VOL. 16 • NO. 01
JANUARY 2009

MSMR

A publication of the Armed Forces Health Surveillance Center



MEDICAL SURVEILLANCE MONTHLY REPORT

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Diagnoses of Overweight/Obesity, Active Component, U.S. Armed Forces, 1998-2008

According to the 2005 DoD Survey of Health Related Behaviors, 61% of men and 39% of women serving in the active component of the U.S. military had a body mass index above 25 kg/m^2 and thus were nominally "overweight". Twelve percent of active service members were nominally obese (BMI>30 kg/m^2), up from less than 5% in 1995. Stress and return from deployment were the most frequently cited reasons for recent weight gain.[1]

To ensure a mission-ready force with a "military appearance," the Department of Defense mandates that each military Service implement "body composition programs," including enforcement of weight-for-height standards required for accession and advancement.[2] An increasing number of young adults in the general population do not meet the current weight-for-height standards.[3] Among 18-year olds who applied for military service in 2006, 35% of males and 28% of females had a BMI above 25 kg/m.[4] Eighteen-year old military applicants may have a higher prevalence of overweight than eighteen-year olds in the general population.[5]

Despite physical fitness and body fat standards, many active service members receive clinical diagnoses of overweight during routine medical examinations and other outpatient encounters. This report documents prevalences and trends of outpatient medical encounters for overweight/obesity among active component members of the U.S. Armed Forces during the past 11 years.

Methods:

The surveillance period was January 1998-December 2008. The surveillance population included all individuals who served in the active component of the U.S. military any time during the surveillance period. Outpatient records routinely maintained in the Defense Medical Surveillance System were searched to identify U.S. military members with diagnoses of "overweight/obesity."

For this report, the endpoint of data summaries and analyses were outpatient medical encounters with diagnoses specific for/suggestive of overweight/obesity ("clinical overweight"). A medical encounter for clinical overweight was defined as at least one of the following: an outpatient encounter with a diagnosis of "overweight or obesity" (ICD-9-CM: 278.00-278.02); an outpatient encounter with a V-coded diagnosis indicating a body mass index above 25 kg/m^2 for adults (V85.2-V85.4); or an outpatient encounter with a pediatric body mass index above the 85th percentile for persons up to 20 years of age (V85.53, V85.54).

For each year of the surveillance period, the prevalence of clinical overweight was determined by dividing the number of service members with at least one overweight/obesity diagnosis by the number of individuals who served in the active component, overall and for each demographic subgroup.

Finally, outpatient encounters with primary diagnoses (dx1) of joint and back disorders (ICD-9-CM: 719 and 724) were assessed during the year prior to the first overweight/obesity diagnosis per individual.

Results:

From 1998 to 2008, the number and prevalence of active component service members who received at least one outpatient diagnosis of overweight/obesity increased more than 2.5-fold (1998: n=25,652; 1.6%; 2008: n=68,786, 4.4%) **(Table 1, Figure 1).** In general, annual prevalences of medical encounters for clinical overweight were low and stable between 1998 and 2002 but increased rapidly between 2002 and 2008 **(Figure 1).**

In 2008, the highest prevalences of clinical overweight were among females (7.2%), health care workers (6.9%), Air

Figure 1. Crude overall number and percentage of service members who received outpatient diagnoses of overweight, by calendar year, active component, U.S. Armed Forces, January 1998-December 2008

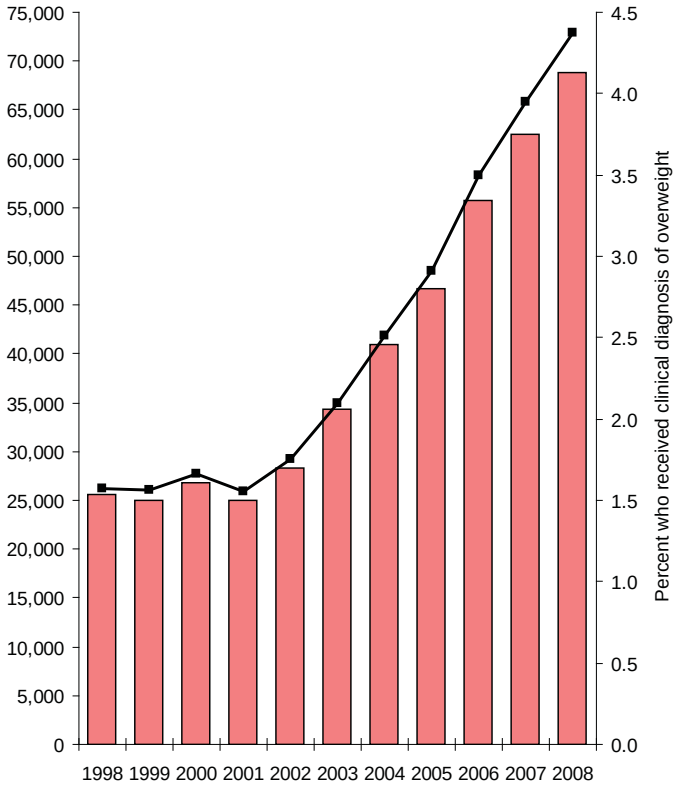


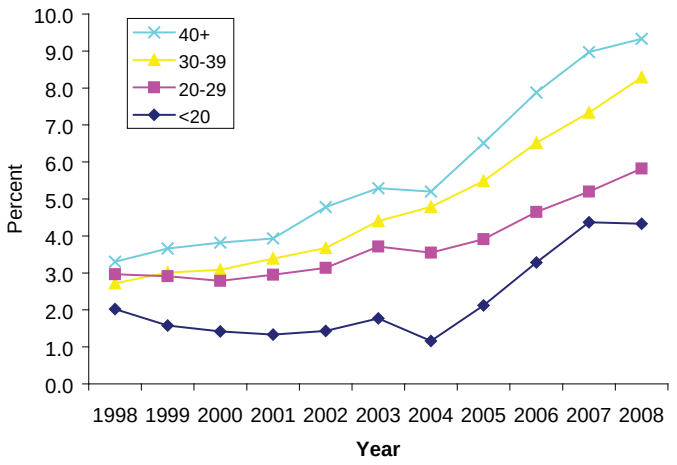
Table 1. Annual number and percentage of service members who received an outpatient diagnosis of overweight*, by calendar year, active component, U.S. Armed Forces, January 1998-December 2008

	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Total	25,652	1.6	25,010	1.6	26,744	1.7	25,016	1.6	28,316	1.8	34,333	2.1	41,002	2.5	46,684	2.9	55,716	3.5	62,569	4.0	68,786	4.4
Service																						
Army	12,690	2.3	11,213	2.1	12,243	2.2	11,393	2.1	12,298	2.2	15,201	2.7	23,373	4.1	23,856	4.3	26,504	4.7	25,323	4.4	28,477	4.8
Navy	4,462	1.0	3,888	0.9	3,632	0.9	4,163	1.0	4,620	1.1	4,851	1.2	5,773	1.4	8,424	2.1	10,215	2.6	11,465	3.1	12,177	3.4
Air Force	6,787	1.7	8,618	2.2	9,608	2.5	7,939	2.0	10,119	2.6	12,700	3.2	9,586	2.4	11,421	2.9	15,108	4.0	20,973	5.7	23,471	6.7
Marine Corps	1,587	0.8	1,149	0.6	1,027	0.5	1,309	0.6	1,018	0.5	1,149	0.6	1,490	0.7	1,857	0.9	2,253	1.1	3,048	1.4	2,646	1.2
Coast Guard	126	0.3	142	0.4	234	0.6	212	0.5	261	0.6	432	1.0	780	1.8	1,126	2.6	1,636	3.8	1,760	4.0	2,015	4.6
Sex																						
Male	18,350	1.3	17,869	1.3	19,302	1.4	17,343	1.3	19,788	1.4	23,964	1.7	30,882	2.2	35,349	2.6	42,068	3.1	47,194	3.5	52,439	3.9
Female	7,302	3.1	7,141	3.1	7,442	3.1	7,673	3.2	8,528	3.5	10,369	4.2	10,120	4.1	11,335	4.8	13,648	5.8	15,375	6.6	16,347	7.2
Race/ethnicity																						
White, non-Hispanic	13,673	1.4	14,768	1.5	16,403	1.6	15,042	1.5	16,826	1.6	19,985	1.9	23,703	2.3	27,033	2.7	32,584	3.2	37,308	3.7	40,475	4.0
Black, non-Hispanic	5,731	1.8	5,501	1.8	5,909	1.9	5,736	1.8	6,513	2.1	8,055	2.7	9,698	3.4	10,371	3.8	11,861	4.5	12,753	5.0	13,948	5.5
Other	6,248	1.9	4,741	1.5	4,432	1.6	4,238	1.5	4,977	1.7	6,293	2.1	7,601	2.5	9,280	3.0	11,271	3.6	12,508	3.9	14,363	4.6
Age																						
<20	1,926	0.9	1,402	0.6	1,676	0.6	1,402	0.5	1,483	0.6	1,647	0.6	1,393	0.6	2,264	1.0	2,642	1.2	3,698	1.8	3,362	1.6
20-24	8,793	1.6	7,932	1.4	8,865	1.5	8,308	1.4	9,514	1.5	11,291	1.8	13,070	2.0	13,668	2.2	14,882	2.4	15,667	2.5	17,818	3.0
25-29	6,167	1.7	6,028	1.7	6,086	1.7	5,555	1.7	6,072	1.8	7,715	2.2	9,231	2.5	10,372	2.8	12,537	3.4	14,007	3.7	16,064	4.2
30-34	3,434	1.2	3,522	1.3	3,558	1.3	3,419	1.4	3,764	1.5	4,766	1.9	6,162	2.4	7,192	2.9	8,572	3.5	9,626	4.0	10,854	4.6
35-39	3,361	1.4	3,812	1.6	4,098	1.7	3,758	1.6	4,248	1.9	4,972	2.2	6,182	2.8	7,005	3.4	8,947	4.4	10,200	5.0	10,856	5.5
40+	1,971	1.3	2,314	1.6	2,461	1.7	2,574	1.8	3,235	2.2	3,942	2.6	4,964	3.1	6,183	3.9	8,136	5.3	9,371	6.2	9,832	6.6
Marital status																						
Single	9,820	1.4	8,795	1.2	9,978	1.3	9,516	1.2	10,758	1.3	12,596	1.6	14,865	1.8	16,397	2.2	18,173	2.5	20,251	2.8	21,937	3.1
Married	14,771	1.6	15,031	1.7	15,466	1.8	14,318	1.7	16,182	1.9	19,955	2.3	24,096	2.7	27,900	3.1	34,391	3.9	38,693	4.3	42,438	4.8
Other	1,061	1.4	1,184	1.6	1,300	1.4	1,182	1.6	1,376	1.8	1,782	2.5	2,041	2.8	2,387	3.3	3,152	4.2	3,625	4.6	4411	5.6
Military occupation																						
Combat	3,292	1.2	2,939	1.1	3,057	1.2	2,489	1.0	3,027	1.2	3,414	1.3	5,454	2.1	6,707	2.2	7,105	2.7	6,441	2.5	8,076	3.1
Health care	3,338	2.4	3,448	2.6	3,263	2.5	3,099	2.3	3,756	2.8	4,076	3.1	4,295	3.2	5,573	4.2	8,189	6.2	8,560	6.5	8,799	6.9
Other	19,022	1.5	18,623	1.5	20,424	1.6	19,428	1.5	21,533	1.7	26,843	2.1	31,253	2.4	34,404	2.7	40,422	3.2	47,568	3.8	51,911	4.2

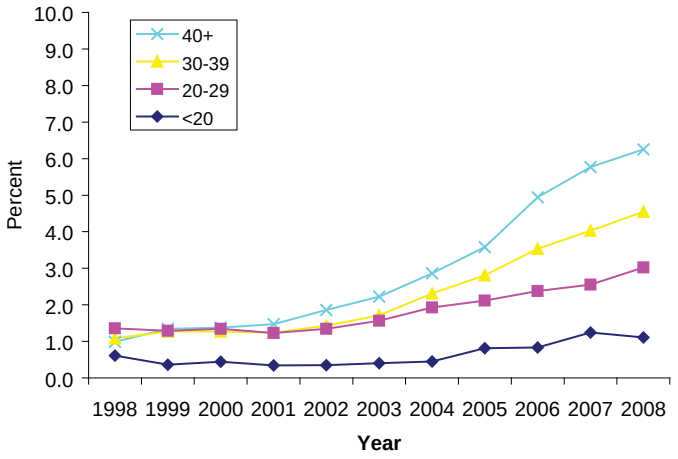
* ICD-9-CM: 278.0 Overweight and obesity, V85.2 Body Mass Index between 25-29, V85.3 Body Mass Index between 30-39, V85.4 Body Mass Index 40 and over. For individuals up to 20 years of age: V85.53 and V85.54.

Figure 2a-b. Annual percents of female/ male service members who received clinical diagnosis of overweight, by age group, active component, U.S. Armed Forces, 1998-2008

a. Female



b. Male



Force members (6.7%), and those older than 40 years (6.6%). The lowest prevalences of clinical overweight in 2008 were among Marines (1.2%) and the youngest aged (<20 years) (1.6%).

From 1998 to 2008, the largest absolute increases in annual prevalences (unadjusted) of clinical overweight were among service members older than 40 (1998-2008, prevalence difference [PD]: 5.4%), Air Force members (PD: 5.0%), and those with health care occupations (PD: 4.5%). During the period, the smallest absolute increases in clinical overweight were among Marines (PD: 0.4%) and the youngest aged (PD: 0.8%).

Throughout the period, females were approximately twice as likely as males to receive clinical diagnoses of overweight **(Table 1)**. However, during the period prevalences of clinical overweight increased among males and females in all age groups — the majority of the increases occurred during the last five years of the period **(Figures 2a-b)**. Between 2003 and 2008, the percentages of teenaged females who received clinical diagnoses of overweight more than doubled, from 1.8% to 4.3% **(Figure 2a)**. Among male service members, annual prevalences of overweight diagnoses in all age groups were below 2% until 2003; after 2003, annual prevalences of clinical overweight monotonically increased in each age group of males except the youngest **(Figure 2b)**. By 2008, prevalences of clinical overweight among males in each age-stratum over 20 years were 3.0% (20-29 years), 4.5% (30-39 years) and 6.3% (40 years and older).

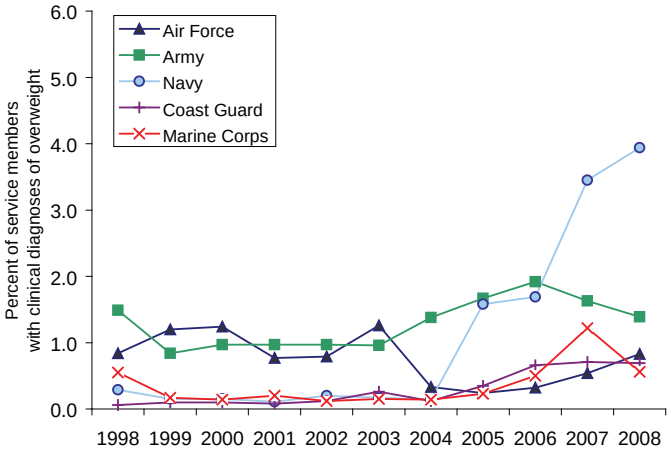
Throughout the period among the Services, the Air Force had the largest absolute increases in annual prevalences of clinical overweight diagnoses — the increases among Air Force members affected all age groups except the youngest **(Figure 3a-d)**. Of interest, in 2004 (following implementation of the Fit to Fight program), there were sharp but temporary declines in prevalences of clinical overweight among Airmen in their teens and twenties **(Figures 3a-b)**; however, by 2008, 5.3% of Airmen in their twenties received clinical diagnoses of overweight.

Until 2003, annual prevalences and trends of clinical overweight were generally similar among Army and Air Force members. However, in each age stratum of soldiers older than 20, prevalences of clinical overweight climbed sharply from 2003 to 2006 and then leveled-off; among similarly aged Air Force members, annual prevalences continued to increase after 2006 **(Figures 3a-d)**. In 2008, 4.3%, 5.4% and 6.4% of soldiers in their twenties, thirties and 40 and older, respectively, received clinical diagnoses of overweight.

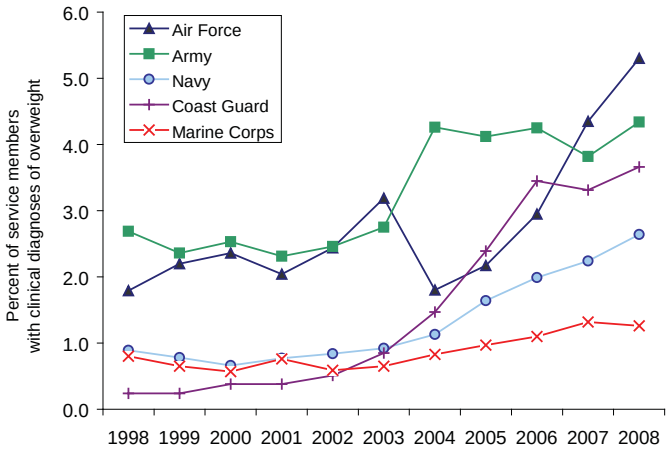
In 2004, very few teenaged members of the Navy had clinical diagnoses of overweight; by 2008, the prevalence of clinical overweight among teenaged sailors had increased to 3.9%. Annual prevalences of clinical overweight among sailors older than 30 sharply increased from 2003 until

Figure 3a-d. Annual percents of service members who received clinical diagnosis of overweight, by year, active component, U.S. Armed Forces, 1998-2008

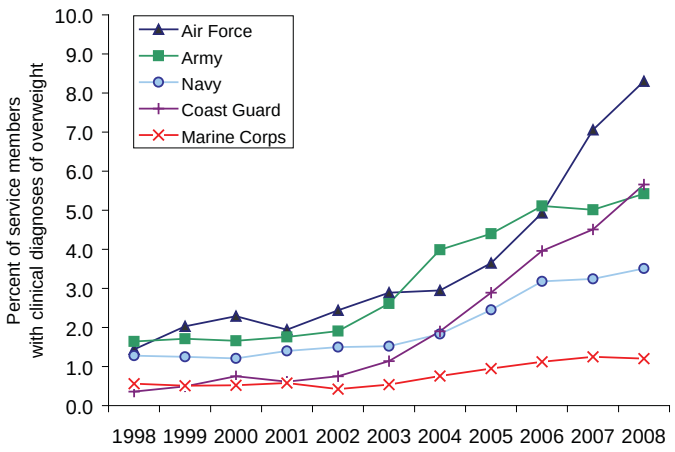
a. < 20 years



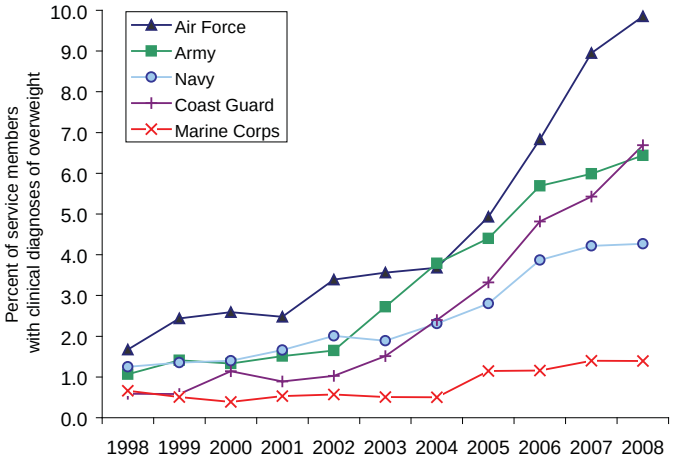
b. 20-29 years



c. 30-39 years



d. 40+ years



2006 and then leveled (trends were similar but prevalences lower than among similarly aged members of the Army). **(Figure 3a-d).**

Of the Services, the Marine Corps had the lowest annual prevalences of overweight diagnoses. In each age group of Marines, annual prevalences of clinical overweight were less than one percent and stable until 2003, and then increased slightly through 2007 **(Figure 3a-d; Table 1).**

Diagnoses most often reported during the same medical encounters at which overweight/obesity is diagnosed were "dietary surveillance and counseling", "general medical examination", "essential hypertension", "disorders of lipid metabolism", "other and unspecified disorders of joint" and "other and unspecified disorders of back". Among service members who received their first overweight diagnosis in 2008, 26% had at least one outpatient encounter for a joint disorder within the prior year, and 16% had at least one encounter for a back disorder in the prior year. The likelihood of having a joint or back disorder in the year prior to an overweight diagnosis increased with age **(Figure 4a)** and over time **(Figure 4b)**. Compared to the general population of service members, service members with initial overweight diagnoses in 2008 were approximately three times more likely to receive a joint or back disorder diagnosis within the past year (data not shown).

Data summary by Gi-Taik Oh, Data Analysis Group, AFHSC.

Editorial comment:

The epidemic of obesity in the general U.S. population is well documented and highly publicized. Currently, approximately one of five young adult Americans (18 and 34 years old) are obese (BMI>30), and the prevalence of obesity among young adults has more than doubled since the early 1990s. Not surprisingly, the increase of obesity in the general population is reflected in higher BMIs and more "medically unfit for service" rejections among civilian applicants for military service.

Military service is inherently physically demanding — many military activities require significant physical strength and endurance. Regular physical exercise and periodic

Figure 4a. Percent of service members with at least one medical encounter for "disorder of back" or "disorder of joint" within one year prior to incident diagnosis of overweight or obesity, by age group and gender, active component, U.S. Armed Forces, 2008

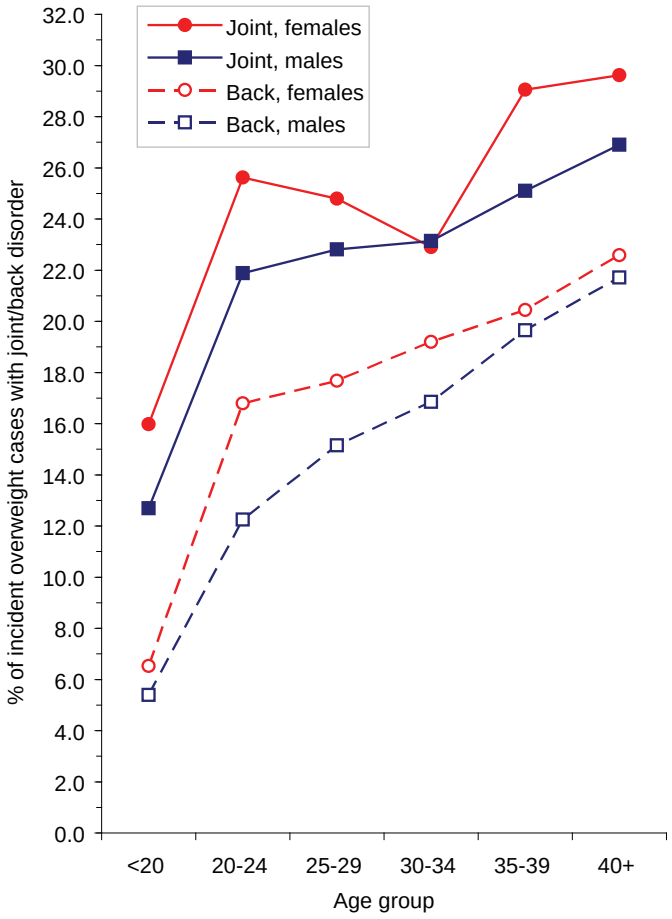
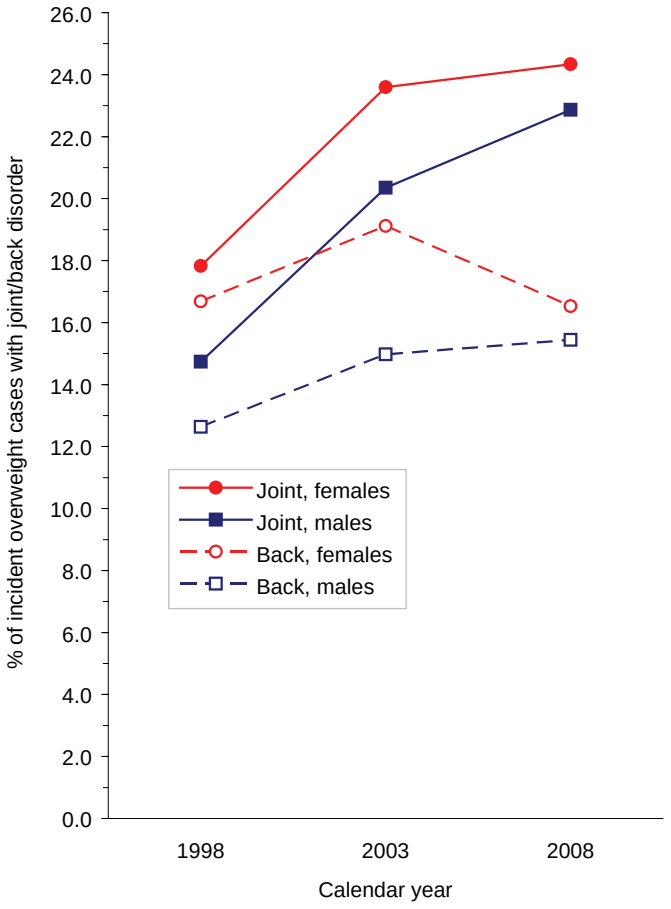


Figure 4b. Percent of service members with at least one medical encounter for "disorder of back" or "disorder of joint" within one year prior to incident diagnosis of overweight or obesity, by gender, active component, U.S. Armed Forces, 1998, 2003, 2008



fitness testing are important parts of the training regimens of most military units; also, military members must maintain compliance with Service-specific height-weight standards to continue service. For these reasons, active military members have been considered relatively immune to the obesity epidemic. The results of this report suggest otherwise.

In the past decade among active military members in general, the percent of military members who experienced medical encounters for overweight/obesity has steadily increased; and since 2003, rates of increase have generally accelerated. Among military members in general, prevalences of overweight/obesity diagnoses are higher among females than males and increase with age. However, during the surveillance period, prevalences of overweight/obesity increased among both males and females in every age group — particularly so after 2003.

Among the services, the Air Force and Marine Corps had the highest and lowest overall prevalences of medical encounters for overweight/obesity, respectively. For many reasons, prevalences of clinical overweight are not directly comparable among the Services. For example, prevalences of clinical overweight are generally higher among females than males and increase with age. Thus, differences in prevalences of clinical overweight across the Services reflect at least in part differences in their gender and age distributions, e.g., the Air Force has the highest and the Marine Corps the lowest relative numbers of females and older members.

The results of this report should be interpreted with consideration of its limitations. For example, this report was based on diagnoses of overweight/obesity reported on standard medical records rather than actual measurements of heights and weights. Prevalence and trends of "overweight/obesity" may reflect changes in clinical practice (e.g., referrals for nutritional counseling), medical administrative procedures (e.g., diagnostic coding), and/or health care seeking behaviors rather than actual changes in overweight/obesity prevalence. Also, the finding of higher numbers of medical encounters for overweight/obesity may reflect increasing uses of medical care for medical/nutritional counseling by, rather than increasing numbers of, overweight/obese service members. If so, the finding may reflect increasing awareness of the adverse health effects of overweight/obesity by affected service members, more effective community health education efforts, and/or more aggressive clinical prevention programs related to obesity, exercise, and nutrition.

Still, the suggestion of significantly increasing prevalences of overweight/obesity among active service members is not implausible. For example, when not deployed or training, many service members live, shop, and recreate in civilian communities. "Fast food" restaurants and physically passive recreational outlets (e.g., videogames, television, movies) are ubiquitous in both military and civilian communities. It would be surprising, therefore, if military members were not at risk from the general epidemic of obesity — to the extent they have unhealthy dietary habits and sedentary recreational activities.

Overweight/obesity is a significant military medical concern because it is associated with decreased military operational effectiveness (e.g., physical fitness) and both acute and chronic adverse health effects (e.g., musculoskeletal disorders, cardiovascular diseases, cancers). In this report, 23% and 16% of service members diagnosed with overweight/obesity in 2008 had at least one medical encounter for a joint and back disorder, respectively, within the prior year. Joint and back disorders are among the leading causes of morbidity, lost duty time, and health care costs among military members in general; and rates of these conditions among "overweight/obese" military members are three times higher than among service members overall.

The results of this analysis suggest that the U.S. military is significantly affected in many ways by the obesity epidemic among young adult Americans. "Nutritional fitness" should be a priority of military medical and line leaders at every level.

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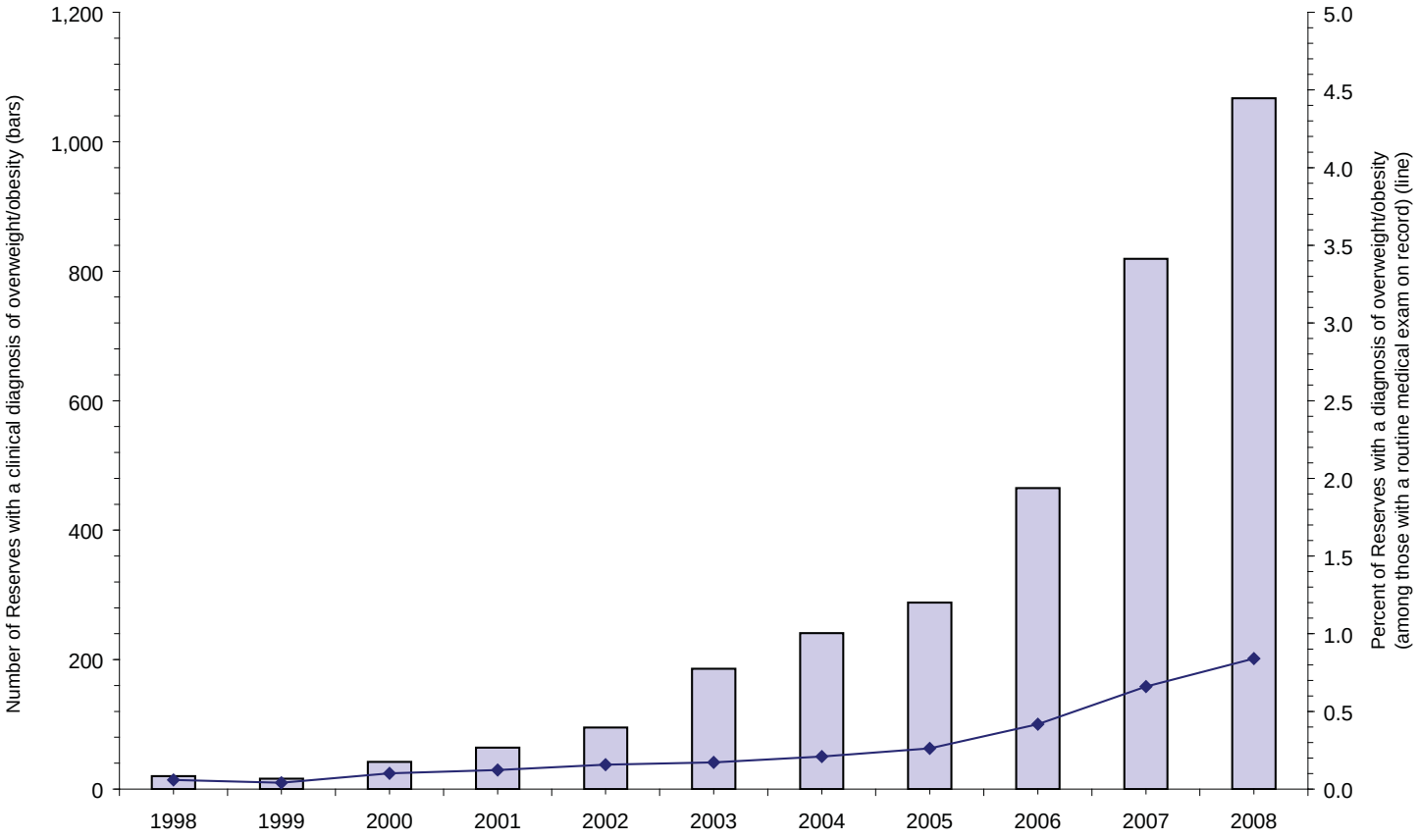
SURVEILLANCE SNAPSHOT:
Diagnoses of Overweight/Obesity among Reserve Component Members

Reserve component members who received a diagnosis of overweight/obesity during a routine medical examination, among those with a routine medical examination on record, by year, U.S. Armed Forces, 1998-2008



Update: Malaria, U.S. Armed Forces, 2008

Malaria is a mosquito-transmitted parasitic disease that is endemic throughout the tropics and in some temperate regions. Four *Plasmodium* species are capable of infecting humans and causing clinically significant illness: *Plasmodium falciparum* (the most deadly), *Plasmodium vivax* (the most common), *Plasmodium ovale*, and *Plasmodium malariae*.

For centuries, malaria has threatened the health and operational capabilities of military forces in malaria endemic areas.[1,2] Currently, U.S. service members are at risk of malaria infection when they train, conduct operations, or are permanently assigned in endemic areas; or when they visit malarious areas during personal travels. Since the mid-1990s, most malaria cases among U.S. service members have resulted from *P. vivax* infections acquired during summer-fall seasons near the demilitarized zone in Korea.[3-5] Since the beginning of Operation Enduring Freedom in 2001, *P. vivax* has threatened U.S. military forces in Afghanistan; in 2002, 38 U.S. Army Rangers acquired vivax malaria while operating in eastern Afghanistan.[6,7] This report summarizes the malaria experiences of U.S. service members during calendar year 2008 and compares it to recent experience.

Methods:

The Defense Medical Surveillance System was searched to identify inpatient medical encounters and reportable medical events that included primary (first-listed) diagnoses of malaria (ICD-9-CM: 084.0-084.9) among active and Reserve component members of the U.S. Armed Forces during calendar years 2002 through 2008. For this summary, only one episode of malaria per service member was included. When multiple records were available for a single case, the date of the earliest was considered the date of clinical onset, and the most specific diagnosis (typically from an inpatient record) was used to classify the species type.

Presumed locations of malaria acquisition were estimated using a hierarchical classification system: (1) cases diagnosed in Korea were considered acquired in Korea; (2) cases among service members who had been assigned to Korea within one year prior to diagnosis were considered acquired in Korea; (3) cases among service members who had deployed to Afghanistan within one year prior to diagnosis were considered acquired in Afghanistan; (4) cases documented as reportable medical events that listed exposures to other malaria endemic locations were considered acquired in those locations; (5) all remaining cases were considered acquired in "unknown" areas.

Results:

In 2008, 83 U.S. military members were diagnosed and/or reported with malaria. The number of cases in 2008 was similar to the numbers in 2002, 2004, 2005, and 2007 – but fewer than in 2003 and 2006 **(Figure 1)**.

Of all cases in 2008, approximately one-third were caused by *P. vivax* (n=26) and more than one-fifth (n=18) by *P. falciparum*. The percent (and number) of cases reported as *P. vivax* was the lowest of any year of the surveillance period. Of note, in 2008, the responsible agent was "unspecified" for nearly one-half (n=38) of all cases **(Table 1, Figure 1)**.

Of U.S. military members diagnosed/reported with malaria in 2008, most by far were males (98%), in their twenties (72%), in the Army (76%), and in the active component (92%) **(Table 1)**. More than two-thirds (n=55) of all cases diagnosed/reported in 2008 were caused by infections likely acquired in Afghanistan. Of note, only one case diagnosed during the year was considered acquired in Korea, while 22 (26.5%) cases had unknown areas of infection acquisition **(Table 2)**.

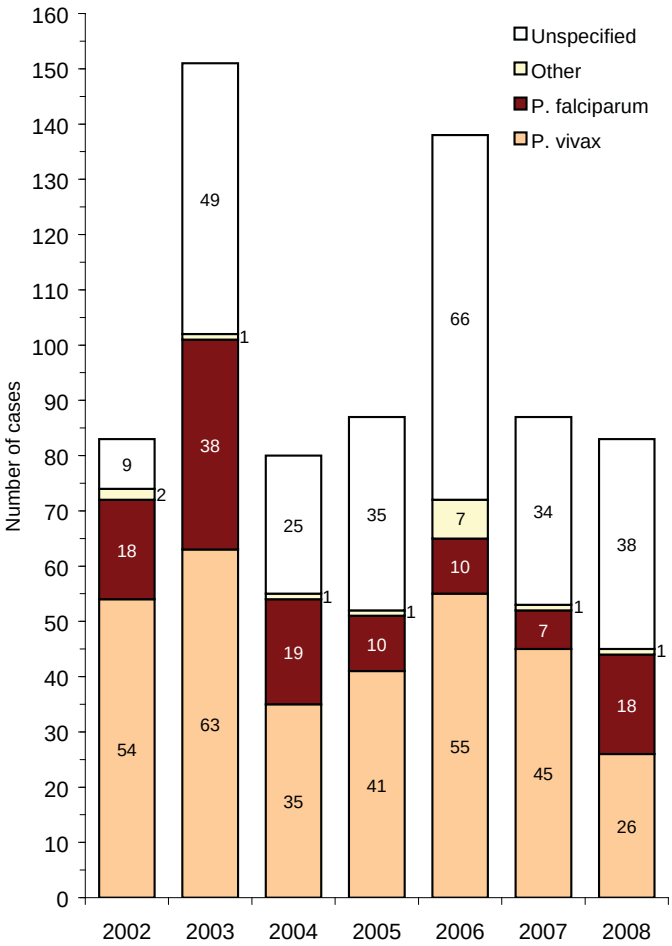
Table 1. Demographic and military characteristics of service members with malaria, by plasmodium species, U.S. Armed Forces, 2008

	Plasmodium species				
	P. vivax	*P. falciparum*	Unspecified or other	Total	Percent of total
Component					
Active	25	18	33	76	91.6
Reserve	1	0	6	7	8.4
Service					
Army	20	10	33	63	75.9
Navy	3	5	2	10	12.0
Air Force	2	2	1	5	6.0
Marine Corps	1	1	3	5	6.0
Gender					
Male	25	18	38	81	97.6
Female	1	0	1	2	2.4
Age group					
<20 years	0	1	1	2	2.4
20-24	13	4	14	31	37.3
25-29	6	6	17	29	34.9
30-34	2	2	4	8	9.6
35-39	2	4	0	6	7.2
40+ years	3	1	3	7	8.4
Race/ethnicity					
White non-Hispanic	20	7	25	52	62.7
Black non-Hispanic	2	4	7	13	15.7
Other	4	7	7	18	21.7
Total	26	18	39	83	100.0

Table 2. Malaria cases among U.S. service members, by location of diagnosis/report and presumed regions of infection acquisition, U.S. Armed Forces, 2008

Location of diagnosis/report	Presumed location of infection acquisition						
	Central Asia/ Middle East	Korea	Africa	Central/ South America	Unknown	Location total	% of total 2008 cases
More than 1 case each							
Landstuhl, Germany	11	0	0	0	4	15	18.1
Fort Bragg, NC	11	0	0	0	1	12	14.5
Fort Lewis, WA	6	0	0	0	1	7	8.4
Wuerzburg, Germany	4	0	0	0	0	4	4.8
Bethesda, MD	0	0	1	0	3	4	4.8
Philadelphia, PA	2	0	0	0	1	3	3.6
Agana, Guam	2	0	0	0	1	3	3.6
Camp Lejeune, NC	0	0	0	0	2	2	2.4
South Carolina	2	0	0	0	0	2	2.4
Other locations (with 1 case each)	15	1	1	2	8	27	32.5
Unknown	2	0	1	0	1	4	4.8
Total	55	1	3	2	22	83	100.0
% of total	66.3	1.2	3.6	2.4	26.5	100.0	

Figure 1. Malaria cases among U.S. service members, by plasmodium species, by calendar year of diagnosis/ report, 2002-2008



In 2008, malaria cases were diagnosed/reported from more than 30 different medical facilities in the United States, western Europe, and Pacific Islands; however, only three facilities treated/reported at least five cases — Landstuhl Regional Medical Center, Germany (n=15); Womack Army Medical Center, Fort Bragg, NC (n=12); and Madigan Army Medical Center, Fort Lewis, WA (n=7) — while 27 facilities treated/reported only one case each **(Table 2)**. Only four cases were diagnosed/reported at medical facilities outside of the United States or western Europe; of note, no cases were diagnosed/reported from Korea **(Table 2)**.

During each month of 2008, at least three malaria cases were diagnosed/reported among U.S. service members. The most cases overall were reported in July (n=16) and September (n=13). Cases acquired in Afghanistan were diagnosed/reported in each month of 2008 except March; however, there was a sharp peak in Afghanistan-acquired cases in July (n=16) **(Figure 2)**.

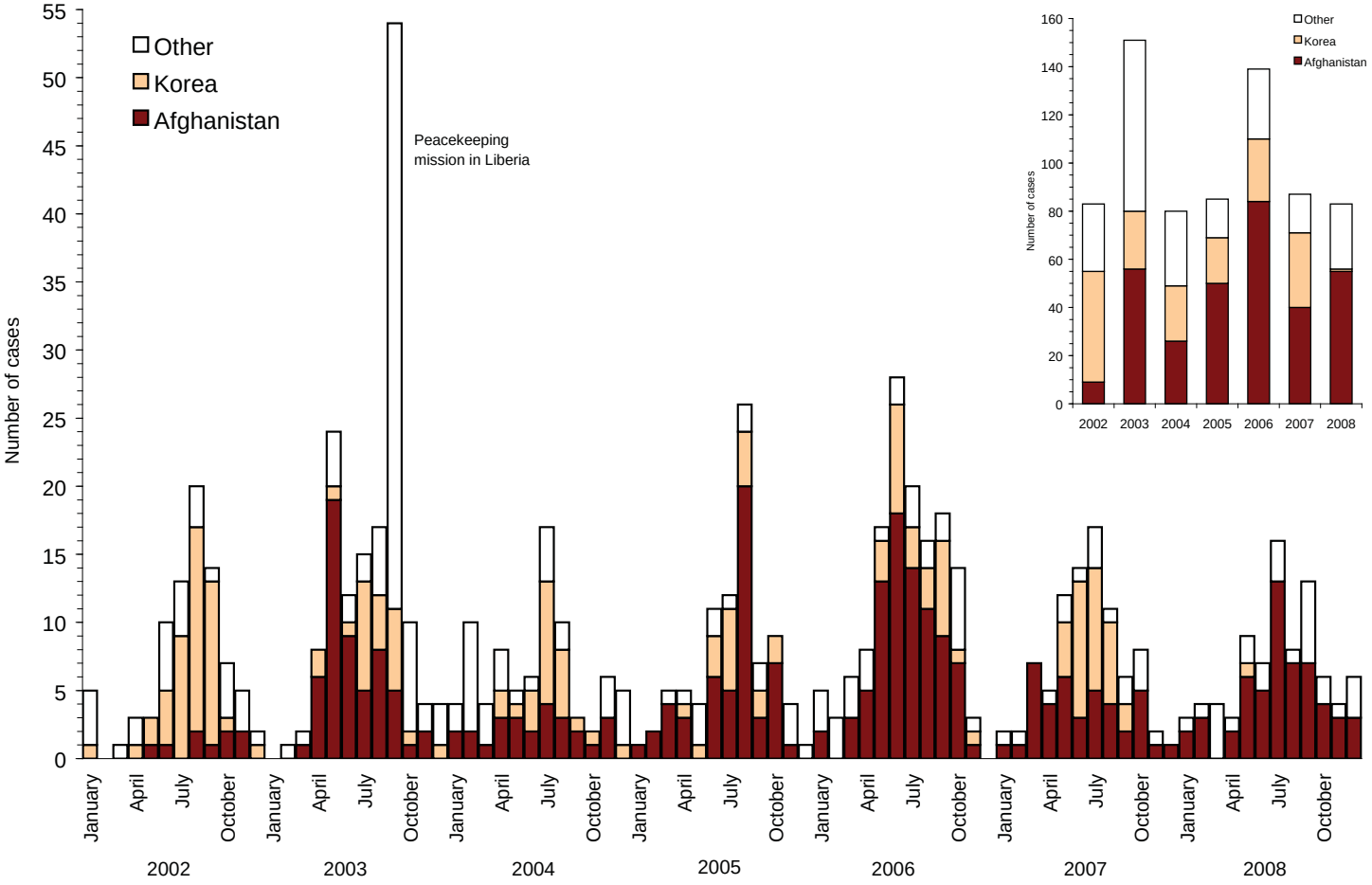
During the 7-year surveillance period, cases acquired in Afghanistan have been diagnosed/reported during every month of the year. In general, however, numbers of Afghanistan-acquired cases have slowly increased through the spring (February-April), plateaued during the summer (May-August), and declined through the fall (September-November) **(Figure 3)**.

Data summary by Stephen B. Taubman, PhD, Data Analysis Group, AFHSC.

Editorial comment:

The most significant finding of this summary relates to the decline in cases from Korea. From the mid-1990s

Figure 2. Malaria cases among U.S. service members, by estimated location of infection acquisition and month and year (inset) of clinical diagnosis/report, U.S. Armed Forces, January 2002-December 2008



through 2004, most cases of malaria among U.S. military members were due to *P. vivax* infections acquired near the demilitarized zone in Korea.[3-5,10] From 2004 through 2007, Korea-associated cases declined — undoubtedly due to prevention policies and practices of U.S. forces and improved and expanded malaria control programs (e.g., case detection and treatment; vector control; collaboration between civilian and military) in South and North Korea.[10-12] Remarkably, in 2008, no malaria cases were diagnosed/reported among U.S. service members in Korea, and only one case was considered Korea-acquired (a soldier who travelled to Korea in 2007).

Overall, the number of malaria cases diagnosed/reported among U.S. service members in 2008 was similar to the numbers in four of the prior six years – and significantly fewer than in the other two. Since 2006, most malaria cases among U.S. military members were likely due to infections acquired in Afghanistan. In 2008, 55 cases were considered acquired in Afghanistan — more than in 2007 (n=40) but fewer than in 2006 (n=84).

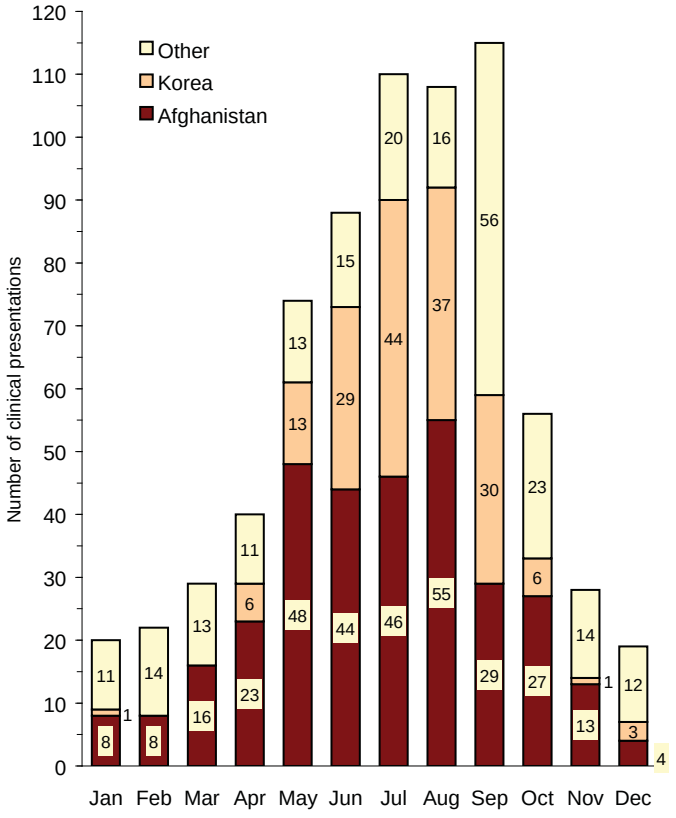
The findings of this report should be interpreted with consideration of its limitations. In particular, there are significant difficulties in ascertaining and tracking not only the numbers and types of clinical cases of malaria but also the times when and the locations where the underlying infections were acquired.[13] For several reasons, most cases of malaria among U.S. service members are diagnosed/reported at medical facilities outside of the areas where – and long after – the infections were acquired.[13] For example, the clinical manifestations of *P. vivax* infections acquired in Afghanistan may be suppressed until chemoprophylaxis taken routinely while deployed is terminated following deployment. Also, malaria parasites endemic in temperate climate regions often have long latency periods.[16] If terminal prophylaxis is not completed after leaving *P. vivax* endemic areas, an infection acquired months or years previously may be clinically expressed in a different (nonendemic) geographic location.[7,13] *P. vivax* infections acquired in Afghanistan or Korea may be clinically expressed outside of the areas where the infections were acquired.[5,13,15,16]

In 2008, malaria cases among U.S. military members were diagnosed at/reported during each month of the year except December from more than 30 locations throughout the United States and western Europe. Thus, most medical facilities where malaria cases are diagnosed/reported are not in the areas where the causal plasmodium infections were acquired. Providers of medical care to U.S. service members

— during all seasons and in all locations — should be alert for service members who present with clinical syndromes consistent with malaria and who traveled to or were assigned/deployed to malaria-endemic areas during the previous two years.

All soldiers at risk of malaria (and other arthropod-transmitted infections) should be informed of the nature of the risk; trained, equipped, and supplied to conduct indicated countermeasures; and monitored to ensure compliance. Personal protective measures against malaria include the proper wear of permethrin-impregnated uniforms; the use of bed nets and military-issued DEET-containing insect repellent; and compliance with prescribed chemoprophylactic drugs before, during, and after times of exposure in malarious areas.

Figure 3. Malaria diagnoses among U.S. service members, by location of acquisition and month of diagnosis, U.S. Armed Forces, January 2002-December 2008



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Update: Deployment Health Assessments, U.S. Armed Forces, December 2008

The force health protection strategy of the U.S. Armed Forces is designed to deploy healthy, fit, and medically ready forces, to minimize illnesses and injuries during deployments, and to evaluate and treat physical and psychological problems (and deployment-related health concerns) following deployment.

In 1998, the Department of Defense initiated health assessments of all deployers prior to and after serving in major operations outside of the United States.[1] In March 2005, the Post-Deployment Health Reassessment (PDHRA) program was begun to identify and respond to health concerns that persisted until or emerged within three to six months after returning from deployment.[2]

This report summarizes responses to selected questions on deployment health assessments completed since 2003. In addition, it documents the natures and frequencies of changes in responses from pre-deployment to post-deployment.

Methods:

Completed deployment health assessment forms are transmitted to the Armed Forces Health Surveillance Center (AFHSC) where they are incorporated into the Defense Medical Surveillance System (DMSS).[3] In the DMSS, data recorded on health assessment forms are integrated with data that document demographic and military characteristics and medical encounters (e.g. hospitalizations, ambulatory visits) at fixed military and other (contracted care) medical facilities of the Military Health System. For this analysis, DMSS was searched to identify all pre (DD2795) and post (DD2796) deployment health assessment forms completed since 1 January 2003 and all post-deployment health reassessment (DD2900) forms completed since 1 August 2005.

Results:

During the 12-month period from Janaury to December 2008, there were 408,527 pre-deployment health assessments, 369,124 post-deployment health assessments, and 318,632 post-deployment health reassessments completed at field sites, forwarded to the Armed Forces Health Surveillance Center, and archived in the Defense Medical Surveillance System **(Table 1)**.

Between January 2003 and December 2008, there were peaks and troughs in the numbers of pre-deployment and post-deployment health assessments that generally corresponded to times of departure and return of large numbers of deployers **(Figure 1)**. Since April 2006, the numbers of post-deployment health reassessments (PDHRA) completed per month have fluctuated in a range between approximately 17,000 and 37,000 **(Figure 1, Table 1)**.

From January to December 2008, nearly three-fourths (73.0%) of deployers rated their "health in general" as "excellent" or "very good" during pre-deployment health assessments. Smaller proportions of returned deployers rated their health as "excellent" or "very good" during post-deployment assessments (58.5%) and post-deployment reassessments (53.5%). There were increases in the proportions of deployers who rated their health as "fair" or "poor" from pre-deployment to post-deployment and from

Figure 1. Total deployment health assessment and reassessment forms, by month, U.S. Armed Forces, January 2003-December 2008

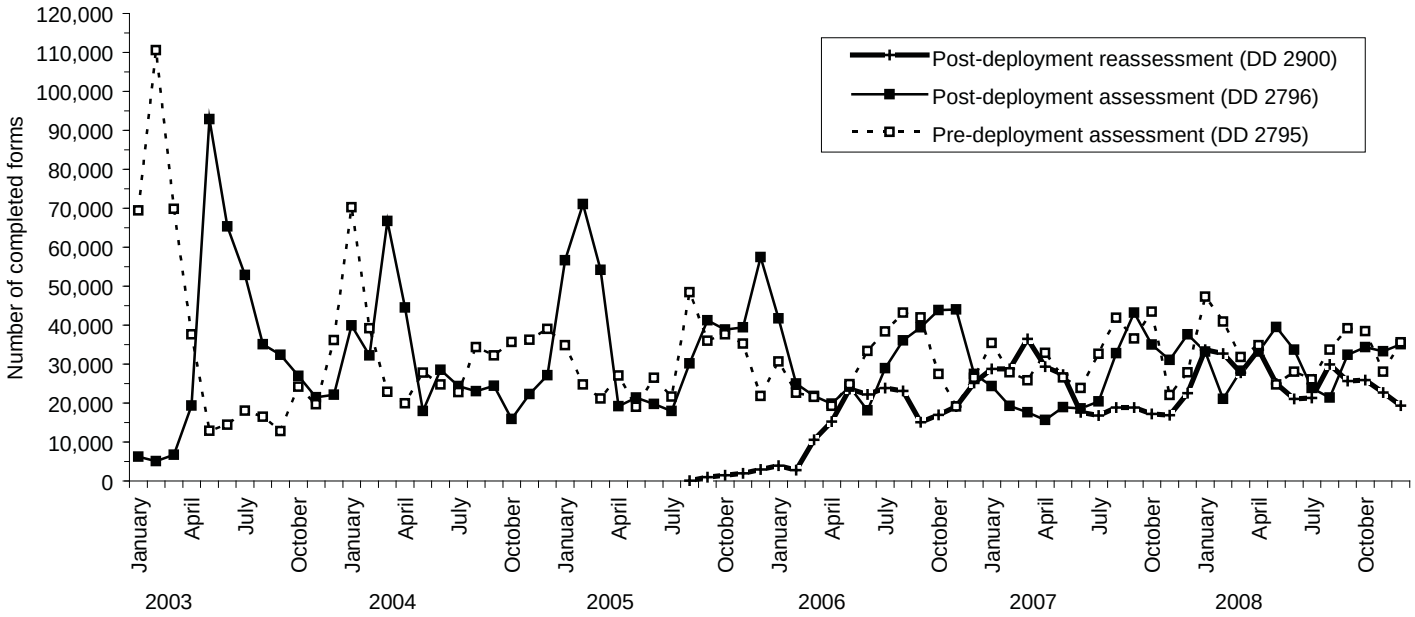


Table 1. Deployment-related health assessment forms, by month, U.S. Armed Forces, January 2008-December 2008

	Pre-deployment assessment DD2795		Post-deployment assessment DD2796		Post-deployment reassessment DD2900	
	No.	%	No.	%	No.	%
Total	**408,527**	**100**	**369,124**	**100**	**318,632**	**100**
2008						
January	47,275	11.6	33,213	9.0	33,680	10.6
February	40,878	10.0	21,025	5.7	32,714	10.3
March	31,786	7.8	28,242	7.7	27,762	8.7
April	34,866	8.5	33,185	9.0	33,648	10.6
May	24,778	6.1	39,497	10.7	24,993	7.8
June	28,067	6.9	33,676	9.1	21,052	6.6
July	26,027	6.4	23,877	6.5	21,316	6.7
August	33,665	8.2	21,367	5.8	29,892	9.4
September	39,144	9.6	32,344	8.8	25,616	8.0
October	38,433	9.4	34,317	9.3	25,871	8.1
November	28,025	6.9	33,295	9.0	22,729	7.1
December	35,583	8.7	35,086	9.5	19,359	6.1

immediate post-deployment to 3-6 months after returning. For example, prior to deploying, less than one of 40 (2.6%) deployers rated their health as "fair" or "poor"; upon returning from deployment, one of 14 (8.2%) deployers rated their health as "fair" or "poor"; and 3-6 months after returning, one of 7 (13.4%) deployers rated their health as "fair" or "poor" **(Figure 2).**

In the past 12 months, the proportion of deployers who assessed their general health as "fair" or "poor" was consistently low before deployment (mean, by month: 2.6%), higher at return from deployment (mean, by month: 8.1%), and highest 3-6 months after return from deployment (mean, by month: 13.2%) **(Figure 3).** There was relatively little variability in the proportions of deployers who rated their health as "fair" or "poor" on pre-deployment, and post-deployment reassessment questionnaires **(Figure 3).** However, the proportions of deployers who rated their health as "fair" or "poor" on the post-deployment questionnaire generally increased during the year from less then 6% in January to nearly 11% in November **(Figure 3).** Of deployers who completed health assessments both prior to and 3-6 months after returning from deployment, approximately one of 6 (16.3%) indicated significant declines (i.e., change of 2 or more categories on a 5-category scale) in their perceived general health states between the assessments **(Figure 4).**

In general, on post-deployment assessments and reassessments, deployers in the Army and in Reserve components were more likely than their respective counterparts to report health and exposure-related concerns. Among Reserve component members of the Army and Marine Corps, health and exposure-related concerns and indications for referrals were much greater 3-6 months after return from deployment (DD2900) than at the time of return deployment (DD2796). Of note, at the time of return, active component soldiers were the most likely of all deployers to receive mental health referrals; however, 3-6 months after returning, Reserve component members of the Army and

Figure 2. Percent distributions of self-assessed health status as reported on deployment health assesment forms, U.S. Armed Forces, January 2008-December 2008

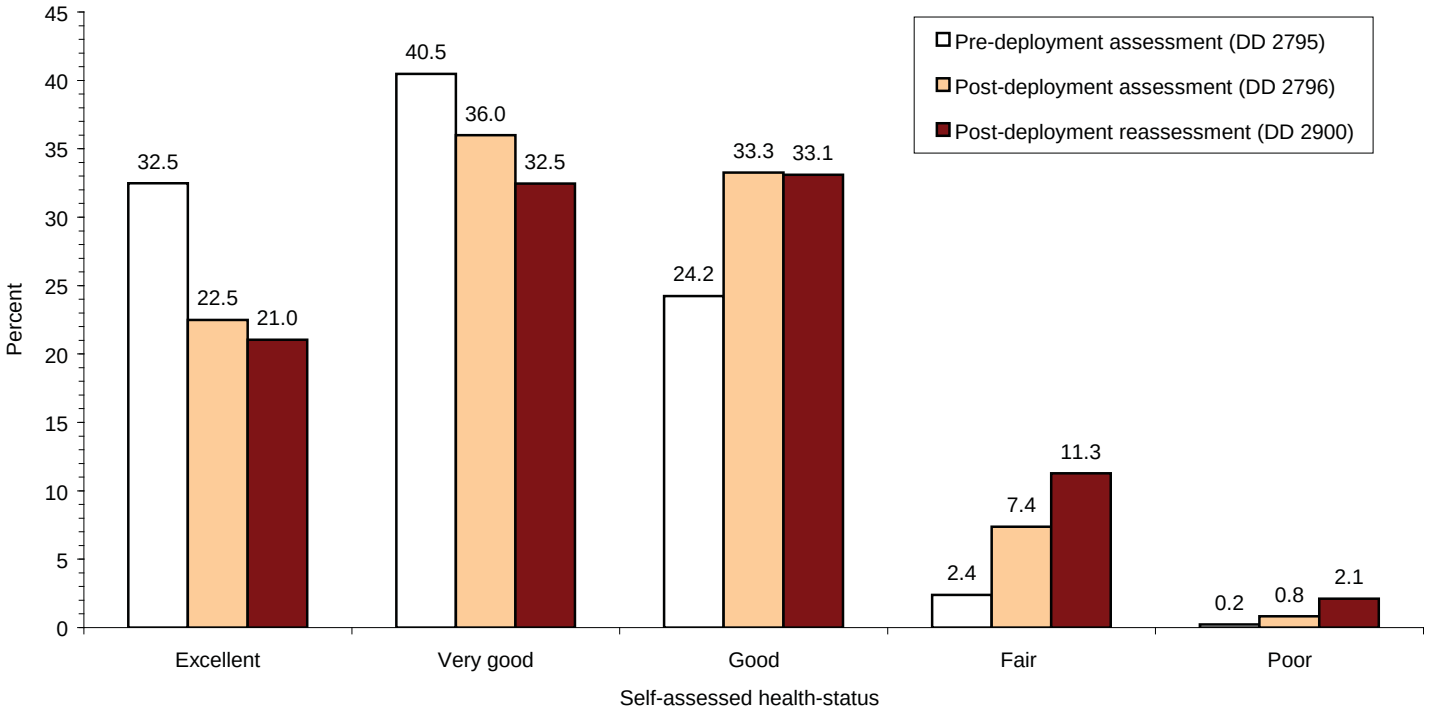
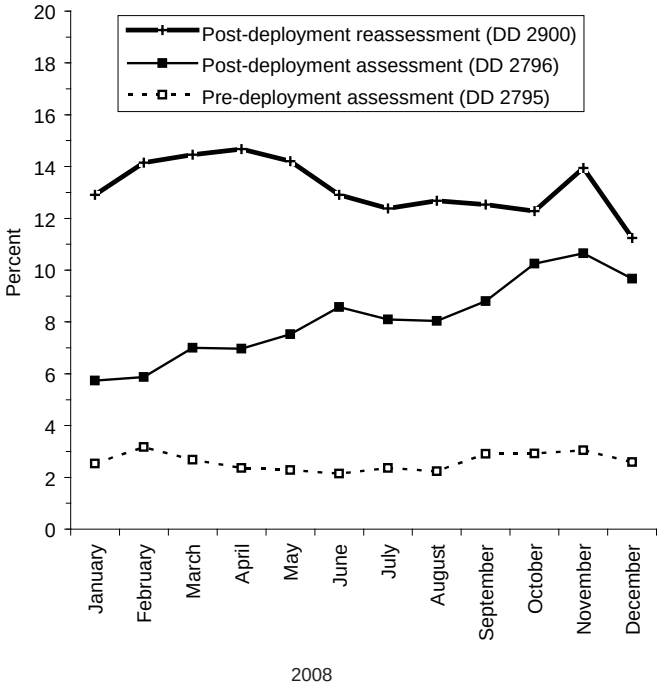


Figure 3. Proportion of deployment health assessment forms with self-assessed health status as "fair" or "poor", U.S. Armed Forces, January 2008-December 2008



Marine Corps were the most likely of all deployers to receive mental health referrals **(Table 2, Figures 5,6).**

Finally, in general, soldiers and Reserve component members were more likely than their respective counterparts to report "exposure concerns"; and both active and Reserve component members were more likely to report "exposure concerns" 3-6 months after compared to the time of return from deployment **(Table 2, Figures 6,7).**

Editorial comment:

A consistent finding of deployment-related health assessments is that deployers rate their general health worse when they return from deployment compared to before deploying, regardless of the Service or component. Deployments are inherently physically and psychologically demanding; and there are more – and more significant – threats to the physical and mental health of service members when they are conducting combat operations away from their families in hostile environments compared to when serving at their permanent duty stations (active component) or when living in their civilian communities (Reserve component).

Another consistent finding of deployment-related health surveillance is that, as a group, returned service members rate their general health worse and are more likely to report exposure concerns 3-6 months after returning from deployment compared to the time of return. Symptoms of post deployment stress disorder (PTSD) may emerge or worsen within several months after a life threatening experience (such as military service in a war zone). PTSD among U.S. veterans of combat duty in Iraq has been associated with higher rates of physical health problems after return from deployment.[4] Among British veterans of the Iraq war, Reservists reported more "ill health" than their active counterparts. Roles, traumatic experiences, and unit cohesion while deployed were associated with medical outcomes after

Figure 4. Proportion of service members whose self-assessed health status improved ("better") or declined ("worse") (by 2 or more categories on 5-category scale) from pre-deployment to reassessment, by month, U.S. Armed Forces, January 2008-December 2008

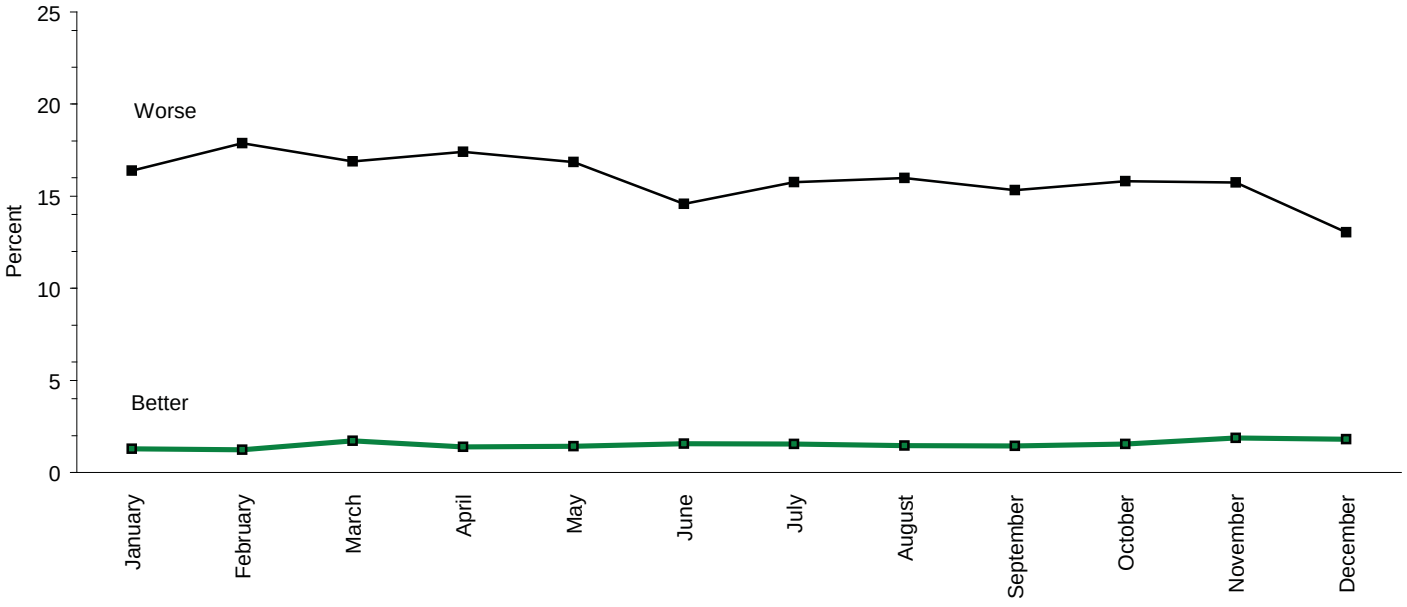


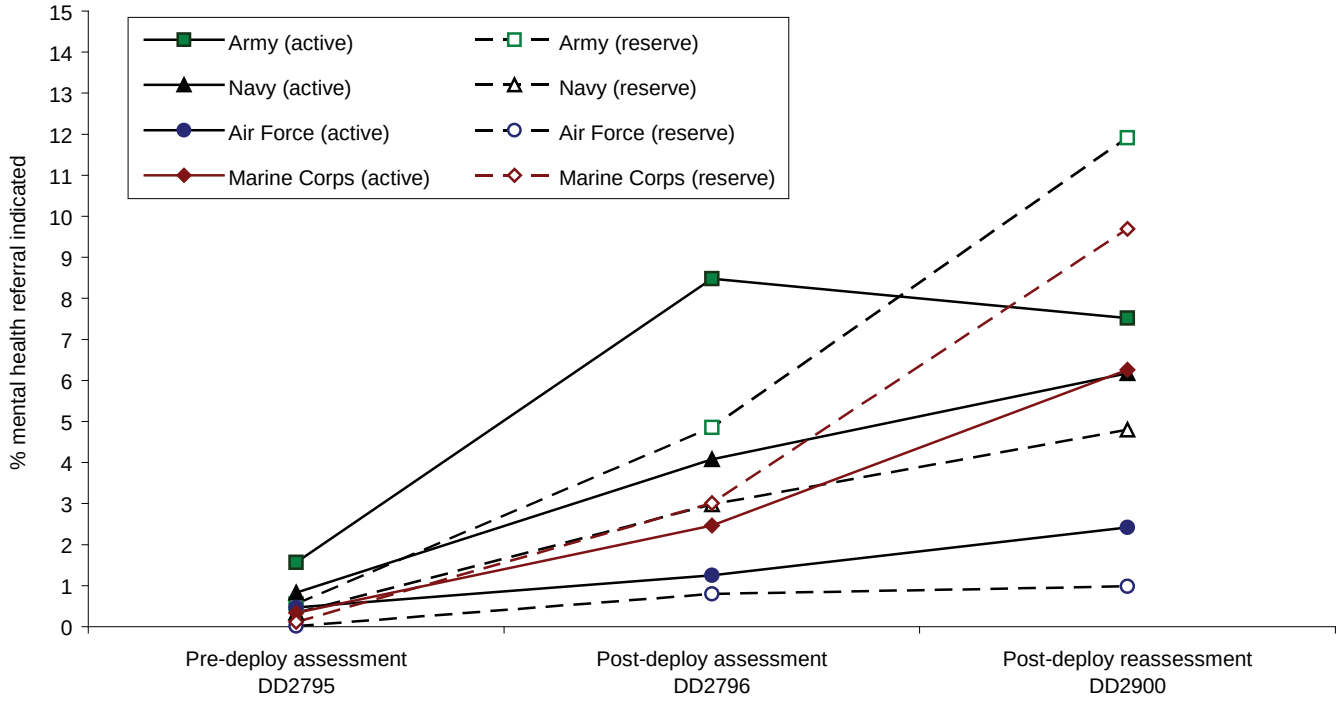
Table 2. Percentage of service members who endorsed selected questions/received referrals on health assessment forms, U.S. Armed Forces, January 2008-December 2008

	Army			Navy			Air Force			Marine Corps			All service members		
	Pre-deploy DD2795	Post-deploy DD2796	Reassess DD2900	Pre-deploy DD2795	Post-deploy DD2796	Reassess DD2900	Pre-deploy DD2795	Post-deploy DD2796	Reassess DD2900	Pre-deploy DD2795	Post-deploy DD2796	Reassess DD2900	Pre-deploy DD2795	Post-deploy DD2796	Reassess DD2900
Active component	n= 134,919	n= 124,776	n= 94,595	n= 16,043	n= 11,914	n= 8,285	n= 58,589	n= 51,268	n= 50,759	n= 30,930	n= 27,307	n= 40,743	n= 240,481	n= 215,265	n= 194,382
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
General health “fair” or “poor”	4.2	10.3	16.6	1.6	4.7	6.6	0.5	3.2	4.5	1.9	5.7	9.7	2.9	7.5	11.8
Health concerns, not wound or injury	12.3	25.4	34.1	5.1	13.7	17.2	2.1	8.3	13.9	3.8	12.4	25.0	8.3	18.5	26.5
Health worse now than before deployed	na	8.7	28.4	na	1.4	14.2	na	2.8	9.6	na	2.0	19.6	na	5.7	21.4
Exposure concerns	na	20.0	24.4	na	14.6	15.3	na	9.8	15.7	na	10.1	21.0	na	15.6	21.1
PTSD symptoms (2 or more)	na	12.8	17.8	na	4.8	8.2	na	2.7	3.3	na	4.4	10.6	na	8.5	12.4
Depression symptoms (any)	na	11.9	37.5	na	2.5	26.3	na	3.0	15.7	na	4.0	33.4	na	7.9	30.9
Referral indicated by provider (any)	5.9	32.6	24.4	5.7	21.5	17.8	1.5	11.6	8.8	5.4	19.5	27.6	4.8	24.9	20.9
Mental health referral indicated*	1.6	8.5	7.5	0.8	4.1	6.2	0.5	1.3	2.4	0.3	2.5	6.3	1.1	5.5	6.0
Medical visit following referral†	98.5	98.1	97.9	88.0	89.3	92.2	78.3	94.6	96.7	74.1	71.9	72.9	90.6	94.8	89.9

	Army			Navy			Air Force			Marine Corps			All service members		
	Pre-deploy DD2795	Post-deploy DD2796	Reassess DD2900	Pre-deploy DD2795	Post-deploy DD2796	Reassess DD2900	Pre-deploy DD2795	Post-deploy DD2796	Reassess DD2900	Pre-deploy DD2795	Post-deploy DD2796	Reassess DD2900	Pre-deploy DD2795	Post-deploy DD2796	Reassess DD2900
Reserve component	n= 67,781	n= 50,870	n= 75,284	n= 3,836	n= 3,980	n= 4,724	n= 15,113	n= 14,152	n= 14,003	n= 2,731	n= 3,137	n= 3,155	n= 89,461	n= 72,139	n= 97,166
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
General health “fair” or “poor”	2.1	10.7	19.5	0.6	7.5	9.7	0.3	4.1	4.6	1.2	8.4	9.9	1.8	9.2	16.0
Health concerns, not wound or injury	13.1	36.9	52.5	3.2	26.6	31.7	1.0	13.7	14.0	4.0	24.0	36.5	10.5	31.6	44.3
Health worse now than before deployed	na	14.0	37.9	na	4.9	23.4	na	4.3	9.9	na	3.5	25.0	na	11.2	31.9
Exposure concerns	na	26.0	37.2	na	34.4	28.1	na	14.9	20.0	na	18.9	29.2	na	24.2	33.5
PTSD symptoms (2 or more)	na	11.4	25.0	na	5.0	11.4	na	2.0	2.6	na	4.6	13.9	na	9.0	20.0
Depression symptoms (any)	na	13.6	40.3	na	3.9	26.7	na	2.6	13.7	na	5.8	32.9	na	10.7	34.8
Referral indicated by provider (any)	4.4	31.9	34.6	3.3	27.7	18.3	0.8	14.0	5.7	6.5	35.5	31.2	3.8	28.9	28.8
Mental health referral indicated*	0.6	4.9	11.9	0.3	3.0	4.8	0.0	0.8	1.0	0.1	3.0	9.7	0.4	4.0	9.6
Medical visit following referral†	95.9	98.0	30.4	83.1	84.2	34.7	54.3	62.5	40.2	80.3	64.0	29.5	93.4	91.2	30.8

*Includes behavioral health, combat stress and substance abuse referrals.
†Record of inpatient or outpatient visit within 6 months after referral

Figure 5. Percent of deployers with mental or behavioral health referrals, by Service and component, by timing of health assessment, U.S. Armed Forces, January 2008-December 2008



returning; however, PTSD symptoms were more associated with problems at home (e.g., reintegration into family, work, and other aspects of civilian life) than with events in Iraq.[5]

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Figure 6. Ratio of percents of deployers who endorse selected questions, Reserve versus active component, on pre-deployment health assessments (DD2795) and post-deployment health reassessments (DD2900), U.S. Armed Forces, December 2007-November 2008

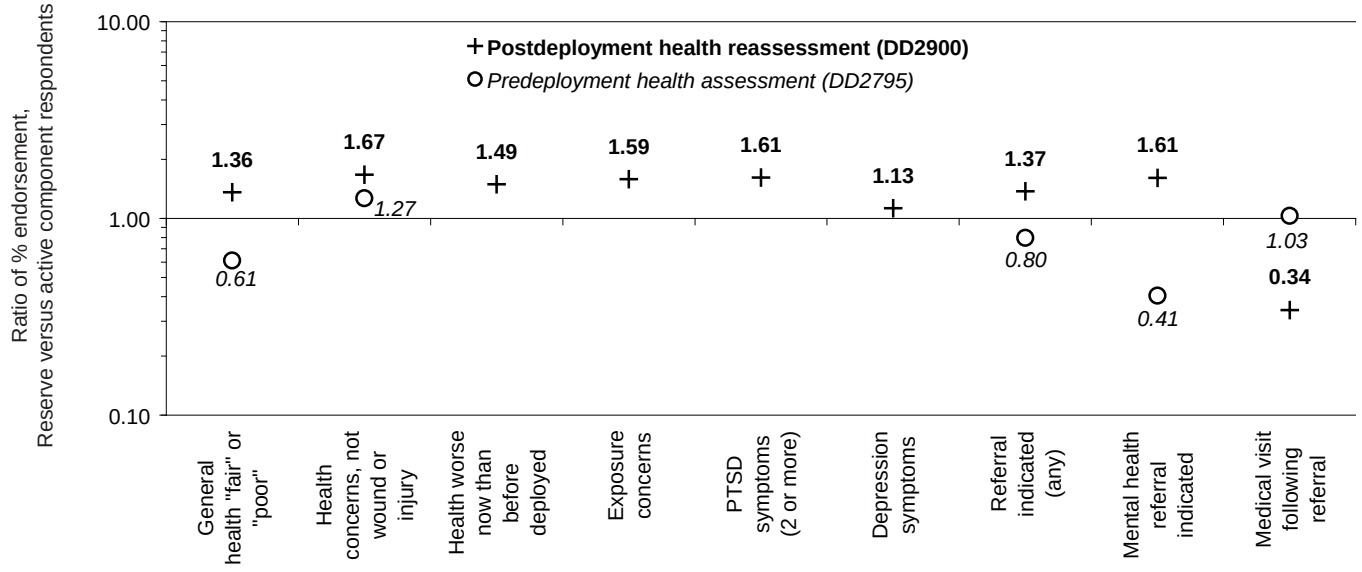
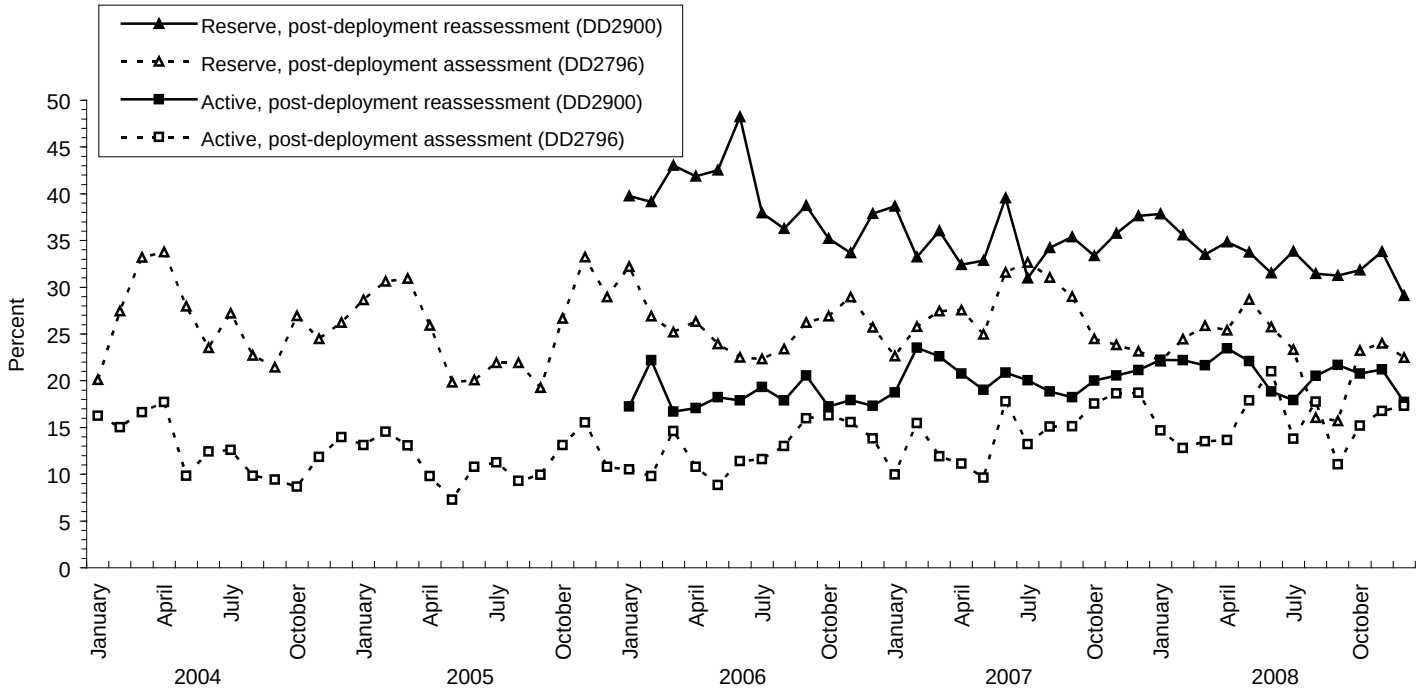
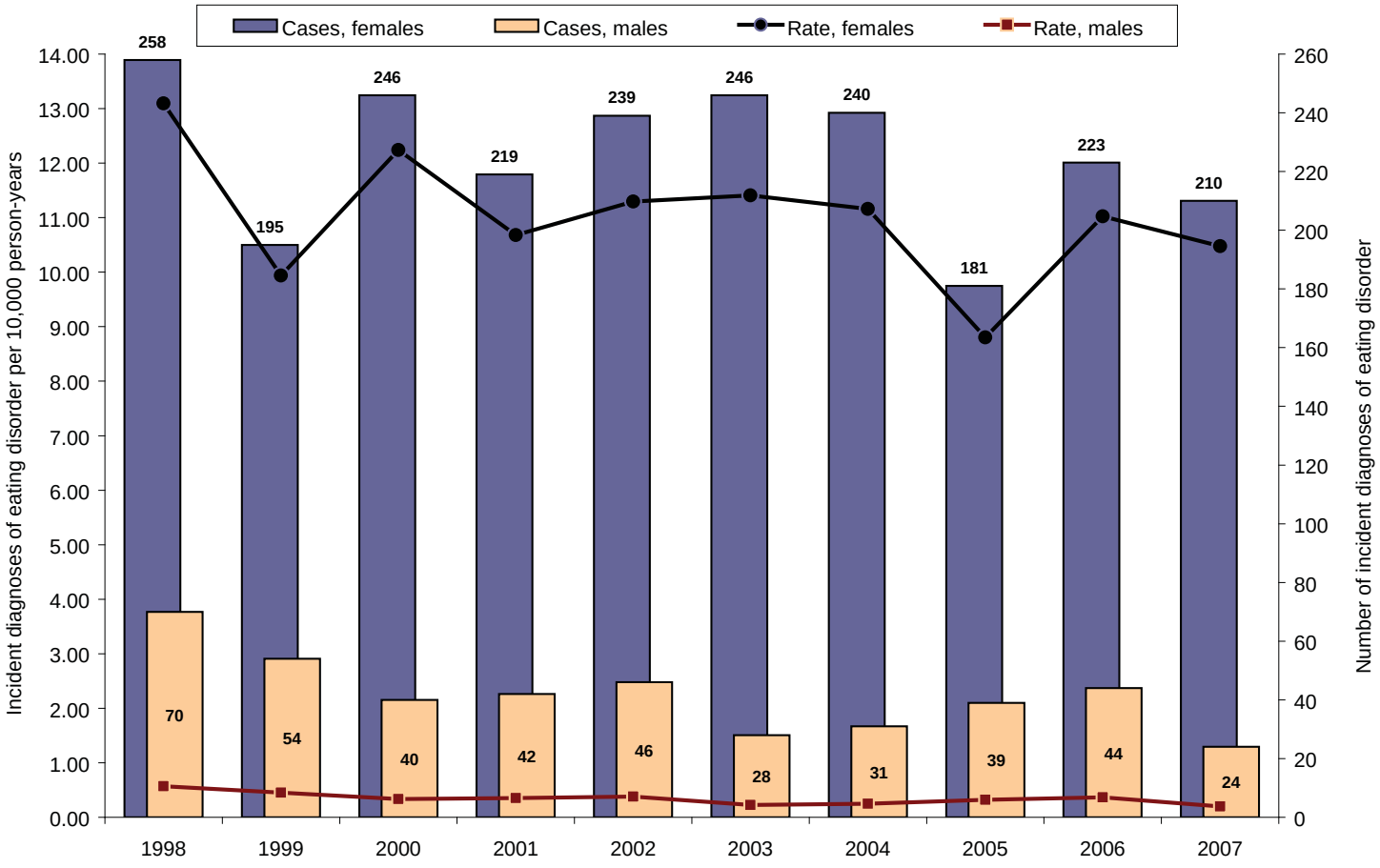


Figure 7. Proportion of service members who endorse exposure concerns on post-deployment health assessments, U.S. Armed Forces, January 2004-December 2008



SURVEILLANCE SNAPSHOT:
Eating Disorders

Frequencies and rates of incident diagnoses of eating disorders*, by gender, active component, U.S. Armed Forces, 1998-2007



*One inpatient or two or more outpatient encounters of ICD-9-CM:
307.1 Anorexia nervosa
307.51 Bulimia nervosa
307.50 Eating disorder, not otherwise specified

Sentinel reportable events for service members and beneficiaries at U.S. Army medical facilities, cumulative numbers* for calendar years through 31 December 2007 and 31 December 2008

Army

Reporting locations	Number of reports all events†		Food-borne								Vaccine preventable					
			Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
NORTH ATLANTIC																
Washington, DC Area	297	319	2	2	4	5	7	1	1	1	.	.	6	3	1	6
Aberdeen, MD	19	88	.	.	1	.	.	.	.	.	.	.	.	.	.	.
FT Belvoir, VA	238	289	8	8	2	1	8	14	4	4	.	.	.	.	1	.
FT Bragg, NC	1,344	1,699	2	1	.	.	20	20	2	4	.	.	.	.	.	.
FT Drum, NY	246	278	.	.	.	.	.	.	.	.	.	.	2	.	.	.
FT Eustis, VA	209	542	.	1	.	.	1	2	.	.	.	.	.	.	.	1
FT Knox, KY	287	538	4	3	.	.	2	1	4	.	.	.	2	.	.	.
FT Lee, VA	379	306	.	.	1	.	1	.	1	.	.	.	3	4	1	2
FT Meade, MD	93	240	.	.	.	1	1	.	.	1	.	.	.	.	.	.
West Point, NY	46	96	.	.	.	.	.	.	.	.	.	.	3	1	.	.
GREAT PLAINS																
FT Sam Houston, TX	562	773	1	.	3	2	8	14	1	12	.	.	4	.	7	.
FT Bliss, TX	213	618	.	.	.	.	.	14	.	1	.	.	.	.	.	.
FT Carson, CO	696	792	3	4	5	6	2	5	1	.	.	.	.	1	.	.
FT Hood, TX	2,219	2,373	15	6	3	3	19	38	10	6	.	.	.	.	1	2
FT Huachuca, AZ	98	113	1	.	.	.	6	2	.	2	.	.	.	1	.	.
FT Leavenworth, KS	50	54	1	.	.	.	.	.	2	.	.	.	.	.	.	.
FT Leonard Wood, MO	364	502	.	2	1	5	2	1	1	1	.	.	.	1	11	1
FT Polk, LA	245	174	.	1	3	.	5	1	.	1	.	.	.	.	1	1
FT Riley, KS	326	568	2	3	.	1	5	3	.	.	.	.	.	2	2	.
FT Sill, OK	183	221	.	.	.	.	2	3	.	.	.	.	.	1	1	.
SOUTHEAST																
FT Gordon, GA	731	875	.	2	.	.	7	14	4	19	.	.	1	1	.	2
FT Benning, GA	432	377	1	2	1	1	7	5	7	1	.	.	1	.	1	.
FT Campbell, KY	761	280	1	1	.	.	.	.	9	2	.	.	.	.	.	.
FT Jackson, SC	325	387	.	.	.	.	2	.	.	.	.	.	1	1	.	.
FT Rucker, AL	93	96	1	2	.	2	2	5	13	.	.	.	2	1	.	.
FT Stewart, GA	1,051	989	2	6	.	2	30	27	10	3	.	.	3	7	2	.
WESTERN																
FT Lewis, WA	861	1,279	3	12	6	.	3	4	1	3	.	.	.	.	1	.
FT Irwin, CA	108	73	1	.	.	.	2	2	1	1	.	.	.	.	.	.
FT Wainwright, AK	232	339	.	6	.	.	1	2	.	.	.	.	.	1	.	.
PACIFIC																
Hawaii	787	874	25	40	2	4	20	16	.	3	.	.	1	5	.	.
Japan	62	41	.	1	.	.	.	.	.	.	.	.	.	.	.	.
Korea	639	820	.	.	.	.	.	1	.	.	.	.	.	.	2	1
OTHER LOCATIONS																
Germany	892	1,314	6	11	1	3	9	24	13	5	.	.	.	5	1	2
Unknown	0	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Total	15,088	18,327	79	114	33	36	172	219	85	70	0	0	29	35	33	18

*Events reported by December 7, 2007 and 2008

†Seventy medical events/conditions specified by Tri-Service Reportable Events Guidelines and Case Definitions, May 2004.

Note: Completeness and timeliness of reporting vary by facility.

Sentinel reportable events for service members and beneficiaries at U.S. Army medical facilities, cumulative numbers* for calendar years through 31 December 2007 and 31 December 2008

Army

Reporting locations	Arthropod-borne				Sexually transmitted								Environmental			
	Lyme disease		Malaria		Chlamydia		Gonorrhea		Syphilis‡		Urethritis§		Cold		Heat	
	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
NORTH ATLANTIC																
Washington, DC Area	15	17	5	1	159	141	28	28	8	8	.	.	.	.	.	15
Aberdeen, MD	.	3	.	.	10	21	3	4	.	.	.	.	.	.	.	.
FT Belvoir, VA	1	.	1	.	170	187	23	14	2	3	.	.	.	1	.	.
FT Bragg, NC	1	1	4	10	915	1,093	176	214	2	2	84	99	1	.	132	160
FT Drum, NY	2	4	2	.	183	210	26	23	.	.	.	.	.	.	.	.
FT Eustis, VA	1	.	1	.	168	212	14	36	.	4	.	.	.	.	10	1
FT Knox, KY	1	2	1	.	223	219	34	49	.	3	.	.	6	1	2	2
FT Lee, VA	3	2	.	1	289	212	43	67	4	2	.	.	1	.	17	5
FT Meade, MD	1	1	.	.	75	70	9	6	1	.	2	.	1	.	.	.
West Point, NY	24	36	.	.	14	28	.	2	.	.	.	.	.	.	.	.
GREAT PLAINS																
FT Sam Houston, TX	1	.	.	2	295	397	68	95	4	19	.	.	.	1	6	5
FT Bliss, TX	1	.	.	.	161	452	39	88	1	7	.	.	.	.	.	.
FT Carson, CO	.	.	2	.	499	582	72	59	1	.	15	13	1	1	.	.
FT Hood, TX	2	1	5	1	1,610	1,685	321	395	2	1	108	89	.	.	27	.
FT Huachuca, AZ	.	1	.	.	72	87	18	14	1	.	.	.	.	1	.	3
FT Leavenworth, KS	1	1	.	.	41	48	5	5	.	.	.	.	.	.	.	.
FT Leonard Wood, MO	1	.	1	.	255	223	34	32	1	.	.	.	2	3	20	7
FT Polk, LA	.	.	15	.	130	111	43	35	1	2	.	.	.	.	43	20
FT Riley, KS	.	6	.	1	243	369	21	50	.	1	.	2	.	1	19	8
FT Sill, OK	.	.	1	.	106	91	23	21	2	.	.	.	1	.	34	9
SOUTHEAST																
FT Gordon, GA	1	.	.	.	505	515	107	110	4	.	.	.	.	.	6	1
FT Benning, GA	.	.	2	.	269	236	76	82	1	1	.	.	1	.	45	21
FT Campbell, KY	.	1	.	.	585	162	88	14	.	1	.	.	.	.	15	6
FT Jackson, SC	.	.	.	.	183	322	47	41	3	1	.	1	.	.	87	20
FT Rucker, AL	1	3	.	.	61	64	4	11	1	2	.	.	.	.	5	2
FT Stewart, GA	1	3	.	2	733	728	139	134	4	6	1	.	.	.	63	41
WESTERN																
FT Lewis, WA	.	.	3	6	729	1,066	97	98	.	1	11	14	.	.	.	.
FT Irwin, CA	1	.	1	.	75	49	5	9	.	1	.	.	.	.	18	11
FT Wainwright, AK	.	1	.	.	185	240	13	30	.	1	.	.	16	16	.	1
PACIFIC																
Hawaii	1	.	.	1	628	655	65	67	.	.	.	.	.	.	3	2
Japan	.	.	.	.	27	24	6	4	.	.	.	1	.	.	.	.
Korea	.	.	13	.	523	716	66	73	1	4	1	.	25	.	8	4
OTHER LOCATIONS																
Germany	30	45	14	22	521	824	178	148	2	7	3	.	.	8	45	18
Unknown	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Total	90	128	71	47	10,642	12,039	1,891	2,058	46	77	225	219	55	33	605	362

‡Primary and secondary.

§Urethritis, non-gonococcal (NGU).

Sentinel reportable events for service members and beneficiaries at U.S. Navy medical facilities, cumulative numbers* for calendar years through 31 December 2007 and 31 December 2008

Navy

Reporting locations	Number of reports all events†		Food-borne								Vaccine preventable					
			Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
NATIONAL CAPITOL AREA																
NNMC Bethesda, MD	46	126	1	2	.	2	2	8	.	1	.	.	1	3	.	.
NHC Annapolis, MD	0	40	.	1	.	.	.	1	.	.	.	.	.	.	.	.
NHC Patuxent River, MD	20	26	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NHC Quantico, VA	0	112	.	.	.	.	.	.	.	.	.	.	.	1	.	.
NAVY MEDICINE EAST																
NH Beaufort, SC	297	122	.	.	.	.	.	1	1	1	.	.	.	.	.	.
NH Camp Lejeune, NC	374	450	.	1	.	.	8	14	.	.	.	.	.	.	.	.
NH Charleston, SC	3	41	.	.	.	.	.	1	.	1	.	.	.	.	.	.
NH Cherry Point, NC	186	193	.	.	.	.	2	8	.	.	.	.	.	.	3	.
NH Corpus Christi, TX	8	7	.	.	.	.	.	.	.	1	.	.	.	.	.	1
NHC Great Lakes, IL	171	724	.	.	1	.	3	.	.	.	.	.	.	7	.	2
NH Guantanamo Bay, Cuba	6	11	.	.	.	1	1	.	.	.	.	.	.	.	.	.
NH Jacksonville, FL	277	278	2	.	1	1	25	42	6	3	.	.	.	3	.	3
NH Naples, Italy	7	28	.	1	.	.	.	.	.	.	.	.	.	1	.	.
NHC New England, RI	11	41	.	1	.	.	.	1	.	.	.	.	.	.	.	1
NH Pensacola, FL	116	154	.	1	3	.	7	6	3	1	.	.	.	.	5	.
NMC Portsmouth, VA	443	634	.	.	.	.	.	1	.	2	.	.	.	4	.	.
NH Rota, Spain	0	28	.	5	.	.	.	3	.	.	.	.	.	.	.	.
NH Sigonella, Italy	19	57	.	.	.	.	.	1	.	.	.	.	.	.	1	1
NAVY MEDICINE WEST																
NH Bremerton, WA	1	85	.	1	.	.	.	1	.	.	.	.	.	.	.	.
NH Camp Pendleton, CA	17	241	.	3	.	2	1	4	.	1	.	.	.	.	.	.
NH Guam-Agana, Guam	31	72	.	.	.	.	1	.	.	.	.	.	.	.	.	3
NHC Hawaii, HI	0	161	.	.	.	.	.	2	.	.	.	.	.	1	.	.
NH Lemoore, CA	2	39	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NH Oak Harbor, WA	1	81	.	.	.	.	.	2	.	.	.	.	.	2	.	.
NH Okinawa, Japan	103	51	.	.	.	1	.	.	.	.	.	.	.	.	1	.
NMC San Diego, CA	339	537	3	.	2	.	3	2	2	1	.	.	29	26	.	1
NH Twentynine Palms, CA	1	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NH Yokosuka, Japan	12	86	.	.	.	.	.	.	.	.	.	.	.	3	.	.
NAVAL SHIPS																
COMNAVAIRLANT/CINCLANTFLEET	14	37	.	.	.	.	.	.	.	.	.	.	.	.	.	.
COMNAVSURFPAC/CINCPACFLEET	42	64	.	.	.	.	.	2	.	.	.	.	.	.	1	.
OTHER LOCATIONS																
Unknown	28	211	.	.	.	.	2	1	.	1	.	.	.	1	2	2
Total	**2,575**	**4,746**	**6**	**16**	**7**	**7**	**55**	**101**	**12**	**13**	**0**	**0**	**30**	**52**	**13**	**14**

*Events reported by December 7, 2008

†Seventy medical events/conditions specified by Tri-Service Reportable Events Guidelines and Case Definitions, May 2004.

Note: Completeness and timeliness of reporting vary by facility.

Sentinel reportable events for service members and beneficiaries at U.S. Navy medical facilities, cumulative numbers* for calendar years through 31 December 2007 and 31 December 2008

Navy

Reporting location	Arthropod-borne				Sexually transmitted								Environmental			
	Lyme disease		Malaria		Chlamydia		Gonorrhea		Syphilis‡		Urethritis§		Cold		Heat	
	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
NATIONAL CAPITOL AREA																
NNMC Bethesda, MD	4	11	.	3	29	74	2	6	2	1	.	.	.	.	.	.
NHC Annapolis, MD	.	6	.	.	.	22	.	1	.	1	.	.	.	.	.	1
NHC Patuxent River, MD	.	3	.	.	16	20	.	1	2	.	.	.	.	.	.	.
NHC Quantico, VA	.	2	.	1	.	54	.	6	.	.	.	.	.	.	.	46
NAVY MEDICINE EAST																
NH Beaufort, SC	.	1	1	.	206	18	23	1	2	.	.	.	.	1	57	96
NH Camp Lejeune, NC	13	3	1	.	298	262	33	57	.	1	.	40	.	.	17	66
NH Charleston, SC	.	1	.	.	3	29	.	3	.	2	.	.	.	.	.	1
NH Cherry Point, NC	.	1	.	.	160	135	10	23	1	.	.	.	.	.	3	4
NH Corpus Christi, TX	.	.	.	.	7	2	1	3	.	.	.	.	.	.	.	.
NHC Great Lakes, IL	.	.	.	.	143	663	17	46	.	3	.	.	.	.	.	.
NH Guantanamo Bay, Cuba	.	.	.	.	5	9	.	1	.	.	.	.	.	.	.	.
NH Jacksonville, FL	.	.	.	.	181	172	29	17	5	4	.	.	.	.	8	.
NH Naples, Italy	.	.	.	.	6	22	1	2	.	.	.	.	.	.	.	.
NHC New England, RI	.	7	.	.	8	26	1	3	2	.	.	.	.	1	.	.
NH Pensacola, FL	1	1	.	.	70	98	10	13	.	4	.	.	.	.	12	21
NMC Portsmouth, VA	1	2	.	1	368	510	72	101	.	3	.	.	.	.	.	.
NH Rota, Spain	.	.	.	.	.	19	.	1	.	.	.	.	.	.	.	.
NH Sigonella, Italy	.	.	.	1	18	43	.	5	.	1	.	.	.	.	.	4
NAVY MEDICINE WEST																
NH Bremerton, WA	.	.	.	1	1	69	.	4	.	.	.	3	.	1	.	.
NH Camp Pendleton, CA	.	2	.	2	14	196	1	23	1	1	.	.	.	.	.	.
NH Guam-Agana, Guam	.	.	.	3	25	49	4	13	.	.	.	.	.	.	.	.
NHC Hawaii, HI	.	.	.	.	.	142	.	10	.	1	.	.	.	.	.	.
NH Lemoore, CA	.	2	.	.	1	27	.	.	.	.	.	.	.	.	.	.
NH Oak Harbor, WA	.	.	.	.	1	61	.	2	.	1	.	.	.	.	.	.
NH Okinawa, Japan	.	.	.	1	72	33	17	8	.	.	.	.	.	.	8	5
NMC San Diego, CA	1	4	.	1	220	393	36	50	5	5	.	.	.	.	.	2
NH Twentynine Palms, CA	.	.	.	.	.	6	1	.	.	.	.	.	.	.	.	3
NH Yokosuka, Japan	.	.	.	.	10	72	.	9	.	.	.	.	.	.	1	.
NAVAL SHIPS																
COMNAVAIRLANT/CINCLANTFLEET	.	.	.	.	11	33	3	4	.	.	.	.	.	.	.	.
COMNAVSURFPAC/CINCPACFLEET	.	.	.	.	29	41	11	12	.	.	.	9	.	.	1	.
OTHER LOCATIONS																
Unknown	.	29	2	2	19	135	2	11	1	1	.	.	.	.	.	14
Total	**20**	**75**	**4**	**16**	**1,921**	**3,435**	**274**	**436**	**21**	**29**	**0**	**52**	**0**	**3**	**107**	**263**

‡Primary and secondary.

§Urethritis, non-gonococcal (NGU).

Sentinel reportable events for service members and beneficiaries at U.S. Air Force medical facilities, cumulative numbers* for calendar years through 31 December 2007 and 31 December 2008

Air Force

Reporting locations	Number of reports all events†		Food-borne								Vaccine preventable					
			Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
Air Combat Cmd	1,703	1,884	3	5	4	11	12	24	.	7	.	.	9	32	7	3
Air Education & Training Cmd	764	1,086	1	3	1	9	18	17	18	5	.	.	4	2	10	8
Air Force Dist. of Washington	230	235	.	.	.	.	5	2	1	.	.	.	1	3	.	.
Air Force Materiel Cmd	576	728	1	4	2	1	21	7	2	10	.	.	.	.	2	.
Air Force Special Ops Cmd	163	203	.	.	.	.	3	3	1	.	.	.	1	3	.	.
Air Force Space Cmd	268	352	2	1	3	2	3	7	1	1	.	.	2	3	1	1
Air Mobility Cmd	646	936	1	1	2	3	9	12	2	2	.	.	4	8	3	9
Pacific Air Forces	726	777	1	8	3	5	4	7	1	.	.	.	14	10	14	3
U.S. Air Forces in Europe	434	557	3	2	.	1	6	10	1	.	.	.	3	3	.	4
U.S. Air Forces Academy	49	52	.	1	.	1	2	.	.	.	.	.	.	.	.	.
Other	674	625	5	4	4	5	8	16	.	8	.	.	4	2	2	.
Total	**6,233**	**7,435**	**17**	**29**	**19**	**38**	**91**	**105**	**27**	**33**	**0**	**0**	**42**	**66**	**39**	**28**

*Events reported by December 7, 2008

†Seventy medical events/conditions specified by Tri-Service Reportable Events Guidelines and Case Definitions, May 2004.

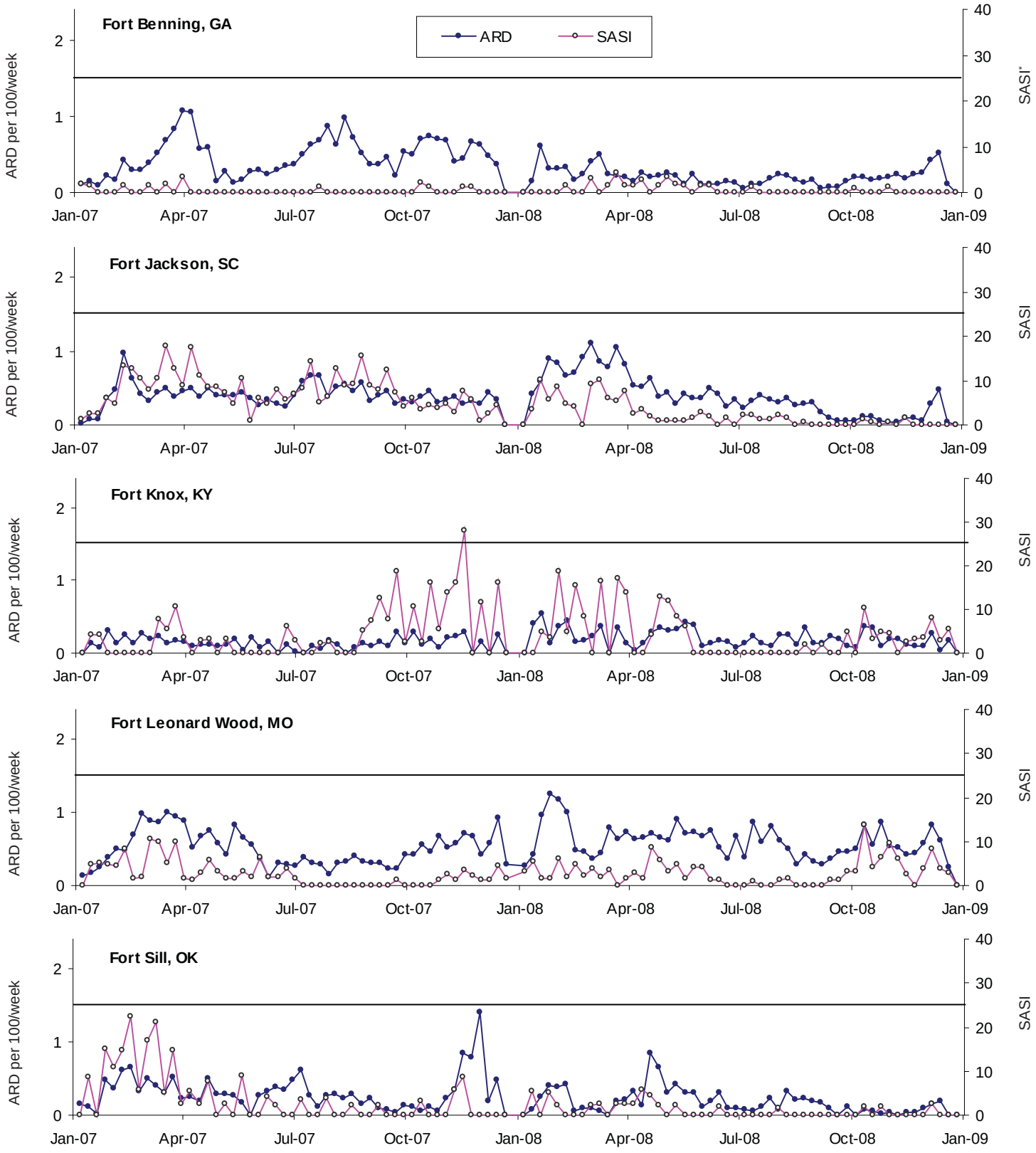
Note: Completeness and timeliness of reporting vary by facility

Reporting location	Arthropod-borne				Sexually transmitted								Environmental			
	Lyme disease		Malaria		Chlamydia		Gonorrhea		Syphilis‡		Urethritis§		Cold		Heat	
	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
Air Combat Cmd	12	4	.	.	1,206	1,265	104	111	5	3	3	3	.	5	6	1
Air Education & Training Cmd	2	4	.	.	565	761	94	73	3	6	.	.	1	1	1	5
Air Force Dist. of Washington	1	2	.	.	186	168	23	23	2	1	.	.	.	.	1	.
Air Force Materiel Cmd	9	11	2	1	450	486	59	65	2	3	.	.	.	.	.	.
Air Force Special Ops Cmd	.	.	.	1	132	173	12	11	1	.	.	.	.	.	12	.
Air Force Space Cmd	1	1	.	.	230	248	16	15	1	.	.	.	.	.	.	.
Air Mobility Cmd	7	15	.	1	547	636	41	67	1	4	.	.	.	5	2	8
Pacific Air Forces	3	.	1	.	581	613	45	31	5	1	.	.	3	1	1	.
U.S. Air Forces in Europe	5	19	.	2	355	427	25	36	.	1	.	.	.	.	.	.
U.S. Air Forces Academy	.	1	.	.	42	45	3	1	.	.	.	.	.	1	.	.
Other	2	6	1	2	596	504	36	29	2	2	.	.	.	.	.	5
Total	**42**	**63**	**4**	**7**	**4,890**	**5,326**	**458**	**462**	**22**	**21**	**3**	**3**	**4**	**13**	**23**	**19**

‡Primary and secondary.

§Urethritis, non-gonococcal (NGU).

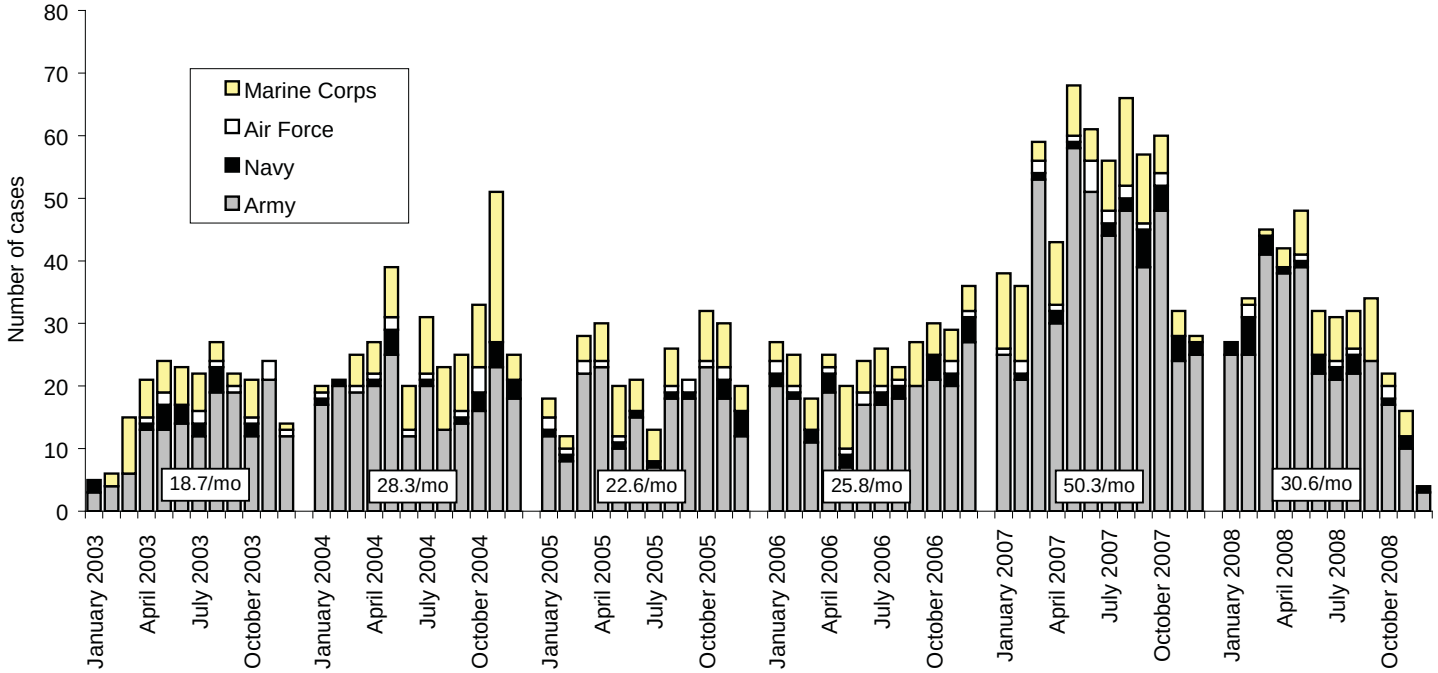
Acute respiratory disease (ARD) and streptococcal pharyngitis rates (SASI*), basic combat training centers, U.S. Army, by week, January 2007-January 2009



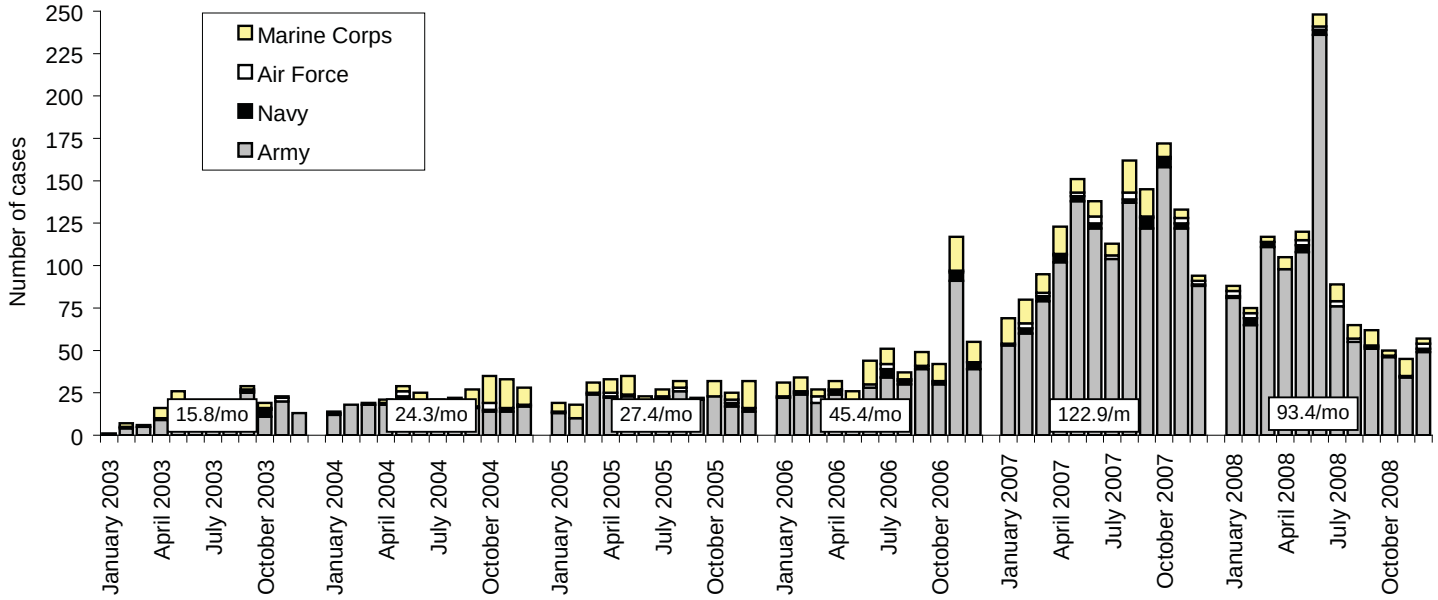
* Streptococcal-ARD surveillance index (SASI) = ARD rate x % positive culture for group A streptococcus
ARD rate = cases per 100 trainees per week
ARD rate ≥ 1.5 or SASI ≥ 25.0 for 2 consecutive weeks are surveillance indicators of epidemics

Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - December 2008

Traumatic brain injury, hospitalizations (ICD-9: 310.2, 800-801, 803-804, 850-854, 950.1-950.3, 959.01, V15.5_1-9, V15.5_A-F)*



Traumatic brain injury, multiple ambulatory visits (without hospitalization),
(ICD-9: 310.2, 800-801, 803-804, 850-854, 950.1-950.3, 959.01, V15.5_1-9, V15.5_A-F)†



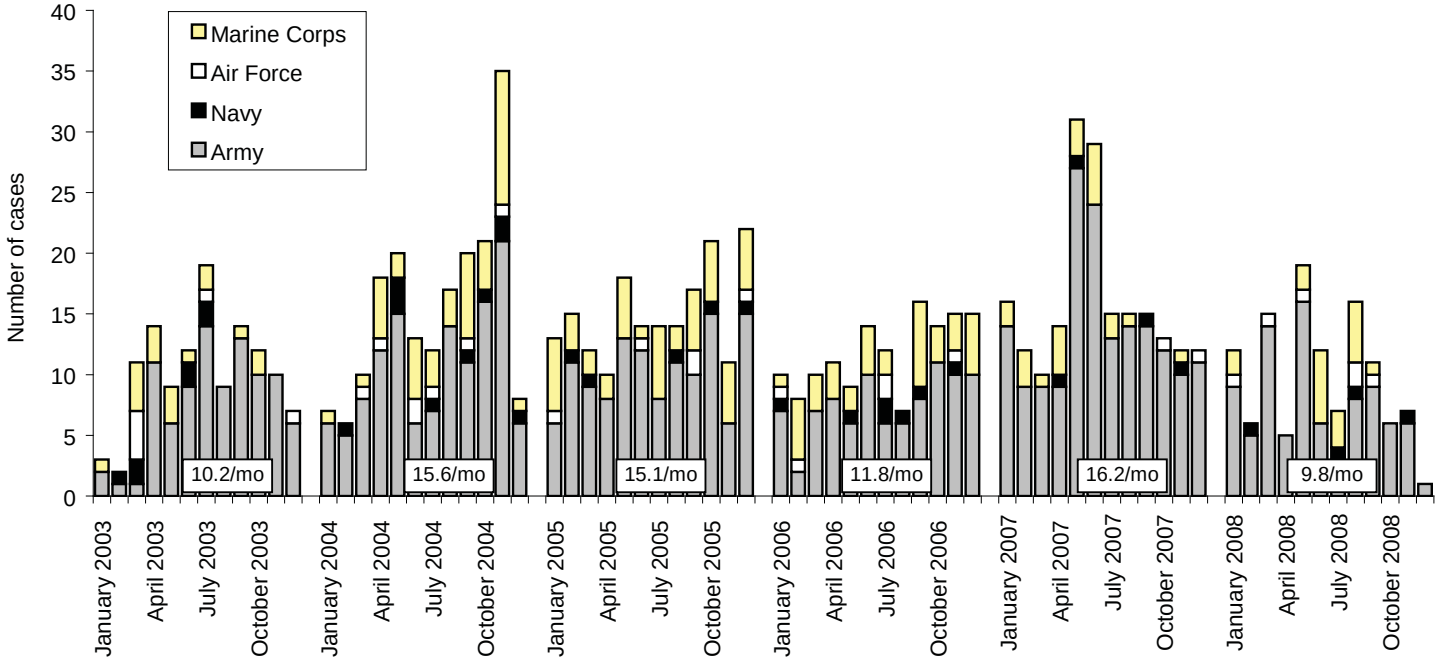
Reference: Army Medical Surveillance Activity. Traumatic brain injury among members of active components, U.S. Armed Forces, 2002-2007. *MSMR*. Aug 2007; 14(5):2-6.

*Indicator diagnosis (one per individual) during a hospitalization while deployed to/within 30 days of returning from OEF/OIF.

†Two or more ambulatory visits at least 7 days apart while deployed to/within 365 days of returning from OEF/OIF.

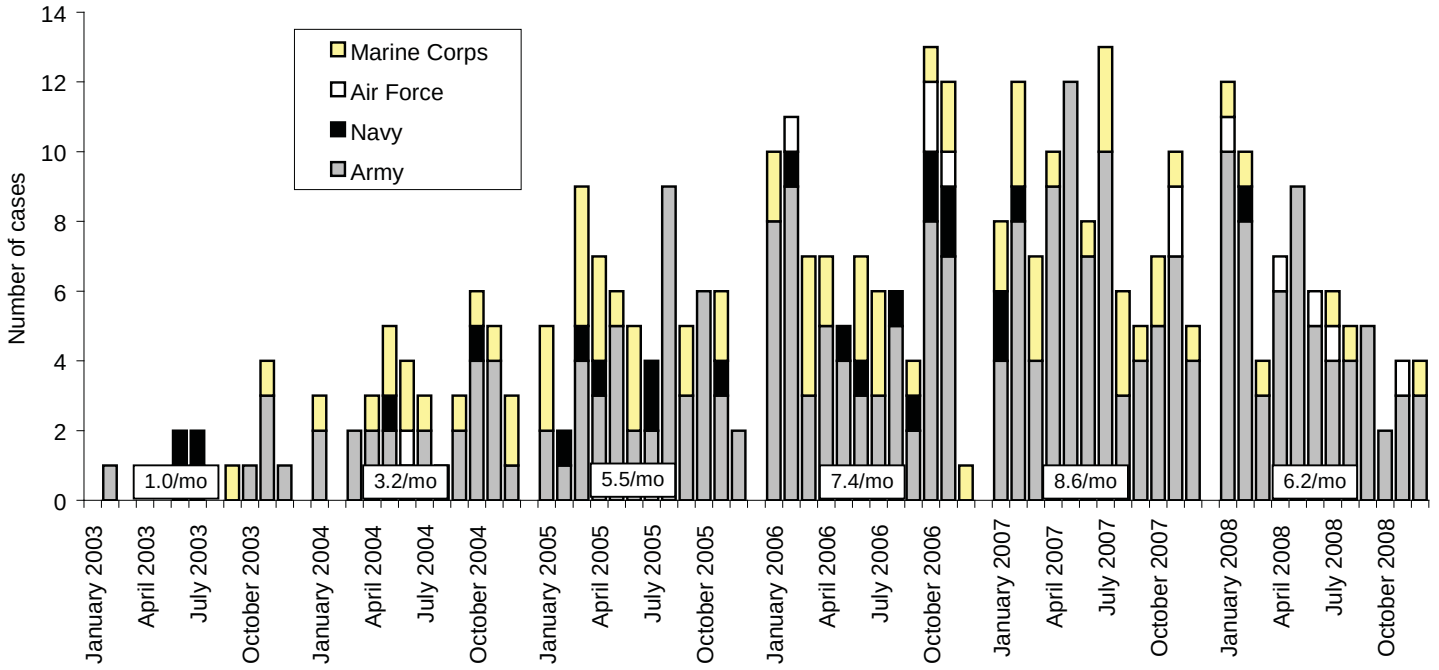
Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - December 2008

Amputations (ICD-9: 887, 896, 897, V49.6 to V49.7, PR 84.0 to PR 84.1)*



Reference: Army Medical Surveillance Activity. Heterotopic ossification, active components, U.S. Armed Forces, 2002-2007. *MSMR*. Aug 2007; 14(5):7-9.
†One diagnosis during a hospitalization or two or more ambulatory visits at least 7 days apart while deployed to/within 365 days of returning from OEF/OIF.

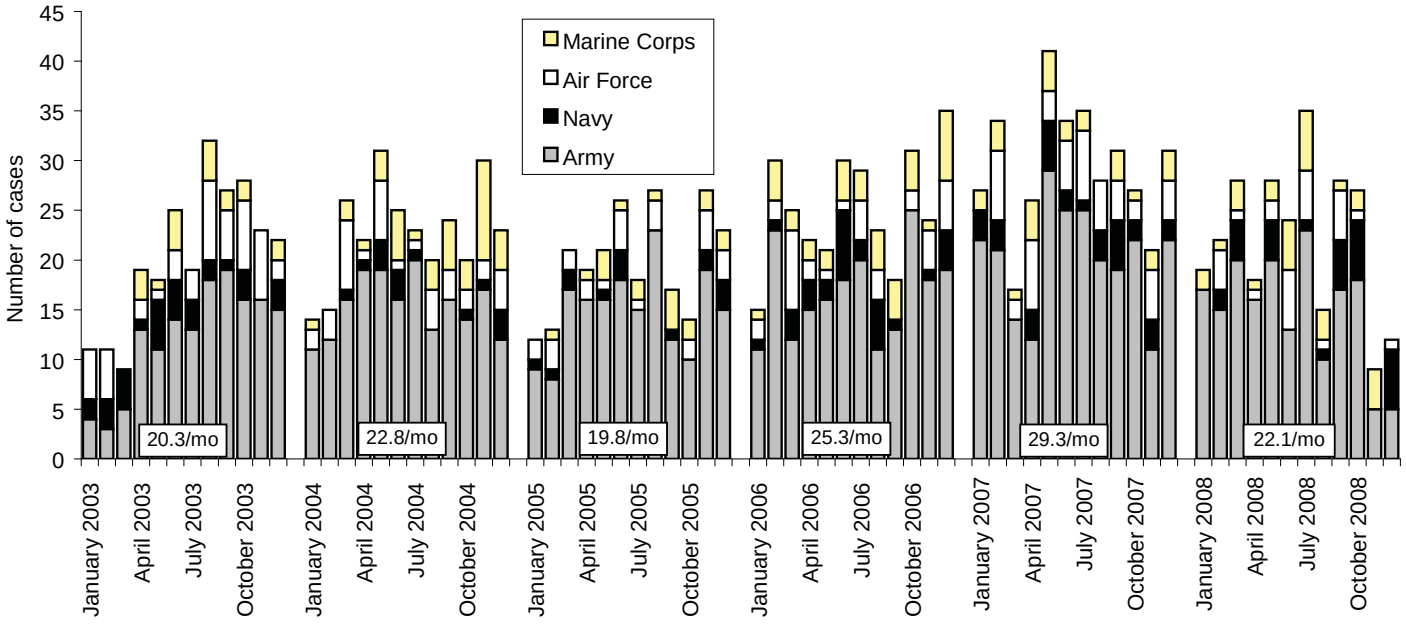
Heterotopic ossification (ICD-9: 728.12, 728.13, 728.19)†



Reference: Army Medical Surveillance Activity. Heterotopic ossification, active components, U.S. Armed Forces, 2002-2007. *MSMR*. Aug 2007; 14(5):7-9.
†One diagnosis during a hospitalization or two or more ambulatory visits at least 7 days apart while deployed to/within 365 days of returning from OEF/OIF.

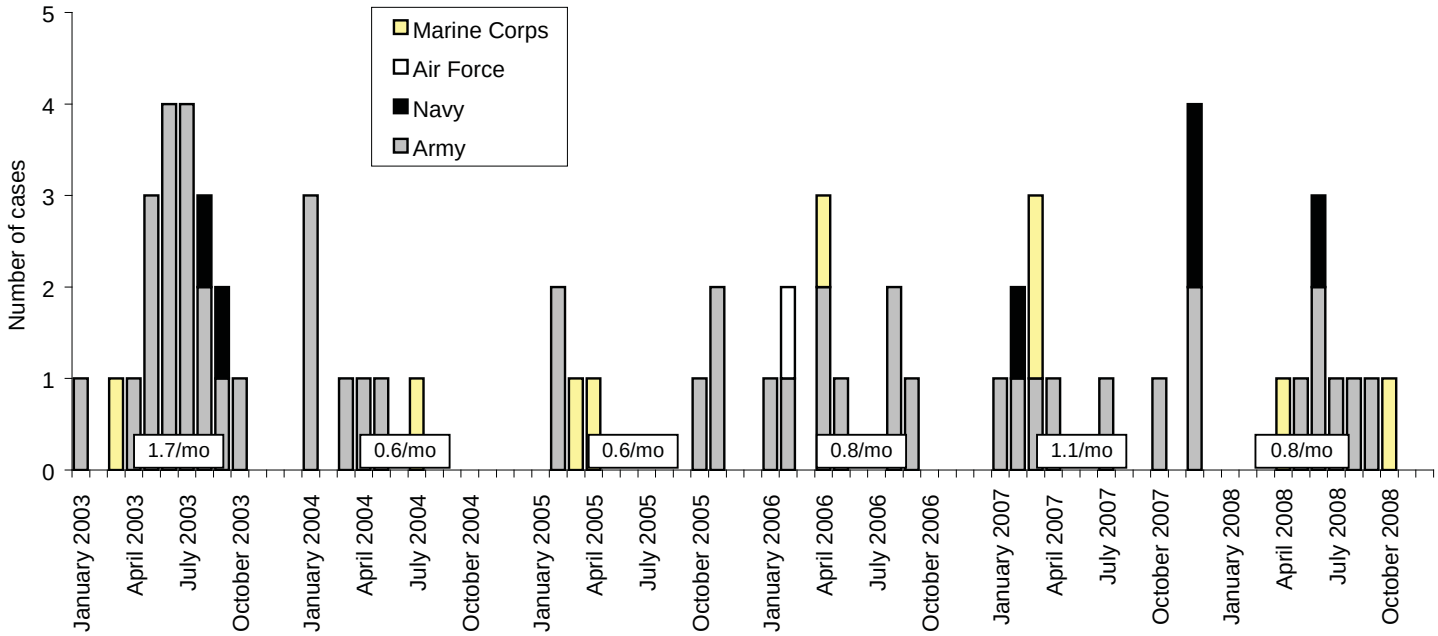
Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - December 2008

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)*



Reference: Isenbarger DW, Atwood JE, Scott PT, et al. Venous thromboembolism among United States soldiers deployed to Southwest Asia. *Thromb Res*. 2006;117(4):379-83.
*Indicator diagnosis (one per individual) during a hospitalization while deployed to/within 90 days of returning from OEF/OIF.

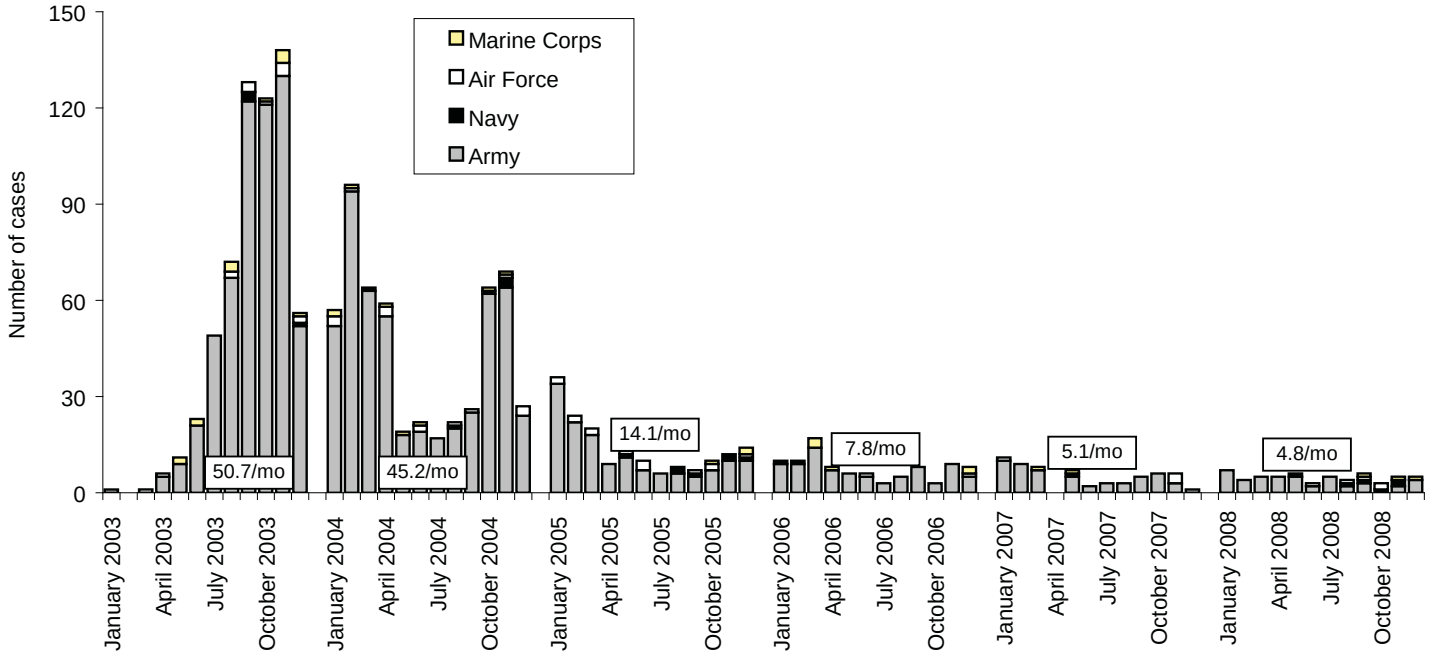
Severe acute pneumonia (ICD-9: 518.81, 518.82, 518.3, 480-487, 786.09)†



Reference: Army Medical Surveillance Activity. Deployment-related condition of special surveillance interest: severe acute pneumonia. Hospitalizations for acute respiratory failure (ARF)/acute respiratory distress syndrome (ARDS) among participants in Operation Enduring Freedom/Operation Iraqi Freedom, active components, U.S. Armed Forces, January 2003-November 2004. *MSMR*. Nov/Dec 2004;10(6):6-7.
†Indicator diagnosis (one per individual) during a hospitalization or ambulatory visit while deployed to/within 30 days of returning from OEF/OIF.

Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - December 2008

Leishmaniasis (ICD-9: 085.0 to 085.9)*



Reference: Army Medical Surveillance Activity. Deployment-related condition of special surveillance interest: leishmaniasis. Leishmaniasis among U.S. Armed Forces, January 2003-November 2004. *MSMR*. Nov/Dec 2004;10(6):2-4.

*Indicator diagnosis (one per individual) during a hospitalization, ambulatory visit, and/or from a notifiable medical event during/after service in OEF/OIF.

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The *Medical Surveillance Monthly Report* (MSMR) is prepared by the Armed Forces Health Surveillance Center (AFHSC), US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

Data in the MSMR are provisional, based on reports and other sources of data available to AFHSC.

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