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Tobacco and Nicotine Use Among Active Component U.S. Military Service Members: A Comparison of 2018 Estimates from the Health Related Behaviors Survey and the Periodic Health Assessment

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This study compared estimates of the prevalence of and risk factors for tobacco and nicotine use obtained from the 2018 Health Related Behaviors Survey (HRBS) and Periodic Health Assessment (PHA) survey. The HRBS and the PHA are important Department of Defense sources of data on health behavior collected from U.S. military service members. While their collection methods differ, some survey questions are similar, which provides an opportunity to compare survey estimates. Active duty service members consistently reported a much lower prevalence of all types of tobacco and nicotine use on the PHA compared to the HRBS: cigarettes (11.1% vs. 18.4%), e-cigarettes (7.3% vs. 16.2%), chewing tobacco (9.7% vs. 13.4%), any tobacco or nicotine use (25.3% vs. 37.8%), and use of 2 or more tobacco or nicotine products (5.8% vs. 17.4%). Associations between tobacco and nicotine use as well as demographic and other behavioral variables were fairly similar, including age, sex, education, race and ethnicity, rank, and alcohol use. The associations with service branch, body mass index, and sleep were inconsistent. This results of this study suggest that the PHA can provide timely information on trends in military tobacco and nicotine use over time, but much higher estimates from the confidential, voluntary HRBS reported in this study suggest that the command-directed PHA may substantially underestimate the prevalence of all types of tobacco and nicotine use.

What are the new findings?

U.S. service members consistently reported much lower prevalence of use of tobacco and nicotine on the PHA compared to the HRBS. The command-directed PHA may provide timely information on trends and risk factors for tobacco and nicotine use but substantially underestimates their use.

What is the impact on readiness and force health protection?

The use of tobacco and nicotine remains an important threat to the health and readiness of U.S. military service members. Both the HRBS and the PHA provide unique and valuable information for military policy guidance on force health protection and readiness, and they should be used in tandem.

The HRBS is a confidential, cross-sectional survey sponsored by the Department of Defense (DOD) for better understanding of the health behaviors of all military branches. The HRBS was most recently conducted in 2018 by the RAND Corporation (Santa Monica, CA). Despite its utility in monitoring health-related behaviors in the U.S. military over time, the HRBS is limited by a low response rate, increasing the probability of bias.[1]

The periodic health assessment (PHA) is an annual, standardized health assessment throughout the military services to "assess currency of individual medical readiness (IMR) requirements," in accordance with DOD Instructions 6025.19 and 6200.06.[2,3] The PHA collects some survey items similar to the HRBS, including questions on smoking and tobacco and nicotine product use.[3] As the PHA must be reviewed by a health care provider, often in a direct, personal encounter,[3] its data may not be reported accurately due to service member concerns about negative career consequences, or other social desirability misclassification biases.[4]

In 2015 the prevalence of cigarette use reported in the HRBS within the active duty population (13.8%) declined for the first time to a point lower than the general U.S. population (15.1%).[5-8] In contrast, the prevalence of electronic cigarette (e-cigarette) use—also known as vaping—was higher in the U.S. military (12.4%) than in the general U.S. population (3.5%).[5,9] Particularly notable was the much higher prevalence of e-cigarette use among the 17-24 year old age group in the military (22.8%) compared to the general population (5.2%). The most recently published HRBS results from 2018 indicate substantial increases in overall cigarette use (18.4%) and e-cigarette use (16.2%) compared to 2015.[1]

A comparison of these 2 data sources could be helpful in determining the validity and utility of both data sources both for surveillance purposes and public health guidance. Furthermore, such a comparison could obviate the need for questions in the HRBS that are already covered in the PHA, if the 2 data sources are found to provide similar information.[1] This study compares estimates of prevalence and risk factors for tobacco and nicotine use among active duty U.S. service members that were self-reported in 2018 in the HRBS and the PHA.

Methods

The 2018 HRBS study design included population-based stratified random sampling and non-response weights, which were utilized to make the analytic sample obtained from the study representative of the eligible service member population.[1] Publicly available data from the 2018 HRBS, the most recent data released, were utilized to create a sampling frame of 1,357,219 active component service members (ACSMs), which was segmented into 50 strata, based on the interaction of service branch (5 categories), pay grade (5 categories), and sex. Of 199,996 invited eligible active duty service members, 17,166 responded to the survey request, with an overall weighted response rate of 9.6%.[1] Sampling weights by post-stratification were used to represent the population. The low response rate of HRBS increases risk of selection bias and bias due to unobserved data. To increase representativeness, HRBS used SAS 9.4 to produce summary statistics, with confidence interval (CI) estimates computed using the Wald method.[1] Missing data among respondents was addressed via imputation methods such as predictive mean matching to impute binary, ordinal, and continuous variables, and polytomous regression to impute categorical data.[1]

All PHAs completed (n=854,579) during calendar year 2018 by ACSMs in the Army, Navy, Air Force, Marine Corps, and Coast Guard were queried from the Defense Medical Surveillance System (DMSS).

HRBS and PHA questions assessing tobacco and nicotine use, demographic characteristics, and other exposures were reviewed. The questions that assessed tobacco and nicotine use were very similar, as shown in **Table 1**. Tobacco and nicotine use outcomes were assessed for 5 types of single product use within the past 30 days: cigarettes, chewing tobacco or snuff, cigars (cigars, cigarillos, or little cigars), tobacco use in a pipe or hookah, and electronic cigarettes ('e-cigarettes' or 'vaping'). The use of any tobacco or nicotine product use and 2 or more forms of any single tobacco or nicotine product use were also assessed.

In both surveys, demographic information (age, sex, race and ethnicity, branch of service, rank, education); body mass index (BMI); and health-related behaviors such as sleep (average hours of sleep in a 24-hour period over the last 30 days) and alcohol use (usual number of drinks containing alcohol on day[s] the service member drank in the last 30 days) were collected similarly. The assessment of sexually-transmitted infection (STI) risk defined by the HRBS included self-reporting of an STI (such as gonorrhea, syphilis, chlamydia, HPV, or genital herpes) within the past year. In contrast, the PHA defined STI risk by 1 or more of the following: a new sex partner in the past 3 months; more than 1 sex partner in the last 12 months; sexually active women less than 25 years of age; inconsistent use of latex condoms; men who have sex with men; sexual contact with person(s) with known STIs or risk of STI; exchanged money or drugs for sex; or injected drug use.

HRBS estimates were generated using sample weights to generate representative active component population estimates, as previously reported,[8] while PHA data were reported using unweighted estimates. Relative frequency analyses were performed to describe the distribution of respondents' demographics and health behaviors in both surveys. The prevalence estimates of tobacco or nicotine use classification groups were reported. The standard errors and CIs for weighted HRBS estimates were computed using the Taylor series method. Adjusted odds ratios (aORs) of tobacco or nicotine product use and 95% CIs were calculated using logistic regression, reported separately for the HRBS and PHA; sample weights were again used

TABLE 1. Comparison of PHA and HRBS Smoking and Tobacco Product Use Questions

Tobacco Use Classification	PHA Question	HRBS Question
	In the past 30 days, which of the following products have you used on at least 1 day…	On how many of the past 30 days did you…
Cigarettes	Cigarettes?	Smoke a cigarette?
Chewing tobacco	Chewing tobacco, snuff or dip?	Use chewing tobacco or snuff?
Cigars	Cigars, cigarillos or little cigars?	Smoke cigars, cigarillos, or little cigars?
Hookah/pipe	Hookahs or waterpipes? Pipes filled with tobacco?	Smoke tobacco in a pipe or hookah?
E-cigarettes	Electronic cigarettes, e-cigarettes, or vape pens?	Use electronic cigarettes, e-cigarettes, or 'vaping'?
Any tobacco product[a]	Cigarettes?; chewing tobacco, snuff or dip?; cigars, cigarillos or little cigars?; hookahs or waterpipes?; pipes filled with tobacco?; electronic cigarettes, e-cigarettes, or vape pens?; bidis?; snus?; dissolvable tobacco products?	Smoke a cigarette?; use chewing tobacco or snuff?; smoke cigars, cigarillos, or little cigars?; smoke tobacco in a pipe or hookah? use electronic cigarettes, e-cigarettes, or 'vaping'?
Two or more tobacco products	**2 or more positive responses to the cigarette, chewing tobacco, cigar, hookah/pipe, or e-cigarette classifications described above*	

Abbreviations: PHA, Periodic Health Assessment; HRBS, Health Risk Behavior Survey; e-cigarette, electronic cigarette.
[a] PHA tobacco use categories for bidis, snus, and disosolvable tobacco products did not have a directly comparable terminology group for HRBS; thus, these items were not assessed for individual tobacco use comparison but were included for the 'any tobacco product' PHA classification.

for HRBS (i.e., weighted logistic regression) but not PHA analysis. Statistical significance was set at 0.05 for all statistical tests. SAS statistical software 9.4 (SAS Institute, Cary, NC) was used in all analyses.

Results

A total of 17,166 (9.6% weighted response among those invited) and 854,579 (64% of the active component population) respondents from the HRBS and the PHA, respectively, were included in the analysis **(Table 2)**. PHA response distributions compared to the HRBS were lower for respondents who were: under age 25; of junior or enlisted ranks; in the Navy or Marine Corps; overweight; and with education levels of high school or less. Notably, compared with PHA respondents, HRBS respondents reported shorter sleep duration (5 hours or less per night: 30.3% vs. 11.3%) and more frequent alcohol use (3 or more times per week: 30.2% vs. 15.4%).

Service members consistently reported a much lower prevalence of all types of tobacco and nicotine use in the PHA than in the HRBS **(Table 3)**, for: cigarettes (11.1% vs. 18.4%), e-cigarettes (7.3% vs. 16.2%), cigars (2.8% vs. 10.0%), pipes or hookahs (1.5% vs. 5.2%), and chewing tobacco (9.7% vs. 13.4%). PHA estimates were also lower for any tobacco or nicotine use (25.3% vs. 37.8%) and use of 2 or more tobacco or nicotine products (5.8% vs. 17.4%).

Tobacco and nicotine use associations with demographic and behavioral variables were mostly similar between the 2 data sources. Prevalence for all types of tobacco and nicotine use was highest in youngest service members and decreased with age; of note, prevalence among 17 to 24-year-olds was much higher in the HRBS for both cigarette use (23.1% vs. 13.7%) and e-cigarette use (27.9% vs. 12.5%). Prevalence of all types of tobacco or nicotine use was higher among men than women, except for pipe and hookah use, which was higher among women. Service members who were enlisted, at increased STI risk, used more alcohol, or had lower education levels had generally a higher prevalence of all types of tobacco or nicotine use.

Non-Hispanic Black service members had the lowest prevalence of cigarette, e-cigarette, and chewing tobacco use but highest prevalence of pipe or hookah use (8.0%) and high levels of cigar use (10.2%). Hispanic service members had the highest prevalence of e-cigarette (17.3%) use and high levels of cigarette use (18.1%). These findings were generally consistent between the data sources.

Some associations between demographic and behavioral factors and tobacco or nicotine use were inconsistent between the 2 data sources. Among the services, Marines had the highest use of all types of tobacco or nicotine, but otherwise associations between services varied by type of product used and the data source. For example, prevalence of cigarette use among Navy service members (20.4%) was higher than among Army service members (18.0%) according to HRBS data, but the relationship was reversed for the PHA—estimated prevalence in the Navy (10.1%) was lower than in the Army (14.6%). Associations of hours of sleep per night were also inconsistent with some types of tobacco or nicotine use. Much of the apparent "underweight" BMI heterogeneity between the 2 data sources was likely due to the small numbers of HRBS respondents, leading to unstable estimates.

Table 4 shows the relationship between each demographic and behavioral factor and the different types of tobacco or nicotine use after adjusting for all other factors, which resulted in generally similar associations as seen in **Table 3**. HRBS data demonstrated statistically significant decreases in adjusted odds of any tobacco or nicotine use among service members who were female, older, officers, with higher education levels, had more hours of sleep per night, of a race or ethnicity other than Non-Hispanic White, and with lower alcohol use levels. The findings from PHA data were similar, but with even stronger negative associations between any use and female sex, service, officer rank, and increased education level. In contrast, negative associations of slightly lower magnitude were seen in the PHA data for increasing age, while positive associations of slightly lower magnitude were seen for alcohol use.

Discussion

Service members consistently reported much lower prevalence for all types, and combinations, of tobacco or nicotine use in the PHA compared to the HRBS. As reported elsewhere, HRBS data trends from 2015 to 2018 indicate increased prevalence of cigarette use (13.8% to 18.4%) and e-cigarette use (12.4% to 16.2%) in the U.S. military.[5,1] Highest prevalence for both types of tobacco or nicotine use was among 17-24 year olds, whose cigarette use increased from 19.3% to 23.1%, and e-cigarette use rose from 22.8% to 27.9%.[5] Factors demonstrating generally strong associations with most or all types of increased tobacco and nicotine use included younger age, male sex, enlisted rank, lower education level, greater amounts of alcohol use, increased STI risk, and Marine Corps service. While associations between tobacco or nicotine use and demographic and behavioral variables were mostly similar in the 2 surveys, there were some inconsistent associations with branch of service.

The HRBS-obtained prevalence of cigarette use in the U.S. military was lower in 2015 than the prevalence in the general U.S. population reported by the U.S. Centers for Disease Control and Prevention (CDC),[5,9] but HRBS-obtained prevalence then increased in 2018 to exceed the U.S. population (18.4% vs. 13.7%, respectively).[10] In contrast, the 2018 prevalence of cigarette use in the U.S. military estimated from PHA data (11.1%) was lower than U.S. population prevalence. As the methods employed in obtaining HRBS data were more similar to those used by the CDC for civilian data than in PHA data capture, HRBS data were preferentially utilized for the remainder of military and civilian comparisons. The prevalence of e-cigarette use also remained much higher in the U.S. military than in the U.S. population (16.2% compared to 3.2%),[10] as in 2015.[5] "Any smoking" was higher among service members than in the U.S. population (37.8% vs. 19.7%), as was use of 2 or more tobacco or nicotine products (17.4% vs. 3.7%).[9]

Among 17-24 year olds in the U.S. military there was a much higher prevalence

TABLE 2. Demographic Characteristics of PHA and HRBS, Active Duty U.S. Military Respondents, 2018

	PHA (n=854,579)		HRBS (n=17,166)			
					95% CI	
	No.	%	Unweighted No.	Weighted %	Lower	Upper
Sex						
Male	705,867	82.6	11,813	83.31	82.62	83.99
Female	148,712	17.4	5,353	16.69	16.01	17.38
Age						
17–24	302,449	35.4	3,642	37.77	36.45	39.10
25–34	353,314	41.3	6,467	39.93	38.77	41.08
35–44	164,001	19.2	5,311	18.33	17.68	18.98
45+	34,812	4.1	1,746	3.97	3.72	4.23
Unknown	3	0.0	-	0.0		
Service						
Army	327,120	38.3	3,646	34.5	33.17	35.78
Navy	143,302	16.8	3,675	24.4	23.27	25.44
Marine Corps	82,705	9.7	2,569	13.9	13.14	14.66
Air Force	278,448	32.6	5,579	24.1	23.30	24.88
Coast Guard	23,004	2.7	1,697	3.2	2.98	3.36
Rank						
E1–E4	331,398	38.8	4,444	42.4	41.10	43.70
E5–E6	265,521	31.1	4,585	29.8	28.76	30.84
E7–W5	101,576	11.9	3,125	11.3	10.79	11.85
O1–O3	94,865	11.1	2,469	10.1	9.61	10.66
O4+	61,219	7.2	2,543	6.3	6.04	6.65
Rank group						
Enlisted	698,495	81.7	12,154	83.5	82.89	84.15
Officer	156,084	18.3	5,012	16.5	15.85	17.11
STI risk						
No	797,367	93.3	15,684	90.8	90.15	91.55
Yes	43,727	5.1	521	3.4	2.93	3.85
Unknown	13,485	1.6	961	5.8	5.21	6.32
Sleep						
5 hours or less	96,925	11.3	4,563	30.3	29.11	31.45
5 to less than 7 hours	464,632	54.4	5,903	33.7	32.53	34.83
7–9 hours	283,229	33.1	6,342	33.6	32.45	34.70
9 hours or more	7,005	0.8	358	2.5	2.05	2.88
Unknown	2,788	0.3	-	0.0		
Alcohol use						
No response/none	267,419	31.3	4,380	29.0	27.79	30.15
1–2	455,415	53.3	8,416	40.8	39.68	41.99
3–4	112,974	13.2	3,124	19.2	18.31	20.18
5–6	15,274	1.8	864	7.1	6.38	7.84
7–9	2,412	0.3	186	1.7	1.36	2.13
10+	1,085	0.1	196	2.1	1.64	2.56
BMI group						
Under weight	5,591	0.7	109	0.7	0.41	0.94
Normal weight	263,262	30.8	5,825	34.9	33.68	36.10
Over weight	382,743	44.8	8,761	50.0	48.76	51.21
Obese	125,271	14.7	2,471	14.5	13.63	15.27
Unknown	77,712	9.1	-	0.0		
Education						
High school or less	504,935	59.09	7,990	64.4	63.39	65.42
Some college	126,468	14.80	2,625	12.8	12.19	13.46
Bachelors degree or more	208,288	24.37	6,301	21.6	20.87	22.35
Unknown	14,888	1.74	250	1.2	0.90	1.42
Race and ethnicity						
Non-Hispanic White	490,454	57.39	10,666	57.6	56.41	58.86
Non-Hispanic Black	134,946	15.79	2,226	16.2	15.21	17.14
Hispanic	132,703	15.53	2,459	16.0	15.06	16.92
Non-Hispanic Other	96,476	11.29	1,747	9.5	8.83	10.14
Unknown	0	0.00	68	0.7	0.40	1.03

Abbreviations: PHA, Periodic Health Assessment; HRBS, Health Risk Behavior Survey; CI, confidence interval; No., number; STI, sexually-transmitted infection; BMI, body mass index.

TABLE 3. Prevalence of Tobacco Product Use,[a] HRBS Versus PHA, by Demographic Characteristics, Active Duty U.S. Military, 2018

	Cigarettes						E-Cigarettes						Cigars					
	HRBS				PHA		HRBS				PHA		HRBS				PHA	
			95% CI						95% CI						95% CI			
	No.	%[b]	Lower	Upper	No.	%	No.	%[b]	Lower	Upper	No.	%	No.	%[b]	Lower	Upper	No.	%
Total	2,275	18.4	17.3	19.4	94,731	11.1	1,828	16.2	15.2	17.3	62,541	7.3	1,425	10.0	9.2	10.7	23,956	2.8
Sex																		
Male	1,694	19.5	18.3	20.7	84,078	11.9	1,316	17.1	15.8	18.3	55,869	7.9	1,196	11.0	10.1	11.9	22,532	3.2
Female	581	12.8	11.5	14.1	10,653	7.2	512	12.0	10.5	13.5	6,672	4.5	229	4.6	3.8	5.4	1,424	1.0
Age																		
17–24	680	23.1	20.9	25.4	41,471	13.7	907	27.9	25.5	30.2	37,812	12.5	364	11.7	10.0	13.4	10,633	3.5
25–34	869	17.4	16.0	18.8	35,791	10.1	597	11.3	10.2	12.5	18,994	5.4	522	9.3	8.3	10.3	8,147	2.3
35–44	609	13.2	12.0	14.3	15,719	9.6	287	6.0	5.1	6.8	5,360	3.3	408	8.3	7.4	9.2	4,098	2.5
45+	117	6.8	5.4	8.2	1,750	5.0	37	1.9	1.2	2.6	374	1.1	131	7.5	6.0	8.9	1,078	3.1
Service																		
Army	469	18.0	15.9	20.2	47,810	14.6	246	13.9	11.7	16.1	23,581	7.2	262	8.6	7.1	10.1	10,353	3.2
Navy	540	20.4	18.2	22.7	14,409	10.1	350	17.4	15.1	19.7	10,327	7.2	341	12.2	10.3	14.0	3,396	2.4
Marine Corps	484	27.7	24.9	30.4	12,501	15.1	347	22.6	19.8	25.4	7,993	9.7	320	14.1	12.1	16.1	3,004	3.6
Air Force	579	11.9	10.9	13.0	18,521	6.7	706	14.9	13.7	16.0	19,264	6.9	358	7.1	6.3	7.9	6,573	2.4
Coast Guard	203	14.0	12.0	16.1	1,490	6.5	179	14.9	12.6	17.2	1,376	6.0	144	10.8	8.9	12.6	630	2.7
Rank																		
Enlisted	2,058	21.0	19.7	22.2	92,254	13.2	1,722	18.9	17.7	20.2	61,367	8.8	1,015	10.1	9.2	11.0	19,438	2.8
Officer	217	5.1	4.3	6.0	2,477	1.6	106	2.5	1.9	3.1	1,174	0.8	410	9.3	8.3	10.4	4,518	2.9
STI risk																		
No	2,054	18.3	17.2	19.4	86,441	10.8	1,605	15.7	14.6	16.8	56,138	7.0	1,293	9.9	9.1	10.7	21,601	2.7
Yes	102	23.0	17.1	28.9	7,042	16.1	103	24.8	18.5	31.2	5,575	12.7	52	11.3	6.7	15.9	2,195	5.0
Sleep																		
5 hours or less	857	26.4	24.1	28.6	17,556	18.1	605	21.8	19.5	24.1	9,745	10.1	439	12.6	10.9	14.4	3,943	4.1
5 to less than 7 hours	750	16.3	14.7	17.9	53,793	11.6	622	14.9	13.3	16.6	35,675	7.7	513	9.6	8.4	10.8	13,796	3.0
7–9 hours	614	13.3	11.7	14.9	22,691	8.0	549	12.4	10.9	13.9	16,643	5.9	450	8.1	7.0	9.2	6,054	2.1
9 hours or more	54	16.8	10.6	23.0	685	9.8	52	18.1	11.3	25.0	477	6.8	23	7.3	2.7	11.9	161	2.3
Alcohol use[c]																		
No response / none	389	12.3	10.4	14.1	22,580	8.4	376	13.0	11.0	15.0	19,850	7.4	158	5.0	3.7	6.3	5,069	1.9
1–2	830	13.6	12.4	14.9	44,205	9.7	629	11.2	9.9	12.5	26,784	5.9	673	9.4	8.4	10.4	12,536	2.8
3–4	636	24.1	21.8	26.4	22,136	19.6	494	20.9	18.6	23.3	12,809	11.3	384	13.5	11.6	15.3	5,166	4.6
5–6	275	40.5	35.0	46.0	4,523	29.6	209	33.0	27.6	38.5	2,418	15.8	124	14.8	11.0	18.7	883	5.8
7–9	62	36.8	26.2	47.4	827	34.3	54	35.3	24.6	45.9	454	18.8	37	23.4	13.9	33.0	182	7.5
10+	83	51.7	40.6	62.8	460	42.4	66	43.0	31.7	54.3	226	20.8	49	28.3	18.3	38.4	120	11.1
BMI group																		
Under weight	16	22.8	3.2	42.3	752	13.5	11	9.8	2.7	16.8	539	9.6	8	4.3	0.6	8.0	113	2.0
Normal weight	744	19.3	17.4	21.3	30,049	11.4	702	18.3	16.3	20.3	22,790	8.7	389	8.7	7.4	10.1	6,572	2.5
Over weight	1,151	17.6	16.2	19.0	40,556	10.6	876	15.3	13.9	16.7	25,030	6.5	774	10.6	9.5	11.7	10,702	2.8
Obese	364	18.5	16.1	20.8	14,308	11.4	239	14.6	12.0	17.2	8,195	6.5	254	10.9	9.0	12.7	4,044	3.2
Education																		
High school or less	1,521	23.0	21.5	24.5	74,718	14.8	1,407	22.0	20.5	23.6	53,372	10.6	759	11.0	9.8	12.1	15,223	3.0
Some college	377	15.8	13.9	17.7	12,893	10.2	221	9.1	7.6	10.5	5,903	4.7	167	7.2	5.8	8.6	2,724	2.2
Bachelors degree or more	371	6.9	6.0	7.8	6,401	3.1	185	3.8	3.2	4.5	2,947	1.4	478	8.6	7.7	9.6	5,631	2.7
Race and ethnicity																		
Non-Hispanic White	1,436	19.8	18.4	21.3	57,752	11.8	1,120	16.9	15.5	18.4	37,279	7.6	891	10.4	9.4	11.5	13,402	2.7
Non-Hispanic Black	236	13.5	11.1	15.8	12,777	9.5	198	13.3	10.7	15.8	8,797	6.5	196	10.2	8.2	12.3	5,510	4.1
Hispanic	343	18.1	15.6	20.6	13,373	10.1	294	17.3	14.6	20.0	9,174	6.9	210	8.9	7.2	10.6	3,175	2.4
Non-Hispanic Other	252	18.2	15.1	21.3	10,829	11.2	209	14.9	12.2	17.6	7,291	7.6	122	8.8	6.7	11.0	1,869	1.9

Abbreviations: HRBS, Health Risk Behavior Survey; PHA, Periodic Health Assessment; e-cigarette, electronic cigarette; CI, confidence interval; No., number; STI, sexually-transmitted infection; BMI, body mass index.

[a]Groups are not mutually exclusive; thus, total of tobacco use types does not equal total survey respondents.

[b]Weighted percent.

[c]PHA MHA question 5b does not allow for assessment of missing data; thus, no response to this question is assumed as 0 drinks on a typical day when drinking.

TABLE 3 (cont). Prevalence of Tobacco Product Use,[a] HRBS Versus PHA, by Demographic Characteristics, Active Duty U.S. Military, 2018

	Pipe/Hookah						Chewing Tobacco						Any Tobacco Use					
	HRBS				PHA		HRBS				PHA		HRBS				PHA	
			95% CI						95% CI						95% CI			
	No.	%[b]	Lower	Upper	No.	%	No.	%[b]	Lower	Upper	No.	%	No.	%[b]	Lower	Upper	No.	%
Total	721	5.2	4.6	5.7	12,515	1.5	1,531	13.4	12.4	14.3	83,044	9.7	5,160	37.8	36.6	39.0	216,265	25.3
Sex												0.0						
Male	464	5.1	4.4	5.7	10,041	1.4	1,447	15.7	14.5	16.8	81,887	11.6	4,004	40.4	39.0	41.8	197,361	28.0
Female	257	5.6	4.6	6.6	2,474	1.7	84	2.0	1.5	2.6	1,157	0.8	1,156	24.8	23.0	26.6	18,904	12.7
Age																		0.0
17–24	284	7.4	6.1	8.7	6,618	2.2	377	16.3	14.2	18.4	35,366	11.7	1,472	45.7	43.2	48.3	92,109	30.5
25–34	295	4.7	4.0	5.5	4,699	1.3	617	13.0	11.8	14.3	33,549	9.5	1,959	36.1	34.4	37.7	84,634	24.0
35–44	124	2.5	2.0	3.0	1,063	0.6	435	9.6	8.6	10.6	12,263	7.5	1,397	29.4	27.9	30.9	34,616	21.1
45+	18	0.9	0.4	1.4	135	0.4	102	6.1	4.8	7.4	1,866	5.4	332	18.9	16.7	21.1	4,905	14.1
Service																		
Army	107	3.6	2.6	4.6	4,912	1.5	353	14.7	12.7	16.8	41,183	12.6	1,014	36.2	33.6	38.7	97,029	29.7
Navy	155	6.3	4.8	7.8	2,001	1.4	277	12.8	10.8	14.8	9,684	6.8	1,102	40.6	38.0	43.3	32,937	23.0
Marine Corps	121	6.7	5.1	8.3	1,322	1.6	393	19.8	17.3	22.3	14,246	17.2	1,030	49.0	46.1	51.9	28,133	34.0
Air Force	277	5.5	4.8	6.2	4,105	1.5	357	8.6	7.7	9.5	16,077	5.8	1,528	31.2	29.7	32.6	53,349	19.2
Coast Guard	61	4.2	2.8	5.6	175	0.8	151	11.8	9.9	13.8	1,854	8.1	486	35.4	32.6	38.2	4,817	20.9
Rank																		
Enlisted	594	5.6	5.0	6.3	11,316	1.6	1,220	14.4	13.3	15.5	74,515	10.7	4,276	41.2	39.7	42.6	199,753	28.6
Officer	127	2.9	2.2	3.5	1,199	0.8	311	8.3	7.3	9.4	8,529	5.5	884	20.8	19.3	22.3	16,512	10.6
STI risk																		
No	628	5.1	4.5	5.7	10,591	1.3	1,392	13.2	12.2	14.2	78,020	9.8	4,673	37.5	36.3	38.8	199,303	25.0
Yes	48	9.3	5.1	13.4	1,776	4.1	61	16.5	11.0	22.0	4,440	10.2	203	44.9	38.0	51.7	14,555	33.3
Sleep																		
5 hours or less	234	6.4	5.2	7.6	2,305	2.4	535	19.1	16.9	21.2	11,615	12.0	1,665	47.7	45.3	50.1	32,761	33.8
5 to less than 7 hours	252	5.4	4.4	6.5	7,083	1.5	547	12.9	11.3	14.5	47,563	10.2	1,796	36.5	34.5	38.6	123,215	26.5
7–9 hours	222	3.7	2.9	4.5	3,003	1.1	426	9.1	7.9	10.3	23,486	8.3	1,584	30.3	28.4	32.3	58,935	20.8
9 hours or more	13	6.7	2.0	11.3	124	1.8	23	8.9	3.9	14.0	369	5.3	115	35.0	27.0	43.1	1,336	19.1
Alcohol use[c]																		
No response/none	87	2.5	1.7	3.3	2,618	1.0	242	8.6	7.0	10.2	19,815	7.4	821	25.0	22.6	27.3	50,791	19.0
1–2	291	4.4	3.6	5.2	6,079	1.3	619	11.1	9.8	12.4	40,881	9.0	2,194	32.7	31.0	34.3	108,266	23.8
3–4	217	7.3	5.9	8.8	3,115	2.8	415	17.2	15.1	19.3	17,833	15.8	1,415	52.1	49.5	54.8	46,895	41.5
5–6	70	8.2	5.7	10.8	520	3.4	170	28.4	22.9	33.8	3,518	23.0	487	63.5	58.5	68.6	8,216	53.8
7–9	16	11.8	3.6	20.0	112	4.6	36	21.6	11.9	31.3	660	27.4	117	67.2	56.8	77.6	1,421	58.9
10+	40	21.2	12.2	30.1	71	6.5	49	31.4	20.7	42.1	337	31.1	126	72.2	63.1	81.3	676	62.3
BMI group																		
Under weight	5	3.3	0.0	6.8	96	1.7	10	27.6	4.5	50.7	419	7.5	33	44.3	23.7	64.8	1,441	25.8
Normal weight	267	5.8	4.7	6.8	4,129	1.6	400	12.2	10.4	13.9	21,539	8.2	1,583	36.7	34.4	38.9	63,848	24.3
Over weight	352	4.8	4.0	5.5	5,239	1.4	864	13.7	12.5	15.0	39,046	10.2	2,732	38.0	36.4	39.7	96,196	25.1
Obese	97	5.2	3.7	6.7	1,859	1.5	257	14.5	11.9	17.1	12,711	10.1	812	39.5	36.4	42.5	33,339	26.6
Education																		
High school or less	445	6.3	5.4	7.1	9,189	1.8	935	15.9	14.5	17.3	60,910	12.1	3,136	44.4	42.7	46.2	160,107	31.7
Some college	90	3.3	2.5	4.2	1,452	1.1	220	11.1	9.3	12.9	9,985	7.9	799	32.7	30.4	35.1	28,613	22.6
Bachelors degree or more	176	3.1	2.6	3.7	1,738	0.8	366	7.6	6.7	8.6	11,331	5.4	1,182	22.2	20.8	23.6	25,453	12.2
Race and ethnicity																		
Non-Hispanic White	355	4.3	3.6	5.0	5,177	1.1	1,195	17.7	16.3	19.1	65,104	13.3	3,347	41.2	39.6	42.8	139,480	28.4
Non-Hispanic Black	151	8.0	6.1	9.9	4,032	3.0	67	4.3	2.9	5.6	3,856	2.9	557	29.4	26.3	32.5	27,546	20.4
Hispanic	132	5.9	4.3	7.4	2,032	1.5	134	8.6	6.6	10.6	7,139	5.4	708	34.8	31.7	37.9	26,711	20.1
Non-Hispanic Other	78	4.6	3.3	5.8	1,274	1.3	133	11.5	8.7	14.4	6,945	7.2	531	36.8	33.2	40.4	22,528	23.4

Abbreviations: HRBS, Health Risk Behavior Survey; PHA, Periodic Health Assessment; CI, confidence interval; No., number; STI, sexually-transmitted infection; BMI, body mass index.

[a]Groups are not mutually exclusive; thus, total of tobacco use types does not equal total survey respondents.

[b]Weighted percent.

[c]PHA MHA question 5b does not allow for assessment of missing data; thus, no response to this question is assumed as 0 drinks on a typical day when drinking.

TABLE 3 (cont). Prevalence of Tobacco Product Use,[a] HRBS Versus PHA, by Demographic Characteristics, Active Duty U.S. Military, 2018

	Two or More Tobacco Products					
	HRBS				PHA	
			95% CI			
	No.	%[b]	Lower	Upper	No.	%
Total	1,886	17.4	16.3	18.5	49,768	5.8
Sex						
Male	1,511	19.1	17.8	20.3	46,610	6.6
Female	375	9.0	7.7	10.2	3,158	2.1
Age						0.0
17–24	731	25.7	23.3	28.0	29,548	9.8
25–34	716	15.1	13.7	16.5	15,563	4.4
35–44	380	8.3	7.3	9.2	4,293	2.6
45+	59	3.6	2.5	4.6	364	1.0
Service						
Army	329	16.1	13.9	18.2	24,625	7.5
Navy	417	20.2	17.8	22.6	6,205	4.3
Marine Corps	426	26.0	23.2	28.8	8,376	10.1
Air Force	535	11.9	10.8	12.9	9,878	3.5
Coast Guard	179	14.1	11.8	16.3	684	3.0
Rank						
Enlisted	1,660	19.7	18.4	20.9	47,952	6.9
Officer	226	5.7	4.8	6.6	1,816	1.2
STI risk						
No	1,660	16.9	15.7	18.0	44,444	5.6
Yes	108	26.2	19.8	32.7	4,801	11.0
Sleep						
5 hours or less	698	24.9	22.6	27.3	9,409	9.7
5 to less than 7 hours	644	15.8	14.1	17.4	28,731	6.2
7–9 hours	507	12.3	10.7	13.8	11,267	4.0
9 hours or more	37	16.1	9.6	22.6	359	5.1
Alcohol use[c]						
No response/none	297	11.0	9.1	12.8	14,158	5.3
1–2	663	12.6	11.3	13.9	20,145	4.4
3–4	544	23.0	20.6	25.4	11,775	10.4
5–6	241	38.1	32.6	43.6	2,782	18.2
7–9	57	41.1	30.0	52.3	573	23.8
10+	84	58.0	47.5	68.5	335	30.9
BMI group						
Under weight	15	21.0	1.5	40.5	363	6.5
Normal weight	636	18.4	16.4	20.3	16,663	6.3
Over weight	947	16.9	15.5	18.4	20,587	5.4
Obese	288	16.4	13.9	18.9	6,770	5.4
Education						
High school or less	1,337	22.6	21.0	24.1	42,163	8.4
Some college	223	11.4	9.5	13.3	4,298	3.4
Bachelors degree or more	311	6.2	5.3	7.0	3,009	1.4
Race and ethnicity						
Non-Hispanic White	1,190	18.8	17.3	20.2	32,382	6.6
Non-Hispanic Black	210	13.6	11.1	16.1	6,057	4.5
Hispanic	285	17.2	14.5	19.8	6,495	4.9
Non-Hispanic Other	195	16.0	12.8	19.1	4,834	5.0

(23.1%) of cigarette use found than in the U.S. 18-24 year old population (7.8%).[10] The U.S. military also had a much higher prevalence of e-cigarette use in the 17-24 age group (27.9% vs. 7.6% in the U.S. population). Any smoking was higher among 17-24 year old service members than in the U.S. population (45.7% vs. 17.1%), as was use of 2 or more tobacco or nicotine products (25.7% vs. 4.1%). The prevalence of e-cigarette use among U.S. high school students (20.8%) in 2018 was closer to the prevalence among the youngest U.S. service members (27.9%), compared to the U.S. population of the same age (7.6%), but U.S. high school student cigarette use (8.1%) was much lower than cigarette use by youngest U.S. service members (18.4%).[11]

The findings in this study are generally similar to the findings of the 2015 HRBS, but the differences between the military and civilian populations are of greater magnitude.[5] The 7.3% prevalence estimate of e-cigarette use among ACSMs from the PHA data in this study was similar to the 9% prevalence among active and reserve service members previously reported, also using 2018-2019 PHA data.[12] Similar to this study, in 2018 the prevalence of e-cigarette use among U.S. Air Force recruits increased to 15.3%, although prevalence of cigarette and other tobacco or nicotine product use decreased in that study but increased in this study.[13] This study also found similar factors associated with higher prevalence of tobacco or nicotine use, as reported in previous military studies, including younger age, male sex, enlisted rank, lower education levels, greater alcohol use, and Army or Marine Corps service.[5,14] Similar associations have also been found among the general U.S. population.[10]

The most important strengths of this study are the large sample sizes, multiple data sources to assess the burden of tobacco and nicotine use in the U.S. military, and the comparability between the 2 sources due to similar survey questions. The stratified random survey design of the HRBS is also a contributing strength, as it provides estimates representative of the entire U.S. military population.

This work also has several important limitations. Tobacco and nicotine use have been highly dynamic in both the U.S. general and military populations in recent years, and trends have likely changed since 2018; the release of the 2024 HRBS should allow further assessment of these trends. The weighted response rate for the 2018 HRBS was low (9.6%), which could introduce selection bias into these estimates if participating service members differed from those not participating[1]; this type of volunteer bias in survey literature generally leads to healthier participants, however, so tobacco and nicotine use estimates obtained through HRBS data utilization would have been expected to underestimate prevalence,

Abbreviations: HRBS, Health Risk Behavior Survey; PHA, Periodic Health Assessment; CI, confidence interval; No., number; STI, sexually-transmitted infection; BMI, body mass index.

[a]Groups are not mutually exclusive; thus, total of tobacco use types does not equal total survey respondents.

[b]Weighted percent.

[c]PHA MHA question 5b does not allow for assessment of missing data; thus, no response to this question is assumed as 0 drinks on a typical day when drinking.

TABLE 4. Adjusted Odds Ratios (95% CI) for Tobacco Use by Product in the Active Duty U.S. Military, HRBS Versus PHA, 2018

	Cigarettes		E-Cigarettes		Cigars	
	HRBS	PHA	HRBS	PHA	HRBS	PHA
Sex						
Male	Ref	Ref	Ref	Ref	Ref	Ref
Female	0.77 (0.65, 0.90)	0.74 (0.72,0.75)	0.72 (0.60, 0.87)	0.58 (0.56,0.59)	0.44 (0.35, 0.55)	0.30 (0.28,0.31)
Age						
17–24	Ref	Ref	Ref	Ref	Ref	Ref
25–34	0.94 (0.78, 1.14)	0.96 (0.94,0.97)	0.40 (0.33, 0.49)	0.50 (0.49,0.51)	0.74 (0.58, 0.93)	0.58 (0.56,0.60)
35–44	0.85 (0.69, 1.04)	1.14 (1.12,1.17)	0.23 (0.18, 0.30)	0.37 (0.36,0.38)	0.63 (0.49, 0.81)	0.59 (0.56,0.62)
45+	0.63 (0.46, 0.85)	0.88 (0.83,0.93)	0.11 (0.07, 0.18)	0.20 (0.18,0.23)	0.55 (0.39, 0.76)	0.70 (0.65,0.75)
Service						
Army	Ref	Ref	Ref	Ref	Ref	Ref
Navy	0.99 (0.79, 1.24)	0.68 (0.66,0.69)	1.05 (0.80, 1.38)	1.16 (1.12,1.19)	1.34 (1.01, 1.78)	0.85 (0.81,0.89)
Marine Corps	1.19 (0.94, 1.50)	0.88 (0.86,0.90)	0.96 (0.73, 1.26)	0.96 (0.93,0.99)	1.32 (0.99, 1.77)	1.09 (1.04,1.14)
Air Force	0.69 (0.57, 0.83)	0.48 (0.47,0.49)	1.21 (0.98, 1.51)	1.15 (1.13,1.18)	0.88 (0.69, 1.12)	0.92 (0.89,0.95)
Coast Guard	0.69 (0.54, 0.88)	0.38 (0.36,0.40)	1.23 (0.93, 1.63)	1.00 (0.94,1.07)	1.31 (0.98, 1.77)	1.11 (1.01,1.21)
Rank						
Enlisted	Ref	Ref	Ref	Ref	Ref	Ref
Officer	0.44 (0.34, 0.56)	0.21 (0.20,0.23)	0.28 (0.20, 0.40)	0.22 (0.20,0.24)	1.15 (0.90, 1.46)	1.33 (1.25,1.41)
STI risk						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	1.22 (0.85, 1.75)	1.46 (1.41,1.50)	1.47 (1.01, 2.14)	1.50 (1.45,1.55)	1.15 (0.68, 1.94)	1.64 (1.57,1.73)
Sleep						
5 hours or less	1.56 (1.30, 1.86)	1.44 (1.41,1.47)	1.31 (1.07, 1.62)	1.32 (1.28,1.35)	1.28 (1.02, 1.60)	1.30 (1.25,1.35)
5 to less than 7 hours	Ref	Ref	Ref	Ref	Ref	Ref
7–9 hours	0.88 (0.73, 1.07)	0.79 (0.77,0.80)	0.79 (0.63, 0.97)	0.73 (0.71,0.74)	0.89 (0.72, 1.11)	0.76 (0.74,0.79)
9 hours or more	0.96 (0.59, 1.57)	0.85 (0.78,0.92)	0.89 (0.55, 1.45)	0.68 (0.62,0.76)	0.57 (0.29, 1.12)	0.79 (0.67,0.94)
Alcohol use[a]						
No response / none	Ref	Ref	Ref	Ref	Ref	Ref
1–2	1.36 (1.10, 1.68)	1.64 (1.61,1.67)	1.23 (0.97, 1.56)	1.26 (1.23,1.28)	2.10 (1.54, 2.86)	1.70 (1.64,1.76)
3–4	2.39 (1.90, 3.00)	2.68 (2.62,2.74)	2.16 (1.68, 2.79)	1.83 (1.78,1.87)	2.74 (1.96, 3.82)	2.40 (2.30,2.50)
5–6	3.91 (2.88, 5.30)	3.67 (3.52,3.83)	3.09 (2.22, 4.29)	2.11 (2.00,2.22)	2.76 (1.79, 4.24)	2.61 (2.41,2.83)
7–9	3.30 (1.95, 5.60)	3.93 (3.57,4.33)	3.27 (1.76, 6.08)	2.24 (2.00,2.52)	3.78 (1.98, 7.23)	3.01 (2.54,3.58)
10+	5.77 (3.46, 9.61)	5.09 (4.43,5.84)	4.19 (2.44, 7.20)	2.08 (1.75,2.47)	5.43 (3.00, 9.84)	4.22 (3.38,5.26)
BMI group						
Under weight	1.14 (0.48, 2.67)	1.17 (1.08,1.27)	0.38 (0.12, 1.22)	1.08 (0.99,1.19)	0.42 (0.13, 1.32)	0.85 (0.70,1.03)
Normal weight	Ref	Ref		Ref	Ref	Ref
Over weight	0.86 (0.72, 1.03)	0.85 (0.84,0.87)	1.00 (0.82, 1.21)	0.84 (0.82,0.86)	1.22 (0.97, 1.52)	1.07 (1.04,1.11)
Obese	0.86 (0.69, 1.09)	0.87 (0.85,0.89)	0.98 (0.73, 1.31)	0.89 (0.86,0.91)	1.21 (0.91, 1.62)	1.25 (1.20,1.30)
Education						
High school or less	Ref	Ref		Ref	Ref	Ref
Some college	0.82 (0.68, 0.99)	0.68 (0.66,0.69)	0.74 (0.58, 0.93)	0.64 (0.62,0.66)	0.82 (0.64, 1.05)	0.89 (0.85,0.93)
Bachelors degree or more	0.51 (0.41, 0.64)	0.38 (0.37,0.40)	0.65 (0.49, 0.85)	0.43 (0.41,0.45)	0.98 (0.76, 1.25)	0.99 (0.93,1.05)
Race and ethnicity						
Non-Hispanic White	Ref	Ref		Ref	Ref	Ref
Non-Hispanic Black	0.58 (0.45, 0.74)	0.61 (0.60,0.63)	0.71 (0.54, 0.94)	0.75 (0.73,0.77)	1.17 (0.89, 1.56)	1.69 (1.63,1.75)
Hispanic	0.73 (0.59, 0.90)	0.68 (0.66,0.69)	0.81 (0.64, 1.03)	0.74 (0.72,0.76)	0.80 (0.63, 1.03)	0.90 (0.86,0.94)
Non-Hispanic Other	0.88 (0.69, 1.14)	0.97 (0.95,1.00)	0.89 (0.68, 1.17)	1.02 (0.99,1.05)	0.89 (0.65, 1.22)	0.77 (0.73,0.82)

Abbreviations: CI, confidence interval; HRBS, Health Risk Behavior Survey; PHA, Periodic Health Assessment; e-cigarette, electronic cigarette; STI, sexually-transmitted infection; BMI, body mass index.

[a]PHA MHA question 5b does not allow for assessment of missing data; thus, no response to this question is assumed as 0 drinks on a typical day when drinking.

Note: These analyses used weighted (HRBS) and unweighted (PHA) logistic regression.

TABLE 4 (cont). Adjusted Odds Ratios (95% CI) for Tobacco Use by Product in the Active Duty U.S. Military, HRBS Versus PHA, 2018

	Pipe/Hookah		Chewing Tobacco		Any Tobacco Use	
	HRBS	PHA	HRBS	PHA	HRBS	PHA
Sex						
Male	Ref	Ref	Ref	Ref	Ref	Ref
Female	1.14 (0.88, 1.47)	1.09 (1.04,1.14)	0.14 (0.10, 0.19)	0.09 (0.08,0.09)	0.58 (0.51, 0.66)	0.47 (0.46,0.48)
Age						
17–24	Ref	Ref	Ref	Ref	Ref	Ref
25–34	0.62 (0.47, 0.83)	0.59 (0.57,0.62)	0.87 (0.70, 1.09)	0.92 (0.90,0.94)	0.75 (0.64, 0.87)	0.85 (0.84,0.86)
35–44	0.33 (0.23, 0.46)	0.30 (0.27,0.32)	0.65 (0.51, 0.83)	0.75 (0.72,0.77)	0.62 (0.53, 0.74)	0.84 (0.83,0.86)
45+	0.15 (0.08, 0.28)	0.21 (0.18,0.26)	0.45 (0.32, 0.64)	0.59 (0.55,0.62)	0.46 (0.37, 0.57)	0.69 (0.67,0.72)
Service						
Army	Ref	Ref	Ref	Ref	Ref	Ref
Navy	1.60 (1.07, 2.40)	1.02 (0.96,1.08)	0.72 (0.55, 0.94)	0.54 (0.52,0.55)	0.98 (0.82, 1.17)	0.73 (0.72,0.74)
Marine Corps	1.48 (0.96, 2.27)	0.94 (0.88,1.01)	0.93 (0.72, 1.21)	1.23 (1.20,1.26)	1.13 (0.93, 1.36)	1.01 (0.99,1.02)
Air Force	1.79 (1.27, 2.54)	1.25 (1.20,1.31)	0.56 (0.45, 0.69)	0.46 (0.45,0.47)	0.83 (0.72, 0.96)	0.63 (0.62,0.64)
Coast Guard	1.53 (0.91, 2.57)	0.69 (0.58,0.82)	0.69 (0.52, 0.90)	0.51 (0.48,0.54)	0.85 (0.71, 1.03)	0.55 (0.53,0.57)
Rank						
Enlisted	Ref	Ref	Ref	Ref	Ref	Ref
Officer	0.88 (0.63, 1.22)	0.85 (0.77,0.94)	1.00 (0.77, 1.30)	0.81 (0.78,0.84)	0.64 (0.54, 0.75)	0.54 (0.52,0.55)
STI risk						
No	Ref	Ref	Ref	Ref	Ref	Ref
Yes	1.37 (0.75, 2.47)	2.22 (2.10,2.35)	1.68 (1.05, 2.67)	1.05 (1.01,1.09)	1.31 (0.95, 1.80)	1.38 (1.35,1.42)
Sleep						
5 hours or less	1.03 (0.76, 1.40)	1.41 (1.34,1.49)	1.49 (1.21, 1.85)	1.17 (1.14,1.20)	1.44 (1.25, 1.67)	1.32 (1.30,1.34)
5 to less than 7 hours	Ref	Ref	Ref	Ref	Ref	Ref
7–9 hours	0.67 (0.49, 0.91)	0.75 (0.72,0.79)	0.74 (0.59, 0.91)	0.87 (0.85,0.89)	0.81 (0.71, 0.94)	0.81 (0.80,0.82)
9 hours or more	1.07 (0.48, 2.39)	1.00 (0.83,1.20)	0.61 (0.31, 1.22)	0.59 (0.52,0.66)	0.95 (0.64, 1.39)	0.70 (0.65,0.75)
Alcohol use[a]						
No response/none	Ref	Ref	Ref	Ref	Ref	Ref
1–2	2.31 (1.55, 3.44)	1.90 (1.81,2.00)	1.44 (1.11, 1.87)	1.55 (1.52,1.58)	1.76 (1.51, 2.06)	1.83 (1.81,1.86)
3–4	3.58 (2.36, 5.42)	3.25 (3.07,3.44)	2.08 (1.59, 2.73)	2.16 (2.11,2.22)	3.48 (2.92, 4.15)	3.13 (3.08,3.19)
5–6	4.08 (2.48, 6.70)	3.49 (3.14,3.88)	2.89 (2.01, 4.16)	2.71 (2.59,2.84)	4.32 (3.30, 5.65)	4.08 (3.93,4.24)
7–9	4.89 (1.87, 12.79)	4.27 (3.44,5.31)	1.79 (0.92, 3.50)	3.05 (2.75,3.39)	4.34 (2.55, 7.38)	4.28 (3.90,4.70)
10+	12.24 (6.31, 23.75)	6.01 (4.57,7.91)	2.97 (1.73, 5.11)	3.24 (2.79,3.78)	5.74 (3.47, 9.48)	4.57 (3.97,5.27)
BMI group						
Under weight	0.44 (0.11, 1.82)	1.06 (0.86,1.31)	3.29 (1.19, 9.05)	0.96 (0.87,1.07)	1.33 (0.62, 2.85)	1.09 (1.02,1.16)
Normal weight	Ref	Ref	Ref	Ref	Ref	Ref
Over weight	0.92 (0.69, 1.22)	0.97 (0.93,1.02)	1.02 (0.83, 1.26)	1.19 (1.16,1.21)	1.04 (0.91, 1.19)	0.99 (0.97,1.00)
Obese	0.97 (0.66, 1.42)	1.04 (0.98,1.10)	1.22 (0.90, 1.66)	1.36 (1.33,1.39)	1.08 (0.90, 1.30)	1.07 (1.05,1.09)
Education						
High school or less	Ref	Ref	Ref	Ref	Ref	Ref
Some college	0.83 (0.59, 1.17)	0.88 (0.82,0.93)	0.79 (0.62, 1.00)	0.74 (0.72,0.76)	0.77 (0.66, 0.90)	0.67 (0.66,0.69)
Bachelors degree or more	1.01 (0.74, 1.38)	0.86 (0.78,0.93)	0.56 (0.43, 0.73)	0.51 (0.49,0.53)	0.62 (0.53, 0.73)	0.44 (0.43,0.45)
Race and ethnicity						
Non-Hispanic White	Ref	Ref	Ref	Ref	Ref	Ref
Non-Hispanic Black	2.34 (1.68, 3.25)	2.69 (2.57,2.82)	0.19 (0.13, 0.28)	0.18 (0.17,0.18)	0.56 (0.46, 0.67)	0.55 (0.54,0.56)
Hispanic	1.25 (0.88, 1.78)	1.32 (1.25,1.39)	0.37 (0.27, 0.49)	0.32 (0.31,0.33)	0.60 (0.51, 0.71)	0.52 (0.51,0.52)
Non-Hispanic Other	1.12 (0.78, 1.61)	1.26 (1.17,1.34)	0.63 (0.47, 0.86)	0.57 (0.55,0.58)	0.83 (0.69, 1.00)	0.79 (0.78,0.80)

Abbreviations: CI, confidence interval; HRBS, Health Risk Behavior Survey; PHA, Periodic Health Assessment; STI, sexually-transmitted infection; BMI, body mass index.
[a]PHA MHA question 5b does not allow for assessment of missing data; thus, no response to this question is assumed as 0 drinks on a typical day when drinking.
Note: These analyses used weighted (HRBS) and unweighted (PHA) logistic regression.

TABLE 4 (cont). Adjusted Odds Ratios (95% CI) for Tobacco Use by Product in the Active Duty U.S. Military, HRBS vs. PHA, 2018

	Two or More Tobacco Products	
	HRBS	PHA
Sex		
Male	Ref	Ref
Female	0.48 (0.39, 0.58)	0.38 (0.36,0.39)
Age		
17–24	Ref	Ref
25–34	0.62 (0.51, 0.76)	0.56 (0.54,0.57)
35–44	0.36 (0.29, 0.45)	0.39 (0.37,0.40)
45+	0.20 (0.14, 0.30)	0.21 (0.19,0.24)
Service		
Army	Ref	Ref
Navy	1.13 (0.89, 1.45)	0.66 (0.64,0.68)
Marine Corps	1.07 (0.83, 1.38)	1.02 (0.99,1.05)
Air Force	0.80 (0.65, 0.99)	0.57 (0.55,0.58)
Coast Guard	0.93 (0.71, 1.22)	0.45 (0.42,0.49)
Rank		
Enlisted	Ref	Ref
Officer	0.64 (0.50, 0.83)	0.47 (0.44,0.51)
STI risk		
No	Ref	Ref
Yes	1.65 (1.13, 2.42)	1.76 (1.70,1.83)
Sleep		
5 hours or less	1.50 (1.24, 1.83)	1.50 (1.46,1.54)
5 to less than 7 hours	Ref	Ref
7–9 hours	0.80 (0.65, 0.99)	0.68 (0.66,0.69)
9 hours or more	0.88 (0.51, 1.52)	0.73 (0.65,0.82)
Alcohol use[a]		
No response/none	Ref	Ref
1–2	1.53 (1.20, 1.94)	1.36 (1.33,1.40)
3–4	2.67 (2.08, 3.44)	2.23 (2.16,2.29)
5–6	4.16 (3.02, 5.74)	3.05 (2.90,3.21)
7–9	4.09 (2.31, 7.26)	3.54 (3.17,3.94)
10+	8.51 (5.17,14.02)	4.14 (3.56,4.82)
BMI group		
Under weight	1.01 (0.41, 2.49)	1.02 (0.91,1.14)
Normal weight	Ref	Ref
Over weight	0.98 (0.81, 1.18)	0.91 (0.89,0.93)
Obese	0.95 (0.72, 1.24)	1.02 (0.98,1.05)
Education		
High school or less	Ref	Ref
Some college	0.75 (0.59, 0.95)	0.62 (0.60,0.64)
Bachelors degree or more	0.55 (0.44, 0.70)	0.41 (0.39,0.44)
Race and ethnicity		
Non-Hispanic White	Ref	Ref
Non-Hispanic Black	0.68 (0.52, 0.89)	0.57 (0.56,0.59)
Hispanic	0.73 (0.58, 0.92)	0.59 (0.57,0.61)
Non-Hispanic Other	0.84 (0.63, 1.11)	0.83 (0.80,0.86)

Abbreviations: CI, confidence interval; HRBS, Health Risk Behavior Survey; PHA, Periodic Health Assessment; STI, sexually-transmitted infection; BMI, body mass index.
[a]PHA MHA question 5b does not allow for assessment of missing data; thus, no response to this question is assumed as 0 drinks on a typical day when drinking.
Note: These analyses used weighted (HRBS) and unweighted (PHA) logistic regression

not overestimate it.[15] Likewise, the 64% of service members for whom PHA data were available may have differed from those for whom data were unavailable, but due to the fact that how those service members differed is unknown, the impact of this difference on prevalence estimates is unknown.

A more important source of PHA underestimation is the introduction of misclassification bias if participants did not provide accurate information about their tobacco and nicotine use, which could occur due to social desirability bias, perceived stigma of tobacco and nicotine use, or other perceived negative consequences of divulging tobacco and nicotine use behaviors to other military personnel during a required military examination documented on an official form.[16] The much lower prevalence for all types of tobacco and nicotine use in PHA data compared to the HRBS suggests that this misclassification may lead to substantial bias and underestimates of the burden of tobacco and nicotine use.

Some misclassification may be non-differential; for example, the smaller aORs for age and alcohol use when utilizing PHA data compared to HRBS data suggest bias towards the null and possible non-differential misclassification. The more extreme aORs in the PHA data for other variables such as Naval service, sex, rank, and education compared to HRBS data do suggest possible differential misclassification, which could occur if service members who were female, officers, higher educated, or serving in the Navy were more affected by social desirability, stigma, or perceived negative consequences due to reporting tobacco and nicotine use.[4] The assessment of other health behaviors such as alcohol use, drug use, and sexual practices may also be biased (particularly in the PHA) due to perceived stigma and potential for negative career consequences.[17] The magnitude of this misclassification bias may be associated with the amount of stigma and potential consequences perceived for each behavior, so further research should consider and study their possible associations.

Tobacco and nicotine use remain an important threat to the health of U.S. military service members, resulting not only in short- and long-term health consequences, but also billions of dollars in health care and lost productivity costs,[8] decreased fitness,[18] and higher rates of premature discharge.[19] Military tobacco and nicotine control policies and interventions must be guided by accurate and timely surveillance to ensure interventions are effective and responsive to dynamic societal, cultural, and economic forces that affect tobacco and nicotine use.

This study suggests that the PHA can provide timely information on trends in military tobacco and nicotine use over time, but much higher estimates in this study obtained from the confidential, voluntary HRBS also suggest that the command-directed PHA, which is part of a service member's permanent record, may substantially underestimate the prevalence of all types of tobacco and nicotine use. Additionally, the more extreme differences between some types of service members suggest that this misclassification may be differential. This issue could potentially result in biased, and thereby invalid, associations with these demographic and behavioral risk factors,

such as service members who are female, officers, higher educated, or serve in the Navy.

These differences also suggest that HRBS tobacco and nicotine use questions should not be discontinued, as some have suggested,[1] since its data may be more valid than PHA data. The HRBS, on the other hand, suffers from a lack of timeliness, as it is only performed every 3 to 6 years, with its data lagging several years. Both data sources provide uniquely valuable information to guide military force health protection and readiness policy, and they should be used in tandem. Further research is needed to assess the validity of PHA data, not only for tobacco and nicotine use but other important health behaviors and outcomes as well.

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The contents of this publication are the sole responsibility of the authors and do not necessarily reflect the views, assertions, opinions, nor policies of the Uniformed Services University of the Health Sciences, the Defense Health Agency, or the Department of Defense.

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Coverage of HIV Pre-Exposure Prophylaxis (PrEP) Within the Active Duty U.S. Military, 2023

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Estimates of HIV pre-exposure prophylaxis (PrEP) coverage in the U.S. military, defined as the proportion of the persons taking HIV PrEP out of the estimated number of persons who had indications for it, have never been published. The objective of this study was to provide an estimate of HIV PrEP coverage comparable to U.S. civilian estimates. The population with indications for HIV PrEP was obtained from the Department of Defense 2018 Health Related Behaviors Survey, a stratified random sample of members of all military service branches. The military PrEP coverage estimate of 31.6% in 2023 was lower than the national U.S. estimate of 36.0% in 2022. Among the military population of men who have sex with men (MSM), an estimated 24.6% of service members had indications for PrEP, similar to the national estimate of 24.7%. MSM comprised 66% of all military service members with HIV PrEP indications, compared to 40% in the U.S. general population. The U.S. military should continue deliberate, sustained, and effective actions to address sexual health inequities among MSM, aligned and coordinated with societal efforts including improved coverage of HIV PrEP to prevent HIV transmission.

What are the new findings?

Coverage of HIV PrEP among active duty military service members with indications for its use increased to 31.6% in 2023, which was lower than the national U.S. estimate of 36.0% in 2022. Men who have sex with men constituted 66% of all U.S. military service members with HIV PrEP indications.

What is the impact on readiness and force health protection?

HIV PrEP may be underutilized within the U.S. military despite its effectiveness in preventing HIV transmission and its resultant improvements in morbidity, health care costs, and impacts on deployability and attrition. Men who have sex with men are the most important group for which the military should promote HIV PrEP use.

Despite effective interventions to diagnose, treat, and prevent the transmission of the human immunodeficiency virus (HIV), 36,136 new infections occurred in the U.S. in 2021.[1] Male-to-male sexual contact accounted for 67% of these infections, and 56% of those infected were ages 13 to 34, 40% were non-Hispanic Black, and 29% were Hispanic. Among the important interventions to prevent HIV transmission is pre-exposure prophylaxis (PrEP) with emtricitabine and tenofovir disoproxil fumarate or other approved regimens.

PrEP has been shown to be safe, as well as demonstrating an average effectiveness of 75% in reducing risk of HIV transmission among patients at high risk for HIV acquisition, although its effectiveness may be more or less than 75% depending on patient adherence.[2] Since 2011,[3] the use of PrEP has been recommended for this purpose among persons at high risk for HIV transmission by the U.S. Centers for Disease Control and Prevention (CDC).[4] It is a critical component of the National HIV/AIDS Strategy for the United States[5] and the Ending the HIV Epidemic in the U.S. initiative.[6] Despite its importance in HIV prevention, the CDC estimated that only 36.0% of persons for whom HIV PrEP use was indicated were actually taking it in 2022,[7] although this figure had increased from 12.6% in 2017.[8]

U.S. Department of Defense (DOD) policy offers HIV PrEP in accordance with CDC guidance and as directed in national objectives.[9,10] A prior study found that, from February 2014 to June 2016, an estimated 769 active duty service members had taken HIV PrEP, out of an indirectly estimated (using civilian data) population of 12,000 with indications.[11]

PrEP coverage in the U.S. military, defined as the proportion of the persons taking PrEP out of the estimated number of persons with indications for PrEP, has never been directly estimated using military data. An updated estimate of 4,495 service members taking PrEP in 2023 is provided in this month's issue of *MSMR*.[12] The objective of this study was to provide a direct estimate of the denominator, or population of service members with PrEP indications, to provide an estimate of PrEP coverage comparable to U.S. civilian estimates.

Methods

The population at risk was obtained from the DOD 2018 Health Related Behaviors Survey (HRBS), which is comparable to the active duty population in 2023.[13] The HRBS study population was a stratified random sample of members of all military service branches—Army, Navy, Air Force, Marine Corps, and Coast Guard.[14] Of 199,996 invited eligible active duty service members, the overall weighted response rate was 9.6%.[14]

This study employed a total sampling frame of 1,357,219 active duty service members, and this was segmented into 50 strata based on the interaction of service branch (5 categories), pay grade (5 categories), and sex. All analyses were performed using SAS 9.4 (SAS Institute Inc., Cary, NC). Analyses accounted for survey weights to generate estimates representative of the active duty U.S. military population.

Estimates of the total U.S. military population of men who have sex with men (MSM), intravenous drug users (IVDUs), and sexually-active heterosexual men and women were obtained using HRBS questions 4 and 48 (MSM), 40c (IVDUs), and 46, 48, 49 (sexually-active heterosexuals).[14] Estimates of the population of MSM who had indications for PrEP were also obtained from the HRBS, using the same methods used previously by CDC.[15]

MSM were considered as having indications for PrEP if they reported sex with 2 or more men in the past 12 months and any condom-less sex or a sexually-transmitted infection (STI) within the past 12 months (HRBS questions 46, 47, 54).[14] Estimates of the population of IVDUs and heterosexual men and women with indications for PrEP were obtained by multiplying these populations from the HRBS by the proportion estimated to have indications for PrEP among civilian populations in 2018,[15] as no similar questions pertaining to these indications for these groups were included in the HRBS. Estimates of MSM, heterosexual, and IVDU risks were independent of one another.

Both stratified and aggregate estimates of PrEP coverage in the U.S. active duty military are reported. Methods used to obtain national civilian estimates have been described previously.[7,15] Institutional review was performed by the Uniformed Services University of the Health Sciences, Bethesda, MD.

Results

As seen in the **Table**, there were an estimated 38,341 MSM, 9,599 IVDUs, and 1,138,259 sexually-active heterosexual men and women in the active duty U.S. military population. These 3 subpopulations comprised, respectively, 2.8%, 0.7%, and 83.9% of the total estimated active duty population of 1,357,219 estimated by the HRBS (data not shown).[14]

Among MSM, 9,441 (24.6%) reported 1 or more indications for PrEP. There were also an estimated 1,776 IVDUs, 1,908 heterosexual men, and 1,106 heterosexual women with PrEP indications. These results generated an estimate of 14,231 total service members with PrEP indications. As 4,495 active duty service members were estimated to have been prescribed PrEP in 2023,[12] this resulted in an estimated PrEP coverage of 31.6%. Of note, 66% of military service members with HIV PrEP indications were MSM, compared to only 40% of the U.S. population. The corresponding figures from the U.S. general population are also shown in the **Table**.

TABLE. Populations with PrEP Indications and Prescriptions, U.S. General Population and U.S. Military

	U.S. General Population					U.S. Military				
	Total Population[a]	PrEP Indications[a]		Prescribed PrEP in 2022[b]		Total Population[c]	PrEP Indications		Prescribed PrEP in 2023	
	No.	No.	%	No.	%	No.	No.[e]	%[d]	No.	%
MSM	1,991,903	492,000	24.7%			38,341	9,441	24.6%		
IVDUs	621,622	115,000	18.5%			9,599	1,776	18.5%		
Sexually-active heterosexuals	156,000,000	624,000	0.4%			1,138,259		0.4%		
Men	78,500,000	157,000	0.2%			953,939	1,908	0.2%		
Women	78,000,000	468,000	0.6%			184,320	1,106	0.6%		
Total	158,613,524	1,216,210[g]	0,8%	437,666	36.0%	1,186,199	14,231	1.2%	4,495[f]	31.6%

Abbreviations: PrEP, HIV pre-exposure prophylaxis; No., number; MSM, men who have sex with men; IVDUs, intravenous drug users; HRBS, Health Related Behaviors Survey.

[a] Reference 11

[b] Reference 7

[c] Derived from HRBS questions 4 and 48 (MSM); 40c (IVDUs); and 46, 48, 49 (sexually-active heterosexuals).

[d] Derived from HRBS questions 46, 47, 54 (MSM) or reference 11 (IVDU and sexually-active heterosexuals).

[e] Obtained by multiplying the population in each category and the percent with PrEP indications.

[f] Reference 12

[g] Subgroup frequencies do not exactly match total population frequency due to minor annual variation between references 7 and 11.

Discussion

This report estimates that PrEP coverage among active duty U.S. military service members in 2023 was 31.6%. The DOD estimate of PrEP coverage of 31.6% in 2023 was lower than the 2022 national U.S. estimate of 36.0%. Among those with PrEP indications, MSM comprised 66% of U.S. service members but only 40% of the U.S. population. The difference between these populations is largely attributable to the larger proportion of males in the U.S. military.

The comparison of PrEP coverage may be limited by demographic differences, with the military comprised of a younger and more racially and ethnically diverse population than the U.S. as a whole.[16] Differences in health-related and other behaviors between these populations may also limit these comparisons.[14] Additionally, the low response rate and the 'healthy warrior effect' may limit comparisons between military and civilian populations in this study due to selection bias.[14]

As with any self-reported data, health behaviors may have been misclassified due to concerns about social desirability, stigma, or other factors. The proportions of IVDUs and sexually-active heterosexual service members could not be directly estimated because the HRBS does not contain the necessary data for these calculations, which may have resulted in misclassification. For example, the CDC considers only those IVDUs who "have injected any assessed drug during the past 12 months and used a needle that had previously been used by another person" as having an indication for PrEP.[15] The estimate of U.S. military members who were IVDUs was obtained from a question that also included other illegal drug use not limited to injection (e.g., cocaine, LSD, ecstasy, PCP), with no assessment of needle reuse.[14] The U.S. military also performs routine testing for IV and other illegal drug use. These factors likely resulted in an overestimation of both service members who were IVDUs and those who had indications for PrEP, although this would have had only a small impact on the results of this report.

Similarly, the CDC only considered heterosexuals as having indications for PrEP if they "reported sex with two or more opposite sex partners and either 1) sex with an HIV-infected partner or 2) any condomless sex in the last 4 weeks and sex with a high-risk partner in the past 12 months."[15] High-risk partners were defined as "persons who inject drugs or (for women) male partners known to also have sex with men (behaviorally bisexual)." This information on the behaviors of heterosexual service members and their sexual partners' risk factors was likewise not available from the HRBS nor any other military source. Both national and DOD estimates may underestimate the heterosexual population with PrEP indications due to changing indications for PrEP in the 2021 U.S. Public Health Service and CDC guidelines, as neither included the new indication of a bacterial sexually-transmitted infection within the past 6 months.[4,7] Similar to the CDC's estimates, the groups studied in this report may not be mutually exclusive, resulting in a small overestimation in both estimates for the total population with PrEP indications. There is an expected small underestimation of the total active duty population prescribed PrEP, as it excludes activated Guard and Reserve service members.

Most importantly, service members may have sought HIV PrEP beyond direct or private sector health care provided by the Military Health System, instead seeking it at a local health department or privately-funded clinic serving the MSM community. If such care was not reimbursed by the military, the DOD would have no record of it, resulting in underestimates of HIV PrEP coverage in this report.

HIV degrades military readiness through the direct and indirect costs of HIV-associated health care and through deployment limitations and attrition of personnel with critical military occupational skills and experience.[18,19] This study suggests that HIV PrEP use in the active duty military remains lower than in the U.S. population, and may be underutilized. This difference in use may be due to health care system factors, cultural factors, or demographic and behavioral differences between the U.S. military and civilian populations, although differences due to misclassification of PrEP use due to non-DOD health care utilization or other biases cannot be excluded. It further suggests that MSM in the U.S. military have similar behaviors resulting in HIV PrEP indications as MSM in the civilian population.

The high proportion (66%) of MSM among those with indications for HIV PrEP in the U.S. military suggests that this is the most important group in which the military should promote PrEP use. The U.S. military should continue deliberate, sustained, and effective actions to address sexual health inequities among MSM, commensurate and coordinated with societal efforts, that include improved HIV PrEP coverage to prevent HIV transmission.

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Surveillance Snapshot

HIV Pre-Exposure Prophylaxis (PrEP) Prescriptions Within the Active Component of the U.S. Military, 2023

Angelia A. Eick-Cost, PhD, ScM; Sithembile L. Mabila PhD, MSc; Saixia Ying, PhD

HIV Pre-Exposure Prophylaxis (PrEP) is a highly effective medicine for preventing HIV when used as prescribed, reducing the risk of HIV from sex by around 99% and the risk of HIV from injection drug use by at least 74%.[1] The Department of Defense (DOD) follows the U.S. Centers for Disease Control and Prevention (CDC) HIV PrEP guidelines for identification of individuals eligible for HIV PrEP and their evaluation and monitoring.[2] This Surveillance Snapshot was created to determine the number of active component service members (ACSMs) prescribed PrEP during 2023.

Data from the Defense Medical Surveillance System (DMSS) were used for this analysis.[3] The population was restricted to ACSMs who received a PrEP prescription between January 1, 2023 and December 31, 2023. A PrEP prescription was defined as a record in the Pharmacy Data Transaction System (PDTS) or Theater Medical Data Store (TMDS) medication files within DMSS containing the drug name Truvada, Descovy, Emtricitabine, Tenofovir, Apretude, or Cabotegravir. Records with the names Disoproxil, Viread, or Emtricitabine or listing a therapeutic class of 081808 (antiretrovirals) were excluded, as those are HIV treatment medications. Additionally, a prescription record was excluded if an individual had a diagnosis of chronic hepatitis B or HIV on or before the prescription date, or a needlestick diagnosis within 30 days before or after the prescription date.

An individual was counted once during the surveillance year. Counts were summarized by pharmacy type, demographic characteristics, service-related variables, and self-assessed sexually-transmitted infection (STI) risk (defined from the Periodic Health Assessment if completed within 1 year prior to the prescription date) **(Table)**.

There were 4,495 ACSMs with a prescription for HIV PrEP in 2023 **(Table)**. The majority of prescriptions (79%) were obtained directly from a military clinic. The demographic groups with the highest numbers of prescriptions were 25-29 year olds (1,307), males (4,155), non-Hispanic Whites (1,772), and single, never married (2,865) ACSMs. In evaluating service-related characteristics, the highest number of prescriptions were among Army and Navy service members (1,526 and 1,452, respectively), enlisted (1,664 junior and 1,695 senior), communications/intelligence occupations (1,287), stationed in the U.S. (3,483), and in service for 3-10 years (2,164). The majority of service members with a prescription had a self-assessed risk for a STI (46%), but this information was unknown for 31% of the total PrEP recipients.

These data provide an overview of ACSMs receiving HIV PrEP in 2023 and can be used to further evaluate subpopulations within the ACSM population that may have a missed opportunity for receiving HIV PrEP.

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Disclaimer: The contents of this publication are the sole responsibility of the authors and do not necessarily reflect the views, assertions, opinions, nor policies of the Defense Health Agency or the Department of Defense.

TABLE. Prescriptions for HIV PrEP, U.S. Military Active Component, 2023

	PrEP Prescriptions	
	No.	%
Total	4,495	100
Pharmacy type		
Mail order	43	1
Military clinic	3,547	79
Retail	294	7
Theater	9	0
Veterans Affairs	602	13
Age (years)		
<20	134	3
20-24	1,159	26
25-29	1,307	29
30-34	1,018	23
35-39	576	13
40+	301	7
Sex		
Male	4,155	92
Female	340	8
Race and ethnicity		
Non-Hispanic White	1,772	39
Non-Hispanic Black	1,054	23
Hispanic	1,029	23
Other/unknown	640	14
Marital status		
Single, never married	2,865	64
Married	1,249	28
Other	381	8
Service		
Army	1,526	34
Navy	1,452	32
Air Force	1,108	25
Marine Corps	321	7
Coast Guard	88	2
Rank		
Junior Enlisted (E1-E4)	1,664	37
Senior Enlisted (E5-E9)	1,695	38
Warrant Officer (W*)	42	1
Junior Officer (O1-O3)	790	18
Senior Officer (O4-O10)	304	7
Occupation		
Combat-specific	294	7
Motor transport	122	3
Pilot/air crew	101	2
Repair/engineering	902	20
Communications/ intelligence	1,287	29
Health care	824	18
Other	965	21
Duty station location		
United States	3,483	77
Overseas, EUCOM	295	7
Overseas, INDOPACOM	205	5
Overseas, other	118	3
Unknown	394	9
Time since entrance into military service (years)		
<3	975	22
3-10	2,164	48
11-19	1,136	25
20+	220	5
Self-assessed STI risk		
Yes	2,078	46
No	1,032	23
Unknown or missing	1,385	31

Abbreviations: HIV, human immunodeficiency virus; PrEP, pre-exposure prophylaxis; No., number; EUCOM, European Command; INDOPACOM, Indo-Pacific Command; STI, sexually-transmitted infection.

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Surveillance Snapshot

A Comparison of the Rate of HIV Incidence in the Active Component U.S. Military with the U.S. Population in 2021

James D. Mancuso, MD, DrPH, MPH; Sithembile L. Mabila, PhD

TABLE. Comparison of U.S. Active Component Military and Civilian Rates of HIV Acquisition by Indirect Adjustment, Stratified by Sex, Age, Race and Ethnicity, 2021

	Black, Non-Hispanic				Hispanic				White, Non-Hispanic			
Sex, by Age (years)	U.S. Rate[a]	Military Population	Military Observed Cases	Military Expected Cases	U.S. Rate[a]	Military Population	Military Observed Cases	Military Expected Cases	U.S. Rate[a]	Military Population	Military Observed Cases	Military Expected Cases
Male		160,157	87	143.7		195,957	29	88.2		653,962	53	85.4
13-24[b]	77.9	54,024[b]	36	42.1	22.6	82,157	12	18.6	5.2	221,932	11	11.5
25-34	121.6	66,843	44	81.3	73.7	75,825	15	55.9	20.7	259,113	32	53.6
35-44	57.0	32,410	5	18.5	38.9	32,132	2	12.5	12.8	140,256	7	18.0
45-54	28.1	6,451	2	1.8	21.6	5,584	0	1.2	7.5	30,069	3	2.3
55+	17.0	429	0	0.1	9.0	259	0	0.0	2.3	2,592	0	0.1
Female		56,223	5	12.4		48,393	0	2.5		100,059	0	2.9
13-24[b]	12.5	19,493[b]	1	2.4	3.0	21,945	0	0.7	1.5	36,168	0	0.5
25-34	29.3	23,740	2	7.0	7.0	19,112	0	1.3	3.9	42,329	0	1.7
35-44	24.3	10,813	2	2.6	7.2	6,414	0	0.5	3.6	17,780	0	0.6
45-54	20.3	1,984	0	0.4	4.8	861	0	0.0	2.4	3,386	0	0.1
55+	9.2	193	0	0.0	2.2	61	0	0.0	0.5	396	0	0.0
Total			92	156.2			29	90.7			53	88.4
Total SMR: 0.52		Black SMR	0.59			Hispanic SMR	0.32			White SMR	0.60	

Abbreviations: HIV, human immunodeficiency virus; SMR, standardized mortality ratio.

US data source: Reference 4

[a] Rate per 100,000.

[b] Military population only includes individuals ages 17-24.

The 2022-2025 National HIV/AIDS Strategy to end the HIV epidemic by 2030 includes an implementation plan that directs the Department of Defense (DOD) to "continue to implement interventions, testing, education, and training on the prevention of transmission of HIV infection as described in DODI [DOD Instruction] 6485.01, DHA-PI [Defense Health Agency-Procedural Instruction] 6025.29, and DHA-PI 6485.01."[1,2]

The annual crude rate of new HIV infections in the U.S. military between 2018 and 2023 was 21 per 100,000 population,[3] much higher than the estimated 11.5 per 100,000 in the U.S. general population in 2021.[4] A comparison of U.S. military and general population rates of HIV infection, adjusted for relevant confounding variables, has not been published, neither for U.S. military HIV incidence rates among different races and ethnicities. This Surveillance Snapshot presents a comparison of U.S. active component military and general population HIV incidence rates in 2021,[4] the most recent year for which stratified U.S. data were available, using indirect standardization by sex, age, and race and ethnicity.

There were 174 observed cases of HIV in the U.S. military in 2021 who self-identified their race and ethnicity as Black, Hispanic, or White, compared to an expected number of 335 based on U.S. population rates,[5] resulting in an overall standardized morbidity ratio (SMR) of 0.52 **(Table)**. The rate of HIV in the active component U.S. military was 48% lower than the U.S. general population rate after adjusting for sex, age, and race and ethnicity. SMR estimates stratified by race and ethnicity were similar for non-Hispanic Black and White service members (0.59 and 0.60, respectively) but lower for Hispanic service members (SMR=0.32). SMRs for racial and ethnic groups other than White, Black, and Hispanic cannot be presented because U.S. general population rates have not been not published for additional groups.[4]

Since the U.S. military requires HIV testing at least biennially,[6] it is unlikely that significant numbers of cases in the U.S. military are being missed, whereas infected individuals might be undiagnosed for longer periods of time in the general population if untested, leading to underestimates in younger populations.

The findings from this Snapshot may help to contextualize lower use (24%) of HIV pre-exposure prophylaxis (PrEP) in 2021 among those in the U.S. military with indications for its use, published in this issue of the *MSMR*,[7] compared to those at risk in the general population (30%). The lower adjusted U.S. military rate of HIV infection may be due to unmeasured behavioral or other factors rather than increased use of PrEP. These findings are consistent with the presence of a selection bias (or 'healthy warrior effect') resulting from the exclusion of HIV-infected individuals from entry into service,[8] as some of those with higher-risk sexual behaviors would have already been infected. Despite the lower adjusted rate of HIV infection in the U.S. military, HIV remains a threat to force health protection due to its costs, health consequences, and impact on military readiness.[9]

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Mid-Season Influenza Vaccine Effectiveness Estimates Among DOD Populations: A Composite of Data Presented at VRBPAC—the Vaccines and Related Biological Products Advisory Committee—2024 Meeting on Influenza Vaccine Strain Selection for the 2024-2025 Influenza Season

Each March, the Vaccines and Related Biological Products Advisory Committee (VRBPAC) of the U.S. Food and Drug Agency (FDA) meets to review and discuss data on influenza strain circulation and vaccine effectiveness (VE) estimates for the current influenza season.[1] The committee then makes recommendations on the selection of strains for the influenza vaccines to be developed for the following influenza season.

The Department of Defense (DOD) participates in the VRBPAC meeting by presenting mid-season influenza data from the DOD's global influenza surveillance, VE, and phylogenetic analyses, in addition to antigenic characterization of circulating viruses. DOD VE analyses are conducted among both service member and non-service member beneficiary populations to complement U.S. population VE estimates.[2]

Timing of these analyses is dependent upon the timing of peak activity for each season. Typically, mid-season estimates cannot be generated until February, to allow for adequate testing and sufficient case numbers to provide a reliable sample size for analysis.

These DOD VE analyses represent a joint effort between the Defense Health Agency's Defense Centers for Public Health in Falls Church and Dayton and the Naval Health Research Center (NHRC). The combined assessment of data from these organizations provides the DOD, FDA, and U.S. Centers for Disease Control (CDC) with comprehensive mid-season information on how well the influenza vaccines are working for force health protection and the broader military health population.

MSMR anticipates publishing these findings annually, in February or March, to disseminate this information more widely to interested individuals and public health agencies.

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2023-2024 Mid-Season Influenza Vaccine Effectiveness Against Laboratory-Confirmed Influenza Hospitalizations: U.S. Active Component Service Members

Angelia A. Eick-Cost, PhD, ScM; Zheng Hu

TABLE. Influenza Vaccine Effectiveness Against Influenza Hospitalizations, Active Component Service Members, 2023-2024 Season

Influenza Outcome	Vaccinated	No. (%)	Person-Years (p-yrs)	IR per 100,000 p-yrs	Adjusted IR[a] (95% CI)	Adjusted VE[a] (95% CI)
Laboratory-confirmed hospitalization	Yes	17 (66)	321,131	0.05	0.54 (0.30, 0.98)	46 (2, 70)
	No	30 (34)	307,610	0.10		
Laboratory-confirmed hospitalization or hospitalization record	Yes	21 (33)	321,129	0.07	0.46 (0.28, 0.78)	54 (12, 72)
	No	43 (67)	307,607	0.14		

Abbreviations: No., number; IR, incidence rate; CI, confidence interval; VE, vaccine effectiveness.

[a]Adjusted for sex, age category, prior vaccination (any influenza vaccine in previous 5 years), and month of diagnosis.

This Surveillance Snapshot provides an overview of the 2023-2024 mid-season analysis of influenza VE against influenza hospitalizations among ACSMs. Data from the DMSS and standardized laboratory data provided by DCPH–Portsmouth were utilized for this analysis.[1] A cohort study design was implemented among the population of ACSMs in service at any time between September 1, 2023 and February 14, 2024.

The outcome was defined as a laboratory-confirmed influenza-positive result (rapid antigen, RT-PCR, or culture influenza assay) with an indication that the individual was hospitalized, or a hospitalization record with the first or second diagnostic International Classification of Diseases, 10th revision (ICD-10) code for influenza (J09-J11). Person-time started at the beginning of the surveillance period or entry into active component service (whichever came last) and was censored at either the occurrence of the outcome, end of the surveillance period, or leaving active component or military service (whichever came first). Person-time and outcomes were stratified by vaccination status. Person-time and outcomes occurring prior to vaccination and up to 13 days post-vaccination were defined as unvaccinated. Person-time and outcomes occurring at least 14 days after vaccination were defined as vaccinated. Analyses were conducted for laboratory-confirmed influenza hospitalizations alone and then combined with hospitalization records for influenza. Incidence rates per 100,000 person-years (p-yrs) were calculated and a Poisson regression model was used to calculate adjusted incidence rate ratios (IRRs) (adjusted for sex, age category, prior vaccination [any influenza vaccine within previous 5 years], and month of diagnosis) and 95% CIs. VE was defined as (1 - OR) x 100.

There were 47 laboratory-confirmed influenza hospitalizations among ACSMs during the study period. An additional 17 influenza hospitalization records were identified using the encounter data. For both outcomes, the incidence rate of influenza hospitalization among unvaccinated ACSMs was twice the rate of vaccinated ACSMs (lab-confirmed only: 1.0 vs. 0.5 per 100,000 p-yrs; lab-confirmed and hospitalization records: 1.4 vs. 0.7 per 100,000 p-yrs) **(Table)**. Likewise, the adjusted analysis resulted in VE estimates of 46% (95% CI: 2, 70) and 54% (95% CI: 12, 72) for the laboratory-confirmed only and laboratory-confirmed with hospitalization records, respectively.

The results of this analysis show moderate protection against hospitalization for influenza among ACSMs from the 2023-2024 seasonal influenza vaccines. Although the number of outcomes are small, the analysis still reached statistical significance and provides data supporting the use of influenza vaccines among typically healthy ACSMs to prevent influenza hospitalizations.

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2023-2024 Mid-Season Influenza Vaccine Effectiveness Against Laboratory-Confirmed Ambulatory Influenza: U.S. Active Component Service Members

Angelia A. Eick-Cost, PhD, ScM; Zheng Hu

TABLE. Influenza Vaccine Effectiveness Against Medically-Attended Laboratory-Confirmed Ambulatory Influenza, Active Component Service Members, 2023-2024 Season

Influenza Type	Vaccinated	Cases (%)	Test-Negative Controls (%)	Crude VE (95% CI)	Adjusted VE[a] (95% CI)
Any type	Yes	2,919 (82)	14,013 (85)	20 (11, 27)	21 (13, 29)
	No	621 (18)	2,398 (15)		
A (any subtype)	Yes	2,271 (81)	14,013 (85)	26 (18, 33)	26 (18, 34)
	No	523 (19)	2,398 (15)		
A(H1N1)pdm09	Yes	96 (81)	14,013 (85)	29 (-13, 55)	23 (-23, 51)
	No	23 (19)	2,398 (15)		
A(H3N2)	Yes	204 (83)	14,013 (85)	17 (-16, 51)	28 (-1, 49)
	No	42 (17)	2,398 (15)		
B	Yes	652 (87)	14,013 (85)	-13 (-40, 9)	-5 (-30, 16)
	No	99 (13)	2,398 (15)		

Abbreviations: VE, vaccine effectiveness; CI, confidence interval.

[a]Adjusted for sex, age category, prior vaccination (any influenza vaccine in previous 5 years), and month of diagnosis.

This Surveillance Snapshot provides an overview of the 2023-2024 mid-season analysis of influenza VE against medically-attended ambulatory influenza infections among active component service members (ACSMs). Data from the Defense Medical Surveillance System (DMSS), the NHRC's respiratory surveillance program, and standardized laboratory data provided by the Defense Centers for Public Health–Portsmouth (DCPH–Portsmouth) were used for this analysis.[1,2] A case test-negative study design was implemented among the population of ACSMs from all services who were tested for influenza between December 1, 2023 and February 23, 2024—the period of peak influenza activity for the season.

Cases were defined as individuals with a positive influenza result from a rapid antigen, reverse transcription polymerase chain reaction (RT-PCR) or culture influenza assay. Test-negative controls (TNCs) were individuals with a negative influenza result from a RT-PCR or culture influenza assay. Crude odds ratios (ORs) were calculated and multivariate logistic regression was used to calculate adjusted ORs (adjusted for sex, age category, prior vaccination [any influenza vaccine in previous 5 years], and month of diagnosis) and 95% confidence intervals (CIs). VE estimates were defined as (1 - OR) x 100.

There were 3,540 cases—2,794 A (any subtype), 246 A(H3N2), 119 A(H1N1)pdm09, 751 B (any type)—and 16,411 TNCs. TNCs were more likely vaccinated (85.4%) than cases (82.5%). VE varied by influenza type **(Table)**. Statistically significant VE was found against any influenza case with an adjusted VE of 21% (95% CI: 13, 29) and influenza A (any subtype) with an adjusted VE of 26% (95% CI: 18, 34). The VE point estimate against influenza A(H1N1)pdm09 and A(H3N2) showed effectiveness, but did not reach statistical significance (23% [95% CI: -23, 51] and 28% [95% CI: -1, 49], respectively). This mid-season assessment did not find the vaccine to be effective against influenza B ambulatory infections (-5% [95% CI: -30, 15]).

The results of this analysis show low protection of the 2023-2024 seasonal influenza vaccines against medically-attended influenza A infections that resulted in ambulatory care visits among ACSMs. As these estimates were obtained during the middle of the influenza season, VE estimates and CIs may change when data from the full season are available and sample sizes increase.

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2023-2024 Mid-Season Influenza Vaccine Effectiveness Against Laboratory-Confirmed Ambulatory Influenza: DOD TRICARE Beneficiaries

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TABLE. Influenza Vaccine Effectiveness Against Medically-Attended Laboratory-Confirmed Ambulatory Influenza, DOD TRICARE Beneficiaries, 2023-2024 Season

Influenza Type	Population	Vaccinated	Cases (%)	Matched Test-Negative Controls[a] (%)	Crude VE (95% CI)	Adjusted VE[b] (95% CI)
Any type	Adults	Yes	30 (11)	131 (50)	47 (5, 70)	52 (11, 74)
		No	30 (11)	71 (27)		
Any type	Children	Yes	53 (14)	170 (45)	41 (2, 64)	43 (0, 67)
		No	45 (12)	107 (29)		
Any type	Dependents	Yes	83 (13)	289 (45)	37 (8, 57)	35 (4, 56)
		No	75 (12)	190 (30)		
A (any subtype)	Dependents	Yes	73 (13)	287 (50)	16 (-28, 45)	32 (-8, 57)
		No	49 (8)	168 (29)		
A(H1N1)pdm09	Dependents	Yes	22 (8)	130 (46)	56 (18, 76)	40 (-15, 69)
		No	35 (12)	98 (34)		
A(H3N2)	Dependents	Yes	11 (10)	51 (44)	28 (-86, 72)	54 (-31, 84)
		No	12 (10)	41 (36)		
B	Dependents	Yes	10 (6)	96 (53)	82 (59, 92)	67 (17, 87)
		No	26 (14)	48 (27)		

Abbreviations: DOD, Department of Defense; VE, vaccine effectiveness; CI, confidence interval.
[a]Matched to cases on month of specimen collection.
[b]Adjusted for age group and geographic region.

The DOD Global Respiratory Pathogen Surveillance Program (DODGRPSP)[1] used a matched case-test negative control study design to determine VE estimates against ambulatory influenza among DOD TRICARE beneficiaries. Specimens were collected from October 1, 2023 to February 17, 2024 among individuals with an influenza-like illness (ILI) medical encounter, then analyzed either at the United States Air Force School of Aerospace Medicine or Landstuhl Regional Medical Center. An ILI encounter was defined as presenting with a fever (≥100.4°F) and cough, fever (≥100.4°F) and 2 or more additional symptoms (fatigue, body aches, sore throat, headache, sinus congestion, shortness of breath, chills, runny nose, loss of taste or smell, acute respiratory distress) or a physician-diagnosed ILI. The study excluded service members, who were evaluated separately by the Armed Forces Health Surveillance Division.

Cases were individuals with a laboratory-confirmed positive influenza specimen, while controls were those with a specimen testing negative for influenza. An attempt was made to match each case to 4 controls by the month of specimen collection, but due to control availability, some analyses only had 1 case to 3 controls. Vaccination status was determined by utilizing the Aeromedical Services Information Management System or self-reporting through DODGRPSP questionnaires. Individuals were considered vaccinated if they received the vaccine at least 14 days prior to specimen collection, with exclusions for vaccines received within 14 days. Adjusted ORs and 95% CIs were calculated via multivariable logistic regression, adjusting for age group and geographic region. Adjusted VE estimates were computed as (1 - aOR) x 100.

The study identified 158 cases and 479 controls. Adjusted VE estimates for all DOD beneficiaries showed 35% effectiveness (CI: 4, 56) against overall influenza, 32% (CI: -8, 57) against overall influenza A, 40% (CI: -15, 69) against influenza A(H1N1)pdm09, 54% (CI: -31, 84) against influenza A(H3N2), and 67% (CI: 17, 87) against influenza B. For children, the adjusted VE estimate was 43% (CI: 0, 67) against overall influenza, while for adults it was 52% (CI: 11, 74) against overall influenza.

VE estimates suggest statistically significant, low to moderate protection against overall influenza among all DOD TRICARE beneficiaries and adults, as well as against influenza B among all DOD TRICARE beneficiaries. VE estimates against overall influenza for children, overall influenza A for all DOD TRICARE beneficiaries, influenza A(H1N1)pdm09, and influenza A(H3N2) for all DOD TRICARE beneficiaries indicate low to moderate protection, but these results did not reach statistical significance.

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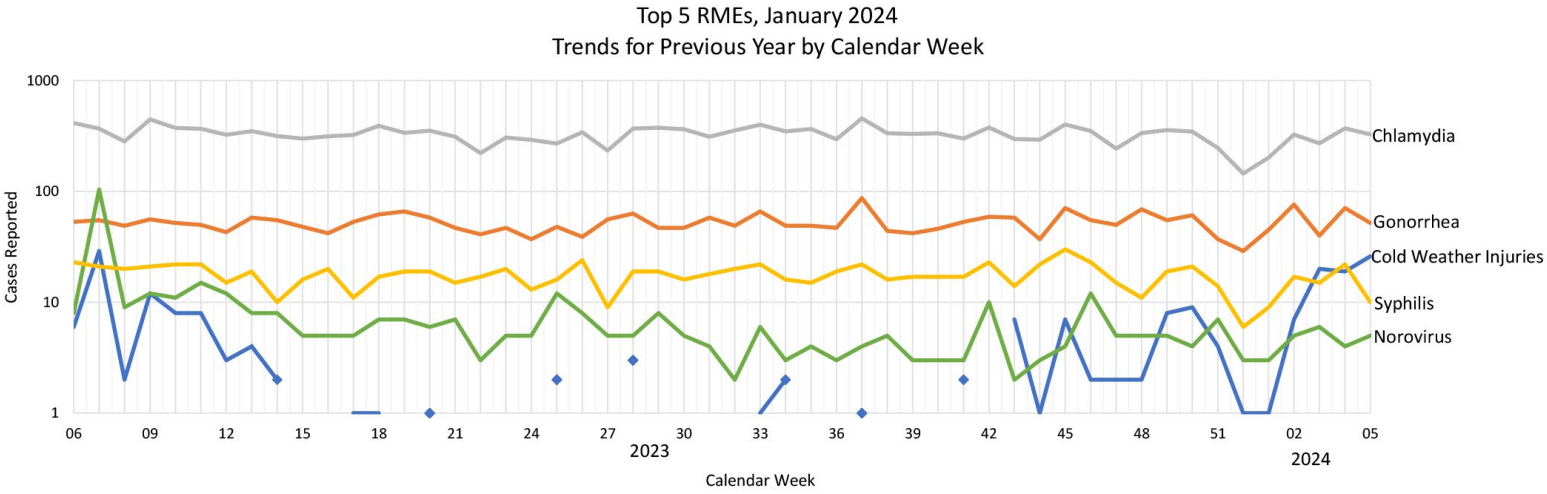
Reportable Medical Events at Military Health System Facilities Through Week 5, Ending February 3, 2024

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

TOP 5 REPORTABLE MEDICAL EVENTS BY CALENDAR WEEK, ACTIVE COMPONENT (FEBRUARY 11, 2023 - FEBRUARY 3, 2024)



Abbreviation: No., number.

[a]Cases are shown on a logarithmic scale.

Note: There were 0 cold weather injuries cases in the following weeks in 2023: 15-16, 19, 21-24, 26-27, 29-32, 35-36, 38-40, 42. Markers added to represent instances of cold weather injuries that were not visible on the log 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 the monitoring, control, and prevention of 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 (January 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

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TABLE. Reportable Medical Events, Military Health System Facilities, Week Ending February 3, 2024 (Week 5)[a]

Reportable Medical Event[b]	Active Component[c]					MHS Beneficiaries[d]
	December 2023	January 2024	YTD 2024	YTD 2023	Total, 2023	January 2024
	No.	No.	No.	No.	No.	No.
Amebiasis	1	0	0	2	15	0
Arboviral diseases, neuroinvasive and non-neuroinvasive	0	0	0	0	2	0
Botulism	0	0	0	0	0	1
COVID-19-associated hospitalization and death[e]	13	7	7	4	114	117
Campylobacteriosis	12	16	16	19	268	23
Chikungunya virus disease	0	0	0	1	2	0
Chlamydia trachomatis	1,175	1,364	1,364	1,643	17,445	209
Cholera	0	0	0	0	4	0
Coccidioidomycosis	6	5	5	5	36	6
Cold weather injury[f]	23	64	64	15	148	3
Cryptosporidiosis	6	4	4	6	67	1
Cyclosporiasis	0	0	0	0	15	0
Dengue virus infection	0	1	1	0	7	3
E. coli, Shiga toxin-producing	5	3	3	0	70	2
Ehrlichiosis / anaplasmosis	0	0	0	0	29	0
Giardiasis	4	12	12	3	78	4
Gonorrhea	201	265	265	284	2,759	27
Haemophilus influenzae, invasive	0	0	0	0	1	1
Hantavirus disease	1	0	0	0	2	0
Heat illness[f]	2	9	9	14	1,257	0
Hepatitis A	0	1	1	2	8	0
Hepatitis B	14	9	9	9	152	5
Hepatitis C	4	4	4	8	52	14
Influenza-associated hospitalization[g]	8	16	16	4	28	45
Lead poisoning, pediatric[h]	0	0	0	0	0	4
Legionellosis	0	0	0	1	5	6
Leishmaniasis	0	0	0	1	1	0
Leprosy	0	0	0	0	2	0
Leptospirosis	0	0	0	1	4	0
Lyme disease	3	7	7	6	69	1
Malaria	2	2	2	4	28	0
Meningococcal disease	2	0	0	0	4	0
Mpox	1	0	0	0	4	0
Mumps	0	0	0	0	0	1
Norovirus	22	20	20	27	416	24
Pertussis	2	2	2	1	15	4
Post-exposure prophylaxis against Rabies	39	52	52	41	591	23
Q fever	0	0	0	1	2	0
Rubella	0	0	0	0	2	0
Salmonellosis	10	8	8	2	129	12
Shigellosis	0	3	3	4	58	4
Spotted Fever Rickettsiosis	0	0	0	3	31	0
Syphilis (all)	63	67	67	87	937	19
Toxic Shock Syndrome	1	1	1	1	2	2
Trypanosomiasis	0	1	1	1	1	0
Tuberculosis	0	0	0	0	10	1
Tularemia	0	0	0	0	1	0
Typhoid fever	0	0	0	0	2	0
Typhus fever	0	1	1	0	3	0
Varicella	1	5	5	1	12	7
Zika virus infection	0	1	1	0	0	0
Total case counts	1,621	1,950	1,950	2,201	24,888	569

Abbreviations: RME, reportable medical event; MHS, Military Health System; YTD, year-to-date; No., number; RME, reportable medical event; DRSi, Disease Reporting System internet; ACSMs, active component service members; FMP, Family Military Prefix.

[a] RMEs reported through DRSi as of Feb. 29, 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 periods of Dec. 1, 2023-Dec. 31, 2023 and Jan. 1, 2024-Jan. 31, 2024. YTD comparison is displayed for the period of Jan. 1, 2024-Jan. 31, 2024 for MHS facilities. Previous year counts are provided as: previous year YTD, Jan. 1, 2023-Jan. 31, 2023; total 2023, Jan. 1, 2023-Dec. 31, 2023.

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

[c] Services included in this report include 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 individuals classified as FMP 20 with duty dtatus 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 ACSMs.

[g] Influenza-sssociated hospitalization is reportable only for individuals aged 65 years or younger.

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

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