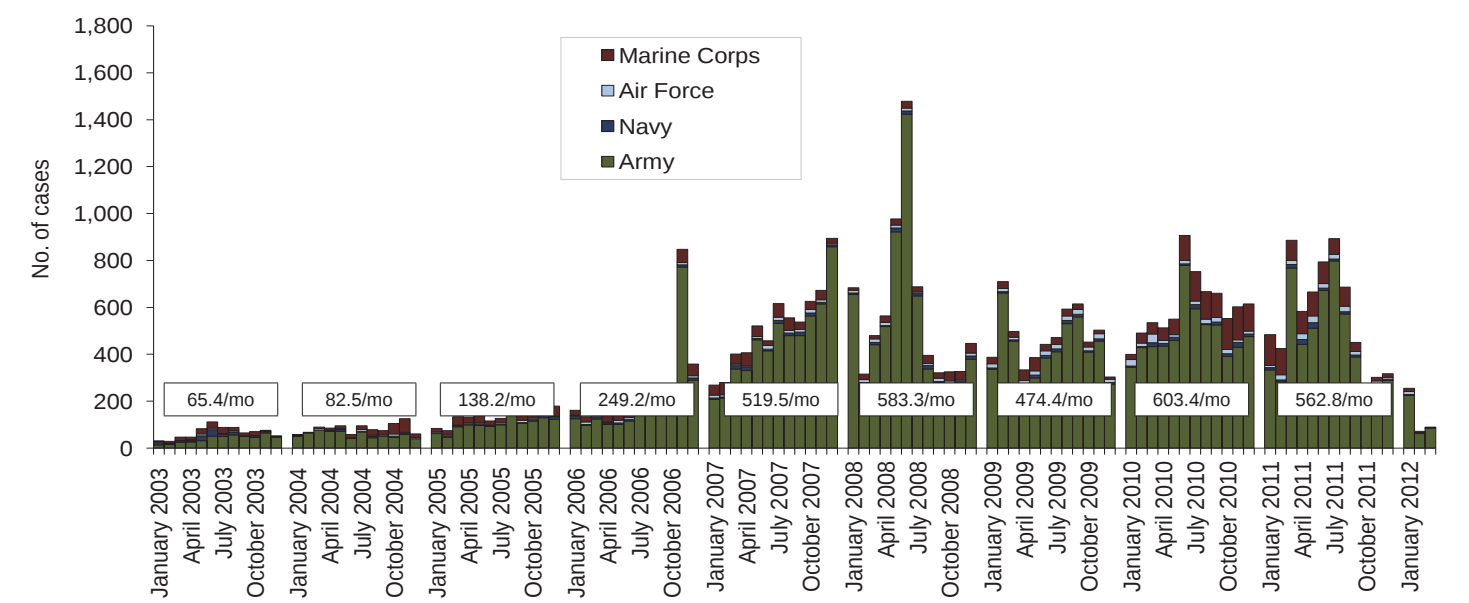
Deaths following motor vehicle accidents occurring in non-military vehicles and outside of the operational theater (per the DoD Medical Mortality Registry)



Reference: Armed Forces Health Surveillance Center. Motor vehicle-related deaths, U.S. Armed Forces, 2010. *Medical Surveillance Monthly Report (MSMR)*. Mar 11;17(3):2-6.  
Note: Death while deployed to/within 90 days of returning from OEF/OIF/OND. Excludes accidents involving military-owned/special use motor vehicles. Excludes individuals medically evacuated from CENTCOM and/or hospitalized in Landstuhl, Germany within 10 days prior to death.

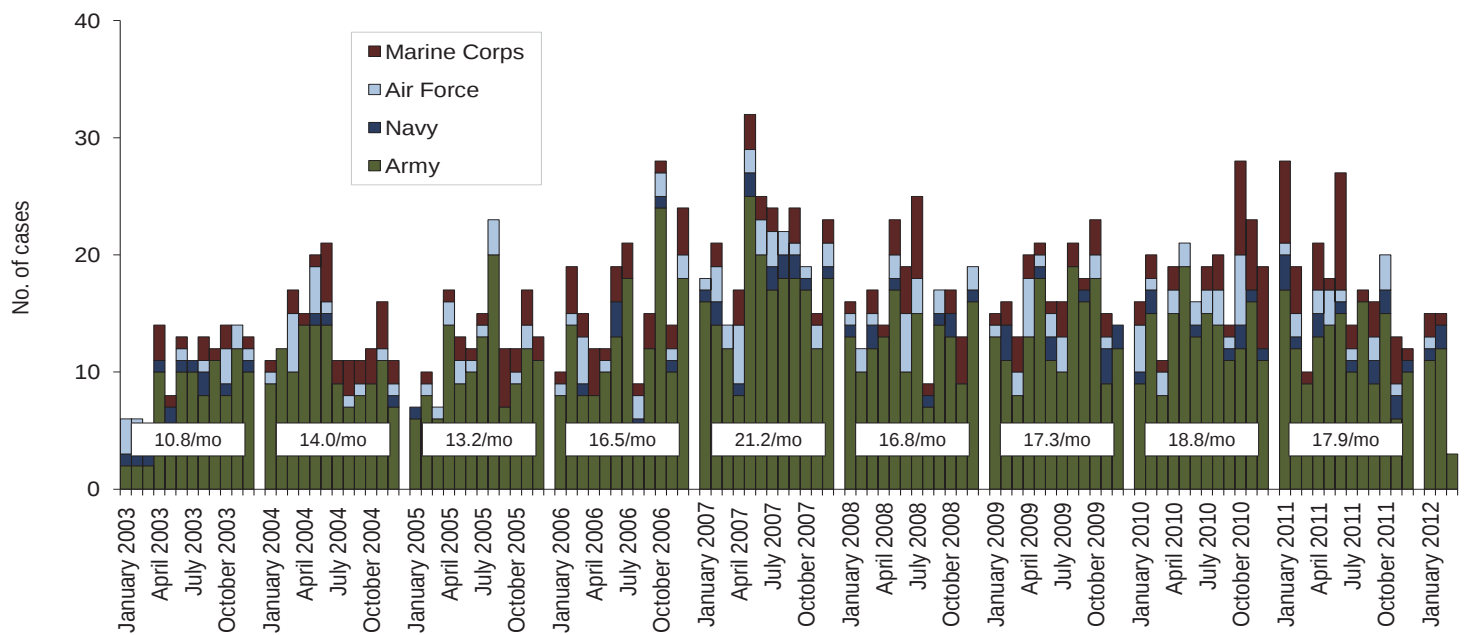
# Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003-March 2011 (data as of 1 May 2012)

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/OND. (Includes in-theater medical encounters from the Theater Medical Data Store [TMDS] and excludes 3,513 deployers who had at least one TBI-related medical encounter any time prior to OEF/OIF/OND).

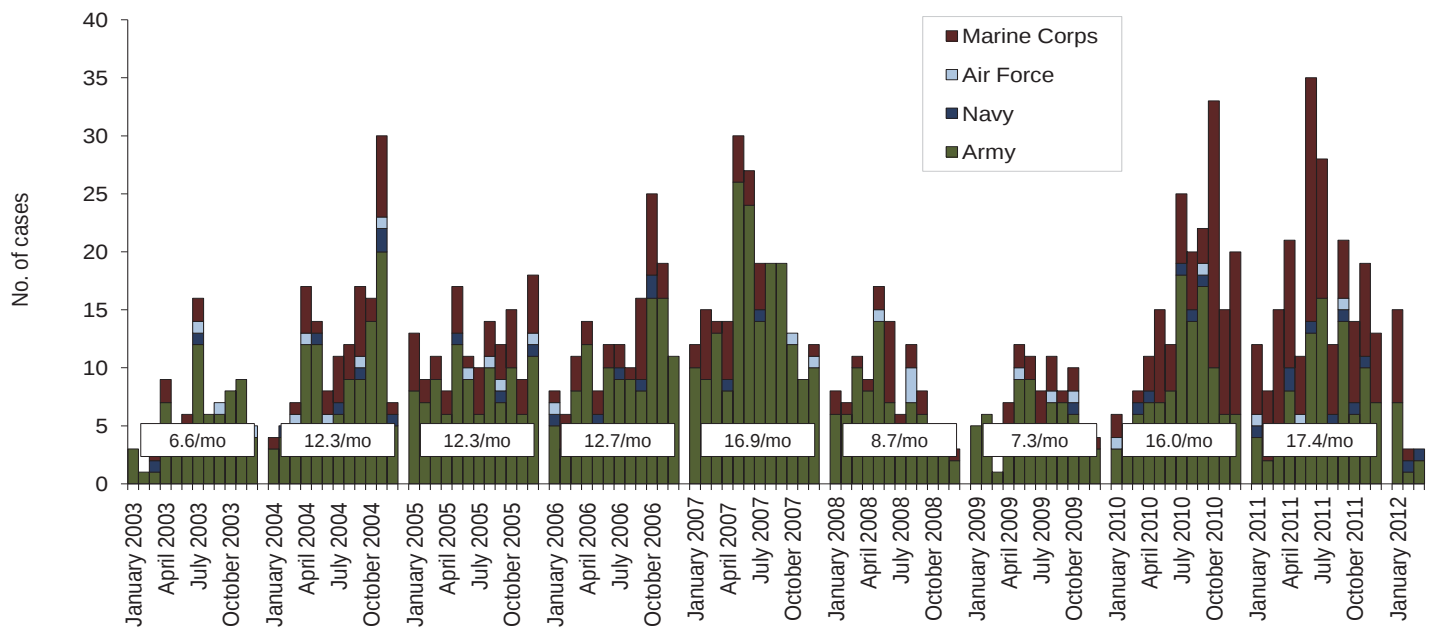
Deep vein thrombophlebitis/pulmonary embolus (ICD-9: 415.1, 451.1, 451.81, 451.83, 451.89, 453.2, 453.40 - 453.42 and 453.8)<sup>b</sup>



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/OND.

# Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003-March 2012 (data as of 1 May 2012)

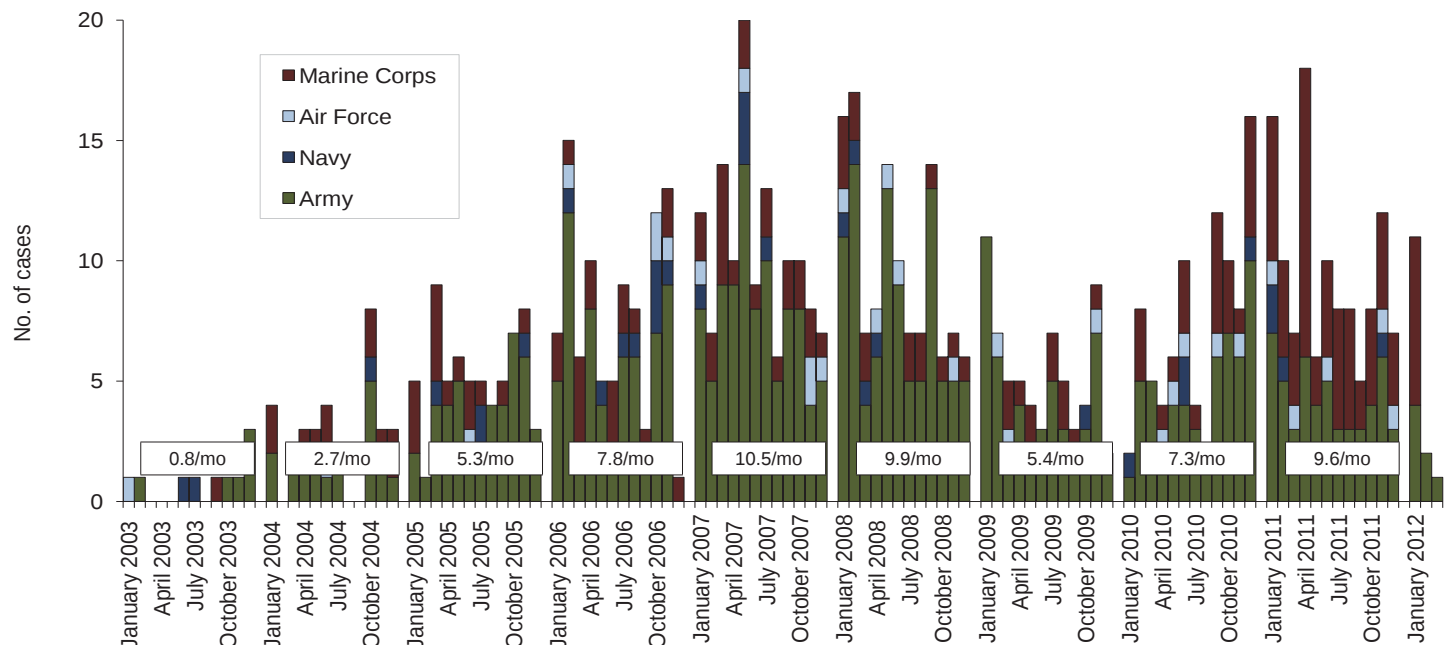
Amputations (ICD-9-CM: 887, 896, 897, V49.6 except V49.61-V49.62, V49.7 except V49.71-V49.72, PR 84.0-PR 84.1, except PR 84.01-PR 84.02 and PR 84.11)<sup>a</sup>



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)**

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