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## MEDICAL SURVEILLANCE MONTHLY REPORT

### ANNUAL SUMMARY ISSUE:

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## Absolute and Relative Morbidity Burdens Attributable to Various Illnesses and Injuries, U.S. Armed Forces, 2010

Illnesses and injuries are “burdens” to the U.S. Armed Forces to the extent that they degrade the health, fitness, morale, sense of well-being, and military operational effectiveness of service members and their units. They also burden the U.S. Military Health System because they consume scarce resources for diagnosis, treatment, rehabilitation, and disability compensation. Perceptions of the “military importance” of various conditions help determine the natures of and priorities for research and prevention activities. Decisions regarding prevention and research priorities should consider the morbidity and health care burdens that are attributable to various conditions.

Several disease classification systems and morbidity measures have been used to estimate the absolute and relative public health burdens that are attributable to various conditions.<sup>1</sup> Of course, different systems of classifying illnesses and injuries and different morbidity metrics lead to different rankings of illnesses and injuries by their attributable public health burdens.<sup>2</sup> For example, in a given population or 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> Clearly, the system used to lump and split related diagnoses into unique “conditions” and the metrics used to quantify condition-specific morbidity burdens can significantly affect estimates of the relative importance of various conditions.

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 2010.

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### Methods:

The surveillance period was 1 January to 31 December 2010. 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 2010 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 at the 3-digit

level) were grouped into 129 burden of disease-related conditions and 23 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 not completely 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); and total bed-days during hospitalizations for each condition.

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### Results:

#### Morbidity burden, by category:

In 2010, more service members (n=668,127) 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=2,704,053) and more than one-fourth (26.3%) of all medical encounters overall (**Figure 1**).

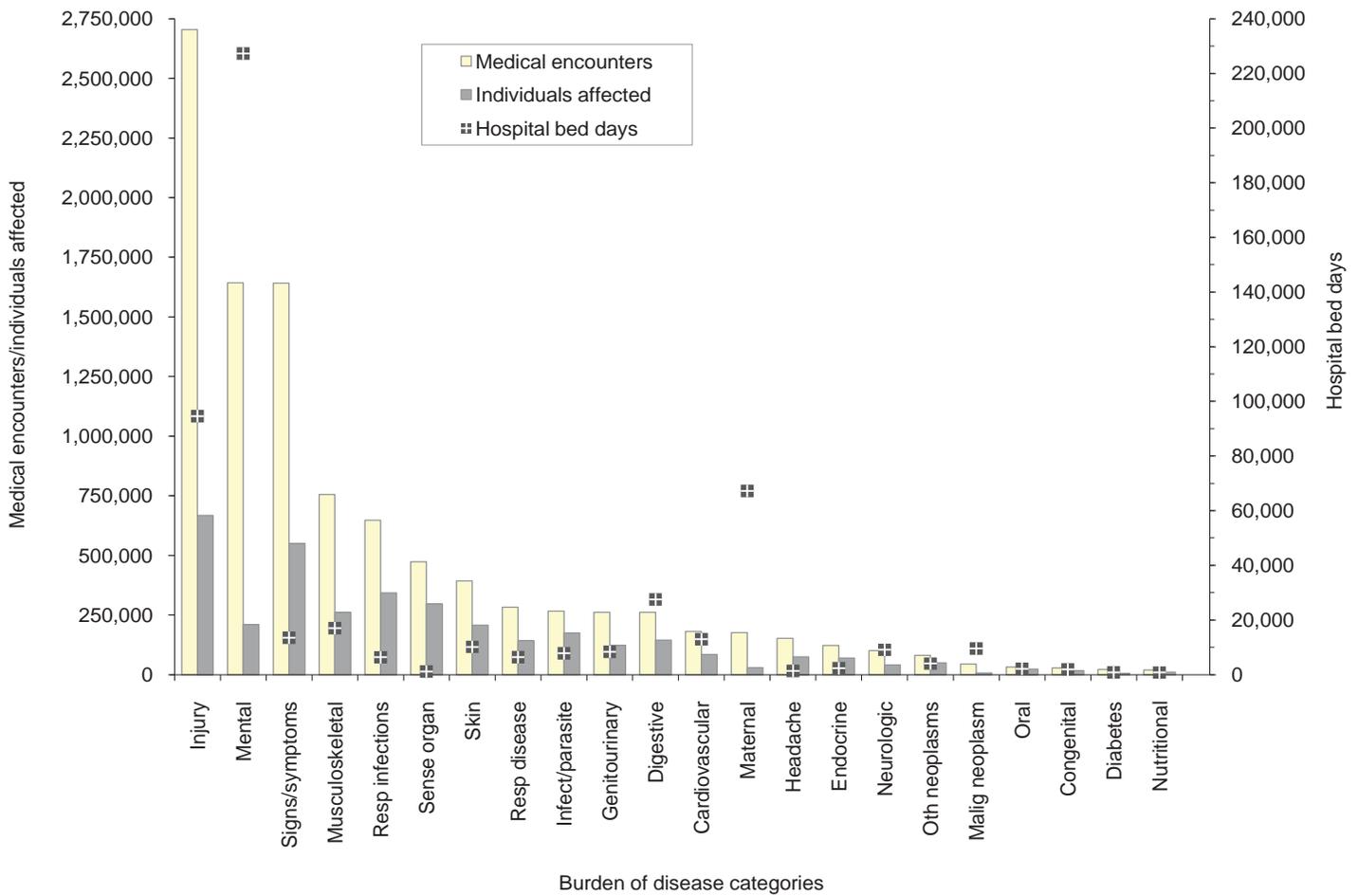
Mental disorders accounted for more hospital bed days than any other morbidity category (n=227,281) and more than two-fifths (42.7%) of all hospital bed days (**Figure 1**). Together, injuries and mental disorders accounted for more than 60 percent of all hospital bed days and more than 40 percent of all medical encounters (**Figure 1**).

Of note, maternal conditions (including pregnancy complications and childbirth) accounted for a relatively large proportion of all hospital bed days (n=67,213; 12.6%) but relatively few (n=176,660; 1.7%) medical encounters overall (**Figure 1**).

#### Medical encounters, by condition:

In 2010, the three burden of disease-related conditions that accounted for the most medical encounters each – “all other signs and symptoms”; injury to the back/abdomen; upper respiratory infections – accounted for nearly one-fourth

**Figure 1.** Medical encounters, individuals affected and hospital bed days, by burden of disease category, active component, U.S. Armed Forces, 2010



(24.4%) of all illness and injury-related medical encounters overall. Moreover, the ten conditions that accounted for the most medical encounters each accounted for more than one-half (52.3%) of all illness and injury-related medical encounters overall (Figure 2). In general, the conditions that accounted for the most medical encounters were predominately injuries (e.g., back and abdomen; knee; arm and shoulder, foot and ankle), upper respiratory infections, and substance abuse and other mental disorders (e.g., mood, anxiety, adjustment disorders) (Table 1, Figure 2).

**Individuals affected, by condition:**

In 2010, as in previous years, more service members received medical care for upper respiratory infections and injuries of the back/abdomen than any other specific condition (Table 1). Of the 10 conditions that affected the most service members, five were injuries (back and abdomen, foot and ankle, knee, arm and shoulder, and “unspecified”). Of note, slightly more individuals were affected by unspecified (“all other”) musculoskeletal disorders (e.g., disorders of “other” joints, muscles, tendons, soft tissues) than any injury-specific condition (Table 1).

**Hospital bed-days, by condition:**

In 2010, substance abuse and mood disorders accounted for 28 percent of all hospital days (Table 1, Figure 3). Together, four mental disorders (substance abuse, mood, anxiety, adjustment reaction) and two pregnancy and childbirth-related conditions (delivery, pregnancy complications) accounted for more than one half (51.5%) of all hospital bed-days (Table 1, Figure 3). Of note, since 2001, the bed days attributable to the four mental disorders that currently account for the most hospital bed days have increased more than 3-fold; over the same period, the bed days attributable to the two pregnancy-related conditions that account for the most hospital bed days have remained relatively stable (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=0.94). For example, the four conditions that affected the most individuals were the same as the four leading causes of

**Table 1.** Health care burdens attributable to various diseases and injuries, U.S. Armed Forces, 2010

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>						
Back and abdomen	628,107	(2)	192,993	(4)	14,096	(10)
Knee	444,032	(5)	143,118	(8)	3,041	(31)
Arm and shoulder	433,539	(6)	136,810	(9)	7,831	(15)
Foot and ankle	370,820	(9)	153,507	(6)	6,552	(20)
Head and neck	223,980	(14)	97,521	(14)	16,981	(7)
Unspecified injury	221,497	(15)	130,833	(10)	3,840	(29)
Leg	138,938	(23)	50,863	(26)	13,140	(11)
Hand and wrist	135,926	(24)	71,986	(19)	3,025	(32)
Other complications NOS	37,779	(46)	20,503	(48)	15,569	(9)
Environmental	30,370	(49)	23,794	(46)	1,614	(40)
All other injury	16,907	(64)	11,514	(60)	3,245	(30)
Other injury from external causes	12,446	(71)	9,100	(63)	366	(78)
Poisoning, drugs	5,164	(84)	3,302	(75)	4,584	(26)
Poisoning, nondrug	4,548	(85)	3,250	(77)	713	(64)
<b>Mental disorders</b>						
Substance abuse disorders	399,864	(7)	39,117	(33)	74,803	(1)
Anxiety	381,837	(8)	60,729	(22)	34,508	(4)
Mood	330,325	(10)	58,653	(24)	74,091	(2)
Adjustment	319,957	(11)	79,500	(16)	25,774	(5)
All other mental disorders	146,886	(22)	57,231	(25)	6,266	(21)
Tobacco dependence	29,153	(51)	18,291	(51)		(130)
Psychotic	18,541	(62)	2,359	(80)	9,828	(13)
Personality	10,116	(72)	3,073	(78)	1,231	(49)
Somatoform	5,588	(83)	1,666	(88)	780	(61)
<b>Signs and symptoms</b>						
All other signs and symptoms	1,342,850	(1)	483,892	(1)	7,286	(18)
Respiratory and chest	174,673	(17)	103,151	(13)	3,919	(28)
Abdomen and pelvis	124,483	(25)	71,999	(18)	2,317	(34)
<b>Musculoskeletal diseases</b>						
All other musculoskeletal diseases	501,766	(4)	200,545	(3)	9,286	(14)
Other back problems	193,979	(16)	69,931	(20)	5,184	(23)
Other knee disorders	27,015	(52)	11,995	(59)	1,458	(45)
Other shoulder disorders	15,214	(65)	8,298	(66)	264	(86)
Osteoarthritis	14,167	(68)	8,074	(67)	771	(62)
Rheumatoid arthritis	3,690	(90)	1,202	(91)	38	(112)
<b>Respiratory infections</b>						
Upper respiratory infections	544,930	(3)	300,842	(2)	1,535	(42)
Lower respiratory infections	67,205	(33)	42,288	(30)	4,746	(24)
Otitis media	35,596	(47)	27,397	(41)	68	(105)
<b>Sense organ diseases</b>						
Refraction/accommodation	224,745	(13)	175,188	(5)	2	(128)
All other sense organ diseases	173,955	(18)	110,885	(11)	1,128	(54)
Hearing disorders	58,612	(36)	35,240	(35)	9	(121)
Glaucoma	14,289	(67)	8,596	(65)	15	(117)
Cataracts	1,564	(106)	845	(98)	4	(126)
<b>Skin diseases</b>						
All other skin diseases	277,644	(12)	151,492	(7)	10,054	(12)
Contact dermatitis	58,182	(37)	42,710	(28)	64	(107)
Sebaceous gland diseases	56,644	(38)	33,450	(37)	43	(110)
<b>Respiratory diseases</b>						
Allergic rhinitis	100,743	(28)	49,645	(27)	12	(118)
All other respiratory diseases	66,550	(34)	37,649	(34)	5,384	(22)
Chronic sinusitis	43,897	(42)	33,720	(36)	167	(93)
Asthma	39,452	(44)	18,159	(51)	528	(68)
Chronic obstructive pulmonary	32,553	(48)	26,315	(43)	278	(83)
<b>Infectious and parasitic diseases</b>						
All other infectious and parasitic	158,651	(20)	104,230	(12)	4,668	(25)
Unspecified viral infection	48,425	(40)	40,979	(32)	270	(84)
STDs	24,465	(55)	18,027	(52)	627	(65)
Diarrheal diseases	19,941	(61)	17,294	(53)	1,227	(50)
Chlamydia	9,073	(76)	7,840	(68)	9	(120)
Hepatitis B and C	2,948	(96)	1,033	(94)	66	(106)
Tuberculosis	1,197	(108)	611	(103)	223	(91)
Bacterial meningitis	957	(110)	350	(107)	477	(70)
Malaria	364	(117)	126	(116)	242	(89)
Tropical cluster	333	(119)	82	(119)	32	(114)
Intestinal nematode infection	226	(125)	199	(125)	4	(124)
<b>Genito-urinary diseases</b>						
All other genito-urinary diseases	159,469	(19)	89,251	(15)	3,984	(27)
Female genital pain	26,657	(53)	15,336	(57)	463	(72)
Kidney stones	23,216	(56)	8,639	(64)	1,521	(43)
Menstrual disorders	22,381	(57)	14,126	(58)	624	(66)
Other breast disorders	18,269	(63)	9,701	(61)	382	(77)
Nephritis and nephrosis	7,513	(79)	2,140	(84)	1,304	(48)
Benign prostatic hypertrophy	3,587	(91)	2,336	(81)	75	(104)
<b>Digestive diseases</b>						
All other digestive diseases	114,765	(26)	59,132	(23)	16,598	(8)
Other gastroenteritis and colitis	83,495	(29)	67,179	(21)	1,222	(51)
Esophagus disease	39,426	(45)	25,677	(44)	1,197	(53)
Inguinal hernia	13,708	(69)	6,099	(71)	735	(63)
Appendicitis	5,787	(82)	3,275	(76)	7,171	(19)
Cirrhosis of the liver	1,931	(103)	1,372	(89)	77	(103)
Peptic ulcer disease	1,716	(104)	1,077	(93)	528	(67)
<b>Cardiovascular diseases</b>						
All other cardiovascular diseases	80,947	(30)	41,230	(31)	7,633	(16)
Essential hypertension	80,798	(31)	42,687	(29)	441	(74)
Ischemic heart disease	9,319	(75)	3,623	(74)	2,101	(37)
Cerebrovascular disease	6,757	(81)	2,141	(83)	2,278	(35)
Inflammatory	2,486	(100)	961	(96)	465	(71)
Rheumatic heart disease	471	(114)	371	(105)	42	(111)
<b>Maternal conditions</b>						
Pregnancy complications	108,313	(27)	24,540	(45)	21,660	(6)
Delivery	55,860	(39)	18,605	(49)	43,506	(3)
Ectopic/miscarriage/abortion	9,579	(73)	4,265	(73)	986	(56)
Puerperium complications	2,822	(97)	1,846	(87)	962	(57)
All other maternal disorders	86	(128)	46	(123)	99	(97)
<b>Headache</b>						
Headache	152,519	(21)	74,615	(17)	1,394	(46)

<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>Conditions affecting newborns erroneously coded on service member medical records

**Table 1 continued.** Health care burdens attributable to various diseases and injuries, U.S. Armed Forces, 2010

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>Endocrine disorders</b>						
All other endocrine disorders	61,315	(35)	27,327	(42)	2,088	(38)
Lipoid metabolism disorders	39,652	(43)	29,413	(40)	48	(109)
Obesity	21,708	(59)	16,644	(54)	220	(92)
<b>Neurologic conditions</b>						
All other neurologic conditions	76,180	(32)	32,667	(38)	7,612	(17)
Other mononeuritis - limbs	12,824	(70)	6,206	(69)	248	(88)
Epilepsy	8,714	(77)	2,620	(79)	906	(58)
Multiple sclerosis	3,332	(94)	683	(101)	268	(85)
Parkinson disease	227	(123)	53	(122)	4	(125)
Alzheimer and other dementias	76	(129)	8	(130)	53	(108)
<b>Other neoplasms</b>						
All other neoplasms	46,110	(41)	30,167	(39)	2,390	(33)
Benign skin neoplasm	20,654	(60)	16,410	(55)	2	(127)
Lipoma	9,519	(74)	6,135	(70)	87	(100)
Uterine leiomyoma	4,295	(87)	2,113	(85)	1,580	(41)
<b>Malignant neoplasms</b>						
All other malignant neoplasms	7,579	(78)	1,179	(92)	1,936	(39)
Lymphoma and multiple myeloma	7,462	(80)	761	(99)	1,219	(52)
Melanoma and other skin	4,548	(86)	2,212	(82)	78	(102)
Leukemia	3,750	(89)	211	(112)	1,386	(47)
Testicular cancer	3,550	(92)	673	(102)	410	(76)
Breast cancer	3,334	(93)	355	(106)	249	(87)
Colon and rectum cancers	2,967	(95)	247	(110)	1,099	(55)
Brain	2,805	(98)	238	(111)	797	(60)
Thyroid	2,265	(101)	515	(104)	349	(79)
Mouth and oropharynx cancers	1,957	(102)	178	(114)	327	(80)
<b>Major category Condition<sup>a</sup></b>						
<b>Medical encounters<sup>b</sup></b>						
<b>Individuals affected<sup>c</sup></b>						
<b>Bed days</b>						
Prostate cancer	1,692	(105)	326	(108)	280	(82)
Trachea,bronchus,lung cancers	895	(111)	82	(120)	317	(81)
Pancreas cancer	378	(115)	32	(127)	239	(90)
Stomach cancer	366	(116)	37	(125)	448	(73)
Ovary cancer	337	(118)	74	(121)	107	(96)
Bladder cancer	294	(120)	85	(118)	35	(113)
Cervix uteri cancer	230	(122)	41	(124)	89	(99)
Liver cancer	192	(126)	32	(126)	93	(98)
Esophagus cancer	149	(127)	15	(129)	83	(101)
Corpus uteri cancer	37	(130)	17	(128)	.	(129)
<b>Oral conditions</b>						
All other oral conditions	30,200	(50)	21,641	(47)	2,103	(36)
Periodontal disease	1,025	(109)	921	(97)	7	(122)
Dental caries	802	(113)	715	(100)	10	(119)
<b>Congenital anomalies</b>						
All other congenital anomalies	25,316	(54)	16,152	(56)	1,509	(44)
Congenital heart disease	2,728	(99)	1,324	(90)	440	(75)
<b>Diabetes mellitus</b>						
Diabetes mellitus	21,737	(58)	5,786	(72)	828	(59)
<b>Nutritional deficiencies</b>						
All other nutritional deficiencies	15,113	(66)	9,103	(62)	491	(69)
Iron-deficiency anemia	3,994	(88)	2,041	(86)	158	(94)
Protein-energy malnutrition	234	(121)	92	(117)	122	(95)
<b>Conditions arising during the perinatal period<sup>d</sup></b>						
All other perinatal anomalies	1,428	(107)	991	(95)	23	(115)
Low birth weight	857	(112)	287	(109)	23	(116)
Birth asphyxia and birth trauma	226	(124)	142	(115)	6	(123)

<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>Conditions affecting newborns erroneously coded on service member medical records

medical encounters (Table 1). In contrast, there were not strong relationships between the hospital bed-days attributable to conditions and either the numbers of individuals affected by ( $r=0.18$ ) or medical encounters attributable to ( $r=0.38$ ) the same conditions. For example, childbirth and substance abuse disorders were among the top three sources of hospital bed-days; however, these conditions affected relatively few service members. Also, "upper respiratory infections" was one of the three leading conditions in terms of medical encounters and individuals affected; however, the condition accounted for relatively few hospital bed-days (Table 1).

Finally, "injuries of the back/abdomen" was the only condition among the top 10 in relation to all burden measures. "Other back problems" and four mental disorders (mood, anxiety, adjustment, "all other" mental disorders) were the only other conditions within the top 25 in relation to all burden measures (Table 1).

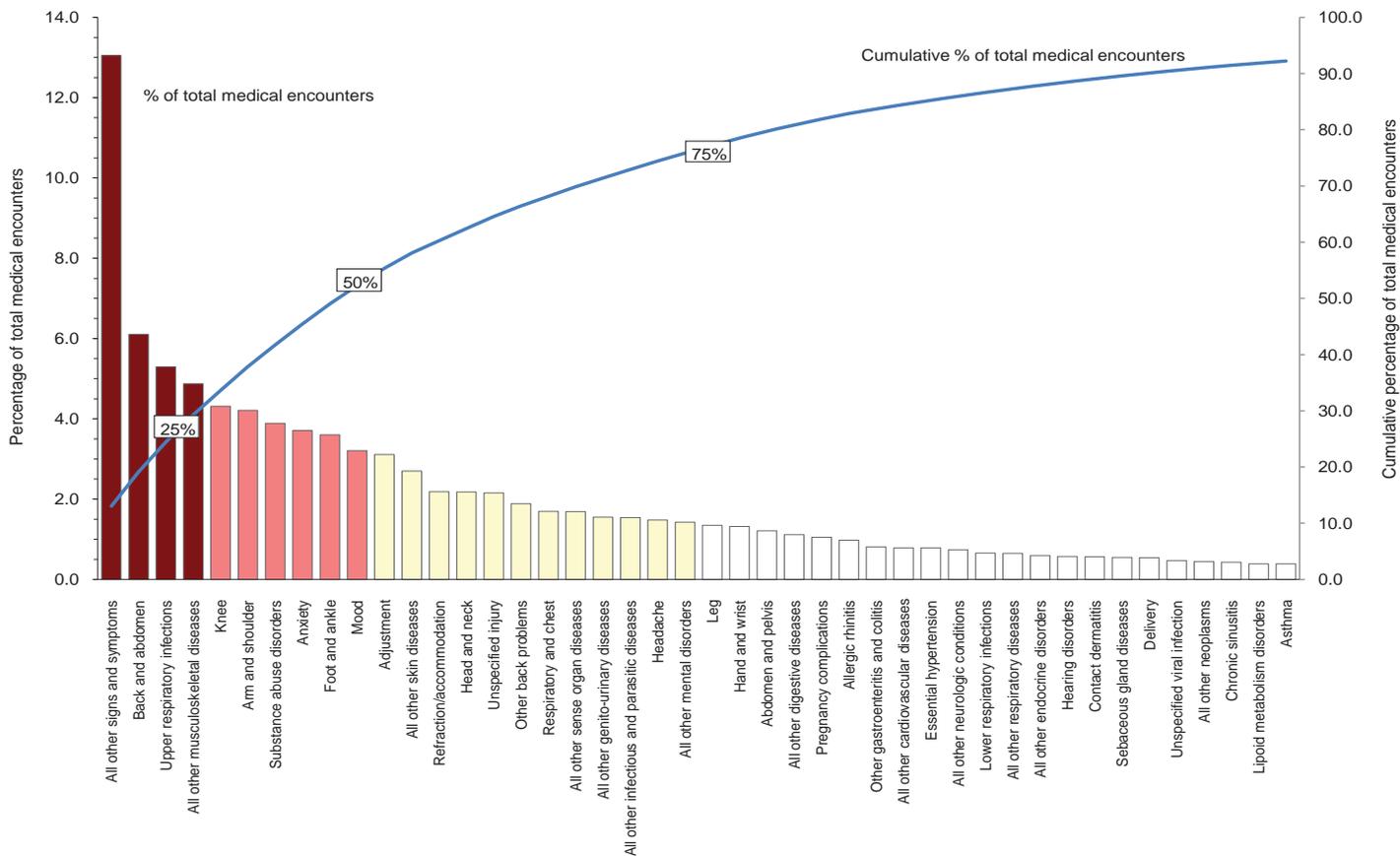
#### Editorial comment:

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 129 burden of disease-defining conditions considered in the analysis.

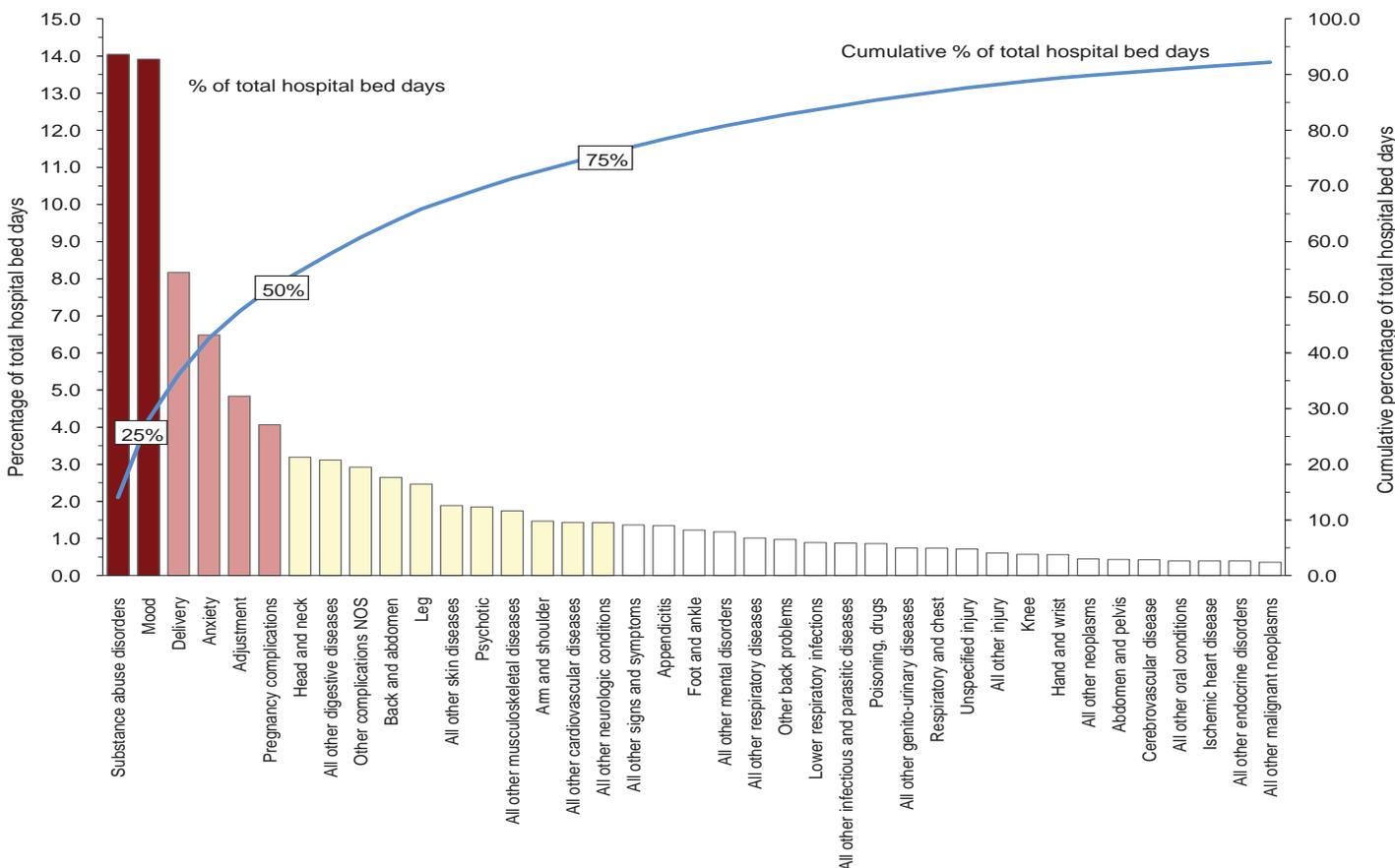
In 2010 as in prior years, injuries in general (particularly of the back), mental disorders (particularly substance abuse, mood, anxiety, and adjustment disorders), and pregnancy/delivery-related conditions accounted for relatively large proportions of the morbidity and health care burdens that affected U.S. military members.

For example, in 2010, substance abuse, mood, anxiety, and adjustment disorders accounted for 573 person-years of

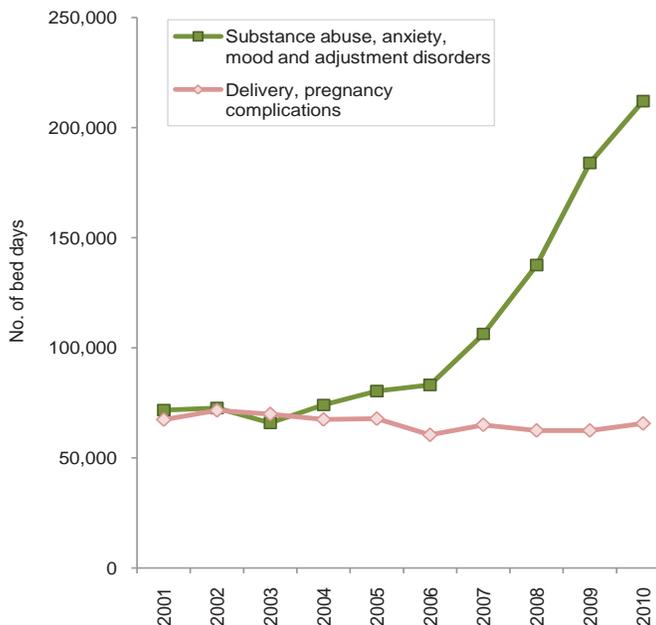
**Figure 2.** Percentage and cumulative % distributions, burden categories that accounted for the most medical encounters among U.S. service members, 2010



**Figure 3.** Percentage and cumulative % distributions, burden categories that accounted for the most hospital bed days, U.S. service members, 2010



**Figure 4.** Annual numbers of hospital bed days attributable to the mental disorders (n=4) and maternal conditions (n=2) that are the six leading sources of hospital bed days overall, 2001-2010



lost duty due to hospitalization; complications of pregnancy and delivery accounted for an additional 178 lost years of operational effectiveness while hospitalized. 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 and still ongoing 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 2010, 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 three mental disorders (substance abuse, anxiety, and mood), three anatomic site-defined injuries (back/abdomen; arm/shoulder; foot/ankle), and upper respiratory infections.

Throughout military history, mental disorders (including substance abuse disorders) and injuries 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 injuries of all types – particularly, back 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, 2010

This report documents the frequencies, rates, trends, and distributions of hospitalizations of active component members of the U.S. Armed Forces during calendar year 2010. 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 not included in this report.

## Frequencies, rates, and trends:

In 2010 there were 88,119 reports of hospitalizations of active component members of the U.S. Army, Navy, Air Force, Marine Corps, and Coast Guard; nearly one-third (32%) of the hospitalizations were in non-military facilities (Table 1, Figure 1). The hospitalization rate (all causes) was 60.4 per 1,000 service members per year. Annual hospitalization rates (all causes) were stable and slightly higher during the last four years compared to the earlier years of the decade (overall hospitalization rate, 2007-2010: 60.2 per 1,000 person-years [p-yrs]; 2001-2006: 55.3 per 1,000 p-yrs) (Figure 1).

## Hospitalizations, by illness and injury categories:

As in recent prior years, in 2010 three diagnostic categories accounted for more than one-half (53.7%) of all hospitalizations of active component members: mental disorders (20.7%), pregnancy-related conditions and childbirth (20.6%), and injuries and poisonings (12.4%) (Table 1). In contrast to recent prior years, in 2010 there were more hospitalizations for mental disorders than for any other major category of illnesses or injuries (per the ICD-9-CM). From 2006 to 2010, numbers of hospitalizations increased in ten and decreased in seven major categories of illnesses and injuries. The largest percentage increases between 2006 and 2010 were for "other" or V-coded hospitalizations (primarily orthopedic aftercare and rehabilitation following a previous illness or injury) (difference in hospitalizations, 2010 versus 2006 [hosp diff, 2010-2006]: +1,440; +71.3%) and mental disorders (hosp diff, 2010-2006: +6,560; +56.1%). The largest percentage decreases during the same period were for hematologic disorders (hosp diff, 2010-2006: -157; -29.9%) and "endocrine, nutrition, immunity" (hosp diff, 2010-2006: -116; -11.5%) (Table 1).

## Hospitalizations, by gender:

In 2010, the hospitalization rate (all causes) was more than three times higher among females than males (hospitalization rate, overall: females: 147.9 per 1,000 p-yrs; males: 45.7 per

**Table 1.** Hospitalizations, ICD-9-CM diagnostic categories, active component, U.S. Armed Forces, 2006, 2008, and 2010

Major diagnostic category (ICD-9-CM)	2006			2008			2010		
	No.	Rate <sup>a</sup>	Rank	No.	Rate <sup>a</sup>	Rank	No.	Rate <sup>a</sup>	Rank
Mental disorders (290 - 319)	11,690	8.34	(2)	15,893	11.19	(2)	18,250	12.51	(1)
Pregnancy and childbirth (630 - 679, relevant V codes) <sup>b</sup>	17,456	12.45 (86.28)	(1)	17,457	12.29 (86.66)	(1)	18,125	12.42 (86.75)	(2)
Injury and poisoning (800 - 999)	11,510	8.21	(3)	11,663	8.21	(3)	10,950	7.51	(3)
Digestive system (520 - 579)	7,056	5.04	(4)	7,562	5.33	(5)	7,867	5.39	(4)
Musculoskeletal system (710 - 739)	6,859	4.90	(5)	7,639	5.38	(4)	7,449	5.11	(5)
Ill-defined conditions (780 - 799)	4,571	3.26	(6)	4,400	3.10	(6)	4,444	3.05	(6)
Other (E80-E99 and V01-V89, except pregnancy-related)	2,020	1.44	(12)	2,504	1.76	(10)	3,460	2.37	(7)
Circulatory system (390 - 459)	2,703	1.93	(9)	2,750	1.94	(8)	2,831	1.94	(8)
Respiratory system (460 - 519)	2,875	2.05	(7)	3,043	2.14	(7)	2,701	1.85	(9)
Genitourinary system (580 - 629)	2,711	1.93	(8)	2,729	1.92	(9)	2,654	1.82	(10)
Neoplasms (140 - 239)	2,079	1.48	(11)	2,134	1.50	(12)	2,101	1.44	(11)
Nervous system (320 - 389)	1,406	1.00	(13)	1,919	1.35	(13)	2,085	1.43	(12)
Skin and subcutaneous tissue (680 - 709)	2,248	1.60	(10)	2,362	1.66	(11)	2,073	1.42	(13)
Infectious and parasitic diseases (001 - 139)	1,276	0.91	(14)	1,274	0.90	(14)	1,396	0.96	(14)
Endocrine, nutrition, immunity (240 - 279)	1,011	0.72	(15)	854	0.60	(15)	895	0.61	(15)
Congenital anomalies (740 - 759)	338	0.24	(17)	353	0.25	(16)	470	0.32	(16)
Hematologic disorders (280 - 289)	525	0.37	(16)	338	0.24	(17)	368	0.25	(17)
<i>Total</i>	<i>78,334</i>	<i>55.91</i>		<i>84,874</i>	<i>59.78</i>		<i>88,119</i>	<i>60.41</i>	

<sup>a</sup>Rates are expressed as hospitalizations per 1,000 person-years

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

1,000 p-yrs); however, pregnancy and childbirth accounted for 58.6 percent of all hospitalizations of females. The rate of hospitalizations for conditions not related to pregnancy and childbirth was one-third (33.9%) higher among females (61.2 per 1,000 per year) than males.

Hospitalization rates were higher among males than females for injuries and poisonings (male:female [m:f], rate ratio [RR]: 1.41; rate difference [RD]: 2.29 per 1,000 p-yrs), musculoskeletal/connective tissue disorders (m:f, RR: 1.17; RD: 0.75 per 1,000 p-yrs), and skin and subcutaneous tissue disorders (m:f, RR: 1.35; RD: 0.38 per 1,000 p-yrs). Hospitalization rates were similar among males and females for circulatory disorders (m:f, RR: 1.03; RD: 0.05 per 1,000 p-yrs) and respiratory diseases (m:f, RR: 1.03; RD: 0.06 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: 5.85 per 1,000 p-yrs), mental disorders (RD: 3.48 per 1,000 p-yrs), and neoplasms (RD: 3.61 per 1,000 p-yrs).

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/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 (Figure 2).

#### Most frequent diagnoses:

In 2010, seven diagnoses (at the 3-digit level of the ICD-9-CM) accounted for more than 1,200 hospitalizations each

among males: adjustment reactions (n=4,524), episodic mood disorders (n=3,809), intervertebral disc disorders (n=2,269), alcohol dependence syndrome (1,850), acute appendicitis (n=1,844), symptoms involving the respiratory system (n=1,458), and other cellulitis and abscess (n=1,360). These seven diagnoses accounted for 30 percent of all hospitalizations of males in 2010 (Table 2).

In 2010, pregnancy and childbirth-related conditions accounted for nearly 60 percent of all hospitalizations of females (Table 3). Other than pregnancy and childbirth-related diagnoses, leading causes of hospitalizations of females were episodic mood disorders (n=1,142), adjustment reactions (n=965), uterine leiomyoma (n=507), intervertebral disc disorders (n=305), depressive disorder (n=285), and acute appendicitis (n=270). These six diagnoses accounted for 27 percent of all hospitalizations (not related to pregnancy/childbirth) of females (Table 3).

#### Mental health conditions:

In 2010 mental disorders accounted for more hospitalizations of U.S. service members than any other major category of diagnoses (Table 1). Adjustment reactions (including posttraumatic stress disorder) and episodic mood disorders caused more hospitalizations among active component members than any other specific conditions (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 childbirth-related), respectively (Tables 2,3).

#### Injuries and poisonings:

As in the past, in 2010, injuries and poisonings were a leading cause of hospitalizations of U.S. military members (Table 1). Of all injuries and poisonings that resulted in

**Figure 1.** Rate of hospitalization (all causes), by calendar year, active component, U.S. Armed Forces, 2001-2010

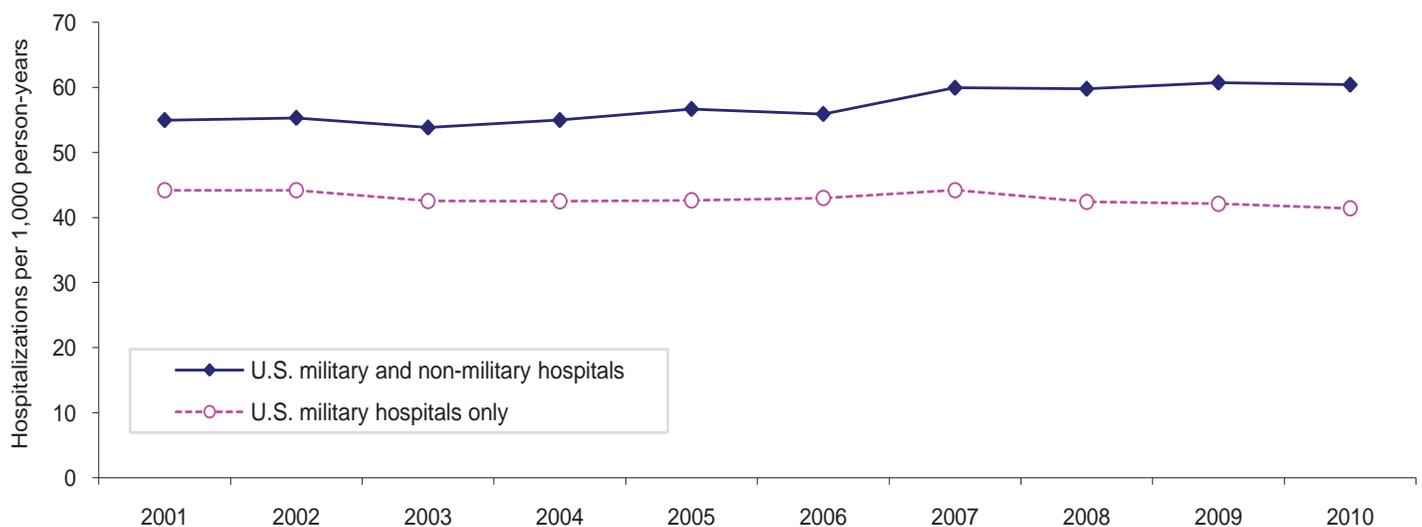
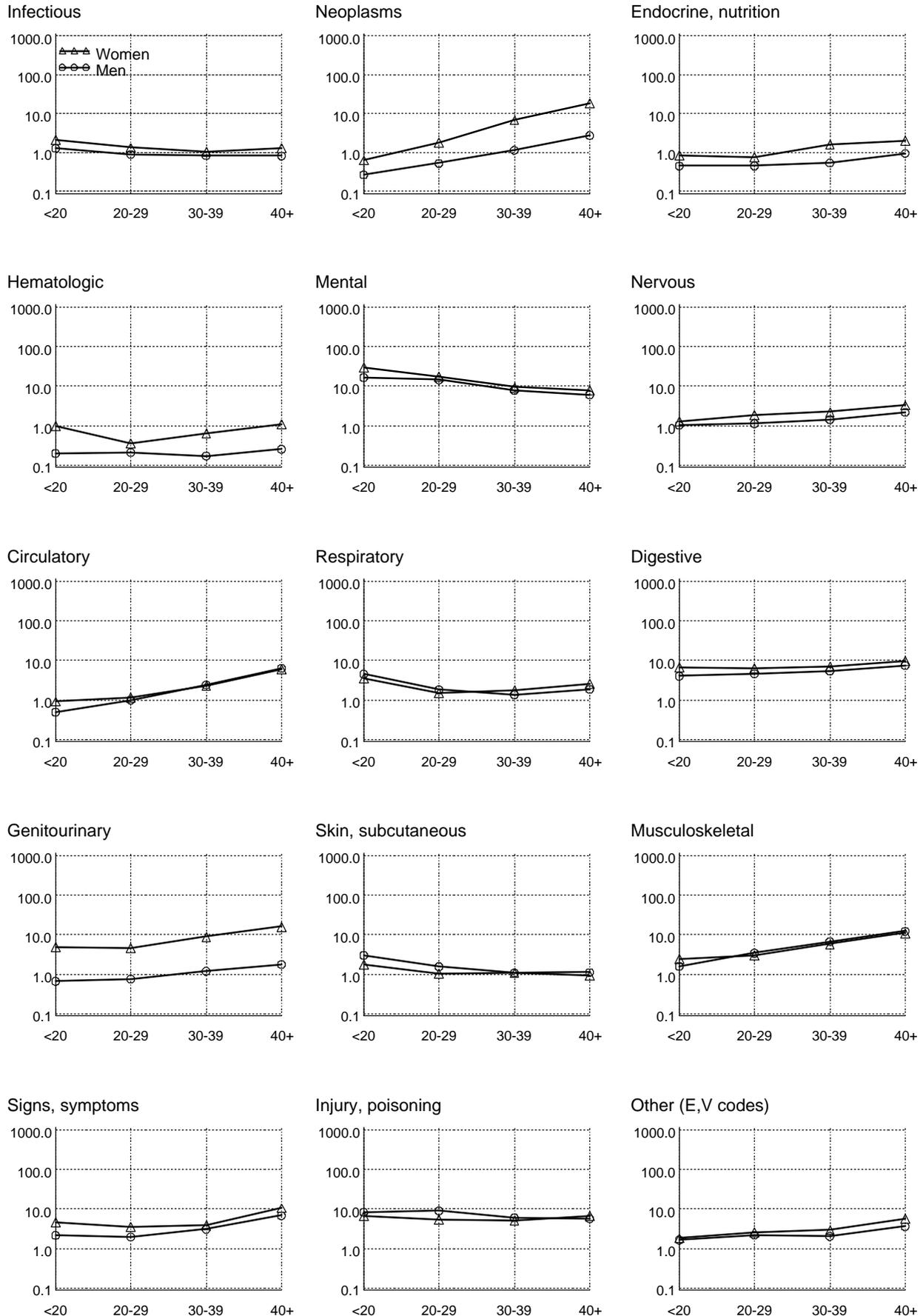


Figure 2. Rate<sup>a</sup> of hospitalizations, by major diagnostic categories, by age and gender, active component, U.S. Armed Forces, 2010



<sup>a</sup>Rate expressed as hospitalizations per 1,000 person-years

**Table 2.** Most frequent diagnoses during hospitalization, by major diagnostic category, males, active component, U.S. Armed Forces, 2010

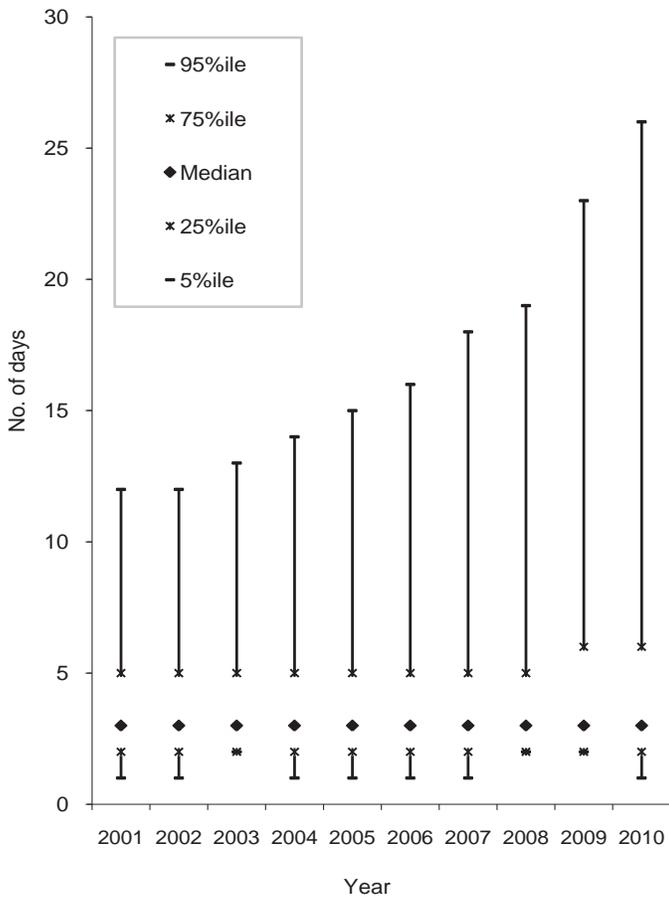
Diagnostic category (ICD-9-CM codes)	No.	%
<b>Infectious and parasitic diseases (001-139)</b>	1,118	
Meningitis due to enterovirus	196	17.5
Septicemia	169	15.1
Intestinal infections due to other organisms	163	14.6
Ill-defined intestinal infections	99	8.9
Viral and chlamydial infection	68	6.1
<b>Neoplasms (140-239)</b>	1,154	
Malignant neoplasm of prostate	89	7.7
Malignant neoplasm of brain	72	6.2
Malignant neoplasm of thyroid gland	71	6.2
Malignant neoplasm of testis	64	5.5
Neoplasms of unspecified nature	46	4.0
<b>Endocrine, nutrition, immunity (240-279)</b>	666	
Disorders of fluid electrolyte and acid-base balance	225	33.8
Diabetes mellitus	192	28.8
Nontoxic nodular goiter	38	5.7
Thyrotoxicosis with or without goiter	37	5.6
Overweight, obesity and other hyperalimentation	37	5.6
<b>Hematologic disorders (280-289)</b>	256	
Diseases of white blood cells	69	27.0
Purpura and other hemorrhagic conditions	50	19.5
Other diseases of blood and blood-forming organs	34	13.3
Aplastic anemia	29	11.3
Other and unspecified anemias	21	8.2
<b>Mental disorders (290-319)</b>	15,012	
Adjustment reaction	4,524	30.1
Episodic mood disorders	3,809	25.4
Alcohol dependence syndrome	1,850	12.3
Depressive disorder not elsewhere classified	1,123	7.5
Nondependent abuse of drugs	744	5.0
<b>Nervous system (320-389)</b>	1,656	
Pain, not elsewhere classified	293	17.7
Organic sleep disorders	259	15.6
Epilepsy	205	12.4
Migraine	133	8.0
Other conditions of brain	69	4.2
<b>Circulatory system (390-459)</b>	2,435	
Cardiac dysrhythmias	531	21.8
Acute pulmonary heart disease	251	10.3
Other forms of chronic ischemic heart disease	192	7.9
Acute myocardial infarction	178	7.3
Other venous embolism and thrombosis	156	6.4
<b>Respiratory system (460-519)</b>	2,324	
Pneumonia organism unspecified	705	30.3
Pneumothorax	167	7.2
Deviated nasal septum	165	7.1
Other diseases of lung	150	6.5
Peritonsillar abscess	134	5.8

Diagnostic category (ICD-9-CM codes)	No.	%
<b>Digestive system (520-579)</b>	6,417	
Acute appendicitis	1,844	28.7
Dentofacial anomalies including malocclusion	444	6.9
Cholelithiasis	418	6.5
Diseases of pancreas	377	5.9
Diseases of esophagus	366	5.7
<b>Genitourinary system (580-629)</b>	1,226	
Calculus of kidney and ureter	435	35.5
Acute renal failure	215	17.5
Other disorders of male genital organs	101	8.2
Other disorders of kidney and ureter	81	6.6
Urethral stricture	70	5.7
<b>Skin and subcutaneous tissue (680-709)</b>	1,844	
Other cellulitis and abscess	1,360	73.8
Pilonidal cyst	146	7.9
Cellulitis and abscess of finger and toe	100	5.4
Other disorders of skin and subcutaneous tissue	35	1.9
Other hypertrophic and atrophic conditions of skin	26	1.4
<b>Musculoskeletal system (710-739)</b>	6,516	
Intervertebral disc disorders	2,269	34.8
Spondylosis and allied disorders	505	7.8
Internal derangement of knee	468	7.2
Disorders of muscle ligament and fascia	436	6.7
Osteoarthritis and allied disorders	392	6.0
<b>Congenital anomalies (740-759)</b>	391	
Other congenital musculoskeletal anomalies	108	27.6
Bulbus cordis anomalies & anomalies of cardiac septal	41	10.5
Congenital anomalies of urinary system	35	9.0
Certain congenital musculoskeletal deformities	33	8.4
Other congenital anomalies of heart	30	7.7
<b>Signs, symptoms, and ill-defined conditions (780-799)</b>	3,533	
Symptoms involving respiratory system	1,458	41.3
General symptoms	1,061	30.0
Other symptoms involving abdomen and pelvis	448	12.7
Symptoms involving head and neck	132	3.7
Symptoms involving digestive system	121	3.4
<b>Injury and poisoning (800-999)</b>	9,791	
Other complications, procedures not elsewhere classified	845	8.6
Fracture of ankle	514	5.2
Fracture of face bones	471	4.8
Complications peculiar to certain specified procedures	429	4.4
Fracture of tibia and fibula	424	4.3
<b>Other (E81-E99 and V01-V82, except pregnancy-related)</b>	2,854	
Encounter for other and unspecified procedures	1,055	37.0
Care involving use of rehabilitation procedures	457	16.0
Other orthopedic aftercare	389	13.6
Observation & evaluation, suspected conditions not found	332	11.6
Other psychosocial circumstances	291	10.2

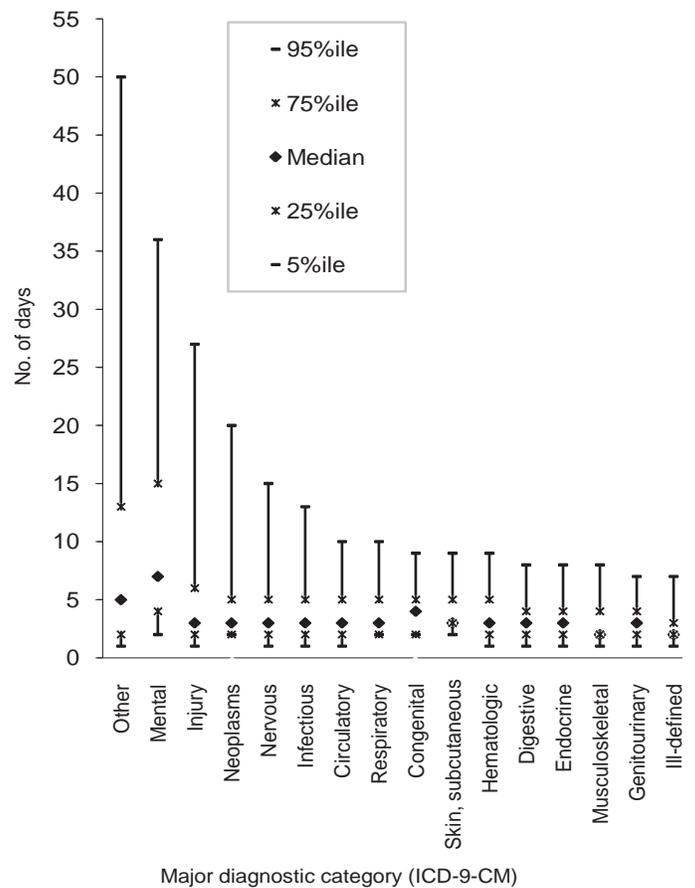
**Table 3.** Most frequent diagnoses during hospitalization, by major diagnostic category, females, active component, U.S. Armed Forces, 2010

Diagnostic category (ICD-9-CM codes)	♀	No.	%
<b>Infectious and parasitic diseases (001-139)</b>		278	
Meningitis due to enterovirus		52	18.7
Septicemia		44	15.8
Intestinal infections due to other organisms		43	15.5
Viral and chlamydial infection		21	7.6
Ill-defined intestinal infections		20	7.2
<b>Neoplasms (140-239)</b>		947	
Uterine leiomyoma		507	53.5
Benign neoplasm of ovary		62	6.5
Malignant neoplasm of thyroid gland		47	5.0
Malignant neoplasm of female breast		44	4.6
Benign neoplasm of other endocrine glands		19	2.0
<b>Endocrine, nutrition, immunity (240-279)</b>		229	
Disorders of fluid electrolyte and acid-base balance		56	24.5
Nontoxic nodular goiter		50	21.8
Overweight, obesity and other hyperalimentation		31	13.5
Thyrotoxicosis with or without goiter		27	11.8
Diabetes mellitus		16	7.0
<b>Hematologic disorders (280-289)</b>		112	
Iron deficiency anemias		38	33.9
Other and unspecified anemias		19	17.0
Purpura and other hemorrhagic conditions		14	12.5
Diseases of white blood cells		14	12.5
Other diseases of blood and blood-forming organs		13	11.6
<b>Mental disorders (290-319)</b>		3,238	
Episodic mood disorders		1,142	35.3
Adjustment reaction		965	29.8
Depressive disorder not elsewhere classified		285	8.8
Alcohol dependence syndrome		203	6.3
Anxiety, dissociative and somatoform disorders		188	5.8
<b>Nervous system (320-389)</b>		429	
Migraine		94	21.9
Pain, not elsewhere classified		84	19.6
Epilepsy		42	9.8
Other conditions of brain		29	6.8
Multiple sclerosis		17	4.0
<b>Circulatory system (390-459)</b>		396	
Cardiac dysrhythmias		84	21.2
Acute pulmonary heart disease		62	15.7
Other venous embolism and thrombosis		30	7.6
Essential hypertension		27	6.8
Hemorrhoids		19	4.8
<b>Respiratory system (460-519)</b>		377	
Pneumonia organism unspecified		81	21.5
Asthma		46	12.2
Chronic disease of tonsils and adenoids		36	9.5
Acute tonsillitis		29	7.7
Deviated nasal septum		19	5.0
<b>Digestive system (520-579)</b>		1,450	
Acute appendicitis		270	18.6
Cholelithiasis		223	15.4
Dentofacial anomalies including malocclusion		165	11.4
Diseases of pancreas		112	7.7
Intestinal obstruction without mention of hernia		71	4.9
<b>Genitourinary system (580-629)</b>		1,428	
Disorders of menstruation and other abnormal bleeding		241	16.9
Infections of kidney		176	12.3
Pain & other symptoms, female genital organs		171	12.0
Noninflammatory disorders of ovary fallopian tube		155	10.9
Inflammatory disease of ovary fallopian tube		119	8.3
<b>Pregnancy and childbirth (630-679, relevant V codes)</b>		18,125	
Trauma to perineum and vulva during delivery		4,640	25.6
Other indications for care, intervention related to labor		1,484	8.2
Other current conditions complicating pregnancy		1,398	7.7
Abnormality of organs and soft tissues of pelvis		1,219	6.7
Hypertension complicating pregnancy, childbirth		1,101	6.1
<b>Skin and subcutaneous tissue (680-709)</b>		229	
Other cellulitis and abscess		140	61.1
Cellulitis and abscess of finger and toe		15	6.6
Pilonidal cyst		14	6.1
Other hypertrophic and atrophic conditions of skin		12	5.2
Disorders of sweat glands		10	4.4
<b>Musculoskeletal system (710-739)</b>		933	
Intervertebral disc disorders		305	32.7
Other derangement of joint		75	8.0
Other disorders of bone and cartilage		74	7.9
Other and unspecified disorders of back		65	7.0
Internal derangement of knee		56	6.0
<b>Signs, symptoms, and ill-defined conditions (780-799)</b>		911	
Other symptoms involving abdomen and pelvis		244	26.8
General symptoms		237	26.0
Symptoms involving respiratory system		234	25.7
Symptoms involving head and neck		59	6.5
Symptoms involving digestive system		44	4.8
<b>Injury and poisoning (800-999)</b>		1,159	
Other complications of procedures not elsewhere classified		224	19.3
Poisoning by analgesics antipyretics & antirheumatics		86	7.4
Complications peculiar to certain specified procedures		68	5.9
Fracture of ankle		63	5.4
Poisoning by psychotropic agents		61	5.3
<b>Other (E81-E99 and V01-V82, except pregnancy-related)</b>		606	
Encounter for other and unspecified procedures		183	30.2
Observation & evaluation for suspected conditions		145	23.9
Other psychosocial circumstances		62	10.2
Other orthopedic aftercare		48	7.9
Care involving use of rehabilitation procedures		48	7.9

**Figure 3.** Length of hospital stay, by year, active component, U.S. Armed Forces, 2010



**Figure 4.** Length of hospital stay, by major diagnostic category, active component, U.S. Armed Forces, 2010



hospitalizations in U.S. military medical facilities (n=7,423), approximately one in six (n=1,212; 16.3%) were reported as “intentionally inflicted” (e.g., enemy weapons; suicide gestures/attempts; fights, assaults, legal interventions) of which nearly 70 percent (n=845; 69.7%) were reported as “battle casualties” (Table 4). Of all “unintentional” injuries and poisonings that resulted in hospitalizations in U.S. military facilities (n=6,185), approximately two-thirds (62.5%) were considered caused by “falls and miscellaneous” (n=1,764), complications of medical or surgical care (n=1,250), or “guns and explosives” (n=854) (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 2001, the median durations of hospitalizations (all causes) have been stable (3 days), but the durations of the longest hospitalizations have sharply increased (Figure 3). In

2010 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 (musculoskeletal disorders; signs, symptoms, and ill-defined conditions) to seven days (mental disorders); and for most diagnostic categories, fewer than 5 percent of hospitalizations exceeded 15 days, but approximately 5 percent of mental disorder-related hospitalizations exceeded 36 days (Figure 4).

**Hospitalizations by service:**

Among members of the Navy, Air Force, and Coast Guard, pregnancy and childbirth-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 three-times higher than in the Coast Guard, twice as high as in the Navy and Air Force, and 67 percent higher than in the Marine Corps (Table 5).

Injuries and poisonings were the second leading cause of hospitalizations in the Marine Corps and the third leading cause in the Army, Navy and Coast Guard. The

**Table 5.** Hospitalizations, by service and ICD-9-CM diagnostic category, active component, U.S. Armed Forces, 2010

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)	10,100	18.0	2,932	9.1	2,767	8.4	2,192	10.8	259	6.2
Pregnancy and childbirth (630 - 679, relevant V codes) <sup>b</sup>	6,472	11.6	4,652	14.4	5,129	15.5	1,481	7.3	391	9.3
Injury and poisoning (800 - 999)	5,746	10.3	1,647	5.1	1,388	4.2	2,001	9.9	168	4.0
Musculoskeletal system (710 - 739)	3,709	6.6	1,121	3.5	1,599	4.8	860	4.2	160	3.8
Digestive system (520 - 579)	3,398	6.1	1,587	4.9	1,757	5.3	935	4.6	190	4.5
Ill-defined conditions (780 - 799)	2,442	4.4	678	2.1	887	2.7	370	1.8	67	1.6
Other (E81-E99 and V01-V82, except pregnancy-related)	1,804	3.2	622	1.9	453	1.4	524	2.6	57	1.4
Respiratory system (460 - 519)	1,421	2.5	367	1.1	453	1.4	404	2.0	56	1.3
Circulatory system (390 - 459)	1,412	2.5	531	1.6	622	1.9	198	1.0	68	1.6
Genitourinary system (580 - 629)	1,204	2.2	485	1.5	694	2.1	216	1.1	55	1.3
Nervous system (320 - 389)	1,075	1.9	337	1.0	417	1.3	222	1.1	34	0.8
Skin and subcutaneous tissue (680 - 709)	956	1.7	383	1.2	315	1.0	381	1.9	38	0.9
Neoplasms (140 - 239)	914	1.6	464	1.4	518	1.6	168	0.8	37	0.9
Infectious and parasitic diseases (001 - 139)	600	1.1	286	0.9	273	0.8	200	1.0	37	0.9
Endocrine, nutrition, immunity (240 - 279)	438	0.8	164	0.5	179	0.5	105	0.5	9	0.2
Congenital anomalies (740 - 759)	212	0.4	72	0.2	101	0.3	76	0.4	9	0.2
Hematologic disorders (280 - 289)	166	0.3	84	0.3	68	0.2	38	0.2	12	0.3
Total	42,069	75.1	16,412	50.7	17,620	49.62	10,371	51.22	1,647	39.32

<sup>a</sup>Rate expressed as hospitalizations per 1,000 person-years of service

<sup>b</sup>Rates of pregnancy and childbirth-related hospitalizations among females in the Army, Navy, Air Force, Marine Corps and Coast Guard were 85.9, 91.2, 80.5, 111.6, and 70.0, respectively.

hospitalization rate for injuries/poisonings was slightly higher among soldiers (10.3 per 1,000 p-yrs) than Marines (9.9 per 1,000 p-yrs) and approximately two times higher among soldiers than members of the other Services (Table 5).

#### Editorial comment:

In 2010, on average, one of every 16 active component members was hospitalized for any cause; and one of every 20 members was hospitalized for a condition not related to pregnancy or childbirth. Hospitalization rates for all causes among active component members have not significantly changed in the past decade. As in the past, in 2010, mental disorders, pregnancy/childbirth-related conditions, and injuries/poisonings accounted for more than one-half of all hospitalizations of active component members. Since 2006, 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

**Table 4.** Injury hospitalizations<sup>a</sup> by casual agent,<sup>b</sup> active component, U.S. Armed Forces, 2010

Cause	No.	%
<b>Unintentional</b>	<b>6,185</b>	<b>83.3</b>
Falls and miscellaneous	1,764	23.8
Complications of medical/surgical procedures	1,250	16.8
Land transport	854	11.5
Guns, explosives (includes accidents during war)	798	10.8
Poisons and fire	522	7.0
Athletics	352	4.7
Environmental	231	3.1
Machinery, tools	200	2.7
Air transport	183	2.5
Water transport	31	0.4
<b>Intentional</b>	<b>1,212</b>	<b>16.3</b>
Battle casualty	845	11.4
Self-inflicted	304	4.1
Non-battle, inflicted by other (e.g., assault)	63	0.8
<b>Missing/invalid code</b>	<b>26</b>	<b>0.4</b>

<sup>a</sup>Hospitalizations in U.S. military medical facilities only

<sup>b</sup>Causes determined by codes specified in NATO Standardization Agreement (STANAG) No.2050

members were hospitalized for illnesses and injuries while serving on active duty in 2010; 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 2010, adjustment reactions (including posttraumatic 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.

### **Reportable medical events, active and reserve components, U.S. Armed Forces, 2010**

Annual summaries of reportable medical events in CY 2010 will be published in a future *MSMR* issue.

## Ambulatory Visits among Members of the Active Component, U.S. Armed Forces, 2010

This report documents frequencies, rates, trends, and characteristics of ambulatory visits of active component members of the U.S. Armed Forces during calendar year 2010. 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 2010 were categorized according to the first three digits of the primary (first-listed) diagnosis code (per International Classification of Diseases, 9<sup>th</sup> revision, clinical modifications [ICD-9-CM]).

### Frequencies, rates, and trends:

During 2010, there were 19,227,110 reported ambulatory visits of active component service members (Table 1). The crude annual rate (all causes) was 13,181 visits per 1,000 service members; thus, on average, each service member had 13 ambulatory encounters during the year (Figure 1). The rate of documented ambulatory visits in 2010 was 9.4 percent higher than in 2009 and 64.1 percent higher than in 2001 (Figure 1).

In 2010, four of every nine (44.3%) ambulatory visits were for “other contact with health services.” 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) (Tables 2,3). Three “V-coded” diagnoses accounted for the majority of the visits in this category: general medical examination (including deployment health assessments) (32.5%), care involving use of rehabilitation procedures (15.8%), and special investigations and examinations (including vision, dental and gynecological exams) (7.5%).

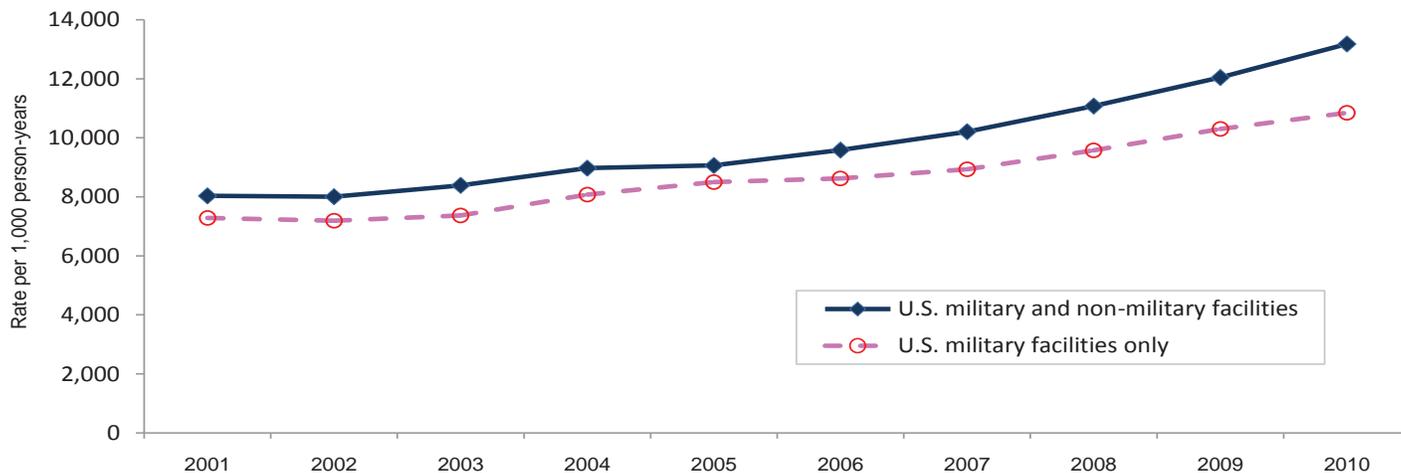
In 2010, there were 10,703,649 documented ambulatory visits for illnesses and injuries (ICD-9-CM: 001-999). The crude annual rate of illness and injury-related visits was 7.3 visits per person per year (p-yr). The rate of ambulatory visits for illnesses and injuries in 2010 was 20.6 percent higher than in 2008 and 40.0 percent higher than in 2006 (Table 1).

### Ambulatory visits, by diagnostic categories:

In 2010, three major diagnostic categories accounted for the majority (55.8%) of all illness and injury-related ambulatory visits among active component service members: musculoskeletal and connective tissue disorders (23.7%), “signs, symptoms and ill-defined conditions” (16.5%), and mental disorders (15.6%) (Table 1).

From 2006 to 2010, there were increases in numbers of visits in all major diagnostic categories except infectious and parasitic diseases (Table 1). The largest percentage increases from 2006 to 2010 were for “signs, symptoms and ill-defined conditions” (change in ambulatory visits, 2006-10: +1,019,354; +136.5%), mental disorders (change in ambulatory visits, 2006-10: +889,061; +113.7%), and musculoskeletal and connective tissue disorders (change in ambulatory visits, 2006-10: +878,918; +53.0% (Table 1).

Figure 1. Rate of ambulatory visits by calendar year, active component, U.S. Armed Forces, 1999-2010



Over the past five years, the relative distributions of ambulatory visits by diagnostic categories of the ICD-9-CM remained fairly stable. Between 2006 and 2010, other (V-coded) encounters and musculoskeletal and connective tissue disorders consistently accounted for the most ambulatory visits. During the period, one category increased and one decreased by at least two in rank order based on numbers of attributable visits: “signs, symptoms, and ill-defined conditions” (change in rank order, 2006-10: 5<sup>th</sup> to 3<sup>rd</sup>) and injury and poisoning (3<sup>rd</sup> to 5<sup>th</sup>) (Table 1).

#### Ambulatory visits, by gender:

In 2010, males accounted for three-fourths (75.3%) of all illness and injury-related visits; however, the annual crude rate was approximately twice as high among females (12.7 visits/p-yr) than males (6.4 visits/p-yr). Excluding pregnancy-related visits (which accounted for 13.1% of all non-V coded ambulatory visits among females), the ambulatory visit rate among females was 11.0 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: 728.6; male: 465.8;

female:male rate ratio [RR]: 1.56); adjustment reaction (rates, female: 537.8; male: 362.8; RR: 1.48); and other/unspecified disorders of the back (rates, female: 534.3; male: 350.2; RR: 1.53). Other specific diagnoses that were among the ten most frequently reported among both males and females were disorders of refraction and accommodation, anxiety disorders, and respiratory symptoms. Four mental disorders among males (adjustment reaction, alcohol dependence syndrome, anxiety disorders, nondependent abuse of drugs) and three among females (adjustment reaction, episodic mood disorders, 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 eighth 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 sharply increased with age among males (Figure 2).

**Table 1.** Ambulatory visits, ICD-9-CM diagnostic categories, active component, U.S. Armed Forces, 2006, 2008 and 2010

Major diagnostic category (ICD-9-CM)	2006			2008			2010		
	No.	No. per person	Rank	No.	No. per person	Rank	No.	No. per person	Rank
Other (V01-V89, except pregnancy-related)	6,088,454	4.35	(1)	7,087,697	4.99	(1)	8,523,461	5.84	(1)
Musculoskeletal system (710-739)	1,658,996	1.18	(2)	2,074,770	1.46	(2)	2,537,914	1.74	(2)
Ill-defined conditions (780-799)	746,854	0.53	(5)	899,525	0.63	(5)	1,766,208	1.21	(3)
Mental disorders (290 - 319)	781,916	0.56	(4)	1,217,155	0.86	(3)	1,670,977	1.15	(4)
Injury and poisoning (800-999)	888,146	0.63	(3)	973,762	0.69	(4)	977,607	0.67	(5)
Nervous system (320-389)	707,770	0.51	(6)	753,304	0.53	(6)	928,563	0.64	(6)
Respiratory system (460-519)	679,421	0.48	(7)	745,260	0.52	(7)	723,437	0.50	(7)
Skin, subcutaneous tissue (680-709)	369,394	0.26	(8)	390,424	0.27	(8)	399,001	0.27	(8)
Pregnancy complications or care (630-679, relevant V codes)	302,123	0.22	(9)	319,170	0.22	(9)	345,704	0.24	(9)
Digestive system (520-579)	271,007	0.19	(10)	282,456	0.20	(10)	301,715	0.21	(10)
Genitourinary system (580-629)	246,896	0.18	(12)	263,266	0.19	(11)	289,032	0.20	(11)
Infectious and parasitic diseases (001-139)	255,344	0.18	(11)	245,405	0.17	(12)	245,586	0.17	(12)
Circulatory system (390 -459)	163,539	0.12	(13)	174,667	0.12	(13)	185,590	0.13	(13)
Endocrine, nutrition, immunity (240-279)	126,676	0.09	(14)	133,762	0.09	(14)	149,567	0.10	(14)
Neoplasms (140-239)	100,586	0.07	(15)	117,724	0.08	(15)	128,938	0.09	(15)
Congenital anomalies (740-759)	25,360	0.02	(16)	27,691	0.02	(16)	28,051	0.02	(16)
Hematologic disorders (280-289)	18,173	0.01	(17)	21,010	0.01	(17)	25,759	0.02	(17)
<i>Total</i>	<i>13,430,655</i>	<i>9.59</i>		<i>15,727,048</i>	<i>11.08</i>		<i>19,227,110</i>	<i>13.18</i>	

**Table 2.** Most frequent diagnoses during ambulatory visits by major diagnostic category, males, U.S. Armed Forces, 2010

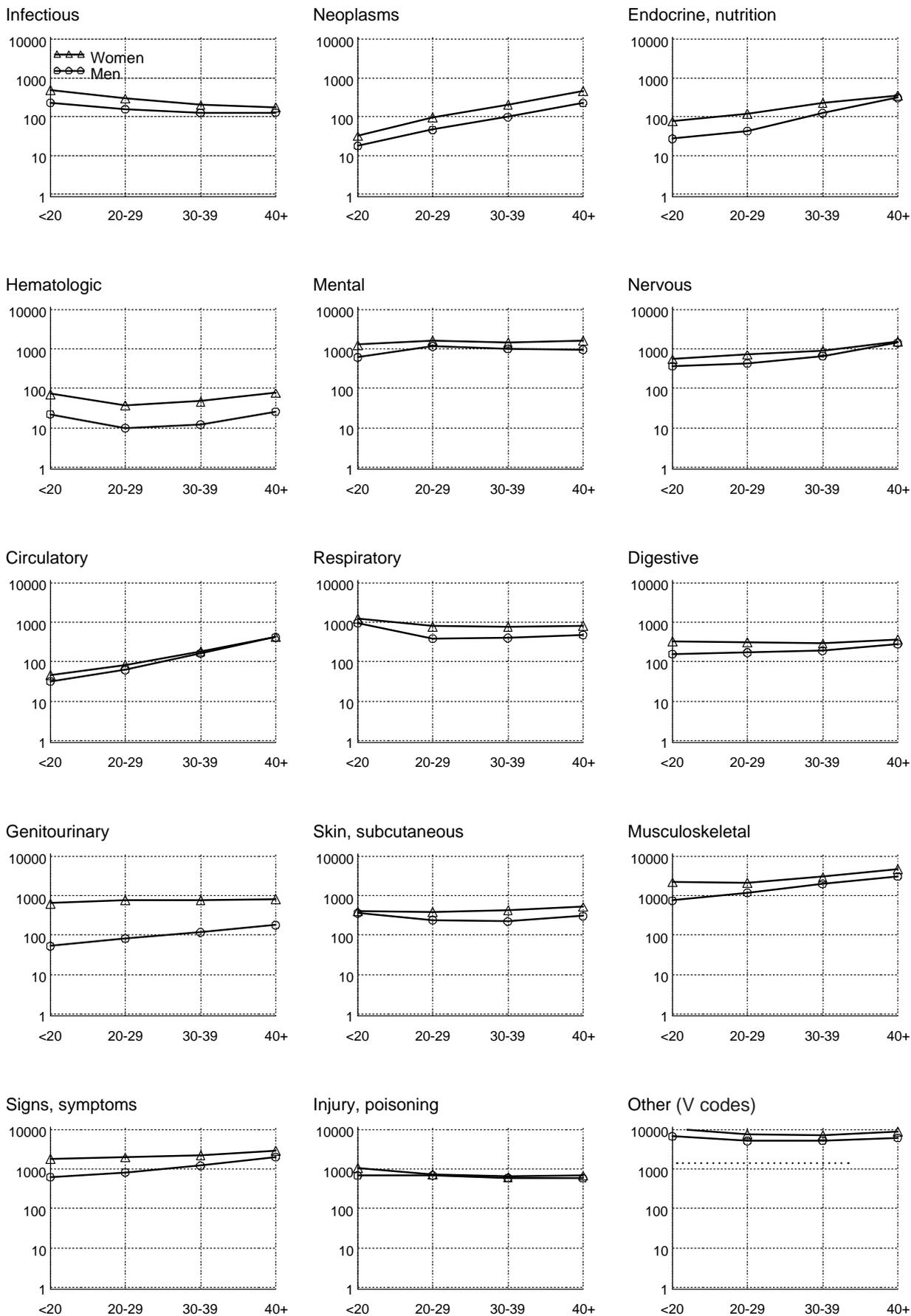
Diagnostic category (ICD-9-CM codes)	No.	%	Diagnostic category (ICD-9-CM codes)	No.	%
<b>Infectious and parasitic diseases (001 - 139)</b>	187,770		<b>Digestive system (520 - 579)</b>	235,535	
Other diseases due to viruses and chlamydiae	40,167	21.4	Other noninfectious gastroenteritis and colitis	62,822	26.7
Viral & chlamydial infection	39,254	20.9	Diseases of esophagus	34,210	14.5
Dermatophytosis	28,917	15.4	Gastrointestinal hemorrhage	14,393	6.1
Intestinal infections due to other organisms	13,295	7.1	Inguinal hernia	13,706	5.8
Streptococcal sore throat and scarlet fever	10,580	5.6	Gastritis and duodenitis	12,633	5.4
<b>Neoplasms (140 - 239)</b>	97,203		<b>Genitourinary system (580 - 629)</b>	126,178	
Benign neoplasm of skin	16,089	16.6	Other disorders of male genital organs	24,164	19.2
Neoplasm of uncertain behavior, oth & unspec site	13,452	13.8	Calculus of kidney and ureter	21,208	16.8
Neoplasms of unspecified nature	9,349	9.6	Other disorders of urethra and urinary tract	13,919	11.0
Lipoma	8,890	9.1	Orchitis and epididymitis	10,370	8.2
Malignant neoplasm of testis	3,536	3.6	Male infertility	8,821	7.0
<b>Endocrine, nutrition, immunity (240 - 279)</b>	115,312		<b>Skin and subcutaneous tissue (680 - 709)</b>	312,380	
Disorders of lipid metabolism	37,231	32.3	Other cellulitis and abscess	54,047	17.3
Diabetes mellitus	19,866	17.2	Contact dermatitis and other eczema	46,063	14.7
Overweight, obesity and other hyperalimentation	15,339	13.3	Diseases of hair and hair follicles	44,808	14.3
Disorders of fluid electrolyte and acid-base balance	7,400	6.4	Diseases of sebaceous glands	38,121	12.2
Acquired hypothyroidism	7,206	6.2	Diseases of nail	16,274	5.2
<b>Hematologic disorders (280 - 289)</b>	16,179		<b>Musculoskeletal system (710 - 739)</b>	1,996,654	
Other and unspecified anemias	3,734	23.1	Other and unspecified disorders of joint	582,071	29.2
Hereditary hemolytic anemias	2,757	17.0	Other and unspecified disorders of back	437,613	21.9
Diseases of white blood cells	2,731	16.9	Intervertebral disc disorders	138,431	6.9
Purpura and other hemorrhagic conditions	2,259	14.0	Peripheral enthesopathies and allied syndromes	132,351	6.6
Other diseases of blood and blood-forming organs	1,662	10.3	Other disorders of soft tissues	120,710	6.0
<b>Mental disorders (290 - 319)</b>	1,343,888		<b>Congenital anomalies (740 - 759)</b>	21,536	
Adjustment reaction	453,454	33.7	Certain congenital musculoskeletal deformities	6,159	28.6
Alcohol dependence syndrome	192,012	14.3	Other congenital musculoskeletal anomalies	3,170	14.7
Anxiety, dissociative and somatoform disorders	156,077	11.6	Congenital anomalies of the integument	3,009	14.0
Nondependent abuse of drugs	150,755	11.2	Other congenital anomalies of limbs	2,466	11.5
Episodic mood disorders	129,093	9.6	Congenital anomalies of urinary system	1,064	4.9
<b>Nervous system (320 - 389)</b>	754,027		<b>Signs, symptoms, and ill-defined conditions (780-799)</b>	1,317,566	
Disorders of refraction and accommodation	178,837	23.7	Other ill-defined, unknown causes of morbidity	591,732	44.9
Organic sleep disorders	177,559	23.5	General symptoms	183,855	14.0
Hearing loss	41,581	5.5	Symptoms involving respiratory system	150,323	11.4
Disorders of conjunctiva	36,868	4.9	Other symptoms involving abdomen and pelvis	87,680	6.7
Pain, not elsewhere classified	33,700	4.5	Symptoms involving digestive system	74,305	5.6
<b>Circulatory system (390 - 459)</b>	156,981		<b>Injury and poisoning (800 - 999)</b>	823,538	
Essential hypertension	71,610	45.6	Sprains and strains of ankle and foot	82,839	10.1
Hemorrhoids	17,354	11.1	Sprains and strains of knee and leg	82,586	10.0
Cardiac dysrhythmias	13,793	8.8	Sprains and strains of shoulder and upper arm	58,218	7.1
Varicose veins of other sites	5,543	3.5	Sprains and strains, other/unspec back	55,017	6.7
Other forms of chronic ischemic heart disease	4,719	3.0	Injury other and unspecified	50,988	6.2
<b>Respiratory system (460 - 519)</b>	551,339		<b>Other (V01-V82, except pregnancy-related)</b>	6,856,800	
Acute upper respiratory infections, unspecified site	127,640	23.2	General medical examination	2,353,814	34.3
Allergic rhinitis	75,096	13.6	Care involving use of rehabilitation procedures	1,085,820	15.8
Acute pharyngitis	65,933	12.0	Encounters for administrative purposes	461,820	6.7
Acute nasopharyngitis (common cold)	46,832	8.5	Special investigations and examinations	438,702	6.4
Pneumonia organism unspecified	32,033	5.8	Prophylactic vaccination and inoculation	437,847	6.0

**Table 3.** Most frequent diagnoses during ambulatory visits by major diagnostic category, females, U.S. Armed Forces, 2010

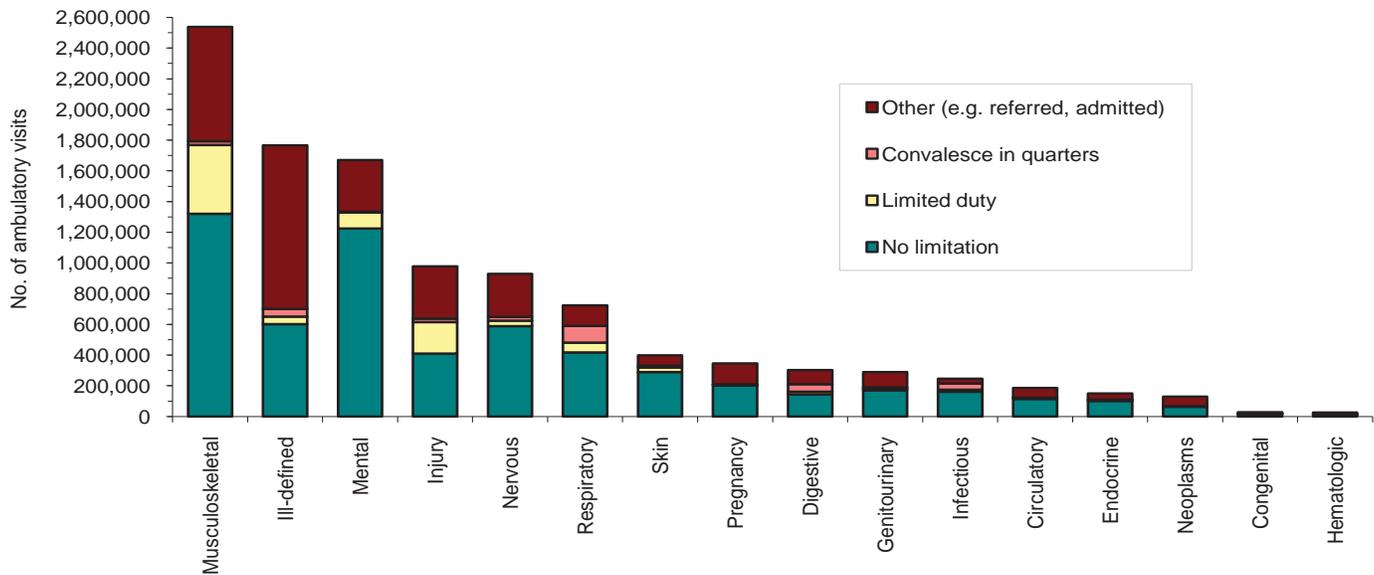
Diagnostic category (ICD-9-CM codes)	♀	No.	%
<b>Infectious and parasitic diseases (001 - 139)</b>		57,816	
Viral & chlamydial infection		15,373	26.6
Candidiasis		7,423	12.8
Other diseases due to viruses and chlamydiae		6,370	11.0
Dermatophytosis		4,822	8.3
Intestinal infections due to other organisms		4,172	7.2
<b>Neoplasms (140 - 239)</b>		31,735	
Benign neoplasm of skin		4,914	15.5
Uterine leiomyoma		4,270	13.5
Malignant neoplasm of female breast		3,387	10.7
Neoplasm of uncertain behavior, other & unspec site		3,295	10.4
Neoplasms of unspecified nature		2,532	8.0
<b>Endocrine, nutrition, immunity (240 - 279)</b>		34,255	
Overweight, obesity and other hyperalimentation		6,427	18.8
Acquired hypothyroidism		6,352	18.5
Ovarian dysfunction		3,009	8.8
Thyrotoxicosis with or without goiter		2,527	7.4
Disorders of fluid electrolyte and acid-base balance		2,488	7.3
<b>Hematologic disorders (280 - 289)</b>		9,580	
Other and unspecified anemias		3,485	36.4
Iron deficiency anemias		2,638	27.5
Purpura and other hemorrhagic conditions		816	8.5
Diseases of white blood cells		784	8.2
Hereditary hemolytic anemias		746	7.8
<b>Mental disorders (290 - 319)</b>		327,089	
Adjustment reaction		112,359	34.4
Episodic mood disorders		54,652	16.7
Anxiety, dissociative and somatoform disorders		49,104	15.0
Depressive disorder not elsewhere classified		34,417	10.5
Alcohol dependence syndrome		22,156	6.8
<b>Nervous system (320 - 389)</b>		174,536	
Disorders of refraction and accommodation		46,577	26.7
Migraine		25,852	14.8
Organic sleep disorders		10,564	6.1
Disorders of conjunctiva		10,430	6.0
Other headache syndromes		8,498	4.9
<b>Circulatory system (390 - 459)</b>		28,609	
Essential hypertension		9,514	33.3
Hemorrhoids		3,651	12.8
Cardiac dysrhythmias		3,095	10.8
Varicose veins of lower extremities		2,118	7.4
Disease of capillaries		965	3.4
<b>Respiratory system (460 - 519)</b>		172,098	
Acute upper respiratory infections, unspecified site		40,463	23.5
Allergic rhinitis		26,840	15.6
Acute pharyngitis		22,271	12.9
Acute nasopharyngitis (common cold)		13,234	7.7
Chronic sinusitis		12,412	7.2

Diagnostic category (ICD-9-CM codes)	♀	No.	%
<b>Digestive system (520 - 579)</b>		66,180	
Other noninfectious gastroenteritis and colitis		20,586	31.1
Functional digestive disorders		8,769	13.3
Diseases of esophagus		6,722	10.2
Gastritis and duodenitis		4,659	7.0
Gastrointestinal hemorrhage		2,637	4.0
<b>Genitourinary system (580 - 629)</b>		162,854	
Pain & other symptoms, female genital organs		26,772	16.4
Menstrual disorders, other abnormal bleeding		22,570	13.9
Other disorders of urethra and urinary tract		20,847	12.8
Inflammatory disease of cervix vagina and vulva		17,934	11.0
Other disorders of breast		12,587	7.7
<b>Pregnancy complications or care (630-679, relevant V codes)</b>		345,704	
Normal pregnancy		113,759	32.9
Other current conditions in the mother		34,044	9.8
Other complications of pregnancy		28,448	8.2
Postpartum care and examination		26,794	7.8
Early or threatened labor		11,932	3.5
<b>Skin and subcutaneous tissue (680 - 709)</b>		86,621	
Diseases of sebaceous glands		18,606	21.5
Contact dermatitis and other eczema		13,989	16.1
Other cellulitis and abscess		8,915	10.3
Diseases of hair and hair follicles		7,649	8.8
Other disorders of skin and subcutaneous tissue		6,039	7.0
<b>Musculoskeletal system (710 - 739)</b>		541,260	
Other and unspecified disorders of joint		152,235	28.1
Other and unspecified disorders of back		111,630	20.6
Other disorders of soft tissues		43,255	8.0
Nonallopathic lesions not elsewhere classified		35,640	6.6
Peripheral enthesopathies and allied syndromes		30,602	5.7
<b>Signs, symptoms, and ill-defined conditions (780-799)</b>		448,642	
Other unknown causes of morbidity		187,873	41.9
Other symptoms involving abdomen and pelvis		48,369	10.8
General symptoms		42,741	9.5
Symptoms involving respiratory system		38,123	8.5
Symptoms involving digestive system		30,772	6.9
<b>Injury and poisoning (800 - 999)</b>		154,069	
Sprains and strains of knee and leg		18,239	11.8
Sprains and strains of ankle and foot		18,218	11.8
Sprains and strains of other, unspec parts of back		13,659	8.9
Injury other and unspecified		8,449	5.5
Sprains and strains of shoulder and upper arm		8,207	5.3
<b>Other (V01-V82, except pregnancy-related)</b>		1,666,661	
General medical examination		415,869	25.0
Care involving use of rehabilitation procedures		261,635	15.7
Special investigations and examinations		204,196	12.3
Encounters for administrative purposes		115,518	6.9
Other persons seeking consultation		109,406	7.0

Figure 2. Rate<sup>a</sup> of ambulatory visits, by major diagnostic categories, by age and gender, U.S. Armed Forces, 2010



<sup>a</sup>Rate expressed as ambulatory visits per 1,000 person-years

**Figure 3.** Ambulatory visits in relation to reported dispositions, by diagnostic category, active component, U.S. Armed Forces, 2010

### Dispositions after ambulatory visits:

Approximately 54.5 percent of all illness and injury-related visits resulted in “duty without limitations” dispositions (**Figure 3**). Only one in 30 (3.3%) 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 (24.1%), injuries and poisonings (23.3%), diseases of the digestive system (22.0%), infectious and parasitic diseases (20.9%) and musculoskeletal and connective tissue disorders (18.7%). Musculoskeletal and connective tissue disorders and injuries and poisonings accounted for almost two-thirds (64.7%) of all “limited duty” dispositions; diseases of the respiratory system accounted for nearly one-third (31.3%) of all “convalescence in quarters” dispositions – more than twice as many ( $n = 110,068$ ) 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 2006 to 2010, the numbers of visits that were documented with diagnostic codes indicating “ill-defined conditions” or mental disorders more than doubled. Thus, in 2010, ill-defined conditions and mental disorders accounted for nearly one-third (32.1%) of all illness and injury-related diagnoses reported on standardized records of ambulatory encounters.

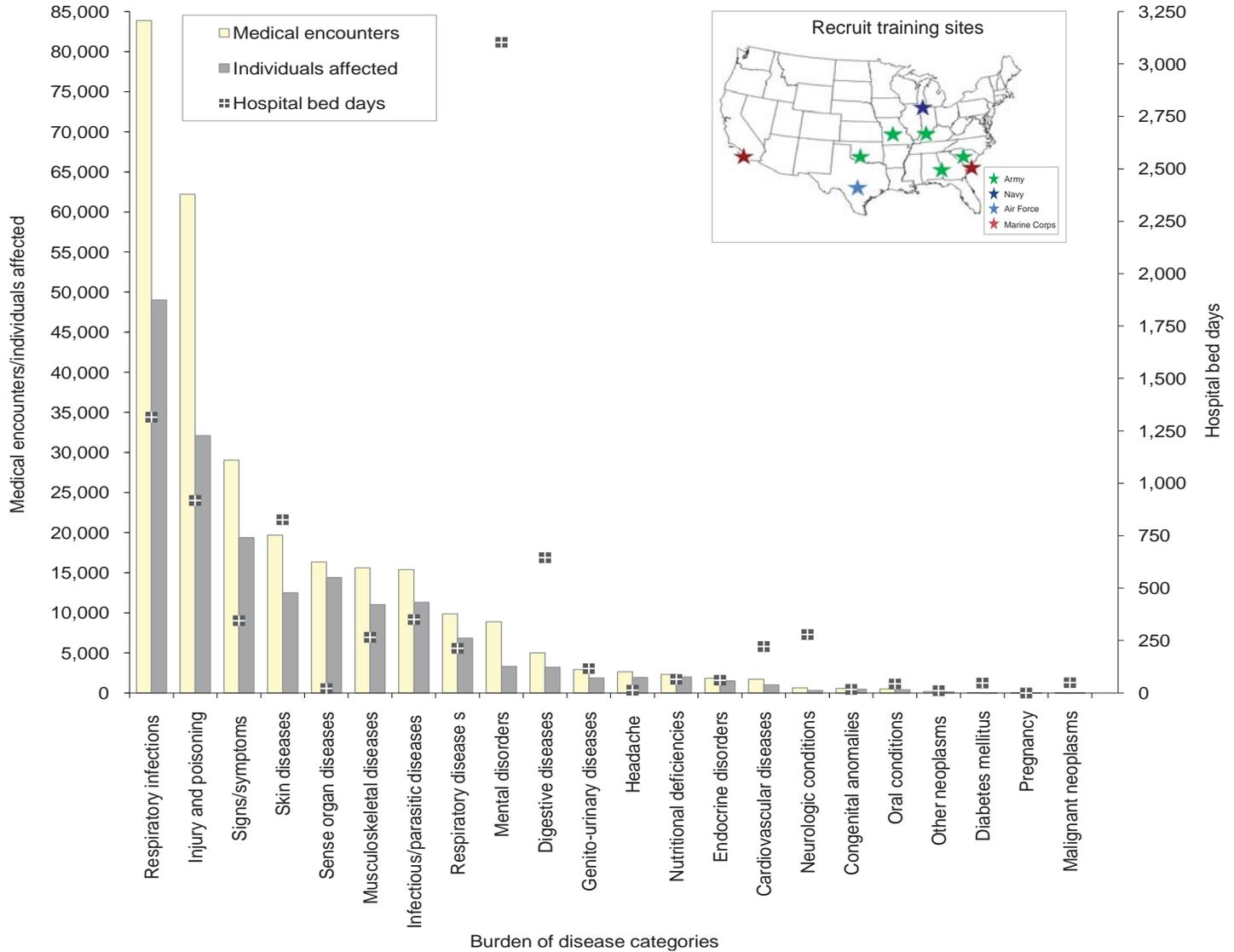
Between 2006 and 2010, the relative importance of injuries/poisonings as primary causes of ambulatory visits declined. However, the military operational impacts of various conditions cannot be assessed by numbers of attributable ambulatory visits alone. For example, in 2010,

injuries and poisonings accounted for approximately one of every 20 ambulatory visits overall but nearly one-fourth of all ambulatory visits with duty-limiting dispositions. Of particular note in relation to injuries and musculoskeletal conditions, in 2010 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 organic sleep disorders among men in particular are interesting and perhaps revealing, e.g., responses of 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 Recruits

Medical encounters, individuals affected and hospital bed days, by burden of disease category<sup>a</sup>, among basic combat-trainees/recruits<sup>b</sup>, active component, U.S. Armed Forces, 2010

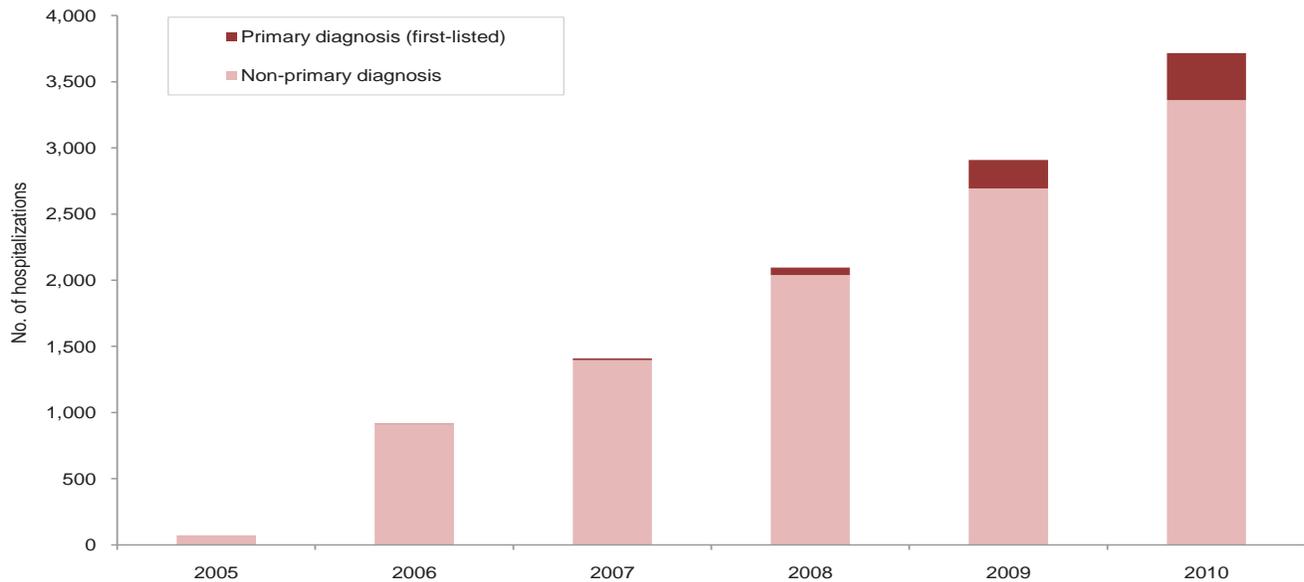


<sup>a</sup>Burden of disease categories are the same as those used for analyses of morbidity burdens in the active components overall (see pages 2-7 of this issue)

<sup>b</sup>Basic combat trainees/recruits 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 nine training locations (inset). Medical encounters were included if they occurred during a service-specific training period following service members' first-ever personnel records.

## Surveillance Snapshot: Hospitalizations for Suicidal Ideation

Hospitalizations with primary (first-listed) or non-primary diagnoses of “suicidal ideation” (ICD-9-CM: V62.84), active component, U.S. Armed Forces, 2005-2010.



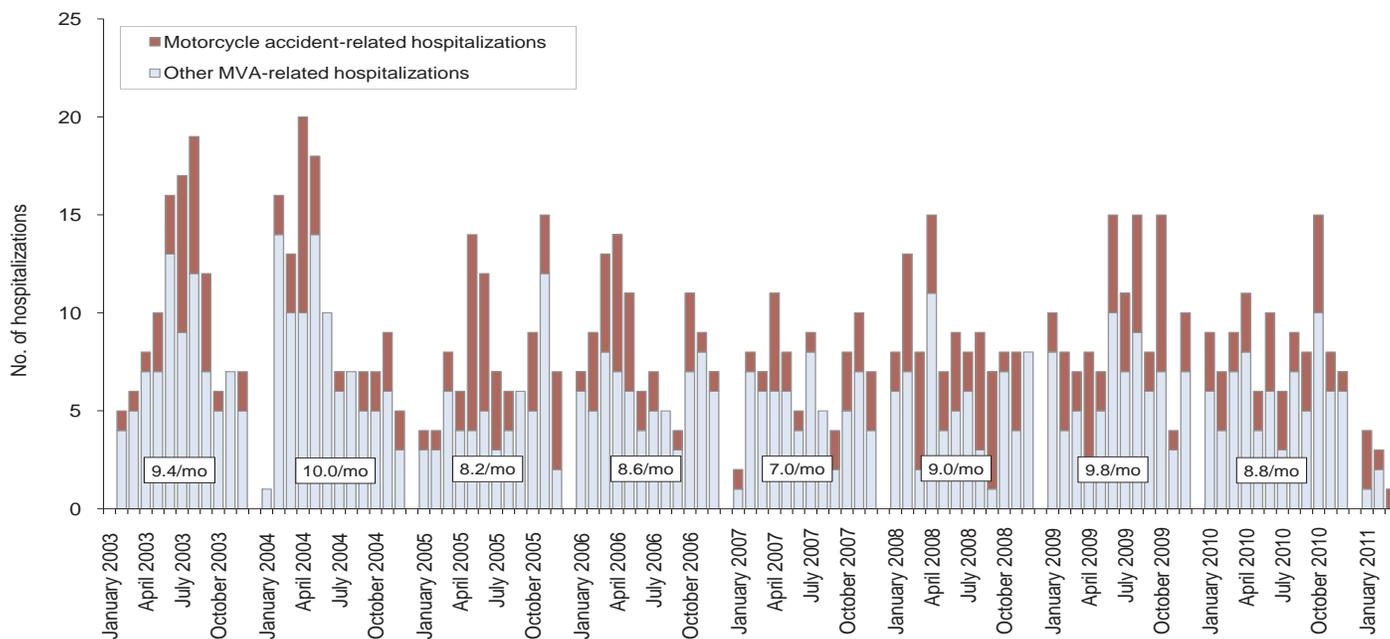
In October 2005, a diagnostic code for “suicidal ideation” was added to the International Classification of Diseases (ICD-9-CM). Since then, annual numbers of hospitalizations with primary (first-listed) diagnoses of suicidal ideation at discharge have steadily and sharply increased (from 5 in 2006 to 355 in 2010). Numbers of hospitalizations with non-primary diagnoses of suicidal ideation also have increased during this period.

In 2010, 90 percent of hospitalizations with a primary diagnosis of suicidal ideation were reported with a mental health disorder-specific diagnosis (ICD-9-CM: 290-319) in a non-primary diagnostic position.

The results should be interpreted with consideration of several factors that may affect the completeness of reporting of “suicidal ideation” among active component members. For example, the results may reflect at least in part increased awareness of and concern regarding suicide prevention among unit commanders, other front line supervisors, and primary care providers; increased awareness and use of the relatively new ICD-9-CM diagnostic code that specifies “suicidal ideation”; decreased barriers to and perceived stigmas associated with care seeking for mental health concerns; and so on.

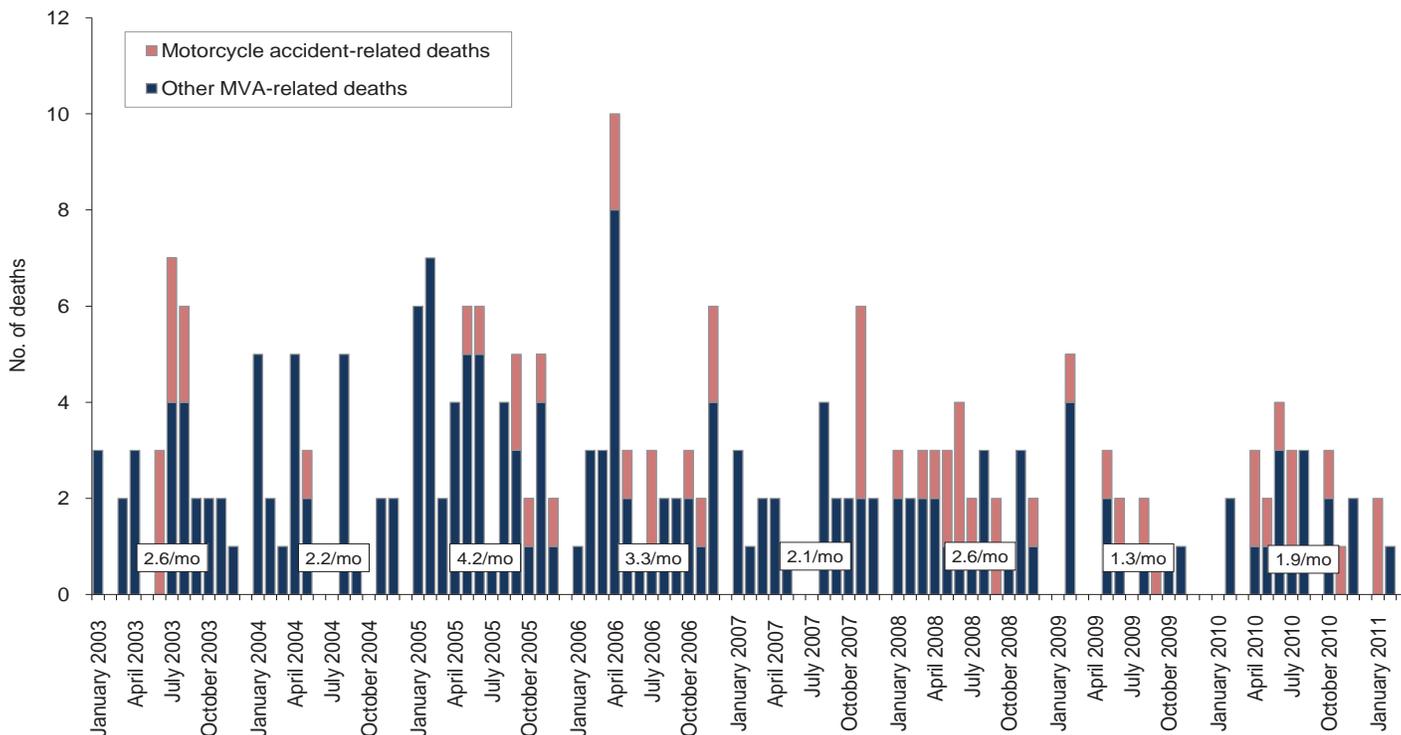
## Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - March 2011 (data as of 22 April 2011)

Motor vehicle accident-related hospitalizations (outside of the operational theater) (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 a motor vehicle accident-related hospitalization.

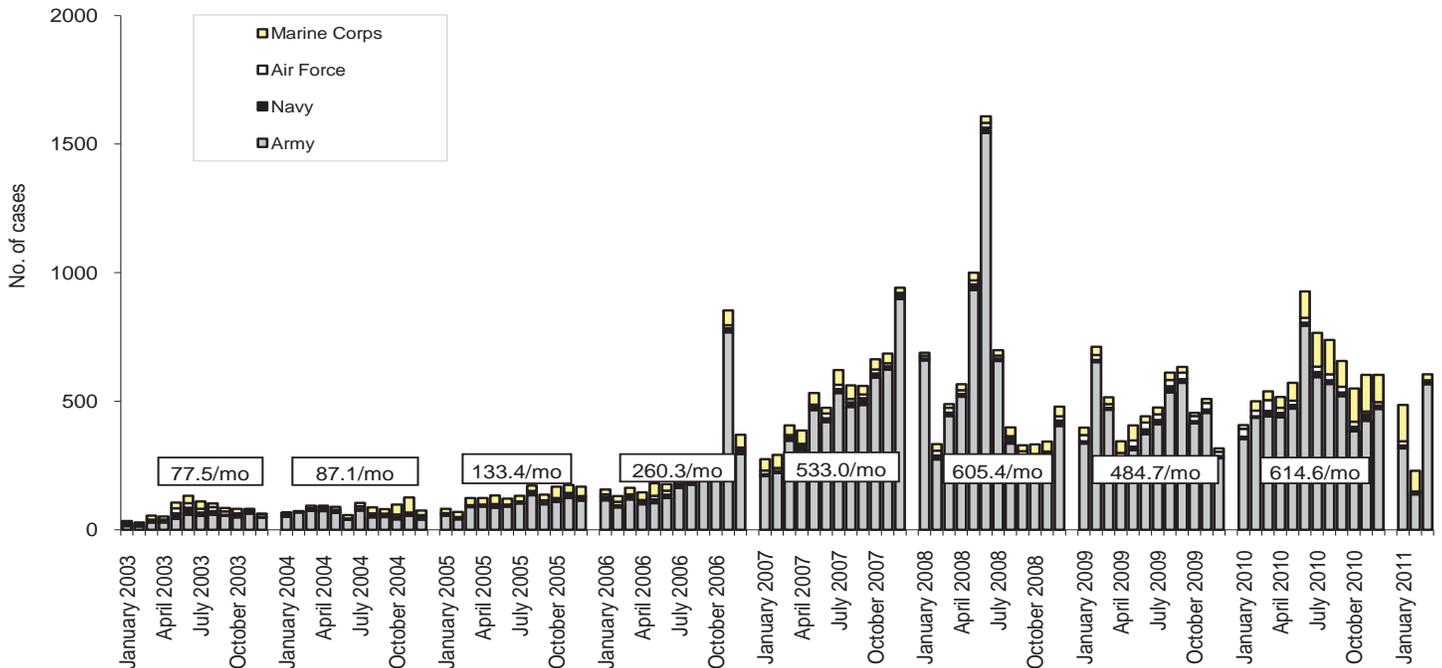
Motor vehicle accident-related deaths (outside of the operational theater) (per the DoD Medical Mortality Registry)



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 25 April 2011)

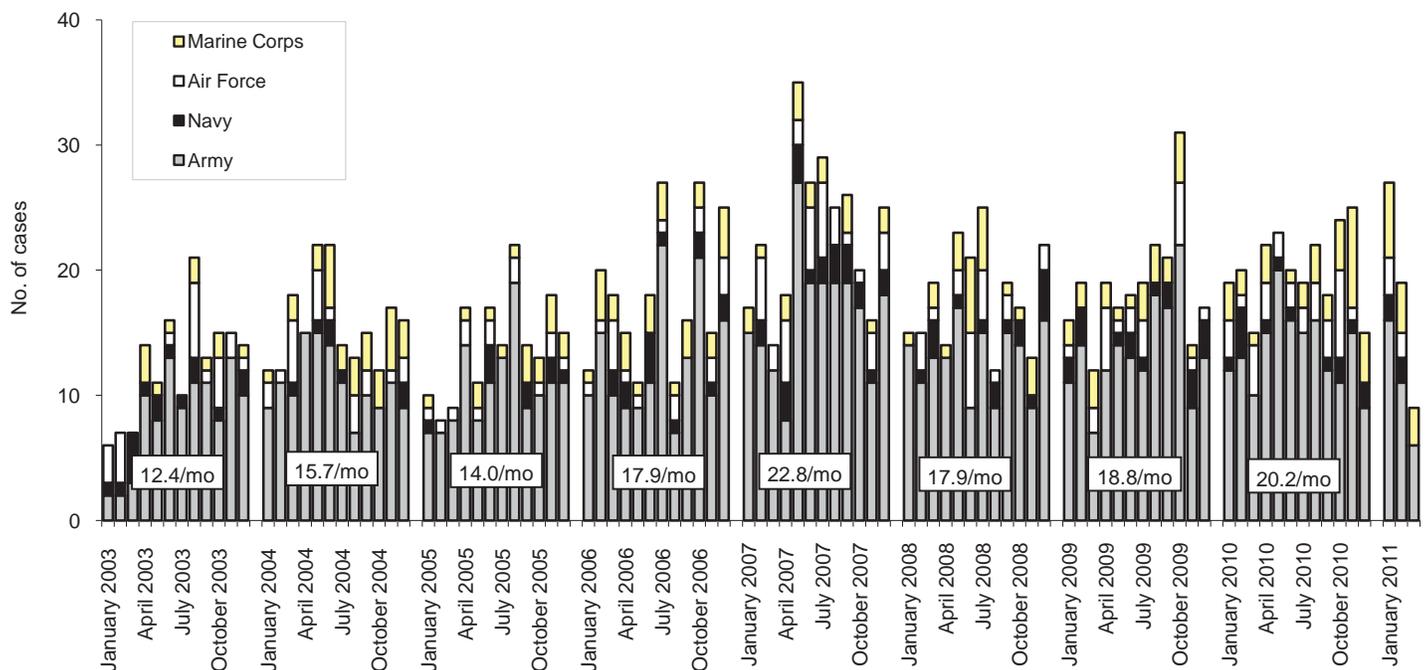
Traumatic brain injury (ICD-9: 310.2, 800-801, 803-804, 850-854, 907.0, 950.1-950.3, 959.01, V15.5\_1-9, V15.5\_A-F, V15.59\_1-9, V15.59\_A-F)<sup>a</sup>



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

<sup>a</sup>Indicator diagnosis (one per individual) during a hospitalization or ambulatory visit while deployed to/within 30 days of returning from OEF/OIF. (Includes in-theater medical encounters from the Theater Medical Data Store [TMDS] and excludes 2,858 deployers who had at least one TBI-related medical encounter any time prior to OEF/OIF).

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

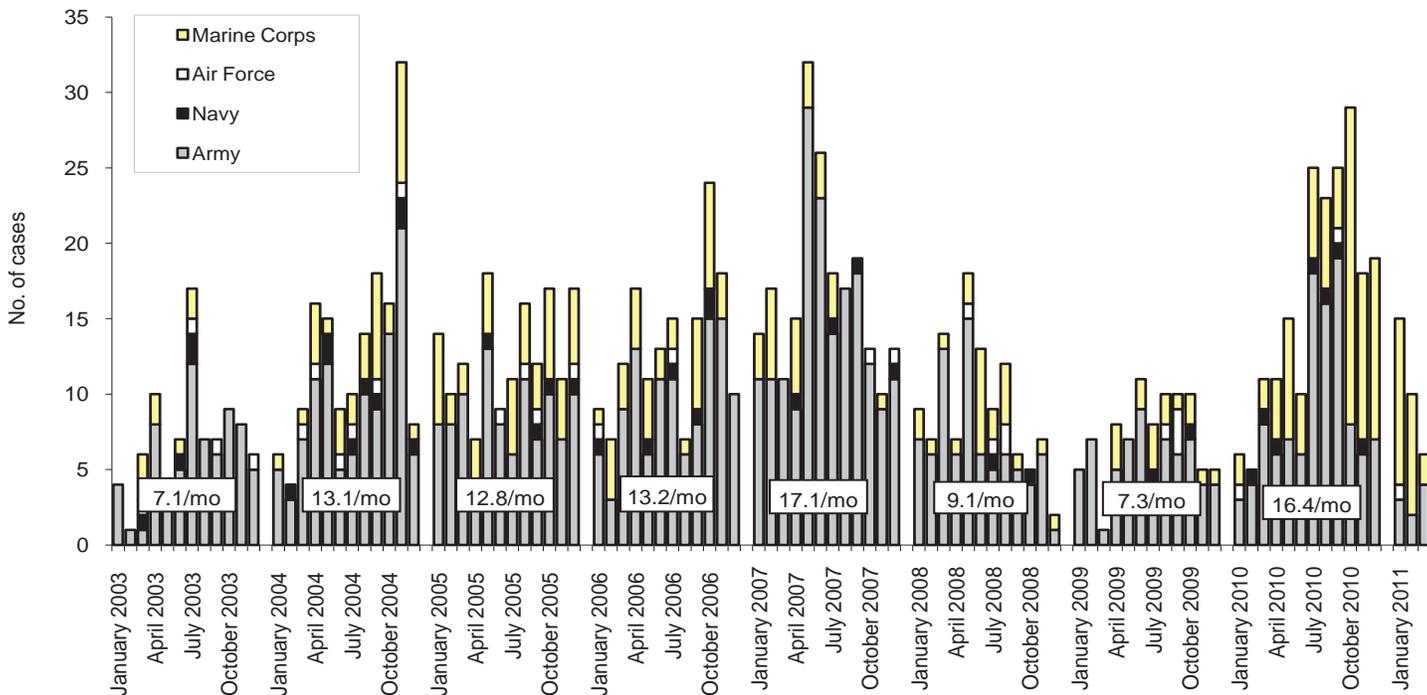


Reference: Isenbarger DW, Atwood JE, Scott PT, et al. Venous thromboembolism among United States soldiers deployed to Southwest Asia. *Thromb Res*. 2006;117(4):379-83.

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

## Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - March 2011 (data as of 25 April 2011)

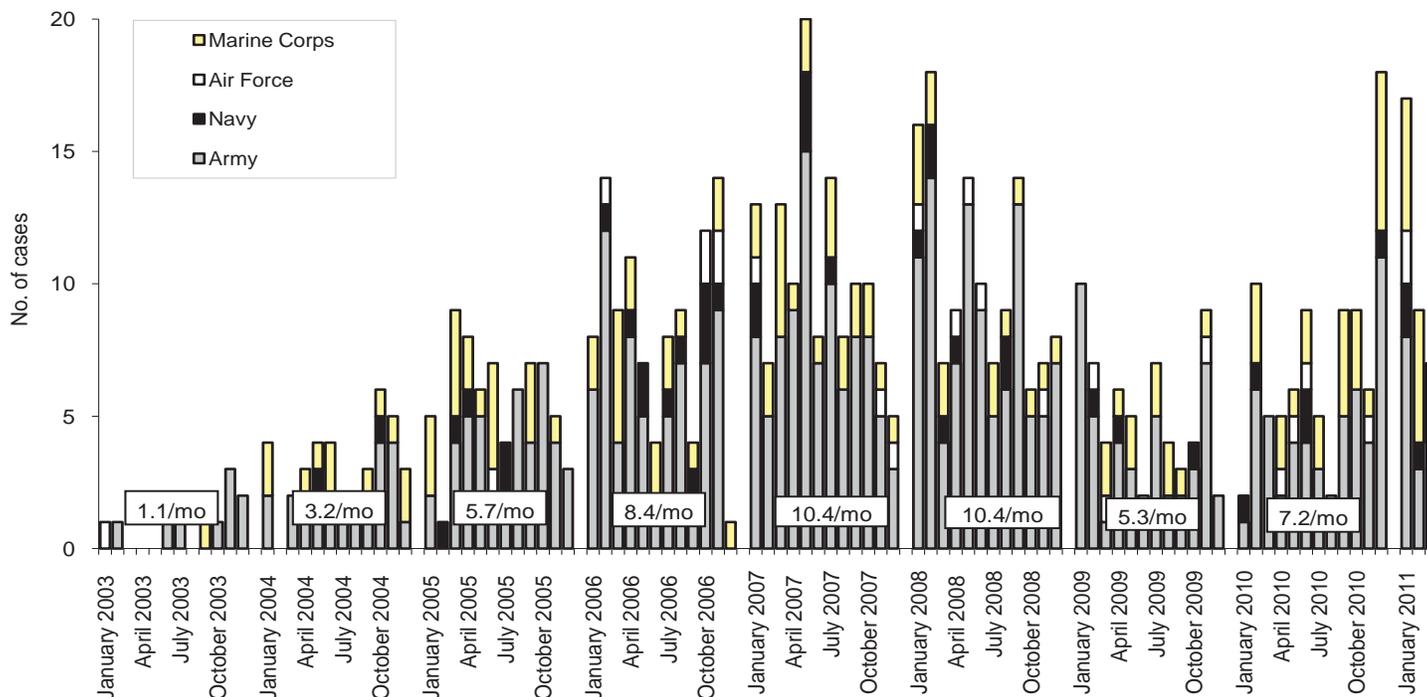
Amputations (ICD-9: 887, 896, 897, V49.6 except V49.61-V49.62, V49.7 except V49.71-V49.72, PR 84.0-PR 84.1, except PR 84.01-PR 84.02 and PR 84.11)<sup>a</sup>



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.

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

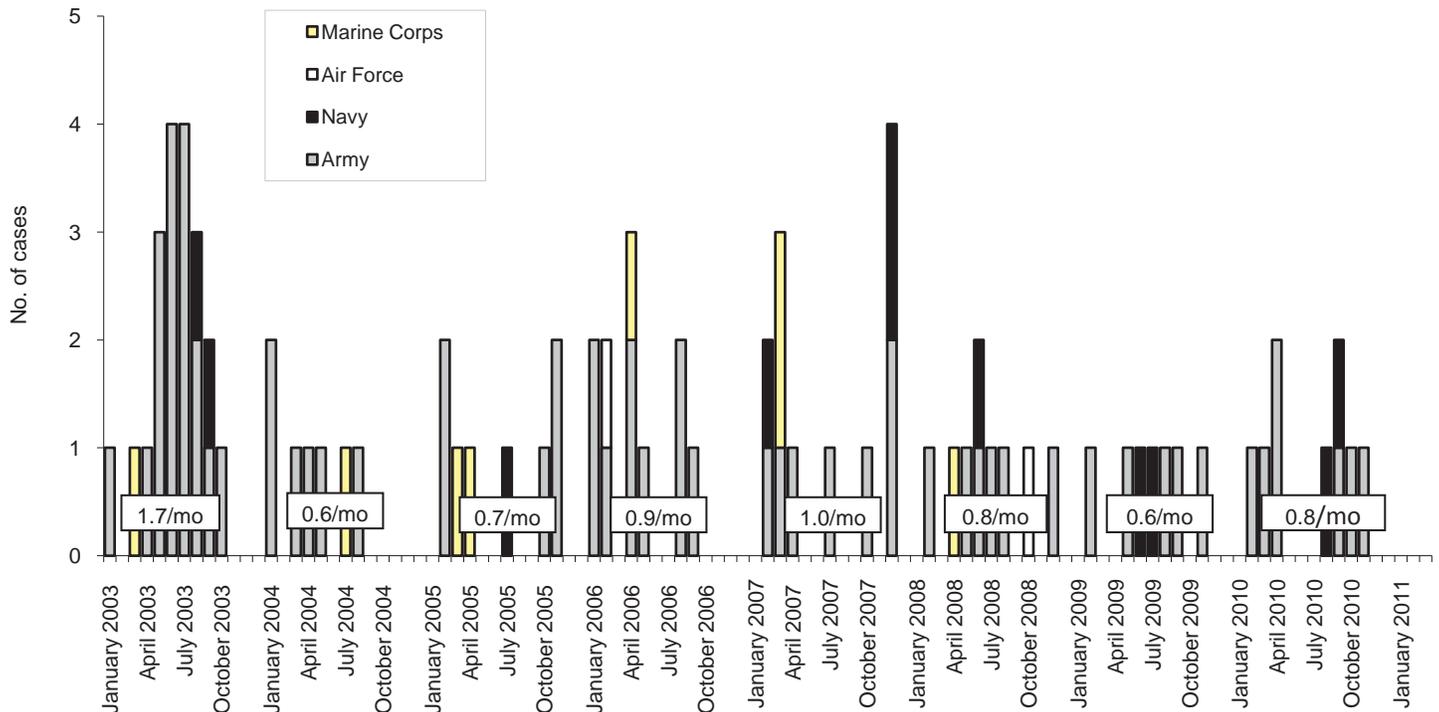


Reference: Army Medical Surveillance Activity. Heterotopic ossification, active components, U.S. Armed Forces, 2002-2007. *MSMR*. Aug 2007; 14(5):7-9.

<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.

## Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - March 2011 (data as of 25 April 2011)

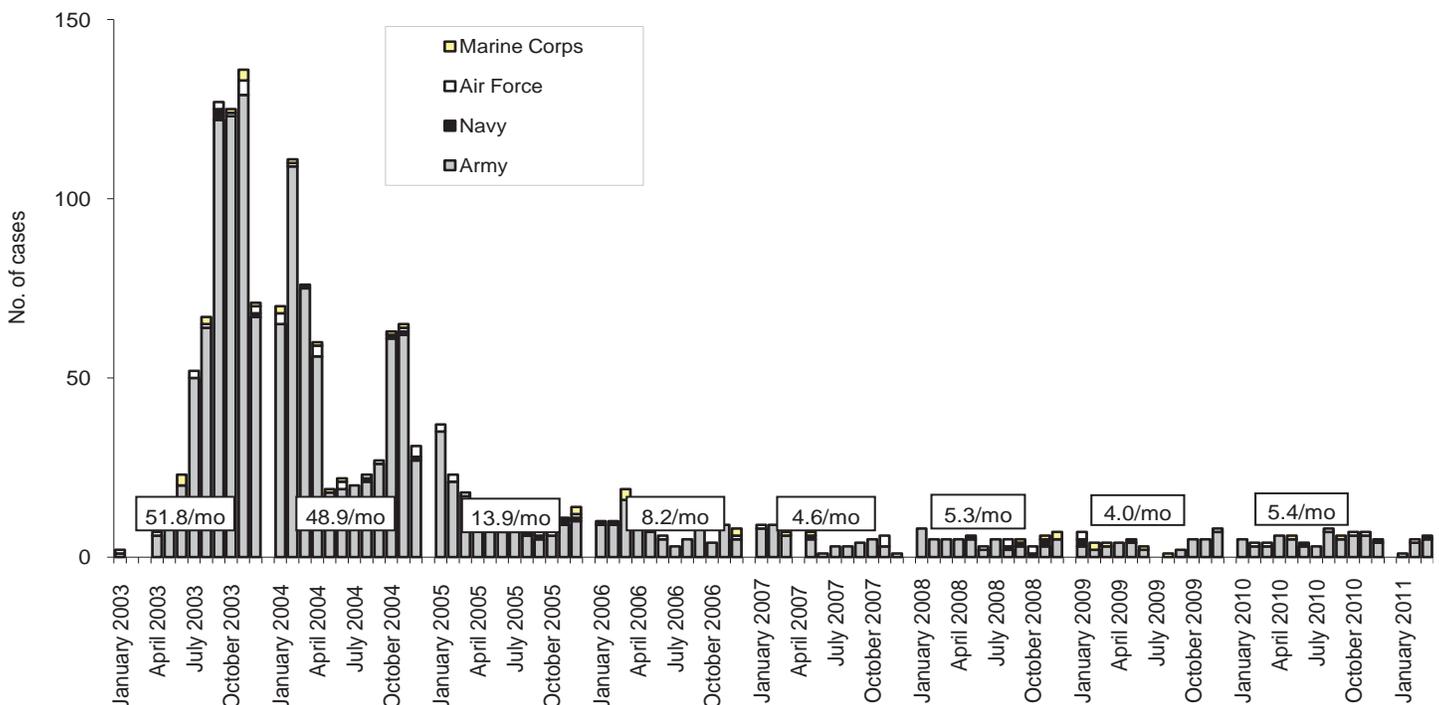
Severe acute pneumonia (ICD-9: 518.81, 518.82, 480-487, 786.09)<sup>a</sup>



Reference: Army Medical Surveillance Activity. Deployment-related condition of special surveillance interest: severe acute pneumonia. Hospitalizations for acute respiratory failure (ARF)/acute respiratory distress syndrome (ARDS) among participants in Operation Enduring Freedom/Operation Iraqi Freedom, active components, U.S. Armed Forces, January 2003-November 2004. *MSMR*. Nov/Dec 2004;10(6):6-7.

<sup>a</sup>Indicator diagnosis (one per individual) during a hospitalization while deployed to/within 30 days of returning from OEF/OIF.

Leishmaniasis (ICD-9: 085.0 to 085.9)<sup>b</sup>



Reference: Army Medical Surveillance Activity. Deployment-related condition of special surveillance interest: leishmaniasis. Leishmaniasis among U.S. Armed Forces, January 2003-November 2004. *MSMR*. Nov/Dec 2004;10(6):2-4.

<sup>b</sup>Indicator diagnosis (one per individual) during a hospitalization, ambulatory visit, and/or from a notifiable medical event during/after service in OEF/OIF.

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