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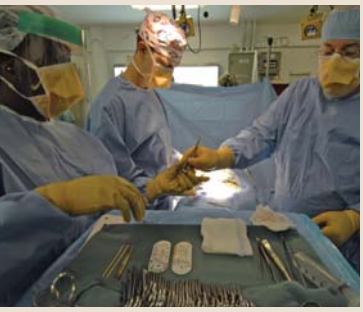


Annual Summary Issue

A publication of the Armed Forces Health Surveillance Center

Absolute and Relative Morbidity Burdens Attributable to Various Illnesses and Injuries, U.S. Armed Forces, 2013

Perceptions of the relative "importance" of various health conditions in military populations often determine the natures, extents, and priorities for resources applied to primary, secondary, and tertiary prevention activities. However, these perceptions are inherently subjective and may not reflect objective measures of the relationship between the conditions and their impact on health, fitness, military operational effectiveness, healthcare 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.[1] Not surprisingly, different classification systems and morbidity measures lead to different rankings of illness- and injury-specific public health burdens.[2]

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 may differ from those that affect the most individuals, have the most debilitating or long-lasting effects, and so on.[2] Thus, in a given population and setting, the classification system or measure employed 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 (modified for use among U.S. military members) and several healthcare burden measures to quantify the impacts of various illnesses and injuries among members of the U.S. Armed Forces in 2013.

METHODS

The surveillance period was 1 January through 31 December 2013. 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 2013 were summarized according to the primary (first-listed) diagnosis (if reported with an International Classification of Diseases, Ninth Revision, Clinical Modification [ICD-9-CM] code between 001 and 999 or code V27.0).

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.[1] In general, the GBD system groups diagnoses with common pathophysiologic or etiologic bases and/or significant international health policymaking importance. For this analysis, some diagnoses that are grouped into single categories in the GBD system (e.g., mental disorders) were disaggregated to increase the military relevance of the results. Also, injuries were categorized by affected anatomic site rather than by cause 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 (i.e., total hospitalizations and ambulatory visits for the condition with a limit of one encounter per individual per condition per day), numbers of 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 work days due to each condition. This fourth measure 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.

RESULTS

Morbidity burden, by category

In 2013, more service members (n=596,506) received medical care for injury/poisoning than any other morbidity-related category. In addition, injury/poisoning accounted for more medical encounters (n=2,152,394) than any other morbidity category and one-fifth (20.7%) of all medical encounters overall **(Figures 1a, 1b)**.

Mental disorders accounted for more hospital bed days (n=179,673) than any other morbidity category and about 45% of all hospital bed days overall **(Figures 1a, 1b)**. Together, injury/poisoning and mental disorders accounted for more than half (56.9%) of all hospital bed days and almost two-fifths (39.8%) of all medical encounters. Injuries and poisonings accounted for the most lost work time (n=288,551 lost work days; 24.3% of the total).

Of note, maternal conditions (including pregnancy complications and delivery) accounted for a relatively large proportion of all hospital bed days (n=56,425; 14.1%), but a much smaller proportion of medical encounters overall (n=181,182; 1.7%) **(Figures 1a, 1b)**; routine prenatal visits are not included in this summary.

Medical encounters, by condition

In 2013, the four burden of disease-related conditions that accounted for the

FIGURE 1a. Medical encounters,[a] individuals affected,[b] hospital bed days, and lost work time[c] by burden of disease category,[d] active component, U.S. Armed Forces, 2013

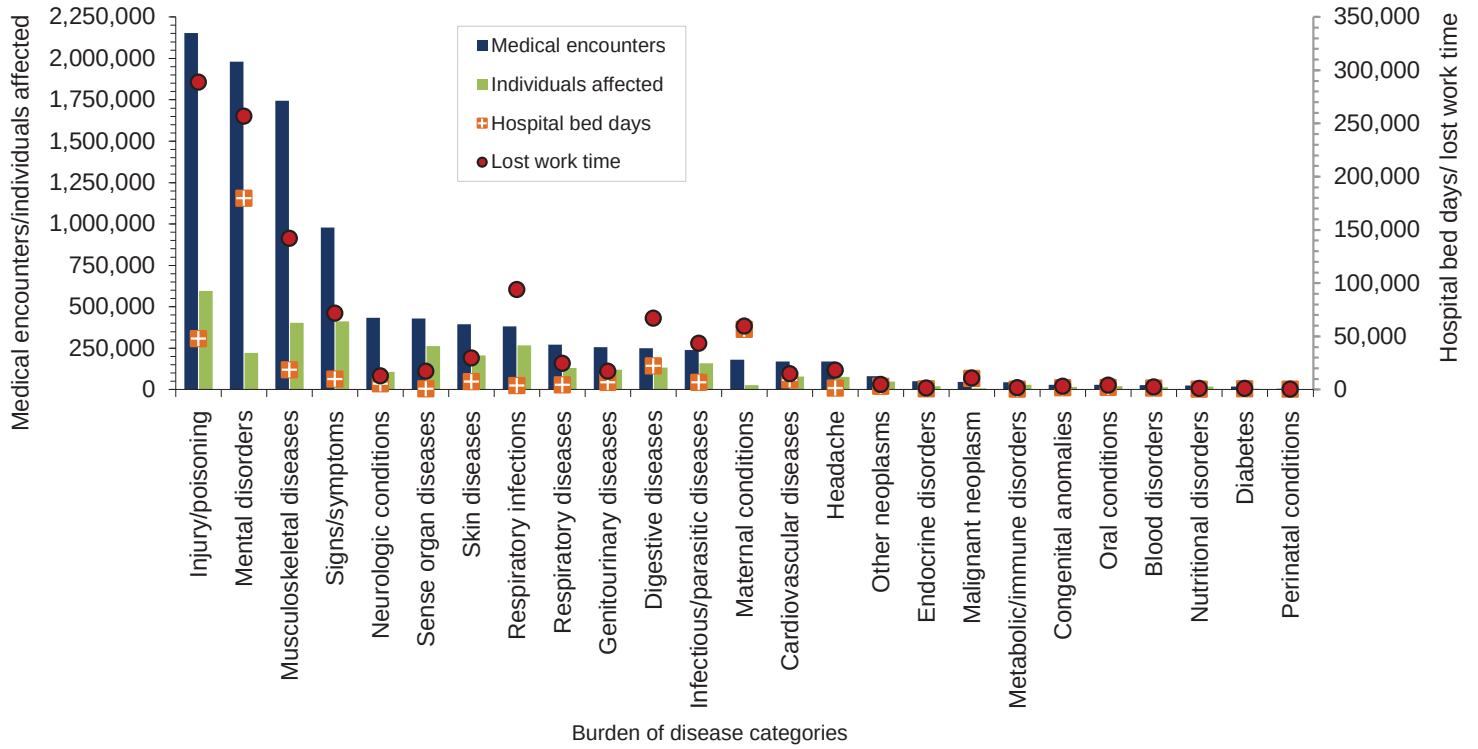
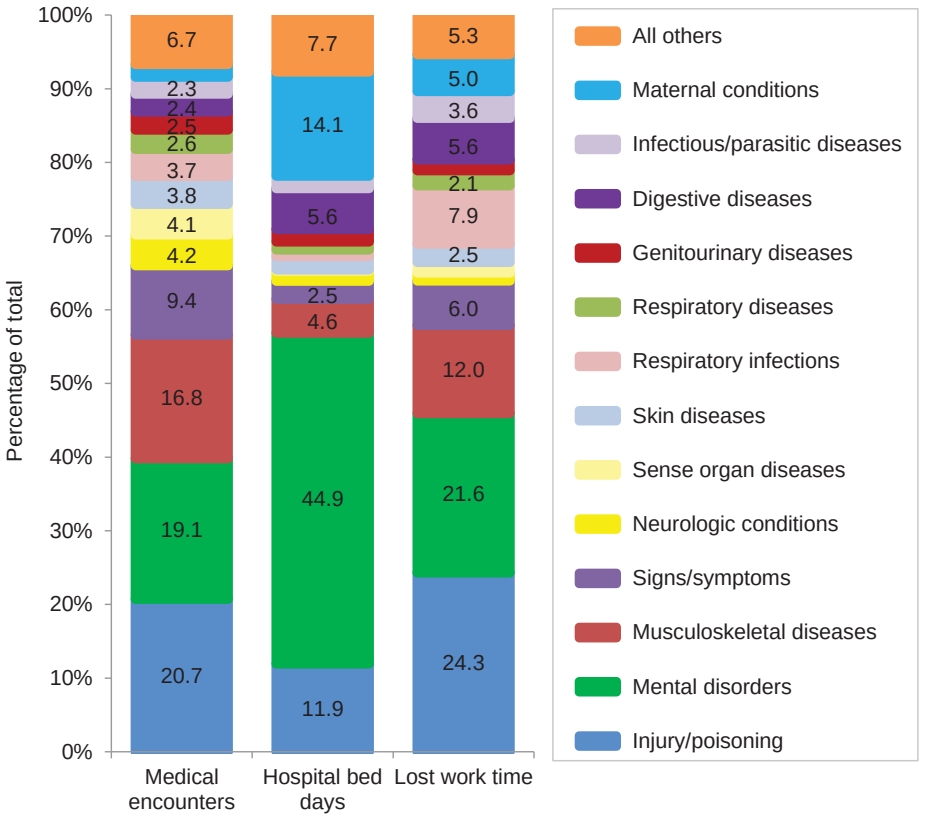


FIGURE 1b. Medical encounters,[a] hospital bed days, and lost work time[c] by burden of disease category,[d] active component, U.S. Armed Forces, 2013



[a]Medical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition).
[b]Individuals with at least one hospitalization or ambulatory visit for the condition.
[c]A measure of lost work time calculated in days due to bed days, convalescence, and one-half day for each ambulatory visit that resulted in limited duty.
[d]Major categories and conditions defined in the Global Burden of Disease Study.

most medical encounters (i.e., other back problems, other musculoskeletal diseases, other signs and symptoms, and anxiety) accounted for more than one-fourth (27.3%) of all illness- and injury-related medical encounters overall. Moreover, the 10 conditions that accounted for the most medical encounters accounted for more than half (52.1%) 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)**.

TABLE 1. Healthcare burdens attributable to various diseases and injuries, U.S. Armed Forces, 2013

Major category condition[a]	Medical encounters[b]		Individuals affected[c]		Bed days	
	No.	Rank	No.	Rank	No.	Rank
Injury and poisoning						
Arm and shoulder	515,480	(5)	156,623	(5)	3,372	(23)
Knee	496,660	(6)	155,145	(6)	1,678	(36)
Foot and ankle	380,469	(9)	152,278	(8)	3,453	(21)
Leg	190,640	(15)	75,537	(19)	5,348	(16)
Unspecified injury	145,327	(23)	92,747	(14)	1,114	(47)
Hand and wrist	137,863	(24)	70,288	(21)	1,855	(34)
Head and neck	94,964	(29)	58,713	(24)	8,080	(10)
Back and abdomen	82,662	(31)	50,425	(27)	4,615	(18)
Other complications	38,428	(43)	20,564	(46)	12,045	(8)
Environmental	27,568	(50)	21,496	(45)	1,052	(48)
Other injury/external	17,419	(64)	10,874	(62)	430	(68)
All other injury	16,339	(66)	11,024	(61)	1,147	(45)
Poisoning, nondrug	4,537	(93)	3,074	(83)	311	(77)
Poisoning, drugs	4,038	(97)	2,612	(87)	3,290	(25)
Mental disorders						
Anxiety	578,785	(4)	76,829	(17)	34,339	(4)
Adjustment	406,323	(7)	87,579	(15)	25,839	(5)
Mood	403,890	(8)	59,332	(23)	56,466	(1)
Substance abuse dis	373,515	(10)	31,826	(38)	51,130	(2)
All other mental dis	149,632	(21)	56,429	(25)	3,118	(26)
Tobacco dependence	27,093	(51)	17,189	(50)	34	(115)
Psychotic	21,822	(57)	2,829	(84)	7,111	(13)
Personality	10,324	(75)	2,669	(86)	1,270	(40)
Somatoform	9,478	(77)	2,455	(88)	366	(73)
Musculoskeletal diseases						
Other back problems	975,609	(1)	219,866	(4)	7,201	(12)
Other musculosk dis	696,558	(2)	250,841	(2)	8,167	(9)
Other knee disorders	35,999	(45)	14,949	(57)	1,833	(35)
Other shoulder dis	16,178	(67)	8,229	(65)	150	(95)
Osteoarthritis	15,140	(69)	8,149	(66)	946	(52)
Rheumatoid arthritis	3,856	(99)	1,233	(98)	22	(120)
Signs and symptoms						
Other signs/symptom	585,755	(3)	276,352	(1)	4,467	(19)
Abdomen and pelvis	216,235	(14)	129,705	(10)	2,611	(29)
Respiratory and chest	176,339	(17)	103,275	(12)	2,731	(28)
Sense organ diseases						
Other sense org dis	178,570	(16)	111,694	(11)	662	(59)
Refraction/accomm	175,234	(18)	134,032	(9)	0	(139)
Hearing disorders	61,612	(35)	37,161	(33)	28	(118)
Glaucoma	13,188	(71)	7,658	(69)	6	(133)
Cataracts	1,594	(112)	847	(103)	2	(136)
Skin diseases						
All other skin diseases	282,875	(13)	152,862	(7)	7,212	(11)
Contact dermatitis	57,939	(37)	42,212	(29)	48	(113)
Sebaceous gland dis	53,645	(38)	31,939	(37)	22	(121)
Neurologic conditions						
Organic sleep dis	309,868	(11)	72,106	(20)	438	(67)
Other neurolog cond	98,183	(28)	34,873	(34)	3,778	(20)
Mononeuritis, limbs	15,756	(68)	7,942	(67)	110	(100)
Epilepsy	6,056	(88)	1,834	(93)	894	(54)
Multiple sclerosis	3,544	(100)	648	(107)	256	(79)
Parkinson disease	291	(127)	69	(128)	0	(138)
Respiratory infections						
Upper respiratory	299,458	(12)	228,115	(3)	550	(62)
Lower respiratory	50,508	(39)	33,681	(36)	2,964	(27)
Otitis media	31,518	(47)	24,243	(41)	70	(107)
Respiratory diseases						
Allergic rhinitis	102,816	(27)	45,048	(28)	12	(127)
Other respiratory dis	66,906	(34)	37,824	(31)	3,381	(22)
Chronic sinusitis	40,973	(41)	30,627	(40)	143	(96)
Asthma	35,679	(46)	15,913	(51)	492	(65)
Chron obstr pulm dis	24,877	(54)	20,412	(47)	255	(80)
Genitourinary diseases						
Other GU diseases	151,927	(20)	84,271	(16)	3,330	(24)
Female genital pain	27,899	(49)	15,796	(52)	252	(81)
Menstrual disorders	22,808	(56)	14,390	(59)	597	(60)
Kidney stones	21,714	(58)	8,293	(64)	971	(51)
Other breast disorders	20,791	(60)	11,135	(60)	377	(72)
Nephritis and nephrosis	7,876	(83)	2,165	(90)	1,166	(44)
Prostatic hypertrophy	2,913	(102)	1,830	(94)	59	(109)
Digestive diseases						
Other digestive dis	121,888	(25)	59,928	(22)	13,627	(7)
Gastroenteritis/colitis	68,611	(33)	55,685	(26)	927	(53)
Esophagus disease	36,516	(44)	23,536	(42)	856	(55)
Inguinal hernia	12,582	(72)	5,563	(73)	537	(64)
Appendicitis	6,196	(87)	3,191	(81)	5,652	(14)
Cirrhosis of the liver	2,012	(110)	1,383	(97)	91	(103)
Peptic ulcer disease	1,572	(113)	899	(102)	581	(61)
Infectious and parasitic diseases						
Other infec/paras dis	148,013	(22)	97,840	(13)	4,638	(17)
Unspec viral infection	39,062	(42)	34,329	(35)	168	(91)
STDs	21,290	(59)	15,746	(53)	390	(71)
Diarrheal diseases	17,418	(65)	15,048	(56)	1,228	(42)
Chlamydia	8,638	(80)	7,079	(70)	4	(135)
Hepatitis B and C	2,610	(104)	1,001	(101)	25	(119)
Tuberculosis	785	(121)	264	(118)	169	(90)
Intest nematode inf	197	(133)	173	(123)	11	(128)
Malaria	173	(134)	77	(127)	73	(105)
Bacterial meningitis	125	(136)	35	(133)	69	(108)
Tropical cluster	53	(139)	34	(135)	5	(134)
Maternal conditions						
Pregnancy complic	111,758	(26)	23,131	(44)	18,842	(6)
Delivery	58,344	(36)	17,704	(49)	36,037	(3)
Ectop/miscar/abort	8,647	(79)	3,811	(78)	697	(57)
Puerperium complic	2,378	(106)	1,512	(95)	719	(56)
All other maternal dis	55	(138)	37	(132)	130	(98)

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

TABLE 1. Healthcare burdens attributable to various diseases and injuries, U.S. Armed Forces, 2013

Major category condition[a]	Medical encounters[b]		Individuals affected[c]		Bed days	
	No.	Rank	No.	Rank	No.	Rank
Cardiovascular diseases						
Other cardiovasc dis	83,091	(30)	41,280	(30)	5,467	(15)
Essential hypertension	69,397	(32)	37,624	(32)	249	(82)
Ischemic heart disease	7,904	(82)	3,093	(82)	1,354	(39)
Cerebrovascular disease	7,726	(84)	2,045	(92)	1,618	(37)
Inflammatory	1,283	(115)	472	(112)	469	(66)
Rheumatic heart dis	561	(123)	427	(113)	19	(123)
Headache						
Headache	168,895	(19)	75,913	(18)	1,223	(43)
Other neoplasms						
All other neoplasms	47,161	(40)	31,268	(39)	1,905	(33)
Benign skin neoplasm	19,076	(62)	15,386	(55)	12	(126)
Lipoma	9,538	(76)	5,987	(72)	95	(101)
Uterine leiomyoma	4,266	(94)	2,108	(91)	1,024	(49)
Malignant neoplasms						
Lymphoma/myeloma	7,576	(85)	743	(104)	1,131	(46)
Other malignancies	6,682	(86)	1,130	(99)	1,934	(32)
Leukemia	5,114	(91)	252	(120)	2,357	(30)
Melanoma/other skin	5,029	(92)	2,198	(89)	318	(76)
Breast cancer	4,251	(95)	420	(114)	248	(83)
Testicular cancer	4,102	(96)	731	(105)	423	(69)
Colon/rectum cancer	3,019	(101)	280	(117)	1,514	(38)
Brain	2,725	(103)	238	(122)	1,001	(50)
Thyroid	2,371	(107)	555	(108)	237	(85)
Prostate cancer	1,700	(111)	298	(115)	184	(89)
Mouth/oropharynx	1,405	(114)	143	(124)	220	(86)
Trach/bronchus/lung	959	(117)	82	(125)	271	(78)
Pancreas cancer	529	(124)	35	(134)	160	(93)
Bladder cancer	464	(125)	80	(126)	32	(116)
Esophagus cancer	246	(129)	17	(139)	42	(114)
Ovary cancer	246	(128)	63	(130)	71	(106)
Liver cancer	244	(130)	40	(131)	116	(99)
Stomach cancer	205	(131)	22	(137)	92	(102)
Cervix uteri cancer	148	(135)	34	(136)	7	(131)
Corpus uteri cancer	68	(137)	19	(138)	7	(132)
Endocrine disorders						
Other endocrine dis	22,919	(55)	9,005	(63)	212	(88)
Hypothyroidism	14,766	(70)	7,831	(68)	14	(124)
Other thyroid disorders	12,333	(73)	5,153	(74)	412	(70)
Metabolic and immunity disorders						
Lipoid metabol dis	30,208	(48)	23,253	(43)	31	(117)
Other metabolic dis	12,173	(74)	6,576	(71)	359	(74)
Immunity disorders	923	(118)	296	(116)	9	(130)
Oral conditions						
All other oral conditions	26,777	(52)	19,613	(48)	2,056	(31)
Dental caries	803	(120)	683	(106)	20	(122)
Periodontal disease	564	(122)	513	(110)	13	(125)
Congenital anomalies						
Other cong anom	25,628	(53)	15,619	(54)	1,250	(41)
Congenital heart dis	2,128	(108)	1,059	(100)	162	(92)
Other circulat anom	1,224	(116)	493	(111)	237	(84)
Blood disorders						
All other blood disorders	9,206	(78)	4,402	(77)	675	(58)
Other non-defic anem	8,352	(81)	4,506	(76)	335	(75)
Iron-deficiency anem	5,141	(90)	2,705	(85)	217	(87)
Hereditary anemias	3,943	(98)	3,490	(80)	49	(111)
Other defic anemias	451	(126)	242	(121)	0	(137)
Nutritional disorders						
Overweight, obesity	19,084	(61)	14,945	(58)	131	(97)
Other nutritional dis	5,735	(89)	3,711	(79)	10	(129)
Protein-energy malnu	205	(132)	65	(129)	48	(112)
Diabetes mellitus						
Diabetes mellitus	18,962	(63)	4,976	(75)	538	(63)
Conditions arising during the perinatal period[d]						
Other perinatal anom	2,416	(105)	1,444	(96)	52	(110)
Low birth weight	2,118	(109)	547	(109)	79	(104)
Birth asphyx/trauma	814	(119)	258	(119)	152	(94)

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

Individuals affected, by condition

In 2013, more service members received medical care for "other signs and symptoms" than for any other specific condition **(Table 1)**. Of the 10 conditions that affected the most service members, two were musculoskeletal diseases (other musculoskeletal diseases and other back problems) and three were injuries (arm/shoulder, knee, and foot/ankle).

Hospital bed days, by condition

In 2013, mood disorders and substance abuse accounted for more than a quarter (26.9%) of all hospital days. Together, four mental disorders (mood, substance abuse, anxiety, and adjustment) and one maternal condition (delivery) accounted for about half (51%) of all hospital bed days **(Table 1, Figure 3)**. About one-eighth (11.9%) of all hospital bed days were attributable to injuries and poisonings.

FIGURE 2. Percentage and cumulative percentage distribution, burden "conditions" that accounted for the most medical encounters among U.S. service members, 2013

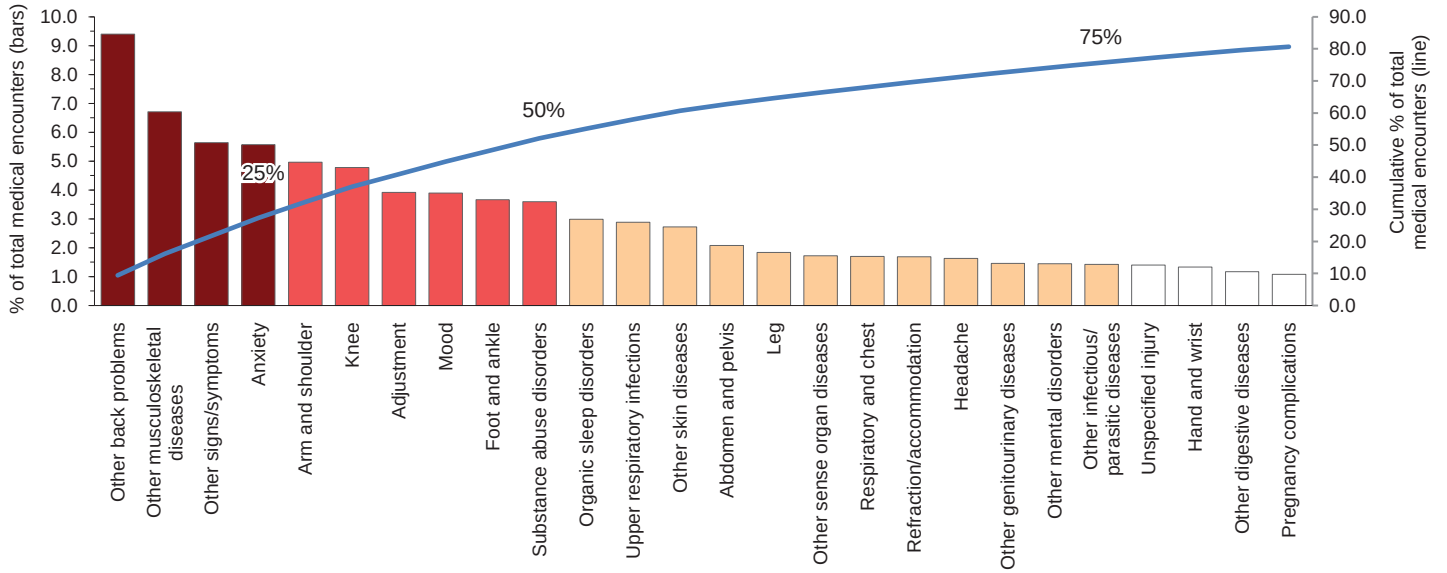
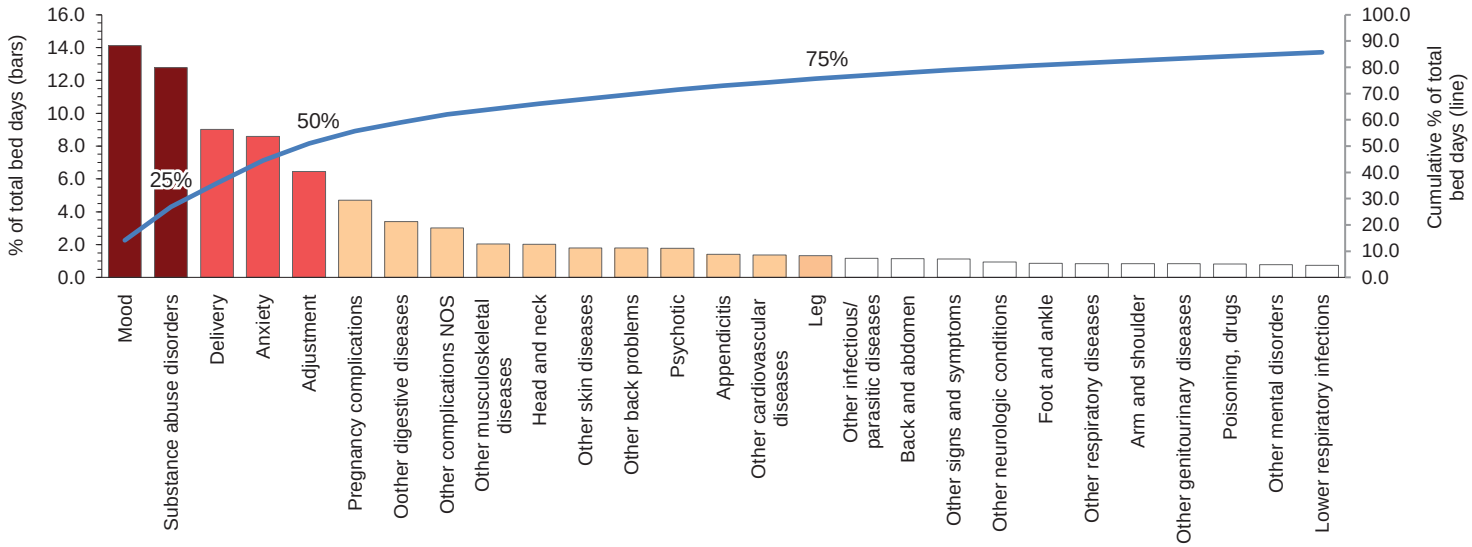


FIGURE 3. Percentage and cumulative percentage distribution, burden "conditions" that accounted for the most hospital bed days among U.S. service members, 2013



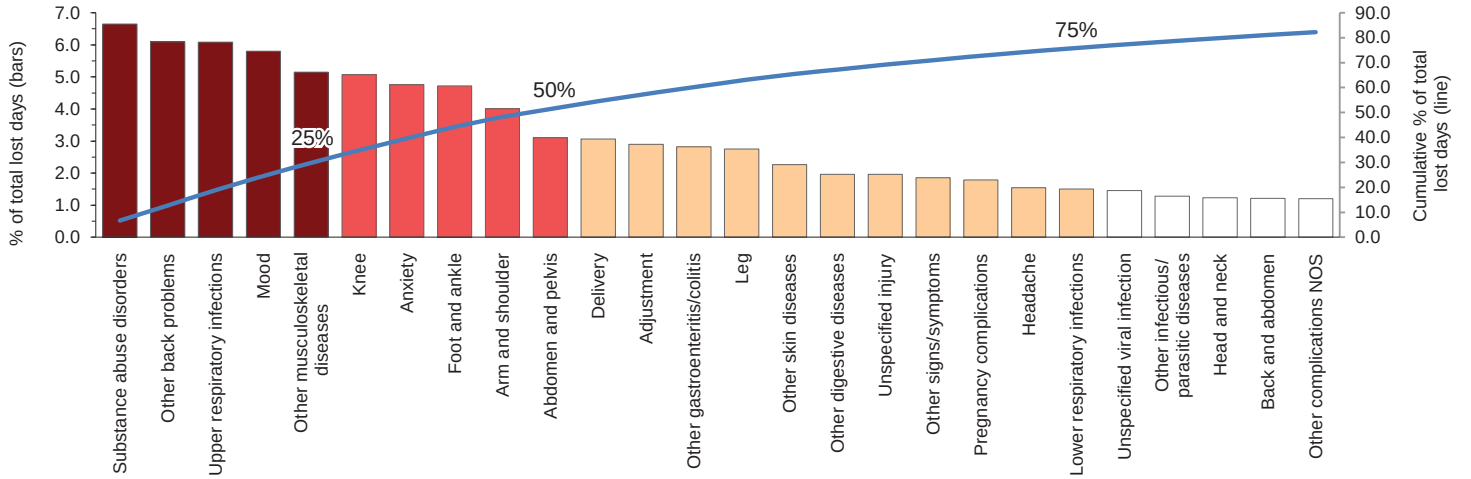
Lost work time, by condition

No single condition accounted for more than 7% of all lost work time **(Figure 4)**. Together, the four conditions with the most lost work time (substance abuse disorders, other back problems, upper respiratory infections, and mood disorders) accounted for 24.6% all lost work time.

Relationships between healthcare 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=0.76) **(data not shown)**. 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 work time attributable to conditions and medical encounters attributable to (r=0.71) the same conditions. For example, of the 10 conditions that resulted in the most lost work time, eight were among the top 10 leading causes of medical encounters. In contrast, there were not strong relationships between the hospital bed days attributable

FIGURE 4. Percentage and cumulative percentage distribution, burden "conditions" that accounted for the most lost work time among U.S. service members, 2013



to conditions and either the numbers of individuals affected by (r=0.04) or medical encounters attributable to (r=0.21) the same conditions. For example, labor and delivery and substance abuse disorders were among the top four sources of hospital bed days; however, these conditions affected relatively few service members.

EDITORIAL COMMENT

This report reiterates the major findings of prior annual reports regarding morbidity and healthcare burdens among U.S. military members. In particular, the report documents that a majority of the morbidity and healthcare 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 2013, as in prior years, musculoskeletal disorders (particularly of the back), injuries (particularly of the arm/shoulder, knee, and foot/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 healthcare burdens that affected U.S. military members. For example, in 2013, substance abuse, mood, anxiety, and adjustment disorders accounted for 238,789 lost work days due to hospitalization, convalescence, and limited duty dispositions. More than 10% of all lost work time is attributable to other back problems (e.g., lumbago or low back pain) and other musculoskeletal diseases; together, these two musculoskeletal disorders accounted for more than 130,000 lost work days.

Also, in 2013, 10 burden of disease-defined conditions accounted for more than half of all illness- and injury-related medical encounters of active component members. The 10 conditions that accounted for the most medical encounters overall included four mental disorders (anxiety, adjustment, mood, and substance abuse), 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 work time among service members.[4-8] 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 healthcare burdens that affect U.S. military members. Illnesses and injuries that disproportionately contribute to morbidity and healthcare burden should be high-priority targets for prevention research and resources.

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Hospitalizations Among Members of the Active Component, U.S. Armed Forces, 2013

This report documents the frequencies, rates, trends, and distributions of hospitalizations of active component members of the U.S. Armed Forces during calendar year 2013. 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 the International Classification of Diseases, Ninth Revision, Clinical Modification (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 2013, there were 77,790 records of hospitalizations of active component members of the U.S. Army, Navy, Air Force, Marine Corps, and Coast Guard; 37% of the hospitalizations were in non-military facilities **(Table 1, Figure 1)**. The hospitalization rate (all causes) was 55.2 per 1,000 service member person-years (p-yrs). The annual hospitalization rate (all causes) for 2013 was the lowest rate reported within the last 10 years covered in this report. **(Figure 1)**.

Hospitalizations, by illness and injury categories

As in prior years, in 2013 three diagnostic categories accounted for more than half (54.6%) of all hospitalizations of active component members: mental disorders (23.2%), pregnancy- and delivery-related conditions (20.7%), and injuries and poisonings (10.7%) **(Table 1)**. Similar to 2009 and 2011, in 2013 there were more hospitalizations for mental disorders than for any other major diagnostic category (per the ICD-9-CM). The last year in which the number of hospitalizations for pregnancy- and delivery-related conditions exceeded the number for mental disorders was 2008 **(data not shown)**.

Comparing 2013 to 2009, numbers of hospitalizations decreased in 15 and increased in two major categories of illnesses and injuries **(Table 1)**. The largest percentage decreases in hospitalizations during 2009–2013 were for respiratory system conditions (hosp diff, 2009–2013: −1,571; −42.1%) and for injuries and poisonings (hosp diff, 2009–2013: −3,561; −30.0%).

Hospitalizations, by gender

In 2013, the hospitalization rate (all causes) among females was nearly three times that of males (hospitalization rate, overall: females: 134.3 per 1,000 p-yrs; males: 41.4 per 1,000 p-yrs). Excluding pregnancy and delivery, the rate of hospitalizations among females (57.2 per 1,000 p-yrs) was 38.2% higher than among males **(data not shown)**.

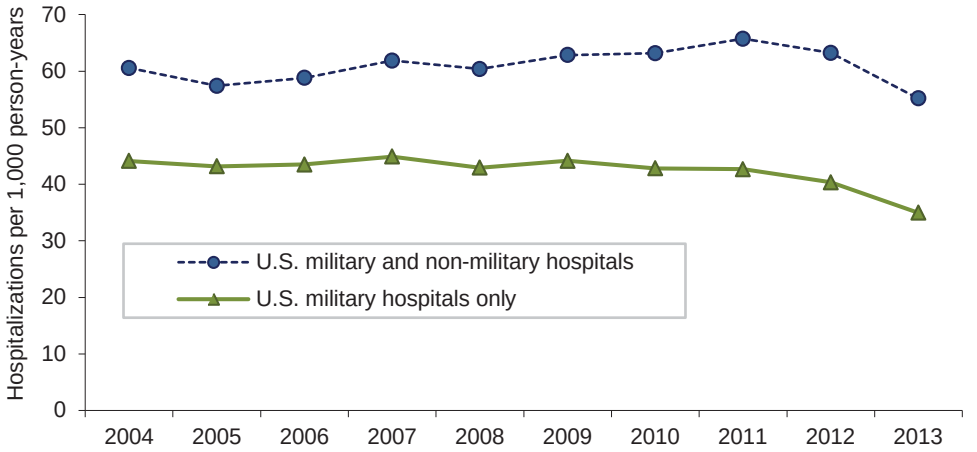
Hospitalization rates were higher among males than females for injuries and poisonings (male:female [m:f], rate

TABLE 1. Hospitalizations, ICD-9 diagnostic categories, active component, U.S. Armed Forces, 2009, 2011, and 2013

	2009			2011			2013		
Major diagnostic category (ICD-9-CM)	No.	Rate[a]	Rank	No.	Rate[a]	Rank	No.	Rate[a]	Rank
Mental disorders (290–319)	18,283	12.7	(1)	21,232	14.6	(1)	18,020	12.8	(1)
Pregnancy/delivery (630–679, relevant V-codes)[b]	18,099	12.5 *(88.1)*	(2)	18,488	12.7 *(87.8)*	(2)	16,099	11.4 *(77.0)*	(2)
Injury and poisoning (800–999)	11,879	8.2	(3)	12,184	8.4	(3)	8,318	5.9	(3)
Digestive system (520–579)	8,032	5.6	(4)	8,516	5.8	(4)	7,143	5.1	(4)
Musculoskeletal system/connective tissue (710–739)	7,825	5.4	(5)	8,017	5.5	(5)	6,400	4.5	(5)
Signs, symptoms, ill-defined conditions (780–799)	4,702	3.3	(6)	4,774	3.3	(6)	3,641	2.6	(6)
Other (V01–V82, except pregnancy-related)	2,990	2.1	(8)	3,847	2.6	(7)	3,164	2.2	(7)
Circulatory system (390–459)	2,935	2.0	(9)	2,965	2.0	(8)	2,422	1.7	(8)
Genitourinary system (580–629)	2,812	1.9	(10)	2,913	2.0	(10)	2,328	1.7	(9)
Respiratory system (460–519)	3,728	2.6	(7)	2,915	2.0	(9)	2,157	1.5	(10)
Nervous system (320–389)	1,992	1.4	(13)	2,331	1.6	(11)	1,881	1.3	(11)
Neoplasms (140–239)	2,235	1.5	(11)	2,295	1.6	(12)	1,849	1.3	(12)
Skin and subcutaneous tissue (680–709)	2,203	1.5	(12)	1,975	1.4	(13)	1,644	1.2	(13)
Infectious and parasitic diseases (001–139)	1,342	0.9	(14)	1,532	1.1	(14)	1,286	0.9	(14)
Endocrine, nutrition, immunity (240–279)	910	0.6	(15)	933	0.6	(15)	723	0.5	(15)
Congenital anomalies (740–759)	379	0.3	(17)	451	0.3	(16)	396	0.3	(16)
Hematologic disorders (280–289)	402	0.3	(16)	375	0.3	(17)	319	0.2	(17)
Total	90,748	62.8		95,743	65.7		77,790	55.2	

[a]Rates are based on 1,000 person-years
[b]Rates of pregnancy- and delivery-related hospitalizations among females only (in parentheses)

FIGURE 1. Rates of hospitalization by year, active component, U.S. Armed Forces, 2004–2013



difference [RD]: 1.5 per 1,000 p-yrs). Hospitalization rates were higher among females than males for genitourinary disorders (RD: 4.6 per 1,000 p-yrs); mental disorders (RD: 4.8 per 1,000 p-yrs); neoplasms (RD: 2.5 per 1,000 p-yrs); digestive disorders (RD: 1.1 per 1,000 p-yrs); "other" V-coded conditions (RD: 1.6 per 1,000 p-yrs); and signs, symptoms, and ill-defined conditions (RD: 1.4 per 1,000 p-yrs). Hospitalization rates were similar among males and females for the remaining nine major disease-specific categories **(data not shown)**.

Relationships between age and hospitalization rates significantly varied across illness- and injury-specific categories. 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 2013, five diagnoses (at the three-digit level of the ICD-9-CM) each accounted for more than 1,500 hospitalizations among males: adjustment reactions (n=4,698), episodic mood disorders (n=3,207), intervertebral disc disorders (n=1,795), alcohol dependence syndrome (n=1,739), and acute appendicitis (n=1,658) **(Table 2)**. These five diagnoses accounted for approximately 23% of all hospitalizations of males in 2012.

In 2013, pregnancy- and delivery-related conditions accounted for 57% of all hospitalizations of females **(Table 3)**. Other than pregnancy- and delivery-related diagnoses, leading causes of hospitalizations of females were adjustment reactions (n=1,189), episodic mood disorders (n=1,062), uterine leiomyoma (n=371), depressive disorder (n=336), observation and evaluation for conditions not found (n=282), and acute appendicitis (n=262). These six diagnoses accounted for about 29% of all hospitalizations (not related to pregnancy/delivery) of females.

Mental health conditions

In 2013, mental disorders accounted for more hospitalizations of U.S. service members than any other major diagnostic category **(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 three-digit level); together, these two conditions accounted for 16% and 19% of all hospitalizations of males and females (excluding pregnancy/delivery), respectively **(Tables 2, 3)**.

Injuries and poisonings

As in the past, in 2013 injuries and poisonings were the third 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=4,986), approximately one in eight (n=401; 8.0%) were reported as "intentionally inflicted" (e.g., enemy weapons; suicide gestures/attempts; fights, assaults, legal interventions). The majority of hospitalizations categorized as "intentionally inflicted" were reported as "self-inflicted" (n=225; 56.1%). Of all "unintentional" injuries and poisonings that resulted in hospitalizations in U.S. military facilities (n=4,527), approximately two-thirds (64.6%) were considered caused by falls and miscellaneous (n=1,271), complications of medical or surgical care (n=1,093), or related to land transport accidents (n=559) **(Table 4)**.

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

Durations of hospitalizations

Since 2004, the median durations of hospitalizations (all causes) have been stable (3 days), but the durations of the longest hospitalizations have increased **(Figure 3)**. In 2013 as in previous years, medians and ranges of durations of hospitalizations varied significantly across major diagnostic categories. For example, median lengths of hospitalizations varied from 2 days (e.g., musculoskeletal system/connective tissue disorders; signs, symptoms, and ill-defined conditions) to 6 days (i.e., mental disorders). For most diagnostic categories, less than 5% of hospitalizations exceeded 15 days, but for three categories, 5% of hospitalizations had longer durations: neoplasms (25 days); mental disorders (32 days); and "other" or V-coded hospitalizations (primarily orthopedic aftercare and rehabilitation following a previous illness or injury) (44 days) **(Figure 4)**.

FIGURE 2. Rates (per 1,000 person-years) of hospitalization by major diagnostic categories, by age and gender, active component, U.S. Armed Forces, 2013

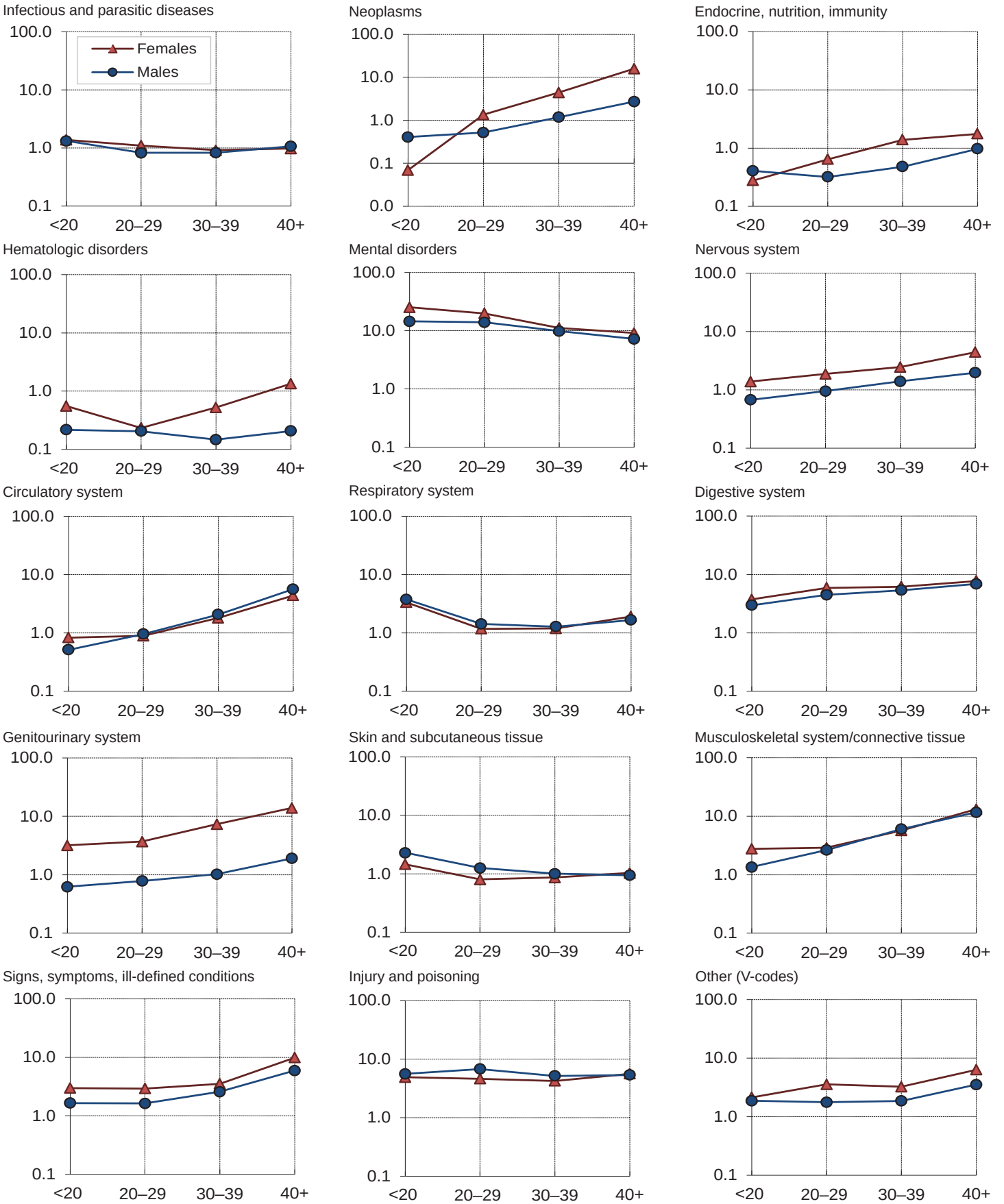


TABLE 2. Most frequent diagnoses during hospitalization, by major diagnostic category, males, active component, U.S. Armed Forces, 2013

Diagnostic category (ICD-9-CM codes) ♂	No.	%
Infectious and parasitic diseases (001–139)	1,064	
Septicemia	277	26.0
Intestinal infections due to other organisms	179	16.8
Meningitis due to enterovirus	106	10.0
Ill-defined intestinal infections	94	8.8
Infectious mononucleosis	52	4.9
Neoplasms (140–239)	1,134	
Malignant neoplasm of testis	75	6.6
Malignant neoplasm of prostate	56	4.9
Malignant neoplasm of brain	56	4.9
Malignant neoplasm of colon	52	4.6
Malignant neoplasm of thyroid gland	52	4.6
Endocrine, nutrition, immunity (240–279)	531	
Disorders of fluid electrolyte/acid-base balance	178	33.5
Diabetes mellitus	156	29.4
Nontoxic nodular goiter	39	7.3
Thyrotoxicosis with or without goiter	29	5.5
Overweight, obesity and other hyperalimentation	28	5.3
Hematologic disorders (280–289)	228	
Diseases of white blood cells	59	25.9
Other diseases of blood and blood-forming organs	40	17.5
Purpura and other hemorrhagic conditions	39	17.1
Other and unspecified anemias	27	11.8
Iron deficiency anemias	25	11.0
Mental disorders (290–319)	14,488	
Adjustment reaction	4,698	32.4
Episodic mood disorders	3,207	22.1
Alcohol dependence syndrome	1,739	12.0
Depressive disorder not elsewhere classified	1,210	8.4
Anxiety, dissociative and somatoform disorders	862	5.9
Nervous system (320–389)	1,413	
Pain, not elsewhere classified	255	18.0
Epilepsy	185	13.1
Organic sleep disorders	179	12.7
Migraine	131	9.3
Other conditions of brain	62	4.4
Circulatory system (390–459)	2,118	
Cardiac dysrhythmias	416	19.6
Acute pulmonary heart disease	241	11.4
Acute myocardial infarction	155	7.3
Other venous embolism and thrombosis	126	5.9
Other forms of chronic ischemic heart disease	103	4.9
Respiratory system (460–519)	1,865	
Pneumonia organism unspecified	557	29.9
Pneumothorax	186	10.0
Other diseases of lung	116	6.2
Asthma	112	6.0
Peritonsillar abscess	100	5.4

Diagnostic category (ICD-9-CM codes) ♂	No.	%
Digestive system (520–579)	5,890	
Acute appendicitis	1,658	28.1
Dentofacial anomalies including malocclusion	406	6.9
Diseases of pancreas	383	6.5
Cholelithiasis	355	6.0
Diseases of esophagus	276	4.7
Genitourinary system (580–629)	1,162	
Calculus of kidney and ureter	298	25.6
Acute renal failure	213	18.3
Other disorders of male genital organs	111	9.6
Urethral stricture	90	7.7
Other disorders of kidney and ureter	84	7.2
Skin and subcutaneous tissue (680–709)	1,459	
Other cellulitis and abscess	1,031	70.7
Pilonidal cyst	100	6.9
Cellulitis and abscess of finger and toe	98	6.7
Other disorders of skin and subcutaneous tissue	47	3.2
Erythematous conditions	24	1.6
Musculoskeletal system/connective tissue (710–739)	5,440	
Intervertebral disc disorders	1,795	33.0
Disorders of muscle ligament and fascia	476	8.8
Spondylosis and allied disorders	431	7.9
Osteoarthrosis and allied disorders	422	7.8
Other and unspecified disorders of back	347	6.4
Congenital anomalies (740–759)	327	
Other congenital musculoskeletal anomalies	105	32.1
Other congenital anomalies of circulatory system	39	11.9
Congenital anomalies of urinary system	36	11.0
Other congenital anomalies of digestive system	24	7.3
Other congenital anomalies of heart	19	5.8
Signs, symptoms, ill-defined conditions (780–799)	2,860	
Symptoms involving respiratory system/chest symptoms	1,103	38.6
General symptoms	790	27.6
Other symptoms involving abdomen and pelvis	384	13.4
Symptoms involving head and neck	141	4.9
Symptoms involving digestive system	91	3.2
Injury and poisoning (800–999)	7,348	
Other complications of procedures not elsewhere classified	715	9.7
Fracture of ankle	376	5.1
Complications peculiar to certain specified procedures	352	4.8
Fracture of face bones	338	4.6
Fracture of tibia and fibula	287	3.9
Other (V01–V82, except pregnancy-related)	2,402	
Encounter for other/unspecified procedures and aftercare	653	27.2
Care involving use of rehabilitation procedures	417	17.4
Convalescence and palliative care	326	13.6
Observation/evaluation for suspected conditions not found	297	12.4
Other orthopedic aftercare	295	12.3

TABLE 3. Most frequent diagnoses during hospitalization, by major diagnostic category, females, active component, U.S. Armed Forces, 2013

Diagnostic category (ICD-9-CM codes) ♀	No.	%
Infectious and parasitic diseases (001–139)	222	
Septicemia	66	29.7
Intestinal infections due to other organisms	35	15.8
Meningitis due to enterovirus	31	14.0
Ill-defined intestinal infections	27	12.2
Herpes simplex	11	5.0
Neoplasms (140–239)	715	
Uterine leiomyoma	371	51.9
Malignant neoplasm of female breast	50	7.0
Benign neoplasm of ovary	33	4.6
Malignant neoplasm of thyroid gland	30	4.2
Malignant neoplasm of brain	14	2.0
Endocrine, nutrition, immunity (240–279)	192	
Nontoxic nodular goiter	40	20.8
Disorders of fluid electrolyte and acid-base balance	35	18.2
Thyrotoxicosis with or without goiter	23	12.0
Overweight, obesity and other hyperalimentation	21	10.9
Diabetes mellitus	16	8.3
Hematologic disorders (280–289)	91	
Iron deficiency anemias	31	34.1
Other and unspecified anemias	21	23.1
Diseases of white blood cells	21	23.1
Other diseases of blood and blood-forming organs	10	11.0
Hereditary hemolytic anemias	4	4.4
Mental disorders (290–319)	3,532	
Adjustment reaction	1,189	33.7
Episodic mood disorders	1,062	30.1
Depressive disorder not elsewhere classified	336	9.5
Anxiety, dissociative and somatoform disorders	233	6.6
Alcohol dependence syndrome	193	5.5
Nervous system (320–389)	468	
Migraine	116	24.8
Pain, not elsewhere classified	106	22.6
Epilepsy	56	12.0
Other conditions of brain	20	4.3
Other and unspecified disorders of nervous system	17	3.6
Circulatory system (390–459)	304	
Acute pulmonary heart disease	57	18.8
Cardiac dysrhythmias	50	16.4
Transient cerebral ischemia	22	7.2
Other venous embolism and thrombosis	22	7.2
Occlusion of cerebral arteries	20	6.6
Respiratory system (460–519)	292	
Pneumonia organism unspecified	48	16.4
Asthma	37	12.7
Chronic disease of tonsils and adenoids	29	9.9
Peritonsillar abscess	23	7.9
Other diseases of lung	21	7.2

Diagnostic category (ICD-9-CM codes) ♀	No.	%
Digestive system (520–579)	1,253	
Acute appendicitis	262	20.9
Cholelithiasis	164	13.1
Dentofacial anomalies including malocclusion	150	12.0
Other disorders of gallbladder	73	5.8
Diseases of pancreas	59	4.7
Genitourinary system (580–629)	1,166	
Disorders of menstruation/abnormal bleeding from genital tract	250	21.4
Infections of kidney	144	12.3
Noninflammatory disorders of ovary, tube, and broad ligament	123	10.5
Pain, other symptoms associated with female genital organs	111	9.5
Other disorders of breast	93	8.0
Pregnancy and delivery (630–679, relevant V-codes)	16,099	
Trauma to perineum and vulva during delivery	3,811	23.7
Other indications for care related to labor and delivery NEC	1,364	8.5
Other conds in mother complicating pregn, birth, or puerperium	1,278	7.9
Late pregnancy	1,176	7.3
Abnormality of organs and soft tissues of pelvis	1,172	7.3
Skin and subcutaneous tissue (680–709)	185	
Other cellulitis and abscess	109	58.9
Pilonidal cyst	21	11.4
Other hypertrophic and atrophic conditions of skin	11	5.9
Other disorders of skin and subcutaneous tissue	9	4.9
Disorders of sweat glands	7	3.8
Musculoskeletal system/connective tissue (710–739)	960	
Intervertebral disc disorders	248	25.8
Disorders of muscle ligament and fascia	82	8.5
Osteoarthrosis and allied disorders	68	7.1
Other and unspecified disorders of back	68	7.1
Other disorders of bone and cartilage	68	7.1
Signs, symptoms, ill-defined conditions (780–799)	781	
Other symptoms involving abdomen and pelvis	241	30.9
Symptoms of respiratory system and other chest symptoms	188	24.1
General symptoms	180	23.0
Symptoms involving digestive system	46	5.9
Symptoms involving head and neck	31	4.0
Injury and poisoning (800–999)	970	
Other complications of procedures not elsewhere classified	148	15.3
Poisoning by psychotropic agents	69	7.1
Complications peculiar to certain specified procedures	65	6.7
Certain adverse effects not elsewhere classified	57	5.9
Complications affecting specified body system NEC	52	5.4
Other (V01–V82, except pregnancy-related)	762	
Observation and evaluation for suspected conditions not found	282	37.0
Encounter for other and unspecified procedures and aftercare	138	18.1
Convalescence and palliative care	84	11.0
Care involving use of rehabilitation procedures	62	8.1
Other orthopedic aftercare	55	7.2

TABLE 4. Injury hospitalizations[a] by causal agent,[b] active component, U.S. Armed Forces, 2013

Cause	No.	%
Unintentional	4,527	90.8
Fall and miscellaneous	1,271	25.5
Complications of medical/surgical	1,093	21.9
Land transport	559	11.2
Poisons and fire	369	7.4
Athletics	318	6.4
Guns, explosives (includes accidents during war)	303	6.1
Machinery, tools	240	4.8
Environmental	210	4.2
Air transport	153	3.1
Water transport	11	0.2
Intentional	401	8.0
Self-inflicted	225	4.5
Battle casualty	129	2.6
Non-battle, inflicted by other (e.g., assault)	47	0.9
Missing/invalid code	58	1.2
Total	4,986	100.0

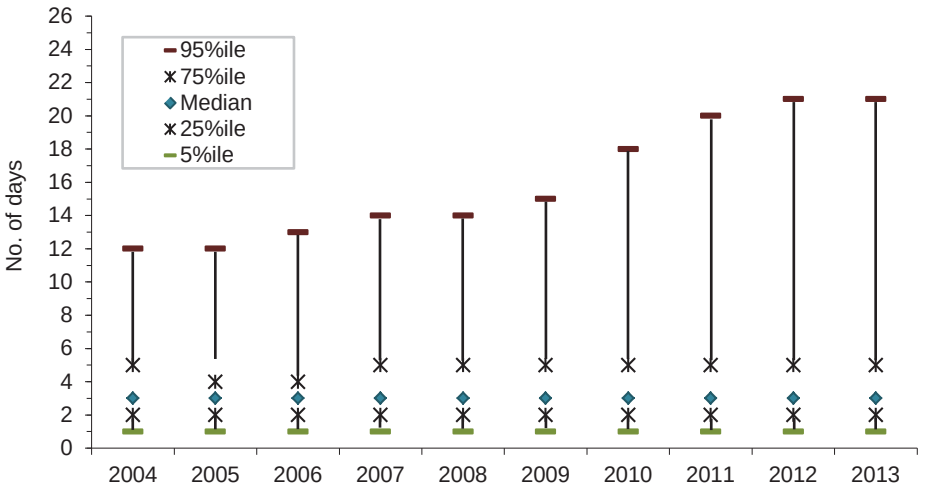
[a]Hospitalizations in U.S. military medical facilities only
[b]Causal agents were determined by codes IAW STANAG 2050.

twice as high among soldiers as among members of the three other Services.

EDITORIAL COMMENT

In 2013, for every 18 active component service members, there was one hospitalization for any cause; for every 22 members, there was one hospitalization for a condition not related to pregnancy and delivery. Hospitalization rates for all causes among active component members decreased in 2013 to the lowest rates in the past decade. As in the past, in 2013, mental disorders, pregnancy- and delivery-related conditions, and injuries and poisonings accounted for more than half of all

FIGURE 3. Length of hospital stay by year, active component, U.S. Armed Forces, 2002–2013



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 **(Table 5)**. The crude hospitalization rate for mental disorders in the Army (17.8 per 1,000 p-yrs) was higher than all other Services and almost double that of the Navy, Air Force, and Coast Guard.

Injuries and poisonings were the second leading cause of hospitalizations in the Marine Corps and the third leading cause in the Army. **(Table 5)**. The hospitalization rate for injuries and poisonings was 21% higher among soldiers (8.0 per 1,000 p-yrs) than Marines (6.6 per 1,000 p-yrs) and almost

FIGURE 4. Length of hospital stay by major diagnostic category, active component, U.S. Armed Forces, 2013

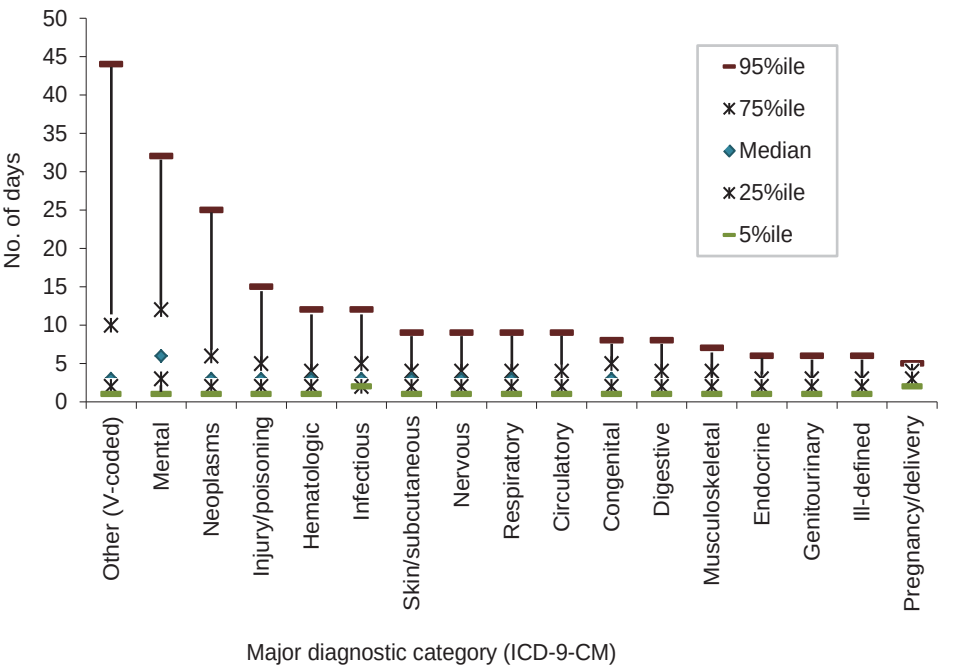


TABLE 5. Hospitalizations, by Service and ICD-9 diagnostic category, active component, U.S. Armed Forces, 2013

	Army		Navy		Air Force		Marine Corps		Coast Guard	
Major diagnostic category (ICD-9-CM)	No.	Rate[a]	No.	Rate[a]	No.	Rate[a]	No.	Rate[a]	No.	Rate[a]
Mental disorders (290–319)	9,454	17.8	2,965	9.4	3,154	9.6	2,135	11.0	312	7.7
Pregnancy/delivery (630–679, relevant V-codes)[b]	5,863	11.1 *(81.5)*	4,046	12.8 *(73.7)*	4,560	13.9 *(73.5)*	1,169	6.0 *(83.1)*	461	11.3 *(76.3)*
Injury and poisoning (800–999)	4,237	8.0	1,412	4.5	1,235	3.8	1,288	6.6	146	3.6
Digestive system (520–579)	3,184	6.0	1,467	4.6	1,486	4.5	826	4.2	180	4.4
Musculoskeletal system/connective tissue (710–739)	3,163	6.0	1,060	3.3	1,451	4.4	578	3.0	148	3.6
Signs, symptoms, ill-defined conditions (780–799)	2,016	3.8	669	2.1	642	2.0	274	1.4	40	1.0
Other (V01–V82, except pregnancy-related)	1,653	3.1	579	1.8	512	1.6	364	1.9	56	1.4
Circulatory system (390–459)	1,228	2.3	439	1.4	508	1.5	182	0.9	65	1.6
Respiratory system (460–519)	1,178	2.2	275	0.9	374	1.1	300	1.5	30	0.7
Genitourinary system (580–629)	1,050	2.0	452	1.4	573	1.7	208	1.1	45	1.1
Nervous system (320–389)	943	1.8	320	1.0	410	1.2	168	0.9	40	1.0
Neoplasms (140–239)	838	1.6	416	1.3	416	1.3	125	0.6	54	1.3
Skin and subcutaneous tissue (680–709)	762	1.4	300	0.9	252	0.8	299	1.5	31	0.8
Infectious and parasitic diseases (001–139)	557	1.1	237	0.7	264	0.8	189	1.0	39	1.0
Endocrine, nutrition, immunity (240–279)	400	0.8	112	0.4	130	0.4	70	0.4	11	0.3
Congenital anomalies (740–759)	178	0.3	75	0.2	81	0.2	55	0.3	7	0.2
Hematologic disorders (280–289)	122	0.2	77	0.2	67	0.2	46	0.2	7	0.2
Total	36,826	69.5	14,901	47.0	16,115	45.4	8,276	42.5	1,672	41.1

[a]Rates are based on 1,000 person-years.
[b]Rates of pregnancy- and delivery-related hospitalizations among females only (in parentheses)

hospitalizations of active component members. Although annual numbers of hospitalizations for mental disorders had been rising each year since 2008, in 2013, the number fell to the lowest level since 2008.

The reasons for the 2013 downturn in the annual numbers of hospitalizations overall and for mental disorders in particular are not clear. It is conceivable that there has been a decline in the impact of combat and peacekeeping operations on overall morbidity among service members since the withdrawal of U.S. forces from Iraq, the steady decline in the size of the forces in Afghanistan, and the change in the extent of combat engagements there. It is also conceivable that the concerted efforts in recent years to decrease stigmas and to remove barriers and enhance access to mental health care may have forestalled the need to hospitalize many service members because of early interventions in the outpatient setting. Continued monitoring of hospitalizations and all other healthcare encounters over time may permit elucidation of the possible reasons for the recent trends in hospitalization.

This summary has certain limitations 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 2013; 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 2013, adjustment reactions (including post-traumatic stress disorder) and mood 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 focused on detecting, diagnosing, and treating mental disorders—especially those related to long and repeated deployments and combat stresses.

Ambulatory Visits Among Members of the Active Component, U.S. Armed Forces, 2013

This report documents the frequencies, rates, trends, and characteristics of ambulatory healthcare visits of active component members of the U.S. Armed Forces during 2013. Ambulatory visits of U.S. service members in fixed military and non-military (reimbursed through the Military Health System [MHS]) medical treatment facilities are documented with standardized, automated records. These records are routinely archived for health surveillance purposes in the Defense Medical Surveillance System (DMSS), 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 in this report.

For this report, all records of ambulatory visits of active component members of the Army, Navy, Air Force, Marine Corps, and Coast Guard in 2013 were categorized according to the first three digits of the primary (first-listed) diagnosis code (per International Classification of Diseases, 9th Revision, Clinical Modification [ICD-9-CM]).

Frequencies, rates, and trends

During 2013, there were 20,199,687 reported ambulatory visits of active component service members. The crude annual rate (all causes) was 14,325 visits per 1,000 person-years (p-yrs); thus, on average, each service member had more than 14 ambulatory encounters during the year **(Table 1)**. The rate of documented ambulatory visits in 2013 was 4.3% higher than in 2011 and 58.3% higher than in 2004 **(Figure 1)**.

In 2013, nearly half (46.4%) of ambulatory visits were for "other" (i.e., 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 2013, three V-coded diagnoses accounted for a majority of the visits in this category: general medical examination (including deployment health assessments) (31.1%), care involving use of rehabilitation procedures (16.1%), and encounters for administrative purposes (8.6%) **(Tables 2, 3)**.

In 2013, there were 10,835,409 documented ambulatory visits for illnesses and injuries (ICD-9-CM: 001–999, including relevant pregnancy V-codes) **(Table 1)**. The crude annual rate of illness- and injury-related visits was 7.7 visits per person per year (p-yr). The rate of ambulatory visits for illnesses and injuries in 2013 was 3.6% higher than in 2011 and 14.0% higher than in 2009.

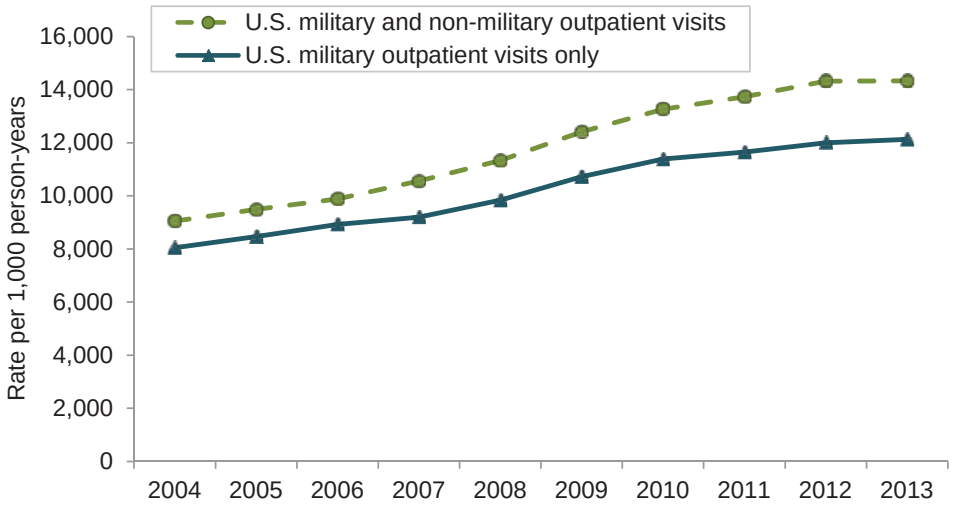
Ambulatory visits, by diagnostic categories

In 2013, four major diagnostic categories accounted for two-thirds (67.0%) of all

TABLE 1. Ambulatory visits, ICD-9-CM diagnostic categories, active component, U.S. Armed Forces, 2009, 2011, and 2013

	2009			2011			2013		
Major diagnostic category (ICD-9-CM)	No.	No. per person-year	Rank	No.	No. per person-year	Rank	No.	No. per person-year	Rank
Other (V01–V82, except pregnancy-related)	8,185,486	5.67	(1)	9,195,495	6.31	(1)	9,364,278	6.64	(1)
Musculoskeletal system (710–739)	2,326,881	1.61	(2)	2,908,573	2.00	(2)	3,089,375	2.19	(2)
Mental disorders (290–319)	1,504,350	1.04	(3)	1,913,770	1.31	(3)	2,013,189	1.43	(3)
Signs, symptoms, and ill-defined conditions (780–799)	999,755	0.69	(5)	1,110,427	0.76	(4)	1,095,190	0.78	(4)
Nervous system (320–389)	890,467	0.62	(6)	991,920	0.68	(6)	1,059,244	0.75	(5)
Injury and poisoning (800–999)	1,010,122	0.70	(4)	1,002,758	0.69	(5)	895,306	0.63	(6)
Respiratory system (460–519)	840,221	0.58	(7)	688,791	0.47	(7)	628,213	0.45	(7)
Skin and subcutaneous tissue (680–709)	407,709	0.28	(8)	407,740	0.28	(8)	403,754	0.29	(8)
Pregnancy and delivery (630–679, relevant V-codes)	365,200	0.25	(9)	385,745	0.26	(9)	355,417	0.25	(9)
Genitourinary system (580–629)	290,646	0.20	(11)	302,403	0.21	(10)	281,870	0.20	(10)
Digestive system (520–579)	295,923	0.20	(10)	302,256	0.21	(11)	280,425	0.20	(11)
Infectious and parasitic diseases (001–139)	279,490	0.19	(12)	241,922	0.17	(12)	221,580	0.16	(12)
Circulatory system (390–459)	185,977	0.13	(13)	195,275	0.13	(13)	176,008	0.12	(13)
Endocrine, nutrition, immunity (240–279)	144,326	0.10	(14)	155,151	0.11	(14)	146,010	0.10	(14)
Neoplasms (140–239)	135,251	0.09	(15)	142,302	0.10	(15)	133,141	0.09	(15)
Congenital anomalies (740–759)	29,493	0.02	(16)	30,160	0.02	(16)	29,007	0.02	(16)
Hematologic disorders (280–289)	24,873	0.02	(17)	27,655	0.02	(17)	27,680	0.02	(17)
Total	17,916,170	12.41		20,002,343	13.73		20,199,687	14.32	

FIGURE 1. Rates of ambulatory visits by year, active component, U.S. Armed Forces, 2004–2013



illness- and injury-related ambulatory visits among active component service members: musculoskeletal system/connective tissue disorders (28.5%), mental disorders (18.6%), "signs, symptoms, and ill-defined conditions" (10.1%), and disorders of the nervous system and sense organs (9.8%) **(Table 1)**.

During 2009–2013, there were increases in numbers of visits in seven major diagnostic categories and decreases in 10 major diagnostic categories **(Table 1)**. The largest percentage increases during 2009–2013 were for mental disorders (change in ambulatory visits, 2009–2013: +508,839; +33.8%), and musculoskeletal system/connective tissue disorders (change in ambulatory visits, 2009–2013: +762,494; +32.8%). The largest percentage decreases during 2009–2013 were for respiratory system (change in ambulatory visits, 2009–2013: −212,008; −25.2%), and infectious and parasitic diseases (change in ambulatory visits, 2009–2013: −57,910; −20.7%).

Over the past 5 years, the relative distributions of ambulatory visits by diagnostic categories of the ICD-9-CM remained fairly stable with a few exceptions **(Table 1)**. In relation to visits attributable to each of the 17 major diagnostic categories, between 2009 and 2013, three categories increased in rank order: signs, symptoms, and ill-defined conditions (5th to 4th), nervous system (6th to 5th), and genitourinary system (11th to 10th). Two categories decreased in rank order: injury and poisoning (4th to 6th) and digestive system (10th to 11th).

Ambulatory visits, by gender

In 2013, males accounted for three-fourths (75.6%) of all illness- and injury-related visits; however, the annual crude rate among females (12.7 visits/p-yr) was 89% higher than that of males (6.8 visits/p-yr) **(data not shown)**. Excluding pregnancy and delivery-related visits (which accounted for 13.4% of all non-V-coded ambulatory visits among females), the non-V-coded 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 three-digit level of the ICD-9-CM) accounted for the largest numbers of ambulatory visits among males and females **(Tables 2, 3)**. For each of the three most frequently reported illness- or injury-specific diagnoses, the crude rate was at least 40% higher among females than males: other/unspecified disorders of joints (rates [per 1,000 p-yrs], female: 927.7; male: 628.2; female:male rate ratio [RR]: 1.48); adjustment reaction (rates, female: 780.7; male: 495.6; RR: 1.58); and other/unspecified disorders of the back (rates, female: 725.3; male: 516.5; RR: 1.40) **(data not shown)**. Anxiety disorders, general symptoms, other disorders of soft tissues, and episodic mood disorders also ranked in the top 10 diagnoses for both males and females. Four mental disorders among males (adjustment reaction, anxiety disorders, alcohol dependence syndrome, and episodic mood disorders) and four mental disorders among females (adjustment reaction, anxiety disorders, episodic mood disorders, and depressive disorder) were among the 10 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 among those aged 40 years or older were more than 10 times the rates among 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.

Dispositions after ambulatory visits

Approximately 59.0% of all illness-and injury-related visits resulted in "no limitation" (i.e., duty without limitations) dispositions **(Figure 3)**. Approximately one in 37 (2.7%) 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 injuries and poisonings (20.8%), diseases of the respiratory system (20.7%), diseases of the digestive system (19.3%), infectious and parasitic diseases (18.5%), and musculoskeletal system/connective tissue disorders

FIGURE 2. Rates (per 1,000 p-yrs) of ambulatory visits by major diagnostic categories, by age and gender, active component, U.S. Armed Forces, 2013

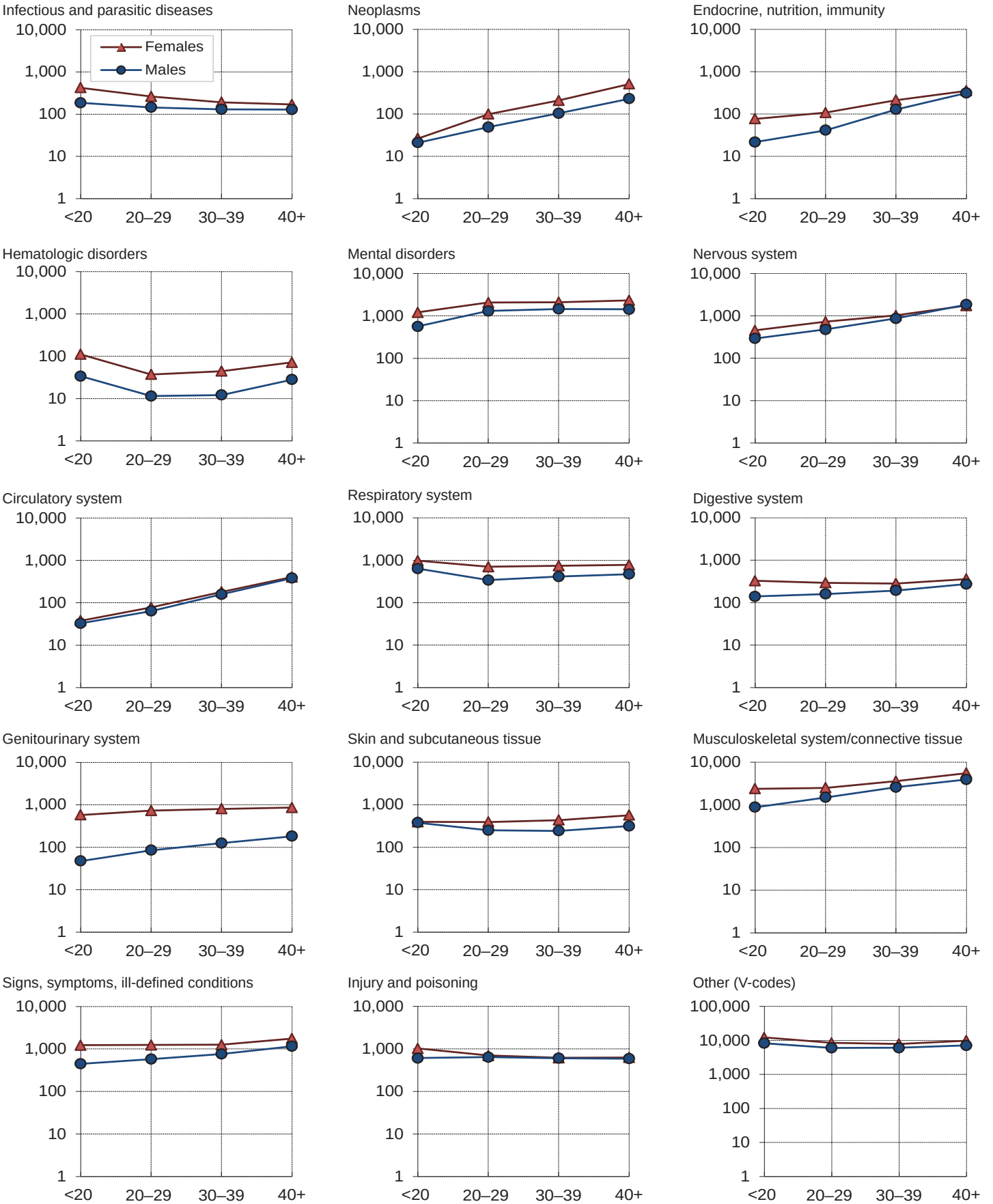


TABLE 2. Most frequent diagnoses during ambulatory visits by major diagnostic category, males, active component, U.S. Armed Forces, 2013

Diagnostic category (ICD-9-CM codes) ♂	No.	%
Infectious and parasitic diseases (001–139)	170,232	
Other diseases due to viruses and chlamydiae[a]	36,818	21.6
Viral and chlamydial infection[b]	31,869	18.7
Dermatophytosis	27,508	16.2
Intestinal infections due to other organisms	10,896	6.4
Streptococcal sore throat and scarlet fever	10,336	6.1
Neoplasms (140–239)	99,460	
Benign neoplasm of skin	15,856	15.9
Neoplasm of uncertain behavior	13,213	13.3
Neoplasms of unspecified nature	11,152	11.2
Lipoma	9,152	9.2
Malignant neoplasm of testis	4,083	4.1
Endocrine, nutrition, immunity (240–279)	113,520	
Disorders of lipoid metabolism	28,566	25.2
Diabetes mellitus	17,312	15.3
Testicular dysfunction	15,244	13.4
Overweight, obesity, and other hyperalimentation	13,553	11.9
Acquired hypothyroidism	8,541	7.5
Hematologic disorders (280–289)	17,810	
Other and unspecified anemias	4,341	24.4
Hereditary hemolytic anemias	3,079	17.3
Diseases of white blood cells	2,933	16.5
Purpura and other hemorrhagic conditions	2,277	12.8
Iron deficiency anemias	1,914	10.7
Mental disorders (290–319)	1,585,088	
Adjustment reaction	595,254	37.6
Anxiety, dissociative, and somatoform disorders	221,370	14.0
Alcohol dependence syndrome	198,482	12.5
Episodic mood disorders	157,693	9.9
Nondependent abuse of drugs	117,994	7.4
Nervous system (320–389)	874,975	
Organic sleep disorders	293,309	33.5
Disorders of refraction and accommodation	140,451	16.1
Pain, not elsewhere classified	59,491	6.8
Hearing loss	42,642	4.9
Other headache syndromes	39,823	4.6
Circulatory system (390–459)	148,339	
Essential hypertension	61,525	41.5
Hemorrhoids	17,325	11.7
Cardiac dysrhythmias	13,894	9.4
Varicose veins of other sites	5,399	3.6
Other venous embolism and thrombosis	4,390	3.0
Respiratory system (460–519)	473,546	
Acute upper respiratory infections, unspecified sites	110,970	23.4
Allergic rhinitis	76,001	16.0
Acute pharyngitis	55,069	11.6
Chronic sinusitis	30,217	6.4
Acute nasopharyngitis (common cold)	27,474	5.8

Diagnostic category (ICD-9-CM codes) ♂	No.	%
Digestive system (520–579)	217,797	
Other/unspecified noninfectious gastroenteritis/colitis	50,981	23.4
Diseases of esophagus	31,207	14.3
Inguinal hernia	12,535	5.8
Gastrointestinal hemorrhage	12,308	5.7
Functional digestive disorders not elsewhere classified	11,510	5.3
Genitourinary system (580–629)	125,417	
Other disorders of male genital organs	25,967	20.7
Calculus of kidney and ureter	19,677	15.7
Other disorders of urethra and urinary tract	13,025	10.4
Male infertility	9,457	7.5
Orchitis and epididymitis	8,607	6.9
Skin and subcutaneous tissue (680–709)	316,106	
Diseases of hair and hair follicles	52,091	16.5
Other cellulitis and abscess	48,984	15.5
Contact dermatitis and other eczema	46,408	14.7
Diseases of sebaceous glands	35,439	11.2
Other disorders of skin and subcutaneous tissue	18,174	5.7
Musculoskeletal system/connective tissue (710–739)	2,447,434	
Other and unspecified disorders of joint	754,569	30.8
Other and unspecified disorders of back	620,311	25.3
Other disorders of soft tissues	153,392	6.3
Intervertebral disc disorders	148,616	6.1
Peripheral enthesopathies and allied syndromes	148,544	6.1
Congenital anomalies (740–759)	22,202	
Certain congenital musculoskeletal deformities	5,898	26.6
Other congenital musculoskeletal anomalies	4,427	19.9
Congenital anomalies of the integument	2,784	12.5
Other congenital anomalies of limbs	2,052	9.2
Congenital anomalies of urinary system	1,077	4.9
Signs, symptoms, ill-defined conditions (780–799)	824,881	
General symptoms	203,744	24.7
Symptoms involving respiratory system	152,455	18.5
Other symptoms involving abdomen and pelvis	94,880	11.5
Symptoms involving digestive system	73,250	8.9
Other ill-defined and unknown	61,787	7.5
Injury and poisoning (800–999)	750,302	
Sprains and strains of ankle and foot	74,246	9.9
Sprains and strains of knee and leg	73,770	9.8
Sprains and strains of shoulder and upper arm	55,998	7.5
Injury other and unspecified	47,327	6.3
Sprains and strains of other/unspecified parts of back	45,549	6.1
Other (V01–V82, except pregnancy-related)	7,546,832	
General medical examination	2,467,559	32.7
Care involving use of rehabilitation procedures	1,212,189	16.1
Encounters for administrative purposes	646,455	8.6
Special investigations and examinations	444,448	5.9
Other persons seeking consultation	362,424	4.8

[a]ICD-9-CM code 078 encompasses a broad variety of conditions including molluscum contagiosum, viral warts, sweating fever, cat-scratch disease, foot and mouth disease, cytomegaloviral disease, hemorrhagic nephrosonephritis, arenaviral hemorrhagic fever, and other disorders such as epidemic vomiting syndrome and Marburg disease.
[b]ICD-9-CM code 079 is for "viral and chlamydial infection in conditions classified elsewhere and of unspecified site" and is to be used to identify the viral or chlamydial agent in diseases classifiable elsewhere and to classify virus or chlamydial infection of unspecified nature or site.

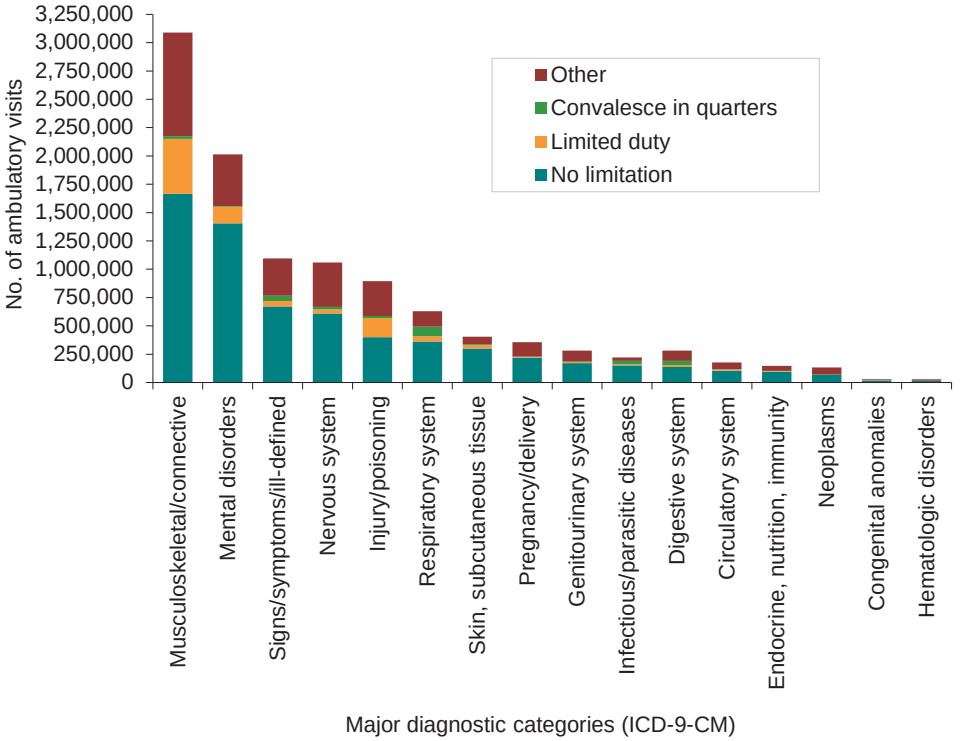
TABLE 3. Most frequent diagnoses during ambulatory visits by major diagnostic category, females, active component, U.S. Armed Forces, 2013

Diagnostic category (ICD-9-CM codes) ♀	No.	%
Infectious and parasitic diseases (001–139)	51,348	
Viral and chlamydial infection[a]	12,651	24.6
Candidiasis	6,727	13.1
Other diseases due to viruses and chlamydiae[b]	5,254	10.2
Dermatophytosis	4,476	8.7
Herpes simplex	3,902	7.6
Neoplasms (140–239)	33,681	
Benign neoplasm of skin	4,775	14.2
Malignant neoplasm of female breast	4,405	13.1
Uterine leiomyoma	4,218	12.5
Neoplasm of uncertain behavior	3,495	10.4
Neoplasms of unspecified nature	3,021	9.0
Endocrine, nutrition, immunity (240–279)	32,490	
Acquired hypothyroidism	6,312	19.4
Overweight, obesity, and other hyperalimentation	5,606	17.3
Ovarian dysfunction	2,852	8.8
Thyrotoxicosis with or without goiter	2,305	7.1
Disorders of fluid electrolyte and acid-base balance	2,241	6.9
Hematologic disorders (280–289)	9,870	
Iron deficiency anemias	3,241	32.8
Other and unspecified anemias	3,236	32.8
Hereditary hemolytic anemias	891	9.0
Purpura and other hemorrhagic conditions	811	8.2
Diseases of white blood cells	777	7.9
Mental disorders (290–319)	428,101	
Adjustment reaction	163,178	38.1
Anxiety, dissociative, and somatoform disorders	76,264	17.8
Episodic mood disorders	69,383	16.2
Depressive disorder not elsewhere classified	41,312	9.7
Alcohol dependence syndrome	22,394	5.2
Nervous system (320–389)	184,269	
Disorders of refraction and accommodation	36,202	19.6
Migraine	27,139	14.7
Organic sleep disorders	17,372	9.4
Pain, not elsewhere classified	15,443	8.4
Other headache syndromes	11,315	6.1
Circulatory system (390–459)	27,669	
Essential hypertension	8,024	29.0
Hemorrhoids	3,985	14.4
Cardiac dysrhythmias	2,976	10.8
Varicose veins of lower extremities	2,306	8.3
Other disorders of circulatory system	1,268	4.6
Respiratory system (460–519)	154,667	
Acute upper respiratory infections, unspecified sites	37,362	24.2
Allergic rhinitis	27,376	17.7
Acute pharyngitis	18,739	12.1
Chronic sinusitis	11,333	7.3
Acute nasopharyngitis (common cold)	10,024	6.5

Diagnostic category (ICD-9-CM codes) ♀	No.	%
Digestive system (520–579)	62,628	
Other/unspecified noninfectious gastroenteritis/colitis	17,490	27.9
Functional digestive disorders not elsewhere classified	9,446	15.1
Diseases of esophagus	6,356	10.1
Gastritis and duodenitis	4,044	6.5
Gastrointestinal hemorrhage	2,366	3.8
Genitourinary system (580–629)	156,453	
Pain/other symptoms associated with female genital organs	28,006	17.9
Disorders of menstruation/abnormal bleeding	22,986	14.7
Other disorders of urethra and urinary tract	19,273	12.3
Inflammatory disease of cervix vagina and vulva	15,495	9.9
Other disorders of breast	11,835	7.6
Pregnancy and delivery (630–679, relevant V-codes)	355,417	
Normal pregnancy	105,848	29.8
Other complications of preg not elsewhere classified	36,401	10.2
Other current conditions classifiable elsewhere	36,399	10.2
Postpartum care and examination	22,986	6.5
Other indications for care/intervention related to labor	17,064	4.8
Skin and subcutaneous tissue (680–709)	87,648	
Diseases of sebaceous glands	18,236	20.8
Contact dermatitis and other eczema	13,306	15.2
Other cellulitis and abscess	8,880	10.1
Diseases of hair and hair follicles	7,714	8.8
Other disorders of skin and subcutaneous tissue	6,707	7.7
Musculoskeletal system/connective tissue (710–739)	641,941	
Other and unspecified disorders of joint	193,908	30.2
Other and unspecified disorders of back	151,604	23.6
Other disorders of soft tissues	53,302	8.3
Other disorders of cervical region	38,606	6.0
Peripheral enthesopathies and allied syndromes	33,693	5.2
Signs, symptoms, ill-defined conditions (780–799)	270,309	
Other symptoms involving abdomen and pelvis	50,260	18.6
General symptoms	47,254	17.5
Symptoms involving respiratory system	37,434	13.8
Symptoms involving digestive system	30,600	11.3
Symptoms involving head and neck	22,626	8.4
Injury and poisoning (800–999)	145,004	
Sprains and strains of ankle and foot	15,930	11.0
Sprains and strains of knee and leg	15,680	10.8
Sprains and strains of other/unspecified parts of back	10,899	7.5
Certain adverse effects not elsewhere classified	8,173	5.6
Injury other and unspecified	8,169	5.6
Other (V01–V82, except pregnancy-related)	1,817,446	
General medical examination	448,477	24.7
Care involving use of rehabilitation procedures	296,504	16.3
Encounters for administrative purposes	161,709	8.9
Special investigations and examinations	154,785	8.5
Other persons seeking consultation	120,954	6.7

[a]ICD-9-CM code 079 is for "viral and chlamydial infection in conditions classified elsewhere and of unspecified site" and is to be used to identify the viral or chlamydial agent in diseases classifiable elsewhere and to classify virus or chlamydial infection of unspecified nature or site.
[b]ICD-9-CM code 078 encompasses a broad variety of conditions including molluscum contagiosum, viral warts, sweating fever, cat-scratch disease, foot and mouth disease, cytomegaloviral disease, hemorrhagic nephrosonephritis, arenaviral hemorrhagic fever, and other disorders such as epidemic vomiting syndrome and Marburg disease.

FIGURE 3. Ambulatory visits in relation to reported dispositions, by diagnostic category, active component, U.S. Armed Forces, 2013



(16.5%). Musculoskeletal system/connective tissue disorders (47.3%) accounted for nearly half of all "limited duty" dispositions, and injuries and poisonings (16.5%) and mental disorders (14.3%) accounted for nearly one-third. Diseases of the respiratory system accounted for 29.0% of all "convalescence in quarters" dispositions—more than twice as many (n=84,099) as any other disease category, except signs, symptoms, and ill-defined conditions (15.8%) **(Figure 3)**.

EDITORIAL COMMENT

In the past 5 years, the distribution of illness- and injury-related ambulatory visits in relation to their reported primary causes has remained fairly stable. However, during 2009–2013, the numbers of visits that were documented with diagnostic codes referring to mental disorders or the musculoskeletal system increased by 33.8% and 32.8%, respectively. In 2013, musculoskeletal system and mental disorders accounted for nearly one-half (47.1%) of all illness- and injury-related diagnoses documented on standardized records of ambulatory encounters.

During 2009–2013, 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 2013, injuries and poisonings accounted for approximately one of every 23 ambulatory visits overall, but one in 10 ambulatory visits with limited duty dispositions. Of particular note in relation to injuries and musculoskeletal conditions, in 2013 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.

It should be noted that the summary data presented here using the major diagnostic categories of the ICD-9-CM system deserve more detailed examination, as presented in Tables 2 and 3. For example, the general category identified as "nervous system" encompasses diseases of the nervous system and the sense organs (eyes and ears). Tables 2 and 3 indicate that the more common diagnoses in this category refer to sleep disorders, disorders of refraction and accommodation, pain disorders, headaches and migraine, and hearing loss.

Several limitations should be considered when interpreting the findings of this report. For example, ambulatory care that is delivered by unit medics and at deployed medical treatment facilities (such as in Afghanistan, Iraq, or at sea) may not be documented on standardized, automated records and thus not archived in the DMSS (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 primary (first-listed) diagnosis codes reported on ambulatory visit records. As a result, the summary discounts morbidity related to comorbid and complicating conditions that may have been documented in secondary diagnostic positions of the healthcare records. Furthermore, the accuracy of reported diagnoses likely varies across conditions, care providers, treatment facilities, and clinical settings. Although some specific diagnoses made during individual encounters may not be definitive, final, or even correct, summaries of the frequencies, natures, and trends of ambulatory encounters among active component members 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 males, reflect patterns of responses by the MHS to the effects of combat- and deployment-related stresses on active component service members.

Lastly, this report documents all ambulatory healthcare visits but does not provide estimates of the incidence rates of the diagnoses described. Illnesses and injuries that necessitate multiple ambulatory visits for evaluation, treatment, and rehabilitation are over-represented in this summary of the ambulatory burden of health care, in contrast to common, self-limited, and minor illnesses and injuries that require very little, if any, follow-up or continuing care.

Surveillance Snapshot: Illness and Injury Burdens Among Reserve Component Service Members, U.S. Armed Forces, 2013

FIGURE 1. Medical encounters,[a] individuals affected,[b] hospital bed days, and lost work time[c] by burden of disease category[d] among reserve component service members,[e] U.S. Armed Forces, 2013

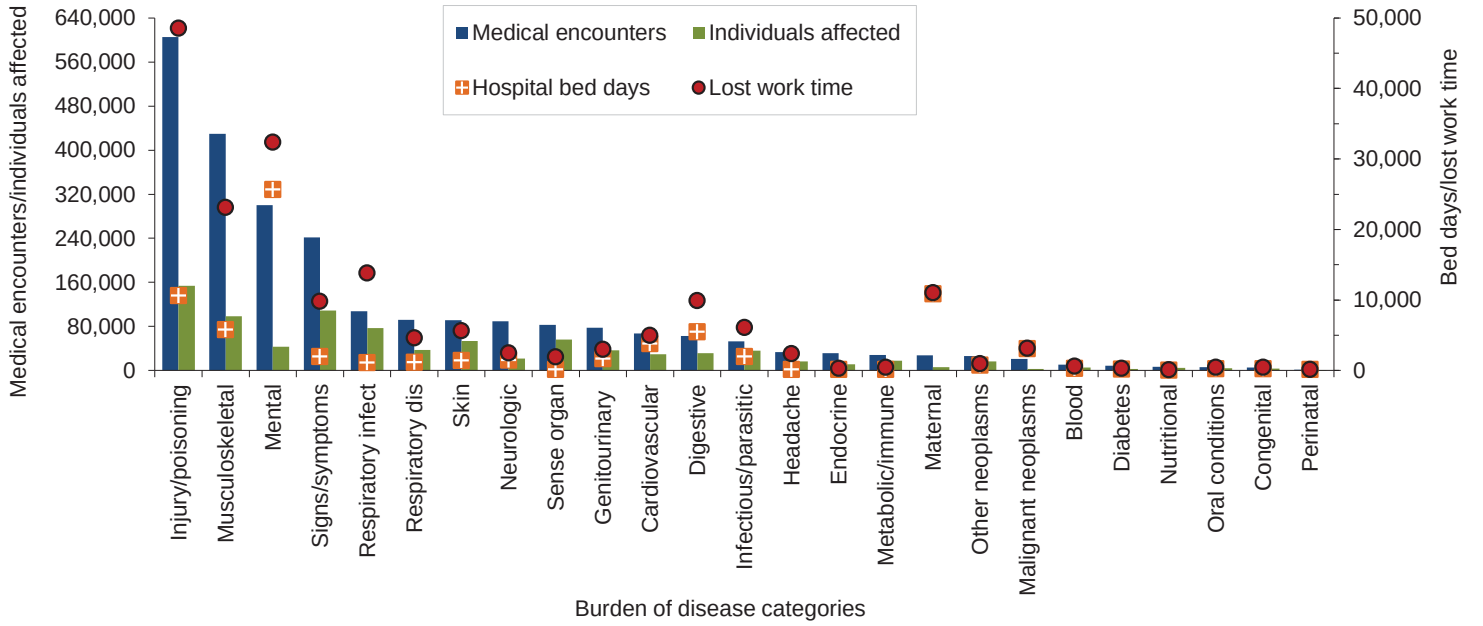
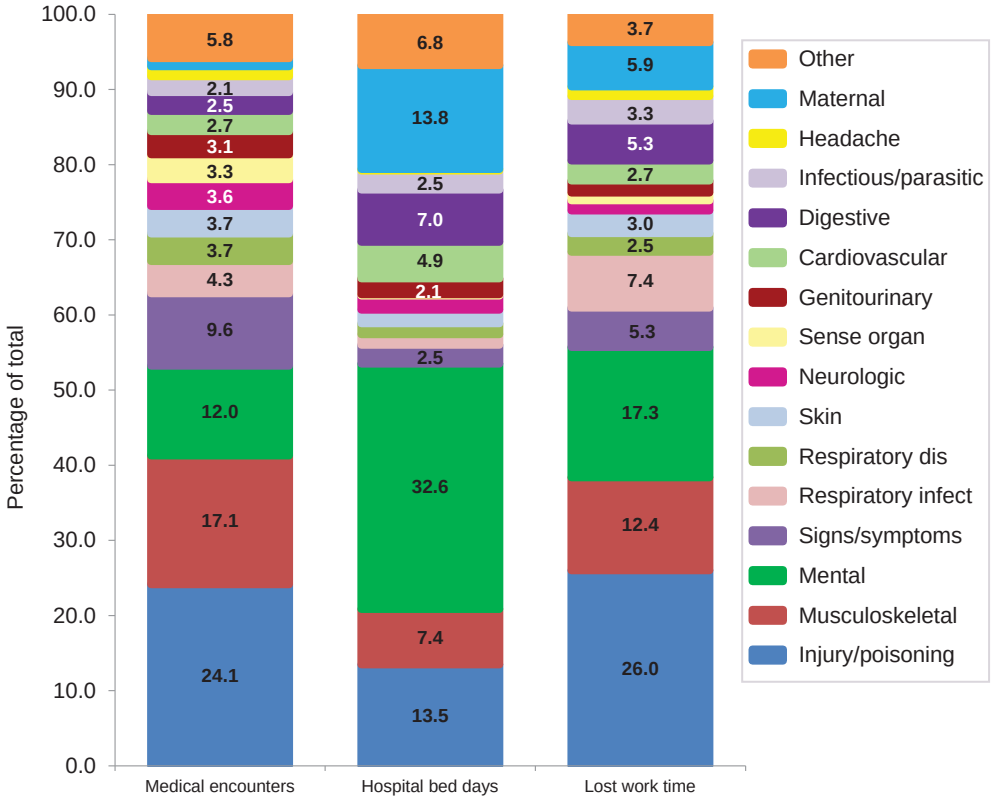


FIGURE 2. Percentages of medical encounters,[a] hospital bed days, and lost work time[c] by burden of disease category[d] among reserve component service members,[e] U.S. Armed Forces, 2013



[a]Medical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition)

[b]Individuals with at least one hospitalization or ambulatory visit for the condition

[c]A measure of lost work time calculated in days due to bed days, convalescence, and one-half day for each ambulatory visit that resulted in limited duty

[d]Burden of disease categories are the same as those used for analyses of morbidity burdens in the active component (see pages 2–7).

[e]The reserve component is made up of Reserve and Guard members of each Service.

Note: In Figure 2, several categories are combined into the Other category; percentages under 2% are not shown.

Surveillance Snapshot: Illness and Injury Burdens Among U.S. Military Recruit Trainees, 2013

FIGURE 1. Medical encounters,[a] individuals affected,[b] hospital bed days, and lost work time,[c] by burden of disease category[d] among recruit trainees,[e] active component, U.S. Armed Forces, 2013

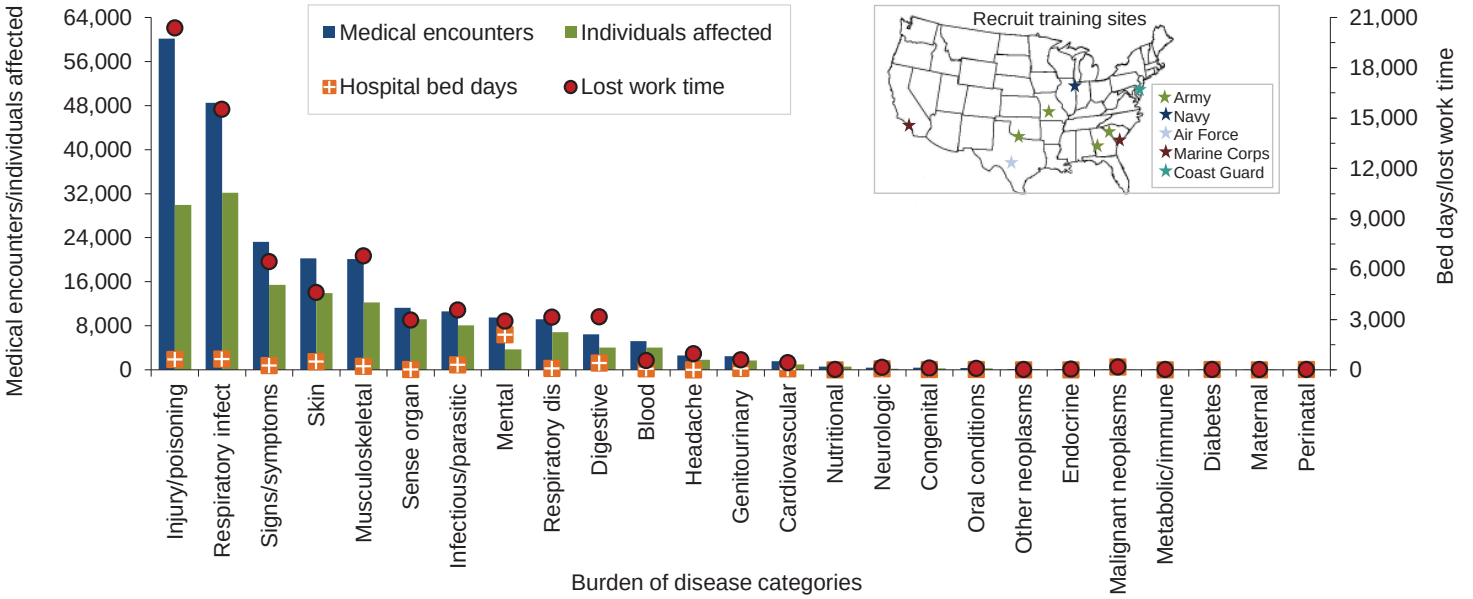
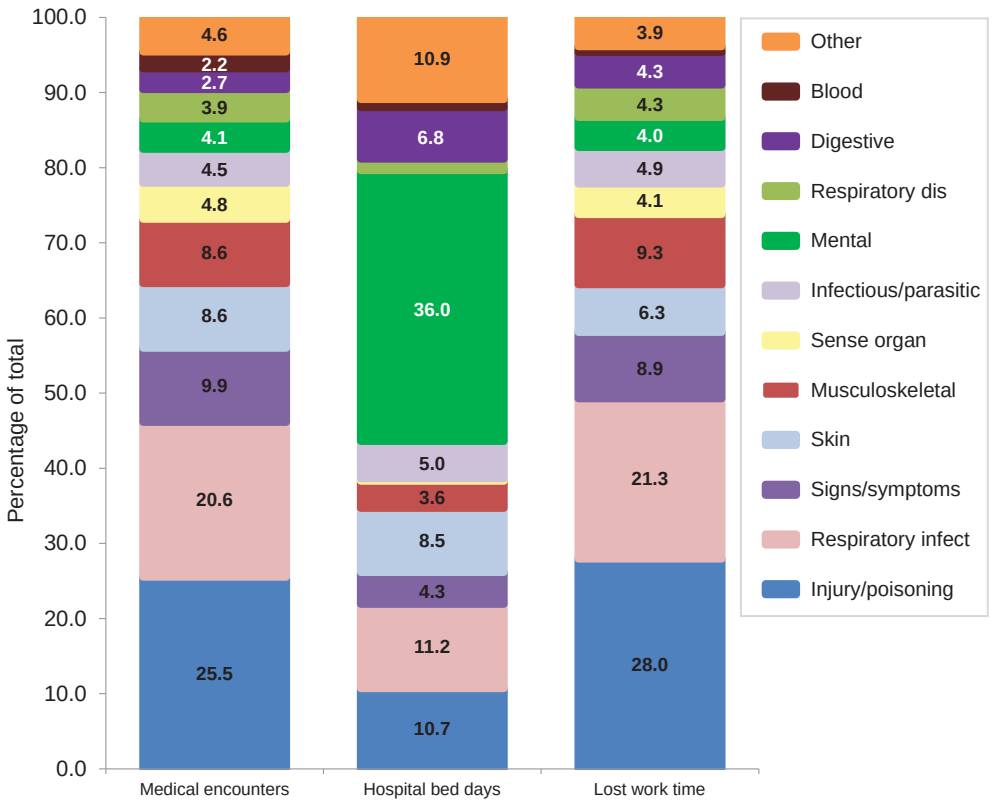


FIGURE 2. Percentages of medical encounters,[a] hospital bed days, and lost work time[c] by burden of disease category[d] among recruit trainees,[e] U.S. Armed Forces, 2013



[a]Medical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition)

[b]Individuals with at least one hospitalization or ambulatory visit for the condition

[c]A measure of lost work time calculated in days due to bed days, convalescence, and one-half day for each ambulatory visit that resulted in limited duty

[d]Burden of disease categories are the same as those used for analyses of morbidity burdens in the active component (see pages 2–7).

[e]Recruit trainees are defined as active component members of the Army, Navy, Air Force, Marine Corps, or Coast Guard with a rank of E1–E4 who served at one of nine basic training locations (inset) during a service-specific training period following a first-ever personnel record.

Note: In Figure 2, several categories are combined into the Other category; percentages under 2% are not shown.

Absolute and Relative Morbidity Burdens Attributable to Various Illnesses and Injuries, Non-Service Member Beneficiaries of the Military Health System, 2013

Individuals who are eligible for care through the Military Health System (MHS) ("beneficiaries") include family members of active component service members, family members of National Guard and Reserve service members, and retirees and eligible family members of retirees. In 2013, there were approximately 1.98 million active component family members, 550,000 Guard/Reserve family members, and 5.29 million retirees and their family members eligible for medical care from the MHS.[1] Some beneficiaries of MHS care do not enroll in the healthcare plans provided by the MHS (e.g., if they use insurance through their own employment); also, some of those who are enrolled do not seek care through the MHS.

MHS beneficiaries may receive care from resources provided directly by the Uniformed Services (i.e., military medical treatment facilities [MTFs]) or from civilian healthcare resources (i.e., outsourced [purchased] care) that supplement direct military medical care.[1] In 2013, approximately 6.8 million individuals utilized inpatient or outpatient services provided by the MHS (data source: the Defense Medical Surveillance System). In the population of MHS care recipients in 2013, there were more females (58%) than males (42%) and more infants, children, and adolescents (<20 years: n=1.9 million; 28.9%) and more seniors (65 years or older: n=1.8 million; 26.1%) than younger (20–44 years: n=1.4 million; 20.1%) or older (45–64 years: n=1.7 million; 24.9%) adults.

Since 1998, the *MSMR* has published annual summaries of the numbers and rates of hospitalizations and outpatient medical encounters to assess the healthcare "burdens" of 16 categories of illnesses and injuries among active component military members. This year, for the first time and using similar methodology, this report quantifies the illnesses and injuries among non-service members who received care in the MHS in 2013. Healthcare burden estimates are stratified by direct versus outsourced care and across four age groups of healthcare recipients.

METHODS

The surveillance period was 1 January through 31 December 2013. The surveillance population included all non-service member beneficiaries of the MHS who had at least one hospitalization or outpatient medical encounter during 2013 either through a military medical facility/provider or a civilian facility/provider (if paid for by the MHS). For this analysis, all inpatient and outpatient medical encounters were summarized according to the primary (first-listed) diagnoses documented on administrative records of the encounters if the diagnoses were reported with International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes that indicate the natures of illnesses or injuries (i.e., ICD-9-CM codes 001–999). Nearly all records of encounters with first-listed diagnoses that were "V-codes" (care other than for a current illness or injury, e.g., general medical examinations, after care, vaccinations) or "E-codes" (indicators of the external causes but not the natures of injuries) were excluded from analyses; however, encounters with primary diagnoses of V27.0 "outcome of delivery, single liveborn" were maintained.

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.[2] The methodology for summarizing absolute and relative morbidity burdens is described on page 2 of this issue of the *MSMR*.

RESULTS

In 2013, a total of 6,764,824 non-service member beneficiaries of the MHS had 83,098,152 medical encounters either in military medical facilities or paid for through the MHS **(Table 1)**. Thus, on average, each individual who accessed care from the MHS had 12.3 medical encounters. The top three morbidity-related categories, which accounted for approximately one-third of all medical encounters, were "signs, symptoms, and ill-defined conditions" (12.1%); musculoskeletal diseases (11.5%); and injuries and poisonings (9.8%) **(Figures 1a, 1b)**. Signs, symptoms, and ill-defined conditions, injuries and poisonings, and sense organ diseases were the illness/injury categories that affected the most individuals (44.7%, 31.9%, and 29.7% of all beneficiaries who received any care, respectively).

Cardiovascular diseases accounted for more hospital bed days (n=1,034,983) than any other illness/injury category and 16.5% of all hospital bed days overall **(Figures 1a, 1b)**. Approximately one-third of all bed days (35.5%) were attributable to injuries and poisonings (11.1%), mental disorders (9.1%), musculoskeletal diseases (7.7%), or digestive diseases (7.6%).

Of note, maternal conditions (including pregnancy complications and delivery) accounted for relatively more hospital bed days (n=406,702; 6.5%) than individuals affected (n=196,095; 2.9% of all beneficiaries) **(Figure 1a)**.

Direct care vs. outsourced care

In 2013, among non-service member beneficiaries, most medical encounters (89.0%) were in non-military medical facilities ("outsourced care") **(Table 1)**. Of all beneficiaries with any illness or injury-related encounters during the year, many more received exclusively outsourced care (n=4,684,229; 69.2%) than either military

FIGURE 1a. Medical encounters, individuals affected, and hospital bed days by burden of disease category among non-service member beneficiaries, 2013

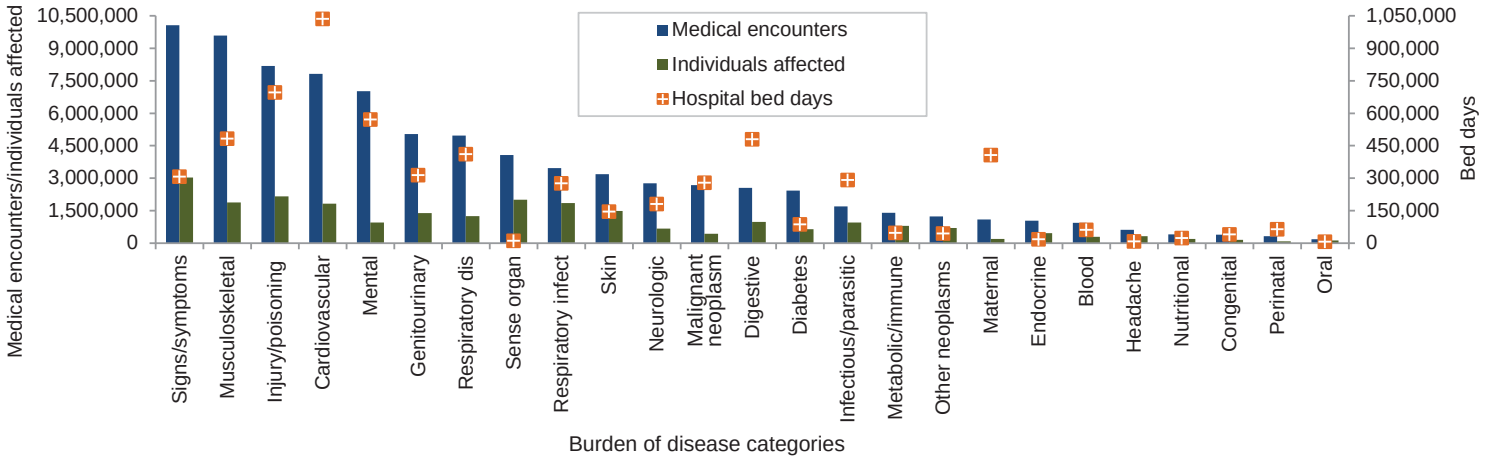


FIGURE 2a. Medical encounters, individuals affected, and hospital bed days by burden of disease category among non-service member beneficiaries, direct care only, 2013

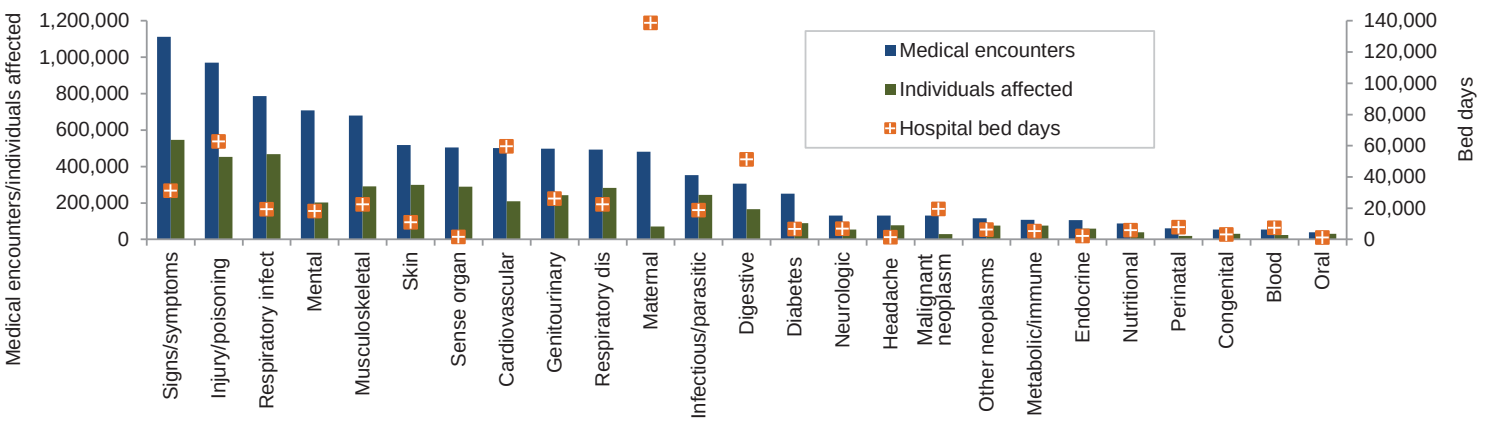


FIGURE 3a. Medical encounters, individuals affected, and hospital bed days by burden of disease category among non-service member beneficiaries, outsourced care only, 2013

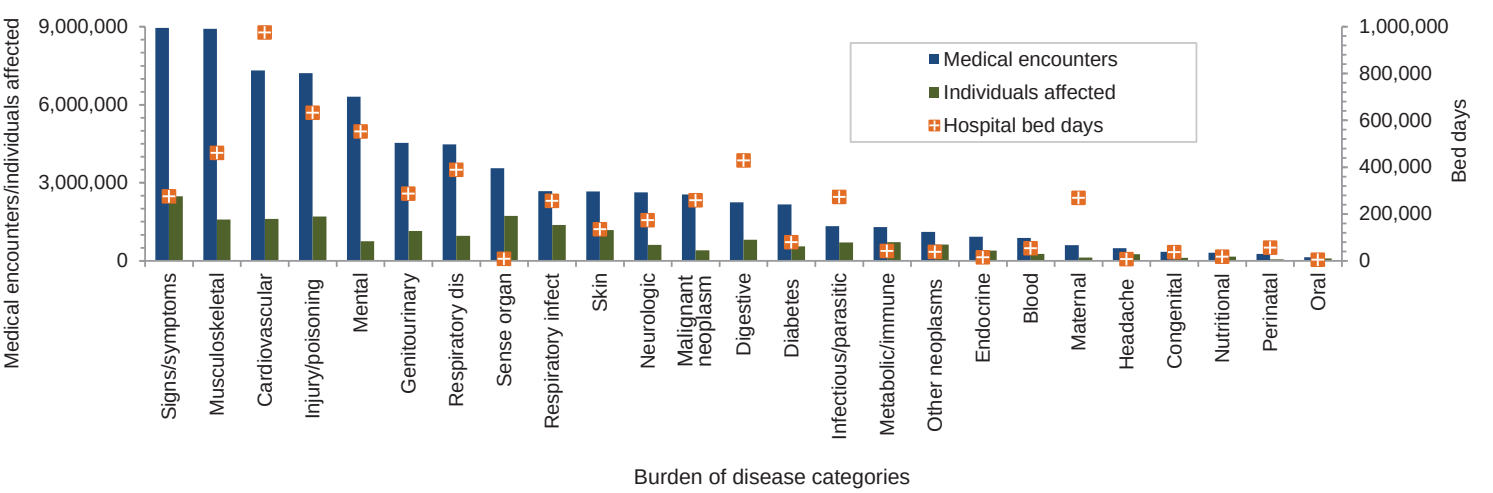


TABLE 1. Medical encounters, individuals affected, and hospital bed days, by source and age group, non-service member beneficiaries, 2013

	Medical encounters		Individuals affected		Hospital bed days		Medical encounters per individual affected
	No.	% total	No.	% total	No.	% total	
All non-service member beneficiaries	83,098,152	–	6,764,824	–	6,270,590	–	12.3
Source							
Direct care only	9,179,727	11.0	922,556	13.6	554,977	8.9	n/a
Outsourced care only	73,918,425	89.0	4,684,229	69.2	5,715,613	91.1	n/a
Direct and outsourced care	n/a	n/a	1,158,039	17.1	n/a	n/a	n/a
Age group[a]							
0–17 years	11,760,959	14.2	1,783,037	26.4	507,610	8.1	6.6
18–44 years	12,492,611	15.0	1,530,859	22.6	843,842	13.5	8.2
45–65 years	19,827,097	23.9	1,684,649	24.9	1,156,476	18.4	11.8
>65 years	39,017,476	47.0	1,766,277	26.1	3,762,662	60.0	22.1

[a]Some ages were unknown, therefore the sum of all age groups may be less than the totals.

medical (direct) care only (n=922,556; 13.6%) or both outsourced and direct care (n=1,158,039; 17.1%). By far, most inpatient care (91.1% of all bed days) was received in non-military facilities (outsourced).

The proportions of medical encounters by morbidity-related categories were generally similar for direct and outsourced care **(Figures 2a, 2b, 3a, 3b)**. However, respiratory infections were relatively more common during direct (8.6%) than outsourced (3.6%) care encounters, and musculoskeletal and cardiovascular diseases were relatively more common during outsourced (12.1% and 9.9%, respectively) than direct (7.4% and 5.5%, respectively) care encounters. Maternal conditions accounted for 25.0% of all direct care bed days but only 4.7% of all outsourced care bed days **(Figures 2a, 2b, 3a, 3b)**. On the other hand, cardiovascular disorders, mental disorders, and musculoskeletal diseases accounted for relatively more of all outsourced than direct care bed days (% of outsourced vs. % of

FIGURE 1b. Percentages of medical encounters and hospital bed days by burden of disease category, non-service member beneficiaries, 2013

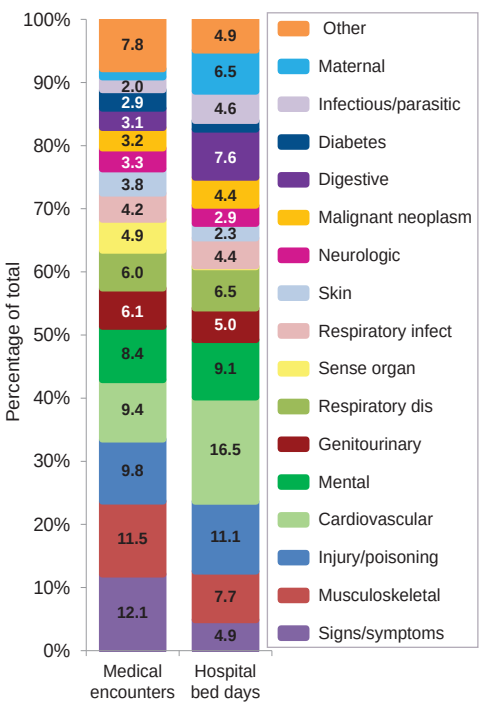


FIGURE 2b. Percentages of medical encounters and hospital bed days by burden of disease category, non-service member beneficiaries, direct care only, 2013

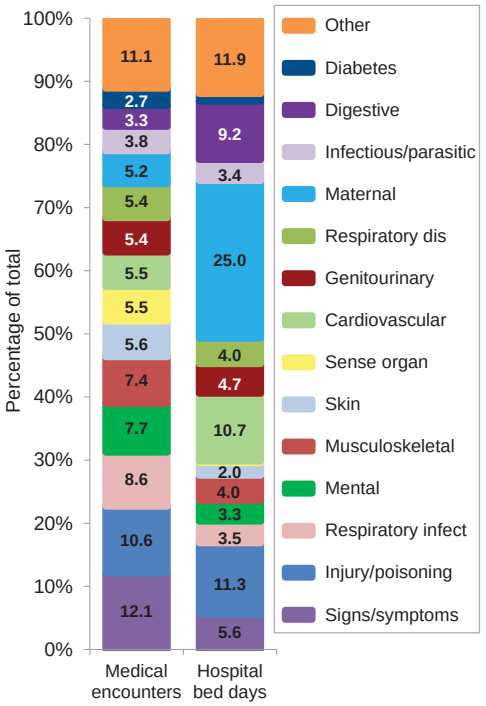
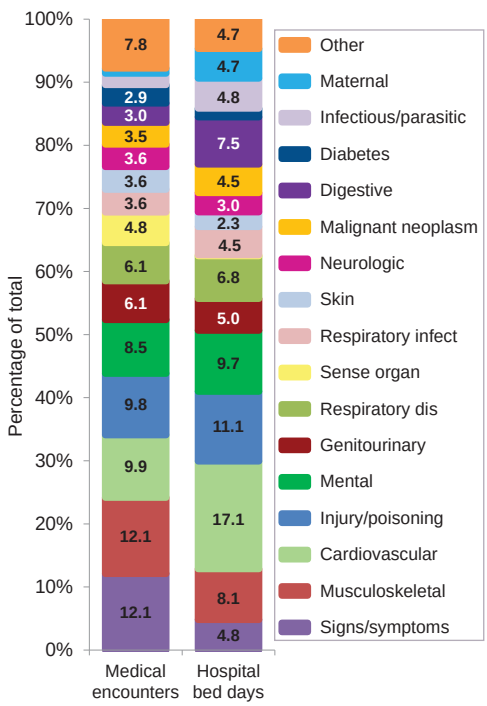


FIGURE 3b. Percentages of medical encounters and hospital bed days by burden of disease category, non-service member beneficiaries, outsourced care only, 2013



direct care bed days: cardiovascular, 17.1% vs. 10.7%; mental, 9.7% vs. 3.3%; musculoskeletal, 8.1% vs. 4.0%).

Pediatric beneficiaries (aged 0–17 years)

In 2013, pediatric beneficiaries accounted for 14.2% of all medical encounters, 26.4% of all individuals affected, and 8.1% of all hospital bed days **(Table 1)**. On average, each affected individual had 6.6 medical encounters during the year.

Mental disorders accounted for one-quarter (n=3,114,050; 25.1%) of all medical encounters and 40.5% of all hospital bed days (n=223,689) among pediatric beneficiaries **(Figures 4a, 4b)**. On average, each pediatric beneficiary who was affected by a mental disorder had 11.2 mental disorder-related encounters during the year. More than half (57.8%) of all encounters for mental disorders among pediatric beneficiaries were for autistic disorders (25.2%), attention deficit disorders (15.9%), or developmental speech/language disorders (16.8%) **(Figures 4c, 4d)**. On average, there were 62.6 autism-related encounters per individual affected with an autistic disorder and 18.9 encounters for developmental speech/language disorder per individual affected with those specific disorders. Despite the high numbers of encounters overall associated with these three categories of mental disorders, nearly two-thirds of mental disorder-related bed days were attributable to depressive disorders (64.6%), and

FIGURE 4b. Percentages of medical encounters and hospital bed days by burden of disease category, pediatric non-service member beneficiaries, aged 0–17 years, 2013

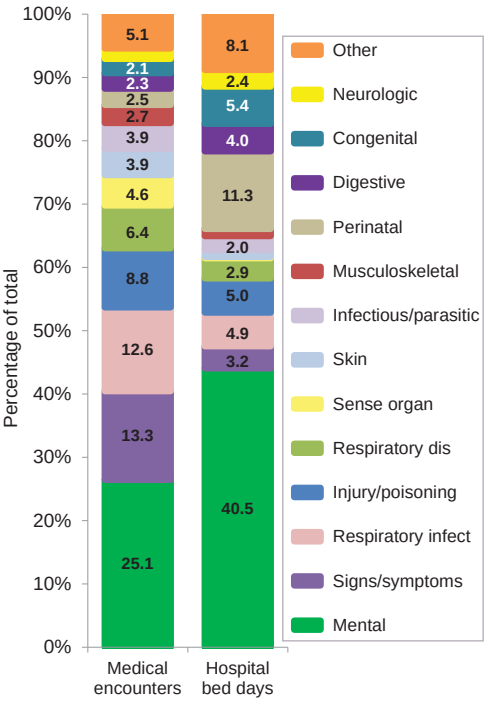


FIGURE 5b. Percentages of medical encounters and hospital bed days by burden of disease category, non-service member beneficiaries, aged 18–44 years, 2013

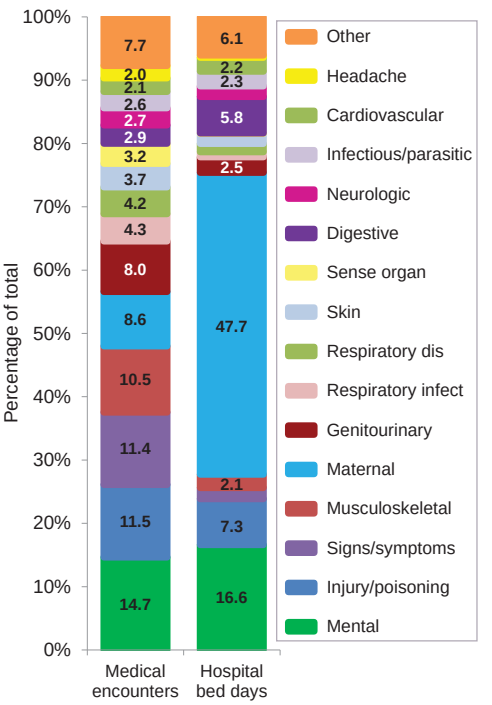


FIGURE 4c. Medical encounters, individuals affected, and hospital bed days by the mental disorders accounting for the most morbidity burden, pediatric non-service member beneficiaries, aged 0–17 years, 2013

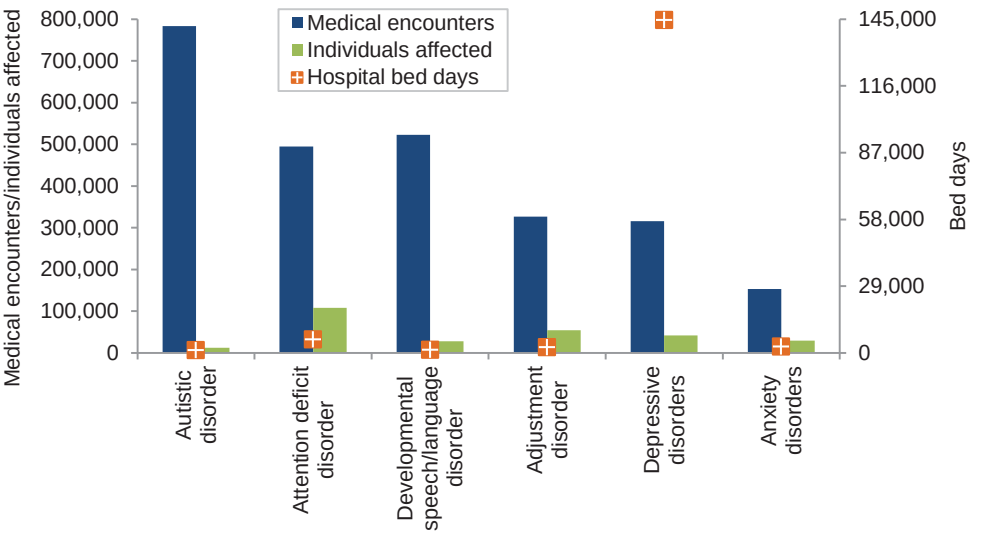


FIGURE 4d. Percentage of total mental disorders, pediatric non-service member beneficiaries, aged 0–17 years, 2013

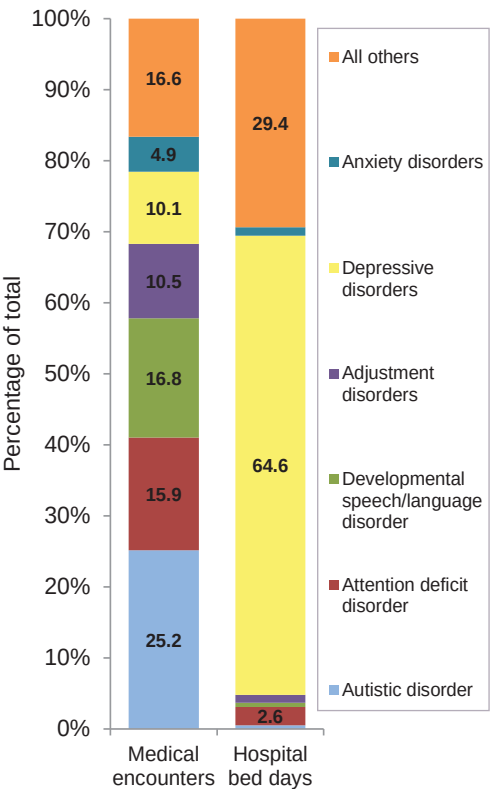


FIGURE 6b. Percentages of medical encounters and hospital bed days by burden of disease category, non-service member beneficiaries, aged 45–65 years, 2013

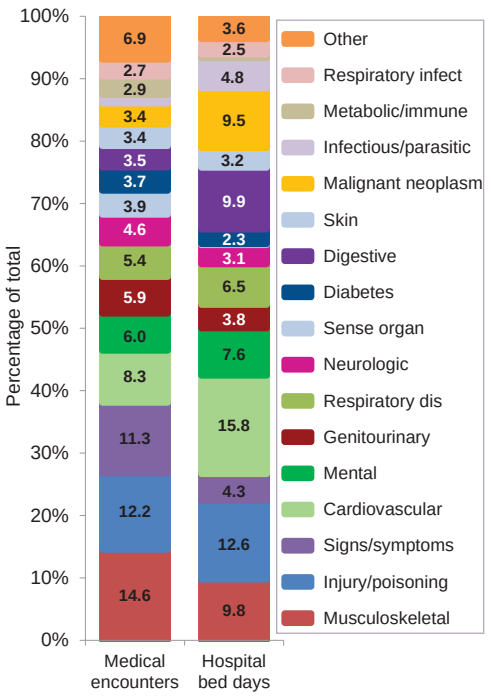
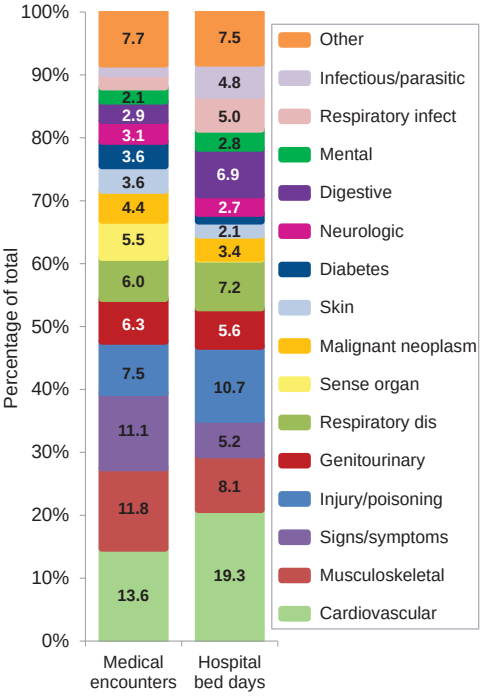


FIGURE 7b. Percentages of medical encounters and hospital bed days by burden of disease category, non-service member beneficiaries, aged 65 years and older, 2013



approximately half (51.5%) of all depression-related bed days were attributable to "affective psychosis, unspecified" **(data not shown)**.

Among pediatric beneficiaries overall, "conditions arising during the perinatal period" (i.e., perinatal category) accounted for the second most bed days (n=62,190) and the third highest number of encounters per individual affected (4.7) **(Figures 4a, 4b)**. Of note, among pediatric beneficiaries with at least one illness or injury-related diagnosis, those with malignant neoplasms had the most related encounters per affected individual (12.4). The highest numbers of malignant neoplasm-related encounters and bed days were attributable to leukemias, "all other malignant neoplasms," and brain neoplasms **(data not shown)**.

Finally, respiratory infections (including upper and lower respiratory infections and otitis media) accounted for relatively more medical encounters and bed days among pediatric beneficiaries (12.6% and 4.9%, respectively), compared to any older age group of beneficiaries (with the exception of beneficiaries aged 65 years or older in whom respiratory infections accounted for 5.0% of total bed days) **(data not shown)**.

Beneficiaries (aged 18–44 years)

In 2013, non-service member beneficiaries aged 18–44 years accounted for 15.0% of all medical encounters, 22.6% of all individuals affected, and 13.5% of hospital bed days **(Table 1)**. On average, each individual affected with an illness or injury (any cause) had 8.2 medical encounters during the year.

Among beneficiaries aged 18–44 years, the morbidity-related category that accounted for the most medical encounters was mental disorders (n=1,830,692; 14.7% of all encounters) **(Figures 5a, 5b)**. Among these adult beneficiaries, mental disorders accounted for 16.6% of all bed days, and on average, each adult affected by a mental disorder had 6.2 mental disorder-related encounters during the year. Mood disorders (40.2%), anxiety disorders (23.3%), and adjustment disorders (16.4%) accounted for nearly four-fifths (79.9%) of all mental disorders medical encounters among beneficiaries aged 18–44 years **(data not shown)**.

Among adults aged 18–44, maternal conditions accounted for nearly half (47.7%) of all bed days and, on average, 5.6 medical encounters per affected individual **(Figures 5a, 5b)**. Normal deliveries accounted for 36.8% of maternal conditions medical encounters **(data not shown)**. Adults aged 18–44 accounted for nearly all (98.9%) maternal condition-related bed days among beneficiaries not in military service. If morbidity burdens associated with maternal conditions were excluded from the overall analysis, beneficiaries aged 18–44 years would account for fewer medical encounters (13.9%) and bed days (7.5%) than any other age group of beneficiaries **(data not shown)**.

Among beneficiaries aged 18–44 years with at least one illness or injury-related diagnosis, those with malignant neoplasms had the most category-specific encounters per affected individual (6.4). Of all malignant neoplasms, breast cancer accounted for the most malignant neoplasm-related encounters (29.3% of the total) **(data not shown)**.

Beneficiaries (aged 45–65 years)

In 2013, non-service member beneficiaries aged 45–65 years accounted for 23.9% of all medical encounters, 24.9% of all individuals affected, and 18.4% of hospital bed days **(Table 1)**. On average, each affected individual had 11.8 medical encounters during the year.

Of all morbidity-related categories, musculoskeletal diseases accounted for the most medical encounters (n=2,888,862; 14.6%) among older adult beneficiaries **(Figures 6a, 6b)**. In addition, in this age group, back problems accounted for 41.8% of all musculoskeletal disease-related encounters **(data not shown)**. Cardiovascular diseases accounted for more hospital bed days (15.8% of the total) than any other category of illnesses or injures; and cerebrovascular disease and ischemic heart disease accounted for 25.2% and 21.5%, respectively, of all cardiovascular disease-related bed days **(data not shown)**.

The most medical encounters per affected individual were associated with malignant neoplasms (mean: 6.5), mental disorders (mean: 6.0), musculoskeletal

FIGURE 4a. Medical encounters, individuals affected, and hospital bed days by burden of disease category among non-service member beneficiaries, pediatric non-service member beneficiaries, aged 0–17 years, 2013

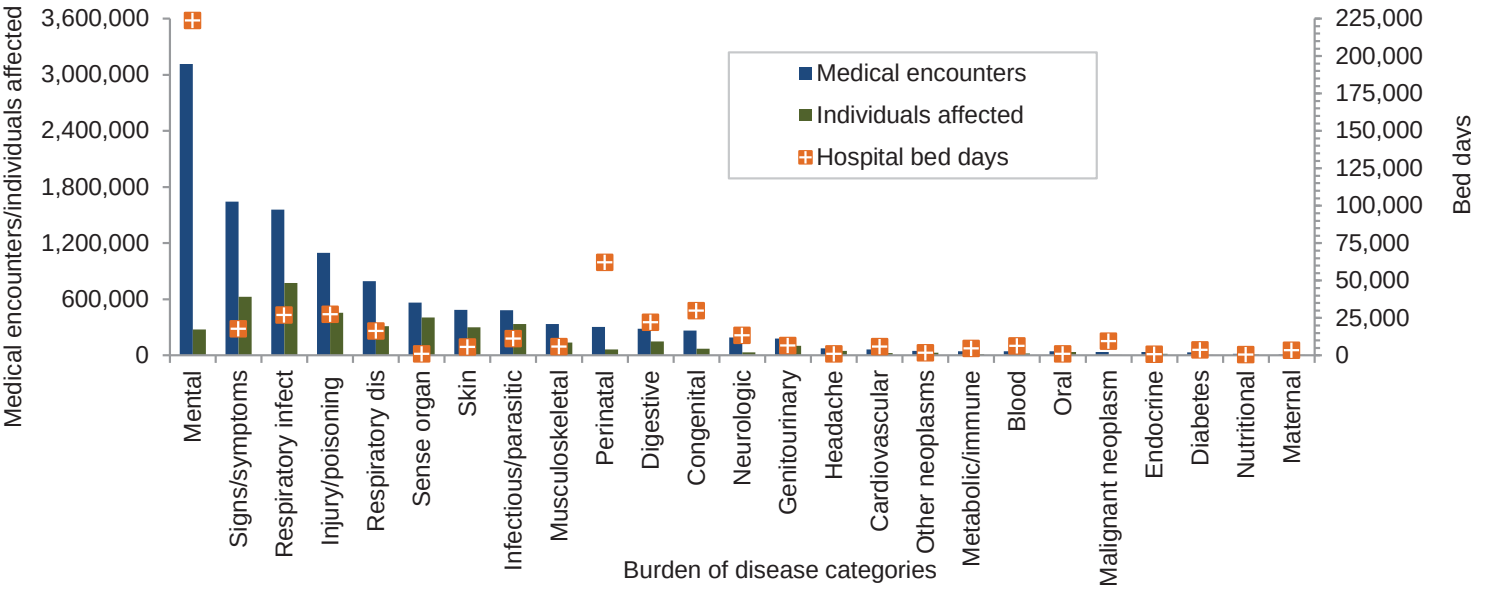
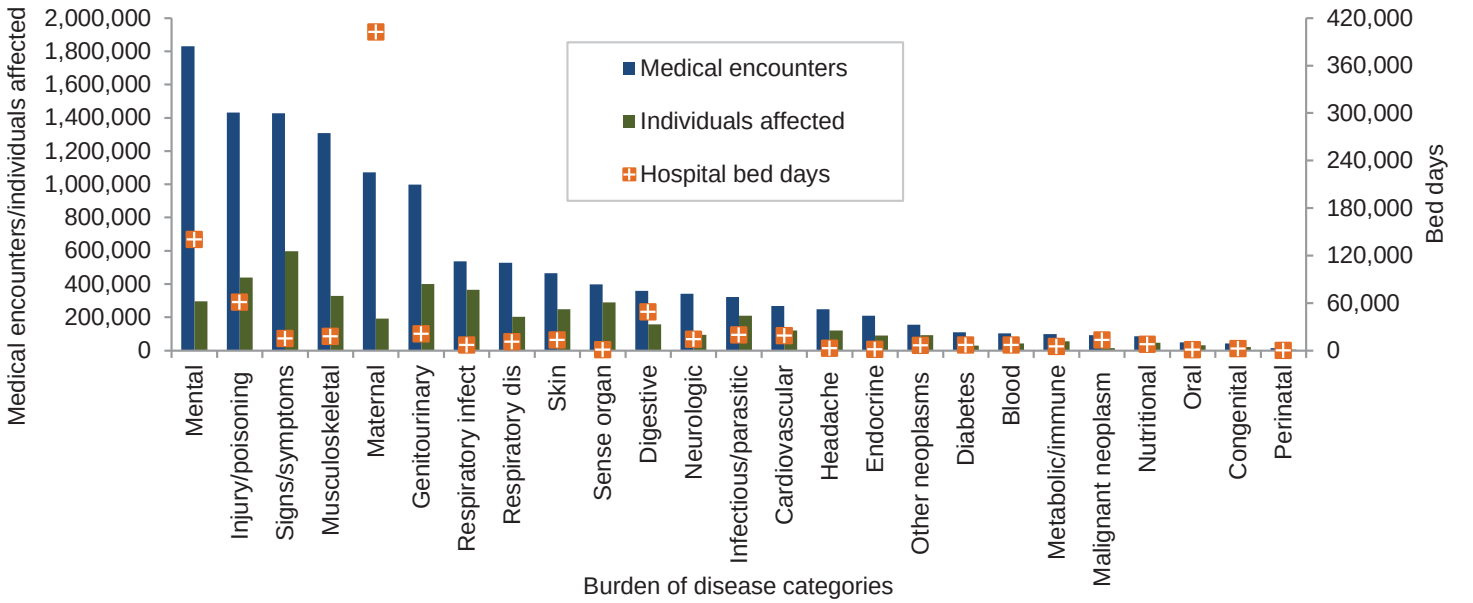


FIGURE 5a. Medical encounters, individuals affected, and hospital bed days by burden of disease category among non-service member beneficiaries, non-service member beneficiaries, aged 18–44 years, 2013



diseases (mean: 4.9), and neurologic disorders (mean: 4.1) **(Figures 6a, 6b)**. Digestive diseases (9.9%), malignant neoplasms (9.5%), and infectious and parasitic diseases (4.8%) accounted for larger proportions of total bed days among beneficiaries aged 45–65 years than the two youngest age groups of beneficiaries; and breast cancer accounted for nearly one-fourth (23.4%) of all malignant neoplasm-related encounters among older adult beneficiaries **(data not shown)**.

Beneficiaries (aged 65 years or older)

In 2013, non-service member beneficiaries aged 65 years or older accounted for 47.0% of all medical encounters, 26.1% of all individuals affected, and 60.0% of hospital bed days **(Table 1)**. On average, each affected individual had 22.1 medical encounters during the year.

Of all morbidity-related categories, cardiovascular diseases accounted for the most medical encounters (13.6%) and bed days (19.3%) **(Figures 7a, 7b)**. Essential hypertension (26.0%), ischemic heart

FIGURE 6a. Medical encounters, individuals affected, and hospital bed days by burden of disease category among non-service member beneficiaries, non-service member beneficiaries, aged 45–65 years, 2013

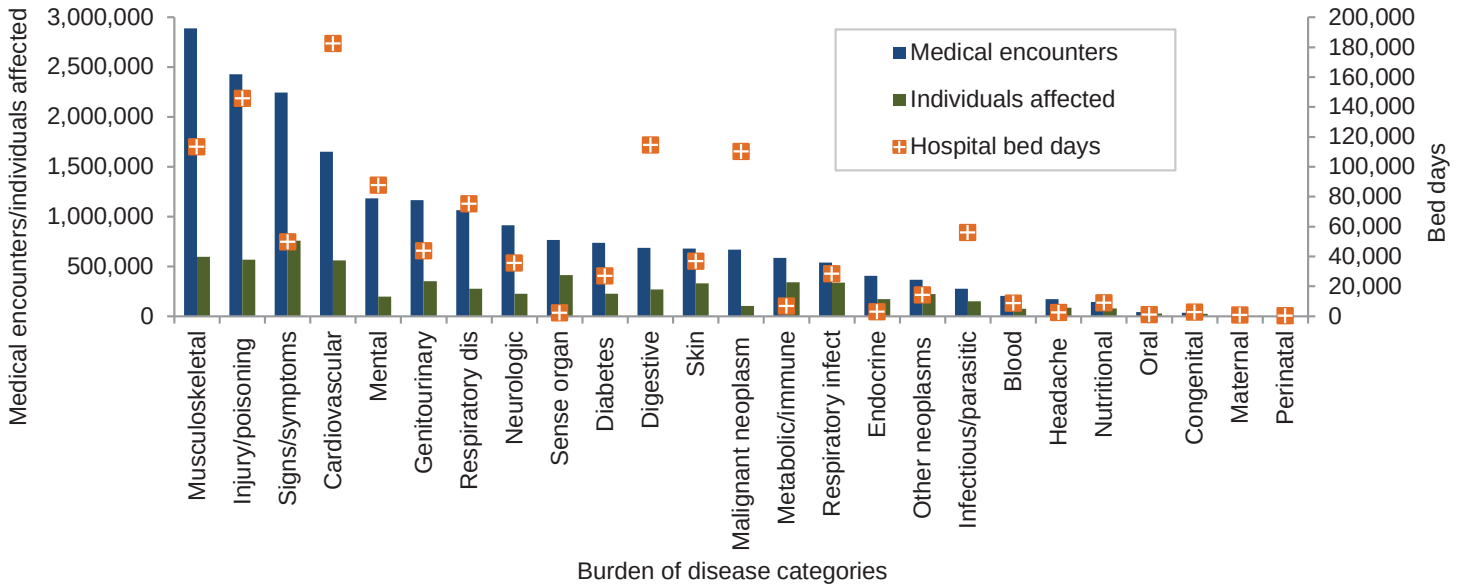
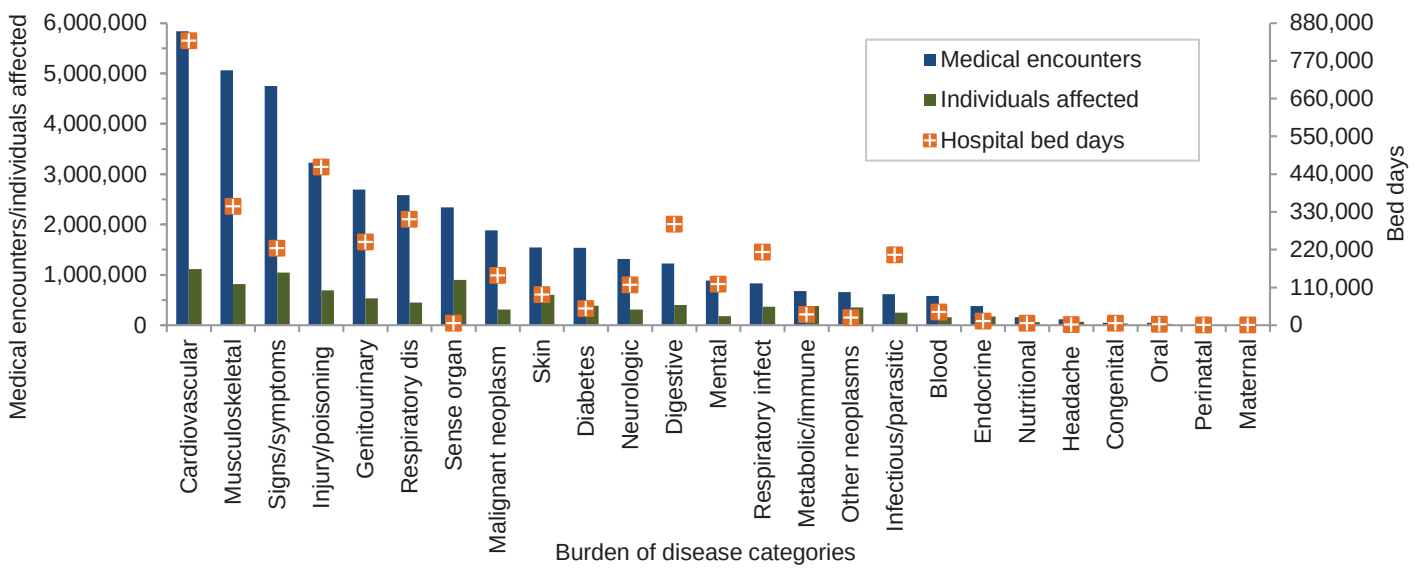


FIGURE 7a. Medical encounters, individuals affected, and hospital bed days by burden of disease category among non-service member beneficiaries, non-service member beneficiaries, aged 65 years and older, 2013



disease (16.0%), and cerebrovascular disease (9.9%) accounted for more than half (51.9%) of all cardiovascular disease-related medical encounters; and cerebrovascular disease accounted for more than one-fourth (26.9%) of all cardiovascular disease-related bed days **(data not shown)**.

Among the oldest age group of beneficiaries, the most medical encounters per affected individual were associated with musculoskeletal diseases (mean: 6.2), malignant neoplasms (mean: 6.0), respiratory diseases (mean: 5.7), and cardiovascular diseases (mean: 5.2). In this age group, back problems (31.6%) accounted for nearly one-third of all musculoskeletal disease-related encounters; together, melanomas and other skin cancers (16.5%), prostate cancer (15.3%), and breast cancer (15.2%) accounted for nearly half of all malignant neoplasm-related encounters **(data not shown)**. Chronic obstructive pulmonary disease (COPD) accounted for more than 40% of all medical encounters (46.2%) and bed days (41.3%) attributable to respiratory diseases.

Digestive diseases (6.9%), respiratory infections (5.0%), and infectious and parasitic diseases (4.8%) accounted for larger proportions of total bed days among the oldest compared to the two youngest age groups of beneficiaries **(Figures 7a, 7b)**. In contrast, mental disorders accounted for smaller percentages of medical encounters (2.1%) and bed days (2.8%) among the oldest compared to the younger age groups.

EDITORIAL COMMENT

This report includes the first estimate of overall morbidity burdens among non-service member beneficiaries of the MHS. The report notes that a large majority of the healthcare services (excluding routine care) that are provided through the MHS to non-service member beneficiaries are delivered in non-military medical facilities (i.e., outsourced [purchased] care). The report also documents that the types of morbidity and the natures of the care provided for evaluation and treatment sharply differ across age groups of beneficiaries. Of particular note, individuals aged 65 years or older account for nearly half of all medical encounters (47.0%) and a majority (60.0%) of all hospital bed days delivered to beneficiaries not currently in military service.

In 2013, mental disorders accounted for the largest proportions of the morbidity and healthcare burdens that affected the pediatric (0–17 years) and adult (18–44 years) beneficiary age groups. Among pediatric beneficiaries, nearly 60% of medical encounters for mental disorders were attributable to autistic disorders, attention deficit disorders, and developmental speech/language disorders. Of particular note, children affected by autistic disorders had, on average, 62.6 autism-related encounters each during the 1-year surveillance period.

As among pediatric beneficiaries, among adults (18–44 years), mental disorders accounted for more medical encounters than any other major category of illnesses or injuries. However, the proportion of all encounters attributable to mental disorders was markedly less among adults (18–44 years) (14.7%) compared to pediatric (25.1%) beneficiaries. Also, the mental disorders that accounted for the largest healthcare burdens among adults (18–44 years)—mood, anxiety, and adjustment disorders—differed from those that most affected the pediatric age group.

It is not surprising that the highest numbers and proportion of hospital bed days among 18- to 44-year-olds were for maternal conditions because this age group encompasses nearly all women of childbearing age.

Among children/adolescents and adults (18–44 years), mental disorders accounted for the largest morbidity and healthcare burdens; among older adults (aged 44–65 years), musculoskeletal diseases were the greatest contributors to morbidity and healthcare burdens; and among adults aged 65 years or older, cardiovascular diseases were the major morbidity and healthcare burdens.

Of musculoskeletal diseases, back problems were the major source of healthcare burden; and of cardiovascular diseases, essential hypertension, cerebrovascular disease, and ischemic heart disease accounted for the largest healthcare burdens. The findings are not surprising and reflect the inevitable effects of aging on the health and healthcare needs of the MHS beneficiary population.

However, the health conditions associated with the largest morbidity and healthcare burdens in older age groups of beneficiaries are also associated with unhealthy life styles (e.g., unhealthy diet, inadequate exercise, tobacco use). As such, to varying extents, the most costly health conditions are preventable and/or their disabling or life-threatening long-term consequences are avoidable. Illnesses and injuries that disproportionately contribute to morbidity and healthcare burdens in various age groups of MHS beneficiaries should be targeted for early detection and treatment and by comprehensive prevention and research programs.

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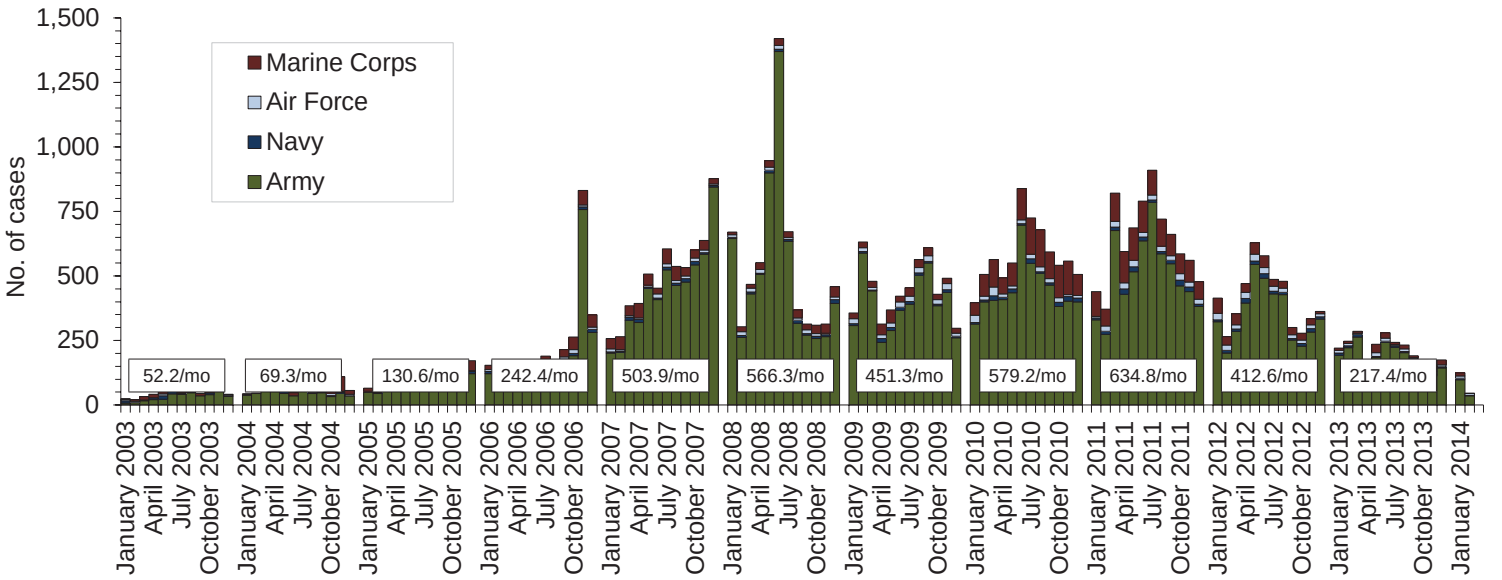
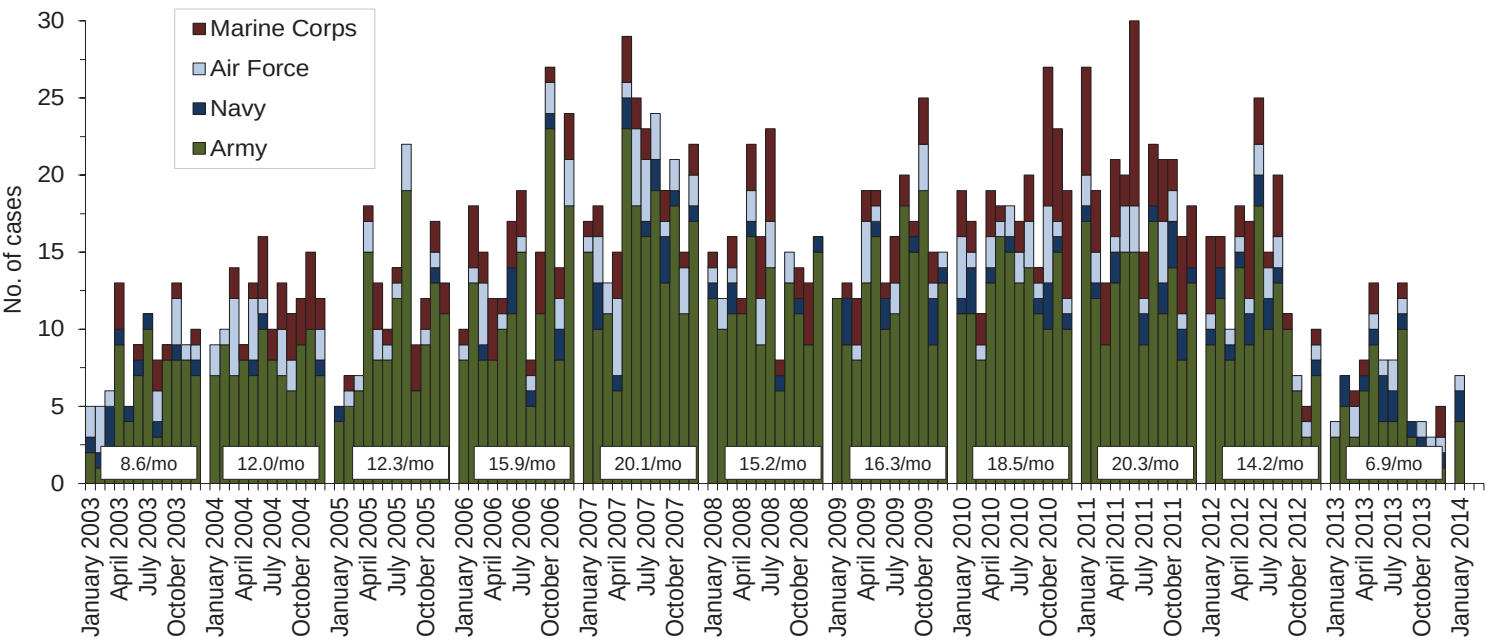
Deployment-related Conditions of Special Surveillance Interest, U.S. Armed Forces, by Month and Service, January 2003–March 2014 (data as of 21 April 2014)

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)[a]



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.
[a]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 4,457 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)[b]



Reference: Isenbarger DW, Atwood JE, Scott PT, et al. Venous thromboembolism among United States soldiers deployed to Southwest Asia. *Thromb Res*. 2006;117(4):379-383.
[b]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.

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