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Absolute and Relative Morbidity Burdens Attributable to Various Illnesses and Injuries, Active Component, U.S. Armed Forces,* 2015

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 used to quantify condition-specific morbidity burdens determines to a large extent the conclusions that may be drawn regarding the relative “importance” of various conditions—and, in turn, the resources that may be indicated to prevent or minimize their impacts.

This annual summary uses a standard disease classification system (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 2015.

**Does not include Coast Guard.*

METHODS

The surveillance period was 1 January through 31 December 2015. The surveillance population included all individuals who served in the active component of the U.S. Army, Navy, Air Force, or Marine Corps anytime during the surveillance period. Coast Guard members were not included in this year’s annual update because of missing data for 2015. For this analysis, all inpatient and outpatient medical encounters of all active component members during 2015 were summarized according to the primary (first-listed) diagnosis (if reported with an International Classification of Diseases, Ninth or Tenth Revision, Clinical Modification [ICD-9/ICD-10] code between 001 and 999 or code V27.0 [ICD-9]; or between A00 and T88, or code Z37.0 [ICD-10]). With the conversion to ICD-10 on 1 October 2015, additional unique codes (“DOD”) were introduced by the Military Health System (MHS). A subset of these DOD codes pertain to a history of traumatic brain injury (TBI) and were counted in the “Injury” category for this analysis.

For summary purposes, all illness- and injury-specific diagnoses (as defined by the ICD-9/ICD-10) were grouped into 142 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), and total bed days during hospitalizations for each condition.

RESULTS

Morbidity burden, by category

In 2015, more service members (n=550,283) received medical care for injury/poisoning than any other morbidity-related category (**Figures 1a, 1b**). In addition, injury/poisoning accounted for more medical encounters (n=2,134,133) than any other morbidity category and one-fifth (21.2%) of all medical encounters overall.

Mental disorders accounted for more hospital bed days (n=147,457) than any other morbidity category and 42.8% of all hospital bed days overall (**Figures 1a, 1b**). Together, injury/poisoning and mental disorders accounted for more than half (54.8%) of all hospital bed days and almost two-fifths (39.6%) of all medical encounters.

Of note, maternal conditions (including pregnancy complications and delivery) accounted for a relatively large proportion of all hospital bed days (n=54,620; 15.8%), but a much smaller proportion of medical encounters overall (n=168,877; 1.7%) (**Figures 1a, 1b**). Routine prenatal visits are not included in this summary.

Medical encounters, by condition

In 2015, the four burden of disease–related conditions that accounted for the most medical encounters (i.e., other back

FIGURE 1a. Numbers of medical encounters,^a individuals affected,^b and hospital bed days, by burden of disease category,^c active component, U.S. Armed Forces, 2015

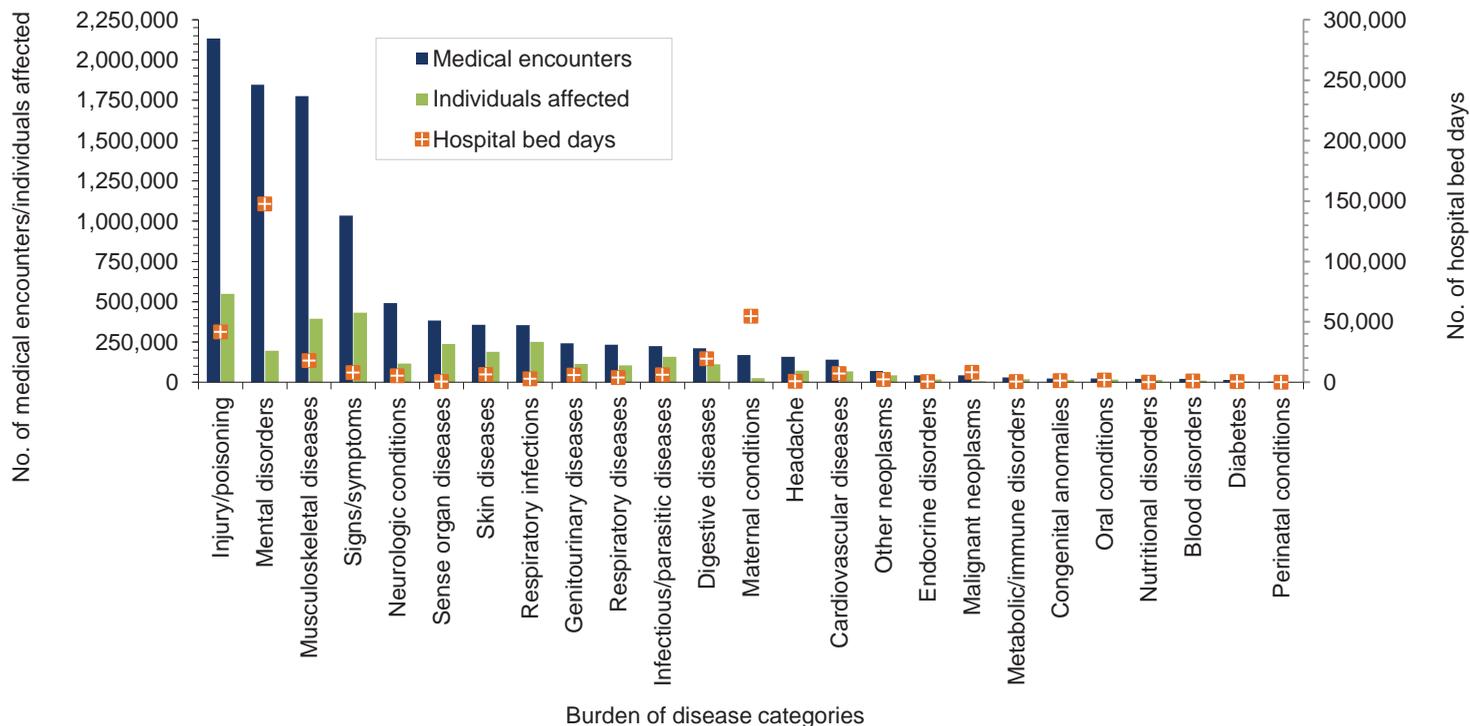
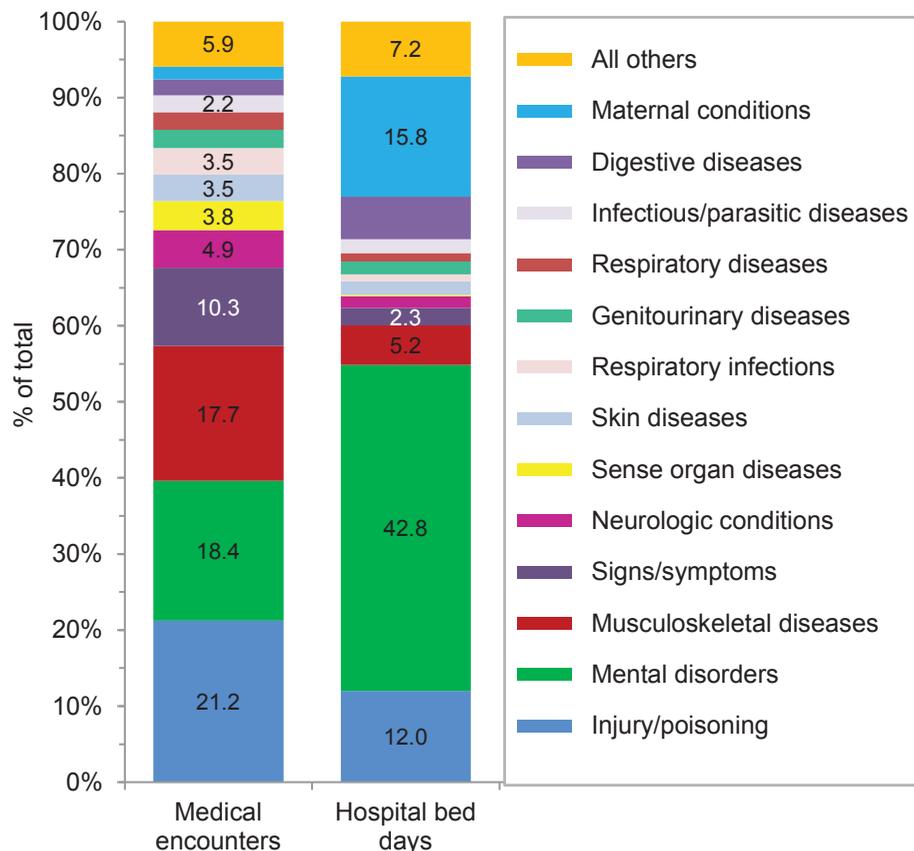


FIGURE 1b. Percentage of medical encounters,^a and hospital bed days,^b attributable to burden of disease categories,^c active component, U.S. Armed Forces, 2015



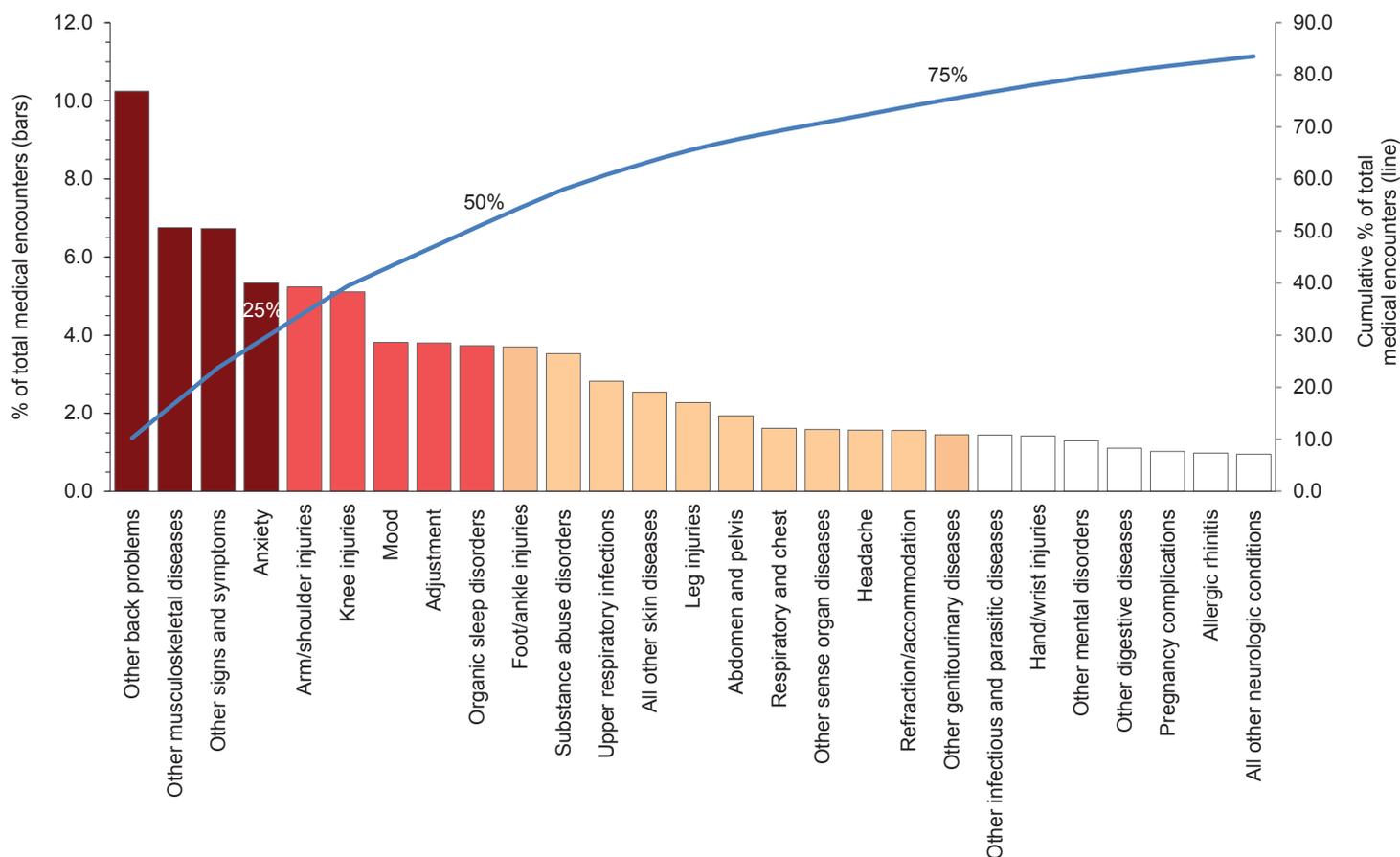
^aMedical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition)

^bIndividuals with at least one hospitalization or ambulatory visit for the condition

^cMajor categories and conditions defined in the Global Burden of Disease Study¹

problems, other musculoskeletal diseases, other signs and symptoms, and anxiety) accounted for more than one-fourth (29.1%) of all illness- and injury-related medical encounters overall (Figure 2). Moreover, the top nine conditions that accounted for the most medical encounters accounted for slightly more than half (50.8%) of all illness- and injury-related medical encounters overall. 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 mental disorders (e.g., anxiety, mood, and adjustment disorders) (Table 1, Figure 2).

FIGURE 2. Percentage and cumulative percentage distribution, burden “conditions” that accounted for the most medical encounters, active component, U.S. Armed Forces, 2015



Individuals affected, by condition

In 2015, more service members received medical care for other signs and symptoms than for any other specific condition (Table 1). Of the top nine 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 2015, mood disorders and substance abuse accounted for one-quarter (25.1 %) of all hospital days. Together, four mental disorders (mood, substance abuse, anxiety, and adjustment) and one maternal condition (delivery) accounted for almost half (48.3 %) of all hospital bed days (Table 1, Figure 3). Close to one-eighth (12.0%) of all hospital bed days were attributable to injuries and poisonings.

Relationships between healthcare burden indicators

There was a strong positive correlation between the number of medical encounters attributable to various conditions and the number of individuals affected by the conditions ($r=0.88$) (data not shown). For example, the three leading causes of medical encounters were among the three conditions that affected the most individuals (Table 1). In contrast, there were weak to moderate positive relationships between the hospital bed days attributable to conditions and either the numbers of individuals affected by ($r=0.21$) or medical encounters attributable to ($r=0.44$) the same conditions. For example, labor and delivery and substance abuse disorders were among the top-ranking conditions in terms of proportion of total 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 just 6.3% of the 142 burden of disease–defining conditions considered in the analysis.

In 2015, as in prior years, musculoskeletal disorders (particularly of the back), injuries (particularly of the arm/shoulder, and knee), 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. Nine burden of disease–defined conditions

TABLE 1. Healthcare burdens attributable to various diseases and injuries, active component, U.S. Armed Forces, 2015

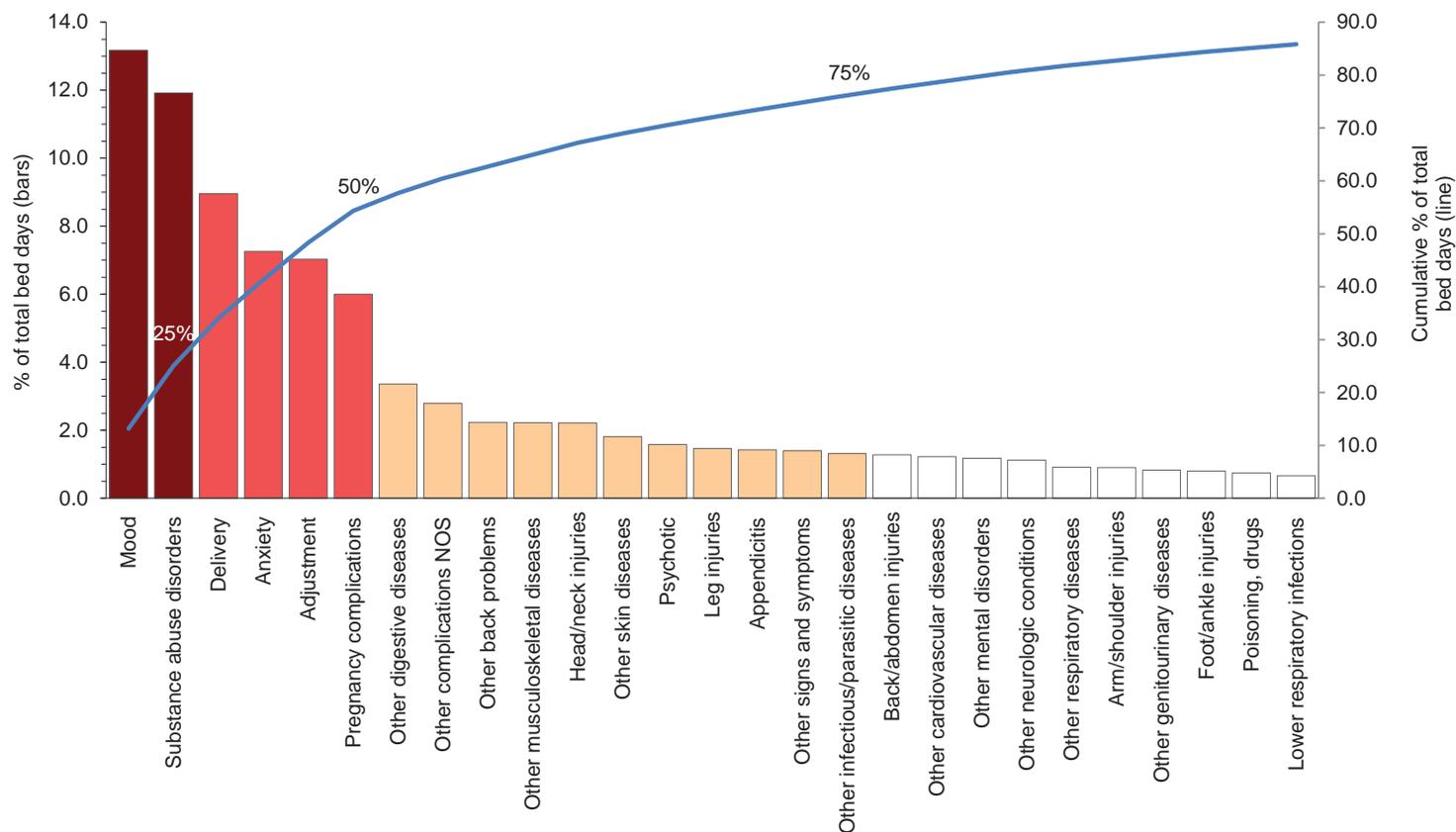
Major category condition ^a	Medical encounters ^b		Individuals affected ^c		Bed days		Major category condition ^a	Medical encounters ^b		Individuals affected ^c		Bed days	
	No.	Rank	No.	Rank	No.	Rank		No.	Rank	No.	Rank	No.	Rank
Injury and poisoning							Sense organ diseases						
Arm and shoulder	526,551	(5)	149,110	(5)	3,097	(23)	All other sense organ diseases	159,677	(17)	102,556	(12)	509	(63)
Knee	514,019	(6)	148,274	(6)	1,563	(34)	Refraction/accommodation	156,926	(19)	120,139	(10)	0	(142)
Foot and ankle	371,796	(10)	140,299	(8)	2,749	(25)	Hearing disorders	55,081	(33)	34,493	(32)	27	(117)
Leg	228,583	(14)	84,757	(15)	5,037	(14)	Glaucoma	10,863	(74)	6,606	(70)	1	(136)
Hand and wrist	142,610	(22)	69,294	(20)	1,454	(36)	Cataracts	1,466	(114)	783	(104)	6	(130)
Head and neck	90,331	(28)	54,151	(23)	7,642	(11)	Skin diseases						
Unspecified injury	89,388	(29)	60,324	(21)	635	(58)	All other skin diseases	255,900	(13)	141,473	(7)	6,246	(12)
Back and abdomen	65,202	(31)	40,360	(26)	4,423	(18)	Sebacous gland diseases	50,913	(35)	29,810	(36)	22	(118)
Other complications	33,038	(41)	18,433	(44)	9,615	(8)	Contact dermatitis	49,907	(36)	36,087	(31)	81	(100)
Other injury, external	26,578	(45)	13,755	(51)	306	(79)	Respiratory infections						
Environmental	23,513	(50)	18,177	(45)	1,159	(41)	Upper respiratory infections	283,688	(12)	216,747	(4)	635	(59)
Other injury	13,592	(70)	9,772	(62)	728	(54)	Lower respiratory infections	45,728	(39)	31,334	(34)	2,304	(27)
Poisoning, nondrug	4,649	(93)	3,215	(80)	469	(64)	Otitis media	25,543	(48)	20,125	(43)	20	(119)
Poisoning, drug	3,574	(99)	2,197	(88)	2,585	(26)	Genitourinary diseases						
Other burns	389	(125)	154	(125)	36	(115)	All other genitourinary diseases	146,032	(20)	81,720	(16)	2,860	(24)
Other superficial injury	303	(128)	236	(121)	0	(138)	Female genital pain	26,413	(46)	15,542	(48)	208	(82)
Underdosing	17	(142)	16	(141)	6	(128)	Other breast disorders	21,387	(55)	11,419	(60)	417	(67)
Mental disorders							Menstrual disorders	21,030	(56)	13,649	(54)	561	(61)
Anxiety	537,080	(4)	73,030	(18)	25,026	(4)	Kidney stones	17,346	(59)	7,115	(67)	768	(52)
Mood	384,304	(7)	53,178	(24)	45,451	(1)	Nephritis and nephrosis	6,620	(85)	2,046	(91)	1,150	(42)
Adjustment	382,633	(8)	80,939	(17)	24,240	(5)	Benign prostatic hypertrophy	2,832	(102)	1,920	(94)	32	(116)
Substance abuse disorders	354,757	(11)	27,268	(38)	41,125	(2)	Respiratory diseases						
Other mental disorders	130,509	(23)	49,241	(25)	4,062	(20)	Allergic rhinitis	99,030	(26)	39,338	(28)	8	(126)
Psychotic	17,191	(60)	2,238	(87)	5,458	(13)	All other respiratory diseases	64,311	(32)	37,670	(29)	3,131	(22)
Tobacco dependence	16,985	(62)	10,244	(61)	0	(139)	Asthma	31,314	(44)	13,710	(53)	372	(70)
Personality	14,781	(67)	3,018	(81)	1,738	(29)	Chronic sinusitis	23,483	(51)	16,760	(47)	121	(95)
Somatoform	8,040	(78)	2,048	(90)	357	(72)	Chronic obstructive pulmonary disease	15,488	(65)	13,248	(57)	128	(93)
Musculoskeletal diseases							Infectious and parasitic diseases						
Other back problems	1,030,535	(1)	222,787	(3)	7,696	(9)	All other infectious and parasitic diseases	145,157	(21)	102,970	(11)	4,527	(17)
Other musculoskeletal diseases	679,214	(2)	240,644	(2)	7,681	(10)	Unspecified viral infection	25,748	(47)	23,487	(39)	156	(87)
Other knee disorders	31,770	(43)	14,195	(50)	1,711	(31)	Diarrheal diseases	24,498	(49)	21,803	(40)	999	(45)
Other shoulder disorders	17,370	(58)	8,522	(64)	175	(85)	STDs	17,634	(57)	13,420	(55)	315	(76)
Osteoarthritis	13,714	(69)	7,746	(65)	674	(55)	Chlamydia	8,088	(77)	7,088	(68)	3	(134)
Rheumatoid arthritis	3,133	(101)	1,061	(99)	42	(111)	Tuberculosis	2,128	(107)	1,190	(97)	70	(104)
Signs and symptoms							Hepatitis B and C	1,664	(109)	761	(105)	36	(114)
All other signs and symptoms	676,597	(3)	313,079	(1)	4,811	(16)	Intestinal nematode infection	219	(132)	199	(123)	9	(124)
Abdomen and pelvis	194,823	(15)	121,769	(9)	1,536	(35)	Bacterial meningitis	152	(137)	48	(134)	57	(107)
Respiratory and chest	162,349	(16)	98,294	(13)	1,659	(32)	Malaria	138	(138)	58	(131)	64	(105)
Neurologic conditions							Tropical cluster	53	(141)	24	(139)	3	(135)
Organic sleep disorders	375,149	(9)	86,193	(14)	345	(73)	^a Major categories and conditions defined in the Global Burden of Disease Study ¹						
All other neurologic conditions	95,406	(27)	33,145	(33)	3,883	(21)	^b Medical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition)						
Other mononeuritis - upper and lower limbs	14,409	(68)	7,634	(66)	78	(101)	^c Individuals with at least one hospitalization or ambulatory visit for the condition						
Epilepsy	4,829	(91)	1,526	(96)	834	(50)							
Multiple sclerosis	2,616	(104)	553	(109)	134	(92)							
Parkinson disease	182	(135)	52	(133)	0	(140)							

TABLE 1. (cont.) Healthcare burdens attributable to various diseases and injuries, active component, U.S. Armed Forces, 2015

Major category condition ^a	Medical encounters ^b		Individuals affected ^c		Bed days		Major category condition ^a	Medical encounters ^b		Individuals affected ^c		Bed days	
	No.	Rank	No.	Rank	No.	Rank		No.	Rank	No.	Rank	No.	Rank
Digestive diseases							Prostate cancer	1,494	(112)	333	(118)	76	(102)
All other digestive diseases	111,304	(24)	57,044	(22)	11,599	(7)	Trachea, bronchus and lung cancers	635	(120)	85	(128)	344	(74)
Other gastroenteritis and colitis	47,267	(37)	39,709	(27)	982	(46)	Pancreas cancer	577	(121)	45	(135)	359	(71)
Esophagus disease	32,343	(42)	20,739	(42)	930	(48)	Esophagus cancer	333	(127)	20	(140)	140	(91)
Inguinal hernia	11,481	(72)	5,063	(72)	440	(65)	Stomach cancer	302	(129)	37	(137)	105	(96)
Appendicitis	5,986	(88)	3,002	(82)	4,913	(15)	Ovary cancer	300	(130)	66	(130)	39	(113)
Cirrhosis of the liver	1,396	(116)	1,030	(100)	103	(97)	Bladder cancer	266	(131)	94	(127)	6	(129)
Peptic ulcer disease	1,356	(117)	796	(103)	403	(68)	Liver cancer	201	(134)	30	(138)	149	(90)
Maternal conditions							Cervix uteri cancer	112	(139)	40	(136)	19	(120)
Pregnancy complications	102,718	(25)	21,549	(41)	20,708	(6)	Corpus uteri cancer	81	(140)	16	(142)	5	(131)
Delivery	47,029	(38)	14,696	(49)	30,882	(3)	Metabolic and immunity disorders						
Ectopic/miscarriage/abortion	8,364	(76)	3,572	(78)	561	(62)	Lipoid metabolism disorders	17,147	(61)	13,741	(52)	42	(110)
All other maternal disorders	7,280	(81)	2,891	(84)	1,735	(30)	Other metabolic disorders	11,401	(73)	6,304	(71)	328	(75)
Puerperium complications	3,486	(100)	2,306	(86)	734	(53)	Immunity disorders	1,200	(118)	502	(111)	58	(106)
Headache							Congenital anomalies						
Headache	157,594	(18)	71,845	(19)	869	(49)	All other congenital anomalies	21,878	(54)	13,353	(56)	1,069	(44)
Cardiovascular diseases							Congenital heart disease	2,079	(108)	996	(101)	185	(83)
All other cardiovascular diseases	73,336	(30)	37,343	(30)	4,212	(19)	Other circulatory anomalies	1,188	(119)	421	(115)	166	(86)
Essential hypertension	52,760	(34)	29,873	(35)	152	(89)	Oral conditions						
Ischemic heart disease	6,990	(83)	2,621	(85)	1,097	(43)	All other oral conditions	22,705	(53)	16,925	(46)	1,857	(28)
Cerebrovascular disease	6,852	(84)	1,771	(95)	1,451	(37)	Dental caries	567	(122)	465	(113)	15	(122)
Inflammatory	1,413	(115)	686	(107)	314	(77)	Periodontal disease	486	(123)	445	(114)	5	(132)
Rheumatic heart disease	403	(124)	347	(117)	55	(108)	Nutritional disorders						
Other neoplasms							Overweight, obesity	15,324	(66)	11,783	(59)	123	(94)
All other neoplasms	41,790	(40)	28,794	(37)	1,378	(38)	All other nutritional disorders	5,992	(87)	4,387	(74)	9	(125)
Benign skin neoplasm	15,985	(63)	13,178	(58)	5	(133)	Protein-energy malnutrition	206	(133)	55	(132)	0	(141)
Lipoma	7,435	(80)	4,942	(73)	16	(121)	Blood disorders						
Uterine leiomyoma	4,180	(95)	1,976	(93)	960	(47)	All other blood disorders	7,977	(79)	3,909	(77)	649	(57)
Endocrine disorders							Other non-deficiency anemias	5,146	(89)	2,950	(83)	250	(80)
All other endocrine disorders	22,922	(52)	8,765	(63)	212	(81)	Iron-deficiency anemia	4,108	(96)	2,026	(92)	94	(98)
Hypothyroidism	12,155	(71)	6,800	(69)	11	(123)	Hereditary anemias	3,682	(97)	3,234	(79)	47	(109)
Other thyroid disorders	9,792	(75)	4,265	(75)	312	(78)	Other deficiency anemias	334	(126)	199	(124)	6	(127)
Malignant neoplasms							Diabetes mellitus						
Lymphoma and multiple myeloma	7,010	(82)	677	(108)	1,332	(40)	Diabetes mellitus	15,747	(64)	4,198	(76)	579	(60)
All other malignant neoplasms	6,555	(86)	1,103	(98)	1,610	(33)	Conditions arising during the perinatal period^d						
Breast cancer	4,832	(90)	466	(112)	177	(84)	All other perinatal anomalies	1,598	(110)	976	(102)	39	(112)
Leukemia	4,782	(92)	258	(120)	1,337	(39)	Low birth weight	1,489	(113)	373	(116)	0	(137)
Melanoma and other skin cancers	4,251	(94)	2,087	(89)	91	(99)	Birth asphyxia and birth trauma	178	(136)	79	(129)	71	(103)
Testicular cancer	3,588	(98)	727	(106)	388	(69)							
Colon and rectum cancers	2,688	(103)	296	(119)	653	(56)							
Brain	2,508	(105)	213	(122)	808	(51)							
Thyroid	2,142	(106)	550	(110)	429	(66)							
Mouth and oropharynx cancers	1,504	(111)	139	(126)	153	(88)							

^aMajor categories and conditions defined in the Global Burden of Disease Study¹
^bMedical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition)
^cIndividuals with at least one hospitalization or ambulatory visit for the condition
^dConditions affecting newborns erroneously coded on service member medical records

FIGURE 3. Percentage and cumulative percentage distribution, burden “conditions” that accounted for the most hospital bed days, active component, U.S. Armed Forces, 2015



accounted for slightly more than half of all illness- and injury-related medical encounters of active component members and included three mental disorders (anxiety, mood, and adjustment disorders), two anatomic site-defined injuries (arm/shoulder and knee), two musculoskeletal disorders (back and disorders of “other” joints, muscles, tendons, soft tissues), and organic sleep disorders.

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.³⁻⁷ 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., post-traumatic stress disorder)—should be 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,* 2015

This report documents the frequencies, rates, trends, and distributions of hospitalizations of active component members of the U.S. Army, Navy, Air Force and Marine Corps during calendar year 2015. 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 or Tenth Revision, Clinical Modification (ICD-9-CM or ICD-10-CM) used to report primary discharge diagnoses. Hospitalizations not routinely documented with standardized, automated records (e.g., field training exercises, shipboard) are not centrally

*Does not include Coast Guard

available for health surveillance purposes and thus are not included in this report.

Frequencies, rates, and trends

In 2015, there were 68,754 records of hospitalizations of active component members of the U.S. Army, Navy, Air Force, and Marine Corps; 32% of the hospitalizations were in non-military facilities (Table 1, Figure 1). The hospitalization rate (all causes) was 52.8 per 1,000 service member person-years (p-yrs). The annual hospitalization rate (all causes) for 2015 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 2015, three diagnostic categories accounted for more than

half (54.3%) of all hospitalizations of active component members: mental disorders (22.4%), pregnancy- and delivery-related conditions (22.0%), and injuries and poisonings (10.0%) (Table 1). Similar to 2011 and 2013, in 2015 there were more hospitalizations for mental disorders than for any other major diagnostic category (per the ICD-9 or ICD-10). 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 2015 to 2011, numbers of hospitalizations decreased in all major categories of illnesses and injuries (Table 1). The largest percentage decrease in hospitalizations during 2011–2015 was for injuries and poisonings (hospitalization difference, 2011–2015: -5,245; -43.4%).

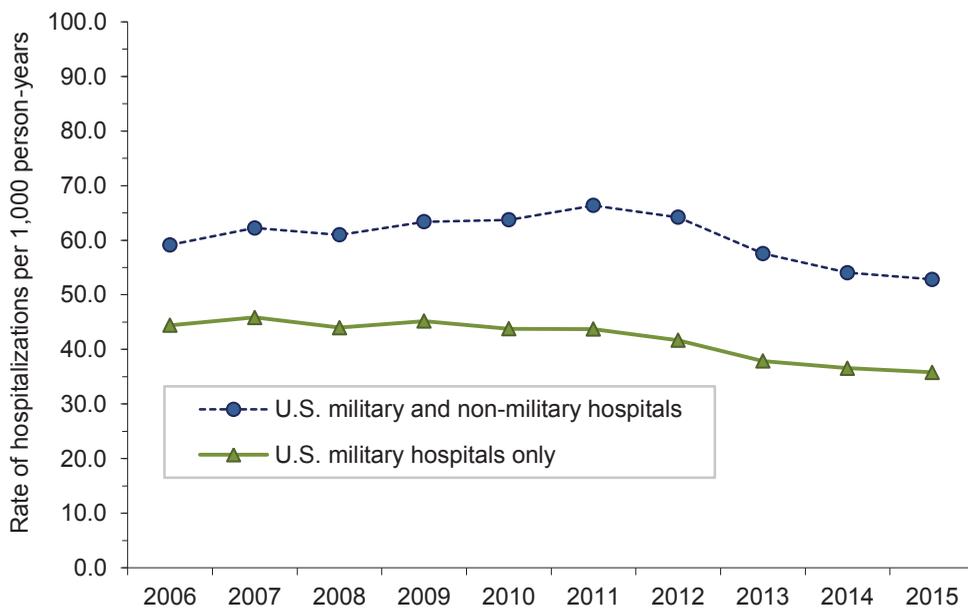
TABLE 1. Hospitalizations, ICD-9/ICD-10 diagnostic categories, active component, U.S. Armed Forces, 2011, 2013, and 2015

Major diagnostic category (ICD-9/ICD-10)	2011			2013			2015		
	No.	Rate ^a	Rank	No.	Rate ^a	Rank	No.	Rate ^a	Rank
Mental disorders (ICD-9: 290–319; ICD-10: F01–F99)	20,890	14.8	(1)	18,022	13.2	(1)	15,412	11.8	(1)
Pregnancy and delivery (ICD-9: 630–679, relevant V-codes; ICD-10: O00–O99, relevant Z-codes) ^b	18,037	88.0	(2)	16,089	79.2	(2)	15,094	75.4	(2)
Injury and poisoning (ICD-9: 800–999; ICD-10: S00–T98)	12,095	8.5	(3)	8,593	6.3	(3)	6,850	5.3	(3)
Digestive system (ICD-9: 520–579; ICD-10: K00–K95)	8,287	5.9	(4)	7,253	5.3	(4)	6,221	4.8	(4)
Musculoskeletal system (ICD-9: 710–739; ICD-10: M00–M99)	7,834	5.5	(5)	6,560	4.8	(5)	6,213	4.8	(5)
Other (ICD-9: E80–E99 and V01–V91, except pregnancy-related; ICD-10: V00–Y99, Z00–Z99, except pregnancy-related)	3,773	2.7	(7)	3,230	2.4	(7)	3,240	2.5	(6)
Signs, symptoms, and ill-defined conditions (ICD-9: 780–799; ICD-10: R00–R99)	4,712	3.3	(6)	3,759	2.7	(6)	2,851	2.2	(7)
Genitourinary system (ICD-9: 580–629; ICD-10: N00–N99)	2,864	2.0	(9)	2,382	1.7	(9)	2,109	1.6	(8)
Circulatory system (ICD-9: 390–459; ICD-10: I00–I99)	2,881	2.0	(8)	2,458	1.8	(8)	1,975	1.5	(9)
Respiratory system (ICD-9: 460–519; ICD-10: J00–J99)	2,861	2.0	(10)	2,193	1.6	(10)	1,860	1.4	(10)
Neoplasms (ICD-9: 140–239; ICD-10: C00–D49)	2,244	1.6	(12)	1,917	1.4	(12)	1,613	1.2	(11)
Nervous system and sense organs (ICD-9: 320–389; ICD-10: G00–H95)	2,306	1.6	(11)	1,959	1.4	(11)	1,500	1.2	(12)
Skin and subcutaneous tissue (ICD-9: 680–709; ICD-10: L00–L99)	1,942	1.4	(13)	1,683	1.2	(13)	1,357	1.0	(13)
Infectious and parasitic diseases (ICD-9: 001–139; ICD-10: A00–B99)	1,486	1.0	(14)	1,289	0.9	(14)	1,180	0.9	(14)
Endocrine, nutrition, immunity (ICD-9: 240–279; ICD-10: E00–E89)	923	0.7	(15)	745	0.5	(15)	645	0.5	(15)
Congenital anomalies (ICD-9: 740–759; ICD-10: Q00–Q99)	444	0.3	(16)	413	0.3	(16)	360	0.3	(16)
Hematologic disorders (ICD-9: 280–289; ICD-10: D50–D89)	370	0.3	(17)	327	0.2	(17)	274	0.2	(17)
Total	93,949	66.4		78,872	57.6		68,754	52.8	

^aRates are based on 1,000 person-years.

^bRates of pregnancy- and delivery-related hospitalizations among females only

FIGURE 1. Rate of hospitalization, by year, active component, U.S. Armed Forces, 2006–2015



Hospitalizations, by gender

In 2015, the hospitalization rate (all causes) among females was more than three times that of males (hospitalization rate, overall: females: 131.0 per 1,000 p-yrs; males: 38.6 per 1,000 p-yrs). Excluding pregnancy and delivery, the rate of hospitalizations among females (52.3 per 1,000 p-yrs) was 35.4% higher than among males (data not shown).

Hospitalization rates were higher among males than females for injuries and poisonings (male:female [m:f], rate difference [RD]: 1.0 per 1,000 p-yrs). Hospitalization rates were higher among females than males for mental disorders (RD: 6.8 per 1,000 p-yrs); genitourinary disorders (RD: 4.5 per 1,000 p-yrs); neoplasms (RD: 2.6 per 1,000 p-yrs); “other” conditions (RD: 1.6 per 1,000 p-yrs); and signs, symptoms, and ill-defined conditions (RD: 1.0 per 1,000 p-yrs). Hospitalization rates were similar (i.e., RDs less than 1.0 per 1,000 p-yrs) among males and females for the remaining 10 major disease-specific categories (data not shown).

Relationships between age and hospitalization rates varied significantly 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 and injuries and poisonings (Figure 2).

Most frequent diagnoses

Due to the transition to ICD-10 on 1 October 2015 and the differences in diagnostic specificity that make combining ICD-9 and ICD-10 diagnoses difficult, the most frequent diagnoses tables were generated separately for ICD-9 and ICD-10. As in previous summaries, the most frequent diagnoses in a category were mapped at the three-digit level for ICD-9; for ICD-10, diagnoses are reported at the four-digit level.

In 2015, the most frequent single diagnosis in males was adjustment reactions (n=3,090) in ICD-9; in ICD-10, adjustment disorders was the most frequent discharge diagnosis during the last quarter of the year (n=747). In ICD-9, adjustment reactions diagnoses also include diagnoses for post-traumatic stress disorder (PTSD); PTSD was reported as a distinct diagnosis in the ICD-10 table and was the primary discharge diagnosis in 189 hospitalizations. Episodic mood disorders (n=1,820), intervertebral disc disorders (n=1,205), acute appendicitis (n=1,138), and alcohol dependence

syndrome (n=915) comprised the next four most frequent diagnoses in males for ICD-9, while similar diagnoses comprised the next four most frequent diagnoses in ICD-10. (Tables 2a, 2b).

In 2015, pregnancy- and delivery-related conditions accounted for 58.2% of all hospitalizations of females (Tables 3a, 3b). Other than pregnancy- and delivery-related diagnoses, leading causes of hospitalizations of females were adjustment reactions (ICD-9; n=1,032) or adjustment disorders (ICD-10; n=208), episodic mood disorders (ICD-9; n=726), and uterine leiomyoma (ICD-9; n=278) or leiomyoma of uterus, unspecified (ICD-10; n=48).

Injuries and poisonings

As in the past, in 2015, 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=4,052), approximately half (50.9%) had a missing or invalid NATO Standardization Agreement (STANAG) injury code. Of all “unintentional” injuries and poisonings that resulted in hospitalizations in U.S. military facilities (n=1,833), slightly more than a quarter (28.3%) were considered caused by falls and miscellaneous (n=519), while complications of medical or surgical care (n=348) accounted for less than one in five “unintentional” injuries (19.0%) (Table 4).

Among males, injury- and poisoning-related hospitalizations were most often related to complications of medical and surgical procedures (e.g., infection), effects of heat and light, or fractures of ankle, leg, or face bones (Tables 2a, 2b). 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) (Tables 3a, 3b).

Durations of hospitalizations

In 2015, while the median durations of hospitalizations (all causes) remained stable (3 days), the durations of the longest hospitalizations decreased. (Figure 3). As in previous

FIGURE 2. Rates (per 1,000 person-years) of hospitalization, by major diagnostic categories, by age and gender, active component, U.S. Armed Forces, 2015

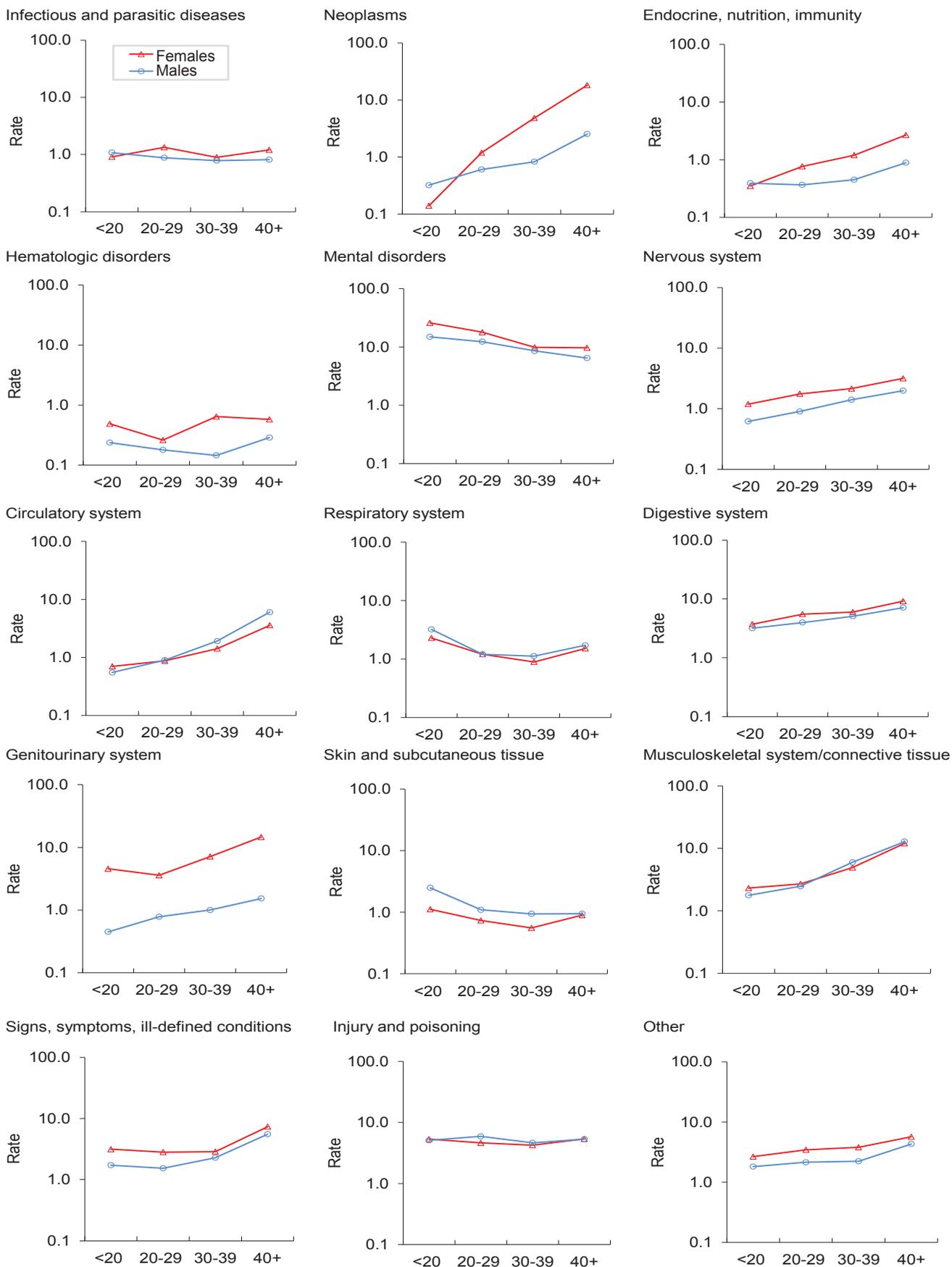


TABLE 2a. Most frequent diagnoses during hospitalization with ICD-9 codes, by major diagnostic category, males, active component, U.S. Armed Forces, 2015

Diagnostic category (ICD-9 codes)	♂	No.	%	Diagnostic category (ICD-9 codes)	♂	No.	%
Mental disorders (ICD-9: 290–319)		9,129		Respiratory system (ICD-9: 460–519)		1,214	
Adjustment reaction		3,090	33.8	Pneumonia, organism unspecified		306	25.2
Episodic mood disorders		1,820	19.9	Pneumothorax		89	7.3
Alcohol dependence syndrome		915	10.0	Deviated nasal septum		87	7.2
Depressive disorder, not elsewhere classified		730	8.0	Other diseases of lung		87	7.2
Anxiety, dissociative and somatoform disorders		678	7.4	Peritonsillar abscess		80	6.6
Injury and poisoning (ICD-9: 800–999)		4,713		Neoplasms (ICD-9: 140–239)		710	
Other complications of procedures not elsewhere classified		429	9.1	Malignant neoplasm of thyroid gland		49	6.9
Complications peculiar to certain specified procedures		249	5.3	Malignant neoplasm of testis		40	5.6
Effects of heat and light		234	5.0	Malignant neoplasm of brain		39	5.5
Fracture of face bones		228	4.8	Secondary malignant neoplasm of respiratory and digestive systems		30	4.2
Fracture of ankle		217	4.6	Neoplasms of unspecified nature		30	4.2
Digestive system (ICD-9: 520–579)		4,063		Nervous system and sense organs (ICD-9: 320–389)		862	
Acute appendicitis		1,138	28.0	Pain, not elsewhere classified		144	16.7
Dentofacial anomalies including malocclusion		366	9.0	Organic sleep disorders		106	12.3
Diseases of pancreas		241	5.9	Epilepsy		96	11.1
Diseases of esophagus		237	5.8	Migraine		75	8.7
Other and unspecified noninfectious gastroenteritis and colitis		204	5.0	Other conditions of brain		41	4.8
Musculoskeletal system (ICD-9: 710–739)		3,979		Skin and subcutaneous tissue (ICD-9: 680–709)		933	
Intervertebral disc disorders		1,205	30.3	Other cellulitis and abscess		694	74.4
Disorders of muscle ligament and fascia		461	11.6	Pilonidal cyst		65	7.0
Spondylosis and allied disorders		437	11.0	Cellulitis and abscess of finger and toe		57	6.1
Osteoarthritis and allied disorders		295	7.4	Contact dermatitis and other eczema		22	2.4
Other and unspecified disorders of back		229	5.8	Disorders of sweat glands		16	1.7
Other (ICD-9: E80–E99 and V01–V91, except pregnancy-related)		2,087		Infectious and parasitic diseases (ICD-9: 001–139)		757	
Other psychosocial circumstances		437	20.9	Septicemia		197	26.0
Encounter for other and unspecified procedures and aftercare		423	20.3	Meningitis due to enterovirus		136	18.0
Convalescence and palliative care		322	15.4	Intestinal infections due to other organisms		105	13.9
Care involving use of rehabilitation procedures		266	12.7	Ill-defined intestinal infections		67	8.9
Observation and evaluation for suspected conditions not found		241	11.5	Infectious mononucleosis		33	4.4
Signs, symptoms, and ill-defined conditions (ICD-9: 780–799)		1,666		Endocrine, nutrition, immunity (ICD-9: 240–279)		389	
Symptoms involving respiratory system and other chest symptoms		552	33.1	Diabetes mellitus		131	33.7
General symptoms		491	29.5	Disorders of fluid electrolyte and acid-base balance		114	29.3
Other symptoms involving abdomen and pelvis		243	14.6	Nontoxic nodular goiter		25	6.4
Symptoms involving head and neck		104	6.2	Thyrotoxicosis with or without goiter		20	5.1
Symptoms involving digestive system		66	4.0	Overweight, obesity and other hyperalimentation		20	5.1
Circulatory system (ICD-9: 390–459)		1,323		Congenital anomalies (ICD-9: 740–759)		222	
Cardiac dysrhythmias		242	18.3	Other congenital musculoskeletal anomalies		77	34.7
Acute pulmonary heart disease		173	13.1	Other congenital anomalies of circulatory system		25	11.3
Acute myocardial infarction		104	7.9	Congenital anomalies of urinary system		21	9.5
Occlusion of cerebral arteries		64	4.8	Other congenital anomalies of digestive system		17	7.7
Other forms of chronic ischemic heart disease		62	4.7	Certain congenital musculoskeletal deformities		16	7.2
Genitourinary system (ICD-9: 580–629)		772		Hematologic disorders (ICD-9: 280–289)		145	
Calculus of kidney and ureter		178	23.1	Diseases of white blood cells		47	32.4
Acute renal failure		155	20.1	Purpura and other hemorrhagic conditions		25	17.2
Other disorders of male genital organs		72	9.3	Other diseases of blood and blood-forming organs		19	13.1
Urethral stricture		70	9.1	Other and unspecified anemias		17	11.7
Other disorders of kidney and ureter		51	6.6	Aplastic anemia		15	10.3

TABLE 2b. Most frequent diagnoses during hospitalization with ICD-10 codes, by major diagnostic category, males, active component, U.S. Armed Forces, 2015

Diagnostic category (ICD-10 codes)	♂	No.	%	Diagnostic category (ICD-10 codes)	♂	No.	%
Mental disorders (ICD-10: F01–F99)		2,767		Respiratory system (ICD-10: J00–J99)		380	
Adjustment disorders		747	27.0	Pneumonia, unspecified organism		79	20.8
Alcohol dependence		424	15.3	Peritonsillar abscess		26	6.8
Major depressive disorder, single episode, unspecified		293	10.6	Deviated nasal septum		24	6.3
Post-traumatic stress disorder (PTSD)		189	6.8	Other and unspecified asthma		18	4.7
Major depressive disorder, recurrent severe without psychotic features		136	4.9	Acute tonsillitis, unspecified		13	3.4
Injury and poisoning (ICD-10: S00–T98)		1,256		Neoplasms (ICD-10: C00–D49)		211	
Infection following a procedure		62	4.9	Malignant neoplasm of thyroid gland		23	10.9
Concussion		35	2.8	Malignant neoplasm of frontal lobe		8	3.8
Fracture of shaft of tibia		30	2.4	Malignant neoplasm of brain, unspecified		8	3.8
Other fractures of lower leg		28	2.2	Malignant neoplasm of prostate		7	3.3
Fracture of mandible		26	2.1	Malignant neoplasm of testis, unspecified whether descended or undescended		7	3.3
Digestive system (ICD-10: K00–K95)		1,150		Nervous system and sense organs (ICD-10: G00–H95)		289	
Other and unspecified acute appendicitis		274	23.8	Sleep apnea		30	10.4
Noninfective gastroenteritis and colitis, unspecified		55	4.8	Acute pain, not elsewhere classified		28	9.7
Acute appendicitis with localized peritonitis		45	3.9	Nonpyogenic meningitis		19	6.6
Acute pancreatitis, unspecified		43	3.7	Epilepsy, unspecified		15	5.2
Unilateral inguinal hernia, without obstruction or gangrene		34	3.0	Migraine with aura		11	3.8
Musculoskeletal system (ICD-10: M00–M99)		1,264		Skin and subcutaneous tissue (ICD-10: L00–L99)		258	
Thoracic, thoracolumbar and lumbosacral intervertebral disc disorders with radiculopathy		118	9.3	Cellulitis and acute lymphangitis of other parts of limb		109	42.2
Other specified disorders of muscle		86	6.8	Cutaneous abscess, furuncle and carbuncle of limb		16	6.2
Other spondylosis with radiculopathy		62	4.9	Cutaneous abscess, furuncle and carbuncle of hand		13	5.0
Spinal stenosis		61	4.8	Cellulitis and acute lymphangitis of finger and toe		13	5.0
Cervical disc disorder with radiculopathy		60	4.7	Cellulitis and acute lymphangitis of face and neck		13	5.0
Other (ICD-10: V00–Y99, Z00–Z99, except pregnancy-related)		386		Infectious and parasitic diseases (ICD-10: A00–B99)		202	
Encounter for other specified postprocedural aftercare		74	19.2	Sepsis, unspecified organism		48	23.8
Encounter for examination and observation for unspecified reason		57	14.8	Viral intestinal infection, unspecified		19	9.4
Encounter for antineoplastic chemotherapy and immunotherapy		49	12.7	Infectious gastroenteritis and colitis, unspecified		18	8.9
Encounter for other orthopedic aftercare		39	10.1	Viral meningitis, unspecified		12	5.9
Aftercare following joint replacement surgery		28	7.3	Infectious mononucleosis, unspecified		10	5.0
Signs, symptoms, and ill-defined conditions (ICD-10: R00–R99)		584		Endocrine, nutrition, immunity (ICD-10: E00–E89)		92	
Other symptoms and signs involving emotional state		162	27.7	Nontoxic single thyroid nodule		10	10.9
Other chest pain		91	15.6	Other specified diabetes mellitus with ketoacidosis		9	9.8
Chest pain, unspecified		46	7.9	Dehydration		9	9.8
Unspecified convulsions		27	4.6	Type 1 diabetes mellitus with ketoacidosis		7	7.6
Unspecified abdominal pain		24	4.1	Hypokalemia		7	7.6
Circulatory system (ICD-10: I00–I99)		400		Congenital anomalies (ICD-10: Q00–Q99)		65	
Pulmonary embolism without acute cor pulmonale		55	13.8	Arteriovenous malformation of cerebral vessels		10	15.4
Unspecified atrial fibrillation and atrial flutter		27	6.8	Atrial septal defect		8	12.3
Paroxysmal atrial fibrillation		22	5.5	Pectus excavatum		3	4.6
Cerebral infarction, unspecified		19	4.8	Congenital spondylolisthesis		3	4.6
Non-ST elevation (NSTEMI) myocardial infarction		18	4.5	Sinus, fistula and cyst of branchial cleft		2	3.1
Genitourinary system (ICD-10: N00–N99)		244		Hematologic disorders (ICD-10: D50–D89)		42	
Acute kidney failure, unspecified		45	18.4	Neutropenia, unspecified		5	11.9
Calculus of ureter		19	7.8	Immune thrombocytopenic purpura		4	9.5
Hypertrophy of breast		18	7.4	Acute posthemorrhagic anemia		3	7.1
Hydronephrosis with renal and ureteral calculous obstruction		16	6.6	Anemia, unspecified		3	7.1
Acute kidney failure with tubular necrosis		9	3.7	Iron deficiency anemia, unspecified		2	4.8

TABLE 3a. Most frequent diagnoses during hospitalization with ICD–9 codes, by major diagnostic category, females, active component, U.S. Armed Forces, 2015

Diagnostic category (ICD-9 codes)	♀	No.	%	Diagnostic category (ICD-9 codes)	♀	No.	%
Mental disorders (ICD-9: 290–319)		2,740		Genitourinary system (ICD-9: 580–629)		811	
Adjustment reaction		1,032	37.7	Disorders of menstruation and other abnormal bleeding from female genital tract		169	20.8
Episodic mood disorders		726	26.5	Infections of kidney		114	14.1
Depressive disorder, not elsewhere classified		252	9.2	Other disorders of breast		82	10.1
Anxiety, dissociative and somatoform disorders		248	9.1	Noninflammatory disorders of ovary fallopian tube and broad ligament		76	9.4
Alcohol dependence syndrome		130	4.7	Pain and other symptoms associated with female genital organs		68	8.4
Pregnancy and delivery (ICD-9: 630–679, relevant V-codes)		11,480		Respiratory system (ICD-9: 460–519)		206	
Trauma to perineum and vulva during delivery		2,549	22.2	Pneumonia, organism unspecified		30	14.6
Late pregnancy		991	8.6	Asthma		28	13.6
Other indications for care or intervention related to labor and delivery not elsewhere classified		974	8.5	Chronic disease of tonsils and adenoids		21	10.2
Hypertension complicating pregnancy childbirth and the puerperium		931	8.1	Peritonsillar abscess		16	7.8
Other current conditions in the mother classifiable elsewhere but complicating pregnancy childbirth or the puerperium		898	7.8	Acute tonsillitis		15	7.3
Injury and poisoning (ICD-9: 800–999)		686		Neoplasms (ICD-9: 140–239)		538	
Other complications of procedures not elsewhere classified		99	14.4	Uterine leiomyoma		278	51.7
Complications peculiar to certain specified procedures		47	6.9	Malignant neoplasm of female breast		40	7.4
Poisoning by analgesics antipyretics and antirheumatics		46	6.7	Malignant neoplasm of thyroid gland		26	4.8
Poisoning by psychotropic agents		37	5.4	Benign neoplasm of ovary		23	4.3
Certain adverse effects not elsewhere classified		31	4.5	Carcinoma in situ of breast and genitourinary system		12	2.2
Digestive system (ICD-9: 520–579)		773		Nervous system and sense organs (ICD-9: 320–389)		258	
Acute appendicitis		150	19.4	Migraine		58	22.5
Cholelithiasis		90	11.6	Pain, not elsewhere classified		37	14.3
Dentofacial anomalies including malocclusion		89	11.5	Epilepsy		30	11.6
Other and unspecified noninfectious gastroenteritis and colitis		66	8.5	Other conditions of brain		16	6.2
Other disorders of gallbladder		46	6.0	Multiple sclerosis		12	4.7
Musculoskeletal system (ICD-9: 710–739)		714		Skin and subcutaneous tissue (ICD-9: 680–709)		129	
Intervertebral disc disorders		183	25.6	Other cellulitis and abscess		70	54.3
Disorders of muscle ligament and fascia		82	11.5	Pilonidal cyst		10	7.8
Other and unspecified disorders of back		56	7.8	Other hypertrophic and atrophic conditions of skin		10	7.8
Spondylosis and allied disorders		54	7.6	Cellulitis and abscess of finger and toe		7	5.4
Other and unspecified disorders of joint		53	7.4	Erythematous conditions		6	4.7
Other (ICD-9: E80–E99 and V01–V91, except pregnancy-related)		611		Infectious and parasitic diseases (ICD-9: 001–139)		159	
Observation and evaluation for suspected conditions not found		143	23.4	Septicemia		41	25.8
Other psychosocial circumstances		98	16.0	Intestinal infections due to other organisms		28	17.6
Encounter for other and unspecified procedures and aftercare		97	15.9	Meningitis due to enterovirus		25	15.7
Convalescence and palliative care		70	11.5	Ill-defined intestinal infections		18	11.3
Care involving use of rehabilitation procedures		53	8.7	Infectious mononucleosis		10	6.3
Signs, symptoms, and ill-defined conditions (ICD-9: 780–799)		430		Endocrine, nutrition, immunity (ICD-9: 240–279)		128	
General symptoms		138	32.1	Disorders of fluid electrolyte and acid-base balance		27	21.1
Other symptoms involving abdomen and pelvis		119	27.7	Nontoxic nodular goiter		25	19.5
Symptoms involving respiratory system and other chest symptoms		90	20.9	Overweight, obesity and other hyperalimentation		18	14.1
Symptoms involving head and neck		19	4.4	Thyrotoxicosis with or without goiter		17	13.3
Symptoms involving digestive system		13	3.0	Diabetes mellitus		16	12.5
Circulatory system (ICD-9: 390–459)		209		Hematologic disorders (ICD-9: 280–289)		62	
Acute pulmonary heart disease		47	22.5	Diseases of white blood cells		18	29.0
Cardiac dysrhythmias		34	16.3	Iron deficiency anemias		15	24.2
Other venous embolism and thrombosis		14	6.7	Other and unspecified anemias		14	22.6
Occlusion of cerebral arteries		13	6.2	Purpura and other hemorrhagic conditions		5	8.1
Acute myocardial infarction		10	4.8	Other diseases of blood and blood-forming organs		5	8.1

TABLE 3b. Most frequent diagnoses during hospitalization with ICD-10 codes, by major diagnostic category, females, active component, U.S. Armed Forces, 2015

Diagnostic category (ICD-10 codes)	♀	No.	%	Diagnostic category (ICD-10 codes)	♀	No.	%
Mental disorders (ICD-10: F01–F99)		776		Genitourinary system (ICD-10: N00–N99)		282	
Adjustment disorders		208	26.8	Excessive and frequent menstruation with regular cycle		27	9.6
Major depressive disorder, single episode, unspecified		95	12.2	Abnormal uterine and vaginal bleeding, unspecified		24	8.5
Post-traumatic stress disorder (PTSD)		77	9.9	Hypertrophy of breast		22	7.8
Major depressive disorder, recurrent severe without psychotic features		51	6.6	Other and unspecified ovarian cysts		20	7.1
Alcohol dependence		37	4.8	Other specified abnormal uterine and vaginal bleeding		18	6.4
Pregnancy and delivery (ICD-10: O00–O99, relevant Z-codes)		3,614		Respiratory system (ICD-10: J00–J99)		60	
First degree perineal laceration during delivery		341	9.4	Pneumonia, unspecified organism		11	18.3
Second degree perineal laceration during delivery		340	9.4	Chronic tonsillitis and adenoiditis		5	8.3
Post-term pregnancy		267	7.4	Pleural effusion, not elsewhere classified		5	8.3
Abnormality in fetal heart rate and rhythm complicating labor and delivery		236	6.5	Other and unspecified asthma		4	6.7
Maternal care due to uterine scar from previous surgery		224	6.2	Acute tonsillitis, unspecified		3	5.0
Injury and poisoning (ICD-10: S00–T98)		195		Neoplasms (ICD-10: C00–D49)		154	
Infection following a procedure		18	9.2	Leiomyoma of uterus, unspecified		48	31.2
Poisoning by, adverse effect of and underdosing of 4-Aminophenol derivatives		9	4.6	Malignant neoplasm of breast of unspecified site		10	6.5
Other fractures of lower leg		7	3.6	Intramural leiomyoma of uterus		9	5.8
Traumatic subarachnoid hemorrhage		6	3.1	Subserosal leiomyoma of uterus		9	5.8
Concussion		5	2.6	Malignant neoplasm of thyroid gland		8	5.2
Digestive system (ICD-10: K00–K95)		235		Nervous system and sense organs (ICD-10: G00–H95)		91	
Other and unspecified acute appendicitis		56	23.8	Migraine, unspecified		12	13.2
Noninfective gastroenteritis and colitis, unspecified		13	5.5	Nonpyogenic meningitis		8	8.8
Calculus of gallbladder with acute cholecystitis		8	3.4	Acute pain, not elsewhere classified		8	8.8
Acute cholecystitis		8	3.4	Migraine with aura		5	5.5
Acute pancreatitis, unspecified		8	3.4	Compression of brain		5	5.5
Musculoskeletal system (ICD-10: M00–M99)		256		Skin and subcutaneous tissue (ICD-10: L00–L99)		37	
Thoracic, thoracolumbar and lumbosacral intervertebral disc disorders with radiculopathy		21	8.2	Cellulitis and acute lymphangitis of other parts of limb		8	21.6
Anomalies of dental arch relationship		17	6.6	Cutaneous abscess, furuncle and carbuncle of buttock		4	10.8
Other specified disorders of muscle		17	6.6	Pilonidal cyst and sinus without abscess		4	10.8
Major anomalies of jaw size		12	4.7	Cutaneous abscess, furuncle and carbuncle of limb		2	5.4
Other spondylosis with radiculopathy		12	4.7	Pilonidal cyst and sinus with abscess		2	5.4
Other (ICD-10: V00–Y99, Z00–Z99, except pregnancy-related)		156		Infectious and parasitic diseases (ICD-10: A00–B99)		62	
Encounter for other specified postprocedural aftercare		22	14.1	Sepsis, unspecified organism		15	24.2
Encounter for supervision of normal pregnancy, unspecified		15	9.6	Infectious gastroenteritis and colitis, unspecified		7	11.3
Encounter for other administrative examinations		10	6.4	Sepsis due to other Gram-negative organisms		6	9.7
Encounter for examination and observation for unspecified reason		10	6.4	Viral intestinal infection, unspecified		5	8.1
Encounter for routine postpartum follow-up		10	6.4	Viral infection, unspecified		5	8.1
Signs, symptoms, and ill-defined conditions (ICD-10: R00–R99)		171		Endocrine, nutrition, immunity (ICD-10: E00–E89)		36	
Other symptoms and signs involving emotional state		32	18.7	Nontoxic multinodular goiter		4	11.1
Pain localized to other parts of lower abdomen		15	8.8	Dehydration		4	11.1
Unspecified convulsions		13	7.6	Nontoxic single thyroid nodule		3	8.3
Unspecified abdominal pain		11	6.4	Thyrotoxicosis with diffuse goiter		3	8.3
Pelvic and perineal pain		10	5.8	Localized adiposity		3	8.3
Circulatory system (ICD-10: I00–I99)		43		Hematologic disorders (ICD-10: D50–D89)		25	
Pulmonary embolism without acute cor pulmonale		12	27.9	Iron deficiency anemia, unspecified		3	12.0
Essential (primary) hypertension		3	7.0	Immune thrombocytopenic purpura		3	12.0
Acute embolism and thrombosis of deep veins of lower extremity		3	7.0	Sarcoidosis of other sites		3	12.0
Angina pectoris with documented spasm		2	4.7	Other iron deficiency anemias		2	8.0
Other secondary pulmonary hypertension		2	4.7	Neutropenia, unspecified		2	8.0

TABLE 4. Injury hospitalizations^a by causal agent,^b active component, U.S. Armed Forces, 2015

Cause	No.	%
Unintentional	1,833	45.2
Fall and miscellaneous	519	12.8
Complications of medical/surgical	348	8.6
Land transport	343	8.5
Poisons, and fire	158	3.9
Athletics	141	3.5
Machinery, tools	111	2.7
Environmental	95	2.3
Air transport	62	1.5
Guns, explosives (includes accidents during war)	48	1.2
Water transport	8	0.2
Intentional	158	3.9
Self-inflicted	93	2.3
Non-battle, inflicted by other (e.g., assault)	37	0.9
Battle casualty	28	0.7
Missing/invalid code	2,061	50.9
Total	4,052	100.0

^aHospitalizations in U.S. military medical facilities only
^bCausal agents were determined by codes in accordance with STANAG 2050.

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 14 days, but for four categories, 5% of hospitalizations had longer durations: injury (16 days); neoplasms (21 days); mental disorders (30 days); and “Other” or V-coded hospitalizations (primarily orthopedic aftercare and rehabilitation following a previous illness or injury) (35 days) (Figure 4).

Hospitalizations, by service

Among members of the Navy and Air Force, pregnancy- and delivery-related conditions accounted for more hospitalizations than any other category of illnesses or

FIGURE 3. Length of hospital stay, by year, active component, U.S. Armed Forces, 2006–2015

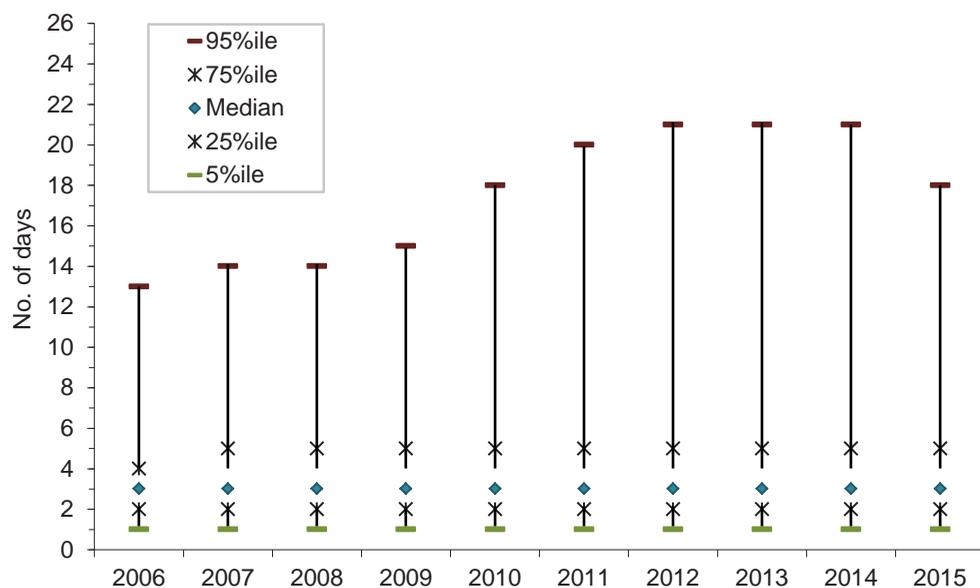
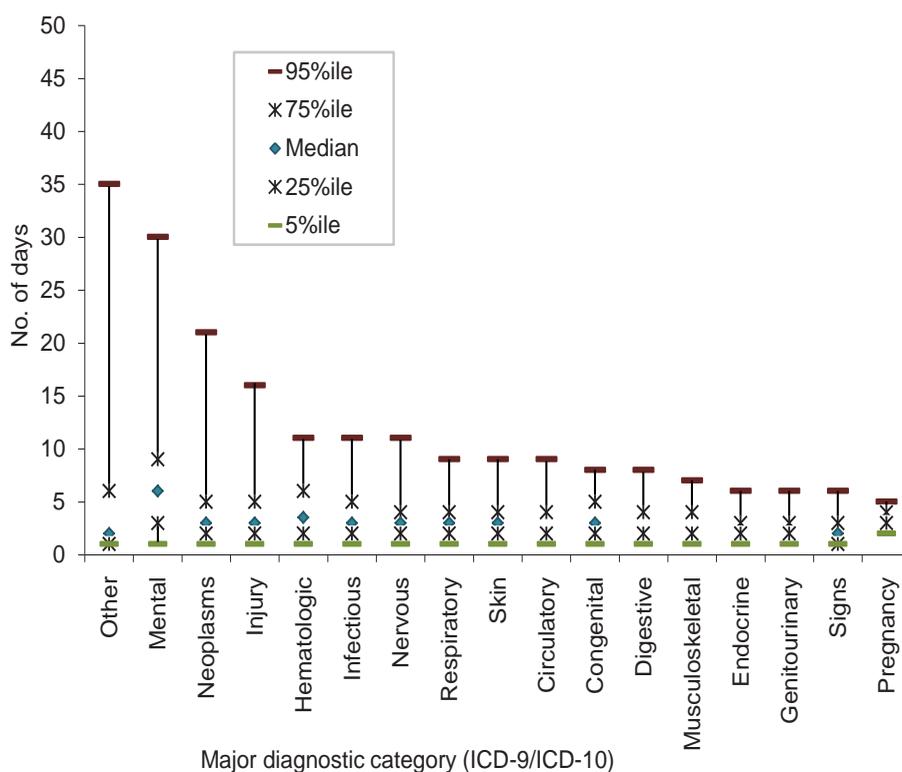


FIGURE 4. Length of hospital stay by diagnostic category, active component, U.S. Armed Forces, 2015



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 (15.6 per 1,000 p-yrs) was higher than in all other services.

Injuries and poisonings were the third

leading cause of hospitalizations in the Army, fourth in the Navy, fifth in the Air Force, and the second leading cause in the Marine Corps (Table 5). The hospitalization rate for injuries and poisonings was 20% higher among soldiers (7.1 per 1,000 p-yrs) than Marines (5.9 per 1,000 p-yrs).

TABLE 5. Hospitalizations, by service and ICD-9/ICD-10 diagnostic category, active component, U.S. Armed Forces, 2015

Major diagnostic category (ICD-9/ICD-10)	Army		Navy		Air Force		Marine Corps	
	No.	Rate ^a	No.	Rate ^a	No.	Rate ^a	No.	Rate ^a
Mental disorders (ICD-9: 290–319; ICD-10: F01–F99)	7,615	15.6	3,093	9.6	2,800	9.1	1,904	10.3
Pregnancy and delivery (ICD-9: 630–679, relevant V-codes; ICD-10: O00–O99, relevant Z-codes) ^b	5,706	82.7	4,298	73.6	4,023	68.7	1,067	75.4
Injury and poisoning (ICD-9: 800–999; ICD-10: S00–T98)	3,483	7.1	1,309	4.1	973	3.2	1,085	5.9
Musculoskeletal system (ICD-9: 710–739; ICD-10: M00–M99)	3,300	6.8	1,035	3.2	1,282	4.2	596	3.2
Digestive system (ICD-9: 520–579; ICD-10: K00–K95)	2,908	6.0	1,319	4.1	1,337	4.3	657	3.6
Signs, symptoms, and ill-defined conditions (ICD-9: 780–799; ICD-10: R00–R99)	1,617	3.3	501	1.6	512	1.7	221	1.2
Other (ICD-9: E80–E99 and V01–V91, except pregnancy-related; ICD-10: V00–Y99, Z00–Z99, except pregnancy-related)	1,590	3.3	590	1.8	629	2.0	431	2.3
Genitourinary system (ICD-9: 580–629; ICD-10: N00–N99)	1,032	2.1	453	1.4	450	1.5	174	0.9
Respiratory system (ICD-9: 460–519; ICD-10: J00–J99)	1,027	2.1	271	0.8	306	1.0	256	1.4
Circulatory system (ICD-9: 390–459; ICD-10: I00–I99)	1,002	2.1	407	1.3	407	1.3	159	0.9
Neoplasms (ICD-9: 140–239; ICD-10: C00–D49)	764	1.6	348	1.1	390	1.3	111	0.6
Nervous system and sense organs (ICD-9: 320–389; ICD-10: G00–H95)	744	1.5	321	1.0	272	0.9	163	0.9
Skin and subcutaneous tissue (ICD-9: 680–709; ICD-10: L00–L99)	595	1.2	279	0.9	200	0.7	283	1.5
Infectious and parasitic diseases (ICD-9: 001–139; ICD-10: A00–B99)	511	1.0	234	0.7	290	0.9	145	0.8
Endocrine, nutrition, immunity (ICD-9: 240–279; ICD-10: E00–E89)	322	0.7	119	0.4	119	0.4	85	0.5
Congenital anomalies (ICD-9: 740–759; ICD-10: Q00–Q99)	163	0.3	68	0.2	83	0.3	46	0.2
Hematologic disorders (ICD-9: 280–289; ICD-10: D50–D89)	133	0.3	52	0.2	61	0.2	28	0.2
Total	32,512	66.7	14,697	45.6	14,134	47.8	7,411	40.2

^aRates are based on 1,000 person-years.

^bRates of pregnancy- and delivery-related hospitalizations among females only

EDITORIAL COMMENT

In 2015, hospitalization rates for all causes among active component members decreased to the lowest rate in the past decade. As in past years, in 2015, mental disorders, pregnancy- and delivery-related conditions, and injuries and poisonings accounted for more than half of all hospitalizations of active component members. 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 stress. Annual numbers of hospitalizations for mental disorders have been declining since 2013; in 2015, the number fell to the lowest level since 2008.

The reasons for the 2015 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 2015; 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 between 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.

Ambulatory Visits Among Members of the Active Component, U.S. Armed Forces,* 2015

This report documents the frequencies, rates, trends, and characteristics of ambulatory healthcare visits of active component members of the U.S. Army, Navy, Air Force, and Marine Corps during 2015. 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, and Marine Corps in 2015 were categorized according to the first three digits of the primary

(first-listed) diagnosis code (per International Classification of Diseases, Ninth Revision, Clinical Modification [ICD-9-CM]) or the first four characters of the diagnosis codes of the newly introduced Tenth Revision (ICD-10-CM).

Frequencies, rates, and trends

During 2015, there were 18,693,989 reported ambulatory visits of active component service members (Table 1). The

*Does not include Coast Guard.

TABLE 1. Ambulatory visits, ICD-9/ICD-10 diagnostic categories, active component, U.S. Armed Forces, 2011, 2013, and 2015

Major diagnostic category (ICD-9-CM/ICD-10-CM)	2011			2013			2015		
	No. of visits	No. per person-year	Rank	No. of visits	No. per person-year	Rank	No. of visits	No. per person-year	Rank
Other (ICD-9: V01–V82, except pregnancy-related; ICD-10: Z00–Z99, except pregnancy-related)	9,047,405	6,391.06	(1)	9,242,437	6,744.52	(1)	8,225,580	6,319.27	(1)
Musculoskeletal system (ICD-9: 710–739; ICD-10: M00–M99)	2,822,597	1,993.87	(2)	3,002,974	2,191.37	(2)	3,203,568	2,461.13	(2)
Mental disorders (ICD-9: 290–319; ICD-10: F01–F99)	1,883,749	1,330.67	(3)	1,990,174	1,452.30	(3)	1,882,735	1,446.40	(3)
Signs, symptoms, and ill-defined conditions (ICD-9: 780–799; ICD-10: R00–R99)	1,080,103	762.98	(4)	1,067,823	779.23	(4)	1,158,914	890.33	(4)
Nervous system and sense organs (ICD-9: 320–389; ICD-10: G00–H95)	960,524	678.51	(5)	1,026,377	748.98	(5)	1,053,948	809.69	(5)
Injury and poisoning (ICD-9: 800–999; ICD-10: S00–T98)	959,784	677.99	(6)	858,881	626.75	(6)	801,048	615.40	(6)
Respiratory system (ICD-9: 460–519; ICD-10: J00–J99)	660,784	466.78	(7)	603,024	440.05	(7)	566,962	435.57	(7)
Skin and subcutaneous tissue (ICD-9: 680–709; ICD-10: L00–L99)	393,072	277.66	(8)	391,150	285.44	(8)	363,357	279.15	(8)
Pregnancy and delivery (ICD-9: 630–679, relevant V-codes; ICD-10: O00–O99, relevant Z-codes)	376,594	266.02	(9)	347,956	253.92	(9)	307,093	235.92	(9)
Genitourinary system (ICD-9: 580–629; ICD-10: N00–N99)	291,488	205.91	(10)	272,033	198.51	(10)	256,220	196.84	(10)
Digestive system (ICD-9: 520–579; ICD-10: K00–K95)	291,063	205.61	(11)	270,625	197.48	(11)	238,364	183.12	(11)
Infectious and parasitic diseases (ICD-9: 001–139; ICD-10: A00–B99)	232,887	164.51	(12)	213,933	156.11	(12)	211,546	162.52	(12)
Circulatory system (ICD-9: 390–459; ICD-10: I00–I99)	187,631	132.54	(13)	169,706	123.84	(13)	142,031	109.11	(13)
Neoplasms (ICD-9: 140–239; ICD-10: C00–D49)	135,655	95.83	(15)	126,955	92.64	(15)	118,471	91.01	(14)
Endocrine, nutrition, immunity (ICD-9: 240–279; ICD-10: E00–E89)	146,561	103.53	(14)	137,943	100.66	(14)	116,509	89.51	(15)
Congenital anomalies (ICD-9: 740–759; ICD-10: Q00–Q99)	29,170	20.61	(16)	28,055	20.47	(16)	25,177	19.34	(16)
Hematologic disorders (ICD-9: 280–289; ICD-10: D50–D89)	26,641	18.82	(17)	26,701	19.48	(17)	22,466	17.26	(17)
Total	19,525,708	13,792.90		19,776,747	14,431.76		18,693,989	14,361.59	

crude annual rate (all causes) was 14,362 visits per 1,000 person-years (p-yrs) or 14.4 visits per person-year (p-yr); thus, on average, each service member had 14 ambulatory encounters during the year.

The rate of documented ambulatory visits in 2015 was 0.5% lower than the rate in 2013 and 45.1% higher than in 2006 (Figure 1). Both the number of ambulatory visits (20,076,797) and the rate of such visits (14,439 visits per 1,000 p-yrs) had peaked in 2012.

On 1 October 2015, the MHS converted its diagnostic coding system from ICD-9 to ICD-10. In conjunction with that change, the MHS introduced its own additional unique codes (“DOD”) that pertained to several circumstances. One category of DOD codes comprised codes for encounters for performance of examinations, assessments, and screenings associated with deployment, occupation, aviation, administrative purposes, retirement or separation from service, periodic health assessments, and entry into service academies. Codes for such encounters are categorized as “General medical examination” for the purposes of this report and fall into the “Other” diagnostic category. A second group of the new DOD codes covered screening for traumatic brain injury (TBI) or a history of TBI in the past. The codes for screening for TBI were categorized under “Other.” The codes for a history of TBI were counted in the “Injury” group.

To demonstrate the variations in terminology and categorization between ICD-9 and ICD-10 codes, Tables 2a, 2b, 3a, and 3b display the distribution of outpatient visits by gender during the first 9 months of 2015 (ICD-9) and the last 3 months (ICD-10).

In 2015, 44.0% of ambulatory visits were classified into the “Other” category (i.e., other contact with health services) (Table 1). This category (indicated by V-codes of the ICD-9, Z-codes of ICD-10, and most of the aforementioned DOD codes) 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).

Three diagnoses accounted for 48.5% of the visits in the “Other” category: general medical examination (including deployment health assessments) (28.6%), care involving use of rehabilitation procedures (13.1%), and encounters for administrative purposes (e.g., disability examinations, issuance of repeat prescriptions) (6.8%). (Tables 2a, 2b, 3a, 3b).

In 2015, there were 10,468,409 documented ambulatory visits for illnesses and injuries (ICD-9: 001–999, including relevant pregnancy V-codes; ICD-10:

A00–T88, including relevant pregnancy Z-codes) (Table 1). “Illnesses and injuries” does not include diagnoses categorized as “Other.” The crude annual rate of illness- and injury-related visits was 8.0 visits per p-yr. The rate of ambulatory visits for illnesses and injuries in 2015 was higher than the rates in 2013 (7.7 visits per p-yr) and 2011 (7.4 visits per p-yr).

Ambulatory visits, by diagnostic categories

In 2015, four major diagnostic categories accounted for 69.7% of all illness- and injury-related ambulatory visits among active component service members: musculoskeletal system/connective tissue disorders (30.6%); mental disorders (18.0%); signs, symptoms, and ill-defined conditions (11.1%); and disorders of the nervous system and sense organs (10.1%) (Table 1).

In a comparison of the years 2011 and 2015, there were increases in numbers of visits in three major diagnostic categories of illness and injury and decreases in 13 categories (Table 1). The largest percentage increases in ambulatory visits during the interval 2011 to 2015 were for musculoskeletal system/connective tissue disorders (change: +380,971 visits; +13.5%), and disorders of the nervous system and sense organs (change: +93,424; +9.7%). Visits for diagnoses of signs, symptoms, and ill-defined conditions also rose by 7.3% during the interval. The largest percentage decreases in visits during 2011–2015 were for disorders of the circulatory system (change: -45,600; -24.3%); endocrine, nutrition, and immunity disorders (change: -30,052; -20.5%); and pregnancy and delivery (change: -69,501; -18.5%). The largest decreases in numbers of visits were for injury and poisoning (change: -158,736; -16.5%) and for disorders of the respiratory system (change: -93,822; -14.2%).

Over the past 5 years, the relative distributions of ambulatory visits by diagnostic categories of the ICD-9 remained fairly stable with a few exceptions (Table 1). In a comparison of the numbers and rates of visits attributable to each of the 17 major diagnostic categories in the years 2011, 2013, and 2015, the rank orders of two categories were exchanged: neoplasms (15th to 14th), and disorders of endocrine, nutrition, and

FIGURE 1. Rates of ambulatory visits, by year, active component, U.S. Armed Forces, 2006–2015

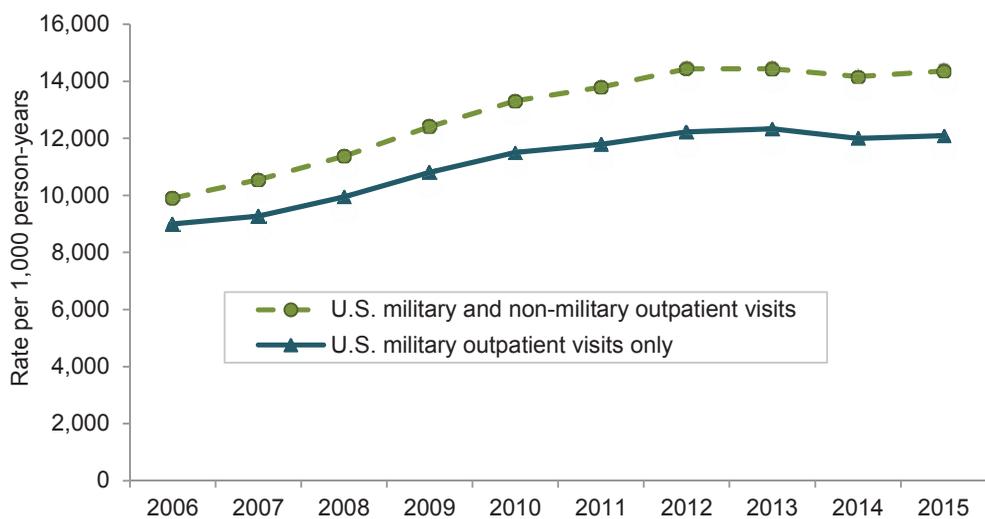


TABLE 2a. Most frequent diagnoses during ambulatory visits with ICD-9 codes, by major diagnostic category, males, active component, U.S. Armed Forces, 2015

Diagnostic category (ICD-9 codes)	♂	No.	%	Diagnostic category (ICD-9 codes)	♂	No.	%
Infectious and parasitic diseases (ICD-9: 001–139)		121,138		Digestive system (ICD-9: 520–579)		144,172	
Viral and chlamydial infection in conditions classified elsewhere and of unspecified site		27,430	22.6	Other and unspecified noninfectious gastroenteritis and colitis		31,451	21.8
Other diseases due to viruses and chlamydiae		22,876	18.9	Diseases of esophagus		21,021	14.6
Dermatophytosis		18,146	15.0	Gastrointestinal hemorrhage		8,611	6.0
Intestinal infections due to other organisms		8,398	6.9	Inguinal hernia		8,368	5.8
Streptococcal sore throat and scarlet fever		7,727	6.4	Functional digestive disorders not elsewhere classified		7,923	5.5
Neoplasms (ICD-9: 140–239)		67,003		Genitourinary system (ICD-9: 580–629)		89,790	
Benign neoplasm of skin		9,995	14.9	Other disorders of male genital organs		19,537	21.8
Neoplasm of uncertain behavior of other and unspecified sites and tissues		8,699	13.0	Calculus of kidney and ureter		11,960	13.3
Neoplasms of unspecified nature		7,582	11.3	Disorders of penis		10,411	11.6
Lipoma		4,949	7.4	Other disorders of urethra and urinary tract		8,246	9.2
Malignant neoplasm of testis		2,894	4.3	Other disorders of breast		7,644	8.5
Endocrine, nutrition, immunity (ICD-9: 240–279)		68,744		Skin and subcutaneous tissue (ICD-9: 680–709)		215,715	
Disorders of lipid metabolism		12,369	18.0	Diseases of hair and hair follicles		38,888	18.0
Testicular dysfunction		11,812	17.2	Contact dermatitis and other eczema		32,437	15.0
Diabetes mellitus		11,055	16.1	Other cellulitis and abscess		28,644	13.3
Overweight, obesity and other hyperalimentation		7,951	11.6	Diseases of sebaceous glands		23,793	11.0
Acquired hypothyroidism		5,121	7.4	Other disorders of skin and subcutaneous tissue		14,317	6.6
Hematologic disorders (ICD-9: 280–289)		10,496		Musculoskeletal system (ICD-9: 710–739)		1,770,012	
Hereditary hemolytic anemias		2,124	20.2	Other and unspecified disorders of joint		561,163	31.7
Diseases of white blood cells		2,085	19.9	Other and unspecified disorders of back		473,731	26.8
Other and unspecified anemias		1,905	18.1	Other disorders of soft tissues		115,412	6.5
Other diseases of blood and blood-forming organs		1,325	12.6	Intervertebral disc disorders		96,400	5.4
Purpura and other hemorrhagic conditions		1,242	11.8	Peripheral enthesopathies and allied syndromes		94,993	5.4
Mental disorders (ICD-9: 290–319)		1,090,365		Congenital anomalies (ICD-9: 740–759)		15,181	
Adjustment reaction		395,065	36.2	Certain congenital musculoskeletal deformities		4,608	30.4
Anxiety, dissociative and somatoform disorders		158,678	14.6	Other congenital musculoskeletal anomalies		3,199	21.1
Alcohol dependence syndrome		148,762	13.6	Other congenital anomalies of limbs		1,446	9.5
Episodic mood disorders		110,987	10.2	Congenital anomalies of the integument		1,292	8.5
Nondependent abuse of drugs		78,369	7.2	Other congenital anomalies of heart		748	4.9
Nervous system and sense organs (ICD-9: 320–389)		637,446		Signs, symptoms, and ill-defined conditions (ICD-9: 780–799)		578,635	
Organic sleep disorders		247,551	38.8	General symptoms		144,978	25.1
Disorders of refraction and accommodation		90,425	14.2	Symptoms involving respiratory system and other chest symptoms		103,387	17.9
Pain, not elsewhere classified		42,550	6.7	Other symptoms involving abdomen and pelvis		63,427	11.0
Hearing loss		28,937	4.5	Symptoms involving digestive system		54,942	9.5
Disorders of conjunctiva		24,806	3.9	Other ill-defined and unknown causes of morbidity and mortality		43,706	7.6
Circulatory system (ICD-9: 390–459)		92,411		Injury and poisoning (ICD-9: 800–999)		489,066	
Essential hypertension		34,596	37.4	Sprains and strains of ankle and foot		46,085	9.4
Hemorrhoids		11,179	12.1	Sprains and strains of knee and leg		44,610	9.1
Cardiac dysrhythmias		9,791	10.6	Sprains and strains of shoulder and upper arm		36,747	7.5
Varicose veins of other sites		3,884	4.2	Injury other and unspecified		34,521	7.1
Other venous embolism and thrombosis		3,237	3.5	Sprains and strains of other and unspecified parts of back		28,082	5.7
Respiratory system (ICD-9: 460–519)		316,568		Other (ICD-9: V01–V82, except pregnancy-related)		4,975,532	
Acute upper respiratory infections of multiple or unspecified sites		77,305	24.4	General medical examination		1,651,075	33.2
Allergic rhinitis		52,622	16.6	Care involving use of rehabilitation procedures		854,662	17.2
Acute pharyngitis		36,423	11.5	Encounters for administrative purposes		437,481	8.8
Acute nasopharyngitis (common cold)		18,743	5.9	Special investigations and examinations		303,924	6.1
Asthma		17,867	5.6	Other persons seeking consultation		248,029	5.0

TABLE 2b. Most frequent diagnoses during ambulatory visits with ICD-10 codes, by major diagnostic category, males, U.S. Armed Forces, 2015

Diagnostic category (ICD-10 codes)	♂ No.	%	Diagnostic category (ICD-10 codes)	♂ No.	%
Infectious and parasitic diseases (ICD-10: A00–B99)	39,448		Digestive system (ICD-10: K00–K95)	41,835	
Viral intestinal infection, unspecified	4,797	12.2	Gastro-esophageal reflux disease without esophagitis	3,800	9.1
Viral infection, unspecified	2,624	6.7	Noninfective gastroenteritis and colitis, unspecified	3,190	7.6
Infectious gastroenteritis and colitis, unspecified	2,399	6.1	Unilateral inguinal hernia, without obstruction or gangrene	2,411	5.8
Other viral warts	2,118	5.4	Constipation	1,896	4.5
Plantar wart	1,864	4.7	Melena	1,495	3.6
Neoplasms (ICD-10: C00–D49)	21,091		Genitourinary system (ICD-10: N00–N99)	26,141	
Neoplasm of uncertain behavior of skin	2,776	13.2	Disorder of male genital organs, unspecified	3,072	11.8
Neoplasm of unspecified behavior of bone, soft tissue, and skin	941	4.5	Calculus of kidney	2,065	7.9
Other benign neoplasm of skin, unspecified	841	4.0	Hypertrophy of breast	1,669	6.4
Melanocytic nevi of trunk	697	3.3	Epididymitis	1,570	6.0
Benign lipomatous neoplasm of skin and subcutaneous tissue of trunk	667	3.2	Other specified disorders of male genital organs	1,471	5.6
Endocrine, nutrition, immunity (ICD-10: E00–E89)	20,076		Skin and subcutaneous tissue (ICD-10: L00–L99)	66,468	
Testicular hypofunction	3,590	17.9	Pseudofolliculitis barbae	9,175	13.8
Hyperlipidemia, unspecified	2,229	11.1	Ingrowing nail	3,685	5.5
Type 2 diabetes mellitus without complications	1,351	6.7	Cellulitis and acute lymphangitis of other parts of limb	3,504	5.3
Hypothyroidism, unspecified	1,306	6.5	Acne vulgaris	3,260	4.9
Overweight	1,199	6.0	Dermatitis, unspecified	2,605	3.9
Hematologic disorders (ICD-10: D50–D89)	3,649		Musculoskeletal system (ICD-10: M00–M99)	755,036	
Anemia, unspecified	425	11.6	Pain in joint	260,351	34.5
Anemia due to glucose-6-phosphate dehydrogenase [g6pd] deficiency	347	9.5	Low back pain	143,349	19.0
Other specified disorders of white blood cells	326	8.9	Pain in limb, hand, foot, fingers and toes	48,740	6.5
Iron deficiency anemia, unspecified	289	7.9	Cervicalgia	29,858	4.0
Sickle-cell trait	243	6.7	Radiculopathy	15,085	2.0
Mental disorders (ICD-10: F01–F99)	346,703		Congenital anomalies (ICD-10: Q00–Q99)	4,130	
Adjustment disorders	67,338	19.4	Congenital pes planus	682	16.5
Post-traumatic stress disorder (ptsd)	60,796	17.5	Congenital pes cavus	297	7.2
Alcohol dependence	47,834	13.8	Other congenital deformities of feet	244	5.9
Anxiety disorder, unspecified	24,557	7.1	Congenital spondylolisthesis	166	4.0
Alcohol abuse	17,502	5.0	Atrial septal defect	150	3.6
Nervous system and sense organs (ICD-10: G00–H95)	234,810		Signs, symptoms, and ill-defined conditions (ICD-10: R00–R99)	288,513	
Sleep apnea	84,573	36.0	Other general symptoms and signs	119,010	41.2
Myopia	21,472	9.1	Headache	11,848	4.1
Insomnia	11,792	5.0	Chest pain, unspecified	9,381	3.3
Chronic pain, not elsewhere classified	9,398	4.0	Cough	6,914	2.4
Astigmatism	4,936	2.1	Unspecified abdominal pain	6,868	2.4
Circulatory system (ICD-10: I00–I99)	26,752		Injury and poisoning (ICD-10: S00–T98)	175,971	
Essential (primary) hypertension	11,931	44.6	Sprain of ankle	12,574	7.1
Scrotal varices	1,129	4.2	Sprain of shoulder joint	8,829	5.0
Atherosclerotic heart disease of native coronary artery	697	2.6	Sprain of cruciate ligament of knee	6,384	3.6
Nevus, non-neoplastic	641	2.4	Injury of unspecified muscle and tendon at lower leg level	4,132	2.3
Acute embolism and thrombosis of deep veins of lower extremity	596	2.2	Fracture of other and unspecified metacarpal bone	3,990	2.3
Respiratory system (ICD-10: J00–J99)	108,352		Other (ICD-10: Z00–Z99, except pregnancy-related)	1,535,580	
Acute upper respiratory infection, unspecified	25,169	23.2	General medical examination	331,556	21.6
Acute pharyngitis, unspecified	10,529	9.7	Encounter for immunization	277,433	18.1
Acute nasopharyngitis [common cold]	8,465	7.8	Encounter for other administrative examinations	149,385	9.7
Allergic rhinitis due to pollen	8,047	7.4	Encounter for examination of ears and hearing	91,252	5.9
Allergic rhinitis, unspecified	6,820	6.3	Encounter for other specified aftercare	68,663	4.5

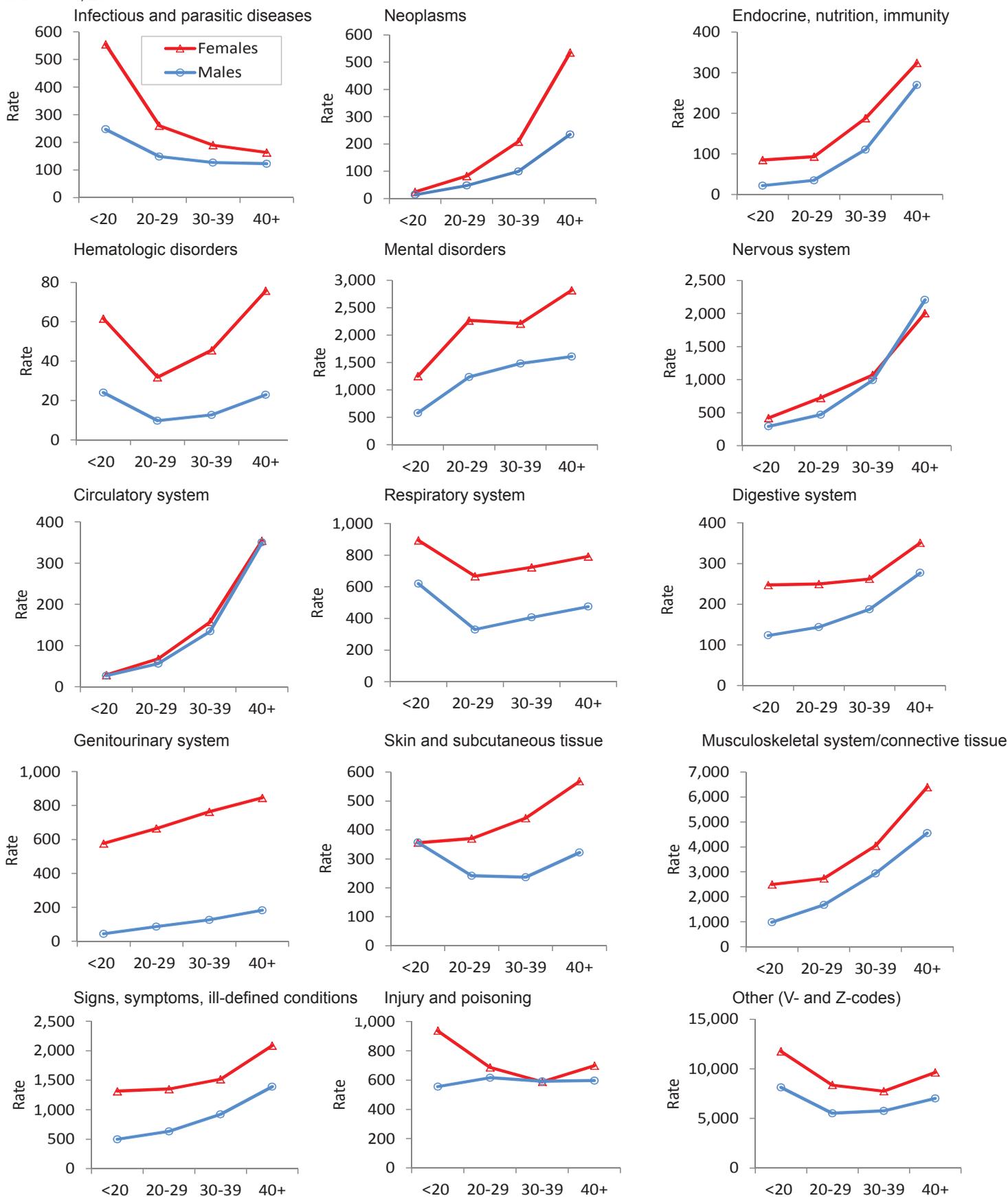
TABLE 3a. Most frequent diagnoses during ambulatory visits with ICD-9 codes, by major diagnostic category, females, U.S. Armed Forces, 2015

Diagnostic category (ICD-9 codes)	♀ No.	%	Diagnostic category (ICD-9 codes)	♀ No.	%
Infectious and parasitic diseases (ICD-9: 001–139)	37,920		Digestive system (ICD-9: 520–579)	40,870	
Viral and chlamydial infection in conditions classified elsewhere and of unspecified site	10,387	27.4	Other and unspecified noninfectious gastroenteritis and colitis	10,389	25.4
Candidiasis	4,440	11.7	Functional digestive disorders not elsewhere classified	6,521	16.0
Other diseases due to viruses and chlamydiae	3,445	9.1	Diseases of esophagus	4,278	10.5
Intestinal infections due to other organisms	2,884	7.6	Gastritis and duodenitis	2,660	6.5
Dermatophytosis	2,859	7.5	Gastrointestinal hemorrhage	1,604	3.9
Neoplasms (ICD-9: 140–239)	23,150		Genitourinary system (ICD-9: 580–629)	107,533	
Malignant neoplasm of female breast	3,949	17.1	Pain and other symptoms associated with female genital organs	20,759	19.3
Uterine leiomyoma	3,132	13.5	Disorders of menstruation and other abnormal bleeding from female genital tract	15,759	14.7
Benign neoplasm of skin	3,048	13.2	Other disorders of urethra and urinary tract	13,887	12.9
Neoplasm of uncertain behavior of other and unspecified sites and tissues	2,180	9.4	Inflammatory disease of cervix vagina and vulva	10,280	9.6
Neoplasms of unspecified nature	1,863	8.0	Other disorders of breast	8,416	7.8
Endocrine, nutrition, immunity (ICD-9: 240–279)	21,336		Pregnancy and delivery (ICD-9: 630–679, relevant V-codes)	255,411	
Acquired hypothyroidism	4,079	19.1	Normal pregnancy	72,619	28.4
Overweight, obesity and other hyperalimentation	3,647	17.1	Other complications of pregnancy not elsewhere classified	26,812	10.5
Ovarian dysfunction	2,100	9.8	Other current conditions in the mother classifiable elsewhere but complicating pregnancy childbirth or the puerperium	25,127	9.8
Diabetes mellitus	1,434	6.7	Postpartum care and examination	20,091	7.9
Disorders of fluid electrolyte and acid-base balance	1,429	6.7	Other indications for care or intervention related to labor and delivery not elsewhere classified	12,365	4.8
Hematologic disorders (ICD-9: 280–289)	6,258		Skin and subcutaneous tissue (ICD-9: 680–709)	61,614	
Iron deficiency anemias	1,950	31.2	Diseases of sebaceous glands	13,141	21.3
Other and unspecified anemias	1,844	29.5	Contact dermatitis and other eczema	9,211	14.9
Hereditary hemolytic anemias	656	10.5	Diseases of hair and hair follicles	5,617	9.1
Purpura and other hemorrhagic conditions	591	9.4	Other cellulitis and abscess	5,485	8.9
Diseases of white blood cells	586	9.4	Other disorders of skin and subcutaneous tissue	5,360	8.7
Mental disorders (ICD-9: 290–319)	336,205		Musculoskeletal system (ICD-9: 710–739)	475,849	
Adjustment reaction	133,117	39.6	Other and unspecified disorders of joint	148,741	31.3
Anxiety, dissociative and somatoform disorders	59,973	17.8	Other and unspecified disorders of back	119,200	25.0
Episodic mood disorders	52,292	15.6	Other disorders of soft tissues	39,623	8.3
Depressive disorder not elsewhere classified	32,110	9.6	Other disorders of cervical region	29,324	6.2
Alcohol dependence syndrome	18,481	5.5	Disorders of muscle ligament and fascia	22,464	4.7
Nervous system and sense organs (ICD-9: 320–389)	131,888		Signs, symptoms, and ill-defined conditions (ICD-9: 780–799)	191,012	
Disorders of refraction and accommodation	24,149	18.3	General symptoms	35,982	18.8
Migraine	20,355	15.4	Other symptoms involving abdomen and pelvis	32,485	17.0
Organic sleep disorders	14,100	10.7	Symptoms involving respiratory system and other chest symptoms	26,632	13.9
Pain, not elsewhere classified	12,959	9.8	Symptoms involving digestive system	21,972	11.5
Disorders of conjunctiva	7,089	5.4	Symptoms involving head and neck	17,278	9.0
Circulatory system (ICD-9: 390–459)	17,866		Injury and poisoning (ICD-9: 800–999)	100,397	
Essential hypertension	4,682	26.2	Sprains and strains of ankle and foot	10,678	10.6
Hemorrhoids	2,714	15.2	Sprains and strains of knee and leg	10,630	10.6
Cardiac dysrhythmias	2,079	11.6	Sprains and strains of other and unspecified parts of back	7,000	7.0
Varicose veins of lower extremities	1,138	6.4	Injury other and unspecified	6,545	6.5
Other disorders of circulatory system	830	4.6	Certain adverse effects not elsewhere classified	6,177	6.2
Respiratory system (ICD-9: 460–519)	104,903		Other (ICD-9: V01–V82, except pregnancy-related)	1,294,833	
Acute upper respiratory infections of multiple or unspecified sites	26,259	25.0	General medical examination	306,773	23.7
Allergic rhinitis	19,469	18.6	Care involving use of rehabilitation procedures	219,781	17.0
Acute pharyngitis	13,288	12.7	Encounters for administrative purposes	122,760	9.5
Asthma	6,481	6.2	Special investigations and examinations	109,298	8.4
Acute nasopharyngitis (common cold)	6,438	6.1	Other persons seeking consultation	93,395	7.2

TABLE 3b. Most frequent diagnoses during ambulatory visits with ICD-10 codes, by major diagnostic category, females, U.S. Armed Forces, 2015

Diagnostic category (ICD-10 codes)	♀	No.	%	Diagnostic category (ICD-10 codes)	♀	No.	%
Infectious and parasitic diseases (ICD-10: A00–B99)		13,040		Digestive system (ICD-10: K00–K95)		11,487	
Viral intestinal infection, unspecified		1,675	12.8	Constipation		1,875	16.3
Candidiasis of vulva and vagina		1,486	11.4	Noninfective gastroenteritis and colitis, unspecified		1,045	9.1
Viral infection, unspecified		918	7.0	Gastro-esophageal reflux disease without esophagitis		858	7.5
Infectious gastroenteritis and colitis, unspecified		767	5.9	Other hemorrhoids		332	2.9
Chlamydial infection of genitourinary tract, unspecified		515	3.9	Melena		330	2.9
Neoplasms (ICD-10: C00–D49)		7,227		Genitourinary system (ICD-10: N00–N99)		32,756	
Leiomyoma of uterus, unspecified		814	11.3	Urinary tract infection, site not specified		3,521	10.7
Malignant neoplasm of breast of unspecified site		728	10.1	Acute vaginitis		2,629	8.0
Neoplasm of uncertain behavior of skin		697	9.6	Female infertility, unspecified		1,699	5.2
Other benign neoplasm of skin, unspecified		266	3.7	Other specified noninflammatory disorders of vagina		1,649	5.0
Neoplasm of unspecified behavior of bone, soft tissue, and skin		209	2.9	Other and unspecified ovarian cysts		1,291	3.9
Endocrine, nutrition, immunity (ICD-10: E00–E89)		6,353		Pregnancy and delivery (ICD-10: O00–O99, relevant Z-codes)		51,682	
Hypothyroidism, unspecified		957	15.1	Other specified diseases and conditions complicating pregnancy, childbirth and the puerperium		3,310	6.4
Overweight		609	9.6	Other specified pregnancy related conditions		3,223	6.2
Polycystic ovarian syndrome		485	7.6	Encounter for supervision of normal first pregnancy		2,905	5.6
Obesity, unspecified		388	6.1	Supervision of elderly primigravida and multigravida		2,532	4.9
Vitamin d deficiency, unspecified		286	4.5	Encounter for antenatal screening of mother		2,523	4.9
Hematologic disorders (ICD-10: D50–D89)		2,063		Skin and subcutaneous tissue (ICD-10: L00–L99)		19,560	
Iron deficiency anemia, unspecified		589	28.6	Acne vulgaris		2,685	13.7
Anemia, unspecified		299	14.5	Acne, unspecified		941	4.8
Iron deficiency anemia secondary to blood loss (chronic)		146	7.1	Dermatitis, unspecified		771	3.9
Other specified disorders of white blood cells		119	5.8	Ingrowing nail		664	3.4
Thrombocytopenia, unspecified		108	5.2	Cellulitis and acute lymphangitis of other parts of limb		557	2.8
Mental disorders (ICD-10: F01–F99)		109,462		Musculoskeletal system (ICD-10: M00–M99)		202,671	
Adjustment disorders		28,056	25.6	Pain in joint		68,025	33.6
Post-traumatic stress disorder (ptsd)		16,098	14.7	Low back pain		35,739	17.6
Anxiety disorder, unspecified		9,042	8.3	Pain in limb, hand, foot, fingers and toes		13,677	6.7
Major depressive disorder, single episode, unspecified		6,056	5.5	Cervicalgia		11,140	5.5
Alcohol dependence		5,918	5.4	Plantar fascial fibromatosis		4,221	2.1
Nervous system and sense organs (ICD-10: G00–H95)		49,804		Signs, symptoms, and ill-defined conditions (ICD-10: R00–R99)		100,754	
Myopia		6,552	13.2	Other general symptoms and signs		38,062	37.8
Sleep apnea		4,813	9.7	Headache		5,146	5.1
Insomnia		2,993	6.0	Unspecified abdominal pain		4,071	4.0
Chronic pain, not elsewhere classified		2,928	5.9	Pelvic and perineal pain		2,961	2.9
Migraine without aura		2,339	4.7	Pain localized to other parts of lower abdomen		2,855	2.8
Circulatory system (ICD-10: I00–I99)		5,002		Injury and poisoning (ICD-10: S00–T98)		35,614	
Essential (primary) hypertension		1,633	32.6	Sprain of ankle		3,143	8.8
Varicose veins of lower extremities with other complications		307	6.1	Injury of unspecified muscle and tendon at lower leg level		1,550	4.4
Nevus, non-neoplastic		179	3.6	Sprain of hip		949	2.7
Raynaud's syndrome		171	3.4	Sprain of cruciate ligament of knee		915	2.6
Supraventricular tachycardia		168	3.4	Sprain of shoulder joint		820	2.3
Respiratory system (ICD-10: J00–J99)		37,139		Other (ICD-10: Z00–Z99, except pregnancy-related)		419,635	
Acute upper respiratory infection, unspecified		8,843	23.8	General medical examination		62,913	15.0
Acute pharyngitis, unspecified		3,863	10.4	Encounter for immunization		58,950	14.0
Acute nasopharyngitis [common cold]		3,229	8.7	Encounter for other administrative examinations		35,653	8.5
Allergic rhinitis due to pollen		3,093	8.3	Encounter for other specified aftercare		20,025	4.8
Allergic rhinitis, unspecified		2,635	7.1	Encounter for examination of ears and hearing		13,951	3.3

FIGURE 2. Rates (per 1,000 person-yr) of ambulatory visits, by major diagnostic categories, by age group and gender, active component, U.S. Armed Forces, 2015



immunity (14th to 15th). Their relative rankings were most affected by an 11% decrease in the rate of visits for disorders of endocrine, nutrition, and immunity.

Ambulatory visits, by gender

In 2015, males accounted for three-fourths (75.1%) of all illness- and injury-related visits; however, the annual crude rate among females (13.0 visits per p-yr) was 82.1% higher than that of males (7.1 visits per p-yr) (**data not shown**). Excluding pregnancy and delivery-related visits (which accounted for 11.8% of all non-V- and non-Z-coded ambulatory visits among females), the illness and injury ambulatory visit rate among females was 11.5 visits per 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 accounted for the largest numbers of ambulatory visits among males and females (**Tables 2a, 2b, 3a, 3b**). For each of the three most frequently reported illness- or injury-specific diagnoses, the crude rate was at least 38% higher among

females than males: other/unspecified disorders of joints (rates [per 1,000 p-yrs], female: 743.2; male: 509.4; female:male rate ratio [RR]: 1.46); adjustment reaction (rates, female: 595.6; male: 358.7; RR: 1.38); and other/unspecified disorders of the back (rates, female: 665.1; male: 430.1; RR: 1.85) (**data not shown**). Other joint disorders, not elsewhere classified, anxiety disorders, dorsalgia, and adjustment 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 adjustment disorder) and four mental disorders among females (adjustment reaction, anxiety disorders, episodic mood disorders, and adjustment disorder) were among the 10 most frequently reported illness- or injury-specific diagnoses during ambulatory encounters (**Tables 2a, 2b, 3a, 3b**). Of note, “organic sleep disorders” was the fifth most frequent illness- or injury-specific primary diagnosis during ambulatory visits of males (**Tables 2a, 2b**).

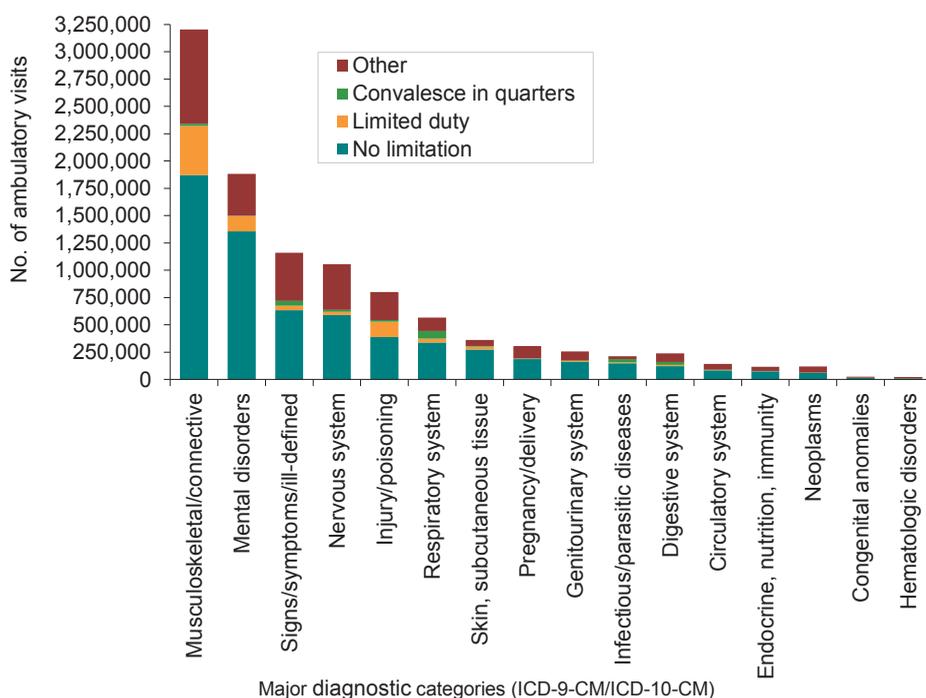
Across diagnostic categories, relationships between age and ambulatory visit rates were generally similar among males

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 10 or more times the rates among those younger than 20 years old; in contrast, clinic visit rates for infectious and parasitic diseases were lower among the oldest compared to the youngest service members. As in the past, clinic visit rates for disorders of the endocrine system, nutrition, and immunity; nervous system; and musculoskeletal system were found to rise more steeply with advancing age than most other categories of illness or injury, for which rates were relatively stable or only modestly increased.

Dispositions after ambulatory visits

Because disposition codes are assigned to ambulatory medical encounters that occur only at military treatment facilities (MTFs), the following metrics do not include outsourced care. Approximately 82.2% of all illness- and injury-related visits resulted in “no limitation” (i.e., duty without limitations) dispositions (**Figure 3**). Approximately one in 32 (3.2%) 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 (27.5%), diseases of the respiratory system (23.9%), diseases of the digestive system (22.1%), infectious and parasitic diseases (19.1%), and musculoskeletal system/connective tissue disorders (20.0%). Musculoskeletal system/connective tissue disorders (49.7%) accounted for nearly half of all “limited duty” dispositions, and injuries and poisonings (15.4%) and mental disorders (15.2%) together accounted for nearly one-third. Diseases of the respiratory system accounted for 29.8% of all “convalescence in quarters” dispositions—more than twice as many (n=72,470) as any other disease category, except signs, symptoms, and ill-defined conditions (18.1%) (**Figure 3**).

FIGURE 3. Ambulatory visits in relation to reported dispositions, by diagnostic category, active component, U.S. Armed Forces, 2015



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. In 2015, musculoskeletal system and mental disorders accounted for nearly one-half (48.6%) of all illness- and injury-related diagnoses documented on standardized records of ambulatory encounters. The 2015 number of visits for musculoskeletal disorders (n=3,203,568) is the highest annual count in the last 13 years. On the other hand, in 2015 the 1,882,735 visits for mental disorders is the lowest annual count since 2010, and represents a decrease of 11.6% since the peak year of 2012. It should be noted, however, that the rate of ambulatory visits for mental disorders have increased by 8.7% since 2011. In 2015, only three major categories showed increased numbers of visits compared to 2011, and two additional categories (mental disorders and skin disorders) showed rate increases, but not increases in visits, since 2011. Except as described, the annual numbers of visits and the rates for most of the major diagnostic categories of illness and injury have recently declined. This downward trend is likely due, in part, to the ongoing draw-down of military forces; for example, at the end of September 2015, there were almost 70,000 fewer military personnel than at the same time in 2013.²

During 2011–2015, the relative ranking of injuries and poisonings (rank: 6) as primary causes of ambulatory visits has been stable. However, the numbers and rates of visits for injuries and poisonings have declined by 16% and 9%, respectively, since 2011. Nevertheless, the potential military operational impacts of various conditions cannot be assessed by numbers of attributable ambulatory visits alone. For example, in 2015, injuries and poisonings accounted for approximately one of every 23 ambulatory visits overall, but, of ambulatory visits

occurring at MTFs, 17% (nearly one in six) had limited duty dispositions. Of particular note in relation to injuries and musculoskeletal conditions, in 2015 as in the past, joint and back injuries and other disorders accounted for large numbers of ambulatory visits and lost duty time; resources should be focused on preventing, treating, and rehabilitating back pain and injuries among active component members.

It should be noted that the summary data presented here using the major diagnostic categories of the ICD-9 and ICD-10 systems deserve more detailed examination, as presented in Tables 2a, 2b, 3a, and 3b. For example, the general category identified as “nervous system” encompasses diseases of the nervous system and the sense organs (eyes and ears). Tables 2a, 2b, 3a, and 3b indicate that the more common diagnoses in this category refer to sleep disorders, disorders of refraction and accommodation, pain disorders, and hearing loss. Closer scrutiny reveals that the overall increase in annual visits for this category from 2011 to 2015 (described above) can be attributed entirely to a rise in diagnoses of organic sleep disorders from 232,343 in 2011 to 351,037 in 2015.³

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 health-care 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.

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Surveillance Snapshot: Illness and Injury Burdens, Reserve Component, U.S. Armed Forces, 2015

FIGURE 1. Numbers of medical encounters,^a individuals affected,^b and hospital bed days, by burden of disease category,^c reserve component,^d U.S. Armed Forces, 2015

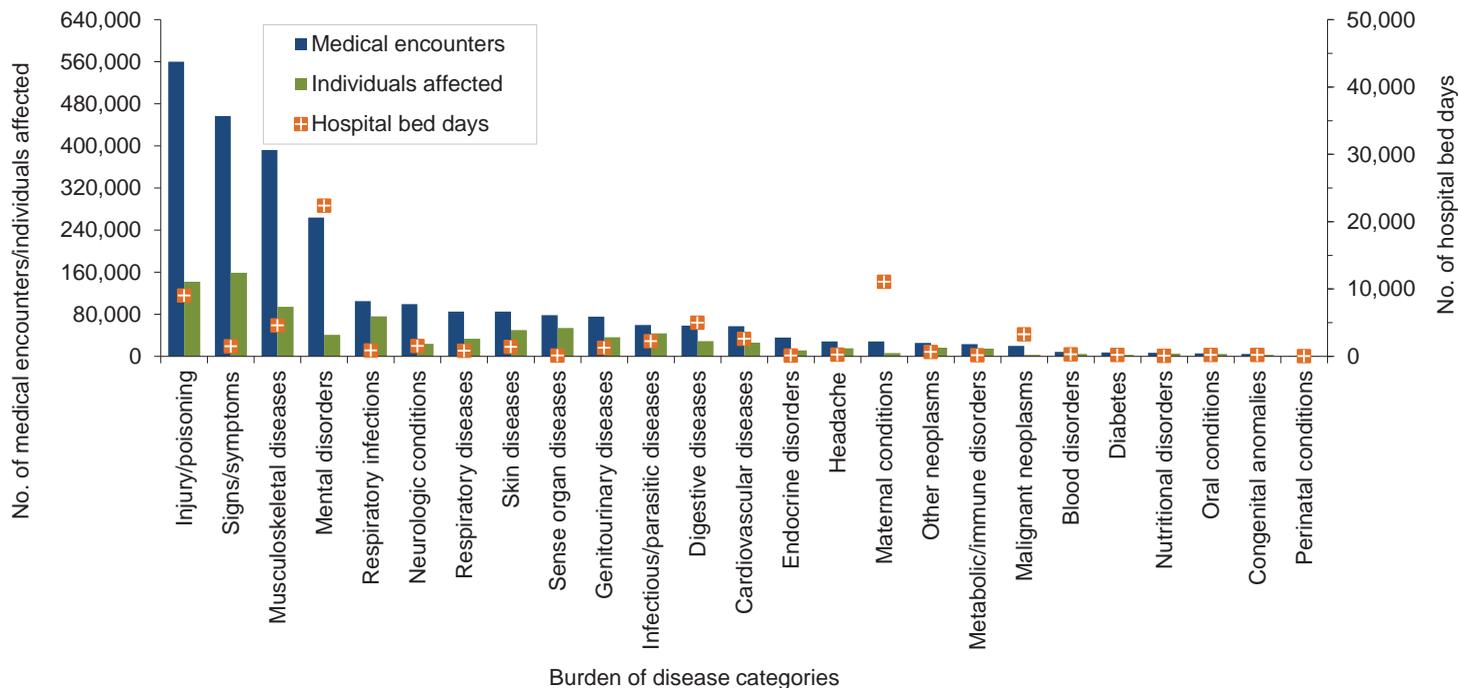


FIGURE 2. Percentages of medical encounters^a and hospital bed days,^b by burden of disease category,^c reserve component,^c U.S. Armed Forces, 2015

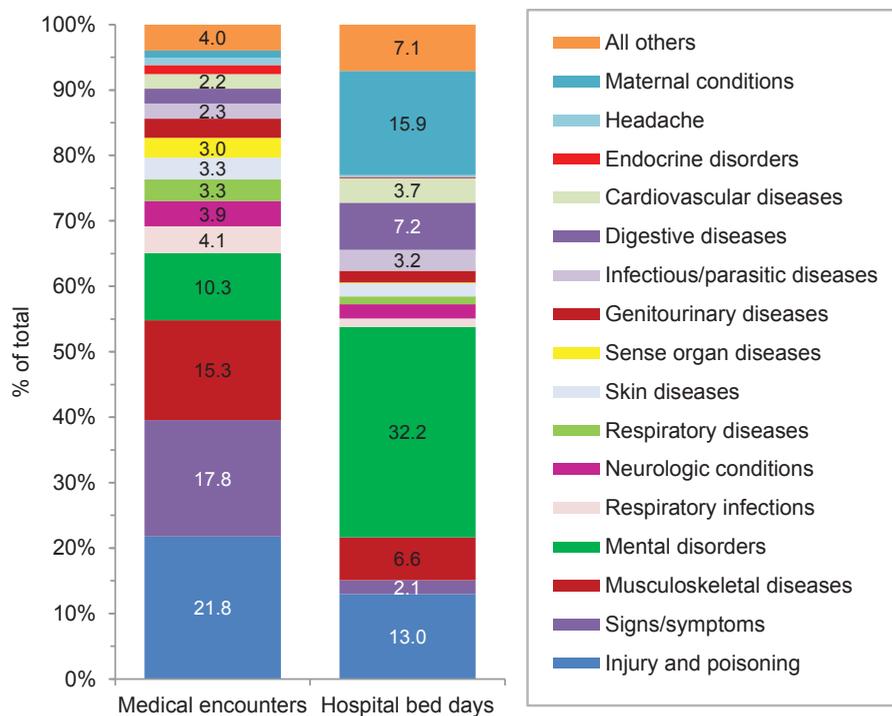
^aMedical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition)

^bIndividuals with at least one hospitalization or ambulatory visit for the condition

^cBurden of disease categories are the same as those used for analyses of morbidity burdens in the active component overall (see pp. 2–7).

^dThe reserve component is made up of reserve and guard members of each service.

**Does not include Coast Guard.*



Surveillance Snapshot: Illness and Injury Burdens, Recruit Trainees, Active Component, U.S. Armed Forces,* 2015

FIGURE 1. Numbers of medical encounters,^a individuals affected,^b and hospital bed days, by burden of disease category,^c recruit trainees,^d active component, U.S. Armed Forces, 2015

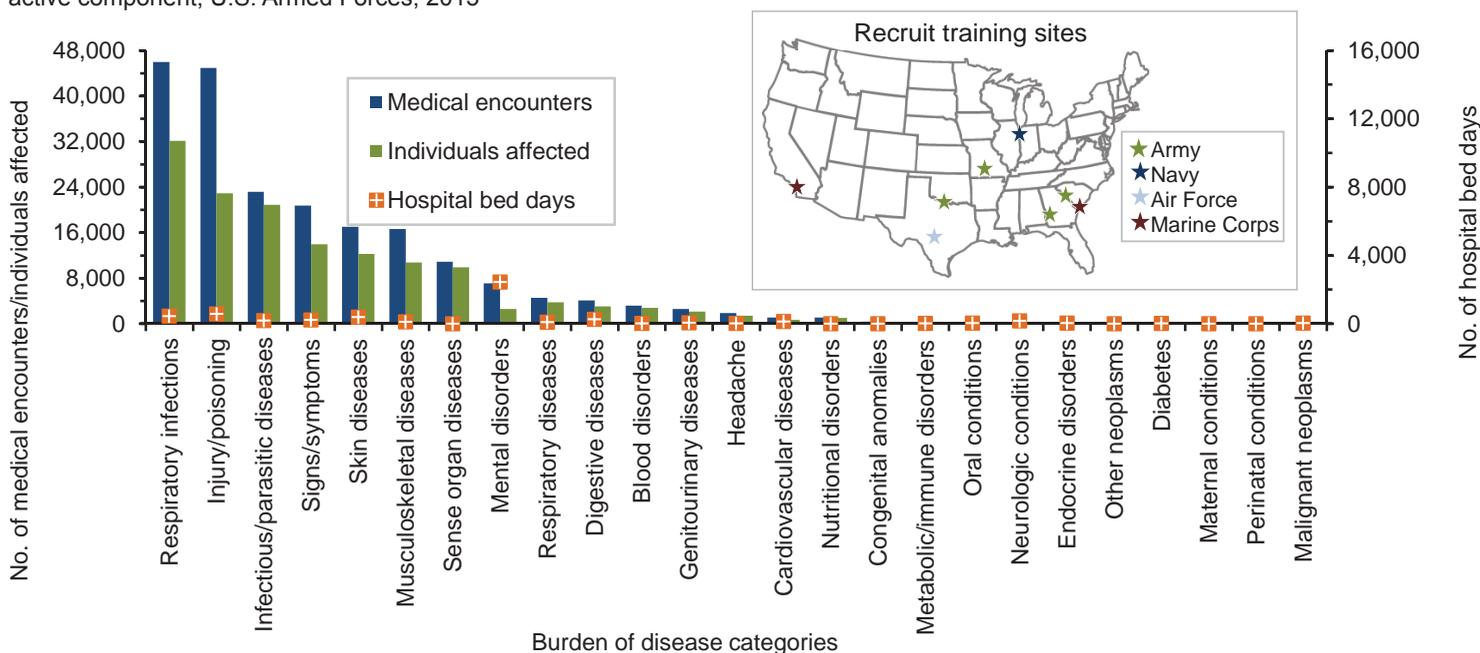
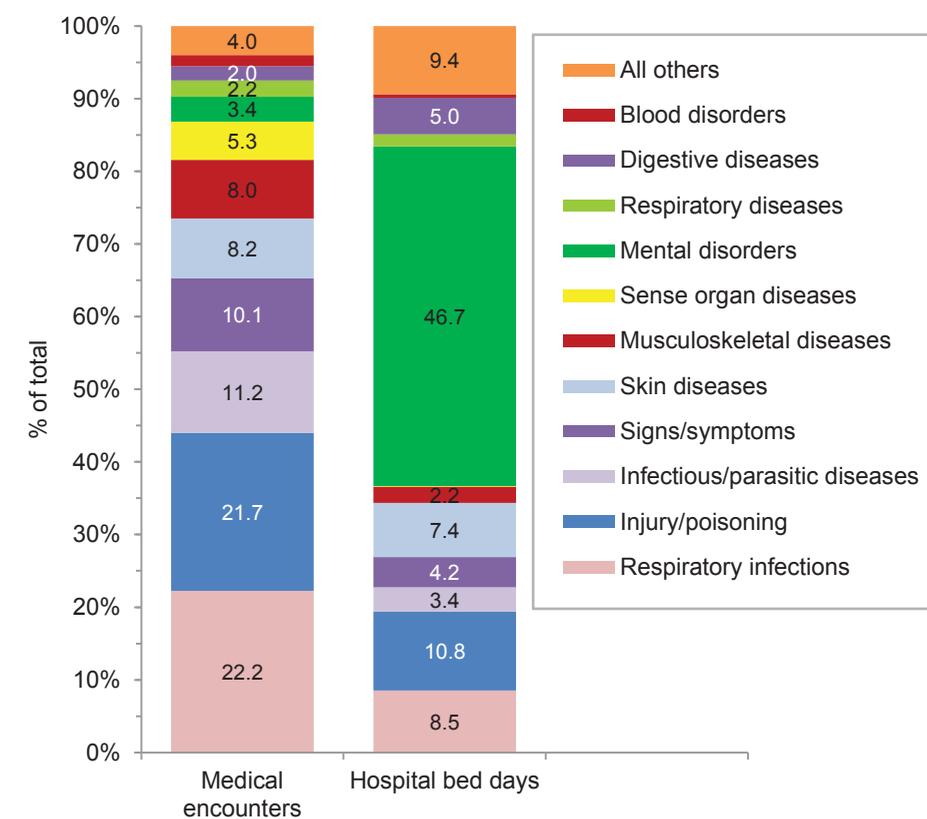


FIGURE 2. Percentages of medical encounters^a and hospital bed days,^b by burden of disease category,^c recruit trainees,^d active component, U.S. Armed Forces, 2015



^aMedical encounters: total hospitalizations and ambulatory visits for the condition (with no more than one encounter per individual per day per condition)

^bIndividuals with at least one hospitalization or ambulatory visit for the condition

^cBurden of disease categories are the same as those used for analyses of morbidity burdens in the active component overall (see pp. 2–7).

^dRecruit trainees are defined as active component members of the Army, Navy, Air Force, or Marine Corps with a rank of E1–E4 who served at one of the eight basic training locations (inset) during a service-specific training period following a first-ever personnel record. The data shown here are a subset of the active component data found on pp. 2–7.

*Does not include Coast Guard.

Absolute and Relative Morbidity Burdens Attributable to Various Illnesses and Injuries, Non-service Member Beneficiaries of the Military Health System, 2015

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 2015, there were approximately 1.8 million active component family members, 680,000 Guard/Reserve family members, and 5.4 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 2015, approximately 6.2 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 2015, there were more females (57%) than males (43%) and more infants, children, and adolescents (younger than 20 years old: n=1.6 million; 25.8%) and more seniors (aged 65 years or older: n=1.9 million; 30.4%) than younger (aged 20–44 years: n=1.2 million; 20.0%) or older (aged 45–64 years: n=1.5 million; 23.7%) 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. In 2014, for the first time and using similar methodology, the *MSMR* published a report that quantified the health

care for illnesses and injuries among non-service members in 2013.² This report is an update to provide a summary of care provided to non-service members in the MHS during calendar year 2015. 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 2015. The surveillance population included all non-service member beneficiaries of the MHS who had at least one hospitalization or outpatient medical encounter during 2015 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 or Tenth Revision, Clinical Modification (ICD-9-CM or ICD-10-CM) codes that indicate the natures of illnesses or injuries (i.e., ICD-9-CM codes 001–999, ICD-10-CM codes A00–T88). Nearly all records of encounters with first-listed diagnoses that were codes for “V- or Z-codes” [ICD-9 and ICD-10, respectively] (care other than for a current illness or injury, e.g., general medical examinations, after care, vaccinations) or “E- or V/W/X/Y-codes” [ICD-9 and ICD-10, respectively] (indicators of the external causes but not the natures of injuries) were excluded from analyses; however, encounters with primary diagnoses of V27.0 or Z37.0 [ICD-9 and ICD-10, respectively] “outcome of delivery, single liveborn” were retained.

For summary purposes, all illness- and injury-specific diagnoses (as defined

by the ICD-9 /ICD-10) were grouped into 142 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.³ The methodology for summarizing absolute and relative morbidity burdens is described on page 2 of this issue of the *MSMR*.

RESULTS

In 2015, a total of 6,181,980 non-service member beneficiaries of the MHS had 64,523,122 medical encounters (**Table 1**). Thus, on average, each individual who accessed care from the MHS had 10.4 medical encounters over the course of the year. The top three morbidity-related categories, which accounted for a little more than one-third of all medical encounters, were signs, symptoms, and ill-defined conditions (12.1%); musculoskeletal diseases (12.1%); and injuries and poisonings (9.9%) (**Figures 1a, 1b**). Signs, symptoms, and ill-defined conditions; injuries and poisonings; and disorders of the sense organs were the illness/injury categories that affected the most individuals (41.4%, 29.2%, and 27.5% of all beneficiaries who received any care, respectively).

Cardiovascular diseases accounted for more hospital bed days (n=742,854) than any other illness/injury category and 16.6% of all hospital bed days overall (**Figures 1a, 1b**). An additional 35.9% of all bed days were attributable to injuries and poisonings (11.0%), mental disorders (9.6%), musculoskeletal diseases (7.7%), and digestive diseases (7.6%).

Of note, maternal conditions (including pregnancy complications and delivery) accounted for relatively more hospital bed days (n=280,588; 6.3%) than individuals affected (n=150,074; 2.4% of all beneficiaries) (**Figure 1a**).

FIGURE 1a. Medical encounters, individuals affected, and hospital bed days, by burden of disease category, non-service member beneficiaries, 2015

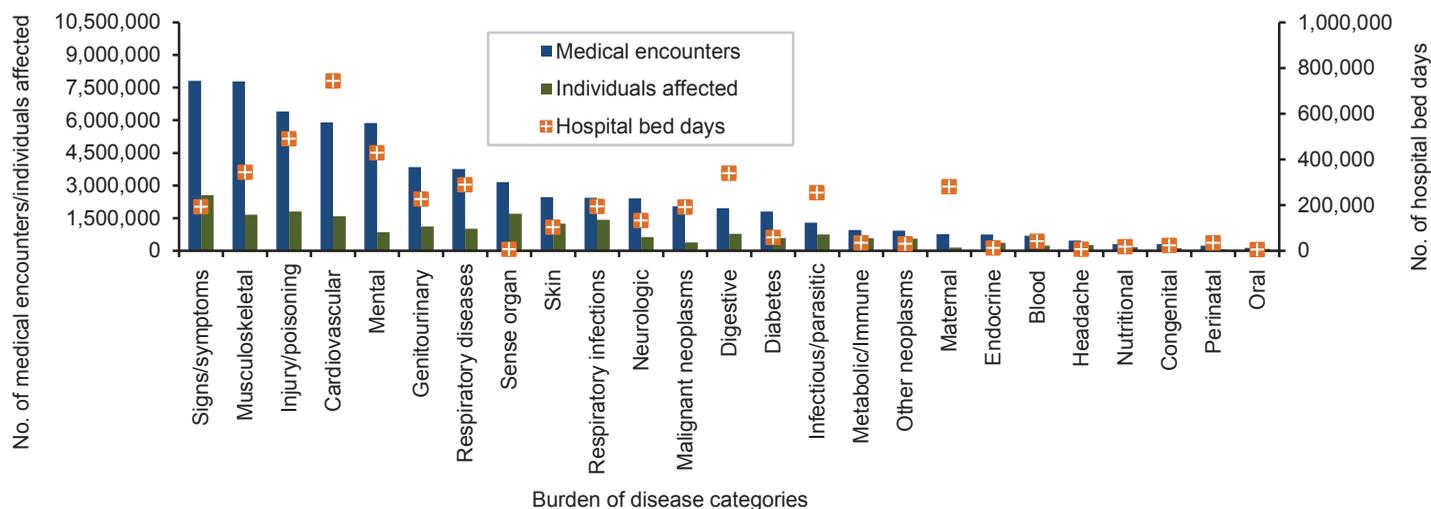


FIGURE 2a. Medical encounters, individuals affected, and hospital bed days, by burden of disease category, non-service member beneficiaries, direct care only, 2015

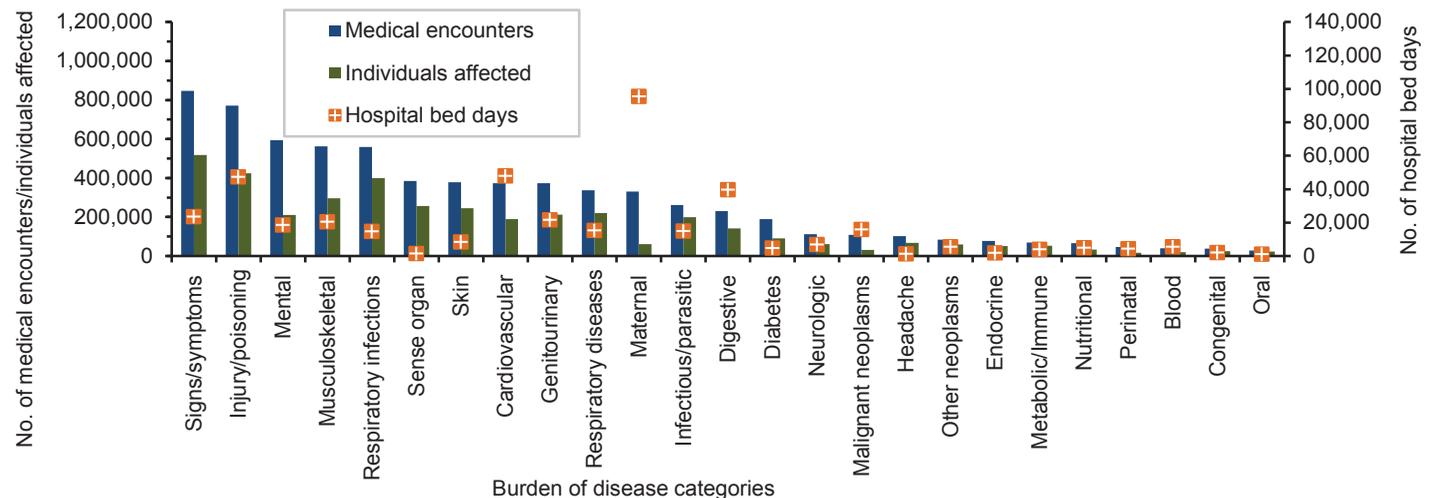


FIGURE 3a. Medical encounters, individuals affected, and hospital bed days, by burden of disease category, non-service member beneficiaries, outsourced care only, 2015

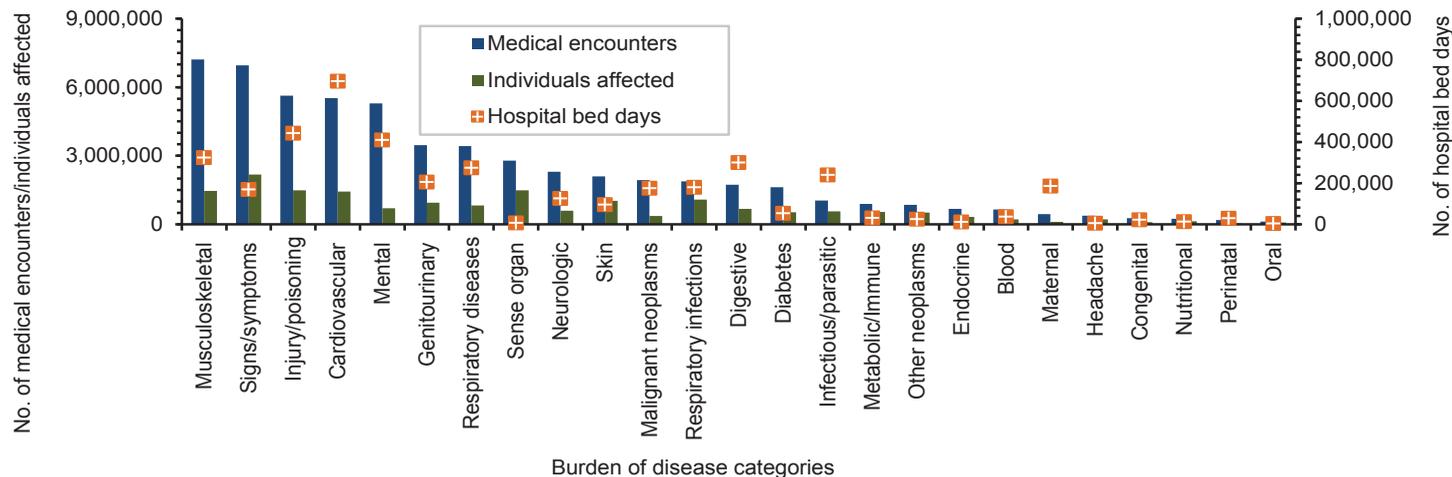


TABLE 1. Medical encounters, individuals affected, and hospital bed days, by source of care and age group, non-service member beneficiaries, 2015

	Medical encounters		Individuals affected		Hospital bed days		Medical encounters per individual affected
	No.	% total	No.	% total	No.	% total	
All non-service member beneficiaries	64,523,122	—	6,181,980	—	4,473,058	—	10.4
Source							
Direct care only	6,965,574	10.8	896,250	14.5	426,619	9.5	n/a
Outsourced care only	57,557,548	89.2	4,290,423	69.4	4,046,439	90.5	n/a
Direct and outsourced	n/a	n/a	995,307	16.1	n/a	n/a	n/a
Age group^a							
0–17 years	8,666,031	13.4	1,440,502	23.3	331,507	7.4	6.0
18–44 years	9,473,873	14.7	1,398,356	22.6	602,082	13.5	6.8
45–65 years	14,469,481	22.4	1,468,432	23.8	743,281	16.6	9.9
>65 years	31,913,736	49.5	1,881,766	30.4	2,796,186	62.5	17.0

^aSome ages were unknown, therefore the sum of all age groups may be less than the totals.

Direct care vs. outsourced care

In 2015, among non-service member beneficiaries, most medical encounters (89.2%) 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=4,290,423; 69.4%) than either military medical (direct) care only (n=896,250; 14.5%) or both outsourced and direct care (n=995,307; 16.1%). By far, most inpatient care (90.5% of all bed days) was received in

non-military facilities (outsourced).

The proportions of medical encounters by morbidity-related categories were broadly similar for direct and outsourced care (Figures 2a, 2b, 3a, 3b). However, encounters for respiratory infections and skin and subcutaneous tissue were relatively

FIGURE 1b. Percentages of medical encounters and hospital bed days, by burden of disease category, non-service member beneficiaries, 2015

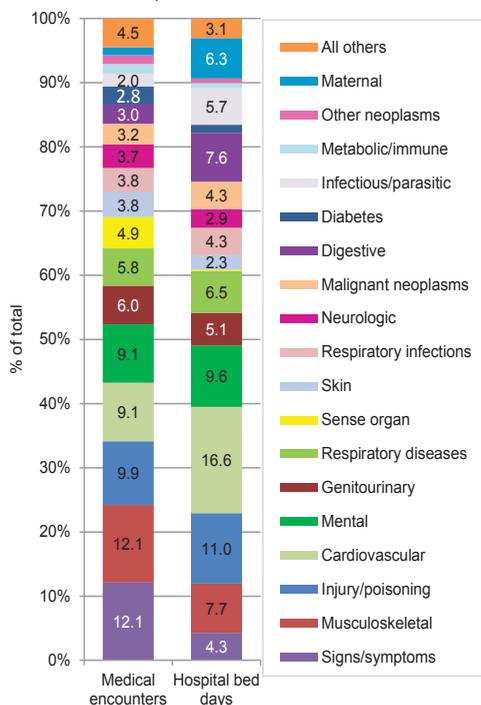


FIGURE 2b. Percentages of medical encounters and hospital bed days, by burden of disease category, non-service member beneficiaries, direct care only, 2015

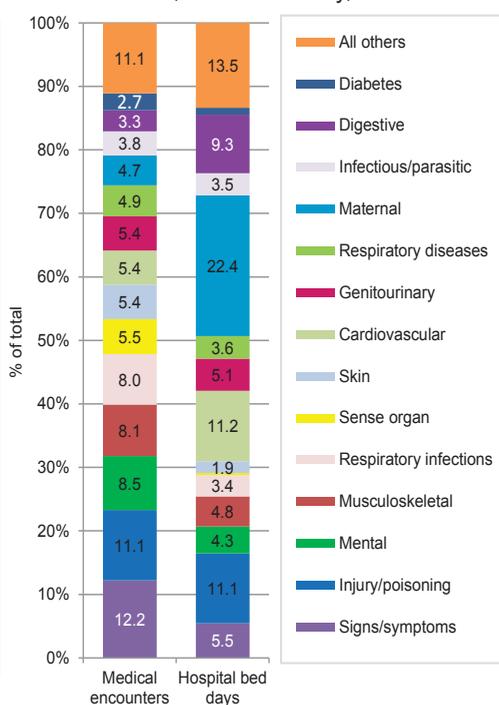
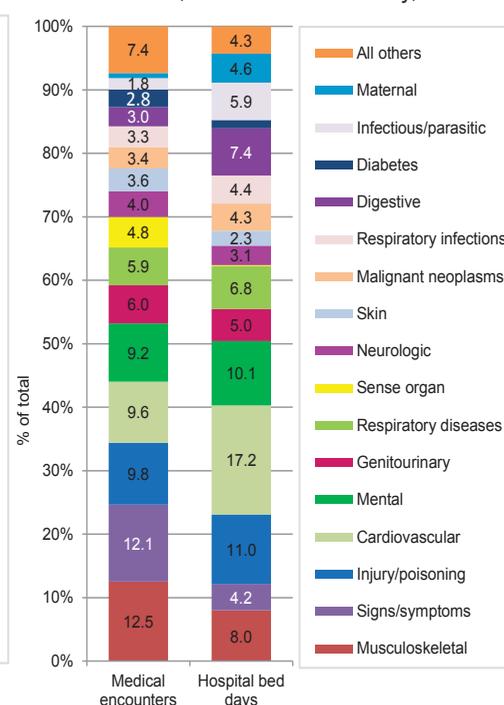


FIGURE 3b. Percentages of medical encounters and hospital bed days, by burden of disease category, non-service member beneficiaries, outsourced care only, 2015



more common during direct (8.0 % and 5.4%, respectively) than outsourced (3.3% and 3.6%, respectively) care encounters. Medical encounters for musculoskeletal diseases, cardiovascular diseases, neurologic disorders, and malignant neoplasms were relatively more common during outsourced (12.5%, 9.6%, 6.0%, and 3.4%, respectively) than direct (8.1%, 5.4%, 1.6%, and 1.6%, respectively) care encounters.

Maternal conditions accounted for 22.4% of all direct care bed days but only 4.6% 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 direct care bed days: cardiovascular, 17.2% vs. 11.2%; mental, 10.1% vs. 4.3%; musculoskeletal, 8.0% vs. 4.8%).

Pediatric beneficiaries (aged 0–17 years)

In 2015, pediatric beneficiaries accounted for 13.4% of all medical encounters, 23.3% of all individuals affected, and 7.4% of all hospital bed days (Table 1). On average, each affected individual had 6.0 medical encounters during the year.

Mental disorders accounted for 30.3% (n=2,622,432) of all medical encounters and 49.6% of all hospital bed days (n=164,273) among pediatric beneficiaries

FIGURE 4b. Percentages of medical encounters and hospital bed days, by burden of disease category, pediatric non-service member beneficiaries, aged 0–17 years, 2015

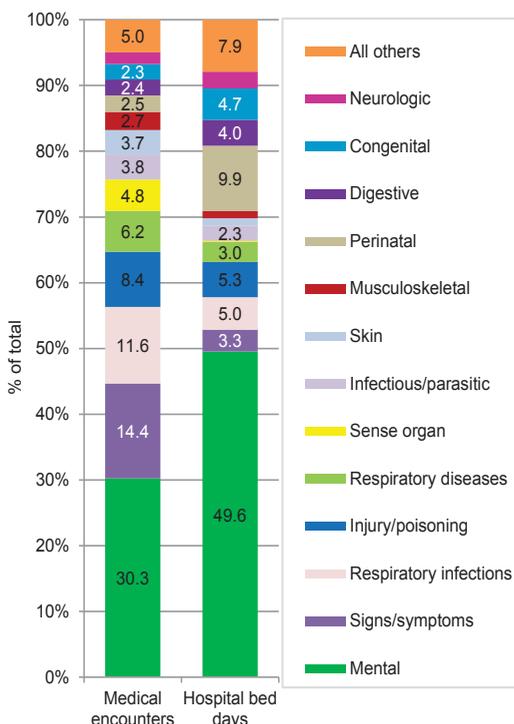
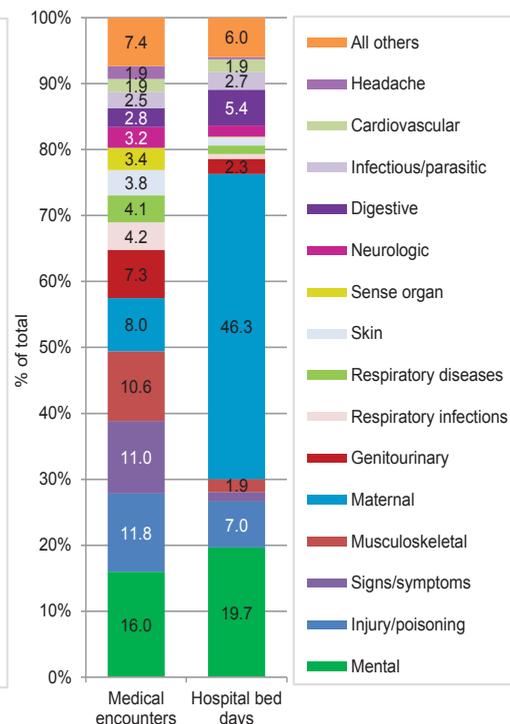


FIGURE 5b. Percentages of medical encounters and hospital bed days, by burden of disease category, non-service member beneficiaries, aged 18–44 years, 2015



(Figures 4a, 4b). On average, each pediatric beneficiary who was affected by a mental disorder had 11.4 mental disorder-related encounters during the year (data not shown). Close to two-thirds (65.4%) of all medical encounters for mental disorders

FIGURE 4c. Medical encounters, individuals affected, and hospital bed days, by mental disorders accounting for the most morbidity burden, pediatric non-service member beneficiaries, aged 0–17 years, 2015

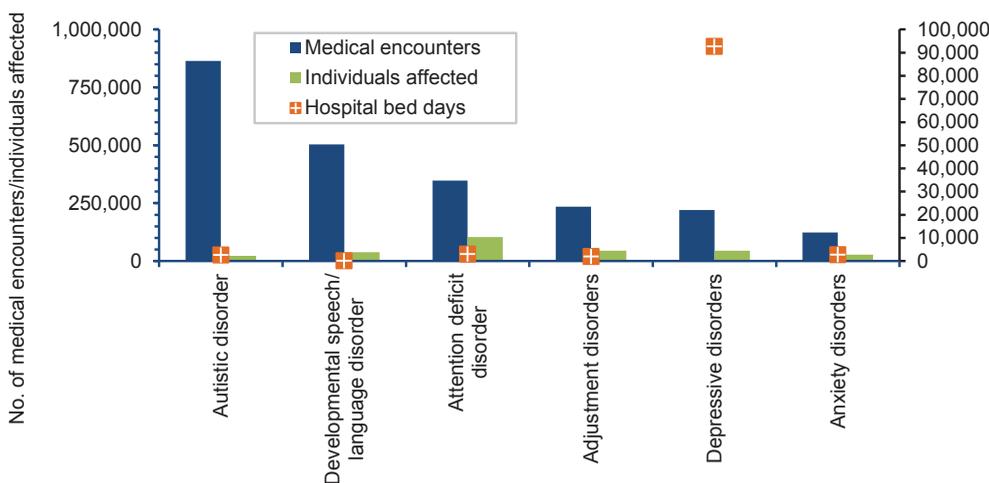
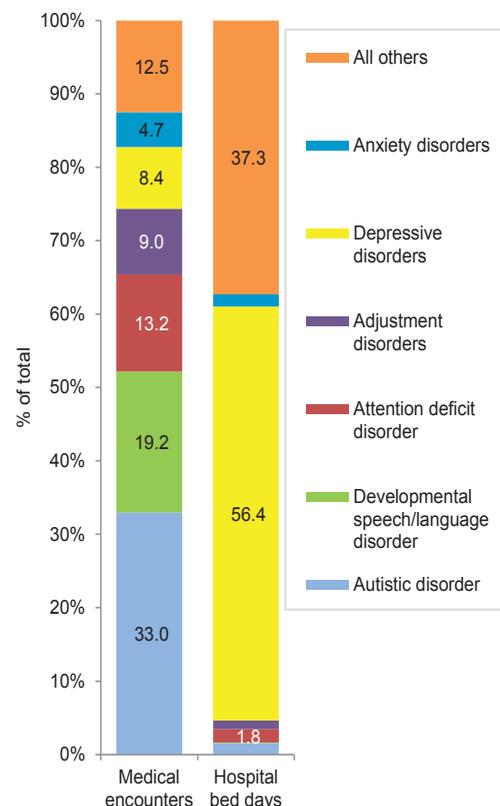


FIGURE 4d. Percentage of total mental disorders, pediatric non-service member beneficiaries, aged 0–17 years, 2015



among pediatric beneficiaries were for autistic disorders (33.0%), developmental speech/language disorders (19.2%), or attention deficit disorders (13.2%) (Figures 4c, 4d). On average, there were 39.4 autism-related encounters per individual affected with an autistic disorder and 13.4 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, a majority of mental disorder-related bed days were attributable to depressive disorders (56.4%), and 33.9% 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=32,928, 9.9%) (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 (10.9). 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).

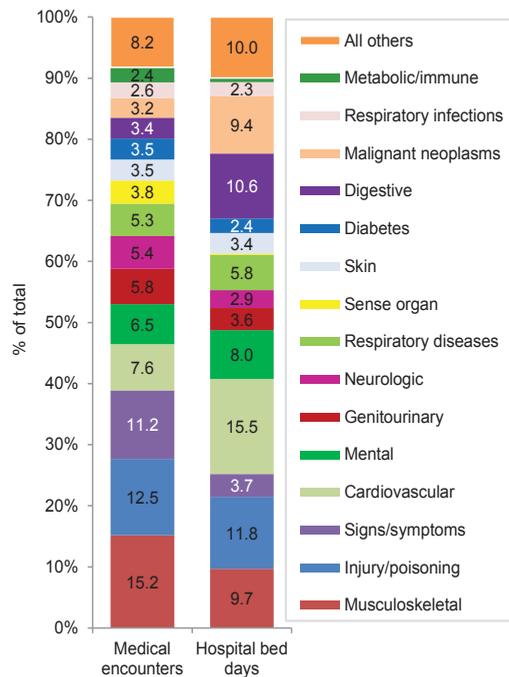
Finally, respiratory infections (including upper and lower respiratory infections and otitis media) accounted for relatively more medical encounters and bed days among pediatric beneficiaries (11.6% and 5.0%, respectively), compared to any older age group of beneficiaries (with the exception of beneficiaries aged 65 years or older in whom respiratory infections accounted for 5.6% of total bed days) (Figures 4b–7b).

Beneficiaries (aged 18–44 years)

In 2015, non-service member beneficiaries aged 18–44 years accounted for 14.7% 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 6.8 medical encounters during the year.

Among beneficiaries aged 18–44 years, the morbidity-related category that

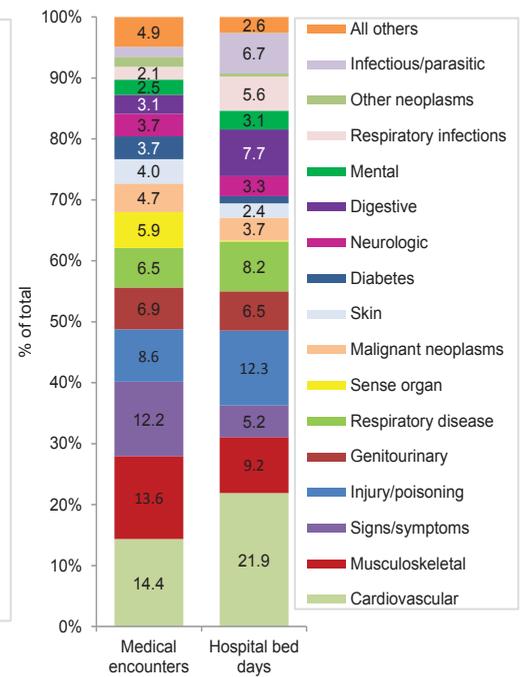
FIGURE 6b. Percentages of medical encounters and hospital bed days, by burden of disease category, non-service member beneficiaries, aged 45–64 years, 2015



accounted for the most medical encounters was mental disorders (n=1,514,873; 16.0% of all encounters) (Figures 5a, 5b). Among these adult beneficiaries, mental disorders accounted for 19.7% of all bed days, and on average, each adult affected by a mental disorder had 5.6 mental disorder-related encounters during the year. Mood disorders (37.2%), anxiety disorders (25.4%), and adjustment disorders (15.9%) accounted for close to four-fifths (78.5%) of all mental disorder-related medical encounters among beneficiaries aged 18–44 years (data not shown).

Among adults aged 18–44 years, maternal conditions accounted for almost half (46.3%) of all bed days and, on average, 5.1 medical encounters per affected individual (Figures 5a, 5b). Normal deliveries accounted for 37.2% of maternal condition-related medical encounters (data not shown). Adults aged 18–44 accounted for nearly all (99.2%) maternal condition-related bed days among beneficiaries not in military service. If morbidity burdens associated with maternal conditions were excluded from the overall analysis, 18- to

FIGURE 7b. Percentages of medical encounters and hospital bed days, by burden of disease category, non-service member beneficiaries, aged 65 years or older, 2015



44-year-olds and pediatric beneficiaries would account for similar percentages of total medical encounters (13.7% and 13.6%, respectively) and total bed days (7.7% and 7.9%, respectively) (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 (6.1). Of all malignant neoplasms, breast cancer accounted for the most malignant neoplasm-related encounters (25.2% of the total) (data not shown).

Beneficiaries (aged 45–65 years)

In 2015, non-service member beneficiaries aged 45–65 years accounted for 22.4% of all medical encounters, 23.8% of all individuals affected, and 16.6% of hospital bed days (Table 1). On average, each affected individual had 9.9 medical encounters during the year.

Of all morbidity-related categories, musculoskeletal diseases accounted for the most medical encounters (n=2,197,324; 15.2%) among older adult beneficiaries

FIGURE 4a. Medical encounters, individuals affected, and hospital bed days, by burden of disease category, pediatric non-service member beneficiaries, aged 0–17 years, 2015

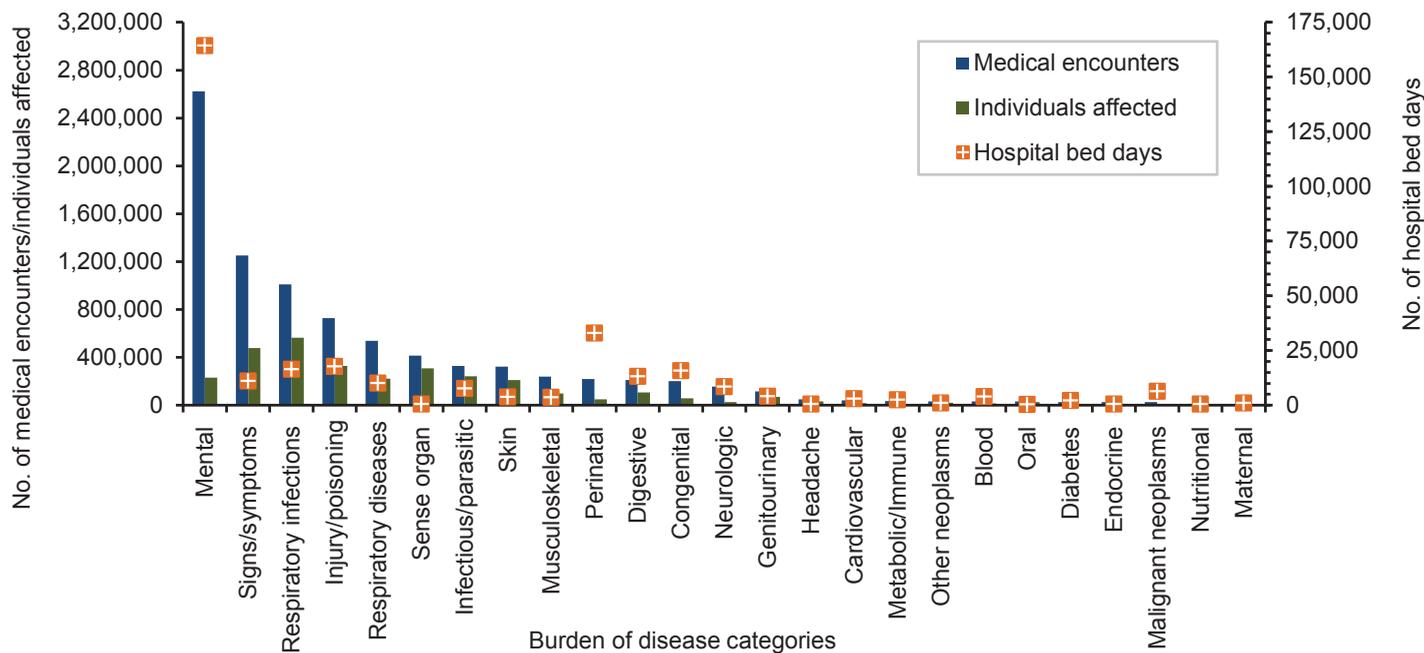
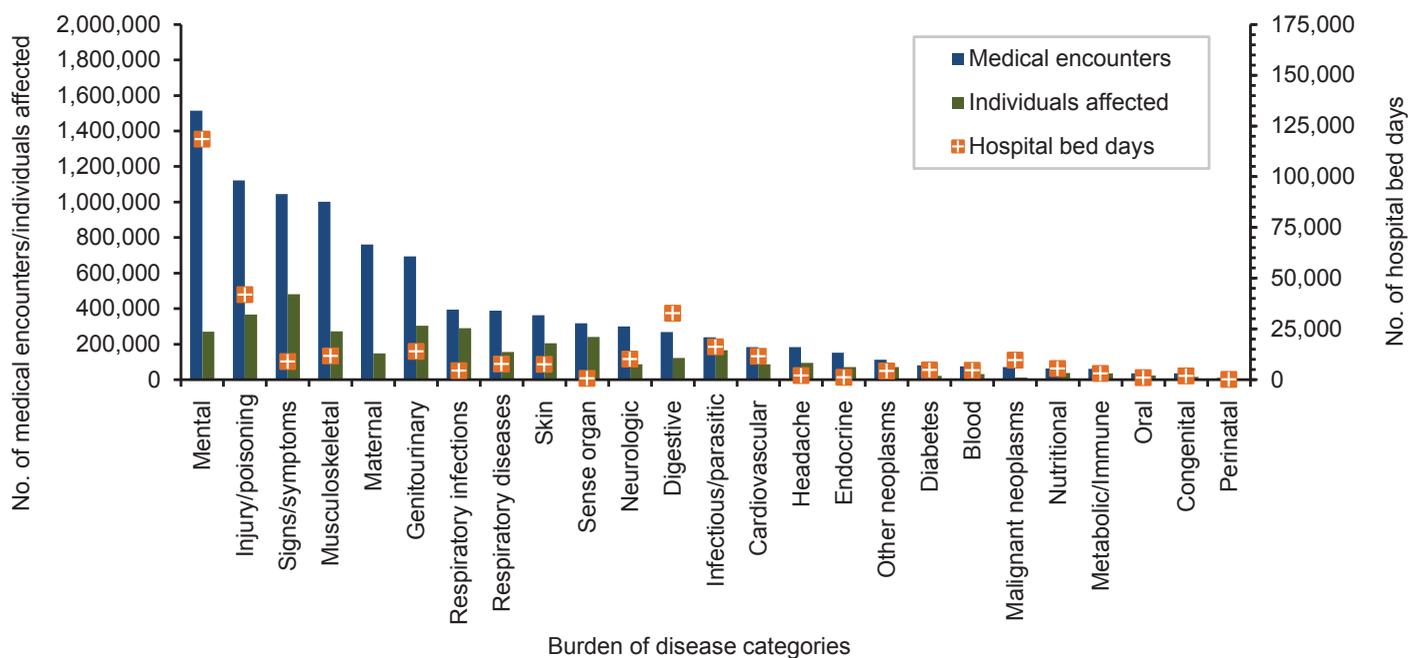


FIGURE 5a. Medical encounters, individuals affected, and hospital bed days, by burden of disease category, non-service member beneficiaries, aged 18–44 years, 2015



(Figures 6a, 6b). In addition, in this age group, back problems accounted for 42.9% of all musculoskeletal disease–related encounters (data not shown). Cardiovascular diseases accounted for more hospital bed days (15.5% of the total) than any other category of illnesses or injures; and cerebrovascular

disease and ischemic heart disease accounted for 24.8% and 21.5%, respectively, of all cardiovascular disease–related bed days (data not shown). Digestive diseases accounted for a larger percentage (10.6%) of total hospital bed days among this age group compared to the other age groups of beneficiaries.

The most medical encounters per affected individual were associated with malignant neoplasms (5.9), mental disorders (5.4), musculoskeletal diseases (4.4), maternal conditions (4.0), and injury/poisoning (3.9) (Figures 6a, 6b). Malignant neoplasms (9.4%) accounted for a larger

FIGURE 6a. Medical encounters, individuals affected, and hospital bed days, by burden of disease category, non-service member beneficiaries, aged 45–64 years, 2015

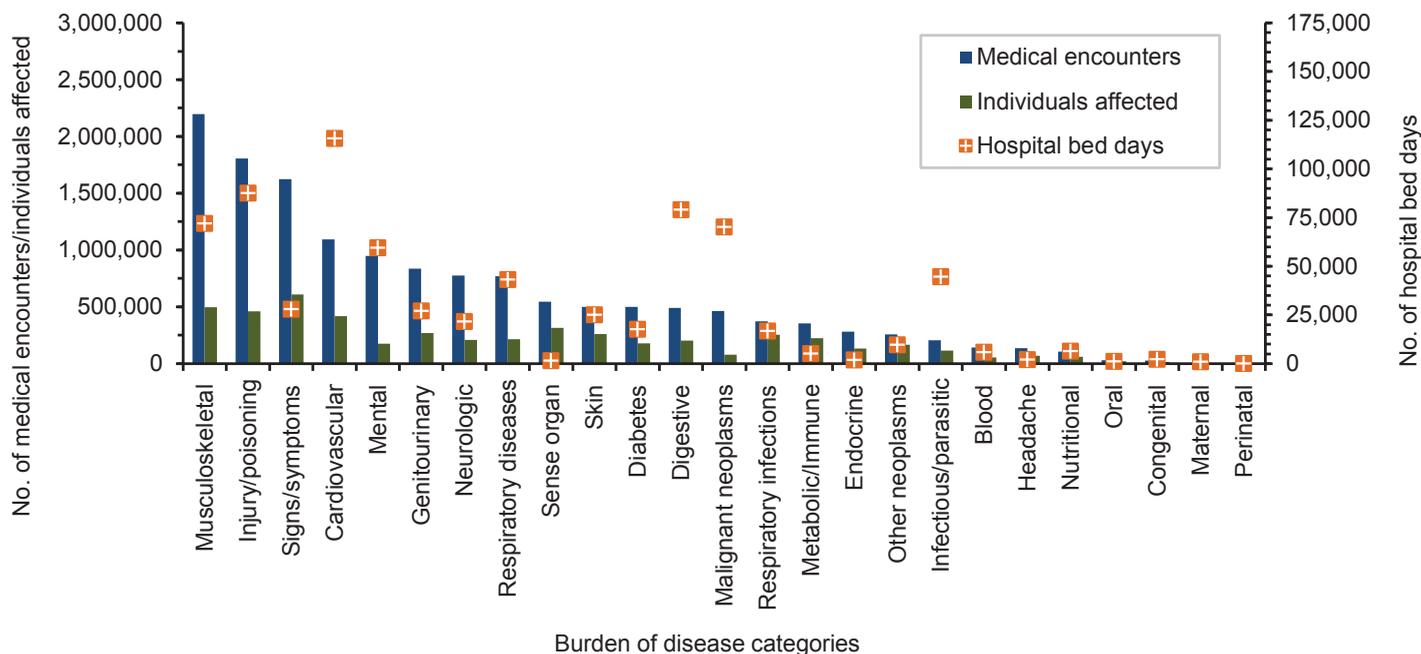
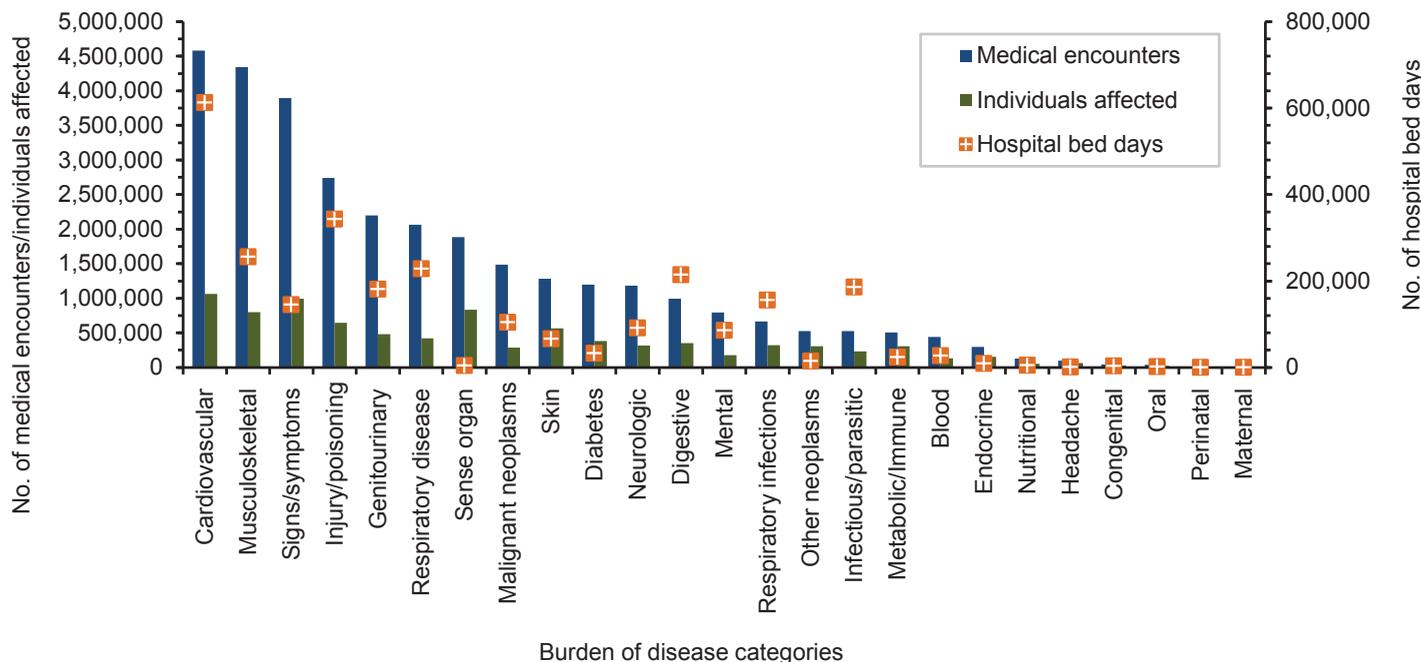


FIGURE 7a. Medical encounters, individuals affected, and hospital bed days, by burden of disease category, non-service member beneficiaries, aged 65 years or older, 2015



proportion of total bed days among beneficiaries aged 45–65 years than the other age groups of beneficiaries. Breast cancer accounted for nearly one-fourth (23.6%) of all malignant neoplasm-related encounters among older adult beneficiaries (data not shown).

Beneficiaries (aged 65 years or older)

In 2015, non-service member beneficiaries aged 65 years or older accounted for 49.5% of all medical encounters, 30.4% of all individuals affected, and 62.5% of hospital bed days (Table 1). On average,

each affected individual had 17.0 medical encounters during the year.

Of all morbidity-related categories, cardiovascular diseases accounted for the most medical encounters (n=4,582,100; 14.4%) and bed days (n=612,774; 21.9%) (Figures 7a, 7b). Essential hypertension (25.2%),

ischemic heart disease (15.4%), and cerebrovascular disease (9.9%) accounted for about half (50.5%) of all cardiovascular disease-related medical encounters; and cerebrovascular disease accounted for more than one-quarter (26.5%) 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 (5.4), malignant neoplasms (5.1), respiratory diseases (4.9), diseases of the genitourinary system (4.6), mental disorders (4.4), and cardiovascular diseases (4.3). In this age group, back problems (32.5%) accounted for nearly one-third of all musculoskeletal disease-related encounters. Together, melanomas and other skin cancers (17.3%); prostate cancer (14.9%); breast cancer (12.6%); and trachea, bronchus, and lung cancers (11.6%) accounted for more than half (56.5%) of all malignant neoplasm-related encounters (**data not shown**). Chronic obstructive pulmonary disease (COPD) accounted for more than 40% of all medical encounters (44.3%) and bed days (40.2%) attributable to respiratory diseases (data not shown).

Infectious and parasitic diseases (6.7%) accounted for a larger proportion of total bed days among the oldest compared to the other age groups of beneficiaries (**Figures 7a, 7b**). In contrast, mental disorders accounted for smaller percentages of medical encounters (2.5%) and bed days (3.1%) among the oldest compared to the younger age groups.

EDITORIAL COMMENT

This report describes the third estimate of overall morbidity burdens among non-service member beneficiaries of the MHS. The report notes that a large majority of the healthcare services for current illness and injury (excluding encounters with diagnoses identified by “V or Z” codes) 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 (49.5%) and a majority (62.5%) of all hospital bed days delivered to beneficiaries not currently in military service.

In 2015, mental disorders accounted for the largest proportions of the morbidity and healthcare burdens that affected the pediatric (aged 0–17 years) and young adult (aged 18–44 years) beneficiary age groups. Among pediatric beneficiaries, 65.4% 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, 39.4 autism-related encounters each during the 1-year surveillance period.

As among pediatric beneficiaries, among young 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) (16.0%) compared to pediatric (30.3%) 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 child-bearing age.

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 accounted for the most 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 older segment of the MHS beneficiary population.

However, many of 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 may be preventable and their disabling or life-threatening long-term consequences may be 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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