Absolute and Relative Morbidity Burdens Attributable to Various Illnesses and Injuries, Active Component, U.S. Armed Forces, 2018

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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. 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 shapes 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 active component of the U.S. Armed Forces in 2018.

METHODS

The surveillance period was 1 January through 31 December 2018. The surveillance population included all individuals who served in the active component of the U.S. Army, Navy, Air Force, or Marine Corps at any time during the surveillance period. All data used in this analysis were derived from records routinely maintained in the Defense Medical Surveillance System (DMSS). These records document both ambulatory encounters and hospitalizations of active component members of the U.S. Armed Forces in fixed military and civilian (if reimbursed through the Military Health System [MHS]) treatment facilities worldwide.

For this analysis, DMSS data for all inpatient and outpatient medical encounters of all active component members during 2018 were summarized according to the primary (first-listed) diagnosis (if reported with an International Classification of Diseases, 10th Revision, Clinical Modification [ICD-10-CM] code between A00 and T88, an ICD-10 code beginning with Z37, or Department of Defense [DoD] unique personal history codes DOD0101–DOD0105). For summary purposes, all illness- and injury-specific diagnoses (as defined by the 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. In this analysis, some diagnoses that are grouped into single categories in the GBD system (e.g., mental health 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.

WHAT ARE THE NEW FINDINGS?

As in prior years, musculoskeletal disorders, injuries, mental health disorders, and pregnancy-related conditions accounted for relatively large proportions of the morbidity and healthcare burdens among active component service members. Injuries accounted for the largest percentage of medical encounters and individuals affected, and mental health disorders accounted for the largest number of hospital bed days.

WHAT IS THE IMPACT ON READINESS AND FORCE HEALTH PROTECTION?

Injuries, musculoskeletal disorders, and mental health disorders are major detractors from service members' individual readiness and deployability and can lead to early separation and disability. Reducing their impact on force readiness can be accomplished through enhanced measures to prevent and treat the occurrence of such disorders.

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 1 encounter per individual per condition per day), numbers of service members affected by each condition (i.e., individuals with at least 1 medical encounter for the condition during the year), and total bed days during hospitalizations for each condition.

The new electronic health record for the MHS, MHS GENESIS, was implemented at several military treatment facilities during 2017. Medical data from sites that are using MHS GENESIS are not available in DMSS. These sites include Naval Hospital Oak Harbor, Naval Hospital Bremerton, Air Force Medical Services Fairchild, and Madigan Army Medical Center. Therefore, medical encounters for individuals seeking care at any of these facilities during 2018 were not included in this analysis.

Morbidity burden, by category

In 2018, more service members (n=522,854) 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=2,703,799) than any other morbidity category and one-quarter (25.4%) of all medical encounters overall.

Mental health disorders accounted for more hospital bed days (n=163,652) than any other morbidity category and 48.9% of all hospital bed days overall **(Figures 1a, 1b)**. Together, injury/poisoning and mental health disorders accounted for nearly three-fifths (59.9%) of all hospital bed days and more than two-fifths (41.9%) 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=52,939; 15.8%) but a much smaller proportion of medical encounters overall (n=174,185; 1.6%) **(Figures 1a, 1b)**. Routine prenatal visits are not included in this summary.

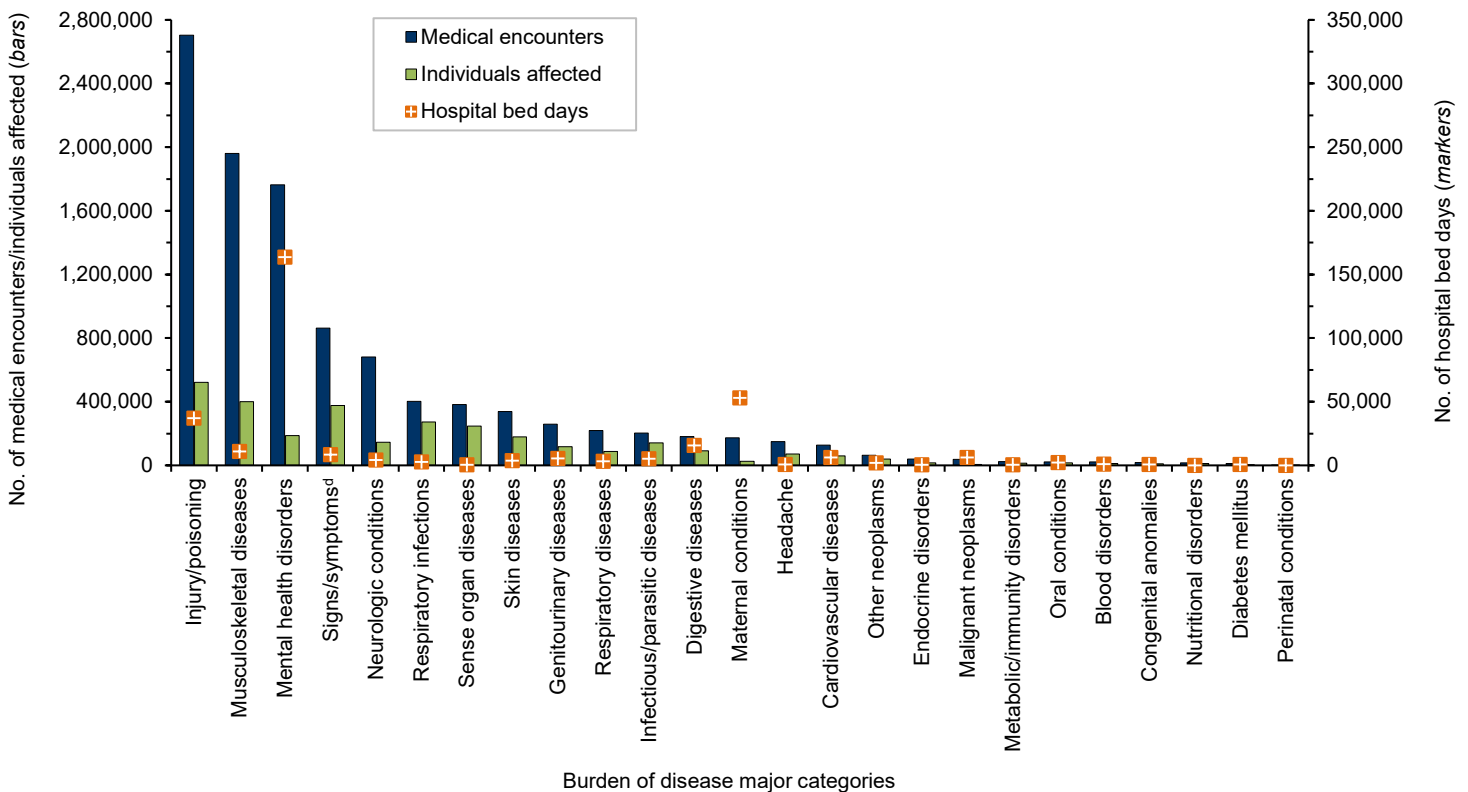## Medical encounters, by condition

In 2018, the 3 burden of disease-related conditions that accounted for the most medical encounters (i.e., other back problems, all other musculoskeletal diseases, and knee injuries) accounted for almost one-quarter (24.5%) of all illness- and injury-related medical encounters overall **(Figure 2)**. Moreover, the 9 conditions that accounted for the most medical encounters were responsible for more than half (53.0%) 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 problems), anatomic site-defined injuries (e.g., injuries of the knee, arm/shoulder, or foot/ankle), and mental health disorders (e.g., adjustment disorders, anxiety disorders, or mood disorders) **(Table, Figure 2)**.

Individuals affected, by condition

In 2018, more service members received medical care for "all other musculoskeletal diseases" than for any other specific condition **(Table)**. Of the 10 conditions that affected the most service members, 3 were anatomic site-defined injuries (injuries of the knee, foot/ankle, and arm/shoulder), 2 were musculoskeletal diseases (all other musculoskeletal diseases and other back problems), 2 were signs and symptoms (all other signs

FIGURE 1a. Numbers of medical encounters,[a] individuals affected,[b] and hospital bed days, by burden of disease major category,[c] active component, U.S. Armed Forces, 2018

[a]Medical encounters include total hospitalizations and ambulatory visits for the condition (with no more than 1 encounter per individual per day per condition).
[b]Individuals with at least 1 hospitalization or ambulatory visit for the condition.
[c]Burden of disease major categories based on a modified version of those defined in the Global Burden of Disease Study.[1]
[d]Includes ill-defined conditions.
No., number.

FIGURE 1b. Percentages of medical encounters[a] and hospital bed days, attributable to burden of disease major categories,[b] active component, U.S. Armed Forces, 2018

[a]Medical encounters include total hospitalizations and ambulatory visits for the condition (with no more than 1 encounter per individual per day per condition).
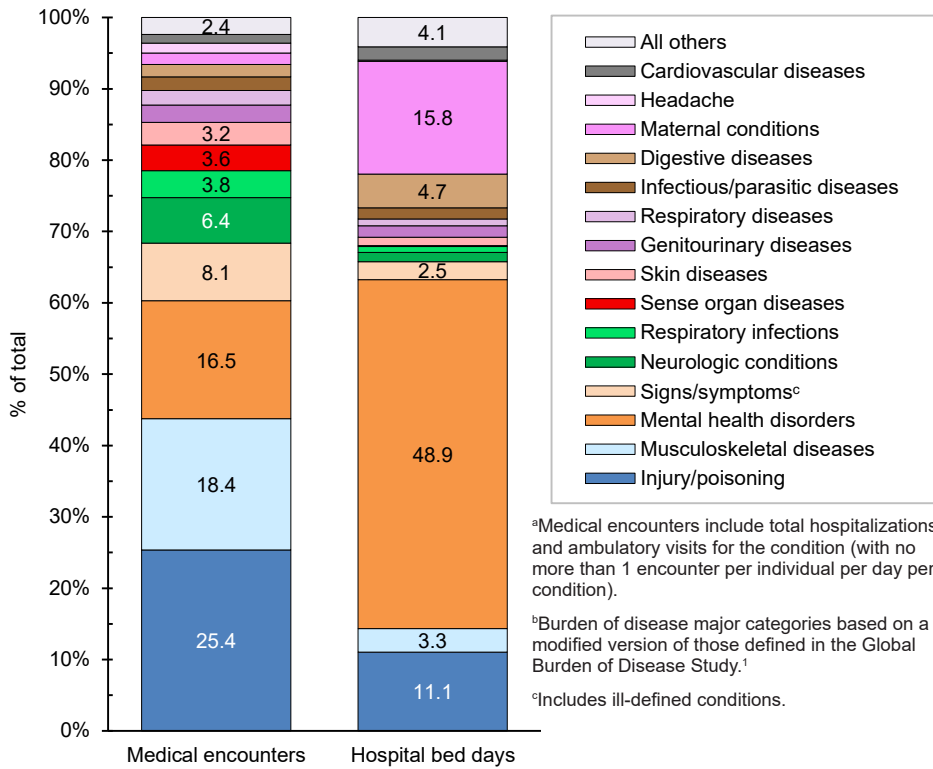
[b]Burden of disease major categories based on a modified version of those defined in the Global Burden of Disease Study.[1]

[c]Includes ill-defined conditions.

and symptoms and abdomen and pelvis), 1 was a respiratory infection-related condition (upper respiratory infections), 1 was a sense organ disease (refraction/accommodation), and 1 was a skin disease-related condition (all other skin diseases).

Hospital bed days, by condition

In 2018, mood and substance abuse disorders accounted for more than one-quarter (29.3%) of all hospital bed days. Together, 4 mental health disorders (mood, substance abuse, adjustment, and anxiety) and 2 maternal conditions (pregnancy complications and delivery) accounted for more than half (58.8%) of all hospital bed days **(Table, Figure 3)**. Approximately one-ninth (11.1%) 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

FIGURE 2. Percentage and cumulative percentage distribution, burden of disease-related conditions[a] that accounted for the most medical encounters, active component, U.S. Armed Forces, 2018
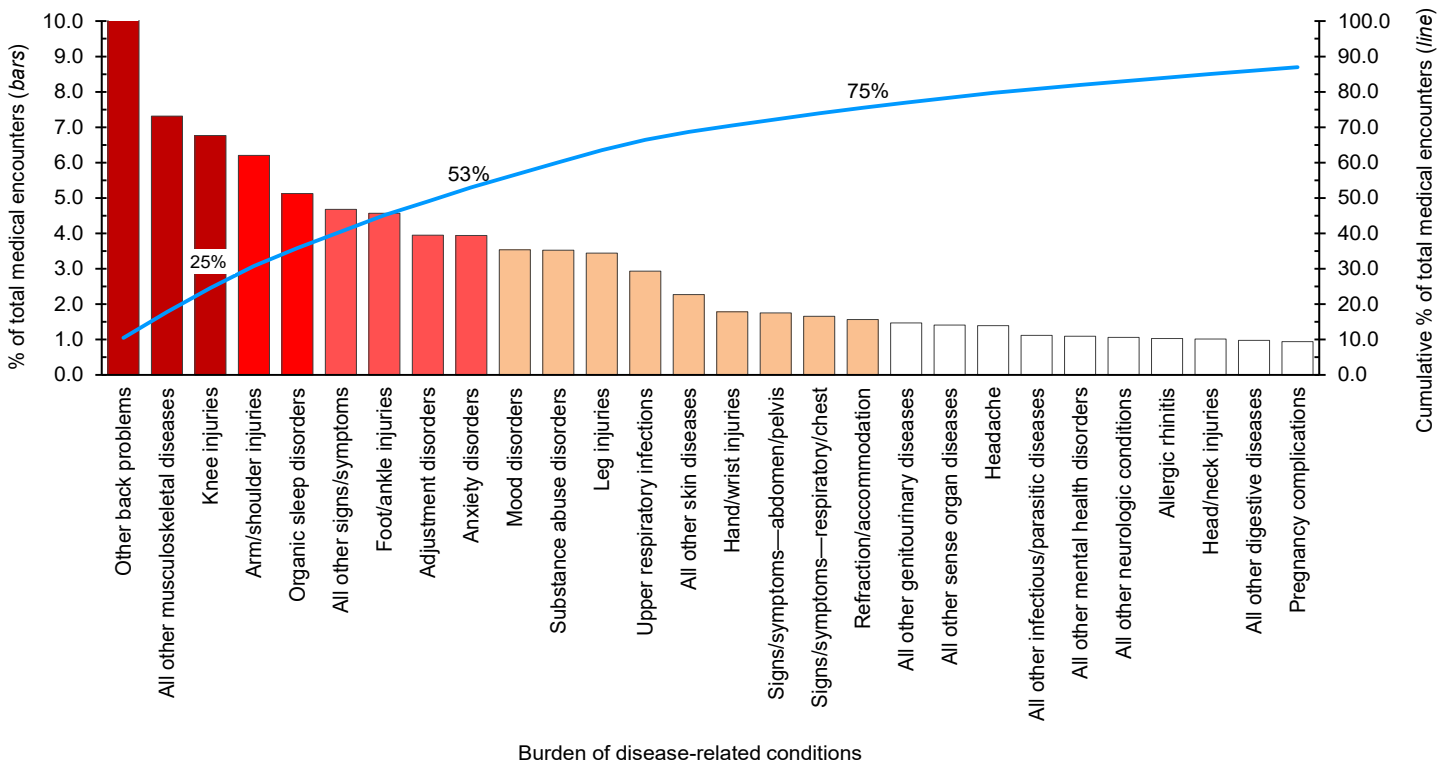
[a]Burden of disease-related conditions based on a modified version of those defined in the Global Burden of Disease Study.[1]

TABLE. Healthcare burdens attributable to various diseases and injuries, U.S. Armed Forces, 2018

Major category condition[a]	Medical encounters[b]		Individuals affected[c]		Bed days	
	No.	Rank[d]	No.	Rank[d]	No.	Rank[d]
Injury and poisoning						
Knee injuries	721,412	(3)	150,477	(5)	1,137	(37)
Arm and shoulder injuries	661,439	(4)	129,885	(9)	2,638	(24)
Foot and ankle injuries	487,036	(7)	140,098	(6)	1,910	(30)
Leg injuries	367,002	(12)	97,037	(13)	5,248	(13)
Hand and wrist injuries	190,125	(15)	73,760	(18)	1,091	(39)
Head and neck injuries	108,123	(26)	52,064	(22)	9,911	(7)
Back and abdomen injuries	49,378	(34)	30,218	(33)	4,149	(17)
Other injury from external causes	31,443	(42)	15,450	(45)	381	(66)
Other complications NOS	30,809	(44)	17,489	(44)	5,706	(11)
Environmental	26,217	(48)	19,604	(40)	1,134	(38)
Unspecified injury	16,893	(56)	12,010	(52)	549	(55)
Poisoning, nondrug	4,783	(92)	3,491	(78)	324	(70)
Poisoning, drugs	3,565	(97)	2,006	(90)	2,624	(25)
All other injury	3,349	(99)	2,772	(85)	135	(85)
Other burns	1,381	(111)	648	(104)	101	(91)
Other superficial injury	823	(119)	626	(106)	0	(135)
Underdosing	21	(142)	18	(141)	0	(135)
Musculoskeletal diseases						
Other back problems	1,115,456	(1)	226,435	(4)	5,175	(14)
All other musculoskeletal diseases	779,825	(2)	242,952	(1)	4,248	(15)
Osteoarthritis	39,012	(39)	18,212	(43)	1,002	(43)
Other knee disorders	12,887	(61)	5,440	(68)	467	(62)
Other shoulder disorders	10,891	(67)	4,687	(71)	131	(87)
Rheumatoid arthritis	2,990	(101)	1,068	(98)	12	(122)
Mental health disorders						
Adjustment disorders	421,034	(8)	83,800	(16)	34,953	(3)
Anxiety disorders	420,138	(9)	62,190	(20)	17,761	(6)
Mood disorders	376,990	(10)	46,353	(23)	51,623	(1)
Substance abuse disorders	375,764	(11)	29,134	(35)	46,423	(2)
All other mental health disorders	116,518	(23)	41,933	(24)	3,559	(20)
Personality disorders	18,646	(54)	3,012	(83)	2,315	(26)
Psychotic disorders	17,948	(55)	1,864	(91)	6,473	(9)
Somatoform disorders	8,198	(76)	2,215	(89)	506	(57)
Tobacco dependence	7,924	(78)	5,429	(69)	39	(111)
Signs and symptoms						
All other signs and symptoms	498,826	(6)	240,132	(2)	6,452	(10)
Abdomen and pelvis	186,805	(16)	117,838	(10)	1,008	(41)
Respiratory and chest	176,605	(17)	108,304	(12)	1,047	(40)
Neurologic conditions						
Organic sleep disorders	546,433	(5)	114,336	(11)	289	(73)
All other neurologic conditions	113,050	(24)	39,433	(27)	3,046	(22)
Other mononeuritis—upper and lower limbs	12,699	(62)	6,531	(64)	14	(121)
Epilepsy	5,438	(89)	1,655	(95)	735	(48)
Multiple sclerosis	2,704	(103)	504	(111)	184	(76)
Parkinson disease	277	(130)	64	(129)	10	(123)

Major category condition[a]	Medical encounters[b]		Individuals affected[c]		Bed days	
	No.	Rank[d]	No.	Rank[d]	No.	Rank[d]
Respiratory infections						
Upper respiratory infections	312,664	(13)	231,797	(3)	536	(56)
Lower respiratory infections	63,339	(30)	41,900	(25)	2,222	(28)
Otitis media	26,518	(47)	20,964	(39)	38	(112)
Sense organ diseases						
Refraction/accommodation	166,841	(18)	138,905	(7)	0	(135)
All other sense organ diseases	150,205	(20)	94,426	(14)	492	(59)
Hearing disorders	53,160	(33)	33,731	(30)	17	(120)
Glaucoma	11,375	(65)	7,272	(62)	0	(135)
Cataracts	1,255	(112)	662	(103)	3	(129)
Skin diseases						
All other skin diseases	242,015	(14)	135,491	(8)	3,725	(19)
Sebaceous gland diseases	56,821	(32)	32,299	(32)	10	(123)
Contact dermatitis	40,144	(38)	29,525	(34)	61	(101)
Genitourinary diseases						
All other genitourinary diseases	156,621	(19)	84,590	(15)	2,102	(29)
Female genital pain	32,192	(41)	15,309	(46)	112	(88)
Menstrual disorders	22,466	(49)	14,788	(49)	560	(54)
Other breast disorders	18,725	(53)	10,460	(54)	364	(68)
Kidney stones	14,866	(59)	6,243	(65)	586	(53)
Nephritis and nephrosis	10,409	(71)	4,090	(75)	1,655	(32)
Benign prostatic hypertrophy	2,873	(102)	1,850	(92)	23	(116)
Respiratory diseases						
Allergic rhinitis	109,619	(25)	40,578	(26)	2	(130)
All other respiratory diseases	62,893	(31)	36,024	(29)	2,712	(23)
Asthma	29,022	(46)	12,615	(50)	306	(71)
Chronic sinusitis	11,521	(64)	6,556	(63)	96	(93)
Chronic obstructive pulmonary disease	5,367	(90)	4,611	(72)	110	(89)
Infectious and parasitic diseases						
All other infectious and parasitic diseases	119,128	(22)	82,493	(17)	4,075	(18)
Diarrheal diseases	44,569	(36)	37,596	(28)	757	(47)
Unspecified viral infection	16,213	(57)	15,003	(48)	109	(90)
STDs (excluding chlamydia)	10,894	(66)	7,765	(61)	61	(101)
Chlamydia	9,215	(74)	8,144	(59)	25	(115)
Tuberculosis	2,154	(106)	780	(102)	83	(95)
Hepatitis B and C	1,046	(117)	524	(109)	0	(135)
Intestinal nematode infection	259	(131)	235	(122)	0	(135)
Malaria	209	(132)	65	(128)	81	(96)
Tropical cluster	143	(137)	49	(132)	33	(113)
Bacterial meningitis	115	(140)	37	(135)	77	(97)
Digestive diseases						
All other digestive diseases	104,065	(27)	59,490	(21)	8,427	(8)
Esophagus disease	30,849	(43)	18,990	(41)	616	(51)
Other gastroenteritis and colitis	29,510	(45)	18,491	(42)	1,692	(31)
Inguinal hernia	10,137	(73)	4,424	(73)	330	(69)
Appendicitis	5,814	(85)	2,816	(84)	4,192	(16)

Major category condition[a]	Medical encounters[b]		Individuals affected[c]		Bed days	
	No.	Rank[d]	No.	Rank[d]	No.	Rank[d]
Digestive diseases (cont.)						
Peptic ulcer disease	1,194	(114)	782	(101)	428	(63)
Cirrhosis of the liver	188	(134)	73	(127)	47	(107)
Maternal conditions						
Pregnancy complications	100,262	(28)	21,203	(38)	28,117	(4)
All other maternal conditions	40,495	(37)	9,632	(55)	5,415	(12)
Delivery	19,409	(52)	10,700	(53)	17,909	(5)
Ectopic pregnancy/miscarriage/abortion	7,973	(77)	3,562	(77)	492	(59)
Puerperium complications	6,046	(84)	3,323	(80)	1,006	(42)
Headache						
Headache	148,440	(21)	70,958	(19)	606	(52)
Cardiovascular diseases						
All other cardiovascular diseases	63,784	(29)	32,396	(31)	3,254	(21)
Essential hypertension	46,913	(35)	26,288	(36)	171	(77)
Ischemic heart disease	6,962	(80)	2,490	(88)	865	(44)
Cerebrovascular disease	6,713	(81)	1,548	(96)	1,636	(33)
Inflammatory	2,241	(105)	1,203	(97)	275	(74)
Rheumatic heart disease	493	(123)	418	(114)	19	(118)
Other neoplasms						
All other neoplasms	36,389	(40)	24,783	(37)	1,248	(36)
Benign skin neoplasm	14,971	(58)	12,380	(51)	0	(135)
Lipoma	7,587	(79)	4,896	(70)	29	(114)
Uterine leiomyoma	3,743	(96)	1,846	(93)	666	(49)
Endocrine disorders						
All other endocrine disorders	19,733	(51)	8,111	(60)	168	(78)
Hypothyroidism	10,140	(72)	5,770	(67)	18	(119)
Other thyroid disorders	8,849	(75)	3,774	(76)	298	(72)
Malignant neoplasms						
Lymphoma and multiple myeloma	6,576	(82)	579	(107)	799	(45)
All other malignant neoplasms	5,736	(86)	919	(99)	1,346	(34)
Leukemia	4,632	(93)	276	(121)	1,345	(35)
Melanoma and other skin cancers	3,759	(95)	1,827	(94)	60	(103)
Breast cancer	3,459	(98)	398	(116)	142	(84)
Testicular cancer	3,042	(100)	537	(108)	400	(65)
Colon and rectum cancers	2,482	(104)	229	(123)	763	(46)
Brain cancer	1,863	(109)	165	(125)	423	(64)
Thyroid cancer	1,485	(110)	400	(115)	147	(81)
Prostate cancer	1,105	(116)	187	(124)	147	(81)
Mouth and oropharynx cancers	959	(118)	124	(126)	56	(105)
Cervix uteri cancer	703	(120)	330	(118)	43	(109)
Trachea, bronchus, and lung cancers	399	(125)	61	(130)	168	(78)
Stomach cancer	371	(127)	35	(137)	89	(94)
Pancreas cancer	332	(128)	29	(139)	48	(106)
Esophagus cancer	313	(129)	19	(140)	71	(98)
Corpus uteri cancer	202	(133)	18	(141)	23	(116)
Ovary cancer	172	(135)	49	(132)	46	(108)

TABLE. (cont.) Healthcare burdens attributable to various diseases and injuries, U.S. Armed Forces, 2018

Major category condition[a]	Medical encounters[b]		Individuals affected[c]		Bed days	
	No.	Rank[d]	No.	Rank[d]	No.	Rank[d]
Malignant neoplasms (cont.)						
Liver cancer	159	(136)	30	(138)	59	(104)
Bladder cancer	133	(139)	49	(132)	0	(135)
Metabolic and immunity disorders						
Other metabolic disorders	10,726	(69)	5,788	(66)	374	(67)
Lipoid metabolism disorders	10,590	(70)	8,566	(57)	5	(127)
Immunity disorders	1,991	(107)	639	(105)	70	(99)
Oral conditions						
All other oral conditions	20,871	(50)	15,198	(47)	2,237	(27)
Dental caries	602	(121)	511	(110)	1	(133)
Periodontal disease	447	(124)	419	(113)	4	(128)
Blood disorders						
All other blood disorders	6,477	(83)	3,029	(82)	474	(61)
Iron-deficiency anemia	5,595	(88)	2,572	(87)	146	(83)
Other non-deficiency anemias	4,880	(91)	2,734	(86)	194	(75)
Hereditary anemias	3,941	(94)	3,387	(79)	100	(92)
Other deficiency anemias	541	(122)	317	(119)	1	(133)
Congenital disorders						
All other congenital anomalies	14,627	(60)	8,603	(56)	498	(58)
Congenital heart disease	1,988	(108)	884	(100)	155	(80)
Other circulatory anomalies	1,218	(113)	432	(112)	135	(85)
Nutritional disorders						
Overweight, obesity	10,858	(68)	8,328	(58)	41	(110)
All other nutritional disorders	5,675	(87)	4,252	(74)	8	(125)
Protein-energy malnutrition	139	(138)	36	(136)	8	(125)
Diabetes mellitus						
Diabetes mellitus	12,502	(63)	3,257	(81)	661	(50)
Conditions arising during perinatal period[e]						
Low birth weight	1,145	(115)	341	(117)	2	(130)
All other perinatal anomalies	381	(126)	277	(120)	2	(130)
Birth asphyxia and birth trauma	95	(141)	55	(131)	68	(100)

[a]Burden of disease major categories and burden of disease-related conditions based on a modified version of those defined in the Global Burden of Disease Study.[1]
[b]Medical encounters include total hospitalizations and ambulatory visits for the condition (with no more than 1 encounter per individual per day per condition).
[c]Individuals with at least 1 hospitalization or ambulatory visit for the condition.
[d]Rank based on 142 burden-related disease conditions; for individuals affected, 1 pair of tied values were given the same ranking, which resulted in a highest rank of 141; for hospital bed days, tied values were given the same ranking, which resulted in a highest rank of 135.
[e]Conditions affecting newborns erroneously coded on service member medical records.
No., number; NOS, not otherwise specified; STDs, sexually transmitted diseases.

attributable to various conditions and the number of individuals affected by the conditions ($r=0.86$) **(data not shown)**. For example, the 3 leading causes of medical encounters were among the 5 conditions that affected the most individuals **(Table)**. 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 ($r=0.17$) or medical encounters attributable to ($r=0.36$) the same conditions **(data not shown)**. 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 on morbidity and healthcare burdens among U.S. military members. In particular, this report documents that a majority of the morbidity and healthcare burdens that affect

FIGURE 3. Percentage and cumulative percentage distribution, burden of disease-related conditions[a] that accounted for the most hospital bed days, active component, U.S. Armed Forces, 2018
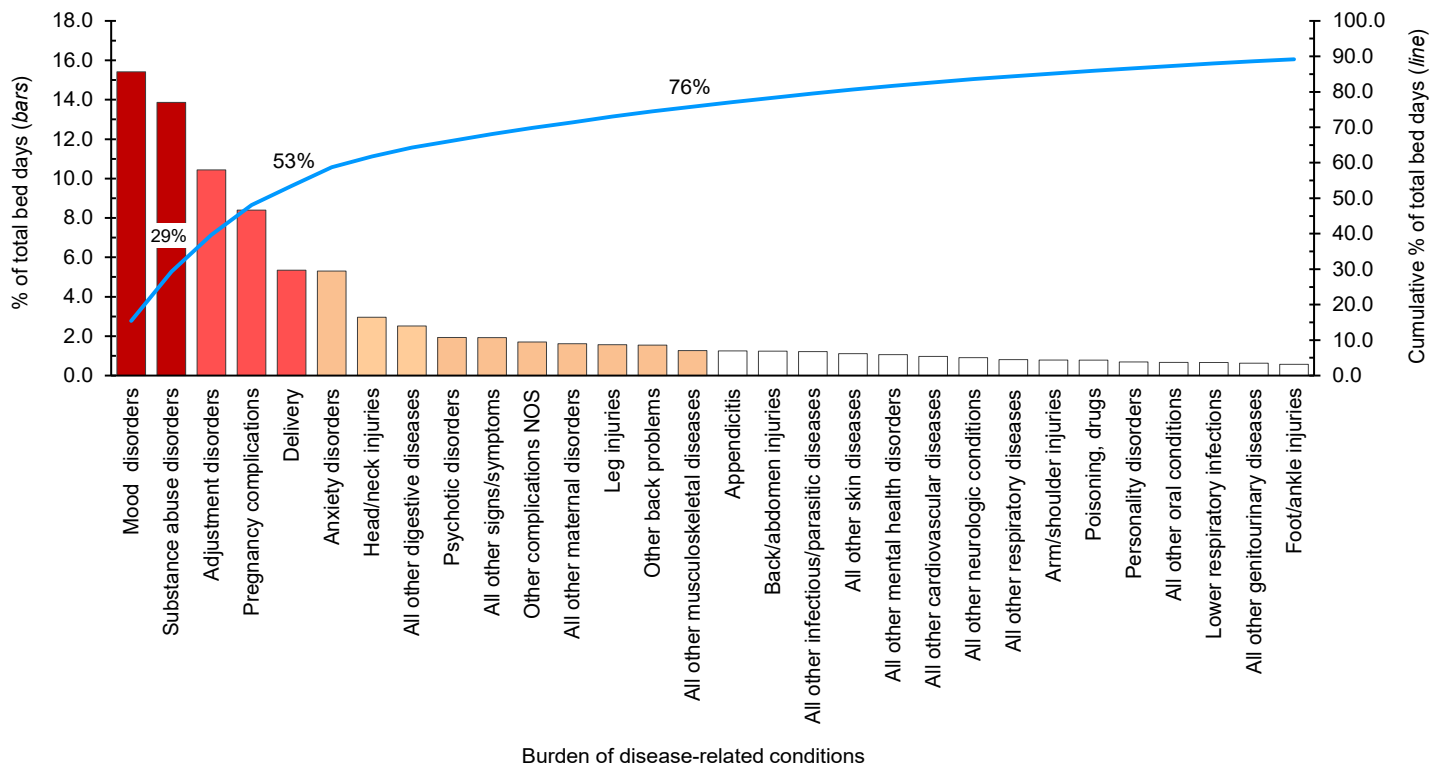
[a]Burden of disease-related conditions based on a modified version of those defined in the Global Burden of Disease Study.[1]
NOS, not otherwise specified.

active component U.S. military members are attributable to just 6.3% of the 142 burden of disease-defining conditions considered in the analysis.

In 2018, as in prior years, musculoskeletal disorders (particularly of the back), injuries (particularly of the knee and arm/shoulder), mental health disorders (particularly adjustment, anxiety, substance abuse, and mood disorders), and pregnancy- and delivery-related conditions accounted for relatively large proportions of the morbidity and healthcare burdens that affected active component service members. Nine burden of disease-related conditions accounted for slightly more than half of all illness- and injury-related medical encounters of active component members and included 2 mental health disorders (adjustment and anxiety disorders), 3 anatomic site-defined injuries (knee, arm/shoulder, and foot/ankle), 2 musculoskeletal conditions (other back problems and all other musculoskeletal diseases), organic

sleep disorders, and all other signs and symptoms.

It should be noted that this annual summary for 2018 was based on the use of ICD-10 codes exclusively. This is the third *MSMR* burden report that did not use ICD-9 codes. Because of some of the differences between the 2 generations of coding (e.g., compared to ICD-9, ICD-10 has more than 4 times as many codes, often allows for much greater specificity of diagnoses, and has added and deleted some specific diagnoses or terminology), direct comparisons of the counts for 2018 with those from years before 2016 should be interpreted with caution. Dramatic changes in counts and rankings for specific categories or conditions may reflect changes in incidence or prevalence, the effects of a different coding system, the adjustment of healthcare providers to the new coding system, or combinations of all 3.

Mental health disorders (including substance abuse disorders), injuries, and

musculoskeletal disorders of the back have been leading causes of morbidity and disability among service members throughout military history.[3–8] It is well recognized that the prevention, treatment, and rehabilitation of back problems and joint injuries, and the detection, characterization, and management of mental health 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 prior years, documents that 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 burdens should be high-priority targets for prevention research and resources.

REFERENCES

1. Murray CJL, Lopez AD, eds. *The Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability from Diseases, Injuries, and Risk Factors in 1990 and Projected to 2020*. Cambridge, MA: Harvard University Press, 1996:120–122.

2. Brundage JF, Johnson KE, Lange JL, Rubertone MV. Comparing the population health impacts of medical conditions using routinely collected health care utilization data: nature and sources of variability. *Mil Med*. 2006;171(10):937–942.

3. Jones BH, Perrotta DM, Canham-Chervak ML, Nee MA, Brundage JF. Injuries in the military: a review and commentary focused on prevention. *Am J Prev Med*. 2000;18(3 suppl):71–84.

4. Ritchie EC, Benedek D, Malone R, Carr-Malone R. Psychiatry and the military: an update. *Psychiatr Clin North Am*. 2006;29(3):695–707.

5. Stahlman S, Oetting AA. Mental health disorders and mental health problems, active component, U.S. Armed Forces, 2007–2016. *MSMR*. 2018;25(3):2–11.

6. Cozza KL, Hales RE. Psychiatry in the Army: a brief historical perspective and current developments. *Hosp Community Psychiatry*.1991;42(4):413–418.

7. Watanabe HK, Harig PT, Rock NL, Koshes RJ. Alcohol and drug abuse and dependence. In: Jones FD, Sparcino LR, Wilcox VL, Rotherberg JM, eds. *Military Psychiatry: Preparing in Peace for War*. Part I of *Textbook of Military Medicine Series*. Washington, DC: Office of the Surgeon General, Department of the Army. Borden Institute; 1994. https://ke.army.mil/bordeninstitute/published_volumes/military_psychiatry/MPch5.pdf. Accessed 2 April 2019.

8. Army Medical Surveillance Activity. Relative burdens of selected illnesses and injuries, U.S. Armed Forces, 2001. *MSMR*. 2002;8(2):24–28.

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Key points

- In 2018, more service members received medical care for injury/poisoning than for any other morbidity-related category, and injury/poisoning accounted for one-quarter of all medical encounters overall.
- Musculoskeletal disorders, injuries, mental health disorders, and pregnancy- and delivery-related conditions accounted for relatively large proportions of the morbidity and healthcare burdens that affected active component service members in 2018.
- This analysis, like those of prior years, documents that relatively few illnesses and injuries account for most of the morbidity and healthcare burdens that affect U.S. military members.

Learning objectives

- The reader will explain how the comparative burden of disease among active component service members can be evaluated and estimated.
- The reader will analyze the rankings of the various burden of disease-related conditions in terms of the number of medical encounters, individuals affected, and hospital bed days for active component service members in 2018.
- The reader will describe the relationships between the 3 healthcare burden indicators for active component service members in 2018.

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