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Viral Hepatitis C, Active Component, U.S. Armed Forces, 2011–2020

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This study reports updated numbers and incidence rates of hepatitis C virus (HCV) infection among active component members of the U.S. military using a revised case definition during a 10-year surveillance period between 2011 and 2020. During the surveillance period, there were 547 incident cases of HCV infection, resulting in an overall incidence rate of 4.1 per 100,000 person-years (p-yrs), which was much lower than that seen in the general U.S. population. The incidence rate trended downward from 4.8 per 100,000 p-yrs in 2011 to 1.6 per 100,000 p-yrs in 2020. Incidence of HCV infection was higher in males, those identifying as non-Hispanic White, Navy members, those in healthcare occupations, and among those in the youngest age category (17–19 years). When stratified by year of birth, the incidence of hepatitis C was highest among those born in 1964 or prior; however, when stratified by time in service, incidence was highest among those with less than 2 years of military service. The updated incidence of and factors associated with HCV infection in the U.S. military provided in this report may be useful in evaluating the impact of current HCV screening policies and in guiding updates to them.

What are the new findings?

During the surveillance period, there were 547 incident cases of HCV infection in the U.S. military, resulting in an overall incidence rate of 4.1 per 100,000 person-years (p-yrs), which was much lower than the rate seen in the general U.S. population. The incidence rate declined from 4.8 per 100,000 p-yrs in 2011 to 1.6 per 100,000 p-yrs in 2020.

What is the impact on readiness and force health protection?

The updated incidence of and factors associated with HCV infection in the U.S. military provided in this report may be useful in evaluating the impact of current HCV screening policies and in guiding updates to them. When present, HCV infection can be a challenge for an individual service member's health. Additionally, in a combat zone, HCV-infected service members may be a source of HCV exposure and transmission to fellow service members in the event of a need for emergency blood transfusion for combat casualties.

Hepatitis C virus (HCV) is the most common cause of chronic viral hepatitis in the United States.[1] HCV can cause significant inflammatory damage to the liver, resulting in complications including cirrhosis, hepatocellular carcinoma, and fulminant liver failure. In the U.S., it has been estimated that 4.1 million persons possess HCV antibodies, and that 2.4 million of these individuals are currently infected.[2] In the U.S. military, HCV infection presents a concern not only for an individual service member's fitness for duty and operational readiness, but it also poses a risk of transmission to uninfected service members during emergency situations in combat when utilizing a walking blood bank for whole blood transfusions is deemed necessary.[3] Additionally, the significant morbidity and cost of treatment for the long-term, adverse health outcomes of chronic HCV infection could burden the Military Health System (MHS) and Veterans Administration.

The impact of HCV on the MHS includes newly acquired cases of acute HCV infection as well as asymptomatic chronic HCV-infected individuals entering military service. Recent *MSMR* publications have estimated the prevalence of HCV during military service to be 5.2 per 100,000 and found that all or nearly all active HCV cases identified during military service are chronic cases.[4]

A validation study published in the September 2022 issue of the *Medical Surveillance Monthly Report (MSMR)* found that the HCV case definition used in previous studies published in the *MSMR* overestimated the burden of confirmed HCV by 39%.[5] The study recommended changing the HCV case definition to include only those individuals identified as cases via the reportable medical event (RME) system. Because this new case definition would result in lower sensitivity, it was also recommended that the Department of Defense (DOD) should establish a method to ensure that hepatitis C laboratory data are entered into the RME system to improve accuracy and completeness of reporting. The aim of this study was to report updated numbers and incidence rates of HCV infection among members of the U.S. military using this revised case definition during the 10-year surveillance period from 2011 through 2020.

Methods

Data for this study were obtained from the Defense Medical Surveillance System (DMSS), which relates demographic

information to health care encounters involving active component service members of the U.S. Armed Forces in direct and purchased care. The DMSS also contains reportable medical events from the military's reportable event notification system, the Disease Reporting System internet (DRSi). The surveillance period was 1 January 2011 through 31 December 2020. The surveillance population included all individuals who served in the active component of the Army, Navy, Air Force, or Marine Corps at any time during the surveillance period. Data from the DMSS included year of diagnosis, demographics (race and ethnicity, sex, service, age, years in service, military occupation, recruit status, birth cohort year, and number of deployments).

Each case was defined by having a record of a notifiable medical event that specified a confirmed diagnosis of hepatitis C. The DOD case definition for confirmatory evidence of HCV includes a positive nucleic acid test (NAT) for HCV RNA, which includes qualitative, quantitative, or genotype testing; a positive HCV antigen test; or anti-HCV test conversion (from negative to positive within a 12 month period).[6] The incident date was the date of the earliest confirmed reportable medical event. Each individual could be an incident case only once per lifetime. Prevalent cases (i.e., cases identified prior to the start of the surveillance period) were excluded. The combined incidence rates of both acute and chronic hepatitis C were calculated per 100,000 person-years (p-yrs) of service. Because RMEs often do not distinguish the type of HCV (acute or chronic), and because the validation study found that almost all service member cases of HCV were chronic,[5] this study did not attempt to distinguish acute vs. chronic HCV. However, it can be presumed that all or almost all cases identified in this report are chronic HCV.

Results

During the 10-year surveillance period, there were 547 incident cases of hepatitis C, resulting in an overall crude (i.e., unadjusted) incidence rate of 4.1 per 100,000 p-yrs **(Table)**. The incidence rate trended downward from 4.8 per 100,000 p-yrs in 2011 to 1.6 per 100,000 p-yrs in 2020 **(Figure)**. The lowest incidence rate observed other than 2020 was 2.9 per 100,000 in 2018 and the highest rate was 7.6 per 100,000 in 2013.

Incidence of hepatitis C infection was higher in males compared to females, those identifying as non-Hispanic White race and ethnicity as compared to non-Hispanic Black or Hispanic, and among those in the youngest age category (17–19 years) compared to older age categories. In addition, incidence was higher among Navy members compared to members in other service branches, among those with a single prior deployment compared to 0 or 2 or more deployments, and among those in healthcare occupations compared to combat or other occupations. Of note, the incidence of hepatitis C among recruits (46.4 per 100,000 p-yrs) was more than 14 times that of non-recruits (3.2 per 100,000 p-yrs). When stratified by year of birth, the incidence of hepatitis C was highest among those born in 1964 or prior; however, when stratified by time in service, incidence was highest among those with less than 2 years of military service.

Editorial Comment

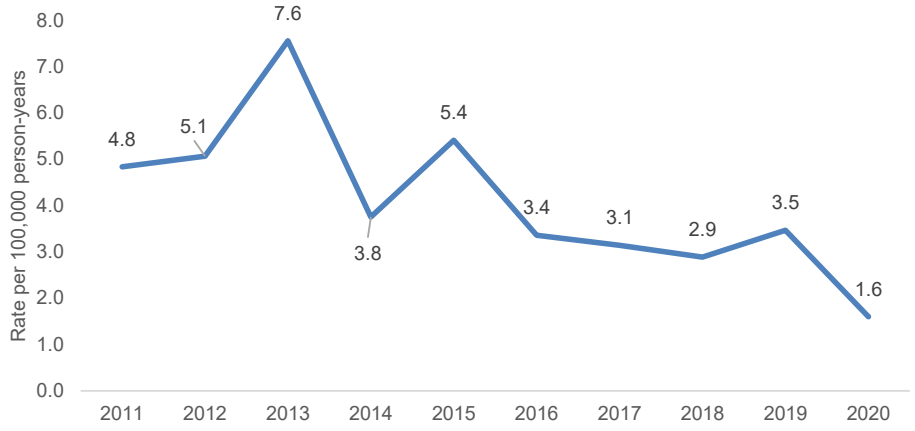
This report documents a decline in annual crude incidence rate of HCV infection among active component service members, with all annual rates during the 5 years of 2016 through 2020 being lower than the average rate for the entire 10 year surveillance period. The highest incidence rate of HCV infection was among recruits, with a rate 14 times that of non-recruits. By age, group rates were highest among those who were 17–19 years of age. Overall rates were also highest among those in the Navy, and among those who had < 2 years in service. These observations were expected in light of the universal Navy and Marine Corps HCV policy screening which occurs in basic training and are thus counted in this report.[6] Nevertheless, the birth cohort of individuals born in or prior to 1964 (i.e., ages 46 and older during the surveillance period) also had a higher rate of infection than other birth cohorts.

TABLE. Incidence of viral hepatitis C, active component service members, U.S. Armed Forces, 2011–2020

	Total	
	No.	Rate[a]
Total	547	4.1
Sex		
Female	75	3.6
Male	472	4.2
Service		
Army	249	5.0
Navy	177	5.5
Air Force	54	1.7
Marine Corps	67	3.6
Age group		
17–19	49	5.6
20–29	339	4.6
30–39	104	2.9
40+	55	4.0
Age group by sex		
Female		
17–19	11	7.1
20–29	46	3.9
30–39	11	2.0
40+	7	3.9
Male		
17–19	38	5.3
20–29	293	4.8
30–39	93	3.0
40+	48	4.0
Race/ethnicity group		
Non Hispanic White	368	4.8
Non Hispanic Black	69	3.2
Hispanic	50	2.6
Other/unknown	60	4.0
Military occupation		
Health care	85	4.5
Combat	45	3.9
Other	417	4.1
Recruit status		
Recruit	131	46.4
Non-recruit	416	3.2
No. of previous deployments		
0	22	2.0
1	444	4.8
2 or more	81	2.8
Time in service (years)		
0–<2	249	8.4
2–<4	90	3.5
4–<8	91	3.3
8+	117	2.4
Birth cohort year		
1997 or after	31	2.7
1981–1996	418	4.6
1965–1980	81	2.8
1964 or prior	17	12.2

[a]Rates per 100,000 person-years

FIGURE. Incidence of viral hepatitis C by year, active component service members, U.S. Armed Forces, 2011 - 2020



The risk factors for and decreasing trend in HCV incidence demonstrated by the current study largely mirror the findings for chronic HCV in a prior study of U.S. military service members from 2008–2016.[7] However, the rates of chronic HCV from these two studies remain notably different, where the current report (4.1 per 100,000 from 2011–2020) was substantially lower than the rate reported in the prior study (12.2 per 100,000 from 2008–2016). This difference may be explained by the continued decline in HCV incidence over the two intervals studied, in addition to a potential for overreporting (39%) inherent to the case definition employed in the study from 2008–2016, as documented in a sensitivity analysis from the September 2022 *MSMR* validation study.[5] In contrast, the case definition used in the current report is expected to underreport the true HCV disease burden by 29.5%. The combination of the overreporting when using the previous case definition and underreporting when using the one in this report would be expected to result in a 49.5% lower rate in this study compared to the previous report.

The 2018 rate of chronic HCV disease estimated from the current study of the U.S. active component (2.9 per 100,000) was demonstrably lower than the civilian population rate (54.1 per 100,000 in 2018) reported in the same year.[8] This was not due to the confounding effects of age, as 20–29 year olds had a much lower incidence in the military over the 10-year reporting period compared to the general U.S. population in 2018 (4.6 vs. 72.0 per 100,000); 30–39 year olds had a similarly lower incidence (2.9 vs. 95.0 per 100,000).[8] Instead, this is likely due to several other factors, such as the prohibition of and regular screening for drug use in the U.S. military, as well as the screening for and exclusion of individuals with medical conditions from military service, including untreated HCV.[9] The individuals who are found to have chronic HCV during basic training screening are then discharged from military service for HCV which is "existing prior to service." They may then reapply for military service after they receive successful treatment and obtain documentation of cure 12 weeks after completion of therapy.[9]

The factors associated with HCV infection in the U.S. military were generally similar to those with chronic HCV in the U.S. civilian population, with higher incidence among men, younger ages, White-non-Hispanic individuals, and those born during or before 1964.[1,8] Differences included a peak incidence among the 17–19 years of age in the military as compared to 30–39 years in the civilian population, which may be partially attributable to the universal screening which was performed among recruits starting in 2012 in the Navy and Marine Corps. Additionally, the highest incidence in the civilian population was seen among individuals with race and ethnicity reported as American Indian or Alaska Native, which was categorized as "other" in the military due to small numbers. Although the decreasing trend of HCV in the military may have been partially due to the recruit screening program instituted in the Navy and Marine Corps, a similar decrease in chronic HCV incidence was also seen in the civilian population between 2011 to 2019 (from 185,979 cases in 2011 to 123,312 in 2019).[1,10] However, civilian rates have much more variability because of the inconsistent number of states reporting chronic HCV from year to year.

The most important limitation of this study is underreporting of HCV infection, since most chronic (and acute) HCV infections often go undiagnosed because they are asymptomatic.[8,11] This may be particularly true of calendar year 2020 due to the impact of the SARS-CoV-2 epidemic in restricting access to health care. Therefore, the numbers and rates of HCV infection diagnoses reported here may underestimate the true rates of new infections among active component U.S. military members. The revised case definition also has limitations in sensitivity and positive predictive value which were quantified previously,[5] and these should be considered when comparing to military studies that used the previous *MSMR* case definition.[7] Furthermore, a surveillance bias is introduced in the Navy and Marine Corps due to the HCV screening program instituted among recruits in those services in 2012, which complicates comparisons with military medical records prior to 2012 and with civilian populations. Finally, although the cases described in this report are all newly diagnosed and may be called incident cases, previous studies have shown that all or nearly all of the cases are chronic, with almost no acute cases.[4] Due to this chronic nature, and since the primary risk factors for these infections existed prior to entry into military service (e.g. injection drug use, contact with an HCV infected case),[1] it is likely that most of these infections occurred prior to military service rather than during it. Thus, these newly diagnosed "incident" cases have many features of prevalent cases due to this more chronic nature.

Per current Department of Defense (DOD) accession standards, individuals are medically disqualified if they display a "history of chronic hepatitis C, unless successfully treated and with documentation of a cure 12 weeks after completion of a

full course of therapy."[9] Prior to accession, applicants are required to submit a medical history and undergo service-specific medical screening procedures.[7] Since 2012, the Navy and Marine Corps have required all new applicants to undergo HCV screening prior to entering military service.[6] The Army and Air Force, however, currently do not require HCV testing at accession, and the Navy and Marine Corps have not instituted testing among any populations other than recruits. The findings of this report may inform a re-evaluation of HCV screening policies by providing an assessment of the impact of the existing service-specific laboratory screening procedures. It may also help guide public health policy makers to determine if a DOD-wide screening policy should be established, as suggested in previous reports.[4,11] The current Centers for Disease Control and Prevention recommendation is for universal HCV screening among adults "except in settings where the prevalence is <0.1%."[12] While the estimated prevalence of HCV in the U.S. military is actually less than this (0.04%),[11] other factors may make a compelling case for screening, such as the estimated 88% of HCV cases which are undiagnosed in the military, and the risk of transmission by undiagnosed blood donors who are part of the "walking blood bank" during emergent transfusion while deployed.[4,13]

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MSMR Instructions for Authors — Abbreviated

Full text of these instructions can be found at: https://www.health.mil/Military-Health-Topics/Health-Readiness/AFHSD/Reports-and-Publications/Medical-Surveillance-Monthly-Report/Instructions-for-Authors

I. CRITERIA FOR PUBLICATION

A. Appropriateness: The *MSMR* publishes reports of evidence-based estimates regarding the incidence, distribution, impact, or trends of illness and injuries among members of the United States Armed Forces and other beneficiaries of the Military Health System (MHS) (e.g., family members, retirees, civilian employees). All reports are based on data or public health information that is directly relevant to the health, safety, and well-being of MHS beneficiaries or the operational fitness of military members.

B. Quality: Reports are typically based on data analyzed using scientific methods. Results should yield actionable public health information or recommendations.

C. Originality: Updates of surveillance summaries previously published in the *MSMR* will be considered if they add significant new information.

D. Timeliness: Reports should contain the most currently available data from surveillance systems or studies.

II. TYPES OF REPORTS

A. Full Reports: These are summaries of data or the findings of original epidemiologic studies of military health importance. Authors should refer to previously published reports as a guideline for style and format.

B. Brief Reports: These are similar to full reports but are less than 1,000 words in length. Brief reports should be structured in the same manner as full reports. An abstract is not required.

C. Outbreak Reports should include all of the sections listed above under "full reports." They may also include additional sections such as: Setting (follows the background and describes the outbreak setting), Countermeasures (follows the results and describes actions taken to prevent continuation or spread of the outbreak).

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E. Surveillance Snapshots typically consist of a single chart with a caption or legend. They may also include 1–2 paragraphs of text.

F. Historical Snapshots describe events or persons that have shaped the history of military public health. They should include photographs or other images.

G. Historical Perspectives summarize the historical impact of a disease or condition on a specific military operation or the military overall.

H. Notice to Readers: Scientific notices to readers describe changes in recommended public health practices (e.g., vaccine recommendations) or the availability of clinical or surveillance resources (e.g., laboratory testing). The *MSMR* does not publish meeting announcements or summaries of past meetings.

I. Images in Health Surveillance are photographs, drawings or other images that depict militarily relevant public health information.

J. Editorials are usually invited but may be proposed.

K. Other article types may be proposed by contacting the Editor-in-Chief.

III. SUBMISSION FORMATS

A. **Suggested Length** (excluding title, authors, abstract, author affiliations, acknowledgements and references): **Full Reports:** 2,000 words. **Brief Reports:** <1,000 words. **Outbreak Reports:** 1,500 words. **Case Reports:** 1,000 words. **Surveillance Snapshots** and **Images in Health Surveillance:** 500 words of text or captions (accompanying one or more figures). **Notices to Readers:** 500 words. Submissions that are longer than suggested in these guidelines will be considered on a case-by-case basis; longer articles should be justified by the authors in their e-mails of transmittal of the manuscripts.

B. **Text:** Submit in Microsoft Word. Do not embed tables or charts in the Word text.

C. **Tables and Figures:** Tables and figures must be submitted in Microsoft Excel and not embedded in text. The data used to create a figure must be included in tabular form and link to the figure. Place titles and legends within the figure. Format all tables and figures to Arial font, size 8. Use lowercase superscripted letters (e.g., a,b,c) for footnotes in tables and figures.

D. **Photographs:** Photographs that illustrate a prevention intervention, risk factor, or outbreak setting are encouraged. Only submit photographs that are in the public domain; if a photo credit is required, submit the name with the photo.

IV. CLEARANCE, CONSENT AND SUBMISSION

A. Prior to submission, authors must initiate clearance processes from their Services/agencies and from human subjects review boards, as appropriate. Manuscripts pending clearance may be submitted for consideration.

B. Prior to submission, corresponding authors must obtain from all of the co-authors written approval and consent to publish the report with their names listed as an author. Written consent may be obtained in the form of email messages from each author saying that they approve publication of the report.

C. Submit via email to dha.ncr.health-surv.mbx.msmr@health.mil.

D. Submit text, tables/figures and photographs as separate attachments.

E. *MSMR* staff will confirm receipt of the report by email.

F. *MSMR* staff will review the submission and send it for peer review by subject matter experts as appropriate.

G. Peer Reviewer nominations: Authors are asked to nominate 1 to 3 external referees to review their manuscript. Please provide their name, email address and telephone number in the email submission to the editor. To avoid conflict of interest, the suggested referee should not be from the same department or division as any one of the authors.

November 2022

Update: Contraception Among Active Component Service Women, U.S. Armed Forces, 2017–2021

This report summarizes the annual prevalence of permanent sterilization, as well as use of long- and short-acting reversible contraceptives (LARCs and SARCs, respectively), contraceptive counseling services, and use of emergency contraceptives from 2017 through 2021 among active component U.S. service women. In 2021, almost half (n=115,671, 45.8%) of women used either LARCs or SARCs. From 2017 to 2021, permanent sterilization decreased from 3.5% to 3.0%; LARC use increased to 23.8% in 2019 and then decreased to 22.4% by 2021; SARC use decreased from 28.1% to 23.4%; and emergency contraceptive use decreased from 2.4% to 1.1%. Annual prevalence of contraceptive counseling only decreased from 4.7% to 2.1%. These data demonstrate that a large proportion of service women utilize at least one form of contraception, and SARCs and LARCs remain the two most popular options.

What are the new findings?

Use of both long- and short-acting reversible contraception has decreased in recent years among active component service women. However, they remain among the most popular forms of contraception, with 23.4% and 22.4% using short- and long-active reversible contraception in 2021, respectively.

What is the impact on readiness and force health protection?

Knowledge of, access to, and consistent use of contraception is key for active component service member readiness, both for preventing pregnancy and promoting menstrual suppression. Long-acting reversible contraception (LARC) is an effective method for reducing unintended pregnancies and should continue to be promoted among active component service women.

More than 230,000 women serve in the active component of the U.S. military, comprising more than 17% of the active component force.[1] Contraceptive health care is an increasingly important military public health issue as women's military career opportunities have expanded into combat roles, and because the majority of women serving in the Armed Forces are of childbearing age.

All U.S. service women have access to universal, no-cost health care including contraceptive coverage. All prescription contraceptive methods, including long-acting reversible contraceptives (LARCs), are available at no cost in military treatment facilities. Despite this fact, rates of unintended pregnancy among service women have been estimated to be 50% higher than age-adjusted estimates in the U.S. general population.[2,3] Unintended pregnancy can have a significant detrimental effect on military unit operations and readiness, especially in the deployed setting. For example, a pregnant service woman is ineligible to deploy and must be evacuated from the theater of operations if she becomes pregnant during deployment.

The Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS) provides population-level estimates of contraceptive use among U.S. women. Using data collected between 2017 and 2019, the NCHS estimated that 65% of women of childbearing age used contraceptives. The most common methods used were sterilization (18%), oral contraceptives (i.e., the pill), and LARCs, used by 14% and 10% of women, respectively.[4] Until 2017, similar population-based estimates of contraceptive use were unavailable for women in the U.S. military. Witkop et al. initially published findings from a comprehensive analysis of contraceptive use among women of childbearing potential in the U.S. military in 2017, which was shortly followed by a *MSMR* report on women's health and contraceptive use.[5,6]

The objective of this report was to update prior estimates of service women who were prescribed contraceptives. Data pertaining to contraceptive use were stratified by demographic and military characteristics, as well as by contraceptive method (e.g., permanent, long-acting, short-acting). Data were also stratified by year to assess temporal trends.

Methods

The surveillance period was 1 January 2017 through 31 December 2021. The study population consisted of all active component service women aged 17–49 years who served in the Army, Navy, Air Force, or Marine Corps at least 1 day during the surveillance period. Women with a history of hysterectomy prior to the start of the surveillance period were excluded. Women who underwent a hysterectomy during the

surveillance period were excluded from subsequent annual contraceptive use prevalence calculations. For example, a woman who underwent a hysterectomy in 2018 was not eligible to be counted for contraceptive use in 2019 or thereafter.

The types of contraception included in the analysis were permanent sterilization; long-acting reversible contraception (LARC), which include intrauterine devices (IUDs) and implants; short-acting reversible contraception (SARC), which include oral contraceptives, patches, vaginal rings, and injectables; contraceptive counseling; and emergency contraception. Service members were identified as using contraception on the basis of database documentation of one or more of the following: a prescription for contraception or progestins (per American Hospital Formulary Service Pharmacologic-Therapeutic Class: 681200 or 683200);[7] or a procedural or diagnostic code for sterilization, contraception, or contraceptive counseling **(Table 1)**.

Prescriptions were identified using data in the Pharmacy Data Transaction Service (PDTS) maintained in the Defense Medical Surveillance System (DMSS). Ninth and tenth revisions of the International Classification of Diseases Clinical Modification diagnostic codes (ICD-9/10-CM), inpatient procedure codes (ICD-9/10-PCS) and current procedural terminology (CPT) codes were also identified in medical encounter records of the DMSS, which collectively contain data on hospitalizations and ambulatory visits by actively serving members in U.S. military and civilian (i.e., contracted or purchased care through the Military Health System [MHS]) medical facilities worldwide. To account for contraception services received in combat theaters of operation, diagnostic codes, procedure codes, and prescriptions contained in the Theater Medical Data Store (TMDS) were also included.

Women who used multiple types of contraceptives during a given calendar year were assigned to one of four mutually exclusive groups, with group assignment as follows (in decreasing order of priority): permanent sterilization, LARCs, SARCs, and contraceptive counseling. Emergency contraception use was measured independently from the other categories of contraceptives. Time-dependent variables, such as age and military rank, were determined at the end of each calendar year for the annual calculations of prevalence percentages.

An individual was considered to be permanently sterilized from the first day of the medical encounter for permanent sterilization (via bilateral tubal ligation, oophorectomy, or salpingectomy) until the end of military service or the end of the surveillance period, whichever came first. For LARCs and SARCs, periods of contraceptive coverage were created based on the "days' supply" for a given contraceptive type. Intrauterine devices were assigned a default 5-year days' supply; however, Skyla® brand was assigned a 3-year days' supply and ParaGard® brand was assigned a 10-year days' supply. Implants were assigned a default 3-year days' supply except for both

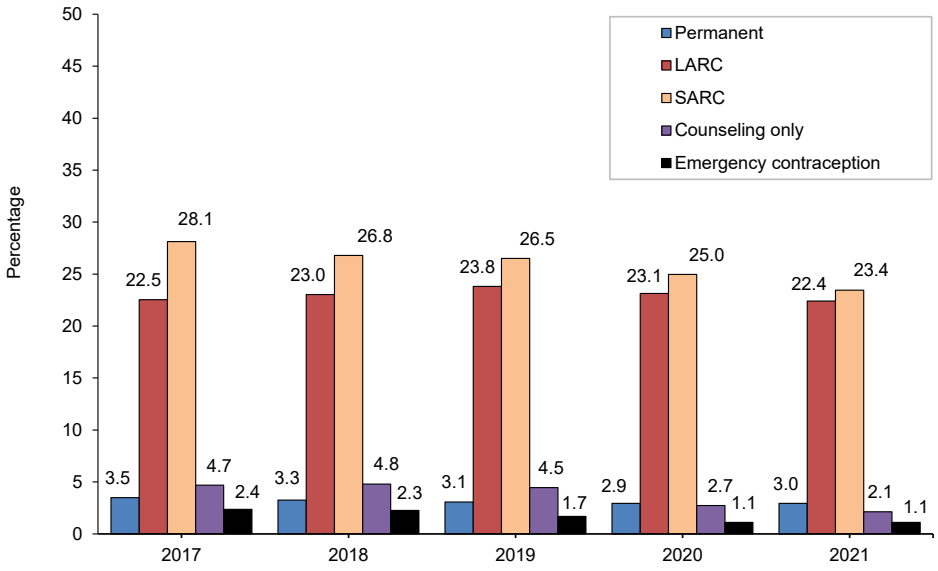
TABLE 1. Diagnosis and procedural codes used to identify contraceptives

Inpatient and outpatient diagnoses		Outpatient procedures	Inpatient procedures	
ICD-9-CM diagnostic codes	ICD-10-CM diagnostic codes	CPT codes	ICD-9-PCS codes	ICD-10-PCS codes
Sterilization				
V25.2	Z30.2	58611, 58615, 58670, 58671	65.5*, 65.6*, 66.2*, 66.3*, 66.5*	0UL74*, 0UL78*, 0UL70*, 0UL77*, 0UL73*, 0U574*, 0U578*, 0U570*, 0U573*, 0U577*, 0UT70*, 0UT74*, 0UT77*, 0UT78*, 0UT7F*, 0UT20*, 0UT24*, 0UT27*, 0UT28*, 0UT2F*
IUD				
V25.11, V25.13, V25.12 (removal)	Z30.014, Z30.430, Z30.433, Z30.432 (removal)	58300, 58301 (removal)	69.7	0UH97HZ, 0UH98HZ, 0UHC7HZ, 0UHC8HZ
Implant				
V25.5	Z30.017	11975, 11981, 11983, 11977, 11976, 11982 (removal)	NA	NA
Contraceptive counseling				
V25.0, V25.01, V25.02, V25.04, V25.09	Z30.02, Z30.09	NA	NA	NA
Emergency contraception				
V25.03	Z30.012	NA	NA	NA

*indicates that all subsequent digits/characters are included
Note: "Removal" indicates a code to document removal of that contraception device and to censor the coverage period.
ICD-9/10-CM, International Classification of Diseases-9th/10th Revision-Clinical Modification; ICD-9/10-PCS, International Classification of Diseases-9th/10th Revision-Procedure Coding System; IUD, intrauterine device; CPT, Current Procedural Terminology

Norplant® and Jadelle® implants, which were assigned a 5-year days' supply. The coverage period was censored on the date that the implant or IUD was removed, if there was any documentation of a removal via diagnostic or procedural codes. For SARCs, if the days' supply information was missing from the record, then a default days' supply of 30 days was assigned for oral contraceptives, patches, and vaginal rings, and a default 90 days' supply was assigned for injectables. An individual was considered to have received contraceptive counseling if it was documented in the individual's health records for the given calendar year and only if there were no other contraceptive types in use during that year. Finally, a woman was considered to have used emergency contraception for a given year if she had a medical encounter or dispensed prescription for emergency contraception at any time during that year.

FIGURE 1. Annual prevalence of contraceptive utilization, by type, active component service women of childbearing potential, U.S. Armed Forces, 2017–2021



Long-acting reversible contraceptives (LARC); short-acting reversible contraceptives (SARC)

Results

The number of service women of childbearing potential in active component military service during each year of the surveillance period increased from 231,433 in 2017 to 252,306 in 2021 **(data not shown)**. However, there was an overall decline in use of any contraceptive method (sterilization, LARC, SARC, or counseling), from 58.8% in 2017 to 50.9% in 2021 **(Figure 1)**. In 2021, the vast majority of women using any contraceptive method used either LARCs or SARCs (n=115,671).

During any given year of the surveillance period, an average of 3.1% of women in service had been permanently sterilized; this prevalence decreased slightly throughout the 5-year surveillance period from 3.5% in 2017 to 3.0% in 2021 **(Figure 1)**. In 2021, permanent sterilization was most prevalent among women aged 40–49 years at 13.4% **(Table 2)**. The proportions of permanent sterilization prevalence were highest among non-Hispanic black women (3.5%), those in the Air Force (3.6%), warrant officers (10.3%), those in communications/intelligence (4.0%) or healthcare (3.7%) occupations, those who completed some college or more (5.0%), and those with "other" marital status (6.1%), which would include widowed or divorced service members **(Table 2)**.

The percentage of women who used either IUDs or implants increased to 23.8% in 2019 and then decreased to 22.4% in 2021, with an average annual prevalence of 23.0% during the surveillance period **(Figure 1)**. In 2021, LARC use was most common among women aged 25–29 years (25.0%). LARC use was most common among Non-Hispanic Whites (24.6%) and Hispanics (24.0%), senior enlisted personnel (24.6%), pilots/aircrew (32.5%), women in the Marine Corps (29.2%), and those with "other" marital status (26.3%) **(Table 2)**.

The annual prevalence of SARC use among service women decreased from 28.1% in 2017 to 23.4% in 2021 **(Figure 1)**. In 2021, SARC use was most common among women aged 20–24 years (26.0%), Non-Hispanic Whites (24.2%), junior officers (26.2%), women in the Air Force (26.3%), those in healthcare occupations (26.2%), and those with "other" marital status (24.8%) **(Table 2)**.

During any given year of the surveillance period, an average of 3.8% of active component service women used only contraceptive counseling services as a contraceptive method **(Figure 1)**. In 2021, the average annual prevalence of the use of contraceptive counseling services only was highest among women in the youngest age group of 17–19 years (8.6%), Hispanics (2.6%), junior enlisted women (3.5%), Marine Corps personnel (8.1%), those in armor/motor transport (3.3%) or "other" (3.8%) occupations, single women (3.1%), and those with a high school education or less (2.8%) **(Table 2)**.

An average prevalence of 1.7% service women had prescriptions or medical encounters for emergency contraception during each year of the surveillance period **(Figure 1)**. In 2021, emergency contraception utilization was highest among women aged 20–24 years (1.8%), Non-Hispanic Blacks and Hispanics (1.5%), junior enlisted personnel (1.6%), women in the Marine Corps (1.8%), women in armor/motor transport occupations (1.4%), single women (1.4%), and those with a high school education or less (1.5%) **(Table 3)**.

Editorial Comment

The current study provides population-based descriptive information on contraceptive use among U.S. service women

TABLE 2. Annual prevalence of contraceptive utilization, by type, active component service women of childbearing potential, U.S. Armed Forces, 2021

	Active component service women	Permanent sterilization		LARC		SARC		Counseling only	
	No.	No.	%	No.	%	No.	%	No.	%
Total	252,306	7,447	3.0	56,515	22.4	59,156	23.4	5,355	2.1
Age (years)									
17-19	18,186	1	0.0	1,856	10.2	2,854	15.7	1,569	8.6
20-24	86,369	184	0.2	20,752	24.0	22,488	26.0	2,040	2.4
25-29	63,998	781	1.2	16,000	25.0	16,517	25.8	957	1.5
30-34	39,929	1,565	3.9	9,122	22.8	9,353	23.4	448	1.1
35-39	26,202	2,547	9.7	5,561	21.2	5,188	19.8	250	1.0
40-44	12,795	1,723	13.5	2,522	19.7	2,136	16.7	70	0.5
45-49	4,827	646	13.4	702	14.5	620	12.8	21	0.4
Race/ethnicity									
Non-Hispanic White	105,093	3,026	2.9	25,871	24.6	25,395	24.2	2,055	2.0
Non-Hispanic Black	60,527	2,134	3.5	10,582	17.5	14,134	23.4	1,308	2.2
Hispanic	52,078	1,347	2.6	12,496	24.0	11,769	22.6	1,370	2.6
Other/Unknown	34,608	940	2.7	7,566	21.9	7,858	22.7	622	1.8
Grade									
Junior enlisted (E1-E4)	115,312	516	0.4	23,003	19.9	27,331	23.7	4,038	3.5
Senior enlisted (E5-E9)	91,055	5,569	6.1	22,372	24.6	20,656	22.7	915	1.0
Junior officer (O1-O3)	30,429	347	1.1	7,408	24.3	7,982	26.2	300	1.0
Senior officer (O4-O10)	13,758	834	6.1	3,325	24.2	2,852	20.7	95	0.7
Warrant officer (W1-W5)	1,752	181	10.3	407	23.2	335	19.1	7	0.4
Service									
Army	81,176	2,539	3.1	15,351	18.9	19,314	23.8	1,255	1.5
Navy	76,691	1,926	2.5	19,485	25.4	16,292	21.2	1,427	1.9
Air Force	75,356	2,696	3.6	16,112	21.4	19,798	26.3	1,134	1.5
Marine Corps	19,083	286	1.5	5,567	29.2	3,752	19.7	1,539	8.1
Military occupation									
Infantry/artillery/combat engineering	8,329	80	1.0	1,889	22.7	1,919	23.0	220	2.6
Armor/motor transport	8,358	174	2.1	1,623	19.4	1,620	19.4	273	3.3
Pilot/air crew	3,983	39	1.0	1,293	32.5	1,017	25.5	41	1.0
Repair/engineering	49,739	1,128	2.3	12,120	24.4	11,035	22.2	761	1.5
Communications/intelligence	79,179	3,163	4.0	17,242	21.8	19,568	24.7	1,383	1.7
Healthcare	43,834	1,609	3.7	12,020	27.4	11,500	26.2	439	1.0
Other	58,884	1,254	2.1	10,328	17.5	12,497	21.2	2,238	3.8
Marital status									
Married	112,586	5,374	4.8	25,950	23.0	25,958	23.1	1,517	1.3
Single	114,869	559	0.5	24,021	20.9	27,030	23.5	3,587	3.1
Other	24,851	1,514	6.1	6,544	26.3	6,168	24.8	251	1.0
Education									
High school or less	145,345	2,093	1.4	32,468	22.3	33,665	23.2	4,134	2.8
College/other	106,961	5,354	5.0	24,047	22.5	25,491	23.8	1,221	1.1

Long-acting reversible contraceptives (LARC); short-acting reversible contraceptives (SARC)

TABLE 3. Annual prevalence of emergency contraceptive utilization, active component service women of childbearing potential, U.S. Armed Forces, 2021

	Total active component service women	Emergency contraception utilization	
	No.	No.	%
Total	252,306	2,814	1.1
Age (years)			
17-19	18,186	159	0.9
20-24	86,369	1,528	1.8
25-29	63,998	711	1.1
30-34	39,929	290	0.7
35-39	26,202	93	0.4
40-44	12,795	26	0.2
45-49	4,827	7	0.1
Race/ethnicity			
Non-Hispanic White	105,093	754	0.7
Non-Hispanic Black	60,527	905	1.5
Hispanic	52,078	782	1.5
Other/Unknown	34,608	373	1.1
Grade			
Junior enlisted (E1-E4)	115,312	1,830	1.6
Senior enlisted (E5-E9)	91,055	837	0.9
Junior officer (O1-O3)	30,429	123	0.4
Senior officer (O4-O10)	13,758	18	0.1
Warrant officer (W1-W5)	1,752	6	0.3
Service			
Army	81,176	692	0.9
Navy	76,691	902	1.2
Air Force	75,356	875	1.2
Marine Corps	19,083	345	1.8
Military occupation			
Infantry/artillery/combat engineering	8,329	75	0.9
Armor/motor transport	8,358	120	1.4
Pilot/air crew	3,983	6	0.2
Repair/engineering	49,739	601	1.2
Communications/intelligence	79,179	898	1.1
Healthcare	43,834	542	1.2
Other	58,884	572	1.0
Marital status			
Married	112,586	939	0.8
Single	114,869	1,580	1.4
Other	24,851	295	1.2
Education			
High school or less	145,345	2,164	1.5
College/other	106,961	650	0.6

during 2017–2021, which is needed to address questions about ready access to contraceptive care. These data demonstrate that about half of service women of childbearing potential used at least one form of contraception in 2021, and that LARCs and SARCs were the most popular types.

Between 2012 and 2016, LARC use increased in both military and civilian populations.[6] This increase may have been the result of increased education programs about contraceptive and non-contraceptive benefits of LARCs as well as other programs such as walk-in contraceptive clinics. However, the current study shows that this increasing trend leveled off, with the percentage of women using LARCs decreasing from 23.8% in 2019 to 22.4% in 2021. SARC use declined slightly during the period, from 28.1% to 23.4%. In addition, there was an overall decline in use of any contraceptive method (sterilization, LARC, SARC, or counseling), from 58.8% in 2017 to 50.9% in 2021. At least part of this decreasing trend during 2020 and 2021 may have been impacted by the COVID-19 pandemic, as there were limitations on appointments and types of procedures being performed and women may have avoided contraceptive appointments during this time. This finding is concerning as LARCs are among the most effective methods for preventing unintended pregnancies and the Defense Health Board released a report in November 2020 recommending improved contraceptive education and services, particularly access to LARCs.[8]

Use of emergency contraception also decreased during the surveillance period. This could be interpreted as a positive finding in that it may indicate that increasing numbers of women had better access to other forms of contraception; therefore, fewer women required emergency contraception as an alternate method. However, it could also be interpreted as a negative finding if fewer women who wanted emergency contraceptives had awareness about it or access to it. Additional information about reasons for receiving or not receiving emergency contraceptives would be needed to provide a clearer interpretation of this trend.

This study shows that there are some differences in the types of contraceptives

used among women in active component military service compared to women in the general U.S. population. In 2021, female service members were most likely to use SARCs (23.4%), followed by LARCs (22.4%), and permanent sterilization (3.0%). In contrast, between 2017 and 2019, women aged 15–49 years in the United States were most likely to use female sterilization as a contraceptive method (18.1%), followed by oral contraceptive pills (14.0%), LARCs (10.4%), and male condoms (8.4%).[4]

Some methodological limitations should be considered in interpreting the results of this study. First, estimated rates reported in this analysis may underestimate contraceptive utilization because they include only contraceptive methods purchased by the MHS or coded in the military's electronic health records. Not captured in this analysis are contraceptives obtained elsewhere (e.g., purchased over the counter or out of pocket by the service member, provided free of charge at health fairs or in other venues, or prescribed by civilian medical providers who are not reimbursed by the MHS). Second, incorrect or nonspecific days' supply information may have led to inaccurate estimates of the coverage periods for contraceptives. In addition, prescription data may overestimate actual utilization of SARCs if women fail to initiate or maintain use. Barrier methods such as condom use are not included in this report because these data were not available.

The analyses presented here provide insight into the evolving trends in contraceptive use among U.S. service women within the MHS. Future analyses hold the promise of providing additional information about potential impediments, facilitators, and health outcomes associated with specific contraceptive methods to enhance service women's readiness and ability to complete their missions.

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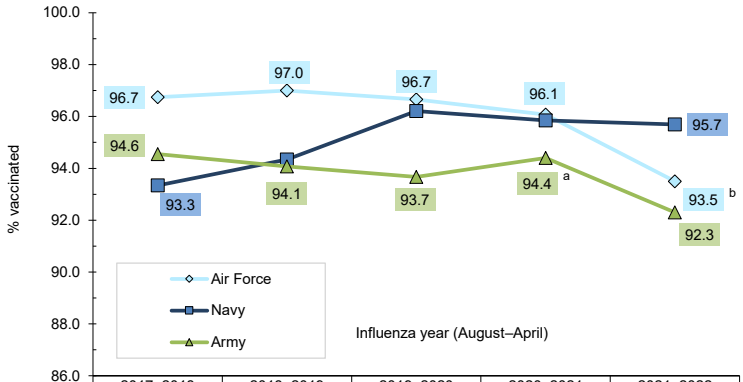
Surveillance Snapshot: Influenza Immunization Among U.S. Armed Forces Healthcare Workers, August 2017–April 2022

FIGURE. Percentage of health care specialists and officers with records of influenza vaccination, by influenza year (1 August through 30 April) and service, active component, U.S. Armed Forces, August 2017–April 2022



	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022
Air Force	96.7	97.0	96.7	96.1	93.5 [b]
Navy	93.3	94.3	96.2	95.9	95.7
Army	94.6	94.1	93.7	94.4 [a]	92.3

[a] Accurate immunization data for the Army 2020–2021 influenza season were not available via the Defense Medical Surveillance System (DMSS), which documented an underestimation of influenza immunization rate for the Army at 88.7%. Based on data from the Medical Protection System (MEDPROS), the overall influenza immunization rate among active component Army members was 94.4% for the 2020–2021 season.

[b] Accurate immunization data for the Air Force 2021-2022 influenza season were not available via the DMSS, which documented an underestimation of influenza immunization rate for the Air Force at 85.9%. Based on data from the Aeromedical Services Information Management System (ASIMS)/Air Force Complete Immunization Tracking Application (AFCITA), the influenza immunization rate was 93.5% among active duty Air Force medical employee health workers for the 2021–2022 season.

The U.S. Advisory Committee on Immunization Practices recommends that all health care personnel be vaccinated against influenza to protect themselves and their patients.[1] The Joint Commission's standard on infection control emphasizes that individuals who are infected with influenza virus are contagious to others before any signs or symptoms appear. The Joint Commission requires that health care organizations work towards the goal of 90% receipt of influenza vaccine. These organizations provide influenza vaccination programs for practitioners and staff to accomplish this goal. Within the Department of Defense, seasonal influenza immunization is mandatory for all uniformed personnel and for health care personnel who provide direct patient care and is recommended for all others (excluding those who are medically exempt).[2–5]

This snapshot covers a 5-year surveillance period (August 2017–April 2022) and presents the documented percentage compliance with the influenza immunization requirement among active component health care personnel of the Army, Navy, and Air Force. In general, these health care personnel include health care specialists (DOD_POC=13) and health care officers (DOD_POC=26), but exclude veterinary medicine, environmental health, biomedical equipment maintenance and repair, and health services administration and logistics. In the 2021–2022 influenza season, the compliance rates ranged from 92.3% among Army health care personnel to 95.7% among Navy health care personnel **(Figure).**

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3 OPTIONS FOR GETTING THE FLU VACCINE

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- You have priority at military hospitals and clinics.
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- You can also get vaccines at participating retail network pharmacies. Not all network pharmacies participate in giving vaccines. Call ahead to confirm.
- Be sure to get your vaccine from the pharmacist, not from a health provider in a pharmacy clinic, to avoid possible out-of-pocket costs.
- If you go to a participating network pharmacy, you won't have any cost-shares or copayments if the flu vaccine is administered by a pharmacist. You can also go to a TRICARE-authorized provider at a participating network onsite clinic.

TRICARE-AUTHORIZED PROVIDER

- If seeing a provider other than your Primary Care manager (PCM), you must have a referral from your PCM.
- In addition, you may have to pay copayments or cost-shares for the office visit.

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- THE DATE THE VACCINE WAS GIVEN
- THE VACCINE NAME OR CODE
- MANUFACTURER
- LOT NUMBER

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