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Medical Evacuations out of U.S. Central and Africa Commands Among the Active and Reserve Components of the U.S. Armed Forces, 2023

This report summarizes the nature, numbers, and trends of conditions for which military members were medically evacuated from the U.S. Central Command (CENTCOM) or Africa Central Command (AFRICOM) operations during 2023, with historical comparisons to the previous 4 years. During deployed military operations, initial medical care is provided by military medical personnel stationed within the operational theater, but some injuries and illnesses require medical care outside the theater of operation. In such cases, affected individuals are usually transported to a permanent military medical facility, usually in Europe or the U.S., for definitive diagnosis or care. Because medical evacuations are resource-intensive, they are employed for serious medical conditions, some of which are directly related to participation in, or support of, military operations. Other medical conditions that are unrelated to operational activities but necessitate medical evacuation may be preventable.

With completion of the withdrawal of all U.S. military forces from Afghanistan on August 31, 2021, followed by the conclusion of the U.S. combat mission in Iraq on December 9, 2021,[1,2] U.S. military operations were substantially reduced in the CENTCOM area of responsibility (AOR). To sustain counterterrorism operation successes, force deployment continues in all AORs, in addition to assistance, advice, and accompaniment of selected partners' security forces.[3]

This report only includes medical evacuations from CENTCOM and AFRICOM, without describing any medical evacuations from recent troop deployment to the U.S. European Command (EUCOM), U.S. Indo-Pacific Command (INDOPACOM), or U.S. Southern Command (SOUTHCOM). *MSMR* has historically reported medical evacuations from CENTCOM due to large numbers of service members deployed for named operations such as Operation Iraqi Freedom, Operation Enduring Freedom, and Operation New Dawn. The AFRICOM AOR was added to this annual report in 2021 due counterterrorism force deployment.[3] Future reports may review medical evacuations from other AORs, as required by leadership interest or changing operational tempos.

Methods

The surveillance population for this analysis included all members of the active and reserve components of the U.S. Army, Navy, Air Force, Marine Corps, and Space Force deployed to the CENTCOM or AFRICOM AORs for any length of time from January 1, 2019 through December 31, 2023. Medical evacuations by the U.S. Transportation Command (TRANSCOM) from the CENTCOM or AFRICOM AORs to a medical treatment facility outside the operational theater were assessed from records maintained in the TRANSCOM Regulating and Command and Control Evacuation System (TRAC2ES). Inclusion criteria for this analysis required that any medical evacuee have at least 1 inpatient or outpatient medical encounter at a permanent military medical facility in the U.S. or Europe within an interval of 5 days preceding to 10 days following a reported evacuation date. CENTCOM and AFRICOM evacuation data are presented separately.

Medical evacuations were classified by the cause and nature of the precipitating medical condition, based on information in relevant evacuation and medical encounter records. All medical evacuations were classified as "battle injuries" or "non-battle injuries and illnesses," based on entries in the TRAC2ES evacuation record.

What are the new findings?

Mental health disorders and injuries were the most common diagnostic categories in 2023 among service members medically evacuated from U.S. Central Command (CENTCOM) and U.S. Africa Command (AFRICOM). In 2023, 724 service members were medically evacuated from CENTCOM and 225 were evacuated from AFRICOM, with hospitalization required for 197 (27.2%) and 50 (22.2%), respectively. Most service members who were medically evacuated from CENTCOM or AFRICOM were returned to full duty status following their post-evacuation hospitalizations or outpatient evaluations.

What is the impact on readiness and force health protection?

In 2023, evacuations for both battle and non-battle injuries from U.S. CENTCOM increased, following a period of decline. The number of service members medically evacuated in 2023 from AFRICOM remained unchanged from the previous year.

Evacuations due to non-battle injuries and illnesses were further classified into 18 illness and injury categories based on International Classification of Diseases, 9th and 10th Revisions (ICD-9 and ICD-10, respectively) diagnostic codes reported in medical encounter records following evacuation. All records of hospitalizations and ambulatory visits from 5 days preceding until 10 days following the reported date of each medical evacuation were identified from Defense Medical Surveillance System (DMSS) data. The primary (first-listed) diagnosis for either hospitalization or earliest ambulatory visit after evacuation was used to classify the condition that necessitated the evacuation. If the first-listed diagnostic code specified an external cause of injury (ICD-9 E-code or ICD-10 V-, W-, X-, or Y-code) or an encounter

for a condition other than a current illness or injury, the secondary diagnosis specifying illness or injury (ICD-9: 001-999 or ICD-10: A00-T88, U07.1, U09.9) was used. If no secondary diagnosis was provided, or if the secondary diagnosis also was an external cause code, the first-listed diagnostic code of a subsequent encounter was used.

Results

In 2023, the CENTCOM AOR required 724 medical evacuations, while 225 medical evacuations originated from the AFRICOM AOR. Evaluation of the subsequent hospitalizations and ambulatory visits outside the operational theater during the requisite period following evacuation indicates that mental health disorders accounted for the most medical evacuations from CENTCOM (n=199; 27.5%), while non-battle injuries accounted for the most medical evacuations from AFRICOM (n=51; 22.7%) **(Table 1)**. Most medical evacuations from CENTCOM (88.1%) and AFRICOM (87.6%) were assigned routine precedence.

The annual numbers of CENTCOM medical evacuations attributable to battle injuries remained stable in 2019 (n=59) and 2020 (n=59), and substantially decreased in 2021 (n=7), 2022 (n=3), and 2023 (n=14) (data not shown), following the conclusion of major combat operations.[1,2] Annual CENTCOM medical evacuations attributable to disease and non-battle injuries also declined during the 5-year surveillance period, from 1,077 disease and non-battle injuries in 2019 to 710 disease and non-battle injuries in 2023 **(Figure)**. Annual medical evacuations from AFRICOM that were attributable to battle injuries peaked at 6 in 2019, falling to 4 in 2020 and then 0 in 2021, with a rise to 2 in 2022 before falling to 0 again in 2023 (data not shown). Notably, the annual numbers of AFRICOM medical evacuations attributable to non-battle injuries and diseases in 2022 (n=225) and 2023 (n=225) exceeded the previous 3 years but remained much lower than CENTCOM **(Figure)**.

Demographic and military characteristics

Non-battle injuries were the leading diagnostic categories of evacuations of male service members from CENTCOM and AFRICOM in 2023. Mental disorders were the leading diagnoses for female evacuees from both AORs, with the addition of non-battle injuries and signs, symptoms

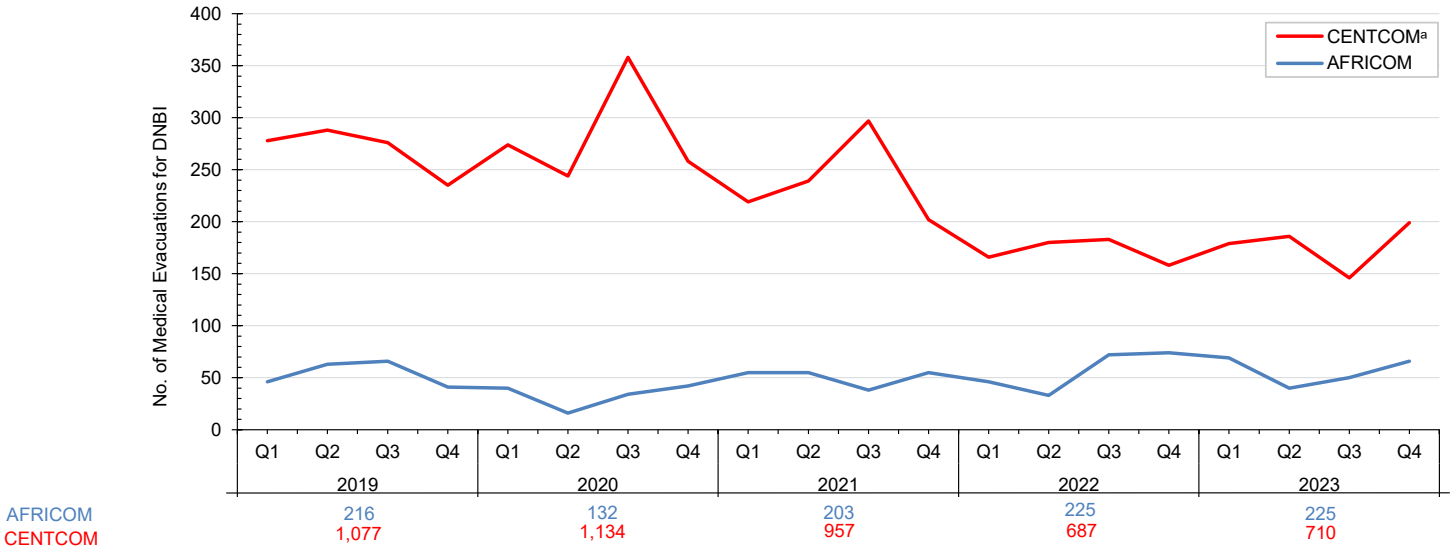
TABLE 1. Numbers and Percentages of Medical Encounters Following Medical Evacuation for Disease and Non-Battle Injuries[a] from Theater by Area of Responsibility and Major ICD-10 Diagnostic Category, U.S. Armed Forces, 2023

	CENTCOM						AFRICOM					
	Total		Men		Women		Total		Men		Women	
Major Diagnostic Category (ICD-10 codes)	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Mental disorders (ICD-10: F01 - F99)	199	27.5	152	25.4	47	37.6	27	12.0	21	11.2	6	16.2
Non-battle injury and poisoning (ICD-10: S00–T88, DOD0101–DOD0105)	183	25.3	170	28.4	13	10.4	51	22.7	45	23.9	6	16.2
Signs, symptoms and ill-defined conditions (ICD-10: R00–R99)	89	12.3	68	11.4	21	16.8	30	13.3	24	12.8	6	16.2
Musculoskeletal system (ICD-10: M00–M99)	83	11.5	74	12.4	9	7.2	30	13.3	28	14.9	2	5.4
Digestive system (ICD-10: K00–K95)	50	6.9	44	7.3	6	4.8	25	11.1	22	11.7	3	8.1
Nervous system and sense organs (ICD-10: G00–G99, H00–H95)	24	3.3	19	3.2	5	4.0	21	9.3	17	9.0	4	10.8
Circulatory system (ICD-10: I00–I99)	21	2.9	19	3.2	2	1.6	6	2.7	6	3.2	0	0.0
Genitourinary system (ICD-10: N00–N99)	17	2.3	9	1.5	8	6.4	11	4.9	6	3.2	5	13.5
Battle injury (TRAC2ES records)	14	1.9	11	1.8	3	2.4	0	0.0	0	0.0	0	0.0
Neoplasms (ICD-10: C00–D49)	9	1.2	7	1.2	2	1.6	3	1.3	2	1.1	1	2.7
Other (ICD-10: Z00–Z99, except pregnancy-related)	9	1.2	6	1.0	3	2.4	10	4.4	8	4.3	2	5.4
Skin and subcutaneous tissue (ICD-10: L00–L99)	8	1.1	7	1.2	1	0.8	4	1.8	4	2.1	0	0.0
Endocrine, nutrition, immunity (ICD-10: E00–E89)	5	0.7	5	0.8	0	0.0	0	0.0	0	0.0	0	0.0
Pregnancy and childbirth (ICD-10: O00–O9A, relevant Z codes)	5	0.7	0	0.0	5	4.0	0	0.0	0	0.0	0	0.0
Respiratory system (ICD-10: J00–J99, U07.0)	4	0.6	4	0.7	0	0.0	5	2.2	4	2.1	1	2.7
Infectious and parasitic diseases (ICD-10: A00–B99)	3	0.4	3	0.5	0	0.0	2	0.9	1	0.5	1	2.7
Hematologic disorders (ICD-10: D50–D89)	1	0.1	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0
Congenital anomalies (ICD-10: Q00–Q99)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
COVID-19 (U07.1, U09.9)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	724	100.0	599	100.0	125	100.0	225	100.0	188	100.0	37	100.0

Abbreviations: ICD, International Classification of Diseases, 10th Revision; No., number; TRAC2ES, U.S. Transportation Command (TRANSCOM) Regulating and Command and Control Evacuation System; COVID-19, coronavirus disease 2019.

[a] Classified as Disease and Non-Battle Injuries from injury_type field in TRAC2ES.

FIGURE. Numbers of Medical Evacuations of U.S. Service Members for Disease and Non-Battle Injuries by Area of Responsibility and Yearly Quarter, 2019–2023[a]



Abbreviations: CENTCOM, Central Command; AFRICOM, Africa Command; No., number; DNBI, Disease Non-Battle Injury; Q1, first quarter; Q2, second quarter; Q3, third quarter; Q4, fourth quarter.
[a] These classifications are based on the causal event of medical evacuation-linked medical encounters.
[b] Note: Operation Resolute Support (ORS) began Jan. 1, 2015 and ended Aug. 31, 2021. The Iranian air strike on the U.S. al-Asad Air Base, Iraq occurred Jan. 8, 2020.

and ill-defined conditions in AFRICOM **(Table 1)**. Compared to men, female service members in CENTCOM and AFRICOM had a higher proportion of medical evacuations for mental health disorders and genitourinary system disorders **(Table 1)**. Male service members from both AORs, in contrast, had higher proportions of evacuation for non-battle injuries, musculoskeletal system disorders, and digestive system conditions.

The largest numbers and proportions of evacuees from CENTCOM and AFRICOM involved non-Hispanic White service members, those aged 20-24 years, members of the Army, and senior and junior enlisted personnel **(Table 2)**.

Most frequent specific diagnoses

Among men and women in both AORs, the leading 3-digit ICD-10 code for mental health disorders indicated reaction to severe stress and adjustment disorders (F43) **(Table 3)**. This ICD-10 code represented over two-thirds of the mental disorder diagnoses among men and women in both AORs (data not shown).

Over 10% of all medical evacuations in both AORs were attributed to signs, symptoms and ill-defined conditions (R00-R99) **(Table 1)**. The primary diagnoses for the R00-R99 major diagnostic category were not clustered around 1 diagnosis but were diffused throughout this ICD-10 code chapter (data not shown).

Disposition

Hospitalizations were required for 197 (27.2%) of the medical evacuees from CENTCOM (n=724) and 50 (22.2%) from AFRICOM (n=225) in 2023 (data not shown).

Discussion

In 2023, only 14 (1.9%) medical evacuations from CENTCOM and none (0) from AFRICOM were associated with battle injuries in TRAC2ES records. While CENTCOM medical evacuations attributable to non-battle injuries from 2022 to 2023 remained substantially lower than the first 3 years of the surveillance period, AFRICOM non-battle injury medical evacuations remained at their highest level in 2023. These trends coincide with the reduction in forces from CENTCOM and reestablishment of persistent military forces throughout East Africa.[3]

The leading diagnoses of AFRICOM non-battle injuries were not clustered around any specific ICD-10 code but distributed among diagnoses such as dislocation and sprain of joints and knee ligaments, intracranial injuries, and wrist or hand fractures. This heterogeneity of injury type may be due to the large proportion due to occupational hazards in the deployed environment. Classification by cause of injury rather than affected body system may be more appropriate for this population; the ICD chapter for external causes of morbidity codes is intended for secondary coding purposes and is not mandatory, however. Consequently, completeness and specificity of these external cause codes for injury-related diagnoses may vary according to coding practices.[4,5]

The proportion of CENTCOM medical evacuations (27.5%; n=199) that were attributed to mental health disorders in 2023 represents a decline after increasing

TABLE 2. Demographic and Military Characteristics of Active Component Service Members Medically Evacuated from U.S. Central and Africa Commands, U.S. Armed Forces, 2023

	CENTCOM		AFRICOM	
	No.	% Total	No.	% Total
Total	724	100.0	225	100.0
Sex				
Male	599	82.7	188	83.6
Female	125	17.3	37	16.4
Age group, y				
<20	14	1.9	2	0.9
20–24	214	29.6	46	20.4
25–29	161	22.2	45	20.0
30–34	132	18.2	49	21.8
35–39	95	13.1	37	16.4
40–44	56	7.7	27	12.0
45+	52	7.2	19	8.4
Race and ethnicity				
White, non-Hispanic	400	55.2	129	57.3
Black, non-Hispanic	131	18.1	39	17.3
Hispanic	124	17.1	32	14.2
Other/unknown	69	9.5	25	11.1
Service branch				
Army	511	70.6	128	56.9
Navy	69	9.5	34	15.1
Air Force	131	18.1	54	24.0
Marine Corps	13	1.8	9	4.0
Component				
Active	335	46.3	70	31.1
Reserve/Guard	389	53.7	155	68.9
Rank, grade				
Junior enlisted (E1–E4)	300	41.4	66	29.3
Senior enlisted (E5–E9)	318	43.9	115	51.1
Junior officer (O1–O3; W1–W3)	67	9.3	27	12.0
Senior officer (O4–O10; W4–W5)	39	5.4	17	7.6
Military occupation				
Combat-specific[a]	156	21.5	53	23.6
Motor transport	25	3.5	2	0.9
Pilot/aircrew	14	1.9	7	3.1
Repair/engineering	195	26.9	56	24.9
Communications/intelligence	152	21.0	49	21.8
Health care	61	8.4	14	6.2
Other/unknown	121	16.7	44	19.6
Marital status				
Married	342	47.2	92	40.9
Single, never married	326	45.0	113	50.2
Other/unknown	56	7.7	20	8.9
Education level				
High school or less	425	58.7	107	47.6
Some college	99	13.7	39	17.3
College	163	22.5	62	27.6
Other/unknown	37	5.1	17	7.6
Precedence[b]				
Routine	638	88.1	197	87.6
Priority	68	9.4	14	6.2
Urgent	18	2.5	14	6.2
Transport mode				
Military	389	53.7	42	18.7
Commercial	31	4.3	7	3.1
Other/unknown	304	42.0	176	78.2

Abbreviations: CENTCOM, Central Command; AFRICOM, Africa Command; No., number; y, years.

[a] Infantry/artillery/combat engineering/armor.

[b] Data field within U.S. Transportation Command (TRANSCOM) Regulating and Command and Control Evacuation System (TRAC2ES).

proportional trends reported in 2019 (26.8%; n=305), 2020 (27.1%; n=323), 2021 (33.4%; n=322), and 2022 (38.6%, n=266). The proportions of medical evacuation due to mental health disorders are considerably higher than the proportion (11.6%; n=5,892) described by a *MSMR* report examining evacuations from Iraq during a 9-year period between 2003 and 2011.[6-9]

Several important limitations should be considered when interpreting these results. Demographic data for the deployed population, i.e., person-time for individuals eligible for medical evacuation, are not readily available. The lack of deployed individual person-time precludes calculation of stratified and overall rates for medical evacuations.

Most causes of medical evacuations were estimated for this report from primary (first-listed) diagnoses in DMSS recorded during hospitalizations or initial outpatient encounters following evacuation. Diagnoses recorded in theater through the Theater Medical Data Store (TMDS) are not reflected in this analysis. In some cases, clinical evaluations at fixed medical treatment facilities following medical evacuation may have ruled out serious conditions clinically suspected while in theater, resulting in possible misclassification errors.

Battle injuries rely on proper classification in the TRAC2ES system. Misclassification errors may occur, and given the small number of battle injuries, any misclassification will have a disproportionate effect.

TABLE 3. Most Frequent 3-Digit ICD-10 Diagnoses Associated with Medical Evacuations by Area of Responsibility and Sex, U.S. Armed Forces, 2023

CENTCOM					
Men			Women		
3-Digit ICD-10 Code	Description	No.	3-Digit ICD-10 Code	Description	No.
F43	Reaction to severe stress, and adjustment disorders	120	F43	Reaction to severe stress, and adjustment disorders	37
M54	Dorsalgia	25	M54	Dorsalgia	5
S06	Intracranial injury	20	M25	Other joint disorder, not elsewhere classified	4
M25	Other joint disorder, not elsewhere classified	19	F10	Alcohol related disorders	3
S46	Injury of muscle, fascia and tendon at shoulder and upper arm level	17	F32	Depressive episode	3
AFRICOM					
Men			Women		
3-Digit ICD-10 Code	Description	No.	3-Digit ICD-10 Code	Description	No.
F43	Reaction to severe stress, and adjustment disorders	16	F43	Reaction to severe stress, and adjustment disorders	4
M54	Dorsalgia	9	R68	Other general symptoms and signs	2
M25	Other joint disorder, not elsewhere classified	7	S82	Fracture of lower leg, including ankle	2
S46	Injury of muscle, fascia and tendon at shoulder and upper arm level	6	S83	Dislocation and sprain of joints and ligaments of knee	2
S83	Dislocation and sprain of joints and ligaments of knee	6	Z02	Encounter for administrative examination	2

Abbreviations: ICD, International Classification of Diseases, 10th Revision; CENTCOM, Central Command; AFRICOM, Africa Command; No., number.

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Morbidity Burdens Attributable to Various Illnesses and Injuries Among Deployed Active and Reserve Component Service Members of the U.S. Armed Forces, 2023

Each year, *MSMR* estimates illness- and injury-related morbidity and health care burdens on the U.S. Armed Forces and the Military Health System (MHS), and this report updates previous analyses of these burden distributions among active and reserve component service members in deployed settings. While deployed service members are primarily selected from a subset of the active component, the reserve component contributes a substantial portion of U.S. deployed forces.

This report utilizes data from the Theater Medical Data Store (TMDS), which documents service members' inpatient and outpatient encounters while treated in an operational environment. TMDS receives medical data from Theater Medical Information Program-Joint (TMIP-J) applications, including AHLTA-Theater, TMIP-Composite Health Care System Cache, Mobile Computing Capability, Maritime Medical Modules, and the U.S. Transportation Command Regulating and Command and Control Evacuation System (TRAC2ES).[1]

The health encounters of service members deployed to 2 specific theaters of operation, US Central Command (CENTCOM) and US Africa Command (AFRICOM), are the subject of this report. While U.S. service members are deployed to all the geographic combatant commands, the largest concentrations without access to fixed medical facilities are in the CENTCOM and AFRICOM areas of operation.[2] While this report focuses on medical encounters of service members treated in CENTCOM and AFRICOM operational environments during the 2023 calendar year, future reports may incorporate other combatant commands as circumstances dictate and data become available.

Methods

The surveillance population included all individuals who served in the active or reserve components of the U.S. Army, Navy, Air Force, Marine Corps, or Space Force with health care encounters captured in the TMDS during the surveillance period. Analysis was restricted to encounters where the theater of care specified was CENTCOM or AFRICOM, or where the name of the theater of operation was missing or null; by default, this excluded encounters in the U.S. Northern Command (NORTHCOM), U.S. European Command (EUCOM), U.S. Indo-Pacific Command (INDOPACOM), or U.S. Southern Command (SOUTHCOM) theaters of operations. In addition, TMDS-recorded medical encounters where the data source was identified as Shipboard Automated Medical System, or where the military treatment facility descriptor indicated that care was provided aboard ship, were excluded from this analysis. Encounters from aeromedical staging facilities outside of CENTCOM or AFRICOM were also excluded.

Morbidity burdens attributable to various conditions were estimated by diagnosis distribution according to the 17 traditional categories of the International Classification of Diseases (ICD) system, with an 18th category for COVID-19. Extended ICD-10 (10th Revision) code groupings were also reviewed for the most common diagnoses. The TMDS has not fully transitioned to ICD-10 codes, so some ICD-9 (9th Revision) codes were included. Primary diagnoses that did not correspond to an ICD-9 or ICD-10 code are not reported in this burden analysis.

What are the new findings?

Musculoskeletal disorders in combination with administrative and other health services (ICD-10 "Z" codes) accounted for more than half of all medical encounters in 2023 among service members deployed to the U.S. Central Command (CENTCOM) and Africa Command (AFRICOM). Three common injury conditions occurred among male and female service members deployed to U.S. CENTCOM and U.S. AFRICOM: other back problems, arm and shoulder injuries, and knee injuries.

What is the impact on readiness and force health protection?

Thorough examination of the most common causes of injury and illness during deployment can assist senior leaders in the development and implementation of strategies to reduce preventable medical issues, enhance force readiness, and ensure fighting strength.

Results

A total of 182,943 medical encounters occurred among 53,215 individuals deployed to Southwest Asia, the Middle East, and Africa in 2023. Of those 182,943 total medical encounters documented in 2023 among deployed service members, 84 (0.05%) were recorded as hospitalizations. The majority of medical encounters (n=137,447; 75.1%), individuals affected (n=43,001; 80.8%), and hospitalizations (n=70; 83.3%) occurred among male service members.

In 2023 the largest percentages of medical encounters attributed to a major ICD-10 diagnostic category were coded as musculoskeletal system/connective tissue disorders, followed by administrative and other health services (Z codes; includes factors influencing health status and health service contact) **(Figure 1)**.

The most common diagnosis within the musculoskeletal system/connective tissue disorders group was for lower back pain (ICD-10 code beginning with M545) **(Table)**. The percentage of total medical encounters attributed to other health services decreased from 43.5% in 2021 to 25.7% in 2023. COVID-19 accounted for only 0.7% of deployed service members' total medical encounters in 2023 **(Table)**.

The percentages of in-theater medical encounters attributed to musculoskeletal system disorders (29.6% to 27.9%) and injuries (7.9% to 7.4%) decreased only slightly from 2019 to 2023 **(Figure 1)**. Lower back pain (M545) was the most frequent ICD-10 diagnostic code for musculoskeletal encounters among both men and women **(Table)**. The second-most frequent ICD-10 diagnostic code for musculoskeletal encounters by male service members was pain in the right shoulder (M25511), while for female service members it was pain in the left knee (M25562) **(Table)**.

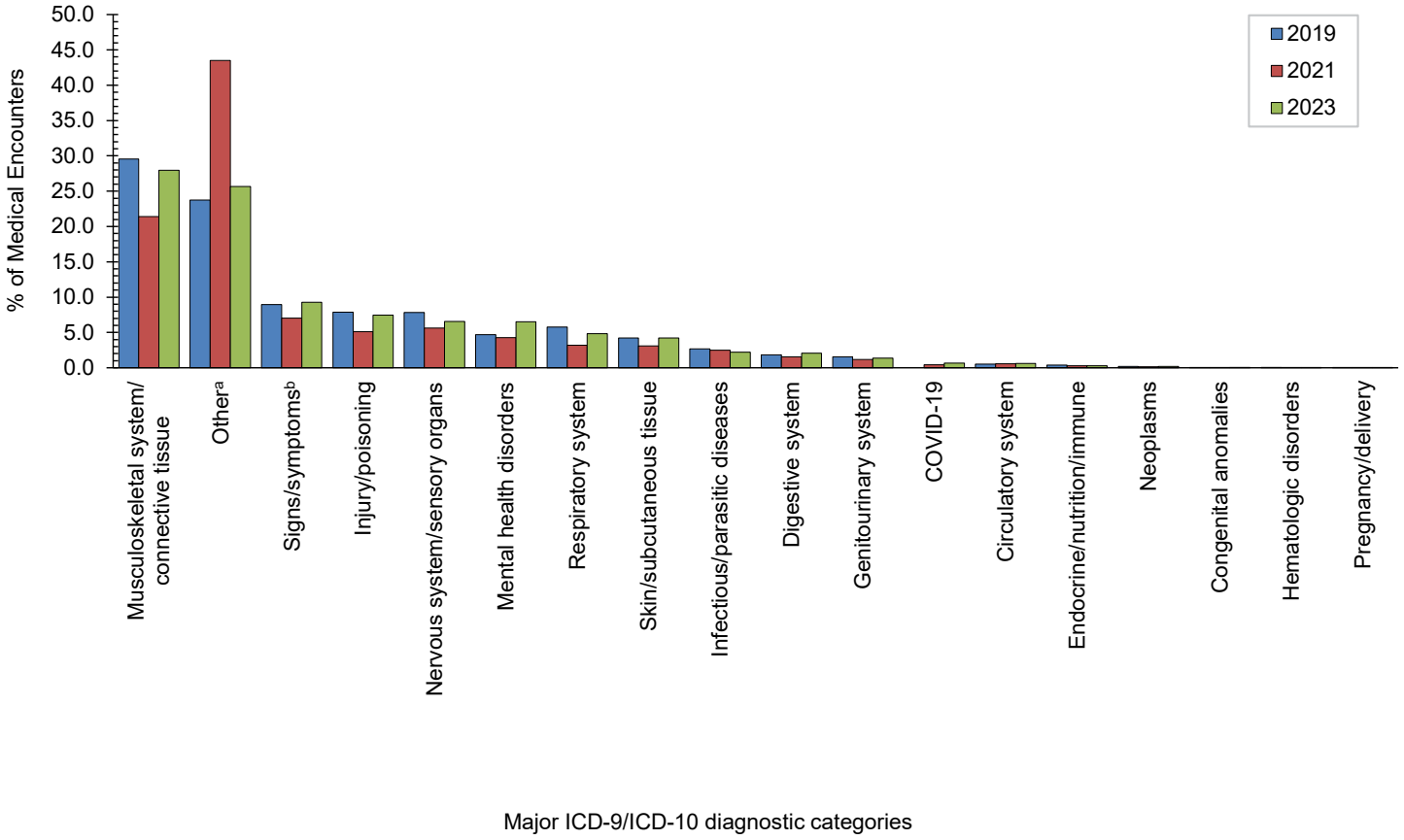
The percentages of in-theater medical encounters attributed to mental health disorders increased from 4.7% to 6.5% during the surveillance period **(Figure)**. Adjustment disorder with mixed anxiety and depressed mood (F4323) accounted for the most frequent mental health disorder diagnoses, with a higher percentage of in-theater encounters for this disorder among women (1.4%) than men (0.8%) **(Table)**.

Discussion

As in prior annual reports of illness- and injury-related morbidity and health care burdens in deployed settings, musculoskeletal disorders in combination with administrative and other health services accounted for more than half of the total medical encounters in theater. In prior reports during the surveillance period, encounters for COVID-19 screening contributed to an increase in encounters for administrative and other health services, as this specific Z-code (Z1152) accounted for almost 5% of all in-theater medical encounters in 2022.[3]

This report documents an increased percentage of in-theater medical encounters for mental health disorders, consistent with the 2019-2023 increased rate of in-garrison ambulatory encounters for mental health disorders. The percentage of total ambulatory encounters attributed to mental health disorders in garrison (14.6%) was substantially higher, however, than the percentage observed in theater (6.5%).[4] No absolute rate comparisons can be made due to the lack of in-theater denominator (person-time) data.

FIGURE. Major ICD-9 and ICD-10 Diagnostic Categories of In-Theater Medical Encounters, Active Component, U.S. Armed Forces, 2019, 2021 and 2023



Abbreviation: ICD-9, International Classification of Diseases, 9th Revision; ICD-10, International Classification of Diseases, 10th Revision.
[a] Other factors influencing health status and contact with health services (excluding pregnancy-related).
[b] Includes ill-defined conditions.

TABLE. Most Frequent ICD-10 Diagnostic Codes for In-Theater Medical Encounters by Sex, Active Component, U.S. Armed Forces, 2023

		Total			Men				Women			
ICD-10 Code[a]	Description	No.	%	ICD-10 Code	Description	No.	%		ICD-10 Code	Description	No.	%
Z029	Encounter for administrative examinations, unspecified	8,502	4.7	Z029	Encounter for administrative examinations, unspecified	6,208	4.5		Z029	Encounter for administrative examinations, unspecified	2,294	5.0
Z5682	Military deployment status	6,493	3.6	Z5682	Military deployment status	4,919	3.6		Z5682	Military deployment status	1,574	3.5
M545	Low back pain	5,288	2.9	M545	Low back pain	4,364	3.2		Z1159	Encounter for screening for other viral diseases	1,428	3.1
M5450	Low back pain, unspecified	4,766	2.6	M5450	Low back pain, unspecified	3,852	2.8		M545	Low back pain	924	2.0
Z0289	Encounter for other administrative examinations	3,868	2.1	M25511	Pain in right shoulder	3,018	2.2		M5450	Low back pain, unspecified	914	2.0
Z9182	Personal history of military deployment	3,625	2.0	Z0289	Encounter for other administrative examinations	2,960	2.2		Z0289	Encounter for other administrative examinations	908	2.0
Z1159	Encounter for screening for other viral diseases	3,547	1.9	Z9182	Personal history of military deployment	2,948	2.1		J069	Acute upper respiratory infection, unspecified	844	1.9
M25511	Pain in right shoulder	3,538	1.9	M25512	Pain in left shoulder	2,686	2.0		M25562	Pain in left knee	780	1.7
J069	Acute upper respiratory infection, unspecified	3,204	1.8	M25562	Pain in left knee	2,380	1.7		M25561	Pain in right knee	768	1.7
M25562	Pain in left knee	3,160	1.7	M25561	Pain in right knee	2,366	1.7		Z7189	Other specified counseling	687	1.5
M25561	Pain in right knee	3,134	1.7	J069	Acute upper respiratory infection, unspecified	2,360	1.7		Z9182	Personal history of military deployment	677	1.5
M25512	Pain in left shoulder	3,067	1.7	Z1159	Encounter for screening for other viral diseases	2,119	1.5		M542	Cervicalgia	663	1.5
M542	Cervicalgia	2,657	1.5	L731	Pseudofolliculitis barbae	2,110	1.5		F4323	Adjustment disorder with mixed anxiety and depressed mood	632	1.4
R197	Diarrhea, unspecified	2,607	1.4	Z23	Encounter for immunization	2,093	1.5		R197	Diarrhea, unspecified	549	1.2
Z23	Encounter for immunization	2,605	1.4	R197	Diarrhea, unspecified	2,058	1.5		M25511	Pain in right shoulder	520	1.1
Z7189	Other specified counseling	2,465	1.3	M542	Cervicalgia	1,994	1.5		Z23	Encounter for immunization	512	1.1
L731	Pseudofolliculitis barbae	2,112	1.2	Z7189	Other specified counseling	1,778	1.3		Z760	Encounter for issue of repeat prescription	483	1.1
M549	Dorsalgia, unspecified	1,811	1.0	M549	Dorsalgia, unspecified	1,397	1.0		J00	Acute nasopharyngitis [common cold]	432	1.0
J00	Acute nasopharyngitis [common cold]	1,735	0.9	J00	Acute nasopharyngitis [common cold]	1,303	0.9		M549	Dorsalgia, unspecified	414	0.9
F4323	Adjustment disorder with mixed anxiety and depressed mood	1,680	0.9	Z760	Encounter for issue of repeat prescription	1,167	0.8		M25551	Pain in right hip	412	0.9
Z760	Encounter for issue of repeat prescription	1,650	0.9	G4729	Other circadian rhythm sleep disorder	1,065	0.8		F419	Anxiety disorder, unspecified	411	0.9
M25571	Pain in right ankle and joints of right foot	1,325	0.7	F4323	Adjustment disorder with mixed anxiety and depressed mood	1,048	0.8		M25512	Pain in left shoulder	381	0.8
M25572	Pain in left ankle and joints of left foot	1,243	0.7	M25571	Pain in right ankle and joints of right foot	1,000	0.7		M25552	Pain in left hip	358	0.8
U071	COVID-19	1,213	0.7	M25572	Pain in left ankle and joints of left foot	926	0.7		F4320	Adjustment disorder, unspecified	351	0.8
G4729	Other circadian rhythm sleep disorder	1,204	0.7	G4726	Circadian rhythm sleep disorder, shift work type	925	0.7		R21	Rash and other nonspecific skin eruption	330	0.7
R21	Rash and other nonspecific skin eruption	1,195	0.7	U071	COVID-19	920	0.7		Z658	Other specified problems related to pyschosocial circumstances	329	0.7
F4320	Adjustment disorder, unspecified	1,189	0.7	G4700	Insomnia, unspecified	898	0.7		M25571	Pain in right ankle and joints of right foot	325	0.7
G4700	Insomnia, unspecified	1,174	0.6	R21	Rash and other nonspecific skin eruption	865	0.6		J029	Acute pharyngitis, unspecified	318	0.7
F419	Anxiety disorder, unspecified	1,089	0.6	F4320	Adjustment disorder, unspecified	838	0.6		M25572	Pain in left ankle and joints of left foot	317	0.7
M25551	Pain in right hip	1,083	0.6	F419	Anxiety disorder, unspecified	678	0.5		Z733	Stress, not elsewhere classified	315	0.7
G4726	Circadian rhythm sleep disorder, shift work type	1,039	0.6	M546	Pain in thoracic spine	677	0.5		N760	Acute vaginitis	297	0.7
R51	Headache	920	0.5	M25551	Pain in right hip	671	0.5		F4322	Adjustment disorder with anxiety	293	0.6
R519	Headache, unspecified	882	0.5	R51	Headache	636	0.5		U071	COVID-19	293	0.6
M546	Pain in thoracic spine	865	0.5	R519	Headache, unspecified	590	0.4		R519	Headache, unspecified	292	0.6
J029	Acute pharyngitis, unspecified	862	0.5	R109	Unspecified abdominal pain	558	0.4		R109	Unspecified abdominal pain	291	0.6
R109	Unspecified abdominal pain	849	0.5	I10	Essential (primary) hypertension	550	0.4		R51	Headache	284	0.6
M25552	Pain in left hip	844	0.5	M722	Plantar fascial fibromatosis	549	0.4		G4700	Insomnia, unspecified	276	0.6
Z658	Other specified problems related to pyschosocial circumstances	807	0.4	J029	Acute pharyngitis, unspecified	544	0.4		R300	Dysuria	207	0.5
Z733	Stress, not elsewhere classified	805	0.4	R079	Chest pain, unspecified	520	0.4		N390	Urinary tract infection, site not specified	203	0.4
M722	Plantar fascial fibromatosis	733	0.4	Z1152	Encounter for screening for COVID-19	519	0.4		F439	Reaction to severe stress, unspecified	196	0.4
F4322	Adjustment disorder with anxiety	706	0.4	M25569	Pain in unspecified knee	511	0.4		M546	Pain in thoracic spine	188	0.4

Abbreviations: ICD-10, International Classification of Diseases, 10th Revision; ICD-9, International Classification of Diseases, 9th Revision; COVID-19, coronavirus disease 2019.

[a] Some ICD-9 codes still appear in TMDS. While medical encounters documented with ICD-9 codes were included in the overall analysis for major diagnostic category analysis, the summary of these codes are excluded from this table.

Encounters for certain conditions are generally rare in deployment settings. Some conditions, including diabetes, pregnancy, or congenital anomalies, often preclude service member deployment. Due to medical pre-screening, service members who are deployed demonstrate a lower rate of medical conditions that could interfere with deployment operations than their non-deployed counterparts. Deployed service members are also less likely to require medical care for pre-screened conditions.

When interpreting these results and analyses, several limitations of these data should be considered. Not all medical encounters in theaters of operations are recorded in the TMDS. Some care by in-theater medical personnel occurs at small, remote, or austere forward locations where electronic documentation of diagnosis and treatment is infeasible, and some emergency medical care for stabilization of combat-injured service members prior to evacuation may not be routinely captured in the TMDS. Due to the exigencies of deployment settings that can complicate accurate data reporting or transmission, this report may underestimate the true burden of health care in the areas of operations assessed.

In any review that relies on ICD coding, some diagnosis misclassification should be expected due to coding errors within the electronic health record. Although the aggregated distributions of illnesses and injuries presented in this report are compatible with assessments derived from other examinations of morbidity in military populations (both deployed and non-deployed), instances of highly unlikely diagnostic codes for a deployed population have been observed. This misclassification bias is likely minor and non-differential.

Because this report only includes medical evacuations from CENTCOM and AFRICOM, it does not describe any medical evacuations from the recent deployment of troops to EUCOM, INDOPACOM, and SOUTHCOM. Each area of operation is unique, with vastly different medical assets, medical evacuation capabilities, and deployed service member populations. Consequently, the results from CENTCOM or AFRICOM may not be generalizable to other combatant commands.

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Absolute and Relative Morbidity Burdens Attributable to Various Illnesses and Injuries Among Non-Service Member Beneficiaries of the Military Health System, 2023

The Military Health System (MHS) is a global, integrated health delivery system tasked with ensuring the medical readiness of the U.S. Armed Forces while fulfilling the individual health care needs of eligible military personnel and their dependents.[1] The MHS network comprises military hospitals and clinics that ensure the medical readiness of the force, which are complemented by programs that enable beneficiary care in the private sector through the TRICARE insurance program.

MHS beneficiaries are a diverse and heterogeneous population that includes not only active duty service members, but retirees in addition to immediate family members, from all branches of military service under the authority of the Department of Defense.[2] Each MHS beneficiary category has its own demographic, enrollment, and health care provision patterns. Since the TRICARE brand name was first applied to the MHS enterprise in 1995, the TRICARE benefit has continued to expand and evolve for service members, retirees, and their families. In fiscal year 2022, TRICARE served approximately 9.6 million beneficiaries.[3]

An important element of beneficiary care is the transition from TRICARE to Medicare. Once an individual reaches age 65, and becomes eligible for Medicare, TRICARE eligibility ends. If individuals enroll in Medicare, they receive a Medicare gap insurance, known as TRICARE for Life (TFL).[2] TFL is funded through mechanisms outside of the Defense Health Program. While TFL patients are eligible for direct care at military hospitals and clinics, most care is provided at private sector institutions, paid through the Medicare benefit. While Medicare-eligible individuals remain eligible for direct care at military medical facilities, such care is contingent upon resource availability.

Beneficiaries enrolled in either the TRICARE Prime or TRICARE Select options, including many family members of active duty service members and a portion of non-Medicare eligible retirees and their family members (primarily those aged 64 years and younger), may receive care at fixed military hospitals and clinics or from private sector health care facilities (purchased care) that supplement direct military medical care. Consequently, distribution of health care burden estimates should be considered in relation to beneficiary age category and source of care when interpreting health care provision data among MHS beneficiaries.

This report represents an updated summary of health care burdens among MHS non-service member beneficiaries during calendar year 2023. Health care burdens were quantified using a classification system derived from the Global Burden of Disease (GBD) Study,[4-7] in combination with diagnostic groupings from the International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) chapter-based system for categorizing hospitalizations and ambulatory visits. This report presents stratified estimates for 4 age groups of health care recipients, and Medicare-eligible beneficiaries (over age 65) are considered separately, as most of their care is provided and paid by non-MHS resources.

What are the new findings?

Mental health disorders accounted for the largest proportions of the morbidity and health care burdens that affected the pediatric and younger adult beneficiary age groups of non-service member beneficiaries of the Military Health System in 2023. Among adults aged 45-64 years and adults aged 65 years and older, musculoskeletal diseases accounted for the most morbidity and health care burdens. With almost all health care for Medicare-eligible beneficiaries aged 65 years and older at private sector medical facilities, over 91% of health care encounters among non-service member beneficiaries (TRICARE-eligible and Medicare-eligible) occurred at non-military medical facilities.

What is the impact on readiness and force health protection?

Ensuring medical care for family members, especially during deployments or other periods of separation, improves service member focus and morale. The promise of lifetime medical benefits upon retirement for not only service members but their immediate family members has been a powerful recruitment and retention tool over the past several decades. Moreover, health care provision to beneficiaries who are not active duty service members provides Military Health System care providers with valuable opportunities for maintaining their requisite medical skills and knowledge, thereby improving medical force readiness. Routinely documented and reported trends in health care utilization and diagnostic patterns can help senior leaders improve resource allocation within the Military Health System to maximize efficiency, medical readiness, and readiness of the medical forces.

Methods

The surveillance population included all non-service member MHS beneficiaries who had at least 1 hospitalization or outpatient medical encounter from January 1 through December 31, 2023, with either a military hospital, clinic, or health care provider, or through a private sector facility or provider (if reimbursed through TRICARE or through Medicare with a copayment by TFL). All inpatient and outpatient medical encounters for this analysis were summarized according to the primary (first-listed) International Classification of Diseases, 10th Revision (ICD-10) codes that indicate the natures of illnesses or injuries

(i.e., ICD-10 codes A00–T88). Nearly all records of encounters with first-listed diagnoses coded with "Z" (care other than for a current illness or injury, e.g., general medical examinations, after care, vaccinations) or "V," "W," "X," or "Y" (indicators of the external causes but not the natures of injuries) were excluded from the analysis; encounters with a code of Z37 ("outcome of delivery, single liveborn") in the primary position were retained.

For summary purposes, all illness- and injury-specific diagnoses (as defined by ICD-10) were grouped into 153 burden of disease-related conditions and 25 major morbidity categories based upon a modified version of the classification system developed for the Global Burden of Disease Study. The methodology for summarizing absolute and relative morbidity has been used annually since 2014 and is described elsewhere.[8] Results were stratified by source of health care (direct care, i.e., military hospitals and clinics vs. non-direct care, i.e., private sector medical facilities) and by age group (0-17 years, 18-44 years, 45-64 years, 65 years and older). For analysis of morbidity burdens within the youngest age group, developmental disorders were included in the general category of mental health disorders.

Results

In 2023 the population of non-service member MHS care recipients included more female (57.0%) than male (43.0%) beneficiaries. Adults ages 65 years and older accounted for the highest number of individuals receiving health care (n=2.03 million; 32.9%), followed by pediatric beneficiaries 17 years of age and younger (n=1.48 million; 24.1%), adults 18-44 years old (n=1.32 million; 21.5%), and older adults 45-64 years of age (n=1.32 million; 21.5%) **(Table)**.

A total of 6,155,668 non-service member MHS beneficiaries had 90,192,185 recorded medical encounters in 2023. Over half (51.4%) of the medical encounters in 2023 within the MHS were among the 2,025,803 beneficiaries over age 65 **(Table)**. Among TRICARE-eligible beneficiaries (under age 65 years), the 3 most frequent morbidity-related categories that accounted for the most medical encounters were mental health disorders, signs or symptoms of ill-defined conditions, and injury or poisoning **(Figure 1a)**. While mental health disorders and injury each also accounted for 1 of the 3 highest morbidity-related groupings for hospital bed days, maternal conditions accounted for the second-highest number of bed days among beneficiaries under age 65 years **(Figure 1b)**.

Pediatric beneficiaries, ages 17 and younger

Pediatric patients accounted for 14.9% of all medical encounters, 24.1% of all individuals affected, and 8.3% of all hospital bed days **(Table)** among non-service member MHS beneficiaries in 2023. On average, each pediatric beneficiary had 9 medical encounters during the year. Among TRICARE-eligible beneficiaries (excluding Medicare-eligible beneficiaries 65 and older), this group accounted for 30.6% of medical encounters, 35.9% of individuals affected, and 26.4% of all bed days.

TABLE. Medical Encounters[a], Individuals Affected[b], and Hospital Bed Days by Source and Age Group, MHS Non-Service Member Beneficiaries, 2023

	Medical Encounters		Individuals Affected		Medical Encounters per Individual Affected	Hospital Bed Days	
	No.	% Total	No.	% Total		No.	% Total
All non-service member beneficiaries	90,192,185	---	6,155,668	---	14.7	6,083,009	---
Source							
Direct care only	6,922,949	7.7	463,593	7.5	14.9	270,571	4.4
Outsourced care only[c]	83,269,236	92.3	4,715,955	76.6	17.7	5,812,438	95.6
Direct and outsourced care[d]	N/A	N/A	976,120	15.9	N/A	N/A	N/A
Age group, y							
0–17	13,426,358	14.9	1,482,338	24.1	9.1	507,252	8.3
18–44	12,970,904	14.4	1,323,647	21.5	9.8	607,208	10.0
45–64	17,418,985	19.3	1,321,940	21.5	13.2	804,712	13.2
65+	46,344,941	51.4	2,025,083	32.9	22.9	4,163,837	68.5

Abbreviations: MHS, Military Health System; No., number; N/A, not applicable; y, years.

[x]A total of 2,660 individuals of unknown age with their medical encounters in this group, 30,997, were not included in age-specific categorical analyses but were included in the overall total.

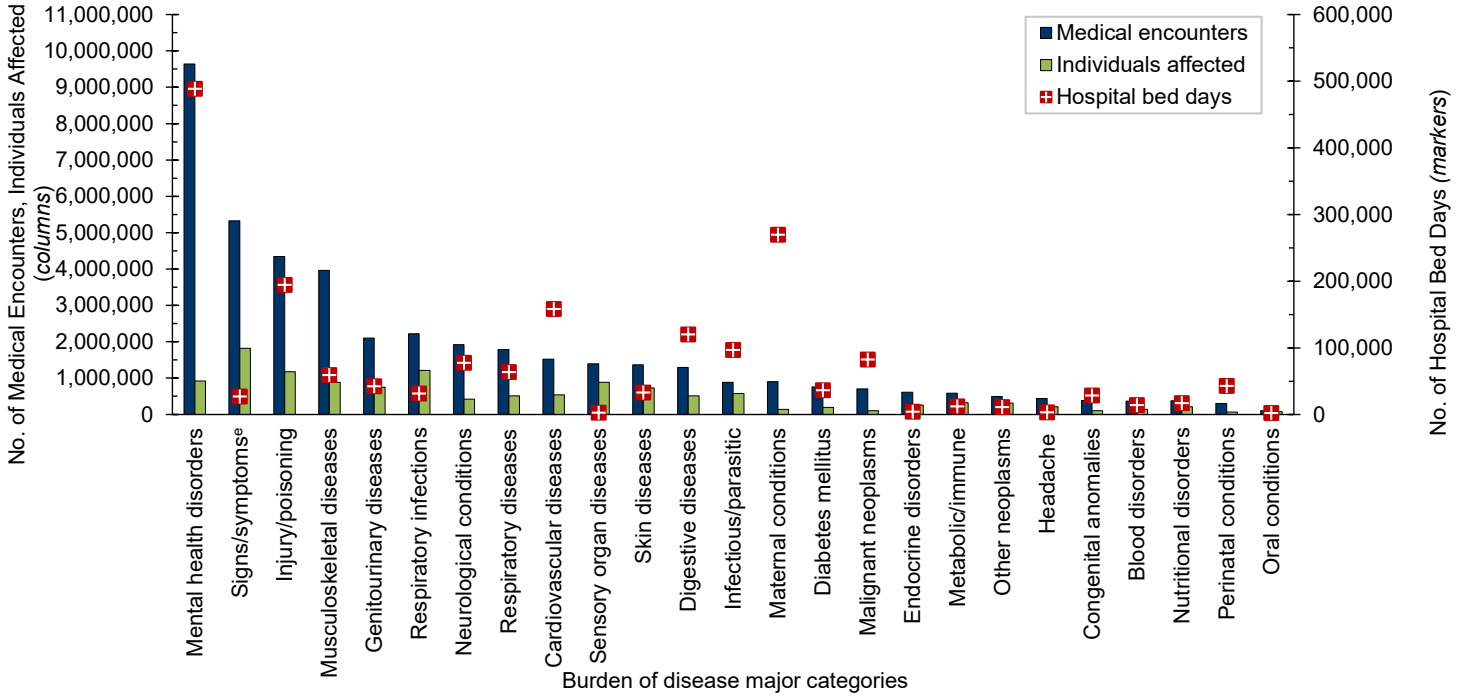
[a] Medical encounters include total hospitalizations and ambulatory visits for the condition (with no more than 1 encounter per individual per day per condition).

[b] Individuals with at least 1 hospitalization or ambulatory visit for the condition.

[c] Represents encounters or hospital bed days under purchased care or care received under Medicare benefit.

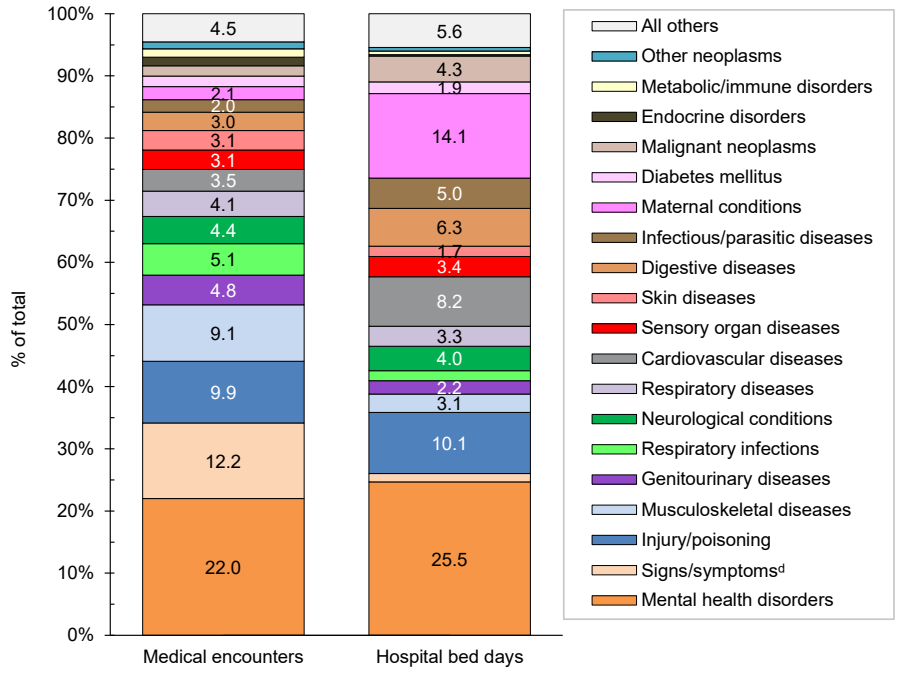
[d] Represents a combination of care received directly at military hospitals and clinics and non-military medical facilities.

FIGURE 1a. Numbers of Medical Encounters[a], Individuals Affected[b], and Hospital Bed Days by Burden of Disease Major Category[c], MHS Non-Service Member Beneficiaries Under Age 65 Years[d], 2023



Abbreviations: MHS, Military Health System; No., number.
[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.
[d] Source of care includes medical encounters or hospitalizations at military hospitals and clinics and non-military medical facilities.
[e] Includes ill-defined conditions.

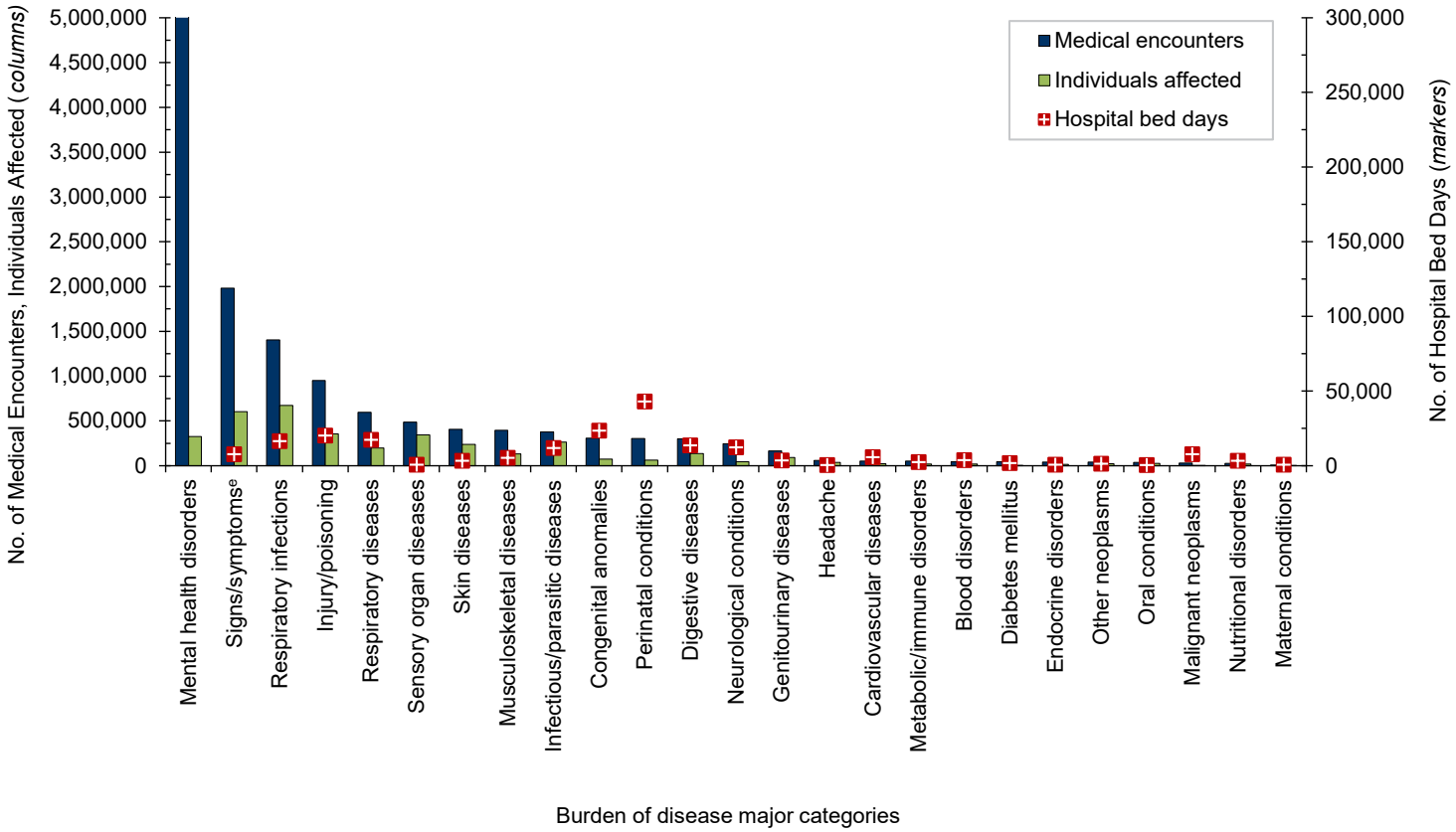
FIGURE 1b. Percentages of Medical Encounters[a] and Hospital Bed Days by Burden of Disease Major Category[b], MHS Non-Service Member Beneficiaries Under Age 65 Years[c], 2023



Mental health disorders represented the largest burden of disease in 2023 among pediatric beneficiary medical encounters (37.7%; n= 5,064,319) and contributed to the highest number of hospital bed stays (59.2%; n=300,462) **(Figures 2a** and **2b)**. On average, pediatric beneficiaries affected by a mental health disorder experienced 15 medical encounters during the year specifically related to this morbidity category (data not shown). More than two-thirds (68.2%) of all medical encounters for mental health disorders among pediatric beneficiaries were attributed to 3 groups of disorders:

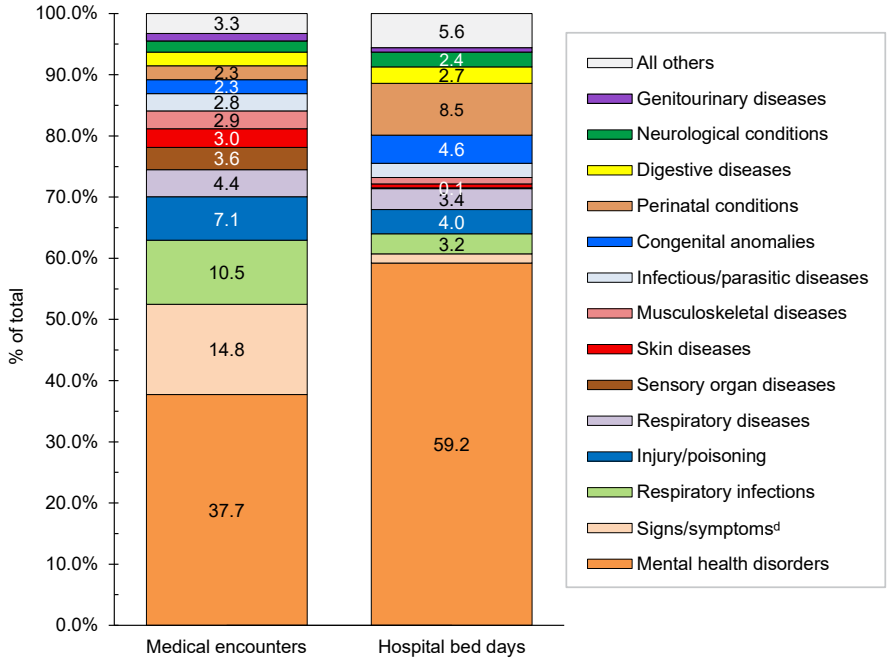
Abbreviation: MHS, Military Health System.
[a] Medical encounters include total hospitalizations and ambulatory visits for the condition (with no more than 1 encounter per individual per day per condition).
[b] Burden of disease major categories based on a modified version of those defined in the Global Burden of Disease study.[3]
[c] Source of care includes medical encounters or hospitalizations at military hospitals and clinics and non-military medical facilities.
[d] Includes ill-defined conditions.

FIGURE 2a. Medical Encounters[a], Individuals Affected[b], and Hospital Bed Days by Burden of Disease Major Category[c], MHS Pediatric Beneficiaries[d], Ages 17 Years and Younger, 2023



Abbreviations: MHS, Military Health System; No., number.
[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.[3]
[d] Source of care includes medical encounters or hospitalizations at military hospitals and clinics and non-military medical facilities.
[e] Includes ill-defined conditions.

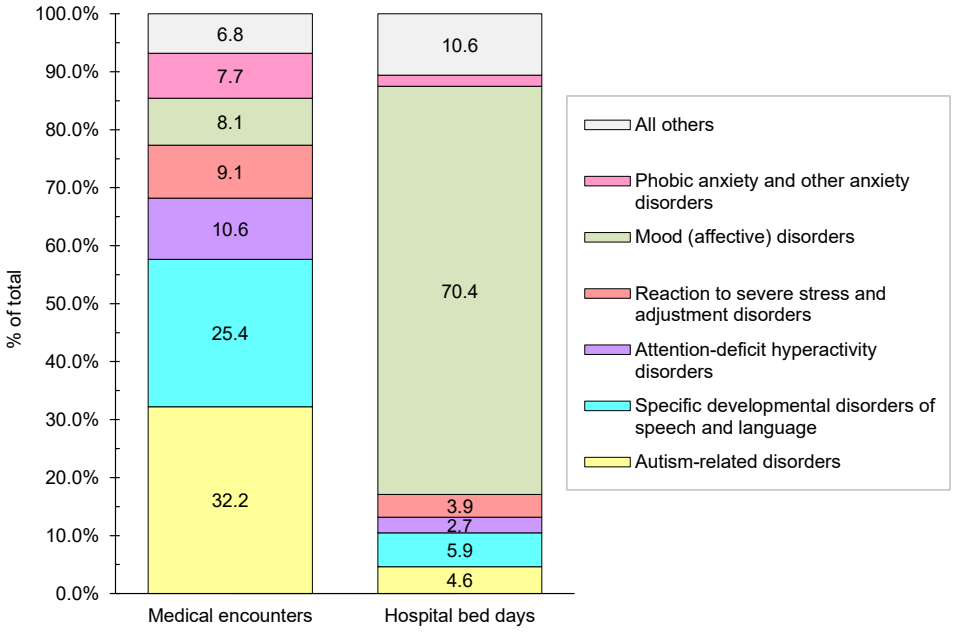
FIGURE 2b. Percentages of Medical Encounters[a] and Hospital Bed Days by Burden of Disease Category[b], MHS Pediatric Beneficiaries[c], Ages 17 Years and Younger, 2023



autism-related disorders (32.2%), developmental disorders of speech and language (25.4%), and attention-deficit hyperactivity disorders (10.6%) **(Figure 2c)**. Pediatric patients affected by an autistic disorder had, on average, 41 autism-related encounters per individual (data not shown). Despite the high numbers of encounters associated with these 3 categories of mental health disorders, approximately three-quarters (70.4%) of hospital bed days related to mental health disorders were attributable to mood disorders, and 29.2% of bed days related to mood disorders

Abbreviation: MHS, Military Health System.
[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.[3]
[c] Source of care includes medical encounters or hospitalizations at military hospitals/clinics and non-military medical facilities.
[d] Includes ill-defined conditions.

FIGURE 2c. Percentages of Medical Encounters[a] and Hospital Bed Days for Mental Health Disorders by Conditions with Greatest Morbidity Burdens, MHS Pediatric Beneficiaries, Ages 17 Years and Younger, 2023



[a] Medical encounters include total hospitalizations and ambulatory visits for the condition (with no more than 1 encounter per individual per day per condition).

were attributable to "disruptive mood dysregulation disorder (ICD10: F3481)" (data not shown).

Perinatal conditions, or medical issues occurring within 1 year of birth, accounted for the second highest number of hospital bed days (n=42,941; 8.5%) among pediatric beneficiaries, after mental health disorders **(Figures 2a** and **2b)**, in 2023. Among pediatric beneficiaries with at least 1 illness- or injury-related diagnosis, those with malignant neoplasms had the second highest number (14) of related encounters per affected individual. The highest numbers of malignant neoplasm-related encounters and hospital bed days were attributable to leukemias (data not shown).

Respiratory infections (including upper and lower respiratory infections and otitis media) accounted for more medical encounters among pediatric beneficiaries (10.5%) compared to any older age group of beneficiaries **(Figures 2b, 3b, 4b** and **5b)**. Pediatric beneficiaries accounted for a smaller proportion (3.4%) of bed days due to respiratory disease than adults ages 65 years and older (6.3%).

Beneficiaries ages 18 to 44

Non-service member beneficiaries ages 18-44 years accounted for 14.4% of all medical encounters, 21.5% of all individuals affected, and 10.0% of hospital bed days in 2023 **(Table)**. On average, each individual who was 18-44 years of age and affected with an illness or injury (any cause) had 10 medical encounters during the year.

Mental health disorders accounted for the most medical encounters (n=3,210,427; 24.8% of all encounters) among beneficiaries ages 18-44 in 2023 **(Figures 3a** and **3b)**, representing over one-fifth (21.6%) of total bed days, and on average, 8 mental health disorder-related encounters per individual during the year. Anxiety disorders (35.3%), mood disorders (30.2%), and adjustment disorders (14.9%) accounted for approximately four-fifths (80.4%) of all medical mental health disorder encounters among beneficiaries ages 18-44 years (data not shown). Among adult beneficiaries in this age group, mood and substance abuse disorders accounted for over three-quarters (50.0% and 26.7%, respectively) of hospital bed days for mental health disorders.

Maternal conditions accounted for more than two-fifths (44.2%) of all bed days among adults ages 18-44 years as well as, on average, 7 medical encounters per affected individual **(Figures 3a** and **3b)**. Infant deliveries accounted for 9.6% of maternal condition-related medical encounters (data not shown).

Malignant neoplasms, as a diagnostic group, resulted in 6.7 encounters on average per individual in 2023, and were relatively comparable to maternal conditions, which resulted in 6.6 encounters per individual, in addition to mental health disorders, at 8.3 encounters per individual. Of the 101,474 medical encounters for malignant neoplasms among adults ages 18-44 years, 32.9% were attributed to malignant neoplasm of the breast (data not shown).

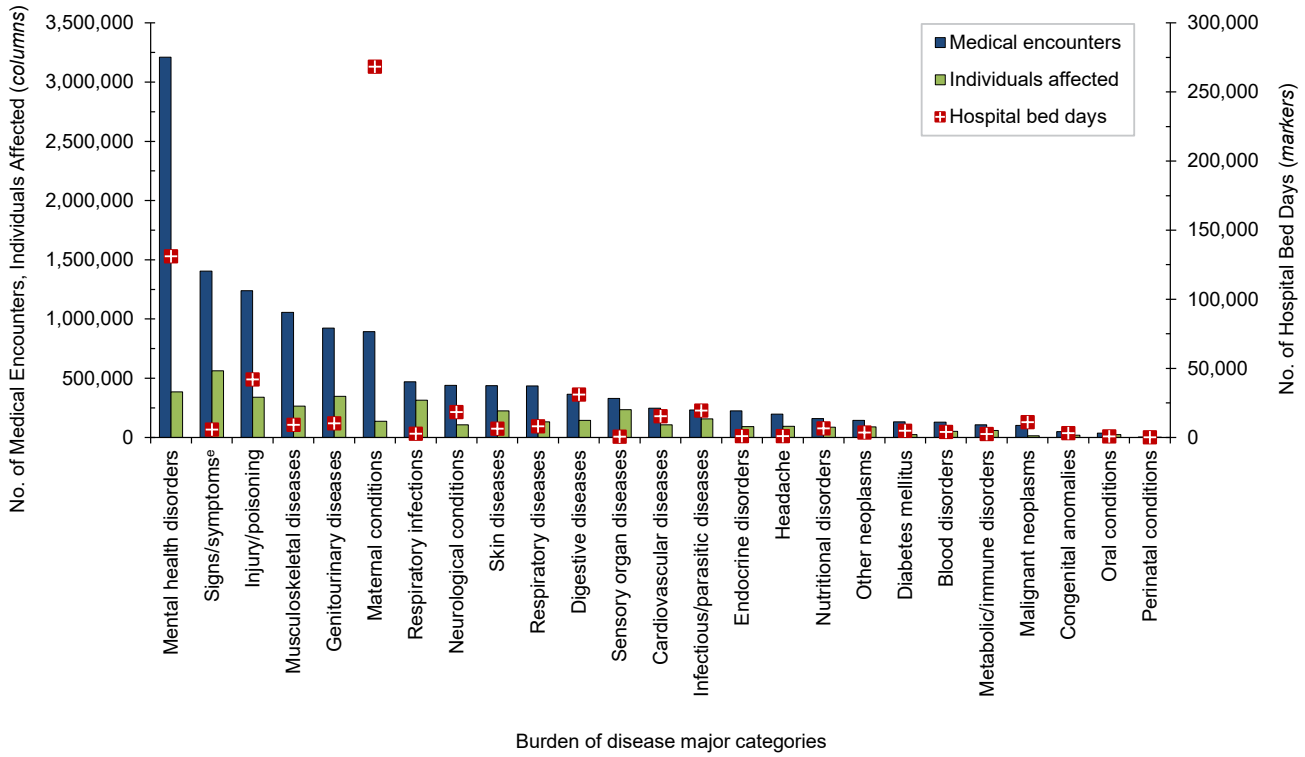
Beneficiaries ages 45 to 64

Non-service member beneficiaries ages 45-64 years accounted for approximately one-fifth (19.3%) of all medical encounters, 21.5% of all individuals affected, and 13.2% of hospital bed days in 2023 **(Table)**. Each affected individual ages 45-64 years necessitated, on average, 13 medical encounters during the year. Of all morbidity-related categories, musculoskeletal diseases accounted for the most medical encounters (n=2,516,572; 14.4%) among older adult beneficiaries ages 45-64 years **(Figures 4a** and **4b)**; back problems accounted for 42% of these musculoskeletal disease-related encounters (data not shown).

Cardiovascular diseases represented the highest proportion of hospital bed days (17.0%), second to injury or poisoning (16.4%) among adults ages 45-64 years (data not shown). Digestive diseases (9.4%) and malignant neoplasms (7.9%) accounted for larger percentages of total hospital bed days among beneficiaries of this age group than within other age groups of non-service member MHS beneficiaries.

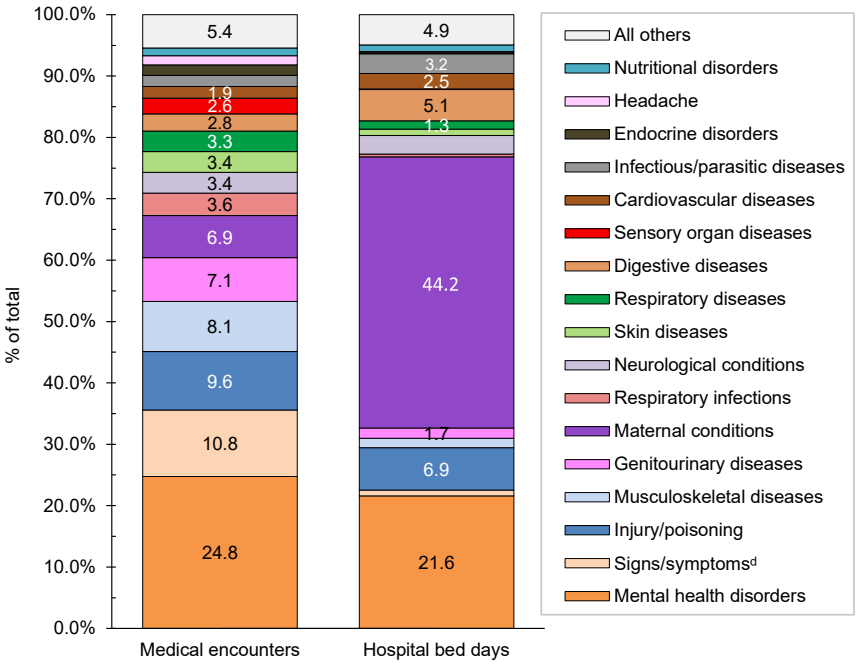
Malignant neoplasm of the breast was the leading cause of neoplasm-related medical encounters (25.4%) by adults ages 45-64 years who were non-service member beneficiaries of the MHS in 2023 (data not shown).

FIGURE 3a. Medical Encounters[a], Individuals Affected[b], and Hospital Bed Days by Burden of Disease Major Category[c], MHS Non-Service Member Beneficiaries[d], Ages 18–44 Years, 2023



Abbreviations: MHS, Military Health System; No., number.
[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.[3]
[d] Source of care includes medical encounters or hospitalizations at military hospitals and clinics and non-military medical facilities.
[e] Includes ill-defined conditions.

FIGURE 3b. Percentages of Medical Encounters[a] and Hospital Bed Days, by Burden of Disease Major Category[b], MHS Non-Service Member Beneficiaries[c], Ages 18–44 Years, 2023



Medicare-eligible beneficiaries ages 65 and older

Non-service member beneficiaries ages 65 years and older accounted for more medical encounters (51.4%) and more than 2.2 times the number of hospital bed days in 2023 than all other age groups combined. On average, each affected individual in this age group necessitated 23 medical encounters during the year. In addition, the number of individuals affected in this age group was greater than in any other age group **(Table)**.

Musculoskeletal diseases (n=6,869,432; 14.8%) together with cardiovascular

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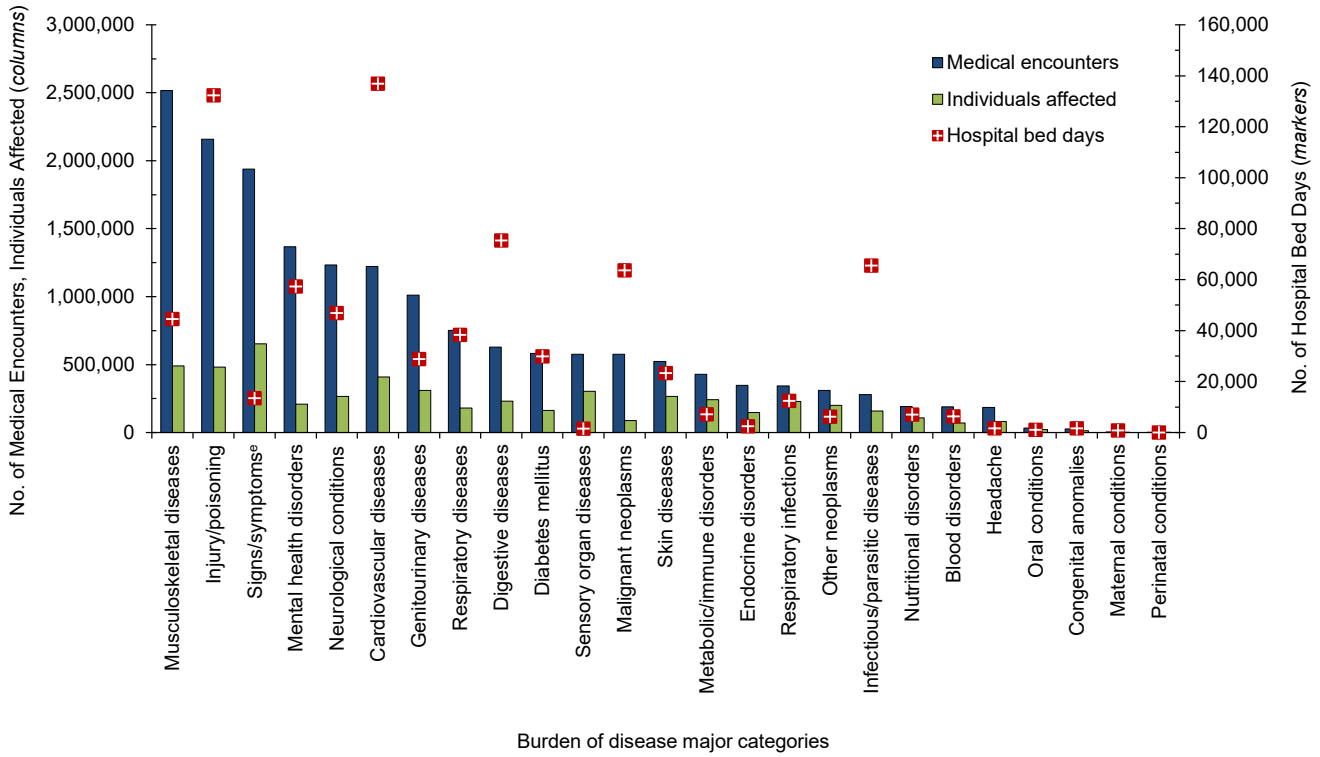
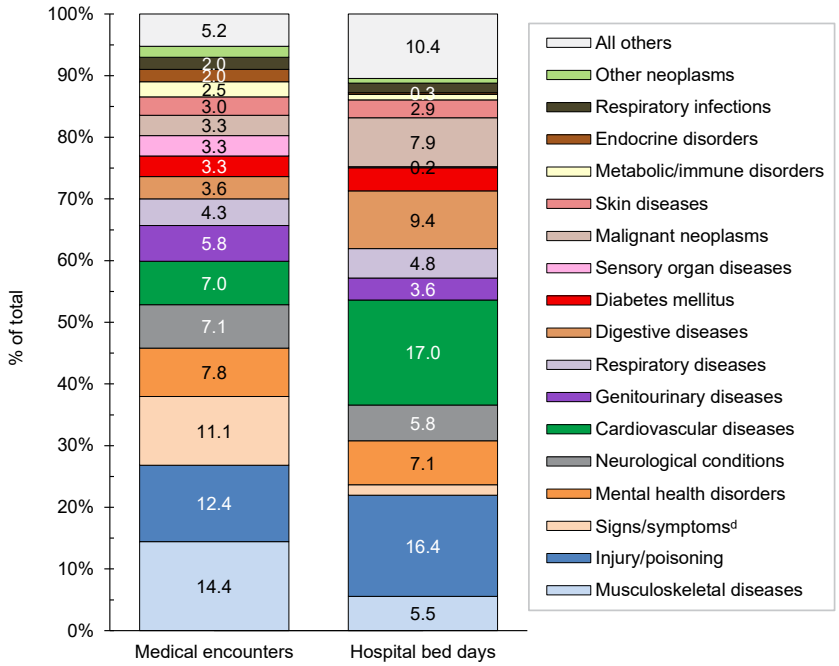
[a] Medical encounters include total hospitalizations and ambulatory visits for the condition (with no more than 1 encounter per individual per day per condition).
[b] Burden of disease major categories based on a modified version of those defined in the Global Burden of Disease study.[3]
[c] Source of care includes medical encounters or hospitalizations at military hospitals/clinics and non-military medical facilities.
[d] Includes ill-defined conditions.

FIGURE 4a. Medical Encounters[a], Individuals Affected[b], and Hospital Bed Days by Burden of Disease Major Category[c], MHS Non-Service Member Beneficiaries[d], Ages 45–64 Years, 2023



Abbreviations: MHS, Military Health System; No., number.
[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.[3]
[d] Source of care includes medical encounters or hospitalizations at military hospitals and clinics and non-military medical facilities.
[e] Includes ill-defined conditions.

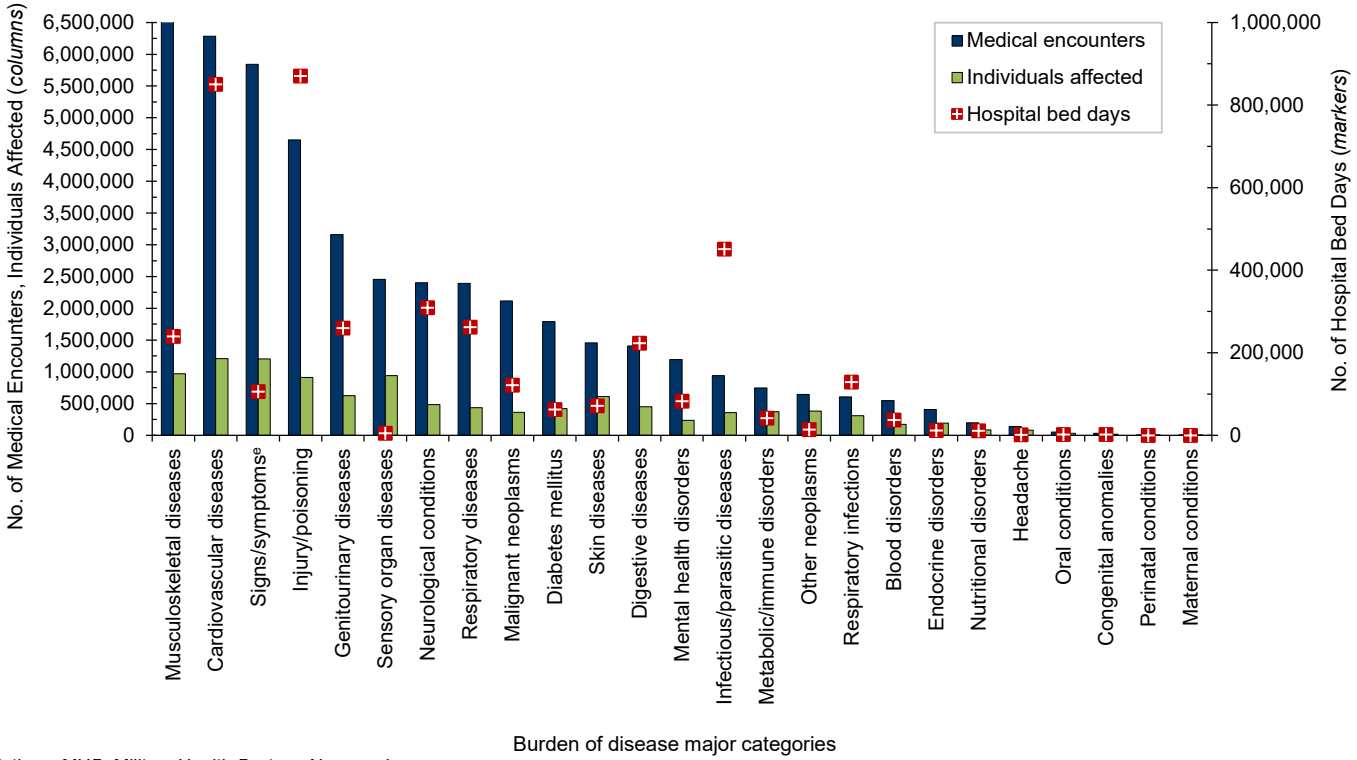
FIGURE 4b. Percentages of Medical Encounters[a] and Hospital Bed Days by Burden of Disease Major Category[b], MHS Non-Service Member Beneficiaries[c], Ages 45–64 Years, 2023



diseases (n=6,285,255; 13.6%) represented the leading causes for medical encounters among beneficiaries ages 65 years and older, while cardiovascular diseases, as a discrete cause, accounted for the second largest number of bed days (850,261 days; 20.4%) in 2023 **(Figures 5a** and **5b)**. Back problems accounted for a little more than one-third (35.4%) of all musculoskeletal disease-related medical encounters among non-service member MHS beneficiaries in 2023 (data not shown).

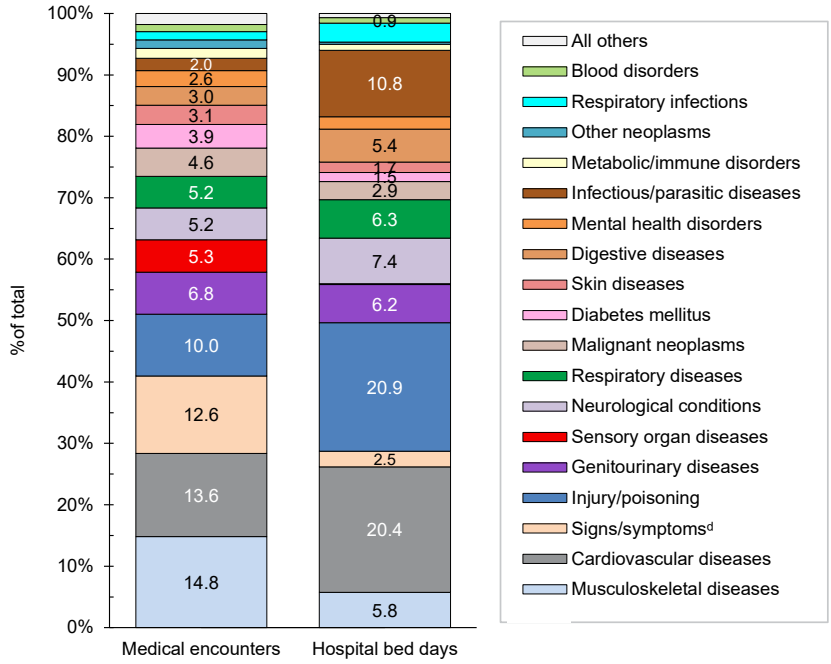
[a] Medical encounters include total hospitalizations and ambulatory visits for the condition (with no more than 1 encounter per individual per day per condition).
[b] Burden of disease major categories based on a modified version of those defined in the Global Burden of Disease study.[3]
[c] Source of care includes medical encounters or hospitalizations at military hospitals and clinics and non-military medical facilities.
[d] Includes ill-defined conditions.

FIGURE 5a. Medical Encounters[a], Individuals Affected[b], and Hospital Bed Days by Burden of Disease Major Category[c], MHS Non-Service Member Beneficiaries[d], Ages 65 Years and Older, 2023



Abbreviations: MHS, Military Health System; No., number.
[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.[3]
[d] Source of care includes medical encounters or hospitalizations at military hospitals and clinics and non-military medical facilities.
[e] Includes ill-defined conditions.

FIGURE 5b. Percentages of Medical Encounters[a] and Hospital Bed Days by Burden of Disease Major Category[b], MHS Non-Service Member Beneficiaries[c], Ages 65 Years and Older, 2023



Discussion

This report documents the overall health care burden of disease among non-service member MHS beneficiaries in 2023, received through not only direct care at military hospitals and clinics, but purchased care reimbursements at private sector medical facilities as well. A substantial majority of non-service member beneficiaries received care exclusively at private sector facilities: Just under 8% of all ambulatory encounters documented in the Defense Medical Surveillance System

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[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.[3]
[c] Source of care includes medical encounters or hospitalizations at military hospitals and clinics and non-military medical facilities.
[d] Includes ill-defined conditions.

(DMSS) in 2023 were provided from a direct care military hospital or clinic. This finding also reflects the substantial proportion of encounters and bed days among non-service member beneficiaries that is attributable to Medicare-eligible (65 years and older) beneficiaries.

The total number of non-service member beneficiaries receiving health care through the MHS in 2023 was 6,155,668, a decrease of 388,365 from 6,544,033 in 2022. Unlike in 2022, the number of pediatric beneficiaries under age 17 years exceeded those ages 18 to 44 years (n=1.48 million, 24.1% vs. n=1.32 million, 21.5%, respectively). Pronounced differences between beneficiary age groups exist for types of morbidity-related diagnoses and disease-specific conditions. Individuals ages 65 years or older—32.9% of all non-service member beneficiaries receiving an illness- or injury-specific diagnosis in 2023—accounted for approximately half (51.4%) of all medical encounters and over two-thirds (68.5%) of all hospital bed days among all beneficiaries.

The National Ambulatory Medical Care Survey of 2019 documented a substantially lower rate of ambulatory visits (3.2 visits per person-year)[9] among the general U.S. population than among non-service member MHS beneficiaries (14.7 visits per person-year) reported here. This higher rate of ambulatory visits among non-service member beneficiaries compared to national civilian data was observed for all age groups. Future analyses comparing major diagnostic category rates to civilian counterparts, by age and sex, may be useful for identifying longitudinal morbidity outcomes unique to military service. Since the National Ambulatory Medical Care survey includes uninsured individuals, financial barriers to care may explain a portion of the lower overall utilization rate among the general U.S. population, while the families of uniformed personnel require more medical procedures in practice, which is reflected in the composition of the most common directly-provided and purchased procedures.[10,11]

As in previous years, mental health disorders were the leading cause in 2023 for medical encounters within the pediatric (ages 0-17 years) and young adult (ages 18-44 years) beneficiary age groups, although the proportion of medical encounters attributed to mental health disorders was markedly lower among young adult (24.8%) than pediatric (37.7%) beneficiaries. Developmental disorders were a significant factor for pediatric beneficiary health care, with 68% of medical encounters for mental health disorders attributable to autism-related disorders, specific developmental disorders of speech and language, or attention-deficit hyperactivity disorders.

While ambulatory encounters among non-service member beneficiaries in 2023 remained relatively stable (with only a 2% increase) compared to 2022, the crude annual difference in hospital bed days decreased by 14%. The decreasing trend for bed days was influenced by beneficiaries ages 65 years and older, in particular their hospital bed days for cardiovascular disease, which reduced to 850,261 in 2023 from 1,201,613 in 2022, a 41% decrease. Meanwhile, the number of individuals ages 65 years or older affected by cardiovascular disease remained stable, decreasing slightly from 1,213,404 individuals in 2022 to 1,209,734 individuals in 2023. Since this report does not include person-time nor approximate rates, annual comparisons are not proportionate to changes in the number of beneficiaries procuring care. Further investigation of this finding may be of interest to MHS researchers, however, as it is noteworthy that the number of hospital days for beneficiaries ages 65 years and older decreased dramatically, along with a decrease in hospitalization days due to cardiovascular disease in 2023. Additional research is needed to determine the actual cause of the decline in cardiovascular disease and assimilate those findings to further improve case and condition management.

Cardiovascular diseases, which accounted for the largest portion of hospitalization days, along with malignant neoplasms of the breast, which represent moderate rates (32.9% vs. 25.4%) among adults ages 18-44 years and 45-64 years, respectively, continue to present as a serious burden to non-service member recipients each year. Both diseases involve many risk factors that are preventable, such as obesity and smoking. Further attention on effective prevention methods is necessary to effectively manage these diseases.[12]

As the MHS completes its transition to the new MHS GENESIS electronic health record, AFHSD is also in the process of completely transferring or mapping electronic health record data to the DMSS. 2023 was the second year DMSS data were housed and analyzed from the new MHS Information Platform (MIP). During this transition to the MIP, the number of records transmitted from MHS GENESIS and the Tricare Encounter Detail to DMSS are being continually reviewed for completeness of data capture.

While this report aims to describe morbidity-related diagnoses for all MHS beneficiaries, the data are limited to beneficiaries who received care at military hospitals and clinics or at private sector medical facilities and reimbursed through TRICARE (as primary or secondary insurance) or through Medicare, if TFL was also billed. Certain forms of care provision, such as that paid with other health insurance and not billed to TRICARE, or paid directly by the patient (or family member), is not captured in this report.

The *Military Health System Strategy for Fiscal Years 2024-2029* calls for additional capacity, to facilitate the return of patients including non-service member beneficiaries to military hospitals and clinics, improve their access to care, and increase opportunities for sustaining military clinical readiness for medical forces while delivering quality care to beneficiaries.[1,13] The need to "attract and reattract" beneficiaries to the direct care setting may be reflected in the data throughout this report, which indicate a substantial proportion of medical encounters and hospitalizations for non-service member MHS beneficiaries exclusively from private sector care. Continued evaluation of health care utilization, provision, and diagnostic patterns may aid senior leaders' allocation of resources for realization of the current MHS strategy and goals.

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Surveillance Snapshot: Illness and Injury Burdens Among Reserve Component Members of the U.S. Armed Forces, 2023

FIGURE 1. Numbers of Medical Encounters[a], Individuals Affected[b], and Hospital Bed Days by Burden of Disease Major Category[c], Reserve Component[d], U.S. Armed Forces, 2023

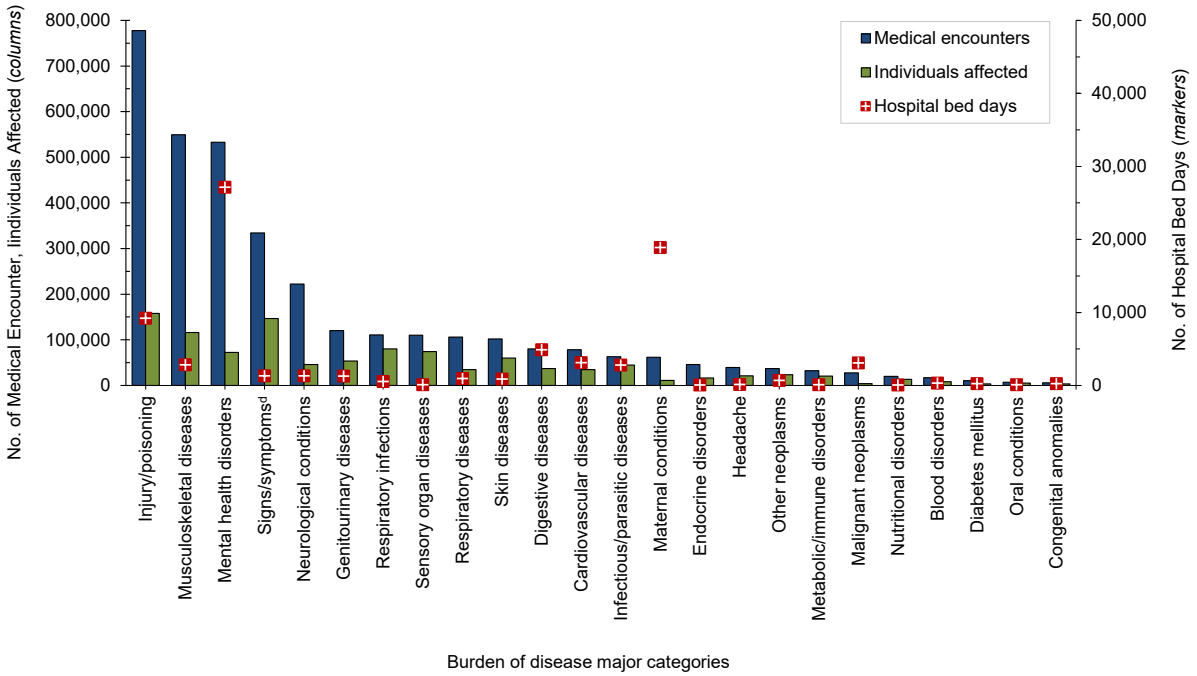
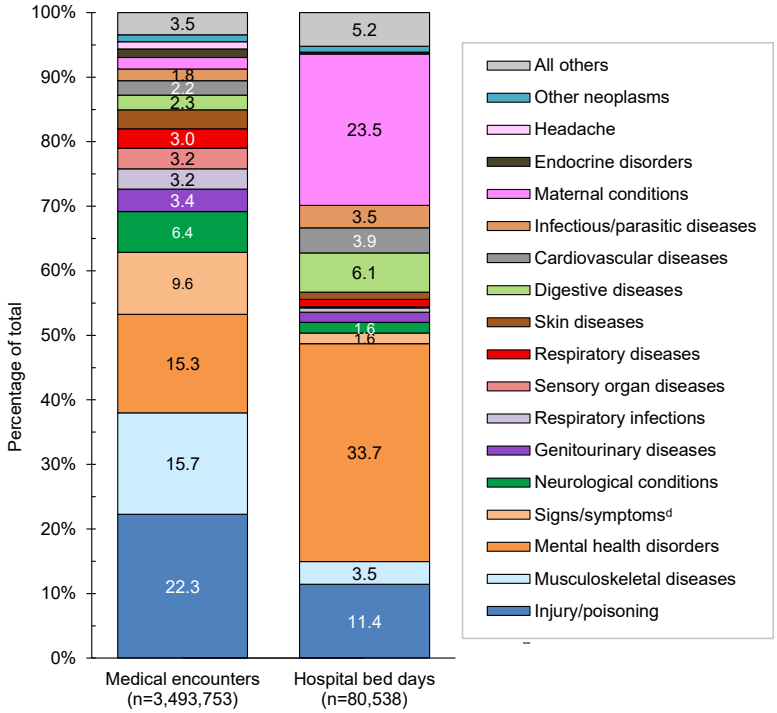


FIGURE 2. Percentages of Medical Encounters[a] and Hospital Bed Days by Burden of Disease Category[b], Reserve Component[c], U.S. Armed Forces, 2023



Abbreviation: No. number.

[a] Medical encounters include total hospitalizations and ambulatory visits for the condition (with no more than 1 encounter per individual per day per condition) occurring in U.S. military and non-military medical facilities.

[b] Burden of disease categories are the same as those used for analyses of morbidity burdens in the active component overall reported in the June issue (*MSMR*. 2024;31(6):2-11).

[c] The reserve component is comprised of Reserve and Guard members of each service.

[d] Includes ill-defined conditions.

Surveillance Snapshot: Illness and Injury Burdens Among Reserve Component Members of the U.S. Coast Guard, 2023

FIGURE 1. Numbers of Medical Encounters[a], Individuals Affected[b], and Hospital Bed Days by Burden of Disease Major Category[c], Coast Guard Reserve Component, U.S. Armed Forces, 2023

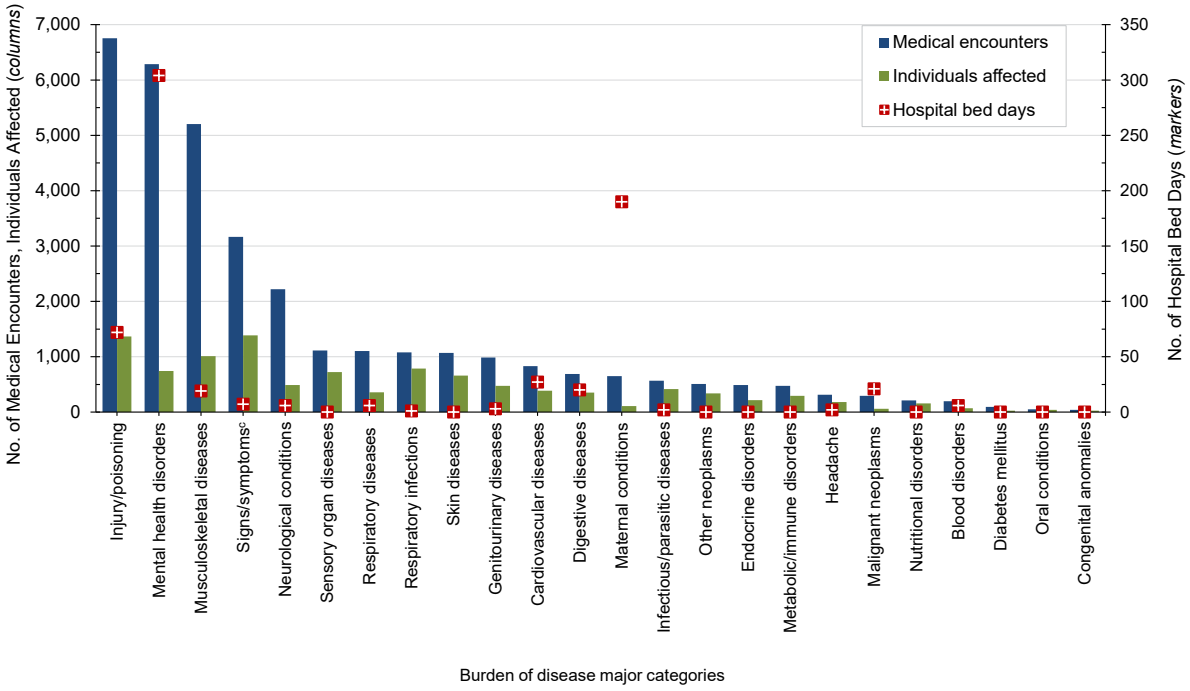
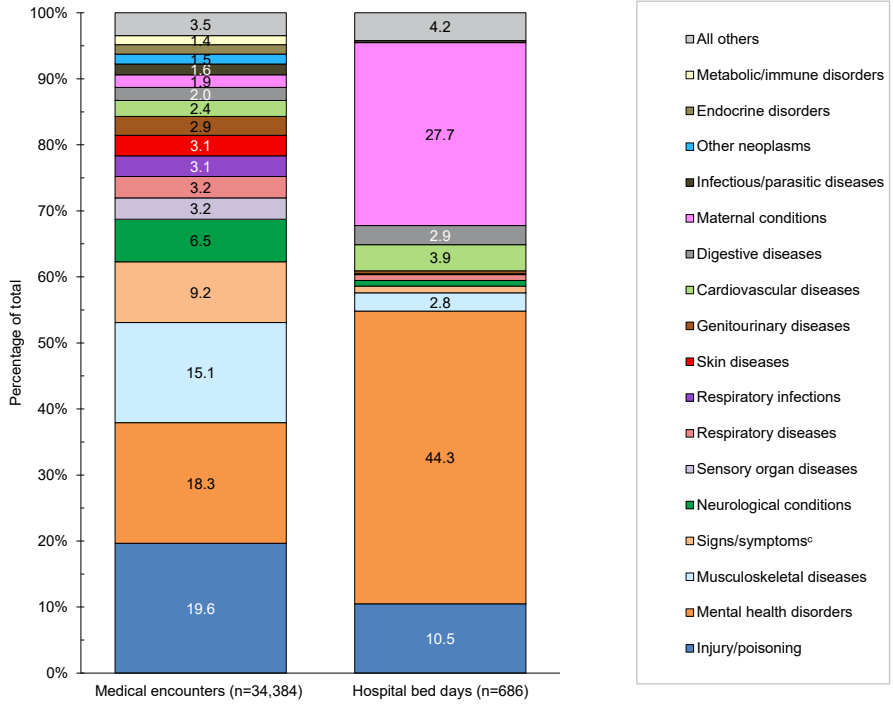


FIGURE 2. Percentages of Medical Encountersa and Hospital Bed Days by Burden of Disease Category[b], Coast Guard Reserve Component, U.S. Armed Forces, 2023



Abbreviation: No. number.

[a] Medical encounters include total hospitalizations and ambulatory visits for the condition (with no more than 1 encounter per individual per day per condition) occurring in U.S. military and non-military medical facilities.

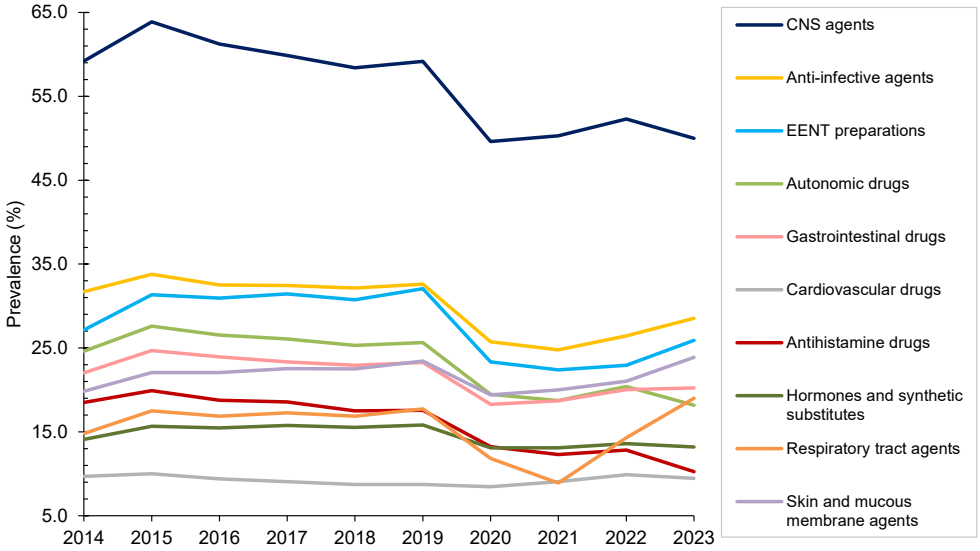
[b] Burden of disease categories are the same as those used for analyses of morbidity burdens in the active component overall reported in the June issue (*MSMR*. 2024;31(6):2-11).

[c] Includes ill-defined conditions.

Surveillance Snapshot: Trends in Pharmacy Prescriptions by Therapeutic Class Among Active Component Members of the U.S. Armed Forces, 2014–2023

Kristen R. Rossi, MPH; Edward A. Sheriff, PhD, MPH; Scott Russell, MPH

FIGURE. Annual Prescription Prevalence by AHFS Therapeutic Class, Active Component,[a] 2014-2023



Abbreviations: AHFS, American Hospital Formulary Service; CNS, central nervous system; EENT, ear, nose and throat; ACSMs, active component service members.
[a] Annual prevalence computed using mid-year estimates for ACSMs of the Army, Navy, Air Force, Marine Corps, and Coast Guard; Space Force mid-year population estimates were included beginning in 2022.

This Surveillance Snapshot presents trends in pharmacy prescriptions ordered from 2014 to 2023 for active component service members (ACSMs) of the U.S. Army, Navy, Air Force, Marine Corps, Coast Guard, and Space Force. Pharmacy prescriptions were queried from the Pharmacy Data Transaction Service (PDTS), which includes prescription orders originating from military hospitals and clinics, mail order, and retail-dispensed facilities. The American Hospital Formulary System (AHFS)[1] pharmacologic-therapeutic codes were utilized to identify ACSMs with pharmacy orders under a first-tier class (2-digit therapeutic class codes) each year. The annual prevalence of each therapeutic class was calculated per person using mid-year estimates for all ACSMs. The figure depicts AHFS classes representing the 10 highest cumulative period prevalence proportions.

Throughout the 10-year period, central nervous system (CNS) agents accounted for the highest prescription prevalence. Of the 658,598 ACSMs with prescriptions for a CNS agent in 2023, the leading 3 prescription orders for ACSMs further classified under a 6-digit AFHS code included other nonsteroidal anti-inflammatory agents (n=424,968; code 280804), analgesics and antipyretics (n=285,082; code 280892), and tricyclics other norepinephrine-reuptake inhibitors (n=172,790; code 281604). Excluding cardiovascular drugs, the prevalence of ACSMs receiving prescription orders decreased in all 9 other therapeutic classes during the SARS-CoV-2 pandemic. From 2019 to 2021, the largest prevalence declines were observed for respiratory tract agents (17.7% to 8.9%), EENT preparations (32.1% to 22.4%), antihistamine drugs (17.6% to 12.3%), autonomic drugs (25.7% to 18.7%), and anti-infective agents (32.6% to 24.8%). Following the pandemic, the prevalence of ACSMs receiving prescription orders during 2023 increased to a highest point observed over the 10-year surveillance period within 2 therapeutic classes, including respiratory tract agents (19.0%) and skin and mucous membrane agents (23.9%).

Two additional therapeutic classes not depicted in the figure demonstrated substantial prevalence increases during the surveillance period. From 2014 to 2023, the prevalence of ACSMs with orders for serum/toxoid/vaccines (class 8000000) increased from 2.4% to 11.6% and miscellaneous therapeutic agents (class 920000) increased from 8.7% to 14.4%. While PDTS includes prescriptions covered under the TRICARE health benefit, intended to provide primary health care coverage for all ACSMs, it does not document over-the-counter medications. Thus, the results presented in this Surveillance Snapshot may underestimate true prevalence for some therapeutic classes.

Author Affiliations
Epidemiology and Analysis Section, Armed Forces Health Surveillance Division, Defense Health Agency

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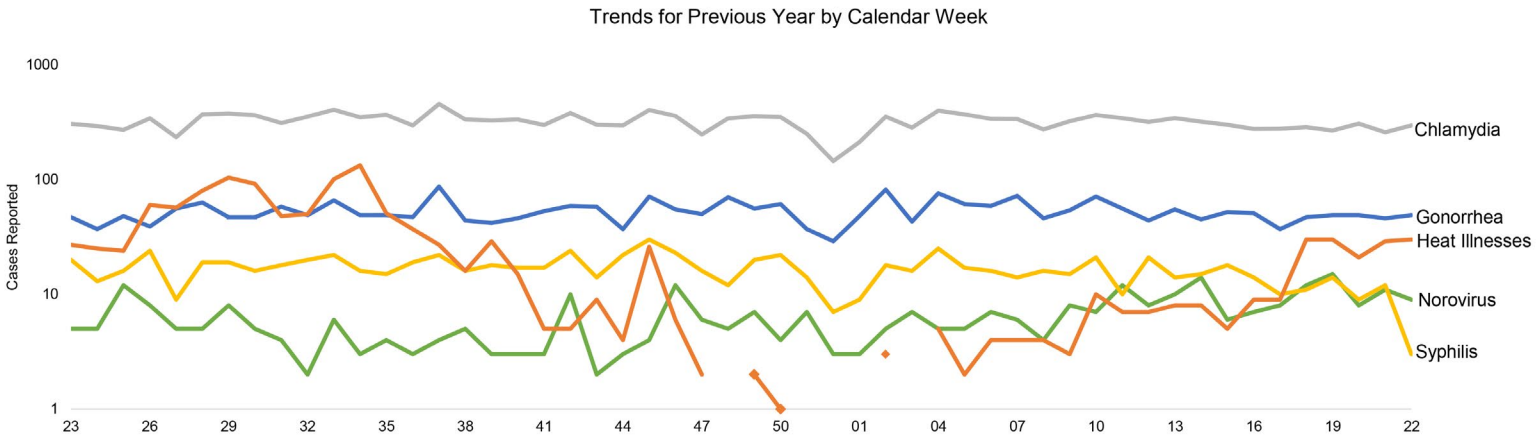
Reportable Medical Events at Military Health System Facilities Through Week 22, Ending June 1, 2024

Matthew W. R. Allman, MPH; Anthony R. Marquez, MPH; Katherine S. Kotas, MPH

TOP 5 REPORTABLE MEDICAL EVENTS BY CALENDAR WEEK, ACTIVE COMPONENT (JUNE 10, 2023 - JUNE 1, 2024)



Abbreviation: RMEs, reportable medical events.

* Cases are shown on a logarithmic scale.

Note: There were 0 heat illness cases in the following weeks in 2023: 48, 51-52, and weeks 1 and 3 in 2024. Markers added to represent instances of heat illnesses that were not visible on the logarithmic scale graph.

Reportable Medical Events (RMEs) are documented in the Disease Reporting System internet (DRSi) by health care providers and public health officials throughout the Military Health System (MHS) for monitoring, controlling, and preventing the occurrence and spread of diseases of public health interest or readiness importance. These reports are reviewed by each service's public health surveillance hub. The DRSi collects reports on over 70 different RMEs, including infectious and non-infectious conditions, outbreak reports, STI risk surveys, and tuberculosis contact investigation reports. A complete list of RMEs is available in the *2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions*.[1] Data reported in these tables are considered provisional and do not represent conclusive evidence until case reports are fully validated.

Total active component cases reported per week are displayed for the top 5 RMEs for the previous year. Each month, the graph is updated with the top 5 RMEs, and is presented with the current month's (May 2024) top 5 RMEs, which may differ from previous months. COVID-19 is excluded from these graphs due to changes in reporting and case definition updates in 2023.

For questions about this report, please contact the Disease Epidemiology Branch at the Defense Centers for Public Health–Aberdeen. Email: dha.apg.pub-health-a.mbx.disease-epidemiologyprogram13@health.mil

Authors' Affiliation: Defense Health Agency, Disease Epidemiology Branch, Defense Centers for Public Health–Aberdeen

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TABLE. Reportable Medical Events, Military Health System Facilities, Week Ending June 1, 2024 (Week 22)[a]

Reportable Medical Event[b]	Active Component[c]					MHS Beneficiaries[d]
	April 2024	May 2024	YTD 2024	YTD 2023	Total 2023	May 2024
	No.	No.	No.	No.	No.	No.
Amebiasis	0	1	6	7	15	0
Arboviral diseases, neuroinvasive and non-neuroinvasive	0	0	0	0	2	0
COVID-19-associated hospitalization and death[e]	0	1	1	0	0	0
Babesiosis	2	1	20	60	113	23
Campylobacteriosis	26	36	106	104	269	31
Chikungunya virus disease	0	0	0	1	2	0
Chlamydia trachomatis	1,265	1,301	6,835	7,549	17,506	191
Cholera	0	0	1	1	4	0
Coccidioidomycosis	3	1	26	10	36	1
Cold weather injury[f]	7	4	132	94	152	N/A
Cryptosporidiosis	4	5	31	32	67	1
Cyclosporiasis	0	0	0	1	15	0
Dengue virus infection	2	1	5	2	7	1
E coli, Shiga toxin-producing	11	9	27	19	69	4
Ehrlichiosis/Anaplasmosis	0	1	1	0	28	1
Giardiasis	8	3	38	32	78	8
Gonorrhea	205	217	1,191	1,184	2,762	35
Haemophilus influenzae, invasive	1	1	3	0	1	2
Hantavirus disease	0	0	0	0	2	0
Heat illness[f]	38	129	224	210	1,255	N/A
Hepatitis A	2	1	4	4	8	0
Hepatitis B, acute and chronic	8	5	43	77	154	11
Hepatitis C, acute and chronic	1	1	14	25	52	5
Influenza-associated hospitalization[g]	1	2	34	5	29	6
Lead poisoning, pediatric[h]	N/A	N/A	N/A	N/A	N/A	8
Legionellosis	0	0	3	2	5	1
Leishmaniasis	0	0	0	1	1	0
Leprosy	0	0	0	0	2	0
Leptospirosis	0	0	0	2	4	1
Lyme disease	9	11	33	27	70	10
Malaria	0	1	4	9	28	0
Meningococcal disease	0	0	0	2	4	0
Mpox	0	0	4	0	5	0
Norovirus	37	52	177	259	419	67
Pertussis	1	3	9	3	15	6
Post-exposure prophylaxis against Rabies	53	46	231	243	598	45
Q fever	0	0	0	1	2	0
Rubella	0	0	0	2	2	1
Salmonellosis	7	14	41	34	129	14
Shigellosis	5	4	19	26	59	5
Spotted Fever Rickettsiosis	2	4	6	18	31	4
Syphilis (all)	61	45	318	391	944	15
Toxic shock syndrome	0	0	2	1	2	0
Trypanosomiasis	0	0	1	1	1	0
Tuberculosis	0	0	1	2	11	0
Tularemia	0	0	1	1	1	0
Typhoid fever	0	0	0	0	2	0
Typhus fever	0	0	1	2	3	2
Varicella	0	3	7	4	12	13
Zika virus infection	0	0	1	0	0	0
Total case counts	1,759	1,903	9,601	10,448	24,976	512

Abbreviations: MHS, Military Health System; YTD, year-to-date; No., number; *E, Escherichia*; N/A, not applicable.

[a] RMEs reported through the DRSi as of Jun. 30, 2024 are included in this report. RMEs were classified by date of diagnosis or, where unavailable, date of onset. Monthly comparisons are displayed for the period of Apr. 1, 2024–Apr. 30, 2024 and May 1, 2024–May 31, 2024. YTD comparison is displayed for the period of Jan. 1, 2024–May 31, 2024 for MHS facilities. Previous year counts are provided as the following: previous YTD, Jan. 1, 2023–May 31, 2023; total 2023, Jan. 1, 2023–Dec. 31, 2023.

[b] RME categories with 0 reported cases among active component service members and MHS beneficiaries for the time periods covered were not included in this report.

[c] Services included in this report include the Army, Navy, Air Force, Marine Corps, Coast Guard, and Space Force, including personnel classified as FMP 20 with duty status of Active Duty, Recruit, or Cadet in DRSi.

[d] Beneficiaries included the following: individuals classified as FMP 20 with duty status of Retired and individuals with all other FMPs except 98 and 99. Civilians, contractors, and foreign nationals were excluded from these counts.

[e] Only cases reported after case definition update on May 4, 2023. Includes only cases resulting in hospitalization or death. Does not include cases of hospitalization or death reported under the previous COVID-19 case definition.

[f] Only reportable for service members.

[g] Influenza-associated hospitalization is reportable only for individuals under 65 years of age.

[h] Pediatric lead poisoning is reportable only for children ages 6 years or younger.

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