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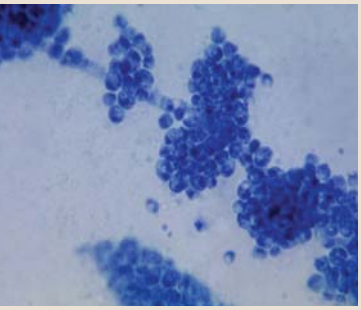

CDC/Dr. Gordon Roberstad

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Spread of Vaccinia Virus Through Shaving During Military Training, Joint Base San Antonio–Lackland, TX, June 2014

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Although naturally occurring smallpox virus was officially declared eradicated in 1980, concern for biological warfare prompted the U.S. Government in 2002 to recommend smallpox vaccination for select individuals. Vaccinia, the smallpox vaccine virus, is administered into the skin, typically on the upper arm, where the virus remains viable and infectious until the scab falls off and the epidermis is fully intact—typically 2–4 weeks. Adverse events following smallpox vaccination may occur in the vaccinee, in individuals who have contact with the vaccinee (i.e., secondary transmission), or in individuals who have contact with the vaccinee's contact (i.e., tertiary transmission). In June 2014 at Joint Base San Antonio–Lackland, TX, two cases of inadvertent inoculation of vaccinia and one case of a non-viral reaction following vaccination occurred in the security forces training squadron. The cases included the first reported case of shaving as the likely source of autoinoculation after contact transmission. This paper describes the diagnosis and treatment of these cases, the outbreak investigation, and steps taken to prevent future transmission.

Adverse events (AEs) associated with smallpox vaccination have been observed since the practice was introduced in the U.S. in the 18th century.[1,2] The frequency of these events, including autoinoculation and contact transmission associated with vaccinia (smallpox vaccine virus), was not described for the U.S. until the 1960s.[3-6] After a successful worldwide campaign, variola (smallpox virus) was officially declared eradicated in 1980. However, in December 2002, in response to the threat of the use of smallpox by terrorists and outlaw states, President George W. Bush announced the initiation of the National Smallpox Vaccination Program.[7]

In 2008, the Smallpox Vaccine Safety Working Group published findings from the first 18 months of the program.[8,9] Unlike the 1960s, when the population targeted for smallpox vaccination consisted mainly of children, the new program focused exclusively on healthy adults and primarily on military personnel. The working group recommended that unintentional transfer of vaccinia (i.e., autoinoculation and contact transmission) and other cutaneous, cardiac, and nervous system AEs should be reported to the Vaccine Adverse Event Reporting System (VAERS) and state health departments.[10] Because some of these AEs are potentially life threatening, particularly to those who have pre-existing conditions such as atopic dermatitis and heart disease, prospective vaccinees are screened for health conditions that, if present, preclude vaccination.[11]

Vaccinia is a live virus vaccine administered into the skin of the upper arm using a bifurcated needle. The virus proliferates at the inoculation site, where it remains viable and infectious until the scab falls off and intact skin has regrown, which typically requires 2–4 weeks. Prior to this, unintentional transfer of vaccinia virus to other parts of the vaccinee's body (autoinoculation) or to other people (contact transmission) may occur. Secondary and tertiary contact transmission cases have been documented.[12,13] The only smallpox vaccine currently available for use in the U.S. is ACAM2000®, which was approved by the Food and Drug Administration on 31 August 2007 and officially replaced Dryvax® on 29 February 2008.[14]

At Joint Base San Antonio–Lackland, TX, the largest U.S. Air Force training installation, select technical training students receive the smallpox vaccination in accordance with current Department of Defense policy. Recipients include students who will be assigned to the Korean Peninsula or to certain special operation career fields. (As of May 2014, military members who deploy to the U.S. Central Command area of responsibility no longer require vaccination.[11])

Index Case

On 9 June 2014, a 30-year-old unvaccinated male security forces student reported to the trainee clinic with a chief complaint of "bumps on the face." The patient had noticed a single small lesion on the underside of his chin 3 days prior, just hours after completing 1 week of combative training, which involves wrestling and other hands-on fighting skills. He described the site as pruritic and burning until the lesion "popped" later that day. Within 2 days, he noticed similar lesions involving the chin, lower jaw, and throat, prompting him to seek medical attention. He had shaved the day of and the day following rupture of the

initial lesion. Review of systems was negative for fever, chills, night sweats, gastrointestinal illness, or any other recent illnesses. On exam, he was afebrile and had scattered umbilicated papules of his lower face **(Figure 1a)**. The patient was issued a shaving restriction waiver and referred to the dermatology clinic for a next-day appointment.

The patient was admitted from the dermatology clinic secondary to concerns for facial vaccinia. Contact precautions were initiated and the infectious disease service was consulted. On the day of admission, 4 days after lesion onset, the patient developed an elevated temperature of 39.3°C (102.7°F). The Centers for Disease Control and Prevention (CDC) was contacted to request the release of intravenous vaccinia immune globulin (VIG) in accordance with the "aberrant infection" indication for VIG use. Further consultation was obtained from the Armed Forces Immunization Healthcare Center (AFIHC; formerly the Military Vaccine Agency–Vaccine Healthcare Centers Network).

On hospital day 2, the patient experienced influenza-like symptoms (e.g., fever, headache, and malaise) and was persistently febrile despite antipyretics. His facial lesions increased in size and began to resemble impetigo **(Figure 1b)**; in addition, he experienced notable facial swelling, cervical adenopathy, and pain. His white blood cell count was 5.6×10^3 cells per microliter (μL) (normal: $3.9–9.8 \times 10^3$ cells/μL) and his serum C-reactive protein concentration was 4.10 milligrams (mg) per deciliter (dL) (normal: less than 0.50 mg/dL). Parenteral vancomycin at 1 gram every 8 hours was initiated because of concern about *Staphylococcus aureus* superinfection. Per AFIHC guidance, four facial lesions were sampled by unroofing with a 26-gauge needle, swabbing with a Dacron swab, and placing separately into sterile plastic tubes. Within several hours of shipping to the local Laboratory Response Network laboratory, non-variola orthopox virus was isolated from the four submitted samples. Through a coordinated effort between the CDC and the U.S. Army Medical Materiel Agency, sufficient VIG was obtained and shipped.

On hospital day 3, the patient continued to have significant facial swelling, erythema, and pain, along with an influenza-like illness and dysphagia. His exam was significant for extensive edema to the lower half of his face, increased warmth, tenderness, and prominent bilateral cervical adenopathy. A computerized tomography scan revealed thickened skin from the neck to the lower face with multiple raised lesions and extensive subcutaneous edema, but no abscesses. VIG arrived that evening. A normal level (586 mg/dL) of serum immunoglobulin A was confirmed prior to intravenous administration of 6,000 units per kilogram of VIG for a total dose of 372,000 units. He experienced no AEs. The same day, the patient's 2-year-old daughter, who had a history of atopic dermatitis and had close contact with her father after eruption of his facial lesions, presented with a fever of 39.4°C (102.9°F) and was admitted for monitoring.

On hospital day 4, the index patient was afebrile and had a notable decrease in his facial swelling, erythema, and pain. Thereafter, the lesions progressed as expected: crusting, scabbing, and separating **(Figure 1c)**. The patient was discharged when all scabs had separated, 27 days after rash onset and 23 days after initial admission. Apart from some scarring **(Figure 1d)**, he suffered no additional sequelae. His daughter's serum was negative for orthopox virus on real-time polymerase chain reaction (PCR), and, having defervesced naturally, she was discharged the day after admission with the presumptive diagnosis of a viral upper respiratory infection.

FIGURE 1a. Contact vaccinia case of the face and neck, as seen at initial visit to trainee clinic, 3 days after onset of lesions

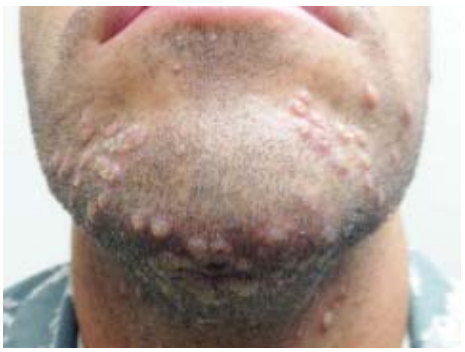


Photo credit: Lindsay Johnston

FIGURE 1b. Five days after onset on hospital day 2

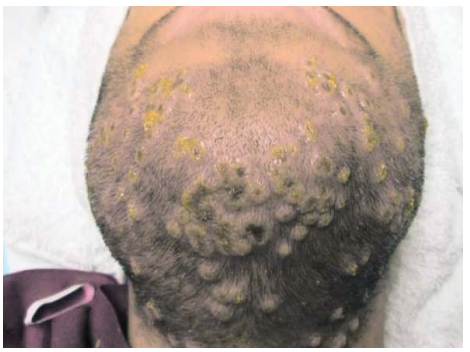


Photo credit: John Hunninghake

FIGURE 1c. Eleven days after onset and 3 days after administration of vaccinia immune globulin

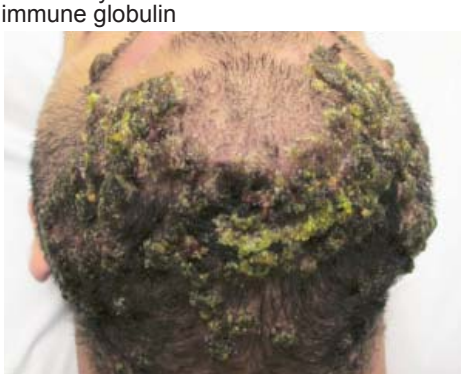
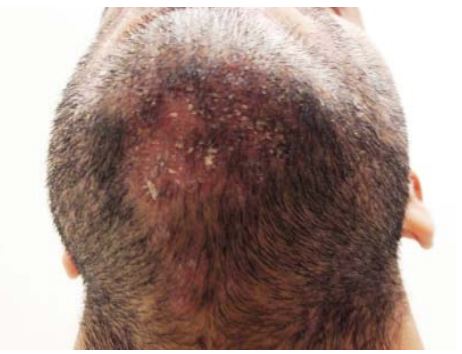


Photo credit: John Hunninghake

FIGURE 1d. Follow-up clinic visit, 32 days after onset



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Vaccinia Immune Globulin

In 1956, Kemp and colleagues demonstrated that VIG could neutralize smallpox virus, suppress viremia, and subdue infection of the skin epithelium;[15] these findings were reproduced in 1962.[16] More recently, it was shown that VIG administration 4 days prior to smallpox vaccination results in a

diminished immune response in a dose-dependent manner, as measured by the sizes of erythema and pox reactions.[17]

The index patient's rapid response after receiving VIG suggests that it played a role in his satisfactory outcome. Shortly after receiving VIG at the minimal recommended dose, the patient experienced rapid resolution of fever and dramatic reduction in pain. Such responses are consistent with prior case reports describing the use of VIG.[18–20] Despite the lack of randomized controlled trials evaluating VIG for the treatment of dermatologic complications, such case reports, including the one presented here, suggest the potential benefit of this therapy for cosmetic outcomes.

Epidemiologic Investigation

On the evening of 10 June 2014, the dermatology clinic notified the installation's public health department of their diagnosis of contact facial vaccinia. Public health officials contacted the security forces training squadron and obtained a roster of the index case's team. Of the 87 students on his team, 13 had received smallpox vaccinations on 20 May 2014. Combatives training had occurred during 2–6 June 2014, placing the vaccinated members around day 13 of the smallpox "take" time frame at the start of combatives training.

Public health and preventive medicine officials initiated an investigation to inspect potential sites of exposure—including the smallpox vaccine clinic and the security forces facilities—and to determine the extent of the outbreak. The smallpox vaccine clinic operates every Tuesday and Friday, at which time designated vaccinees are screened, educated, and, if appropriate, vaccinated. The inoculation site is typically covered with a Tegaderm™ dressing. However, for the 26 recipients vaccinated from 20 May 2014 through 6 June 2014, Band-Aids® were used instead of Tegaderm as dressings. Whereas Tegaderm dressings have an adhesive area of 94.5 square centimeters (cm^2) and an absorptive area of 27 cm^2, the equivalent areas for Band-Aids are 14.25 cm^2 and 3.25 cm^2. Under normal circumstances, Band-Aids are acceptable covers of smallpox vaccination sites;[11] however, in this case, only larger bandages were recommended given the physical contact involved in certain training exercises.

On 11 June 2014, public health facility inspectors evaluated the squadron dormitory and combative laboratory. No discrepancies were noted in the dormitory. The combative facility was generally clean, and shared training equipment (e.g., helmets, handcuffs, flak vests, and mock weapons) was being regularly sanitized with the Decon Zone Sanitizing System, an ozone-generating unit that can neutralize vaccinia; a manufacturer representative confirmed appropriate calibration of the equipment approximately 2 months earlier. The inspection revealed that floor mats, although cleaned, were not regularly sanitized. It was recommended that an antimicrobial agent capable of killing vaccinia virus should be used, such as standard hospital-grade disinfectants with quaternary-ammonia compounds or a hypochlorite solution (ideally 10% household bleach [5.25%–6.15% sodium hypochlorite] and 90% water).[11] Mats are now sanitized at the end of each training day. Preventive medicine officials also advised the security forces leadership to reschedule combative training to precede smallpox vaccination.

The team members of the index case were instructed to report to the trainee clinic if they had any skin lesions or otherwise felt ill. On 11 June 2014, eight students were evaluated in the clinic; of these, three were returned to training and five were referred to dermatology clinic for further evaluation. Dermatology clinic staff diagnosed one student with a non-viral reaction and the others with either acne vulgaris or folliculitis. The roommate of the index case was also referred for dermatologic evaluation; he was cleared of current infection by history and physical examination and advised not to use any of his roommates' personal hygiene products.

Second Case of Inadvertent Inoculation of Vaccinia

On 13 June 2014, an unvaccinated student on another team in the security forces squadron reported to the clinic with four crusted papules of the left upper arm **(Figure 2)**. The first papule appeared 5 days after he had received a tattoo at the same location. He noted that his roommate, who had been vaccinated against smallpox 3 weeks prior, was not keeping his vaccination site covered at all times and had mistakenly used the patient's towel. He was referred for a dermatologic evaluation, which included a biopsy and wound culture. Two histopathologic changes were observed: granulomatous inflammation, typical of a tattoo reaction; and necrotic keratinocytes, suggestive of an infectious process. Real-time PCR demonstrated non-variola orthopox DNA, consistent with the diagnosis of contact transmission of vaccinia.

Non-viral Reaction to Smallpox Vaccination

One of the students identified during active case finding presented to clinic on 11 June 2014 with multiple 2- to 4-millimeter skin-colored to pink papules on the dorsal aspect of his hands and extensor surfaces of his upper arms **(Figure 3)**. He had received the smallpox vaccination 24 days prior, and clinic providers were concerned for extensive autoinoculation. He was referred to the dermatology clinic where a non-viral reaction to the vaccination was diagnosed.

In addition to autoinoculation,[10] AEs unrelated to viral infection may occur following smallpox vaccination and must be differentiated from lesions that are potentially infectious. Non-viral cutaneous reactions have been described in patients receiving both Dryvax and ACAM2000 vaccines. These range from benign (e.g.,

FIGURE 2. Inadvertent inoculation of the upper arm, as seen approximately 10 days after likely exposure to vaccinia

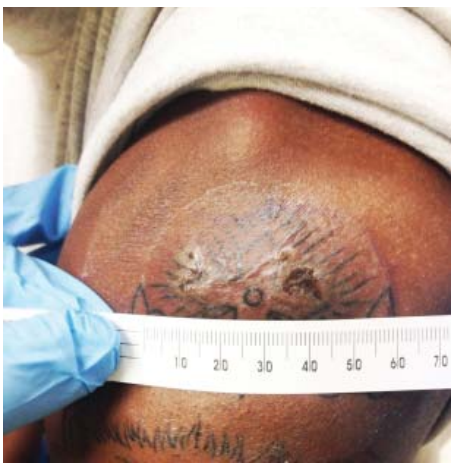

Photo credit: Lindsay Johnston

FIGURE 3. Non-viral reaction of the hand, as seen 24 days after smallpox vaccination

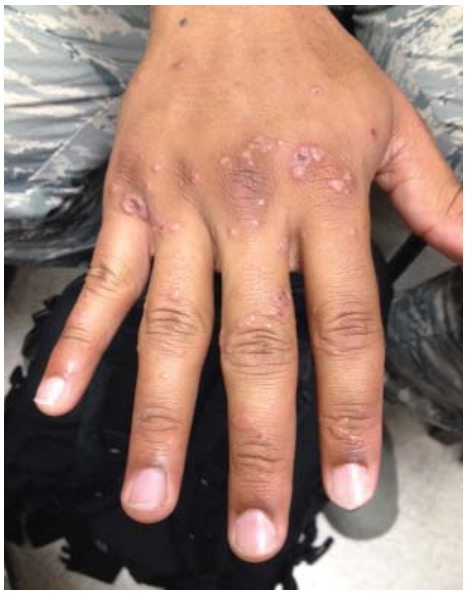

Photo credit: Lindsay Johnston

urticaria and morbilliform eruptions) to potentially life-threatening reactions such as Stevens–Johnson syndrome.[21–23]

A novel reaction to ACAM2000 that had not been seen with Dryvax was recently described.[23] Patients with this reaction develop a papular-pustular eruption on the acral surfaces of the upper and lower extremities, which is variably pruritic and painful. Upon histologic examination, it is clearly distinguishable from disseminated vaccinia by the absence of viral changes, and PCR of the tissue is routinely negative for orthopox. Although the lesions may be confused clinically for vaccinia, they typically lack the characteristic appearance of umbilicated vesicles. This reaction closely resembles Gianotti–Crosti syndrome, another cutaneous reaction to certain viruses, which is usually seen in childhood.

EDITORIAL COMMENT

Since the initiation of the U.S. military's smallpox vaccination program in 2002, there has been significant improvement in the rate of inadvertent infection.[13,24] A total of 53 cases of contact vaccinia were recorded in 2003, 17 cases in 2004, and 5–9 cases in each subsequent year.[13] The average annual rate of contact transmission has remained steady (about 4 per 100,000 vaccinations) since 2008, consistent with rates of 2–6 per 100,000 in the 1960s.[13,24]

Over the past decade, most cases of contact vaccinia have been traced to U.S. service members, who comprise the largest segment of the population vaccinated against smallpox. Most involve women or children who live in the same household and/or share a bed with a vaccinee or with a vaccinee's contact. Of adult female cases, most are described as spouses or intimate partners of vaccinees or secondary contacts. Of adult male cases, most involve some type of recreational activity with physical contact, such as wrestling, grappling, sparring, football, or basketball. Household interactions (e.g., sharing towels or clothing) and "unspecified contact" are also implicated.[13]

Contact transmission of vaccinia is suggested by development of lesions that progress from papules to vesicles or pustules 3–9 days following contact with a recent vaccinee, and when other infectious etiologies have been excluded—particularly staphylococcal skin infections, which are also transmitted more commonly during contact sports and military training exercises.[25] These lesions must further be distinguished from non-infectious reactions to the smallpox virus, such as the non-viral reaction case described here, to prevent unnecessary use of vaccine immune globulin and unwarranted infection control measures.

Isolation of contact transmitted or autoinoculated vaccinia to the beard area has not been reported previously. Although it cannot be proven definitively, the index case likely disseminated vaccinia throughout his beard area by shaving (in this case, with a blade razor). Studies of methicillin-resistant *S. aureus* infections among athletes have demonstrated that interruptions of skin integrity—as a result of contact with other players, artificial grass, and body shaving—facilitated spread of the pathogen.[26,27] Razors may enhance infectivity by not only producing microabrasions, but also serving as the transmission vehicle. Surgical literature has documented increased risk of postoperative infection associated with shaving surgical sites.[28,29]

These two cases provide further rationale for the prohibition of tattooing until a vaccinee's pustule is fully healed and underscores the need for aggressive hygiene education of vaccinees and vaccinees' contacts in units that routinely undergo smallpox vaccination. Because military trainees who are required to receive smallpox vaccination often engage in activities that increase the risk for transmission, such as close combat exercises, and typically reside in dormitories or other congregated settings, training sites that administer the vaccination should emphasize site care and provide the most effective site protection. Vaccinees should wear clothing that covers the vaccination site and use a nonstick bandage, semipermeable dressing, or gauze of sufficient size to cover the site until the scab separates and a fresh epidermal layer has formed. Vaccinees should not share towels with others and should wash their hands with warm, soapy water or a hand-sanitizer containing more than 60% alcohol immediately before and after they touch the vaccination site or change the dressing. Personal responsibility for hygiene is critically important to prevent transmission.[11]

Training commanders should recognize the dangers inherent in training within a 4-week window after vaccination and tailor schedules to minimize the risk of autoinoculation and secondary transmission. Public health at training installations should consider periodic sanitization inspections of training facilities where such transmission is more likely to occur. All shared equipment, including personal protective gear and sparring apparatus, should be routinely sanitized with equipment certified to neutralize vaccinia. Finally, healthcare providers in military treatment facilities should consider vaccinia in the differential diagnosis of suspicious skin lesions and ask directed history questions to determine exposure risk.

Consultation for potential smallpox vaccine AEs and facilitation of VIG shipment is available around the clock. Military providers, or civilian providers

treating Military Health System beneficiaries, should call the AFIHC's Vaccine Clinical Call Center at 866-210-6469. Civilian providers in other settings may contact their local or state health department or the CDC's Emergency Operations Center at 770-488-7100.

Contact transmission and autoinoculation of vaccinia is facilitated by the scarification-style vaccination process unique to the New York City Board of Health strain of virus.[11] As was evident in this outbreak, serious disease may occur when vaccinees fail, or are unable, to practice meticulous site hygiene, or when they or their contacts have contraindicating comorbid conditions. An injectable smallpox vaccine using the Ankara rather than the New York City Board of Health strain of vaccinia was recently added to the U.S. Strategic National Stockpile, intended for use in individuals with compromised immune systems.[30] An injectable smallpox vaccine would significantly reduce the risk for inadvertent spread and other AEs in specific training or operational settings. The Department of Defense has been engaged in Phase III clinical trials of this vaccine since 2012.[31,32]

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Gynecologic Disorders Diagnosed During Deployment to Southwest/Central Asia, Active Component Females, U.S. Armed Forces, 2008–2013

Service women in the U.S. Armed Forces face unique challenges that may lead to or exacerbate gynecologic disorders—particularly during deployment. This report documented that approximately one in 10 military women who served in Southwest/Central Asia were diagnosed with a gynecologic disorder at least once during deployment. In addition, gynecologic disorders accounted for approximately one of every 20 medical evacuations of female service members from the war zone. A majority of clinically significant gynecologic disorder cases were attributable to irregular menstruation/bleeding or unspecified inflammation or pain of the female genital organs. Incidence rates of gynecologic disorder diagnoses were higher among black, non-Hispanic service women; younger women; and those in the Army and in motor transport and communications/intelligence occupations. Approximately 50% of gynecologic disorder cases had received gynecologic care within 6 months prior to deployment and nearly 90% had received care within 2 years of deployment. Despite pre-deployment care, this report shows that service women need continuous access to gynecologic care during deployment, particularly if conditions during deployment lead to and exacerbate gynecologic disorders.

Gynecologic disorders include a wide range of diseases of the female reproductive organs, including nonspecific symptoms (e.g., inflammation, abnormal discharge or bleeding, pain) and specific disorders (e.g., endometriosis, ovarian cysts, dysplasias and other structural abnormalities). Gynecologic disorders are common among women of all ages and backgrounds; in turn, they are a large burden on the healthcare system.

Service women in the U.S. Armed Forces face unique challenges that may lead to or exacerbate gynecologic disorders. Assignments in overseas operational theaters are particularly challenging. First, ongoing evaluations and treatments for gynecologic disorders or contraception may be interrupted by deployments. Second, education and training on prevention, identification, and treatment of gynecologic symptoms while deployed may be absent or inadequate for females prior to deployment.[1] Third, appropriate female-specific and general personal hygiene measures may be difficult to maintain in austere environments.[1–5] Finally, access to adequate medical services may be difficult or undesirable while in operational theaters.

A previous *MSMR* report described urinary tract infections during deployment[6] and a separate report in this month's issue describes vaginal yeast infections among deployed active component service women.[7] This report describes the frequency and distribution of gynecologic disorders that are diagnosed among active component service members during deployments to the U.S. Central Command (CENTCOM) area of responsibility (AOR) (i.e., Southwest/Central Asia), the gynecologic disorders that accounted for medical evacuations from the CENTCOM AOR, and women's health visits (gynecologic examinations and Papanicolaou [Pap] screenings) before deployment among individuals who had gynecologic disorders diagnosed during deployment.

METHODS

For the purpose of this report, gynecologic disorders included diseases of the female pelvic organs **(Table 1)** but excluded disorders of the urinary tract (e.g., urinary stones, urinary tract infections), breast disorders, sexually transmitted infections, yeast infections, and pregnancy-related diagnoses. The surveillance period was 1 January 2008 through 31 December 2013. The surveillance population included all female active component service members of the Army, Navy, Air Force, Marine Corps, and Coast Guard who served at least 1 day in a theater of operations in the CENTCOM AOR during the surveillance period.

Diagnoses of gynecologic disorders that were made during deployment were derived from records of medical encounters of service members deployed to the CENTCOM AOR that were documented in the Theater Medical Data Store (TMDS). Denominators for rate calculations were determined by calculating the lengths of all female deployments during the period of interest and summing them into a total female deployed person-time. If deployment end dates were unavailable, end dates were imputed based on average deployment times for each of the Services and by operation. Individuals who were ascertained as cases of gynecologic disorders who did not have a corresponding deployment record were excluded from the analysis.

The "morbidity burdens" attributable to various gynecologic disorders were estimated based on the annual total number of

TABLE 1. ICD-9 codes for three-digit level categories of gynecologic disorders

Three-digit ICD-9	Main category description
614.xx	Inflammatory disease of ovary, fallopian tube, pelvic cellular tissue, peritoneum
615.xx	Inflammatory disease of uterus, except cervix
616.xx	Inflammatory disease of cervix, vagina, vulva
617.x	Endometriosis
618.xx	Genital prolapse
619.x	Fistula involving female genital tract
620.xx	Noninflammatory disorders of ovary, fallopian tube, broad ligament
621.xx	Disorders of uterus, not elsewhere classified
622.xx	Noninflammatory disorders of cervix
623.xx	Noninflammatory disorders of vagina
624.x	Noninflammatory disorders of vulva and perineum
625.xx	Pain/other symptoms associated with female genital organs
626.xx	Disorders of menstruation/other abnormal bleeding from female genital tract
627.x	Menopausal and postmenopausal disorders
628.x	Female infertility
629.xx	Other disorders of female genital organs

medical encounters (i.e., total hospitalizations and ambulatory visits) attributable to the disorders of interest (as specified in the ICD-9-CM at the three-digit level) and the numbers of service members affected by the disorders (i.e., individuals with at least one medical encounter of interest during the year).

Encounters were considered attributable to conditions of interest if an indicator ICD-9 diagnosis code was reported in the primary diagnostic position of the TMDS record of the encounter. For summary purposes, each affected individual was limited to one attributable encounter per day. Analyses of selected subcategories of gynecologic disorders (based on five-digit level ICD-9 codes) were also conducted.

An incident case of a gynecologic disorder was defined as a medical encounter of a female service member deployed in Southwest/Central Asia for which a gynecologic disorder–specific ICD-9 code was recorded in the primary diagnostic position of the record of the encounter. For overall "first-time" incidence rate calculations, each individual could be counted as a case only once during the surveillance period. For incidence rates stratified by three-digit ICD-9 categories, an individual could be counted once per surveillance period in each three-digit-specific category.

Records of all medical evacuations conducted by the U.S. Transportation Command (TRANSCOM) are routinely collected for health surveillance purposes by the Armed Forces Health Surveillance Center (AFHSC). Service women who were medically evacuated during the surveillance period from the CENTCOM AOR to a medical treatment facility outside the CENTCOM AOR were included in analyses if the affected service woman's first medical encounter (from 5 days prior to 10 days after a documented evacuation date) in a permanent military medical facility in the U.S. or Europe had a gynecologic disorder–specific ICD-9 code listed in the primary diagnostic position of the record of the encounter. The data used in this part of the analysis were retrieved from the Defense Medical Surveillance System (DMSS), which maintains electronic records of all actively serving U.S. military members' hospitalizations and ambulatory healthcare visits in U.S. military and civilian (contracted/purchased care through the Military Health System) medical facilities worldwide.

Among the incident cases identified in TMDS and by medical evacuation, records of health care provided before deployment were searched for evidence of a gynecologic examination (ICD-9: V72.3x) or Pap screening (ICD-9: V76.2, V76.47) in the primary or secondary diagnostic position. If an individual had more than one such medical encounter, the date closest to deployment was selected.

RESULTS

During the surveillance period, 10,466 deployed active component service women (9.7% of the total) were diagnosed with at least one gynecologic disorder **(Table 2)**. The overall incidence rate was 125.6 per 1,000 person-years (p-yrs). The incidence rate decreased 24.4% from 2008 (141.2 per 1,000 p-yrs) to 2013 (106.8 per 1,000 p-yrs) **(Figure 1)**, and the percentages of deployed females with gynecologic

FIGURE 1. Incidence rates of gynecologic disorders and percentage of total female deployed population affected, active component females deployed to Southwest/Central Asia, 2008–2013

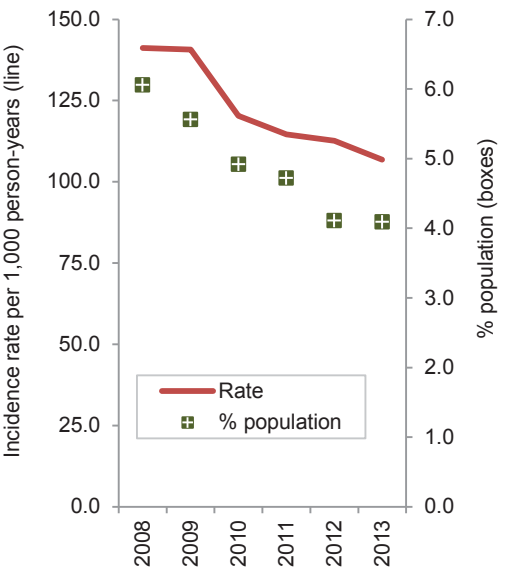


TABLE 2. Incident cases and incidence rates of gynecologic disorders, active component females deployed to Southwest/Central Asia, 2008–2013

	No.	Rate[a]	IRR
Total	10,466	125.6	.
Race/ethnicity			
White, non-Hispanic	3,938	103.5	1.2
Black, non-Hispanic	4,437	174.7	2.1
Hispanic	1,217	118.0	1.4
Asian/Pacific Islander	366	83.3	Ref
American Indian/Alaskan Native	96	97.9	1.2
Other/unknown	412	98.5	1.2
Age			
≤19	392	167.1	2.0
20–24	4,447	152.3	1.8
25–29	2,742	117.9	1.4
30–34	1,398	111.5	1.3
35–39	873	99.8	1.2
40–44	424	86.5	1.0
45+	190	83.0	Ref
Service[b]			
Army	7,709	145.9	2.6
Navy	516	72.1	1.3
Air Force	2,000	106.2	1.9
Marine Corps	241	55.3	Ref
Rank			
Enlisted	9,333	137.9	1.9
Officer	1,133	72.6	Ref
Occupation			
Combat-specific	170	106.9	2.7
Motor transport	555	151.2	3.8
Pilot/aircrew	58	39.5	Ref
Repair/engineer	1,678	125.8	3.2
Communications/intelligence	4,649	133.9	3.4
Health care	1,241	105.7	2.7
Other/unknown	2,115	126.1	3.2

[a]Rate per 1,000 person-years
[b]There were no cases among members of the Coast Guard.
IRR=Incidence rate ratio

disorders decreased 32.5% over the same period (% affected, per year: 6.1%, 2008; 4.1%, 2013).

Burden of gynecologic disease

During the period, three categories of gynecologic disorders—"disorders of menstruation/other abnormal bleeding," "inflammatory diseases of the cervix, vagina, vulva," and "pain/other symptoms associated with female genital organs"—accounted for 12,732 medical encounters and more than three-fourths (76.8%) of all gynecologic disorders among deployed active component service women **(Figure 2, Table 3)**. More service members (n=9,564) received medical care for these three categories of conditions than for any other main categories of gynecologic disorders.

The most frequently diagnosed specific conditions (at the five-digit level of ICD-9) were "vaginitis, unspecified" (n=3,734), "dysmenorrhea" (n=1,783), "unspecified female genital symptoms" (n=1,657), "excess menstruation" (n=1,467), and "noninfectious vaginal leukorrhea" (n=1,043). These conditions accounted for 58.4% of all gynecologic disorder–specific encounters **(Table 3)**.

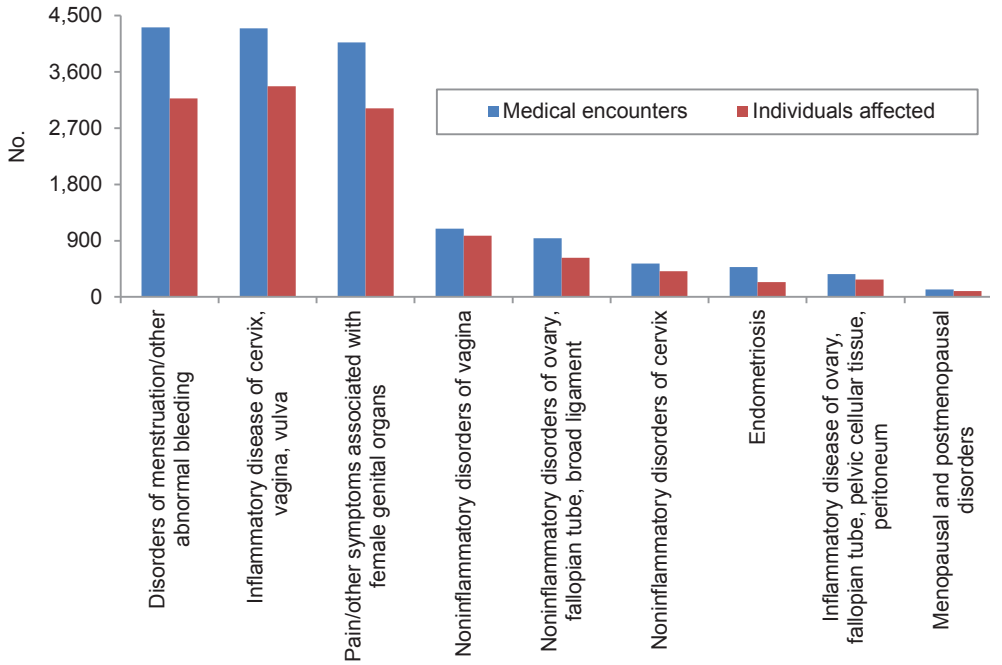
"Other ovarian cyst" (n=813) diagnoses accounted for 86.2% of all encounters included in the main diagnostic category "noninflammatory diseases of ovary, fallopian tube, pelvic cellular tissue, peritoneum." "Dysplasia of cervix" (n=511) and "endometriosis, site unspecified" (n=447) accounted for 95.5% and 93.7% of all encounters included in the main categories "noninflammatory disorders of cervix" and "endometriosis," respectively **(Table 3)**.

Incident cases and incidence rates

Incidence rates of gynecologic disorder diagnoses were higher among black, non-Hispanic (174.7 per 1,000 p-yrs) and lower among Asians/Pacific Islander (83.3 per 1,000 p-yrs) than among any other racial/ethnic subgroup of women (black, non-Hispanic:Asian/Pacific Islanders incidence rate ratio [IRR]=2.1) **(Table 2)**. Incidence rates decreased with increasing age, and women in the Army and those in motor transport and communications/intelligence occupations had higher incidence rates than their respective counterparts (Army:Marine Corps IRR=2.6).

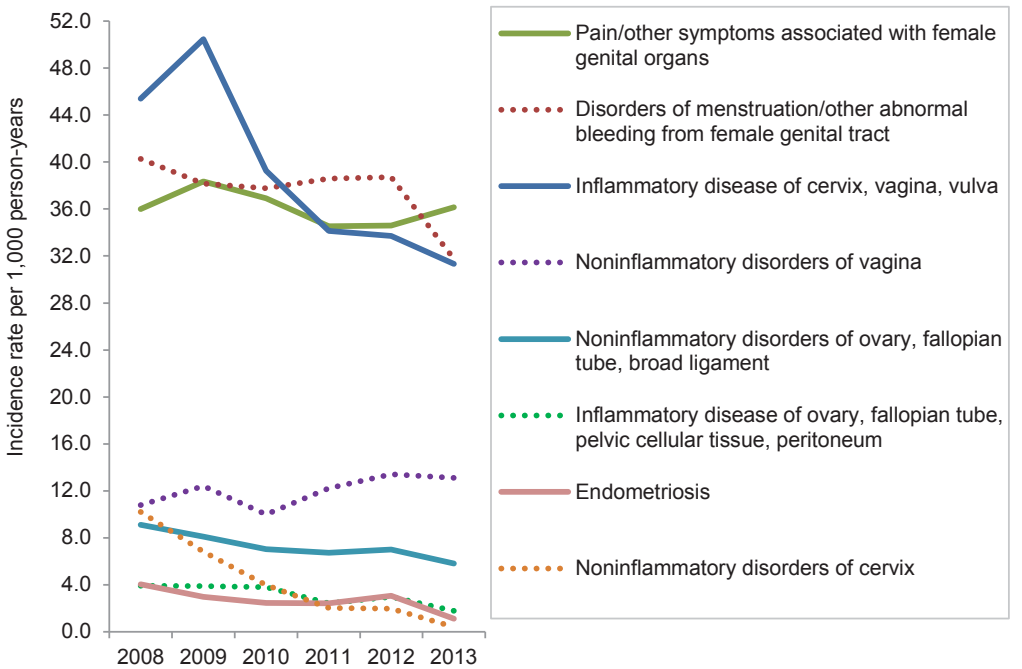
The categories of gynecologic disorders with the highest incidence rates were "inflammatory diseases of the cervix, vagina, vulva" (40.5 per 1,000 p-yrs), "disorders of menstruation/other abnormal bleeding" (38.1 per 1,000 p-yrs), and "pain/other symptoms associated with female genital organs" (36.2 per 1,000 p-yrs) **(Figure 3)**. For most categories of disorders (with 100 or more cases each), rates declined during the period; however, rates increased for diagnoses of "pain/other symptoms associated with female genital organs" (+0.4%) and "noninflammatory disorders of the vagina" (+20.5%).

FIGURE 2. Medical encounters[a] and individuals affected[b] by three-digit level ICD-9-CM gynecologic disorder categories,[c] active component females deployed to Southwest/Central Asia, U.S. Armed Forces, 2008–2013



[a]Medical encounters: total medical encounters for each category (with no more than one encounter per individual per day per category)
[b]Individuals with at least one medical encounter for the category
[c]Only categories with at least 100 medical encounters during the period are shown.

FIGURE 3. Incidence rates[a] of gynecologic disorders by three-digit ICD-9-CM categories,[b] active component females deployed to Southwest/Central Asia, 2008–2013



[a]Rate per 1,000 person-years; an individual could be considered a case in each main category once during the period.
[b]Only categories with at least 100 medical encounters during the period are shown.

Medical evacuations for gynecologic disorders

During the 6-year surveillance period, 384 service women were medically evacuated from the CENTCOM operational theater for gynecologic disorders **(Figure 4)**. Gynecologic disorder–related evacuations accounted for 5.0% of all female medical evacuations during the period. Among those who were medically evacuated, 54.7% (n=210) were diagnosed with a gynecologic disorder at some point during their deployment prior to their evacuations; of these, slightly more than half (n=113) had been diagnosed with the same category of disorder earlier during deployment as at the time of evacuation **(data not shown)**.

Nearly one-third (n=120) of all gynecologic-related medical evacuations were for "pain/other symptoms associated with female genital organs" **(data not shown)**. The specific diagnosis that accounted for the most (n=106; 88.3%) of these evacuations was "unspecified female genital symptoms." An additional one-third of gynecologic-related evacuations were for "noninflammatory disorders of ovary, fallopian tube, broad ligament" (n=77) and "disorders of menstruation/other abnormal bleeding from female genital tract" (n=68). The specific diagnoses that accounted for the largest numbers of evacuations in these two categories were "other ovarian cyst" (n=67) and "excess menstruation" (n=40), respectively.

The most gynecologic-related medical evacuations in any year were in 2010 (n=100) and the fewest were in 2013 (n=19) **(Figure 4)**. The percentages of female medical evacuations that were attributable to gynecologic problems decreased 38.0% during the surveillance period (6.3% in 2008; 3.9% in 2013).

Gynecologic examinations before deployment

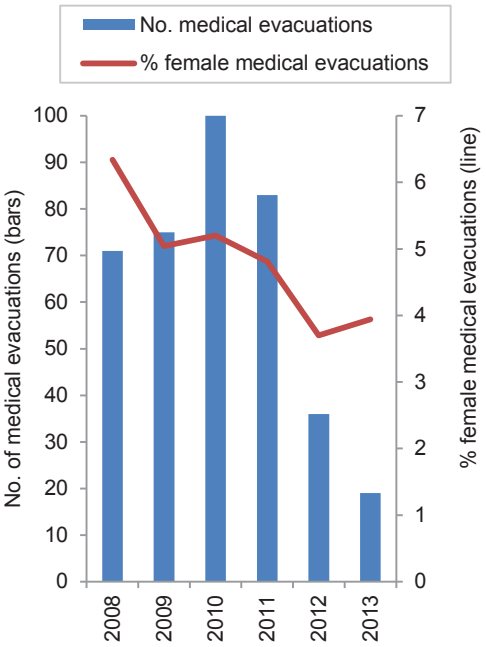
Among incident cases and medically evacuated service members, 26%, 75%, and 89% had documented gynecologic examinations or Pap screenings within 0–3 months, 1 year, and 2 years before deployment, respectively **(Figure 5)**.

TABLE 3. Most frequent gynecologic diagnoses by three-digit level ICD-9-CM categories and selected subcategories,[a] active component females deployed to Southwest/Central Asia, 2008–2013

	No.	%
Disorders of menstruation/other abnormal bleeding from female genital tract	4,348	
Excess menstruation	1,467	33.7
Metrorrhagia	982	22.6
Inflammatory disease of cervix, vagina, vulva	4,307	
Vaginitis, unspecified	3,734	86.7
Pain/other symptoms associated with female genital organs	4,077	
Dysmenorrhea	1,783	43.7
Unspecified female genital symptoms	1,657	40.6
Noninflammatory disorders of vagina	1,091	
Noninfectious vaginal leukorrhea	1,043	95.6
Noninflammatory disorders of ovary, fallopian tube, broad ligament	943	
Other ovarian cyst	813	86.2
Noninflammatory disorders of cervix	535	
Dysplasia of cervix	511	95.5
Endometriosis	477	
Endometriosis, site unspecified	447	93.7
Inflammatory disease of ovary, fallopian tube, pelvic cellular tissue, peritoneum	367	
Unspecified pelvic inflammatory disease	273	74.4
Menopausal and postmenopausal disorders	121	
Symptom menopausal state	57	47.1
Female infertility	86	
Anovulation infertility	64	74.4
Other disorders	77	
Unspecified female genital disorder	35	45.5
All other main categories		
Noninflammatory disorders of vulva and perineum	49	.
Genital prolapse	41	.
Disorders of uterus, not elsewhere classified	31	.
Inflammatory disease of uterus, except cervix	29	.
Fistula involving female genital tract	4	.

[a]Based on five-digit level ICD-9 codes

FIGURE 4. Number of medical evacuations for gynecologic disorders and percentage of all female medical evacuations, active component females deployed to Southwest/Central Asia, 2008–2013



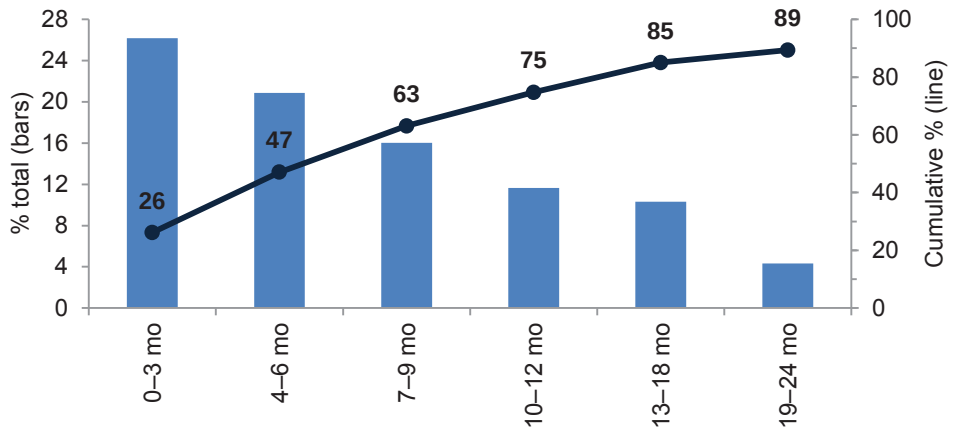
EDITORIAL COMMENT

This report documents that approximately one in 10 military women who served in Southwest/Central Asia were diagnosed with a gynecologic disorder at least once during deployment. In addition, gynecologic disorders accounted for approximately one of every 20 medical evacuations of female service members from the war zone.

During deployment, a majority of clinically significant gynecologic disorder cases were attributable to irregular menstruation/bleeding or unspecified inflammation or pain of the female genital organs. Because specialty care for gynecologic disorders is not routinely available during operational deployments, the diagnosis and treatment of some disabling gynecologic disorders may be unavailable based on the deployment location, laboratory capabilities, and the gynecologic knowledge of deployed providers.[3,5,11] Because many deployed females may not seek care for gynecologic conditions while serving in austere war zones or may receive symptomatic treatment (e.g., from unit medical personnel) that is not documented in centrally archived electronic medical record systems, the findings of this report likely underestimate the actual numbers and percentages of deployed females with disabling gynecologic disorders during deployments

The overall incidence rates, the percentage of deployed service women affected, and the number of medical evacuations for gynecologic disorders all decreased during the surveillance period. The decreases likely reflect, at least in part, improvements in the physical infrastructure of the deployed setting (e.g., better access to latrines, showers, laundry, hygiene products); more effective education and training on women's health before deployment—particularly in prevention and self-care of gynecologic disorders;

FIGURE 5. Percentage of gynecologic disorder cases/medical evacuees with a gynecologic examination or Papanicolaou screening during the period before deployment, active component females, 2008–2013



and recent reductions in operational tempos with concomitant reductions in the frequencies and durations of exposures of women to austere field environments.

Approximately 50% of gynecologic disorder cases had received gynecologic care within 6 months prior to deployment and nearly 90% had received care within 2 years of deployment. These results are consistent with pre-deployment guidelines for cervical cytology/Pap screening that were in place during the majority of the surveillance period.[8–10] In general, these guidelines require cervical cytology/Pap screening within 6 months of deployment for service women younger than 30 years of age, or within 24 months of deployment for service women aged 30 years or older (unless exempt).

Despite pre-deployment care, it is apparent from this report that service women need continuous access to gynecologic care during deployment, particularly if conditions during deployment lead to and exacerbate gynecologic disorders. Service women also may face more challenges receiving a specific diagnosis and the care they need to resolve their symptoms. In accordance with the Women's Health Assessment Team recommendations, standardized educational training in women's hygiene, contraception management, and menstrual cycle control should be a part of each Service's female readiness.[1]

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Vaginal Yeast Infections While Deployed in Southwest/Central Asia, Active Component Females, U.S. Armed Forces, 2008–2013

In field settings, female service members may not have adequate access to bathrooms, showers, laundry, or sanitary products necessary to maintain adequate feminine hygiene; therefore, service women may be at risk for vaginal yeast infections while deployed. During the 6-year surveillance period, nearly 3,000 U.S. military service women were diagnosed with at least one clinically significant yeast infection while supporting combat operations in Southwest/Central Asia. The crude overall incidence rate was 35.1 per 1,000 person-years (p-yrs). Overall incidence rates were higher among black, non-Hispanic service women, and among those in the Army and Air Force, in enlisted grades, and in communications/intelligence and motor transport occupations. The yearly rate of yeast infections was relatively stable from 2008 through 2010, then decreased in 2011 through 2013. Prior to deploying to austere operational settings, female service members should be provided practical and useful information, realistic training, and material support to decrease the risk of acquiring and increase the effectiveness of treating clinically and military operationally significant yeast infections.

Vaginal candidiasis, commonly referred to as a yeast infection, is an inflammation of the vagina and vulva caused by the fungus *Candida*. *Candida* occurs naturally in the female genital tract; however, a disruption in the normal, healthy environment can cause an overgrowth of yeast and subsequent infection. Changes to the normal bacterial flora or vaginal pH can be caused by antibiotic use; high estrogen levels during pregnancy or hormone therapy; wear of tight-fitting clothing or underwear that cause excessive warmth and moisture in the genital area; or douches, feminine sprays, or powders. Also, stress, lack of sleep, poor eating habits, and some illnesses can alter immune function and, in turn, increase risk of yeast infection.

Symptoms associated with vaginal yeast infections include redness, swelling, itching, and soreness of the vaginal area and pain or burning during urination or sexual intercourse. Many affected women have odorless, thick, clumpy vaginal discharges. Treatments include antifungal creams, vaginal suppositories, and oral medications. Because yeast infections can be difficult to distinguish from other types of vaginal infections, particularly sexually transmitted infections, accurate clinical diagnosis is important to ensure effective treatment.

Personal hygiene in field environments, particularly during deployments in theaters of active military operations, remains a challenge for many service women.[1–5] In field settings, female service members may not have adequate access to bathrooms, showers, laundry, or sanitary products necessary to maintain adequate feminine hygiene. The effects of these factors may be exacerbated in hot and humid environments; in such conditions, heat and moisture may be trapped in genital areas and immune function may be altered by physical and psychological stresses and lack of sleep. Together, these risk factors increase the likelihood of gynecologic infections such as yeast infections.

Service women are at risk for yeast infections while deployed. This report describes the incident counts, incidence rates, and trends of yeast infections among active component females during deployment to the U.S. Central Command (CENTCOM) area of responsibility (AOR) (i.e., Southwest/Central Asia) from 2008 through 2013.

METHODS

The surveillance period was 1 January 2008 through 31 December 2013. The surveillance population included all female active component service members of the Army, Navy, Air Force, Marine Corps, and Coast Guard who served at least 1 day in a theater of operations in the CENTCOM AOR during the surveillance period. Diagnoses associated with deployment were derived from records of medical encounters of service members deployed to the CENTCOM AOR that were documented in the Theater Medical Data Store (TMDS).

Denominators used for calculations of rates of yeast infections during deployment were derived by summing the lengths of all deployments of females during the period of interest into a total deployed person-time. If deployment end dates were unavailable, they were imputed based on the average deployment durations for each of the Services and by operation. Individuals who were ascertained as cases of yeast infections who did not have corresponding deployment records were excluded from the analysis.

An incident case of yeast infection was defined as any medical encounter with either ICD-9 code 112.1 "candidiasis of vulva and vagina" or ICD-9 code 112.2 "candidiasis of other urogenital sites" as the primary (first-listed) diagnosis on the TMDS record of the encounter. For incidence rate calculations, each individual could be counted as a case only once during the surveillance period. To calculate rates

of yeast infections overall (first-time and recurrent infections), affected individuals were considered "first-time cases" if they had no previous yeast infection–related encounters during the period; "recurrent cases" were those that occurred at least 30 days after any previous yeast infection–related encounter.

Annual "morbidity burdens" attributable to yeast infections were estimated based on the total number of medical encounters attributable to yeast infections (i.e., medical encounters with yeast infection-specific primary diagnoses; only one yeast infection–specific encounter per individual per day was included in this enumeration); and the total number of service members affected by yeast infections (i.e., individuals with at least one yeast infection–specific medical encounter) during each year of the surveillance period.

RESULTS

During the 6-year surveillance period, vaginal yeast infections were diagnosed among 2,926 deployed service women (incident cases) **(Table 1)**. The crude overall incidence rate was 35.1 per 1,000 person-years (p-yrs).

Overall incidence rates were higher among black, non-Hispanics than any other demographic subgroup of women **(Table 1)**. Incidence rates were relatively similar among service women aged 34 years or younger but declined in service women aged 35 years or older. Rates were higher among service women in the Army and Air Force, in enlisted grades, and in communications/intelligence and motor transport occupations compared to their respective counterparts.

The yearly rate of yeast infections was relatively stable from 2008 through 2010, then decreased in 2011 through 2013 **(Figure 1)**. The overall decrease from 2008 to 2013 was 9.2%. Rates were lower in 2013 than 2008 in each racial/ethnic group except Hispanic women (5.4% increase).

Trends in incidence rates of yeast infections varied by service **(Figure 2)**. Rates among service women in the Army steadily decreased from 2010 through 2013. However, rates in the other services varied from year to year with no clear or consistent trends over the entire period.

During the surveillance period, there were 386 recurrent yeast infection cases **(data not shown)**. The rate of cases overall (incident plus recurrent) was 39.8 per 1,000 p-yrs; this rate decreased 6.7% during the surveillance period.

Yeast infection–related medical encounters and individuals affected were markedly lower in 2013 than 2008 (-62.5% and -57.0%, respectively); however, the declines overall were entirely attributable to sharp declines during the last 3 years of the period **(Figure 3)**. The percentages of deployed females who were affected by clinically significant yeast infections were similar from 2008 to 2010 (1.5%) but lower from 2011 to 2013 (range, annual % affected: 1.1%–1.3%)

EDITORIAL COMMENT

During the 6-year period of interest for this report, nearly 3,000 U.S. military service women were diagnosed with at least one clinically significant yeast infection while supporting combat operations in Southwest/Central Asia. During the period overall, approximately one of every 37 deployed female service members (2.7%) were affected by yeast infections while serving in the war zone.

TABLE 1. Incident cases and incidence rates of yeast infections among active component females deployed to Southwest/Central Asia, 2008–2013

	No.	Rate[a]
Total	2,926	35.1
Race/ethnicity		
White, non-Hispanic	950	25.0
Black, non-Hispanic	1,453	57.2
Hispanic	315	30.5
Other/unknown	208	21.8
Age		
≤19	91	38.8
20–24	1,050	36.0
25–29	806	34.6
30–34	501	40.0
35–39	282	32.2
≥40	196	27.3
Service[b]		
Army	2,063	39.0
Navy	136	19.0
Air Force	660	35.1
Marine Corps	67	15.4
Rank		
Enlisted	2,530	37.4
Officer	396	25.4
Occupation		
Motor transport	139	37.9
Repair/engineer	404	30.3
Communications/ intelligence	1,434	41.3
Health care	324	27.6
Other/unknown	625	31.5

[a]Incidence rate per 1,000 person-years
[b]No service members in the Coast Guard met the case definition.

FIGURE 1. Incidence rates of yeast infections by race/ethnicity among active component females deployed to Southwest/Central Asia, 2008–2013

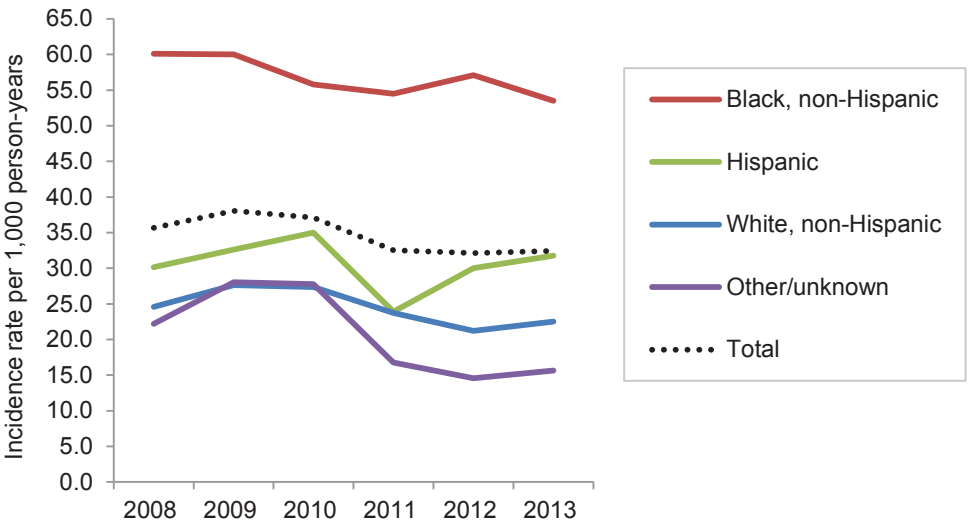
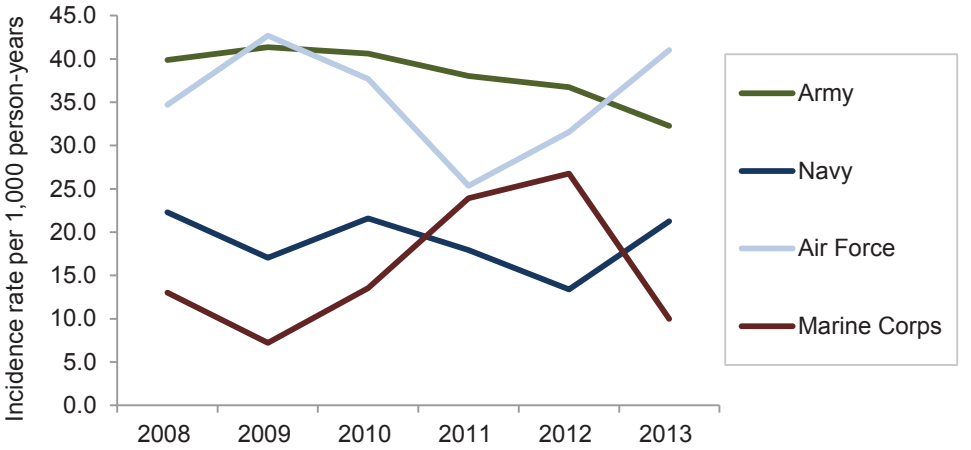
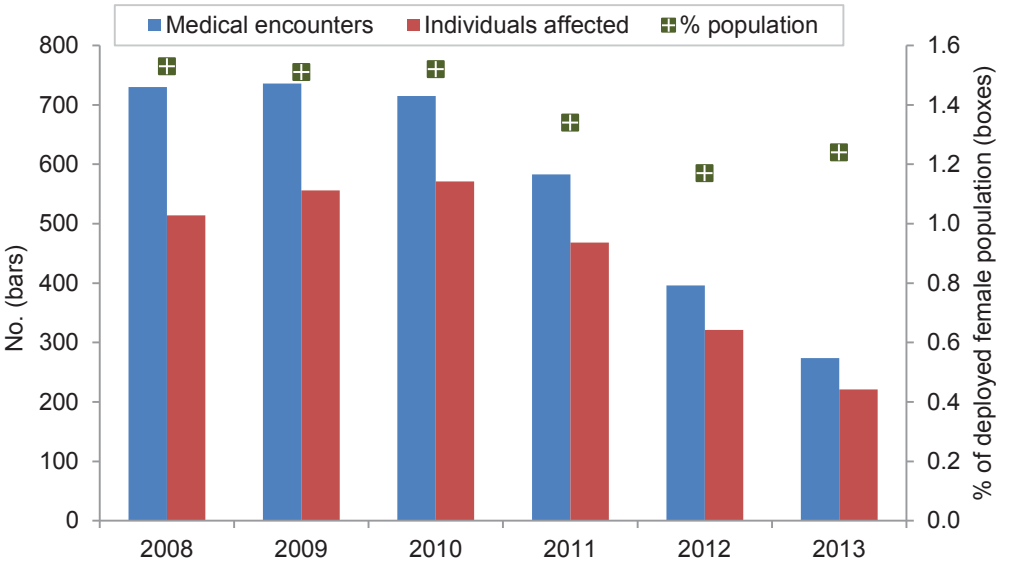


FIGURE 2. Incidence rates of yeast infection by service[a] among active component females deployed to Southwest/Central Asia, 2008–2013



[a]There were no cases reported among service women in the Coast Guard.

FIGURE 3. Medical encounters[a] and individuals affected[b] for yeast infections among active component females deployed to Southwest/Central Asia, 2008–2013



[a]Medical encounters: total medical encounters for yeast infection (with no more than one encounter per individual per day).

[b]Individuals with at least one medical encounter for yeast infection in the year shown.

The findings of this report should be interpreted with consideration of its limitations. For example, the numbers and rates of incident yeast infections reported here likely underestimate the true incidence of these infections among deployed female service members. In preparation for overseas deployments, female service members receive guidance on how to avoid genitourinary infections such as yeast infections; they are also encouraged to bring over-the-counter yeast infection medication with them.[6] In turn, many deployed female service members may self-treat yeast infections based on pre-deployment guidance, particularly those with histories of yeast infections and/or with medications readily available for self-treatment. Other women may seek treatment for symptomatic yeast infections from medical personnel assigned to their units; typically, such encounters are not documented in electronic, centrally archived medical records (TMDS). To the extent that deployed women with yeast infections do not seek treatment at medical facilities that document encounters with electronic, centrally archived records, the cases enumerated here represent only a portion of the clinically significant yeast infections that affect them. Also of note, the infections summarized here likely represent the more symptomatically severe infections and/or those that are unresponsive to over-the-counter treatment. Such infections may require more aggressive oral or vaginal treatment courses under the direction of a clinician in a setting where the diagnoses are more likely to be documented in TMDS.

Despite its shortcomings, this report clearly indicates that yeast infections are more likely to affect deployed service women who are black, non-Hispanic, in the Army or Air Force, and in motor transport or communications/intelligence occupations compared to their respective counterparts. Service women in relatively high-risk occupations may spend more time in field settings where adequate latrine and shower facilities are limited and accommodations conducive to optimal feminine hygiene practices are unavailable. Prior to deploying to austere operational settings, female service members should be provided practical and useful information, realistic training, and material support to decrease the risk of acquiring and increase the effectiveness of treating clinically and military operationally significant yeast infections.

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Update: Routine Screening for Antibodies to Human Immunodeficiency Virus, Civilian Applicants for U.S. Military Service and U.S. Armed Forces, Active and Reserve Components, January 2009–June 2014

This report contains an update through June 2014 of the results of routine screening for antibodies to the human immunodeficiency virus (HIV) among civilian applicants for military service and among members of the active and reserve components of the U.S. Armed Forces. Seroprevalences among civilian applicants in 2013 and the first half of 2014 (0.19 and 0.15 per 1,000 tested, respectively) were markedly lower than in 2012 (0.27 per 1,000 tested). In nearly every component of every service, seroprevalences in 2013 and 2014 were either similar or lower than in prior years; however, in the Army National Guard, seroprevalences increased each year and approximately doubled from 2010 (0.18 per 1,000 tested) to 2013–2014 (0.35–0.41 per 1,000 tested). Among active and reserve component service members, seroprevalences continue to be higher among Army and Navy members and males than their respective counterparts.

Since the acquired immune deficiency syndrome (AIDS) was first recognized as a distinct clinical entity in 1981,[1] its spread has had major impacts on the health of populations and on healthcare systems worldwide. The human immunodeficiency virus (HIV) was identified as the cause of AIDS in 1983. Since October 1985, the U.S. military has conducted routine screening for antibodies to HIV to enable adequate and timely medical evaluations, treatment, and counseling; to prevent unwitting HIV transmission; and to protect the battlefield blood supply.[2]

As part of the U.S. military's HIV screening program, civilian applicants for military service are screened for antibodies to HIV during pre-accession medical examinations. Infection with HIV is medically disqualifying for entry into U.S. military service. In addition, members of the active and reserve components of the U.S. Armed Forces are routinely and periodically screened to detect newly acquired HIV infections. Service members who are infected with HIV receive clinical assessments, treatments, and counseling; they may remain in service as long as they are capable of performing their military duties.[2]

This report summarizes numbers, prevalences, and trends of newly identified HIV antibody positivity among civilian applicants for military service and members of the active and reserve components of the U.S. Armed Forces from January 2009 through June 2014. Summaries of results of routine screening for antibodies to HIV among civilian applicants for and active and reserve component members of the U.S. military since 1990 are available at http://www.afhsc.mil/reports.

METHODS

The surveillance period was 1 January 2009 through 30 June 2014. The surveillance population included all civilian applicants for U.S. military service and all individuals who were screened for antibodies to HIV while serving in the active or reserve component of the Army, Navy, Air Force, Marine Corps, or Coast Guard during the surveillance period.

All individuals who were tested and all first-time detections of antibodies to HIV through U.S. military medical testing programs were ascertained by matching specimen numbers and serologic test results to the personal identifiers of providers of the specimens. With the exception of U.S. Air Force members, all results were accessed from records routinely maintained in the Defense Medical Surveillance System (DMSS). The U.S. Air Force provided summarized results of serologic screening for antibodies to HIV among its members.

An incident case of HIV antibody seropositivity was defined as two positive results from serologic testing of two different specimens from the same individual, or one positive result from serologic testing of the most recent specimen provided by an individual.

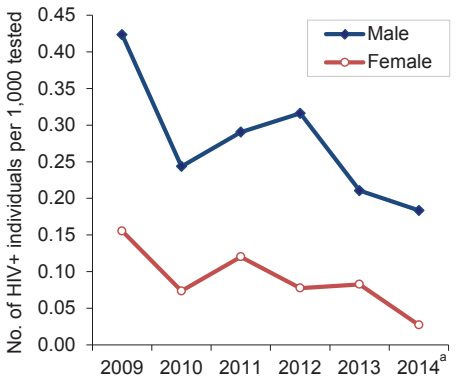
Annual prevalences of HIV seropositivity among civilian applicants for service were calculated by dividing the number of applicants identified as HIV antibody seropositive during each calendar year by the number of applicants tested during the corresponding year. For annual summaries of routine screening among U.S. service members, denominators were the numbers of individuals in each component of each service branch who were tested at least once during the relevant calendar year.

RESULTS

Civilian applicants

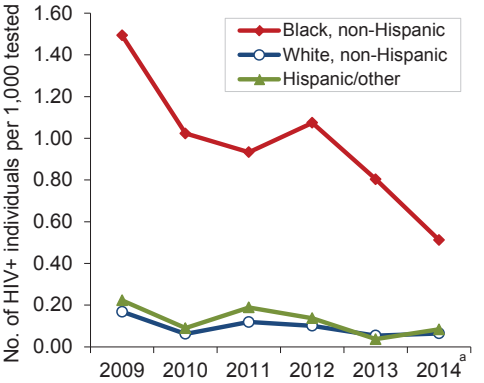
From January 2013 through June 2014, a total of 500,828 civilian applicants for U.S. military service were tested for antibodies to HIV, and 87 applicants were identified as HIV antibody positive (seroprevalence: 0.17 per 1,000 applicants tested) **(Table 1)**. From 2009 to 2013, annual seroprevalences

FIGURE 1. Diagnoses of HIV infections by gender, civilian applicants for U.S. military service, January 2009–June 2014



[a]Through 30 June 2014

FIGURE 2. Diagnoses of HIV infections by race/ethnicity, civilian applicants for U.S. military service, January 2009–June 2014



[a]Through 30 June 2014

among applicants for service declined 49% (2009: 0.37 per 1,000 tested; 2013: 0.19 per 1,000 tested).

Throughout the period, seroprevalences were much higher among males than females and among black, non-Hispanics than other racial/ethnic group members **(Tables 1, 2; Figures 1, 2)**. Of note, from 2009 to 2013, seroprevalences decreased by approximately 50% among both male and female applicants and by 46% among black, non-Hispanic applicants.

U.S. Army

Active component: From January 2013 through June 2014, a total of 612,316 soldiers in the active component of the U.S. Army were tested for antibodies to HIV, and 129 soldiers were identified as HIV antibody positive (seroprevalence: 0.21 per 1,000 soldiers tested) **(Table 3)**.

Annual seroprevalences increased 33% from 2009 (0.21 per 1,000 tested) to 2012 (0.28 per 1,000 tested) and then returned to the 2009 baseline in 2013 (0.21 per 1,000 tested) **(Table 3, Figure 3)**. Of note, during 2013 and the first half of 2014, no new infections were detected among female active component soldiers.

In 2013, on average, one new HIV-infected soldier was detected per 5,894 screening tests **(Table 3)**. Of the 545 active component soldiers diagnosed with HIV infections since 2009, 314 (58%) were still in military service in 2014.

TABLE 1. Diagnoses of HIV infections by gender, civilian applicants for U.S. military service, January 2009–June 2014

Year	Total HIV tests	Total persons tested	Male tested	Female tested	Total HIV(+)	HIV(+) male	HIV(+) female	Overall rate per 1,000 tested	Male rate per 1,000 tested	Female rate per 1,000 tested
2009	317,879	**301,145**	243,244	57,901	**112**	103	9	**0.37**	0.42	0.16
2010	293,566	**280,145**	225,840	54,305	**59**	55	4	**0.21**	0.24	0.07
2011	270,946	**263,393**	213,481	49,912	**68**	62	6	**0.26**	0.29	0.12
2012	274,255	**266,770**	215,163	51,607	**72**	68	4	**0.27**	0.32	0.08
2013	325,613	**316,989**	256,496	60,493	**59**	54	5	**0.19**	0.21	0.08
2014[a]	196,612	**183,839**	147,095	36,744	**28**	27	1	**0.15**	0.18	0.03
Total	1,678,871	**1,612,281**	1,301,319	310,962	**398**	369	29	**0.25**	0.28	0.09

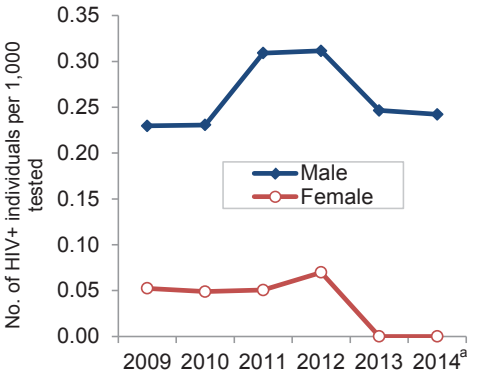
[a]Through 30 June 2014

TABLE 2. Diagnoses of HIV infections by race/ethnicity, civilian applicants for U.S. military service, January 2009–June 2014

Year	Total persons tested	White, non-Hispanic tested	Black, non-Hispanic tested	Hispanic/ others tested	Total HIV(+)	White, non-Hispanic HIV(+)	Black, non-Hispanic HIV(+)	Hispanic/ others HIV(+)	Overall rate per 1,000 tested	White, non-Hispanic rate per 1,000 tested	Black, non-Hispanic rate per 1,000 tested	Hispanic/ others rate per 1,000 tested
2009	**301,155**	207,676	44,180	49,299	**112**	35	66	11	**0.37**	0.17	1.49	0.22
2010	**280,146**	193,403	42,026	44,717	**59**	12	43	4	**0.21**	0.06	1.02	0.09
2011	**263,398**	184,537	41,790	37,071	**68**	22	39	7	**0.26**	0.12	0.93	0.19
2012	**266,770**	178,309	44,668	43,793	**72**	18	48	6	**0.27**	0.10	1.07	0.14
2013	**316,989**	205,519	57,219	54,251	**59**	11	46	2	**0.19**	0.05	0.80	0.04
2014[a]	**183,839**	124,724	35,170	23,945	**28**	8	18	2	**0.15**	0.06	0.51	0.08
Total	**1,612,297**	1,094,168	265,053	253,076	**398**	106	260	32	**0.25**	0.10	0.98	0.13

[a]Through 30 June 2014

FIGURE 3. New diagnoses of HIV infections, by gender, active component, U.S. Army, January 2009–June 2014



[a]Through 30 June 2014

Army National Guard: From January 2013 through June 2014, a total of 286,835 members of the U.S. Army National Guard were tested for antibodies to HIV, and 108 soldiers were identified as HIV antibody positive (seroprevalence: 0.38 per 1,000 soldiers tested) **(Table 4)**.

Among National Guard soldiers, annual seroprevalences increased each year from 2010 through 2013, and the seroprevalence was more than twice as high in 2014 (0.41 per 1,000 tested) than in 2009 (0.18 per 1,000 tested) **(Table 4)**.

In 2013, on average, one new HIV-infected National Guard soldier was detected per 3,404 screening tests **(Table 4)**. Of the 296 National Guard soldiers who tested positive for HIV since 2009, 167 (56%) were still in military service in 2014.

Army Reserve: From January 2013 through June 2014, a total of 173,606 members of the U.S. Army National Guard were tested for antibodies to HIV, and 84 soldiers were identified as HIV antibody positive (seroprevalence: 0.48 per 1,000 soldiers tested) **(Table 5)**.

Among Army Reservists, the seroprevalence in 2012 (0.58 per 1,000 tested) was

TABLE 3. New diagnoses of HIV infections, by gender, active component, U.S. Army, January 2009–June 2014

Year	Total HIV tests	Total persons tested	Males tested	Females tested	Total new HIV(+)	New HIV(+) male	New HIV(+) female	Overall rate per 1,000 tested	Male rate per 1,000 tested	Female rate per 1,000 tested	HIV(+) still in military service in 2014
2009	559,195	**431,713**	374,533	57,180	**89**	86	3	**0.21**	0.23	0.05	**27**
2010	589,929	**451,532**	390,217	61,315	**93**	90	3	**0.21**	0.23	0.05	**37**
2011	538,933	**431,337**	371,980	59,357	**118**	115	3	**0.27**	0.31	0.05	**59**
2012	519,039	**416,715**	359,455	57,260	**116**	112	4	**0.28**	0.31	0.07	**81**
2013	506,875	**405,159**	348,872	56,287	**86**	86	0	**0.21**	0.25	0.00	**67**
2014[a]	224,108	**207,157**	177,543	29,614	**43**	43	0	**0.21**	0.24	0.00	**43**
Total	2,938,079	**2,343,613**	2,022,600	321,013	**545**	532	13	**0.23**	0.26	0.04	**314**

[a]Through 30 June 2014

TABLE 4. New diagnoses of HIV infections, by gender, U.S. Army National Guard, January 2009–June 2014

Year	Total HIV tests	Total persons tested	Males tested	Females tested	Total new HIV(+)	New HIV(+) male	New HIV(+) female	Overall rate per 1,000 tested	Male rate per 1,000 tested	Female rate per 1,000 tested	HIV(+) still in military service in 2014
2009	245,527	**204,799**	177,028	27,771	**55**	53	2	**0.27**	0.30	0.07	**15**
2010	240,468	**197,662**	170,187	27,475	**36**	35	1	**0.18**	0.21	0.04	**16**
2011	224,407	**187,246**	160,547	26,699	**45**	43	2	**0.24**	0.27	0.07	**16**
2012	192,298	**163,277**	137,898	25,379	**52**	52	0	**0.32**	0.38	0.00	**22**
2013	173,612	**147,711**	122,211	25,500	**51**	50	1	**0.35**	0.41	0.04	**41**
2014[a]	146,169	**139,124**	116,569	22,555	**57**	56	1	**0.41**	0.48	0.04	**57**
Total	1,222,481	**1,039,819**	884,440	155,379	**296**	289	7	**0.28**	0.33	0.05	**167**

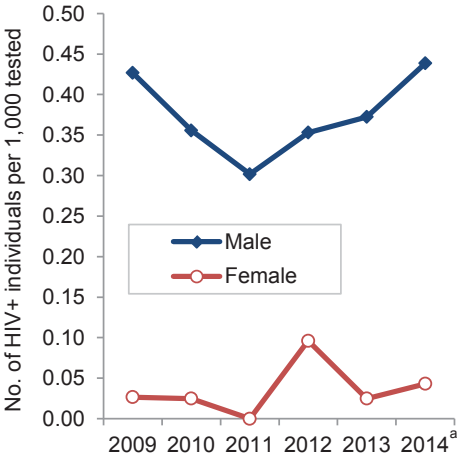
[a]Through 30 June 2014

TABLE 5. New diagnoses of HIV infections, by gender, U.S. Army Reserve, January 2009–June 2014

Year	Total HIV tests	Total persons tested	Males tested	Females tested	Total new HIV(+)	New HIV(+) male	New HIV(+) female	Overall rate per 1,000 tested	Male rate per 1,000 tested	Female rate per 1,000 tested	HIV(+) still in military service in 2014
2009	113,154	**95,631**	74,186	21,445	**36**	34	2	**0.38**	0.46	0.09	**13**
2010	113,101	**93,577**	73,031	20,546	**36**	36	0	**0.38**	0.49	0.00	**21**
2011	106,761	**88,715**	68,938	19,777	**37**	35	2	**0.42**	0.51	0.10	**24**
2012	86,095	**73,643**	57,097	16,546	**43**	42	1	**0.58**	0.74	0.06	**33**
2013	127,334	**113,142**	87,319	25,823	**54**	50	4	**0.48**	0.57	0.15	**51**
2014[a]	64,111	**60,464**	46,096	14,368	**30**	27	3	**0.50**	0.59	0.21	**30**
Total	610,556	**525,172**	406,667	118,505	**236**	224	12	**0.45**	0.55	0.10	**172**

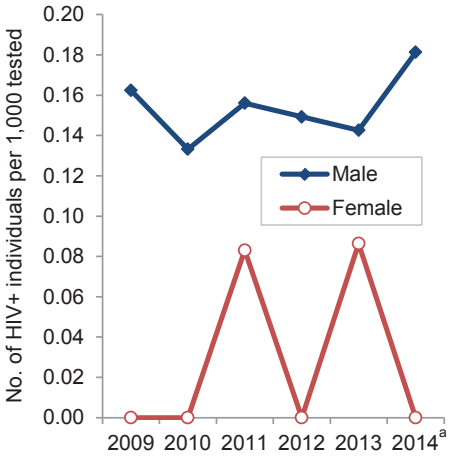
[a]Through 30 June 2014

FIGURE 4. New diagnoses of HIV infections by gender, active component, U.S. Navy, January 2009–June 2014



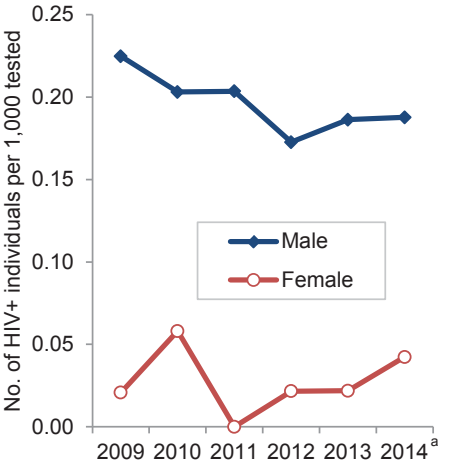
[a]Through 30 June 2014

FIGURE 5. New diagnoses of HIV infections, by gender, active component, U.S. Marine Corps, January 2009–June 2014



[a]Through 30 June 2014

FIGURE 6. New diagnoses of HIV infections, by gender, active component, U.S. Air Force, January 2009–June 2014



[a]Through 30 June 2014

higher than in any other year of routine HIV antibody screening of Army Reservists **(data not shown)**. Of note, however, the seroprevalence among Reservists tested from January 2013 through June 2014 was 18% lower than in 2012 **(Table 5)**.

In 2013, on average, there was one new HIV-infected Army Reserve soldier detected per 2,358 screening tests **(Table 5)**. Of the 236 Army Reservists diagnosed with HIV infections since 2009, 172 (73%) were still in military service in 2014.

U.S. Navy

Active component: From January 2013 through June 2014, a total of 343,395 active component members of the U.S. Navy were tested for antibodies to HIV, and 113 sailors were identified as HIV antibody positive (seroprevalence: 0.33 per 1,000 sailors tested) **(Table 6)**. Among tested male active component sailors, HIV antibody seroprevalence declined from 2009 through 2011 but has increased since then **(Figure 4)**.

On average in 2013, one new HIV-infected sailor was detected per 3,699 screening tests **(Table 6)**. Of the 397 active component sailors who tested positive for HIV since 2009, 259 (65%) were still in military service in 2014.

Navy Reserve: From January 2013 through June 2014, a total of 60,894 members of the U.S. Navy Reserve were tested for antibodies to HIV, and 21 sailors were identified as HIV antibody positive (seroprevalence: 0.34 per 1,000 sailors tested) **(Table 7)**. Since 2009, there have been no clear or consistent trends of HIV antibody seroprevalence among Navy Reservists who have been routinely tested. Of note, since 2009, no female Navy Reservist has been detected with antibodies to HIV during routine screening.

On average in 2013, there was one new HIV-infected Navy Reservist per 3,763 screening tests **(Table 7)**. Of the 76 reserve component sailors diagnosed with HIV infections since 2009, 53 (70%) were still in military service in 2014.

U.S. Marine Corps

Active component: From January 2013 through June 2014, a total of 235,727 members of the active component of the U.S. Marine Corps were tested for antibodies to HIV, and 35 Marines were identified as HIV antibody positive (seroprevalence: 0.15 per 1,000 Marines tested) **(Table 8)**. From 2009 through June 2014, prevalences of antibodies to HIV remained relatively low and stable among Marines who were routinely tested **(Figure 5)**.

In 2013 on average, one of every 8,581 screening tests for HIV infection among active component Marines was positive **(Table 8)**. Of the 126 active component Marines diagnosed with HIV infections since 2009, 59 (47%) were still in military service in 2014.

Marine Corps Reserve: From January 2013 through June 2014, a total of 37,789 members of the U.S. Marine Corps Reserve were tested for antibodies to HIV, and eight Marines were identified as HIV antibody positive (seroprevalence: 0.21 per 1,000 Marines tested) **(Table 9)**. Of note, since 2009, no female Marine Corps Reservist has been detected with antibodies to HIV during routine screening.

In 2013, on average, one of every 6,913 screening tests for HIV infection among Marine Corps Reservists was positive **(Table 9)**. Of the 27 Marine Corps Reservists diagnosed with HIV infection since 2009, 16 (59%) were still in military service in 2014.

U.S. Air Force

Active component: From January 2013 through June 2014, a total of 353,064 active component members of the U.S. Air Force were tested for antibodies to HIV, and 55 airmen were diagnosed with HIV infections (seroprevalence: 0.16 per 1,000 airmen tested) **(Table 10)**.

From 2009 through 2013, annual seroprevalences remained relatively low among active component members of the Air Force **(Table 10, Figure 6)**. In 2013, on average, one new HIV infection was detected among an

TABLE 6. New diagnoses of HIV infections, active component, U.S. Navy, January 2009–June 2014

Year	Total HIV tests	Total persons tested	Males tested	Females tested	Total new HIV(+)	New HIV(+) male	New HIV(+) female	Overall rate per 1,000 tested	Male rate per 1,000 tested	Female rate per 1,000 tested	HIV(+) still in military service in 2014
2009	266,105	**227,516**	189,784	37,732	**82**	81	1	**0.36**	0.43	0.03	**31**
2010	283,050	**240,011**	199,584	40,427	**72**	71	1	**0.30**	0.36	0.02	**34**
2011	271,443	**232,624**	192,228	40,396	**58**	58	0	**0.25**	0.30	0.00	**36**
2012	273,478	**234,250**	192,640	41,610	**72**	68	4	**0.31**	0.35	0.10	**50**
2013	247,846	**217,511**	177,238	40,273	**67**	66	1	**0.31**	0.37	0.02	**63**
2014[a]	132,343	**125,884**	102,599	23,285	**46**	45	1	**0.37**	0.44	0.04	**45**
Total	1,474,265	**1,277,796**	1,054,073	223,723	**397**	389	8	**0.31**	0.37	0.04	**259**

[a]Through 30 June 2014

TABLE 7. New diagnoses of HIV infections, by gender, Navy Reserve, U.S. Navy, January 2009–June 2014

Year	Total HIV tests	Total persons tested	Males tested	Females tested	Total new HIV(+)	New HIV(+) male	New HIV(+) female	Overall rate per 1,000 tested	Male rate per 1,000 tested	Female rate per 1,000 tested	HIV(+) still in military service in 2014
2009	52,060	**43,674**	35,466	8,208	**10**	10	0	**0.23**	0.28	0.00	**6**
2010	54,309	**45,452**	36,901	8,551	**18**	18	0	**0.40**	0.49	0.00	**8**
2011	50,448	**42,850**	34,662	8,188	**14**	14	0	**0.33**	0.40	0.00	**10**
2012	48,209	**41,332**	33,312	8,020	**13**	13	0	**0.31**	0.39	0.00	**10**
2013	45,152	**38,539**	30,694	7,845	**12**	12	0	**0.31**	0.39	0.00	**10**
2014[a]	23,937	**22,355**	17,807	4,548	**9**	9	0	**0.40**	0.51	0.00	**9**
Total	274,115	**234,202**	188,842	45,360	**76**	76	0	**0.32**	0.40	0.00	**53**

[a]Through 30 June 2014

TABLE 8. New diagnoses of HIV infections, by gender, active component, U.S. Marine Corps, January 2009–June 2014

Year	Total HIV tests	Total persons tested	Males tested	Females tested	Total new HIV(+)	New HIV(+) Male	New HIV(+) Female	Overall rate per 1,000 tested	Male rate per 1,000 tested	Female rate per 1,000 tested	HIV(+) still in military service in 2014
2009	188,858	**151,736**	141,672	10,064	**23**	23	0	**0.15**	0.16	0.00	**4**
2010	187,690	**153,377**	142,631	10,746	**19**	19	0	**0.12**	0.13	0.00	**4**
2011	206,241	**172,275**	160,236	12,039	**26**	25	1	**0.15**	0.16	0.08	**6**
2012	202,074	**166,045**	154,087	11,958	**23**	23	0	**0.14**	0.15	0.00	**15**
2013	180,207	**151,862**	140,287	11,575	**21**	20	1	**0.14**	0.14	0.09	**16**
2014[a]	89,710	**83,865**	77,230	6,635	**14**	14	0	**0.17**	0.18	0.00	**14**
Total	1,054,780	**879,160**	816,143	63,017	**126**	124	2	**0.14**	0.15	0.03	**59**

[a]Through 30 June 2014

TABLE 9. New diagnoses of HIV infections, by gender, U.S. Marine Corps Reserve, January 2009–June 2014

Year	Total HIV tests	Total persons tested	Males tested	Females tested	Total new HIV(+)	New HIV(+) male	New HIV(+) female	Overall rate per 1,000 tested	Male rate per 1,000 tested	Female rate per 1,000 tested	HIV(+) still in military service in 2014
2009	29,119	**24,949**	23,932	1,017	**5**	5	0	**0.20**	0.21	0.00	**4**
2010	28,935	**25,339**	24,237	1,102	**6**	6	0	**0.24**	0.25	0.00	**1**
2011	32,882	**28,027**	26,889	1,138	**4**	4	0	**0.14**	0.15	0.00	**1**
2012	30,271	**25,833**	24,801	1,032	**4**	4	0	**0.15**	0.16	0.00	**2**
2013	27,651	**24,160**	23,174	986	**4**	4	0	**0.17**	0.17	0.00	**4**
2014[a]	14,304	**13,629**	13,091	538	**4**	4	0	**0.29**	0.31	0.00	**4**
Total	163,162	**141,937**	136,124	5,813	**27**	27	0	**0.19**	0.20	0.00	**16**

[a]Through 30 June 2014

TABLE 10. New diagnoses of HIV infections, by gender, active component, U.S. Air Force, January 2009–June 2014

Year	Total HIV tests	Total persons tested[a]	Males tested	Females tested	Total new HIV(+)	New HIV(+), males	New HIV(+), females	Overall rate per 1,000 tested	Male rate per 1,000 tested	Female rate per 1,000 tested
2009	290,056	**244,077**	195,826	48,251	**45**	44	1	**0.18**	0.22	0.02
2010	282,446	**263,451**	211,830	51,621	**46**	43	3	**0.17**	0.20	0.06
2011	257,586	**219,328**	176,902	42,426	**36**	36	0	**0.16**	0.20	0.00
2012	250,687	**237,451**	191,140	46,311	**34**	33	1	**0.14**	0.17	0.02
2013	245,013	**233,514**	187,889	45,625	**36**	35	1	**0.15**	0.19	0.02
2014[b]	125,138	**119,550**	95,936	23,614	**19**	18	1	**0.16**	0.19	0.04
Total	1,450,926	**1,317,371**	1,059,523	257,848	**216**	209	7	**0.16**	0.20	0.03

[a]Total persons tested includes unknown or missing genders.
[b]Through 30 June 2014

TABLE 11. New diagnoses of HIV infections, by gender, Air National Guard, U.S. Air Force, January 2009–June 2014

Year	Total HIV tests	Total persons tested[a]	Males tested	Females tested	Total new HIV(+)	New HIV(+), males	New HIV(+), females	Overall rate per 1,000 tested	Male rate per 1,000 tested	Female rate per 1,000 tested
2009	31,577	**27,083**	22,684	4,399	**4**	4	0	**0.15**	0.18	0.00
2010	24,294	**22,612**	18,837	3,775	**0**	0	0	**0.00**	0.00	0.00
2011	43,231	**37,972**	31,540	6,432	**3**	3	0	**0.08**	0.10	0.00
2012	47,687	**45,197**	37,668	7,529	**6**	6	0	**0.13**	0.16	0.00
2013	37,090	**35,577**	29,577	6,000	**2**	2	0	**0.06**	0.07	0.00
2014[b]	22,703	**22,069**	18,216	3,853	**1**	1	0	**0.05**	0.05	0.00
Total	206,582	**190,510**	158,522	31,988	**16**	16	0	**0.08**	0.10	0.00

[a]Total persons tested includes unknown or missing genders.
[b]Through 30 June 2014

TABLE 12. New diagnoses of HIV infections, by gender, Air Force Reserve, U.S. Air Force, January 2009–June 2014

Year	Total HIV tests	Total persons tested[a]	Males tested	Females tested	Total new HIV(+)	New HIV(+), males	New HIV(+), females	Overall rate per 1,000 tested	Male rate per 1,000 tested	Female rate per 1,000 tested
2009	27,720	**24,882**	19,364	5,518	**6**	6	0	**0.24**	0.31	0.00
2010	25,101	**23,938**	18,584	5,354	**9**	9	0	**0.38**	0.48	0.00
2011	27,329	**24,998**	19,570	5,428	**5**	5	0	**0.20**	0.26	0.00
2012	29,444	**28,461**	21,957	6,504	**10**	10	0	**0.35**	0.46	0.00
2013	25,584	**24,956**	19,319	5,637	**10**	10	0	**0.40**	0.52	0.00
2014[b]	16,268	**15,819**	12,079	3,740	**1**	0	1	**0.06**	0.00	0.27
Total	151,446	**143,054**	110,873	32,181	**41**	40	1	**0.29**	0.36	0.03

[a]Total persons tested includes unknown or missing genders.
[b]Through 30 June 2014

active component Air Force member per 6,806 screening tests.

Air National Guard: From January 2013 through June 2014, a total of 57,646 members of the Air National Guard were tested for antibodies to HIV, and three airmen were diagnosed with HIV infections (seroprevalence: 0.05 per 1,000 airmen tested) **(Table 11)**. Of note, since 2009, no female Air National Guard member has been detected with antibodies to HIV during routine testing.

Air Force Reserve: From January 2013 through June 2014, a total of 40,775 members of the Air Force Reserve were tested for antibodies to HIV, and 11 airmen were diagnosed with HIV infections (seroprevalence: 0.27 per 1,000 airmen tested) **(Table 12)**.

Data summaries for the U.S. Air Force were provided by the U.S. Air Force School of Aerospace Medicine (USAFSAM).

U.S. Coast Guard

Active component: From January 2013 through June 2014, a total of 32,870 active component members of the U.S. Coast Guard were tested for antibodies to HIV, and six Coast Guard members were

diagnosed with HIV infections (seroprevalence: 0.18 per 1,000 persons tested) **(data not shown)**.

In 2013, on average, one new HIV-infected Coast Guardsman was detected per 4,593 screening tests **(data not shown)**. Of the 20 active component Coast Guard members diagnosed with HIV infections since 2009, 12 (60%) were still in military service in 2014.

Coast Guard Reserve: From January 2013 through June 2014, a total of 5,410 reserve component members of the U.S. Coast Guard were tested for antibodies to HIV, and no HIV infections were detected **(data not shown)**.

EDITORIAL COMMENT

For nearly 30 years, the U.S. military has conducted routine screening for antibodies to HIV among all civilian applicants for service and all active and reserve component members of the services.[2] For nearly 20 years, results of U.S. military HIV antibody testing programs have been summarized in the *MSMR*.[3]

This report documents that, since 2009, prevalences of HIV seropositivity among civilian applicants for military service have generally declined. In fact, the prevalence of antibodies to HIV among civilian applicants in 2013 was the lowest annual seroprevalence since routine testing began. Of note, however, because applicants for military service are not randomly selected from the general population of U.S. young adults, seroprevalences among them are not directly indicative of HIV prevalences, infection rates, or trends in the general U.S. population. As such, relatively low prevalences of HIV among civilian applicants for military service do not necessarily indicate low prevalences or incidence rates of HIV among young adults in the U.S. in general.

This report also documents that, in 2013 and 2014, compared to prior years, seroprevalences among most of the active and reserve components of the Services were relatively low, and that recent trends of seroprevalences were flat or declining. Again, however, such results should be interpreted with consideration of the limitations of the surveillance data summarized herein. For example, because all military members have been screened as civilian applicants for service (since October 1985), routinely every 2 years (since 2004), and before and after overseas deployments (for more than a decade), routine screening now detects relatively recently acquired HIV infections (i.e., infections acquired since the most recent negative test of each affected individual). As such, annual HIV antibody seroprevalences during routine screening of military populations are reflective of, but are not direct unbiased estimates of, incidence rates and trends of acquisitions of HIV infections among military members. So, for example, the Army National Guard was the only Service and component–defined subgroup in whom annual seroprevalences consistently increased since 2009. However, increasing seroprevalences among Army National Guard members could reflect lengthening time intervals between routine tests (allowing more newly acquired infections to accumulate before they are detected through screening), changes in "selection criteria" for testing (e.g., targeting of individuals at presumed higher risk such as those with multiple/anonymous sexual contacts or diagnosed with sexually transmitted infections), and/or increasing rates of acquisitions of new infections.

In summary, the U.S. military has conducted comprehensive HIV prevention, education, counseling, and treatment programs for nearly 30 years. Since the beginning of the programs, routine screening of all civilian applicants for service and routine periodic testing of all active and reserve component members of the Services have been fundamental components of the military's HIV control and clinical management efforts. Summaries of results of screening programs such as those in this report provide insights into the current status and trends of HIV's impacts in various U.S. military populations.

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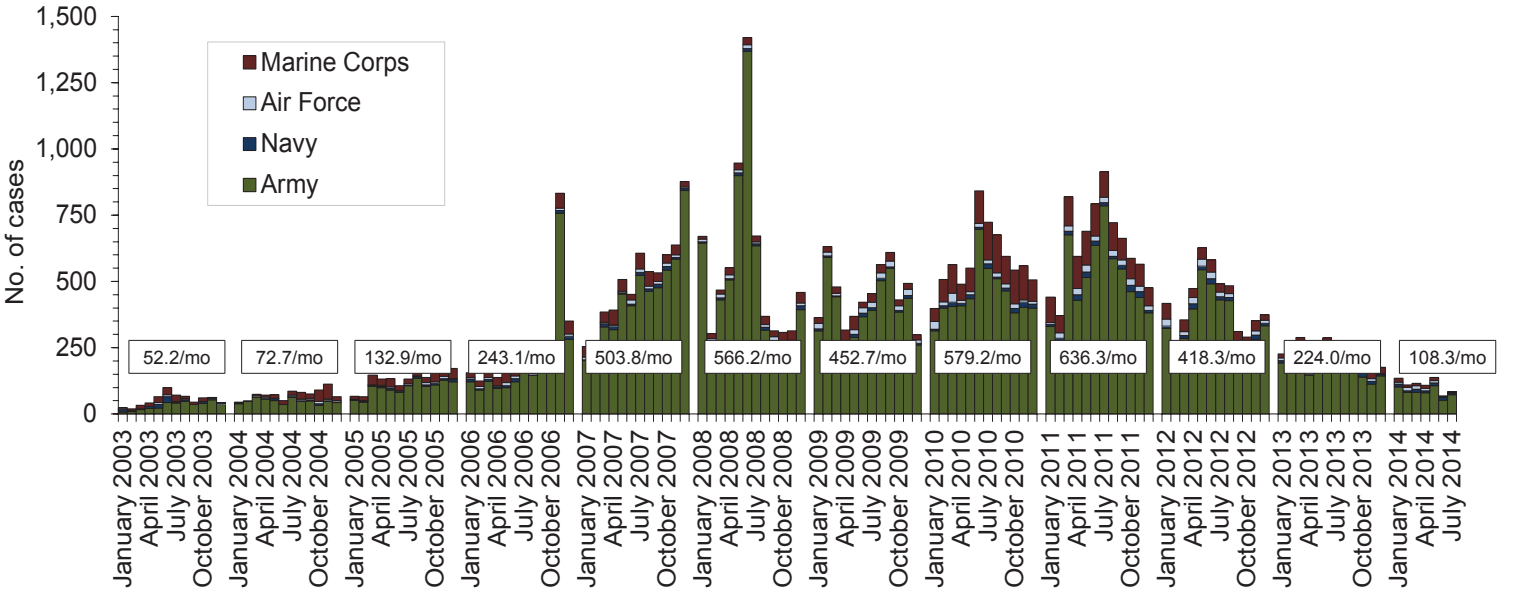
3. Army Medical Surveillance Activity. Supplement: HIV-1 in the Army. *MSMR*. 1995;1(3):12–15.

Deployment-related Conditions of Special Surveillance Interest, U.S. Armed Forces, by Month and Service, January 2003–July 2014 (data as of 18 August 2014)

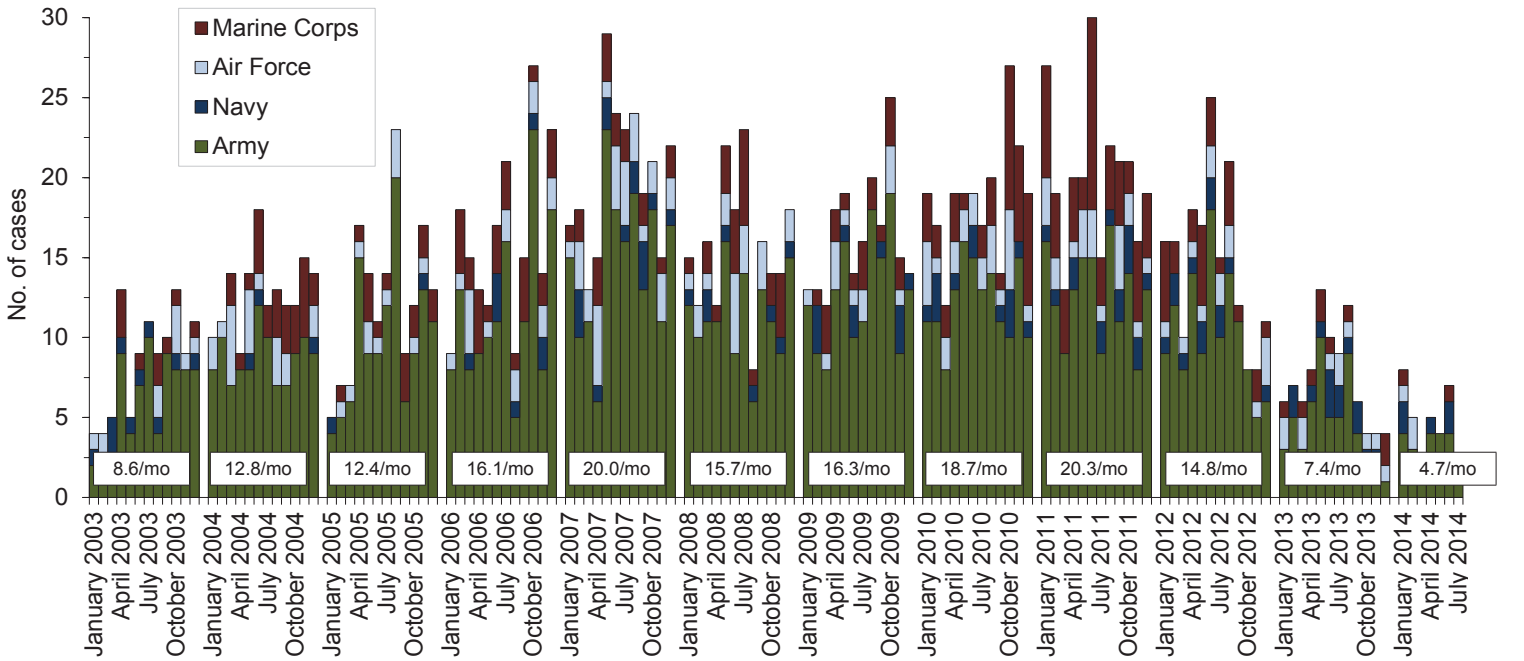
Traumatic brain injury (TBI) (ICD-9: 310.2, 800–801, 803-804, 850–854, 907.0, 950.1–950.3, 959.01, V15.5_1–9, V15.5_A–F, V15.52_0–9, V15.52_A–F, V15.59_1–9, V15.59_A–F)[a]



Reference: Armed Forces Health Surveillance Center. Deriving case counts from medical encounter data: considerations when interpreting health surveillance reports. *MSMR*. 2009; 16(12):2–8.

[a]Indicator diagnosis (one per individual) during a hospitalization or ambulatory visit while deployed to/within 30 days of returning from deployment (includes in-theater medical encounters from the Theater Medical Data Store [TMDS] and excludes 4,598 deployers who had at least one TBI-related medical encounter any time prior to deployment).

Deep vein thrombophlebitis/pulmonary embolus (ICD-9: 415.1, 451.1, 451.81, 451.83, 451.89, 453.2, 453.40–453.42 and 453.8)[b]



Reference: Isenbarger DW, Atwood JE, Scott PT, et al. Venous thromboembolism among United States soldiers deployed to Southwest Asia. *Thromb Res*. 2006;117(4):379–383.

[b]One diagnosis during a hospitalization or two or more ambulatory visits at least 7 days apart (one case per individual) while deployed to/within 90 days of returning from deployment.

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Armed Forces Health Surveillance Center
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