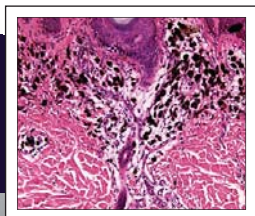


MSMR

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MEDICAL SURVEILLANCE MONTHLY REPORT

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Eye Injuries among Members of Active Components, U.S. Armed Forces, 1998-2007

Eye injuries range in severity from minor scratches and bruises to serious trauma resulting in blindness. Eye injuries cause significant morbidity among military members. A review of Army, Navy and Air Force Safety Center data from 1988-1998 indicated that an eye injury results in an average 5.9 days of work lost and \$6,295 in treatment costs.¹

Studies of eye injuries during peacetime document that the majority of hospitalized cases are caused by non-military activities such as motor vehicle crashes, fights and falls.^{2,3} Eye-hazardous occupations, such as metalworking and welding, are frequent causes of both hospitalized and ambulatory cases among service members.²⁻⁴ A significant proportion of the eye injuries sustained during military service are likely preventable through the use of protective eyewear.^{2,6}

Combat operations in Afghanistan and Iraq have added significantly to the total injury burden of U.S. military members. Battle injuries were the primary reason for 16% of all medical evacuations from Operations Iraqi and Enduring Freedom during 2003-2004.⁵ During combat operations, the number, nature, and intensity of eye injury hazards significantly increase. In December 2004, Military Combat Protective Eyewear (MCEP) became standard issue for deploying forces under the Rapid Fielding Initiative (RFI) Program.⁷ MCEP is encouraged for use in all eye-hazardous situations, in both combat and non-combat situations. The effects, if any, of voluntary use of MCEP among deployed forces have not been systematically assessed. This report examines the natures, frequencies, and trends of ocular injuries among active component service members since 1998. Of particular interest, the numbers, rates, and trends of potentially blinding injuries since the beginning of the war and in relation to the issuance of MCEP are assessed.

Methods:

The surveillance period was January 1998 to December 2007. The surveillance population included members of the U.S. Armed Forces who served in an active component during the surveillance period. For this analysis, an ocular injury was defined as a hospitalization or ambulatory encounter with at least one diagnosis indicative of an ocular injury. To this end, 75 ICD-9-CM codes were identified as indicators of ocular injury (Table 1). If more than one ocular injury diagnosis was reported during a single inpatient or outpatient encounter, only the first listed of the diagnoses was included.

Eye injury diagnoses were separated into nine clinically-relevant categories (Table 2). For the superficial injuries group, only one diagnosis per individual was included per 60-day

period. For all other injuries, only the first diagnosis per person was included. To exclude outpatient follow-up encounters for inpatient diagnoses, only inpatient records were counted for individuals with both an inpatient and an outpatient record with the same diagnosis.

The "high risk of blindness" category was based on a 2006 study of United States Eye Injury Registry (USEIR) data which found that injuries with the highest risk of blindness were perforating trauma (64% of injuries caused blindness), globe rupture (60%), intraocular foreign body (25%), and penetrating trauma (23%).⁸

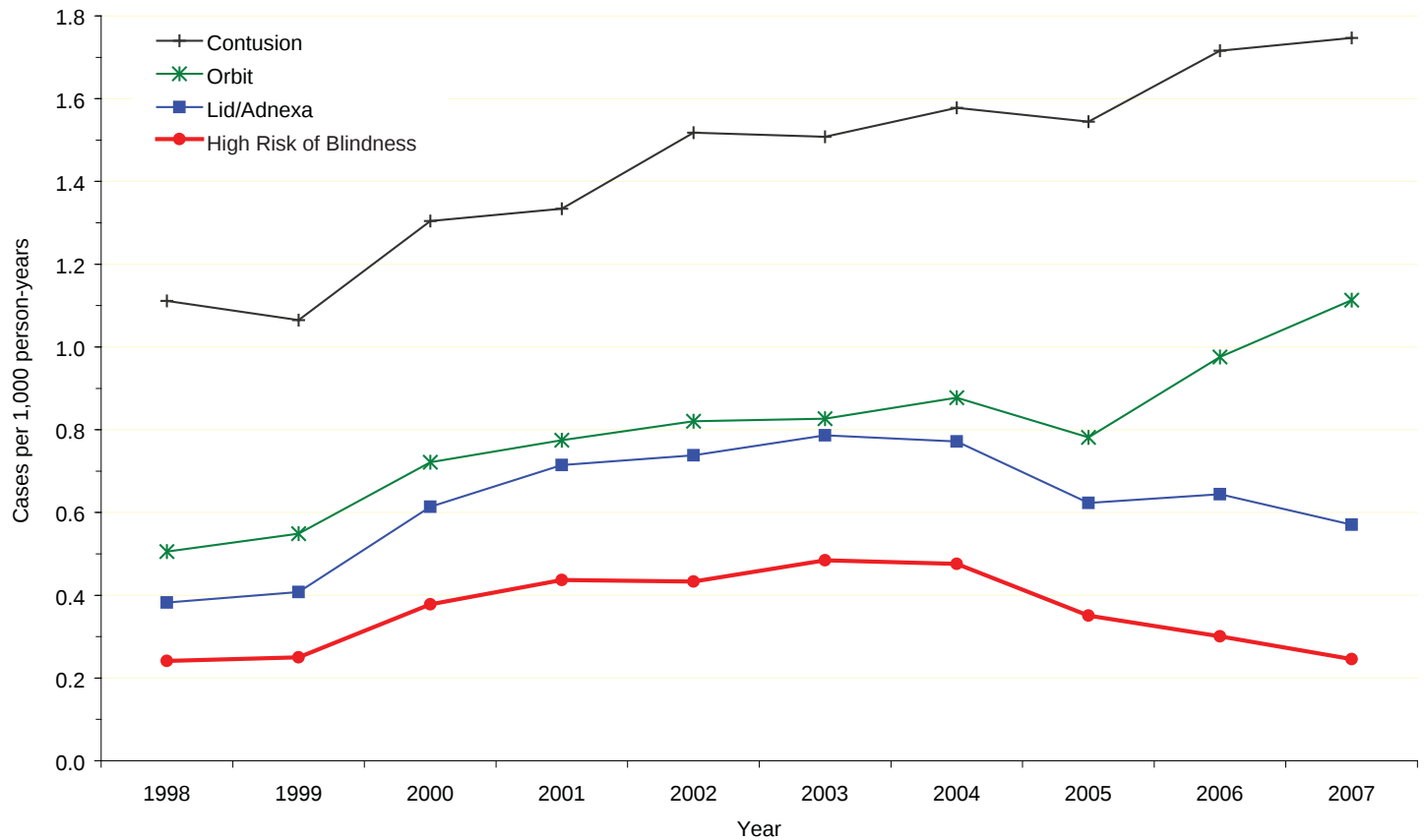
Results:

Between 1998 and 2007, there were 182,828 diagnoses of ocular injury among active component service members (Table 2). Superficial injuries accounted for more than two-thirds of the total injuries during the period (Table 2).

During the 10-year period, the crude overall rate of eye injury events was 13.3 per 1,000 person-years (p-yrs). In general, rates were higher among males, 20-24 year-olds, white non-Hispanics and soldiers than their respective counterparts (Table 3).

Table 1. Seventy-five eye ocular injury codes used for analysis

360.00-360.04	Purulent endophthalmitis, unspecified
361.0	Retinal detachment with retinal defect
361.00-361.07	Retinal detachment with retinal defect
362.81	Retinal hemorrhage
363.61	Choroidal hemorrhage, unspecified
363.63	Choroidal rupture
364.41	Hyphema
364.76	Iridodialysis
366.22	Total traumatic cataract
367.32	Orbital hemorrhage
379.23	Vitreous hemorrhage
802.6-802.7	Orbital floor (blowout) fracture
802.8	Fracture of orbit nos other than roof or floor
870.0-870.4	Laceration of eyelid, penetrating wound of orbit
870.8-870.9	Open wound of ocular adnexa
871.0-870.7	Ocular laceration, penetration, rupture, avulsion
871.9	Unspecified open wound of eyeball
918.0-918.2	Superficial injury of eyelids, cornea, conjunctiva
918.9	Other and nonspecified superficial injuries of eye
921.0-921.3	Contusion of eyelid, eyeball, orbital tissues
921.9	Unspecified contusion of eye
930.0-930.2	Foreign body in cornea, conjunctival sac
930.8-930.9	Foreign body on external eye
940.0-940.5	Burn of eyelids, eyeball, cornea, conjunctival sac
940.9	Unspecified burn of eye and adnexa
941.02	Burn, unspecified degree
941.12	Burn, 1st degree
941.22	Burn, 2nd degree
941.32	Burn, 3rd degree
941.42	Burn, deep 3rd degree without loss
950.0-950.3	Injury to optic nerve chiasm, pathways, visual cortex
950.9	Unspecified (traumatic blindness)
951.0-951.1	Injury to oculomotor/trochlear nerve
951.3	Injury to abducens nerve

Figure 1. Annual rates of ocular injury, by injury category, active components, U.S. Armed Forces, 1998-2007

In general during the period, annual rates of ocular injuries increased (range, per year: 11.0 per 1,000 p-yrs [in 1998] to 14.8 per 1,000 p-yrs [in 2006]). However, trends of various types of nonsuperficial injuries markedly varied. For example, after 2004, rates of lid/adnexal and “high risk of blindness” injuries generally declined; in contrast, from 2005 through 2007, rates of contusions and orbital injuries sharply increased (Figure 1).

Fewer than 3% (n=4,969; 2.7%) of all eye injury cases required hospitalization (data not shown). “External causes”

were reported for more than two-thirds (n=3,502; 70.5%) of all hospitalized cases. Of hospitalized cases with known causes, most were due to fights, falls, and other/unknown causes (n=1,151; 35.0%); war, guns, and explosives (n=1,073; 32.6%); and land transport accidents (n=547; 16.6%). While fights, falls, and land transport accidents consistently caused relatively large numbers of hospitalized cases, “war, guns and explosives” caused significant numbers of hospitalized cases only since 2003 (Figure 2).

Table 2. Frequencies of ocular injury, by injury category, U.S. Armed Forces, January 1998-December 2007

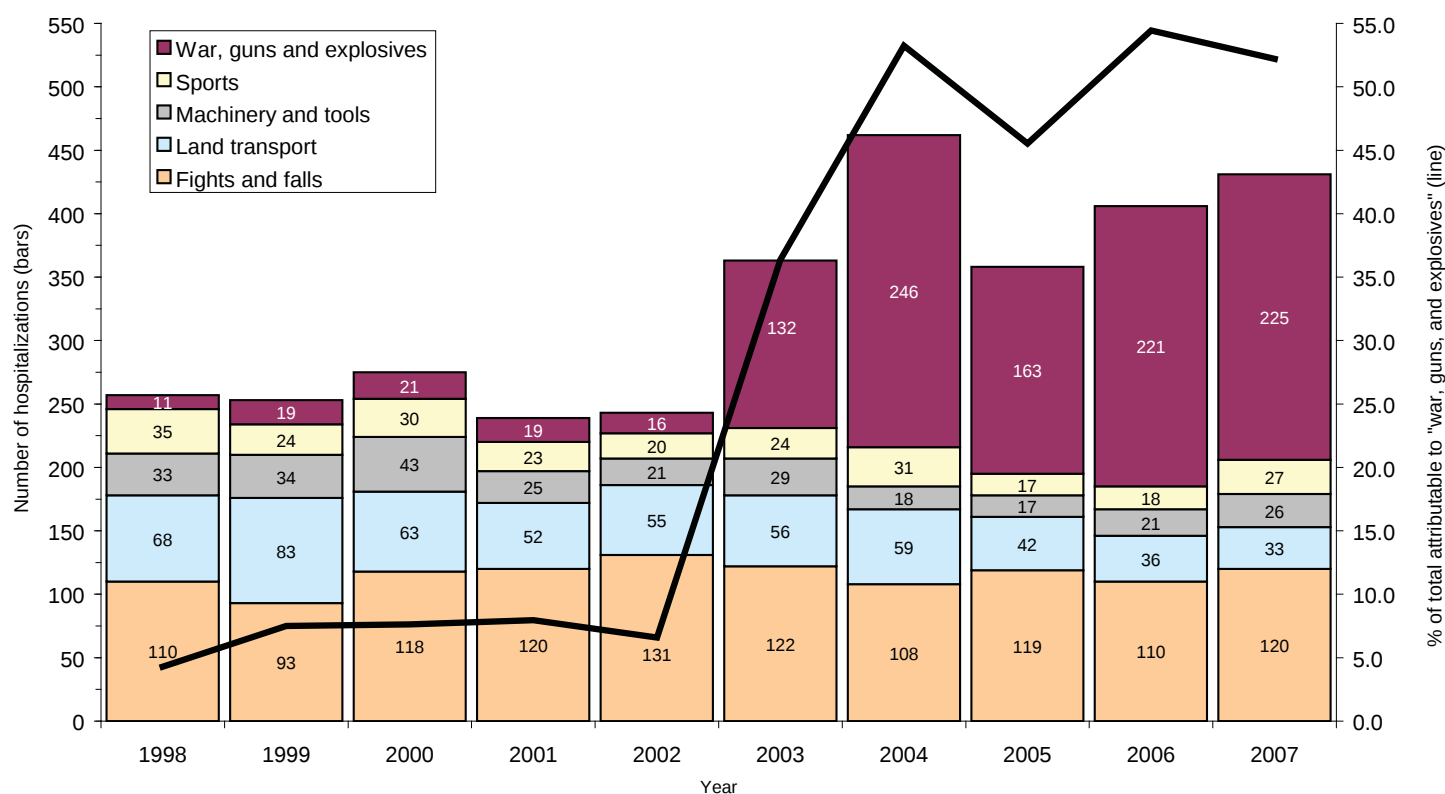
Injury category	Category description	No. of diagnoses	% of total
Superficial injuries			
Superficial Injuries	Corneal abrasions and superficial foreign bodies	122,787	67.2
Nonsuperficial injuries			
Contusion	Black eye, contusion of globe	19,894	10.9
Orbit	Orbit fractures, penetrating wounds	10,954	6.0
Lid/adnexa	Lacerations of lid and adjacent structures	8,632	4.7
Posterior segment	Retinal and choroidal hemorrhage, retinal detachment	8,441	4.6
High risk of blindness	Perforating/penetrating trauma, globe rupture, intraocular foreign body	4,970	2.7
Burns	Chemical and thermal burns of eye/adnexa	4,294	2.3
Anterior segment	Hyphema, traumatic cataract	2,170	1.2
Optic/cranial Nerve	Optic nerve, eye movements	686	0.4
Total		182,828	100.0

Table 3. Numbers and rates of ocular injury, by demographic and military characteristics, U.S. Armed Forces, January 1998-December 2007

	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		Total (1998-2007)	
	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*	No.	Rate*
Total	15,235	11.0	15,448	11.4	17,380	12.8	17,370	12.8	18,811	13.5	19,698	14.0	20,736	14.7	19,162	13.9	20,178	14.8	18,810	13.8	182,828	13.3
Gender																						
Male	13,090	10.9	13,318	11.4	15,046	12.9	15,186	13.1	16,266	13.8	16,886	14.1	17,986	14.9	16,422	14.0	17,348	14.9	16,188	13.9	157,736	13.4
Female	2,137	11.0	2,120	11.0	2,326	11.8	2,181	10.8	2,543	12.2	2,812	13.3	2,750	13.1	2,740	13.6	2,830	14.3	2,622	13.4	25,061	12.5
Age																						
<20	1,260	11.1	1,274	11.1	1,478	12.0	1,630	13.1	1,522	12.6	1,466	13.0	1,429	13.0	1,218	12.6	1,269	13.4	1,361	14.1	13,907	12.6
20-24	5,045	12.0	5,255	12.7	6,077	14.2	6,018	13.6	6,902	14.8	6,990	14.4	7,406	15.2	6,515	13.9	7,217	15.6	6,908	15.0	64,333	14.2
25-29	3,294	11.2	3,116	11.1	3,516	12.9	3,295	12.5	3,449	12.8	3,904	13.9	4,234	14.6	4,211	14.2	4,539	15.1	4,221	13.9	37,779	13.3
30-34	2,362	10.2	2,298	10.7	2,380	11.5	2,393	11.8	2,554	12.6	2,615	12.9	2,842	14.1	2,742	13.9	2,735	14.2	2,471	12.9	25,392	12.4
35-39	1,961	9.6	2,083	10.2	2,322	11.6	2,287	11.8	2,389	12.6	2,550	13.9	2,565	14.6	2,398	14.2	2,283	13.7	2,047	12.3	22,885	12.4
40+	1,313	10.2	1,422	10.8	1,607	12.2	1,747	12.8	1,995	13.9	2,173	14.9	2,260	15.3	2,078	14.2	2,134	15.0	1,797	12.9	18,526	13.3
Race/ethnicity																						
White, non-Hispanic	9,235	11.2	9,813	11.7	11,445	13.4	11,524	13.5	12,461	14.3	13,043	14.8	13,754	15.5	12,396	14.3	13,125	15.3	12,357	14.3	119,153	13.9
Black, non-Hispanic	2,835	10.4	2,838	10.5	3,169	11.7	3,155	11.6	3,275	12.0	3,297	12.3	3,428	13.2	3,294	13.5	3,285	14.1	3,033	13.3	31,609	12.2
Other	3,165	11.0	2,797	11.2	2,766	11.8	2,691	11.4	3,075	12.4	3,358	12.9	3,554	13.3	3,472	13.0	3,768	14.0	3,420	12.7	32,066	12.6
Service																						
Army	5,868	12.3	5,632	12.0	6,450	13.6	6,285	13.3	6,260	13.0	6,097	12.4	6,786	13.8	6,630	13.6	7,464	15.2	7,810	15.3	34,857	13.5
Navy	3,718	9.9	3,557	9.8	3,997	10.9	4,394	11.9	5,492	14.6	5,859	15.6	6,074	16.4	5,571	15.5	5,332	15.4	4,037	12.1	26,948	13.2
Air Force	4,007	11.0	4,348	12.2	4,891	13.9	4,649	13.4	4,843	13.5	5,374	14.6	5,281	14.1	4,624	13.1	4,764	13.8	4,473	13.4	24,585	13.3
Marine Corps	1,642	9.6	1,911	11.2	2,042	11.9	2,042	11.9	2,216	12.9	2,368	13.4	2,595	14.7	2,337	13.1	2,618	14.7	2,490	13.6	12,478	12.8
Military occupation																						
Combat	3,036	10.8	3,108	11.3	3,517	12.8	3,496	12.8	3,717	13.5	3,806	13.7	4,119	14.5	3,968	13.8	4,463	14.8	4,159	14.5	37,389	13.3
Health care	1,577	12.9	1,457	12.5	1,520	13.3	1,541	13.4	1,772	15.3	1,837	15.7	1,929	16.5	1,894	16.7	1,910	17.1	1,805	16.4	17,242	14.9
Other	10,622	10.8	10,883	11.2	12,343	12.7	12,333	12.7	13,322	13.3	14,055	13.8	14,688	14.5	13,300	13.6	13,805	14.6	12,846	13.3	128,197	13.1

*Rate per 1,000 person-years

Figure 2. Ocular injury hospitalizations, by NATO Standardization Agreement (STANAG) external cause of injury category, active components, U.S. Armed Forces, 1998-2007



 Editorial comment:

This report reiterates the finding of previous reports regarding the increasing trend in ocular injury rates among active component military members during the past decade. It extends the findings of those reports by documenting a shift in ocular injury patterns since approximately 2004. Specifically, rates of “high risk of blindness” and lid/adnexal injuries steadily decreased after 2004, while rates of orbit and contusion injuries sharply increased after 2005. Orbital and contusion injuries result from blunt force to face and skull structures surrounding the eye, while “high risk of blindness” and lid/adnexal injuries result from sharp trauma directly to the eye. Military protective eyewear is designed to transfer energy (e.g., heat, shrapnel, dirt, road material, debris) that is directed at the eyes to structures surrounding the eyes. The trends since 2004 of increasing orbital and contusion injuries and decreasing “high risk of blindness” and lid/adnexal injuries may reflect the increasing use of effective protective eyewear among deployed military members.

These findings should be interpreted cautiously in light of inherent limitations. For example, cases of ocular injury for this report were ascertained from standardized records of clinical encounters at fixed medical treatment facilities. Cases diagnosed and treated in deployed settings (e.g., field hospitals) are not included unless they are medically evacuated to “fixed” facilities outside of the operational theater. Of note in this regard, during the surveillance period, more than one thousand ocular injuries were treated in hospitals — most from 2003 to 2007 — and reported as caused by “war, guns

and explosives.” It is likely that most of these injuries were sustained in and evacuated from operational theaters overseas (Figure 2). More detailed reports from deployed settings would strengthen the findings of this report regarding relationships between use of protective eyewear and numbers, natures, and severity of ocular injuries.

Report by Mark Reynolds, MD, MAJ, MC, U.S. Army. Data analysis by Stephen B. Taubman, PhD, Data Analysis Group, Armed Forces Health Surveillance Center.

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Incident Diagnoses of Malignant Melanoma, Active Components, U.S. Armed Forces, January 1998-June 2008

Malignant melanoma is a life threatening cancer of pigment producing cells (melanocytes). Melanocytes are distributed throughout the outer layer of the skin; in response to UV radiation (e.g., sunlight), they produce a pigment (melanin) that darkens the skin. When melanocytes become malignant, they can spread throughout the body, including to vital organs. In the U.S., malignant melanoma is the most lethal skin cancer and among the leading causes of cancer deaths overall.^{1,2}

In the United States, rates of malignant melanoma have been increasing; however, melanoma-associated mortality has been decreasing.^{1,2} The prognosis after treatment of early, thin lesions is much better than after treatment of later stage lesions; thus, the higher observed incidence and decreased mortality reflect, at least in part, the detection and initiation of treatment at earlier clinical stages. In the U.S., survival after case detection is better among white non-Hispanic than other racial/ethnic group members — in general, cases

are detected and treatment initiated at earlier stages among whites than others.¹⁻⁴

In general, incidence rates of melanoma increase with age and are much higher among white non-Hispanic than other race/ethnicity group members.¹ Risk is thought to be associated with exposure to ultraviolet radiation, e.g., from the sun, cosmic radiation, artificial tanning devices. Individuals with positive family histories, fair skin, multiple and/or atypical moles, and histories of severe sunburns are at relatively high risk of melanoma. In relation to specific occupational risk, some studies have documented relatively high rates of melanoma among air crews that frequently travel for long periods at high altitudes — including in military fixed wing aircraft. It is unclear whether the increased risk among aviation personnel is associated with occupational or recreational exposures.¹⁻⁷

Because many military members are exposed to direct sunlight — during training, operations, and recreational

Figure 1. Cases (by Service) and rates (overall) of incident diagnoses of “malignant melanoma” among active component members, U.S. Armed Forces, by year, 1998-2007

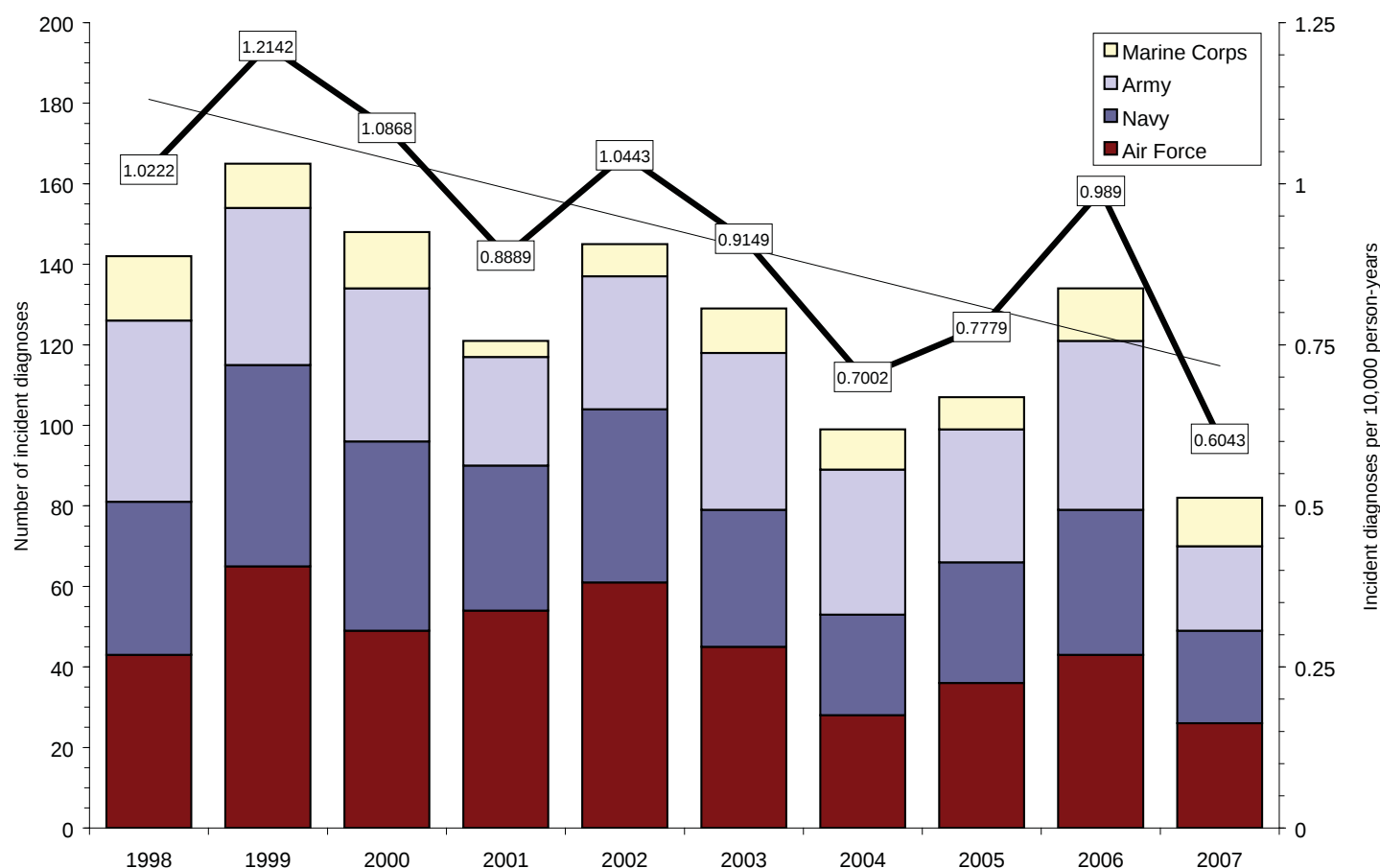


Table 1. Numbers and rates of incident diagnoses of malignant melanoma, active components, U.S. Armed Forces, January 1998- June 2008

	Overall			1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008 (thru Jun)	
	No.	Rate	Rate ratio	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Total	1,319	0.90		142	1.02	165	1.21	148	1.09	121	0.89	145	1.04	129	0.91	99	0.70	107	0.78	134	0.99	82	0.60	47	0.56
Service																									
Army	367	0.71	ref	45	0.94	39	0.83	38	0.80	27	0.57	33	0.69	39	0.80	36	0.73	33	0.68	42	0.86	21	0.41	14	0.44
Navy	381	0.99	1.39	38	1.01	50	1.37	47	1.29	36	0.98	43	1.14	34	0.90	25	0.67	30	0.84	36	1.05	23	0.69	19	0.92
Air Force	460	1.22	1.72	43	1.18	65	1.82	49	1.39	54	1.55	61	1.70	45	1.23	28	0.75	36	1.02	43	1.25	26	0.78	10	0.49
Marine Corps	111	0.60	0.84	16	0.93	11	0.64	14	0.82	4	0.23	8	0.47	11	0.62	10	0.57	8	0.45	13	0.73	12	0.66	4	0.35
Gender																									
Male	1,102	0.88	ref	118	0.99	135	1.16	122	1.05	102	0.88	122	1.03	111	0.93	83	0.69	92	0.78	113	0.98	69	0.59	35	0.48
Female	217	1.02	1.16	24	1.24	30	1.56	26	1.32	19	0.94	23	1.11	18	0.85	16	0.76	15	0.75	21	1.07	13	0.67	12	0.99
Age group																									
<20	12	0.08	ref	0	0.00	2	0.15	0	0.00	1	0.06	5	0.31	2	0.13	1	0.07	0	0.00	0	0.00	0	0.00	1	0.14
20-24	158	0.33	3.99	17	0.40	16	0.38	23	0.54	12	0.27	18	0.39	15	0.31	11	0.22	12	0.25	19	0.40	7	0.15	8	0.28
25-29	208	0.71	8.66	23	0.79	22	0.80	23	0.86	20	0.77	21	0.81	19	0.70	17	0.61	20	0.71	23	0.81	12	0.41	8	0.43
30-34	218	1.01	12.42	22	0.95	40	1.85	25	1.21	16	0.80	16	0.80	23	1.15	12	0.60	19	0.97	24	1.25	10	0.53	11	0.92
35-39	282	1.49	18.26	31	1.58	34	1.74	35	1.82	23	1.23	35	1.90	25	1.39	17	0.99	24	1.46	28	1.74	23	1.43	7	0.69
40+	441	3.43	42.10	49	4.14	51	4.33	42	3.61	49	4.21	50	4.15	45	3.67	41	3.27	32	2.55	40	3.24	30	2.46	12	1.56
Race																									
White	1,193	1.30	ref	119	1.43	146	1.73	134	1.56	107	1.25	137	1.57	122	1.37	94	1.05	97	1.11	120	1.40	72	0.83	45	0.84
Black	10	0.04	0.03	1	0.04	1	0.04	2	0.07	0	0.00	0	0.00	1	0.04	3	0.12	2	0.08	0	0.00	0	0.00	0	0.00
Others	116	0.43	0.33	22	0.77	18	0.73	12	0.52	14	0.61	8	0.33	6	0.24	2	0.08	8	0.31	14	0.53	10	0.40	2	0.12
Military status																									
Enlisted	775	0.63	ref	79	0.68	95	0.83	92	0.80	62	0.54	86	0.74	71	0.60	61	0.51	66	0.57	80	0.71	51	0.45	32	0.45
Officer	540	2.30	3.64	62	2.79	70	3.21	56	2.59	58	2.71	59	2.68	57	2.53	38	1.67	41	1.82	54	2.43	30	1.36	15	1.10
Other	4	3.98	6.29	1	6.48	0	0.00	0	0.00	1	14.44	0	0.00	1	13.10	0	0.00	0	0.00	0	0.00	1	12.91	0	0.00
Military occupation																									
Combat	310	1.04	ref	35	1.25	41	1.49	30	1.09	33	1.21	31	1.13	32	1.15	26	0.92	28	0.98	26	0.89	14	0.49	14	0.78
Health care	171	1.40	1.35	16	1.30	28	2.40	12	1.05	23	2.00	23	1.98	18	1.54	11	0.94	12	1.05	17	1.50	7	0.63	4	0.63
Other	838	0.80	0.77	91	0.92	96	0.99	106	1.09	65	0.67	91	0.91	79	0.78	62	0.61	67	0.69	91	0.96	61	0.64	29	0.48

* Rates are expressed as incident diagnoses per 10,000 person-years.

activities — and because many military aviators fly at high altitudes for long periods during decades of military service, risk of melanoma among military members may be increased. For this report, numbers, rates, and trends of incident diagnoses of melanoma among U.S. military members — with particular attention to pilots, navigators, and crews of fixed wing aircraft — were estimated during a recent 10-year period.

Methods:

The surveillance period was 1 January 1998 to June 2008. The surveillance population included all individuals who served in the active component of the U.S. Armed Forces any time during the surveillance period.

For surveillance purposes, an incident case of malignant melanoma was defined as (a) two or more medical encounters with diagnoses of “malignant melanoma” (ICD-9-CM codes: 172.0-172.9) following at least one medical encounter with

a diagnostic procedure commonly used to evaluate clinically suspicious lesions; or (b) five or more medical encounters with diagnoses of “malignant melanoma” (if no reported relevant diagnostic procedures). For this analysis, “relevant diagnostic procedures” were considered those specified by ICD-9-CM codes: 86.1, 91.6, 86.4, 40.3-40.5 (for procedures during hospitalizations) and CPT codes: 11100, 11101, 11600-11604, 11606, 11620-11624, 11626, 11640-11644, 11646, 11300-11303, 11305-11308, 11310-11313, 11703, 17310, 17311-17315, 38500, 38505, 38510, 38520, 38525, 38530, 38792, 39542, 41100-41108, 67810, 68100, 69100, 69105, 78195, 92225, 92226, 96904 (for outpatient procedures).

Each individual was considered an incident case only once during the surveillance period. Among cases, the incidence date was considered the date of the first medical encounter that included a diagnosis of “malignant melanoma.”

For this report, “fixed wing aviators” were identified from DoD primary occupation codes that specify fixed wing pilots, navigators, and crews. Among aviators, “excess” cases

Table 2. Numbers and incidence rates* of clinically significant malignant melanoma, among active component members with and without fixed-wing aviation-related occupations, U.S. Armed Forces, January 1998- June 2008

	Race						Total		Rate ratio, aviation: non- aviation
	White		Black		Others				
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	
Fixed wing aviation-related occupations									
Age group									
<20	1	0.99	0	0.00	0	0.00	1	0.54	7.11
20-24	4	0.95	0	0.00	1	0.74	5	0.77	2.42
25-29	6	0.72	0	0.00	2	1.73	8	0.81	1.15
30-34	10	1.26	0	0.00	2	2.15	12	1.31	1.31
35-39	21	3.18	0	0.00	1	1.55	22	2.94	2.05
40+	33	5.61	0	0.00	6	9.96	39	5.86	1.78
Total	75	2.21	0	0.00	12	2.33	87	2.09	2.41
Other occupations									
Age group									
<20	10	0.11	0	0.00	1	0.03	11	0.08	
20-24	140	0.47	0	0.00	13	0.13	153	0.32	
25-29	175	1.01	1	0.02	24	0.44	200	0.70	
30-34	191	1.52	3	0.07	12	0.35	206	1.00	
35-39	241	2.14	2	0.05	17	0.61	260	1.43	
40+	361	4.60	4	0.17	37	1.87	402	3.30	
Total	1,118	1.27	10	0.04	104	0.40	1,232	0.87	

*Incidence rates expressed as cases per 10,000 person-years.

were estimated by comparing the numbers of “observed” and “expected” cases. Expected cases were estimated by multiplying the observed rates in all age and race-defined subgroups of non-aviators by the person-years of service in the respective age and race-defined subgroups of aviators.

Results:

From January 1998 through June 2008, there were 1,319 incident diagnoses of malignant melanoma among active component members. The crude overall incidence rate (IR) was 0.90 cases per 10,000 person-years (p-yrs) (Table 1).

Numbers and rates of incident diagnoses of malignant melanoma generally declined during the period. The most cases and highest rate were in 1999 (n=165; IR: 1.21 per 10,000 p-yrs), and the fewest cases and lowest rate were in 2007 (n=82, IR: 0.60 per 10,000 p-yrs). Of note, the incidence rate during the first six months of 2008 (0.56 per 10,000 p-yrs) was lower than the rate during any prior year (Figure 1, Table 1).

As expected, incidence rates sharply increased with age. Among all affected service members, more than 70% were older than 30 and approximately one-third were older than 40 years. Relative to their respective counterparts, crude overall incident rates were higher among females, whites, and those in health care occupations (Table 1).

Among the Services, the most cases and highest rate were

in the Air Force, and the fewest cases and lowest rate were in the Marine Corps — the crude overall rate in the Air Force (1.22 per 10,000 p-yrs) was more than 2-times higher than in the Marine Corps (0.60 per 10,000 p-yrs) (Table 1).

The crude incidence rate among those with fixed wing aviation-related occupations — e.g., pilots, navigators, flight crew (“aviators”) — was 2.4-times higher than among non-aviators (IR, aviators: 2.09 per 10,000 p-yrs; non-aviators: 0.87 per 10,000 p-yrs) (Table 2). There were no cases among Black aviators; however, crude rates among aviators who were white and “other” (non-white/non-black) races were 1.75- and 5.89-times higher than among their respective non-aviator counterparts.

If the rates in each age and race-defined subgroup of non-aviators had occurred in the respective subgroups of aviators, there would have been 66 cases — rather than the 87 observed — among aviators. Not surprisingly, of the estimated 21 excess cases among aviators, most (n=18; 88%) were among those older than 35. Of interest, nearly one-half of the total estimated “excess” cases among aviators affected those of “other” races (observed: 12; expected: 2.5; excess: 9.5) (Table 2).

Editorial comment:

This report documents a relatively low overall incidence of malignant melanoma diagnoses among active component service members. On average during the past 10 years, there was less than one incident diagnosis per 10,000 service members per year. However, the rates of new diagnoses estimated in this report — particularly among service members older than 39 years — are higher than the rates estimated in similarly aged members of the same race/ethnic subgroups of the general U.S. population¹.

This report also documents that rates of new diagnoses of malignant melanoma among U.S. military members have significantly declined over the past ten years. The decline in rates of new diagnoses among military members is contrary to reported increases in rates in the general U.S. population.

Consistently improving case detection may account in part for the findings of relatively high but declining rates of diagnosis of melanoma among military members. In contrast to many civilians, military members have “free” access to medical care and mandatory periodic medical examinations. If cases are detected at earlier stages among military members than others, the distribution of cases by age at detection would be shifted to the left (toward younger ages) among military members relative to civilians. In turn, some cases not detected until civilians are older than military aged (e.g., >50 years) would be diagnosed among military members when they are still in active service (e.g., <50 years). If so, the earlier ascertainment would inflate the rates of diagnosis among military members relative to their similarly aged

civilian counterparts.

By the same token, if in the past ten years, the numbers of actual new cases per year were stable but the ability to detect them in earlier stages was improved, the numbers and rates of incident diagnoses per year would likely decrease. Such an effect of earlier case detection would occur if, in the early years of the period, both early and later stage cases were undetected and thus capable of being newly diagnosed, while in later years, only very early cases were undetected and thus diagnosable.

In U.S. civilian populations, melanomas occur at much lower rates and are detected at later clinical stages among Hispanics and other racial/ethnic minority group members than among white non-Hispanics.¹⁻⁴ The finding of apparently “excess” cases among aviators — particularly those non-white and non-black — may reflect at least in part more complete and/or earlier ascertainment of cases among military aviators of all race/ethnicities. Military aviators are exceptionally closely monitored by medical officers.

There are some significant limitations that should be considered when interpreting the findings of this report. For example, the case definition used for this surveillance relied on “indicator” ICD-9-CM diagnosis and procedure codes that were reported on standardized records of hospitalizations and ambulatory visits. When such administrative records are used to find cases of relatively rare conditions — such as malignant melanoma — the reliability of single reports of indicator diagnostic codes can be low. For example, diagnostic codes that are specific for conditions are sometimes inappropriately used to report medical evaluations that rule out the conditions of interest. To increase the specificity of case definitions used for this report, we required multiple encounters that included the specific ICD-9-CM code for “malignant melanoma” and/or procedure codes that indicated that relevant diagnostic procedures were conducted prior to the diagnosis of malignant melanoma. However, the increase in the specificity of the case definition used for this report likely decreased the sensitivity. If so, some “true cases” would

not have been included as cases for this report — and the numbers and rates documented here would be underestimates of the actual values.

Many military members have frequent, prolonged occupational exposures to intense UV radiation from sunlight. Military leaders at all levels should ensure that service members protect their skin and eyes from sun-related injuries while on duty. Public health officials should encourage service members to protect themselves and their family members from sun-related injury during recreational activities. Medical care providers should closely examine skin surfaces (including nail beds, palms of the hands, and soles of the feet) for pigmented lesions that are potentially malignant. Although the risk of melanoma is relatively low, members of racial/ethnic minorities should be considered at risk and closely examined for suspicious lesions.

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Update: Deployment Health Assessments, U.S. Armed Forces, October 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 predeployment to postdeployment.

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 October 2007 to September 2008, there were 392,962 pre-deployment health assessments, 348,541 post-deployment health assessments, and 302,520 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 October 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 November 2007 to October 2008, nearly three-fourths (73.1%) 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 (58.1%) and post-deployment reassessments (52.8%). 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–October 2008

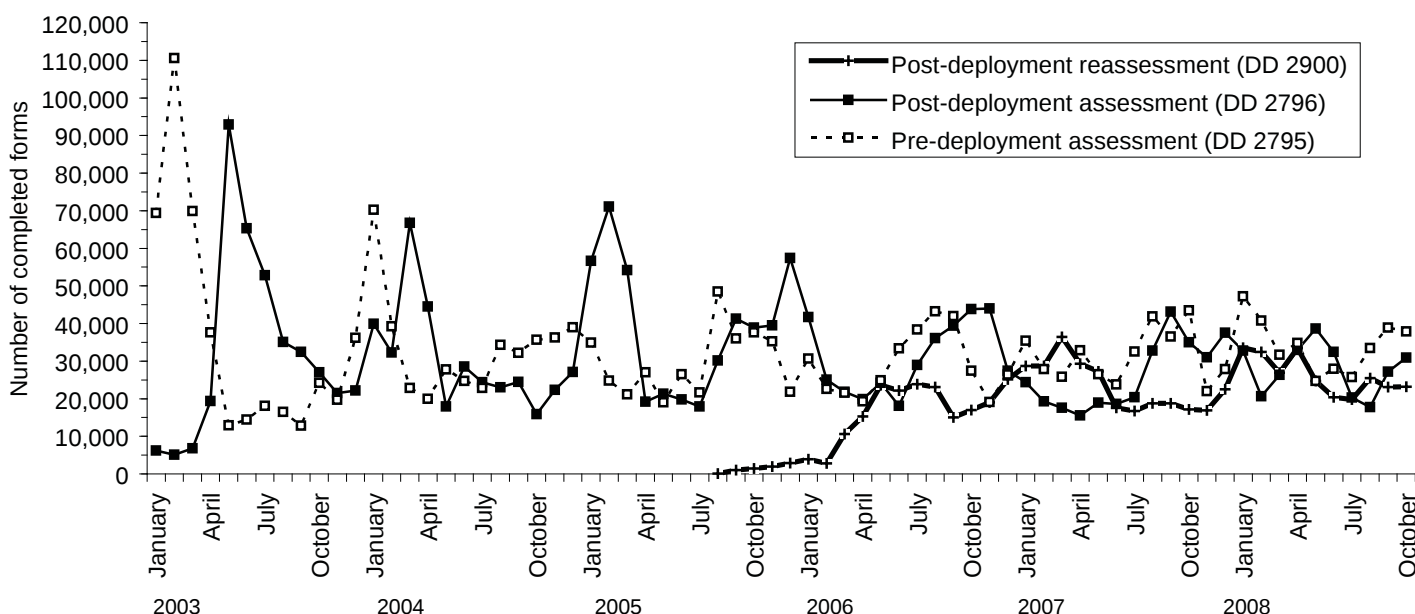


Table 1. Deployment-related health assessment forms, by month, U.S. Armed Forces, November 2007-October 2008

	Pre-deployment assessment DD2795		Post-deployment assessment DD2796		Post-deployment reassessment DD2900	
	No.	%	No.	%	No.	%
Total	392,962	100	348,541	100	302,520	100
2007						
November	21,973	5.6	31,037	8.9	16,866	5.6
December	27,825	7.1	37,572	10.8	22,513	7.4
2008						
January	47,236	12.0	32,756	9.4	33,564	11.1
February	40,789	10.4	20,652	5.9	32,474	10.7
March	31,707	8.1	26,312	7.5	26,891	8.9
April	34,819	8.9	32,985	9.5	33,501	11.1
May	24,715	6.3	38,618	11.1	24,740	8.2
June	27,905	7.1	32,459	9.3	20,404	6.7
July	25,729	6.5	20,320	5.8	19,752	6.5
August	33,461	8.5	17,710	5.1	25,481	8.4
September	38,927	9.9	27,171	7.8	23,138	7.6
October	37,876	9.6	30,949	8.9	23,196	7.7

immediate post-deployment to 3-6 months after returning. For example, prior to deploying, less than one of 40 (2.5%) deployers rated their health as “fair” or “poor”; upon returning from deployment, one of 14 (7.7%) deployers rated their health as “fair” or “poor”; and 3-6 months after returning, one of 7 (13.8%) 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: 7.7%), and highest 3-6 months after return from deployment (mean, by month: 13.7%) (Figure 3). From month to month, there was relatively little variability in the proportions of deployers who rated their health as “fair” or “poor” on predeployment, post-deployment, and post-deployment reassessment questionnaires (Figure 3). Of deployers who completed health assessments prior to and 3-6 months after returning from deployment, approximately one of 6 (16.4%) 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 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

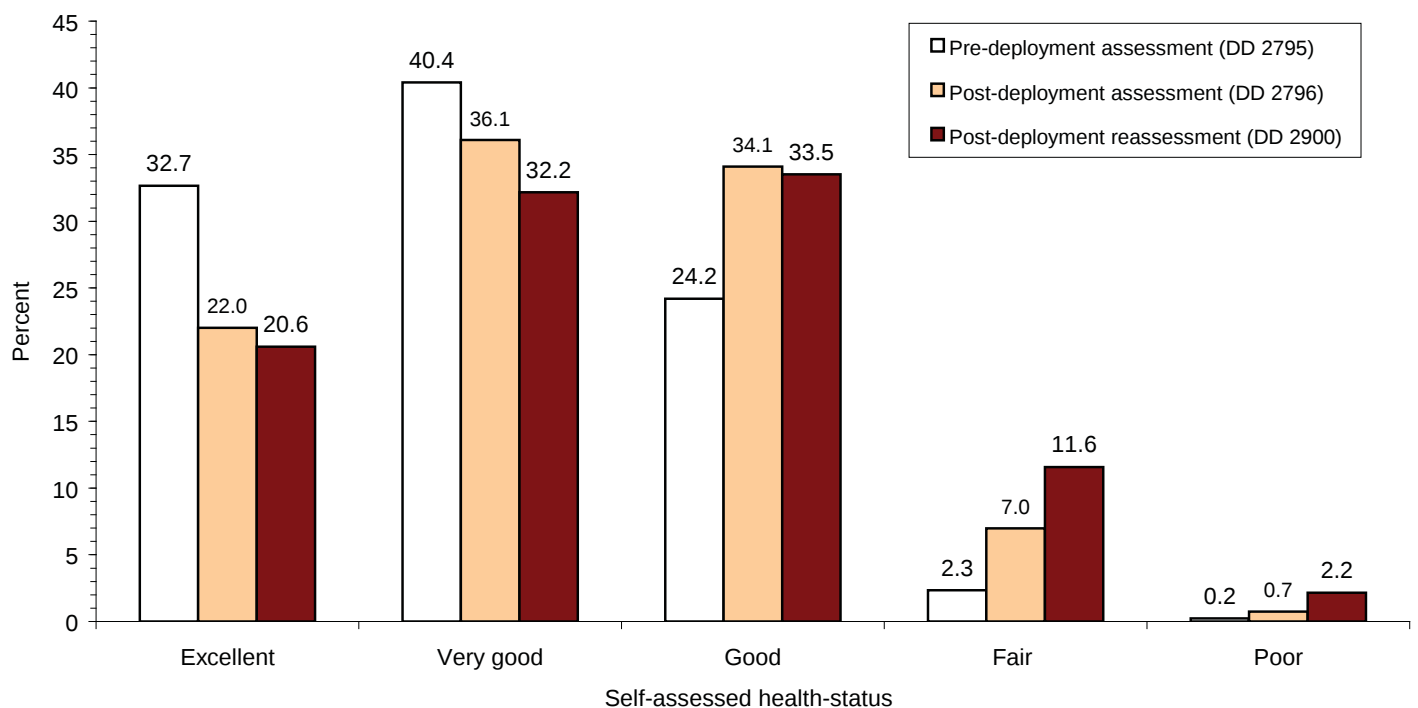
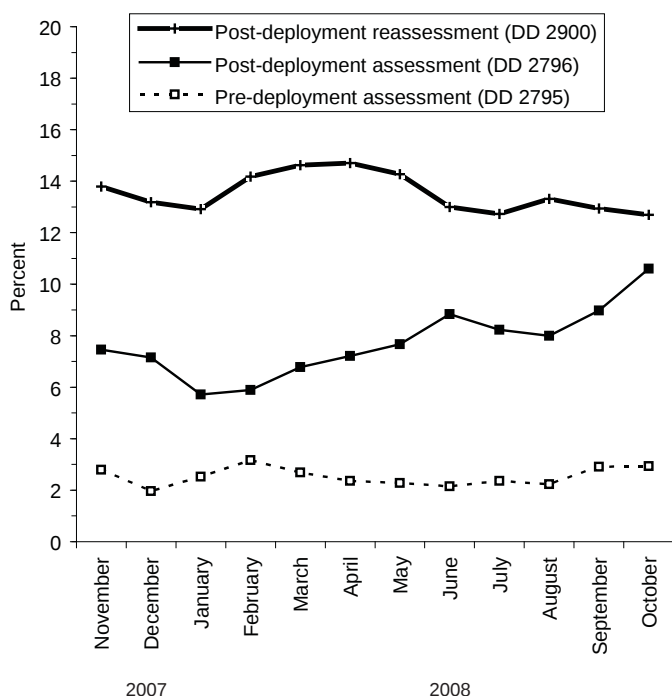
Figure 2. Percent distributions of self-assessed health status as reported on deployment health assessment forms, U.S. Armed Forces, November 2007-October 2008

Figure 3. Proportion of deployment health assessment forms with self-assessed health status as “fair” or “poor”, U.S. Armed Forces, November 2007–October 2008



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 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 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, November 2007–October 2008

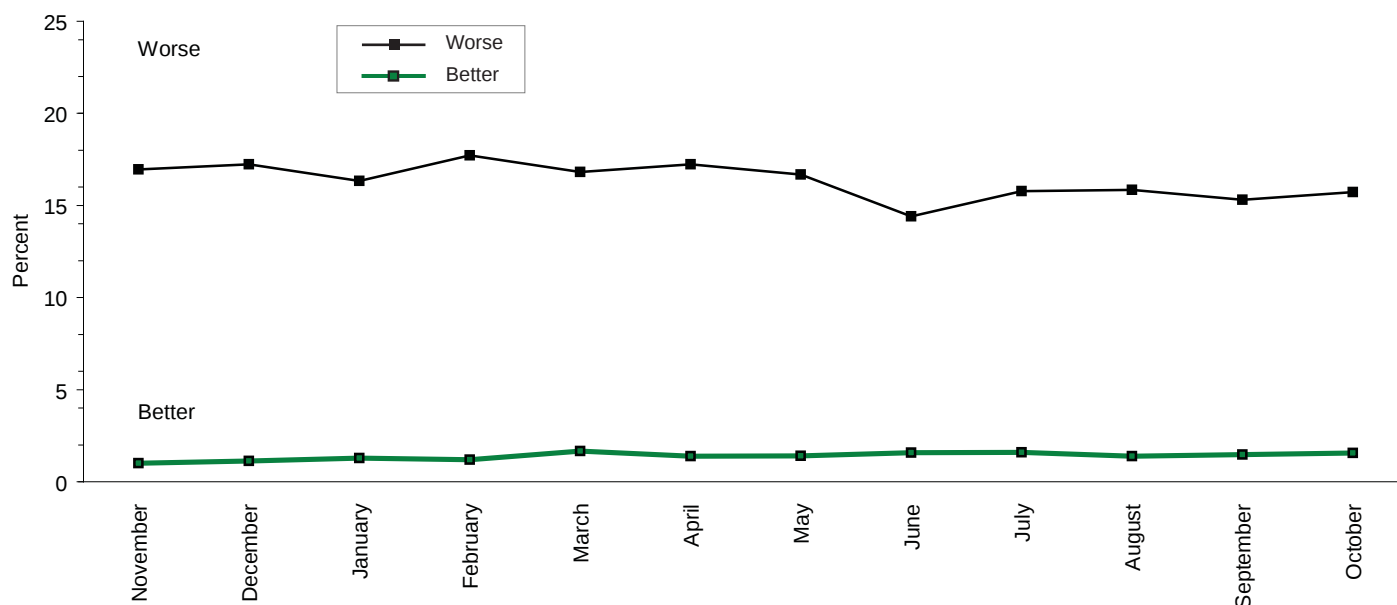


Figure 5. Percent of deployers with mental or behavioral health referrals, by Service and component, by timing of health assessment, U.S. Armed Forces, November 2007–October 2008

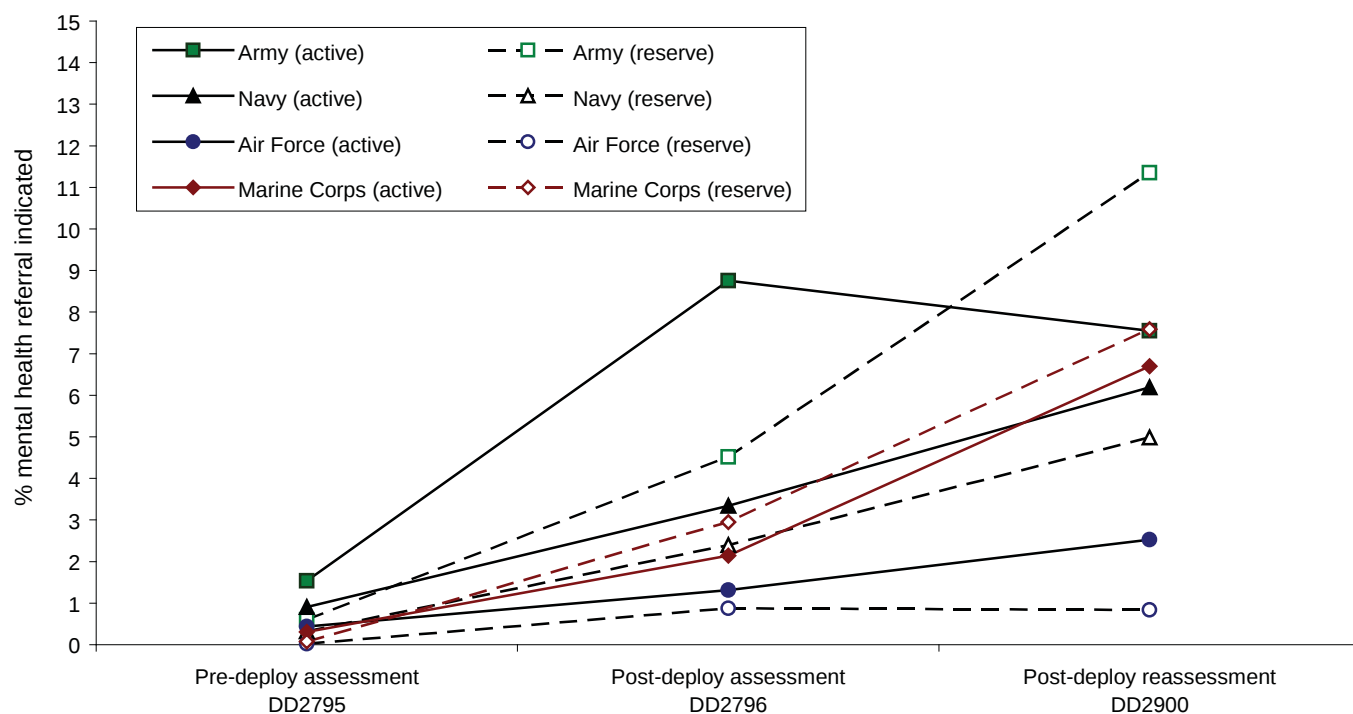


Table 2. Percentage of service members who endorsed selected questions/received referrals on health assessment forms, U.S. Armed Forces, November 2007–October 2008

	Army				Navy				Air Force				Marine Corps				All service members													
	Pre-deploy DD2795		Post-deploy DD2900		Pre-deploy DD2795		Post-deploy DD2900		Pre-deploy DD2795		Post-deploy DD2900		Pre-deploy DD2795		Post-deploy DD2900		Pre-deploy DD2795		Post-deploy DD2900											
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%										
Active component	n=134,919 n=124,776 n=94,595 n=16,043 n=51,268 n=58,589 n=30,930 n=27,307 n=40,743 n=240,481 n=215,265 n=194,382																													
	4.1		9.5		16.9		1.6		4.3		6.6		0.5		2.9		4.5		1.9		3.5		10.3		2.7		6.9		11.9	
	12.4		28.1		36.3		5.1		9.6		19.1		2.7		10.3		14.6		3.8		8.3		27.5		8.3		20.5		28.2	
	na		13.7		28.8		na		3.7		14.0		na		4.2		9.8		na		4.0		20.4		na		9.8		21.5	
	na		21.3		25.0		na		10.5		15.2		na		8.6		15.4		na		7.9		22.0		na		16.2		21.5	
	na		14.4		18.5		na		3.6		8.6		na		2.9		3.4		na		3.2		11.7		na		9.8		12.8	
	na		18.8		37.7		na		6.6		26.4		na		4.6		15.6		na		8.3		34.2		na		13.6		30.8	
	6.2		33.4		24.7		5.8		16.6		19.9		1.6		11.8		9.3		5.6		13.8		28.8		4.9		25.1		21.4	
	1.5		8.8		7.5		0.9		3.3		6.2		0.4		1.3		2.5		0.3		2.1		6.7		1.1		5.9		6.0	
98.2		99.1		97.8		87.8		88.7		92.2		78.2		94.7		96.6		73.9		74.5		72.8		89.7		96.8		88.8		
	Army				Navy				Air Force				Marine Corps				All service members													
	Pre-deploy DD2795		Post-deploy DD2900		Pre-deploy DD2795		Post-deploy DD2900		Pre-deploy DD2795		Post-deploy DD2900		Pre-deploy DD2795		Post-deploy DD2900		Pre-deploy DD2795		Post-deploy DD2900											
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%										
Reserve component	n=67,781 n=50,870 n=75,284 n=3,836 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																													
	2.3		10.2		19.4		0.6		4.5		9.9		0.3		3.4		4.7		1.2		5.3		10.5		1.9		8.4		16.5	
	13.0		38.7		53.7		3.5		17.7		34.5		1.3		14.8		14.5		3.6		23.7		39.7		10.5		32.2		46.6	
	na		19.2		38.0		na		8.3		23.5		na		6.3		10.1		na		6.3		25.7		na		15.5		32.8	
	na		27.8		37.7		na		21.2		29.2		na		11.8		19.5		na		15.5		30.4		na		23.8		34.4	
	na		11.7		24.9		na		3.6		12.8		na		1.8		2.6		na		3.0		16.4		na		9.0		20.7	
	na		18.3		40.3		na		7.0		27.1		na		3.8		13.7		na		10.0		30.6		na		14.5		35.5	
	5.1		29.5		34.4		3.5		18.9		18.3		0.8		13.3		5.8		5.9		27.9		28.7		4.4		25.7		29.3	
	0.6		4.5		11.4		0.3		2.4		5.0		0.0		0.9		0.8		0.1		2.9		7.6		0.5		3.6		9.4	
95.5		97.0		32.1		74.0		79.1		32.8		58.1		61.7		35.2		81.6		62.4		30.9		93.0		89.4		32.2		

*Includes behavioral health, combat stress and substance abuse referrals.

†Record of inpatient or outpatient visit within 6 months after referral

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, November 2007–October 2008

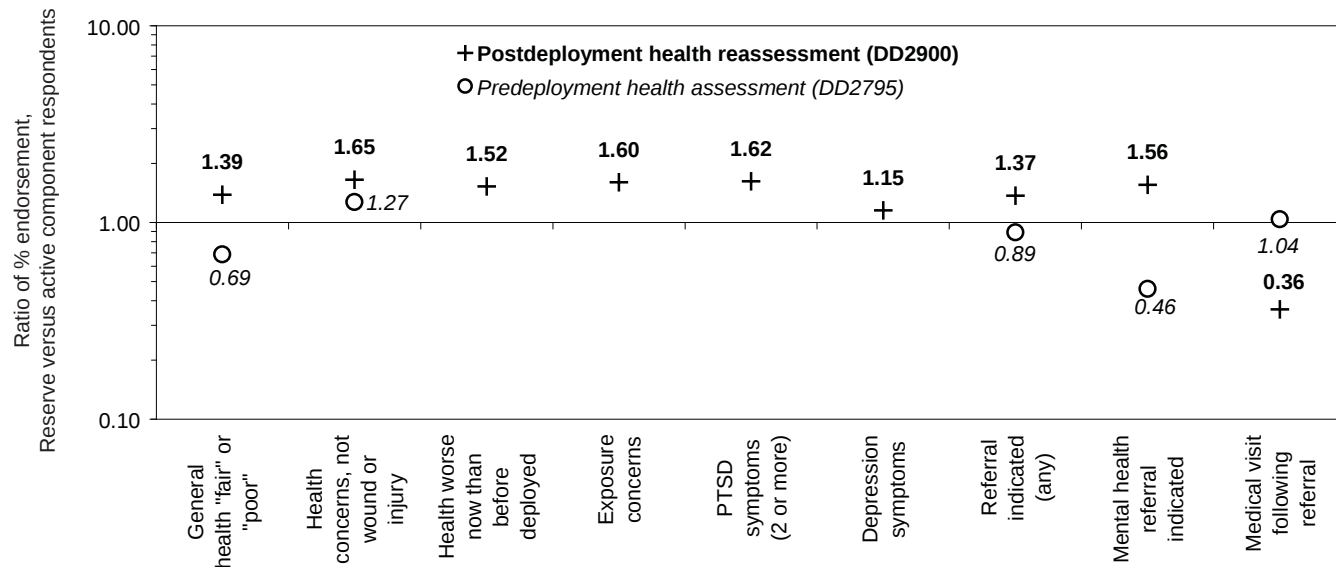
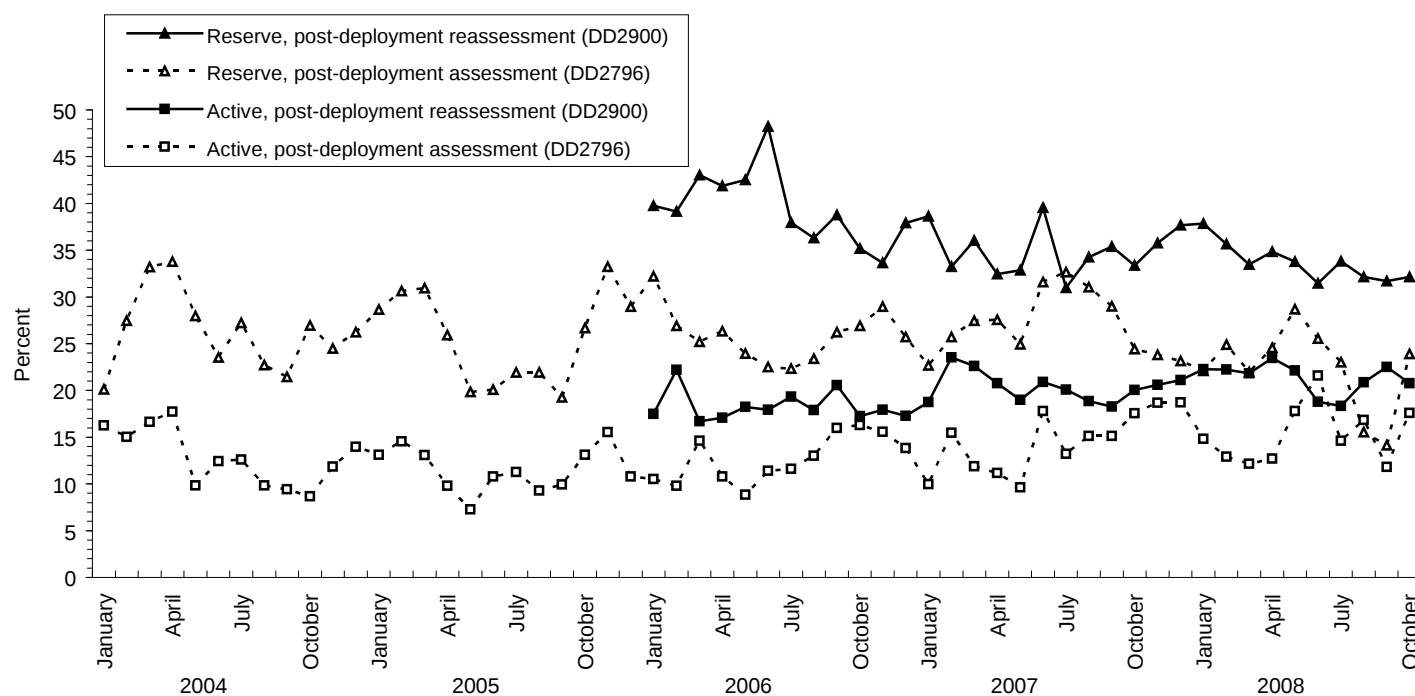


Figure 7. Proportion of service members who endorse exposure concerns on post-deployment health assessments, U.S. Armed Forces, January 2004–October 2008



Sentinel reportable events for service members and beneficiaries at U.S. Army medical facilities, cumulative numbers* for calendar years through 30 October 2007 and 30 October 2008



Army

Reporting locations	Number of reports all events†		Food-borne								Vaccine preventable					
			Campylobacter		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	246	287	1	2	3	4	7	1	1	1	.	.	6	3	1	6
Aberdeen, MD	19	78	.	.	1	.	.	.	.	.	.	.	.	.	.	.
FT Belvoir, VA	215	231	8	7	2	.	8	13	3	4	.	.	.	.	1	.
FT Bragg, NC	1,166	1,457	2	.	.	.	19	16	2	2	.	.	.	.	.	.
FT Drum, NY	198	240	.	.	.	.	.	.	.	.	.	.	2	.	.	.
FT Eustis, VA	174	507	.	1	.	.	.	2	.	.	.	.	.	.	.	1
FT Knox, KY	230	491	2	2	.	.	2	1	5	.	.	.	2	.	.	.
FT Lee, VA	320	264	.	.	1	.	1	.	1	.	.	.	2	4	1	1
FT Meade, MD	78	224	.	.	.	1	1	.	.	1	.	.	.	.	.	.
West Point, NY	42	91	.	.	.	.	.	.	.	.	.	.	3	1	.	.
GREAT PLAINS																
FT Sam Houston, TX	488	662	1	.	2	1	5	9	1	12	.	.	4	.	7	.
FT Bliss, TX	154	486	.	.	.	.	.	10	.	1	.	.	.	.	.	.
FT Carson, CO	576	705	3	3	5	5	1	3	.	.	.	.	1	.	.	.
FT Hood, TX	1,951	2,001	14	6	3	3	14	34	9	6	.	.	.	.	1	2
FT Huachuca, AZ	91	91	1	.	.	.	6	1	.	2	.	.	.	1	.	.
FT Leavenworth, KS	46	41	1	.	.	.	.	.	2	.	.	.	.	.	.	.
FT Leonard Wood, MO	330	443	.	2	1	4	1	1	1	1	.	.	.	1	11	1
FT Polk, LA	204	159	.	1	3	.	5	1	.	1	.	.	.	.	1	1
FT Riley, KS	326	504	2	3	.	1	5	3	.	.	.	.	.	2	2	.
FT Sill, OK	163	210	.	.	.	.	2	3	.	.	.	.	.	1	1	.
SOUTHEAST																
FT Gordon, GA	605	771	.	1	.	.	6	14	.	16	.	.	1	1	.	2
FT Benning, GA	372	328	1	2	1	1	6	5	5	1	.	.	1	.	1	.
FT Campbell, KY	700	280	1	1	.	.	.	.	3	2	.	.	.	.	.	.
FT Jackson, SC	288	344	.	.	.	.	2	.	.	.	.	.	1	1	.	.
FT Rucker, AL	83	80	1	1	.	2	1	4	13	.	.	.	2	1	.	.
FT Stewart, GA	900	799	2	5	.	1	26	25	10	3	.	.	3	7	2	.
WESTERN																
FT Lewis, WA	693	1,081	3	11	4	.	1	3	1	2	.	.	.	.	1	.
FT Irwin, CA	89	70	1	.	.	.	2	3	1	1	.	.	.	.	.	.
FT Wainwright, AK	212	314	.	4	.	.	1	2	.	.	.	.	.	.	.	.
PACIFIC																
Hawaii	671	802	24	34	2	4	14	14	.	3	.	.	1	5	.	.
Korea	573	664	.	.	.	.	.	1	.	.	.	.	.	.	2	1
OTHER LOCATIONS																
Germany	759	1,132	6	10	1	2	8	24	11	5	.	.	.	5	1	2
Unknown	0	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Total	12,962	15,837	74	96	29	29	144	193	69	64	0	0	28	34	33	17

*Events reported by October 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 30 October 2007 and 30 October 2008



Army

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
NORTH ATLANTIC																
Washington, DC Area	12	16	5	1	137	123	22	24	5	7	.	.	.	.	.	15
Aberdeen, MD	.	3	.	.	10	14	3	3	.	.	.	.	.	.	.	.
FT Belvoir, VA	1	.	1	.	152	139	21	11	2	.	.	.	.	.	.	.
FT Bragg, NC	1	1	4	10	787	908	137	188	2	1	75	78	1	.	130	160
FT Drum, NY	2	4	2	.	137	178	24	17	.	.	.	.	.	.	.	.
FT Eustis, VA	1	.	.	.	141	184	11	30	.	4	.	.	.	.	10	1
FT Knox, KY	1	2	1	.	180	186	29	38	.	2	.	.	.	.	2	2
FT Lee, VA	3	2	.	1	248	174	33	64	3	2	.	.	1	.	12	5
FT Meade, MD	1	1	.	.	65	56	8	5	1	.	1	.	1	.	.	.
West Point, NY	22	33	.	.	13	27	.	2	.	.	.	.	.	.	.	.
GREAT PLAINS																
FT Sam Houston, TX	1	.	.	2	260	318	56	72	3	19	.	.	.	1	6	5
FT Bliss, TX	1	.	.	.	112	347	32	68	1	6	.	.	.	.	.	.
FT Carson, CO	.	.	1	.	410	517	56	50	1	.	12	13	1	.	.	.
FT Hood, TX	2	1	5	1	1,421	1,431	273	322	2	1	92	68	.	.	27	.
FT Huachuca, AZ	.	1	.	.	65	69	18	12	1	.	.	.	.	1	.	3
FT Leavenworth, KS	1	1	.	.	37	36	5	4	.	.	.	.	.	.	.	.
FT Leonard Wood, MO	1	.	.	.	224	177	33	20	1	.	.	.	2	3	20	7
FT Polk, LA	.	.	15	.	100	102	33	29	1	2	.	.	.	.	43	20
FT Riley, KS	.	6	.	1	243	318	21	40	.	1	.	1	.	1	19	8
FT Sill, OK	.	.	1	.	88	83	22	18	2	.	.	.	1	.	34	9
SOUTHEAST																
FT Gordon, GA	1	.	.	.	439	434	85	92	4	.	.	.	.	.	6	1
FT Benning, GA	.	.	2	.	230	202	63	69	.	1	.	.	1	.	45	20
FT Campbell, KY	.	1	.	.	539	162	79	14	.	1	.	.	.	.	15	6
FT Jackson, SC	.	.	.	.	153	282	40	38	3	1	.	1	.	.	87	20
FT Rucker, AL	.	2	.	.	54	54	3	10	1	2	.	.	.	.	5	2
FT Stewart, GA	.	2	.	3	626	579	118	104	3	4	1	.	.	.	64	39
WESTERN																
FT Lewis, WA	.	.	3	5	590	889	74	85	.	1	9	14	.	.	.	.
FT Irwin, CA	1	.	1	.	57	46	5	9	.	.	.	.	.	.	18	11
FT Wainwright, AK	.	1	.	.	173	224	12	28	.	1	.	.	10	12	.	1
PACIFIC																
Hawaii	1	.	.	1	509	604	54	65	.	.	.	1	.	.	3	2
Korea	.	.	13	.	471	576	57	67	1	4	1	.	20	.	8	4
OTHER LOCATIONS																
Germany	25	42	8	18	455	674	151	132	2	7	3	.	.	8	37	18
Unknown	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Total	78	119	62	43	9,126	10,717	1,578	1,730	39	67	194	176	38	26	591	359

‡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 30 October 2007 and 30 October 2008



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																
NMCM Bethesda, MD	43	107	1	2	.	2	2	8	.	.	.	.	1	3	.	.
NHC Annapolis, MD	0	35	.	1	.	.	.	1	.	.	.	.	.	.	.	.
NHC Patuxent River, MD	18	19	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NHC Quantico, VA	0	96	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NAVY MEDICINE EAST																
NH Beaufort, SC	274	91	.	.	.	.	.	1	1	1	.	.	.	.	.	.
NH Camp Lejeune, NC	318	364	.	.	.	.	5	11	.	.	.	.	.	.	.	.
NH Charleston, SC	3	37	.	.	.	.	.	1	.	1	.	.	.	.	.	.
NH Cherry Point, NC	150	156	.	.	.	.	2	6	.	.	.	.	.	.	3	.
NH Corpus Christi, TX	8	6	.	.	.	.	.	.	.	1	.	.	.	.	.	.
NHC Great Lakes, IL	170	545	.	.	1	.	3	.	.	.	.	.	7	.	.	2
NH Guantanamo Bay, Cuba	4	8	.	.	.	1	1	.	.	.	.	.	.	.	.	.
NH Jacksonville, FL	256	231	2	.	.	.	23	35	4	3	.	.	.	3	.	2
NH Naples, Italy	7	28	.	1	.	.	.	.	.	.	.	.	1	.	.	.
NHC New England, RI	8	33	.	1	.	.	.	1	.	.	.	.	.	.	.	1
NH Pensacola, FL	93	136	.	1	3	.	7	5	3	1	.	.	.	.	5	.
NMC Portsmouth, VA	428	491	.	.	.	.	.	.	.	2	.	.	.	3	.	.
NH Rota, Spain	0	23	.	5	.	.	.	3	.	.	.	.	.	.	.	.
NH Sigonella, Italy	15	50	.	.	.	.	.	.	.	.	.	.	.	.	.	1
NAVY MEDICINE WEST																
NH Bremerton, WA	1	65	.	1	.	.	.	1	.	.	.	.	.	.	.	.
NH Camp Pendleton, CA	13	167	.	2	.	1	1	3	.	1	.	.	.	.	.	.
NH Guam-Agana, Guam	31	63	.	.	.	.	1	.	.	.	.	.	.	.	.	3
NHC Hawaii, HI	0	100	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NH Lemoore, CA	1	35	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NH Oak Harbor, WA	0	68	.	.	.	.	.	2	.	.	.	.	1	.	.	.
NH Okinawa, Japan	83	51	.	.	.	1	.	.	.	.	.	.	.	.	1	.
NMC San Diego, CA	337	383	3	.	2	.	3	2	2	1	.	.	28	15	.	1
NH Twentynine Palms, CA	1	9	.	.	.	.	.	.	.	.	.	.	.	.	.	.
NH Yokosuka, Japan	11	75	.	.	.	.	.	.	.	.	.	.	3	.	.	.
NAVAL SHIPS																
COMNAVAIRLANT/CINCLANTFLEET	11	21	.	.	.	.	.	.	.	.	.	.	.	.	.	.
COMNAVSURFPAC/CINCPACFLEET	37	48	.	.	.	.	.	2	.	.	.	.	.	.	1	.
OTHER LOCATIONS																
Unknown	24	132	.	.	.	.	2	.	.	.	.	.	.	.	2	2
Total	2,345	3,673	6	14	6	5	50	82	10	11	0	0	29	36	12	12

*Events reported by October 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 30 October 2007 and 30 October 2008



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	10	.	2	26	60	2	6	2	1	.	.	.	.	.	.
NHC Annapolis, MD	.	6	.	.	.	19	.	1	.	1	.	.	.	.	.	1
NHC Patuxent River, MD	.	3	.	.	14	13	.	1	2	.	.	.	.	.	.	.
NHC Quantico, VA	.	2	.	1	.	41	.	5	.	.	.	.	.	.	.	46
NAVY MEDICINE EAST																
NH Beaufort, SC	.	1	.	.	188	18	19	1	2	.	.	.	.	.	57	67
NH Camp Lejeune, NC	12	.	1	.	250	196	30	51	.	.	.	39	.	.	17	64
NH Charleston, SC	.	1	.	.	3	26	.	3	.	1	.	.	.	.	.	1
NH Cherry Point, NC	.	1	.	.	126	103	8	20	1	.	.	.	.	.	3	4
NH Corpus Christi, TX	.	.	.	.	7	2	1	3	.	.	.	.	.	.	.	.
NHC Great Lakes, IL	.	.	.	.	143	491	16	40	.	2	.	.	.	.	.	.
NH Guantanamo Bay, Cuba	.	.	.	.	3	7	.	.	.	.	.	.	.	.	.	.
NH Jacksonville, FL	.	.	.	.	168	140	28	13	4	2	.	.	.	.	8	.
NH Naples, Italy	.	.	.	.	6	22	1	2	.	.	.	.	.	.	.	.
NHC New England, RI	.	6	.	.	6	20	.	3	2	.	.	.	.	1	.	.
NH Pensacola, FL	1	1	.	.	51	83	7	13	.	3	.	.	.	.	12	21
NMC Portsmouth, VA	1	1	.	1	356	385	69	86	.	3	.	.	.	.	.	.
NH Rota, Spain	.	.	.	.	.	14	.	1	.	.	.	.	.	.	.	.
NH Sigonella, Italy	.	.	.	1	15	38	.	4	.	1	.	.	.	.	.	4
NAVY MEDICINE WEST																
NH Bremerton, WA	.	.	.	1	1	54	.	3	.	.	.	.	.	.	.	.
NH Camp Pendleton, CA	.	.	.	.	10	136	1	18	1	.	.	.	.	.	.	.
NH Guam-Agana, Guam	.	.	.	3	25	42	4	13	.	.	.	.	.	.	.	.
NHC Hawaii, HI	.	.	.	.	.	90	.	5	.	1	.	.	.	.	.	.
NH Lemoore, CA	.	2	.	.	.	24	.	.	.	.	.	.	.	.	.	.
NH Oak Harbor, WA	.	.	.	.	.	50	.	2	.	1	.	.	.	.	.	.
NH Okinawa, Japan	.	.	.	1	57	33	13	8	.	.	.	.	.	.	8	5
NMC San Diego, CA	1	3	.	1	219	288	36	30	5	5	.	.	.	.	.	1
NH Twentynine Palms, CA	.	.	.	.	.	6	1	.	.	.	.	.	.	.	.	3
NH Yokosuka, Japan	.	.	.	.	9	61	.	9	.	.	.	.	.	.	1	.
NAVAL SHIPS																
COMNAVAIRLANT/CINCLANTFLEET	.	.	.	.	9	17	2	4	.	.	.	.	.	.	.	.
COMNAVSRFPAC/CINCPACFLEET	.	.	.	.	24	30	11	9	.	.	.	7	.	.	1	.
OTHER LOCATIONS																
Unknown	.	20	1	1	16	88	2	7	1	.	.	.	.	.	.	5
Total	19	57	2	12	1,732	2,597	251	361	20	21	0	46	0	1	107	222

‡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 30 October 2007 and 30 October 2008



Air Force

Reporting locations	Number of reports all events†		Food-borne								Vaccine preventable					
			Campylobacter		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	1,475	1,586	2	4	4	5	9	17	.	4	.	.	9	29	7	3
Air Education & Training Cmd	673	821	1	1	1	7	15	10	10	1	.	.	4	1	10	8
Lackland, TX	0	68	.	.	.	.	.	.	.	2	.	.	.	.	.	.
USAF Academy, CO	43	39	.	1	.	.	2	.	.	.	.	.	.	.	.	.
Air Force Dist. of Washington	28	33	.	.	.	.	.	.	1	.	.	.	1	2	.	.
Air Force Materiel Cmd	495	636	1	2	2	1	19	7	2	10	.	.	.	.	2	.
Air Force Special Ops Cmd	157	233	.	.	.	.	1	3	1	.	.	.	.	4	.	.
Air Force Space Cmd	321	399	2	1	2	2	7	6	1	1	.	.	2	2	1	1
Air Mobility Cmd	655	920	1	1	1	2	12	8	2	2	.	.	4	7	3	9
Pacific Air Forces	471	509	1	7	2	4	4	4	1	.	.	.	5	9	10	3
PACAF Korea	138	164	.	.	.	.	.	.	.	.	.	.	7	1	1	.
U.S. Air Forces in Europe	242	380	3	1	.	1	.	7	1	.	.	.	2	3	.	1
Other	616	616	5	4	4	5	8	14	.	8	.	.	4	2	2	.
Total	5,314	6,404	16	22	16	27	77	76	19	28	0	0	38	60	36	25

*Events reported by October 7, 2008

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

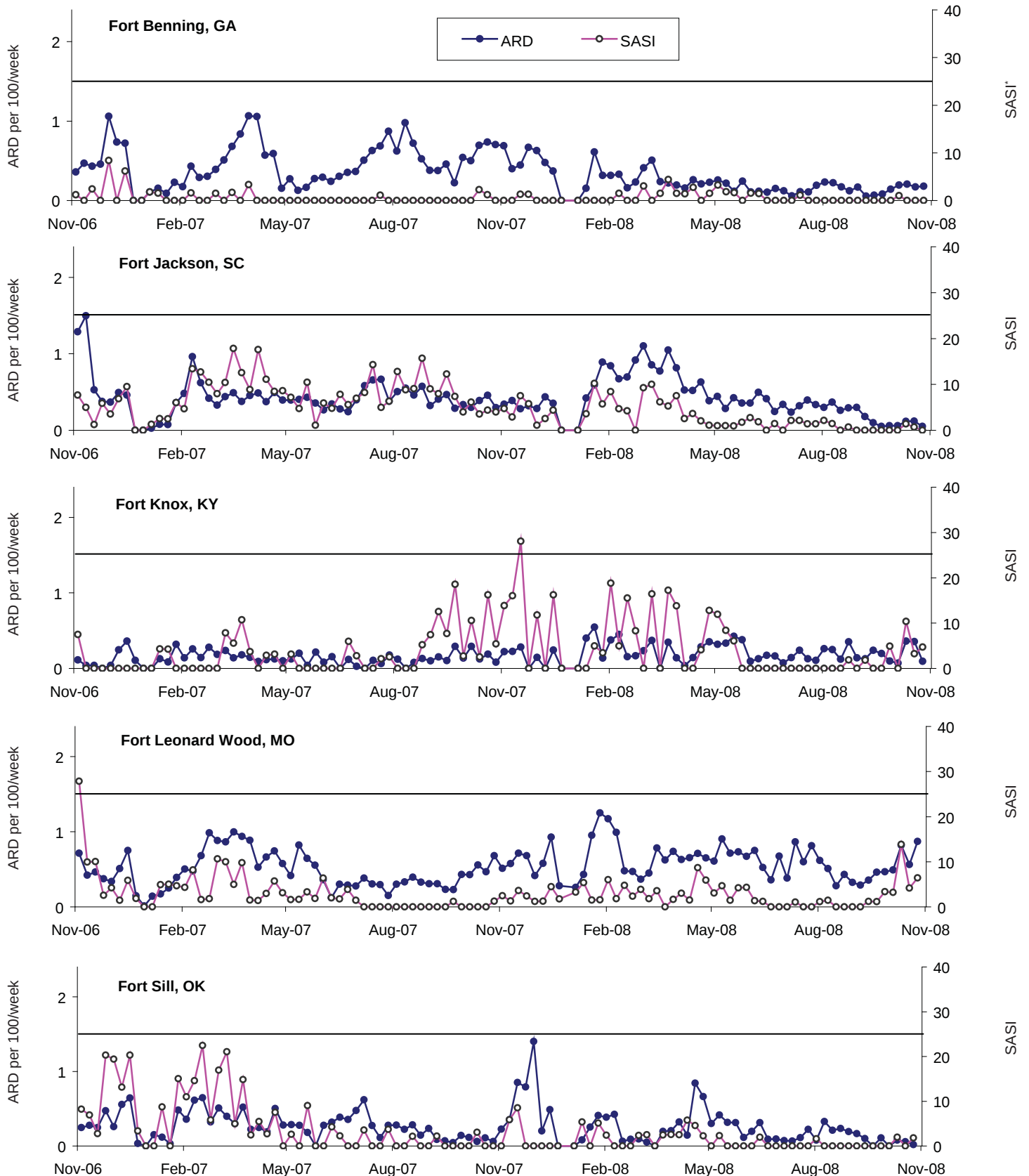
Note: Completeness and timeliness of reporting vary by facility

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	11	3	.	.	1,015	1,038	82	81	5	2	3	3	.	4	6	1
Air Education & Training Cmd	2	4	.	.	517	515	71	47	.	5	.	.	1	1	1	5
Lackland, TX	.	.	.	.	.	60	.	4	.	1	.	.	.	.	.	.
USAF Academy, CO	.	1	.	.	36	35	3	.	.	.	.	.	.	1	.	.
Air Force Dist. of Washington	.	1	.	.	25	22	1	2	.	.	.	.	.	.	.	.
Air Force Materiel Cmd	7	9	1	1	390	411	51	56	1	3	.	.	.	.	.	.
Air Force Special Ops Cmd	.	1	.	1	124	181	19	30	.	1	.	.	.	.	12	.
Air Force Space Cmd	2	5	.	.	274	291	21	16	1	.	.	.	.	.	.	.
Air Mobility Cmd	7	15	.	1	546	640	44	72	3	4	.	.	.	5	3	8
Pacific Air Forces	3	.	1	.	390	404	26	24	.	1	.	.	1	1	.	.
PACAF Korea	.	.	.	.	104	135	5	4	5	.	.	.	2	.	1	.
U.S. Air Forces in Europe	4	14	.	2	189	285	13	32	.	1	.	.	.	.	.	.
Other	2	6	.	1	543	500	33	28	2	2	.	.	.	.	.	5
Total	38	59	2	6	4,153	4,517	369	396	17	20	3	3	4	12	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, November 2006-November 2008



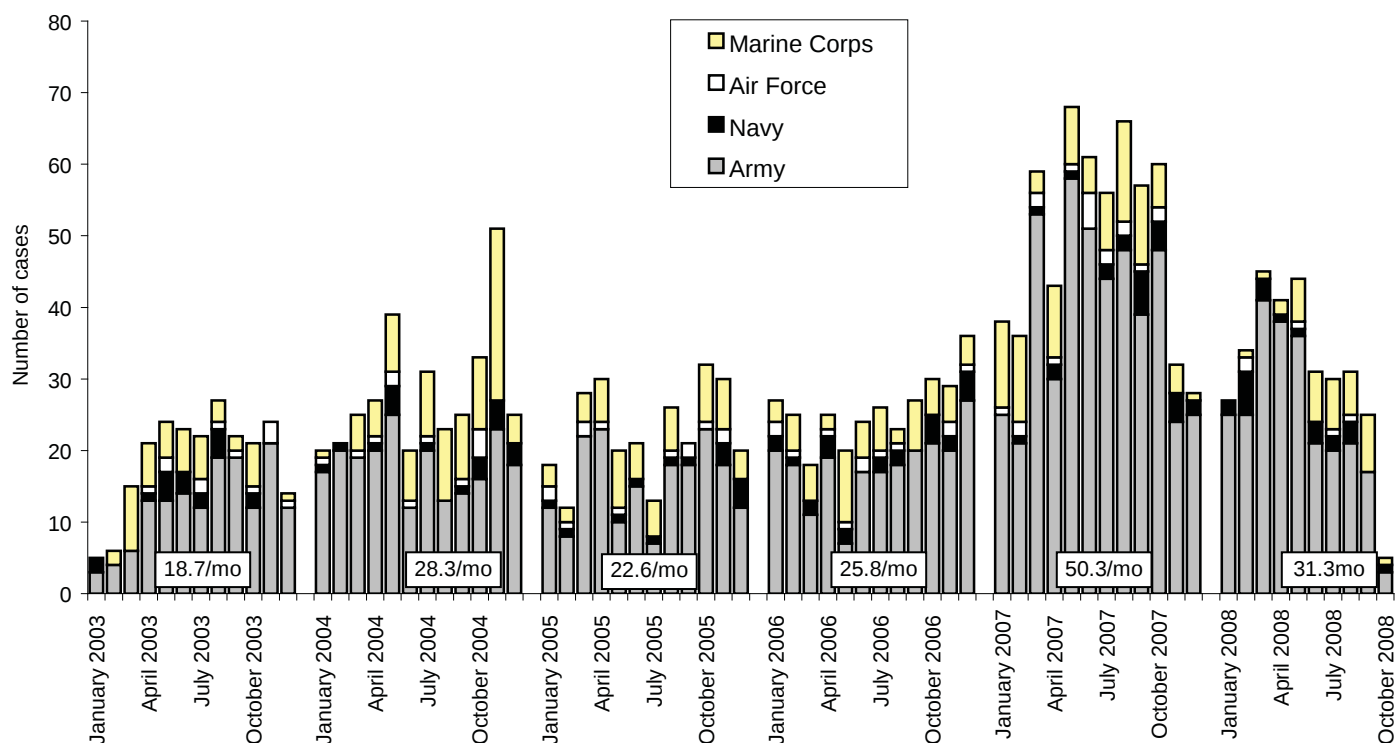
* Streptococcal-ARD surveillance index (SASI) = ARD rate x % positive culture for group A streptococcus

ARD rate = cases per 100 trainees per week

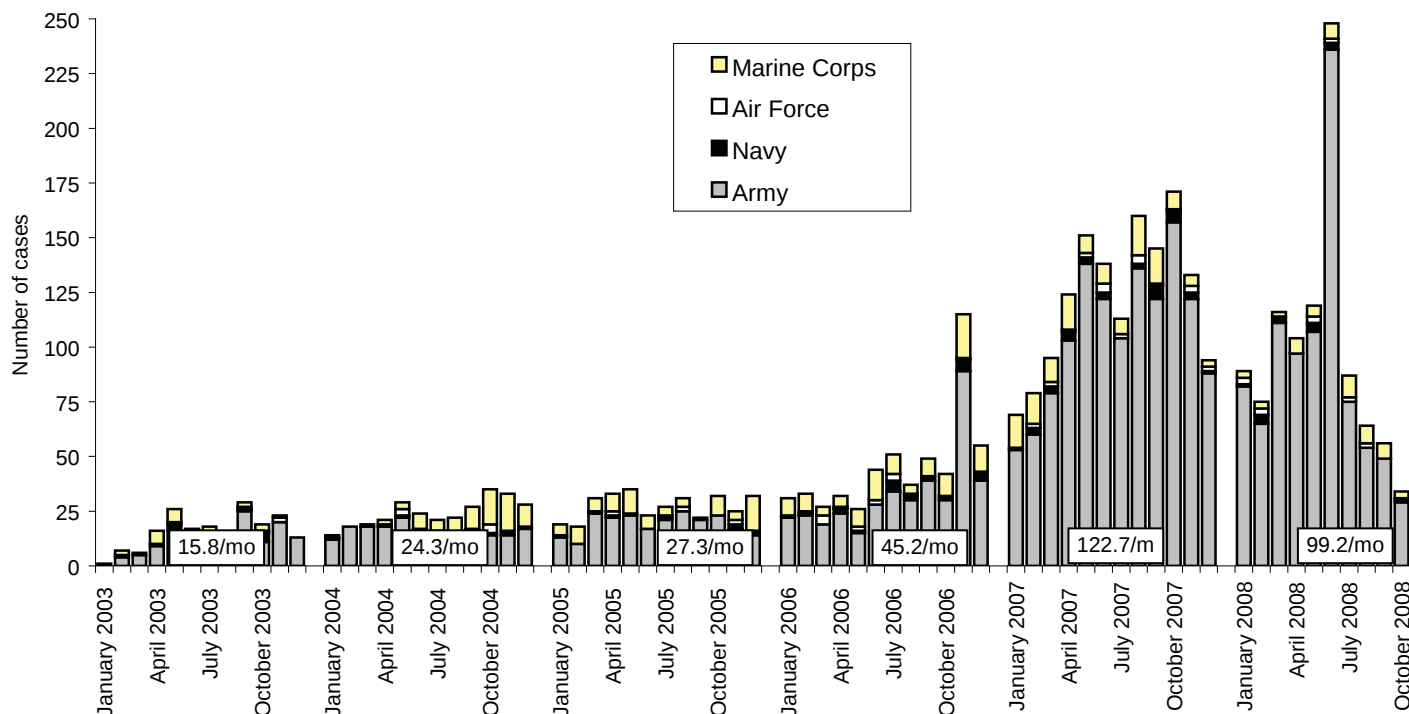
ARD rate ≥ 1.5 or SASI ≥ 25.0 for 2 consecutive weeks are surveillance indicators of epidemics

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



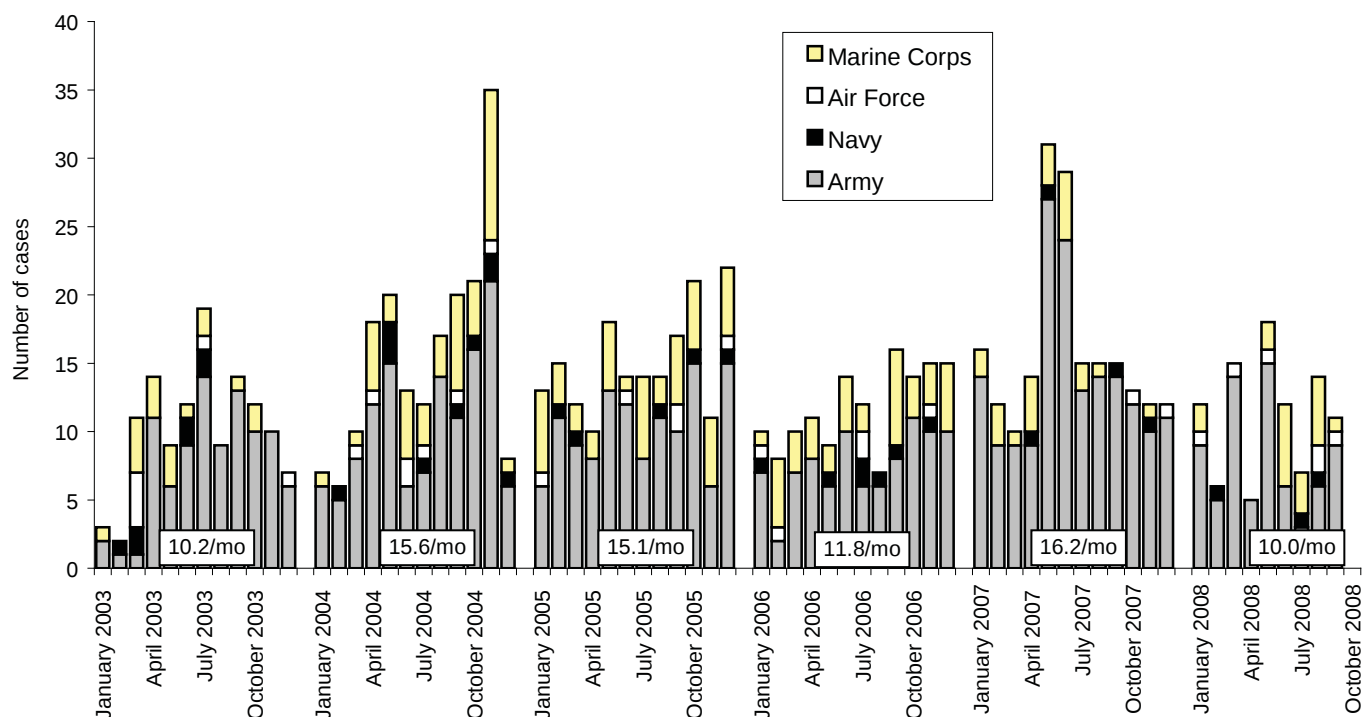
Reference: Army Medical Surveillance Activity. Traumatic brain injury among members of active components, U.S. Armed Forces, 2002-2007. *MSMR*. Aug 2007; 14(5):2-6.

*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 - October 2008

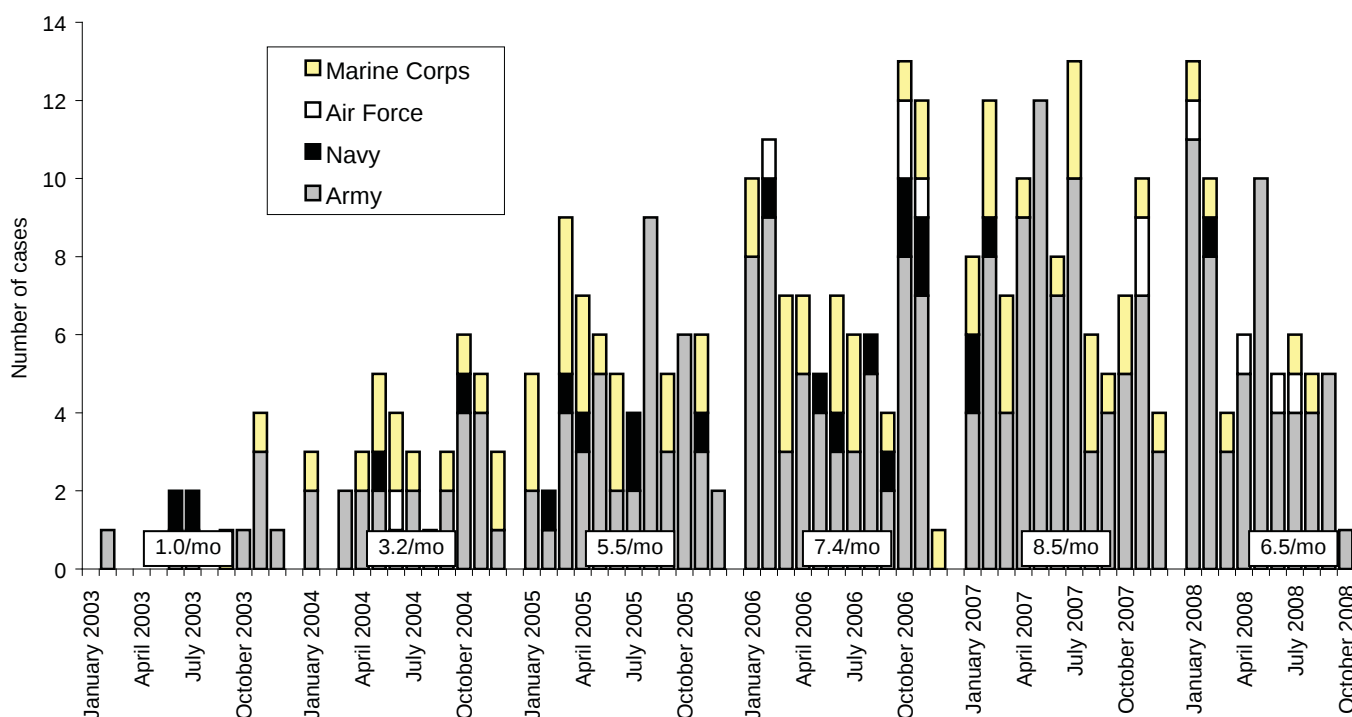
Amputations (ICD-9: 887, 896, 897, V49.6 to V49.7, PR 84.0 to PR 84.1)*



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)†

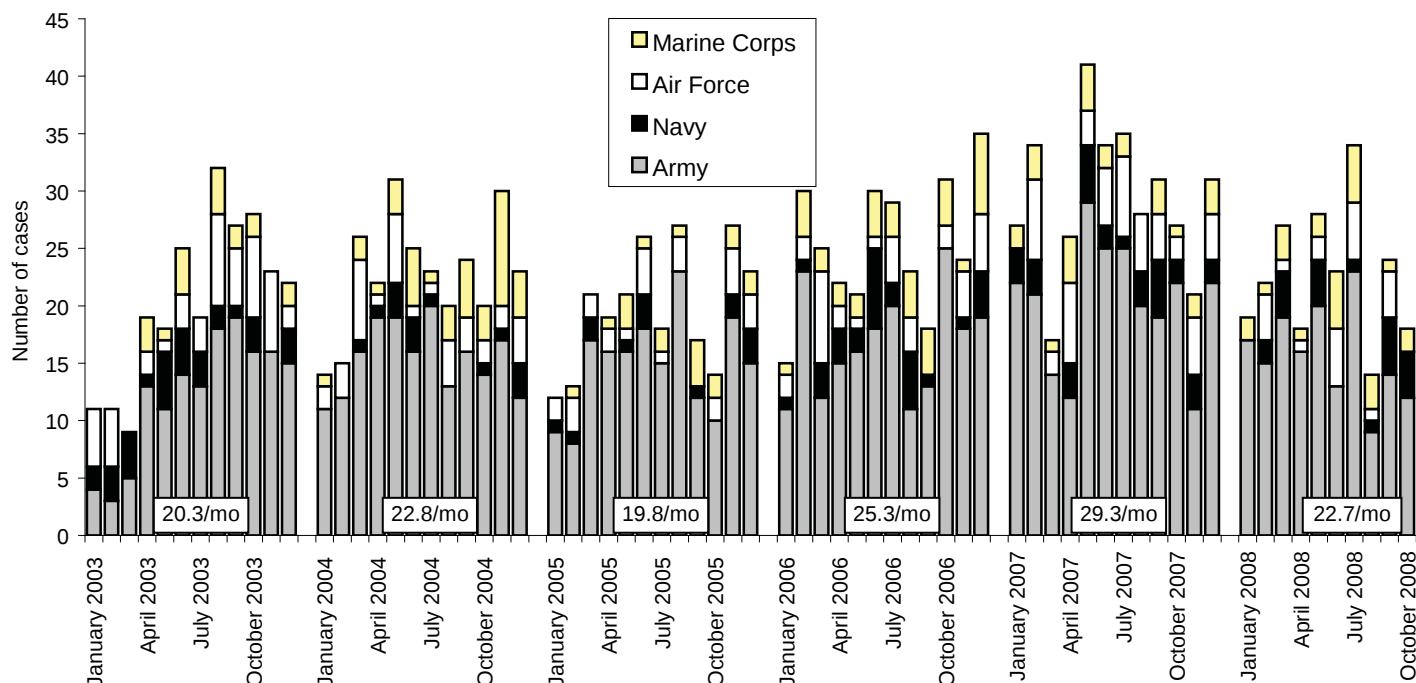


Reference: Army Medical Surveillance Activity. Heterotopic ossification, active components, U.S. Armed Forces, 2002-2007. *MSMR*. Aug 2007; 14(5):7-9.

†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 - October 2008

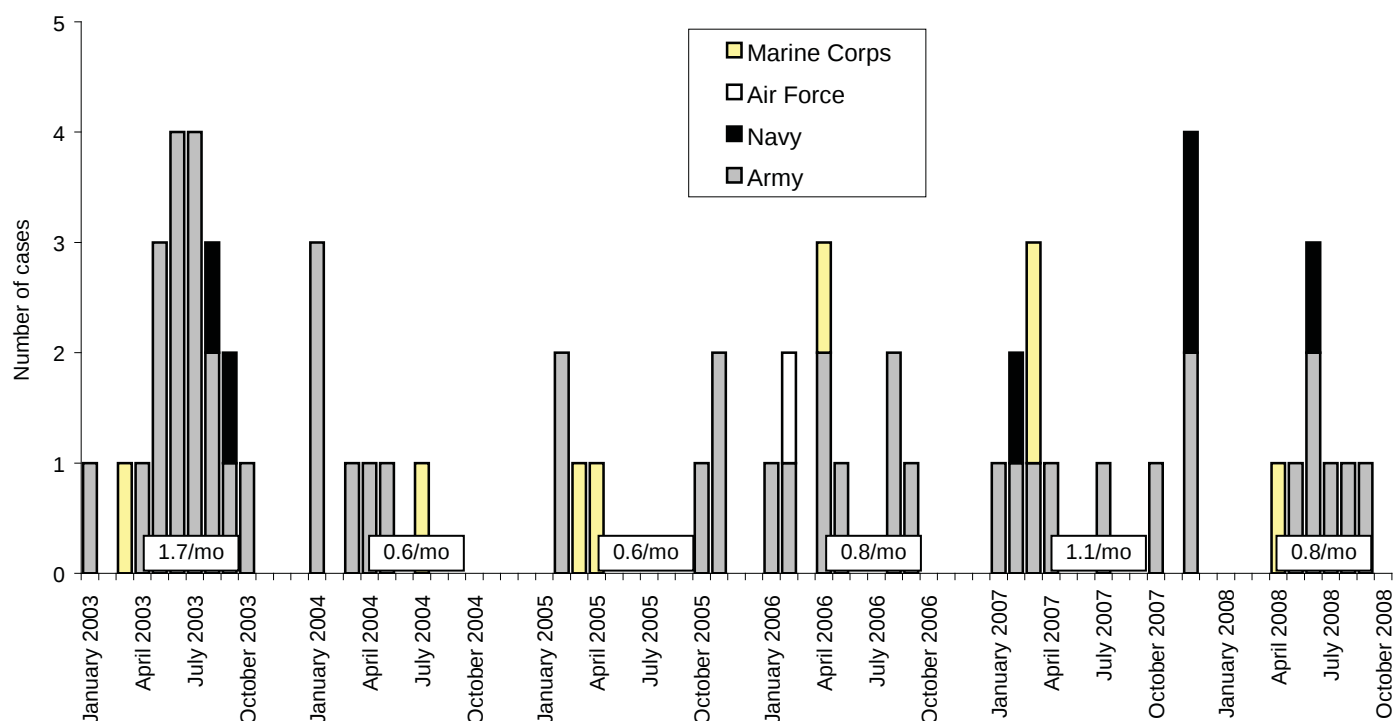
Deep vein thrombophlebitis/pulmonary embolus (ICD-9: 415.1, 451.1, 451.81, 451.83, 451.89, 453.2, 453.40 to 453.42 and 453.8)*



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)[†]

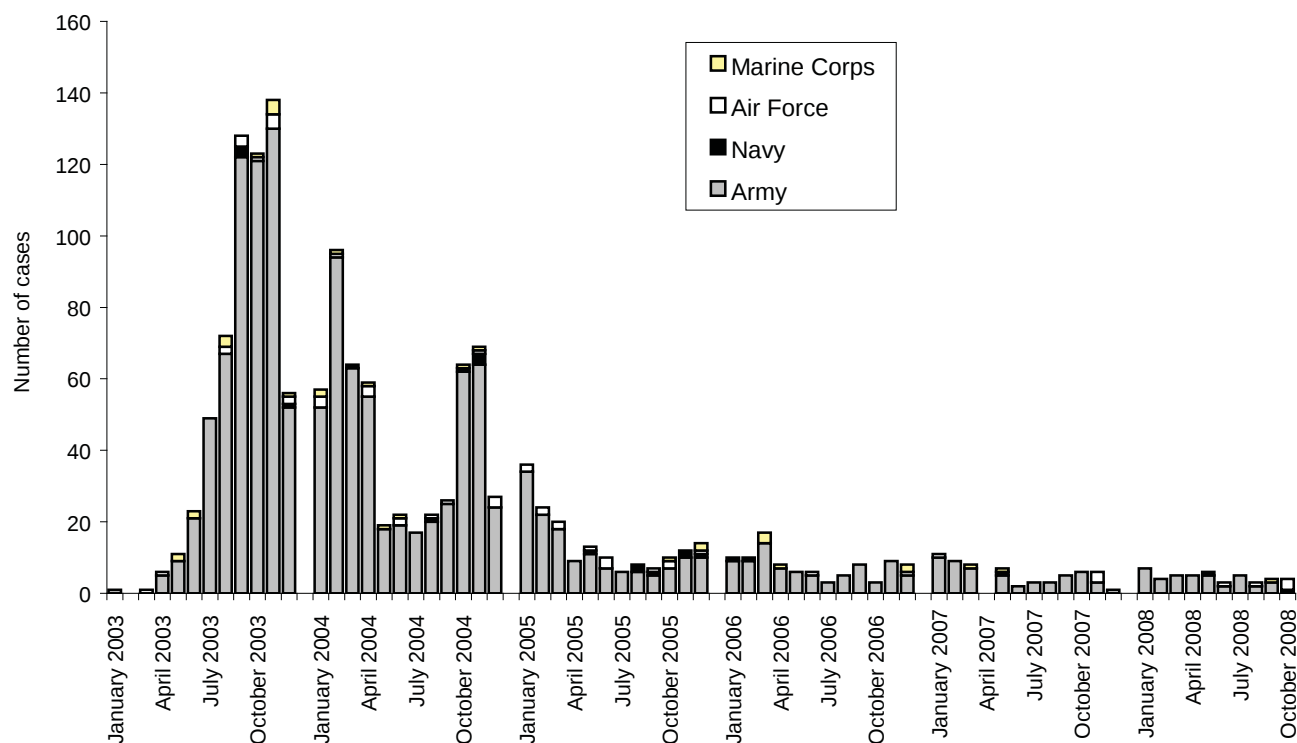


Reference: Army Medical Surveillance Activity. Deployment-related condition of special surveillance interest: severe acute pneumonia. Hospitalizations for acute respiratory failure (ARF)/acute respiratory distress syndrome (ARDS) among participants in Operation Enduring Freedom/Operation Iraqi Freedom, 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 - October 2008

Leishmaniasis (ICD-9: 085.0 to 085.9)*

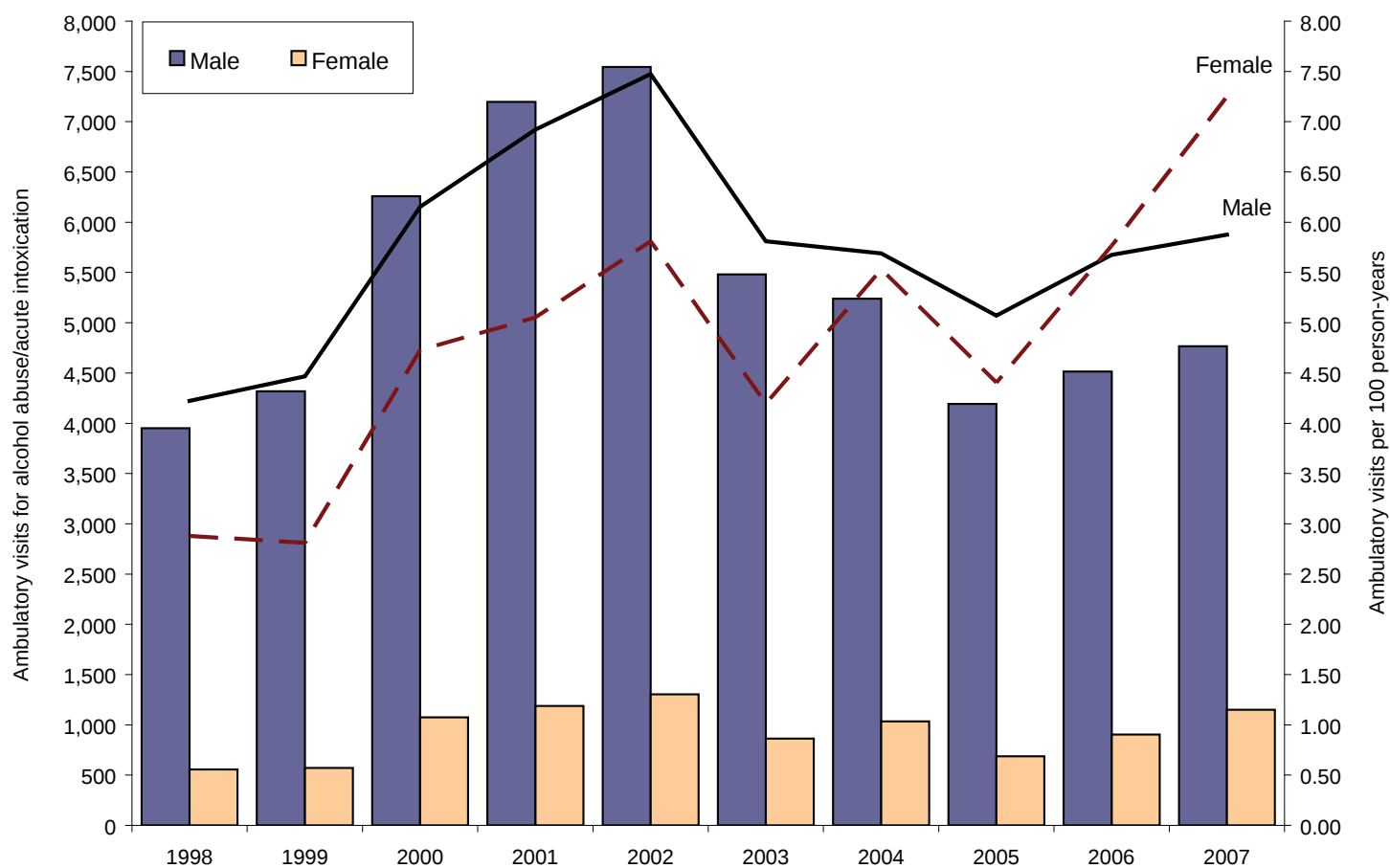


Reference: Army Medical Surveillance Activity. Deployment-related condition of special surveillance interest: leishmaniasis. Leishmaniasis among U.S. Armed Forces, January 2003-November 2004. *MSMR*. Nov/Dec 2004;10(6):2-4.

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

SURVEILLANCE SNAPSHOT: Alcohol Abuse Among Teenaged Service Members

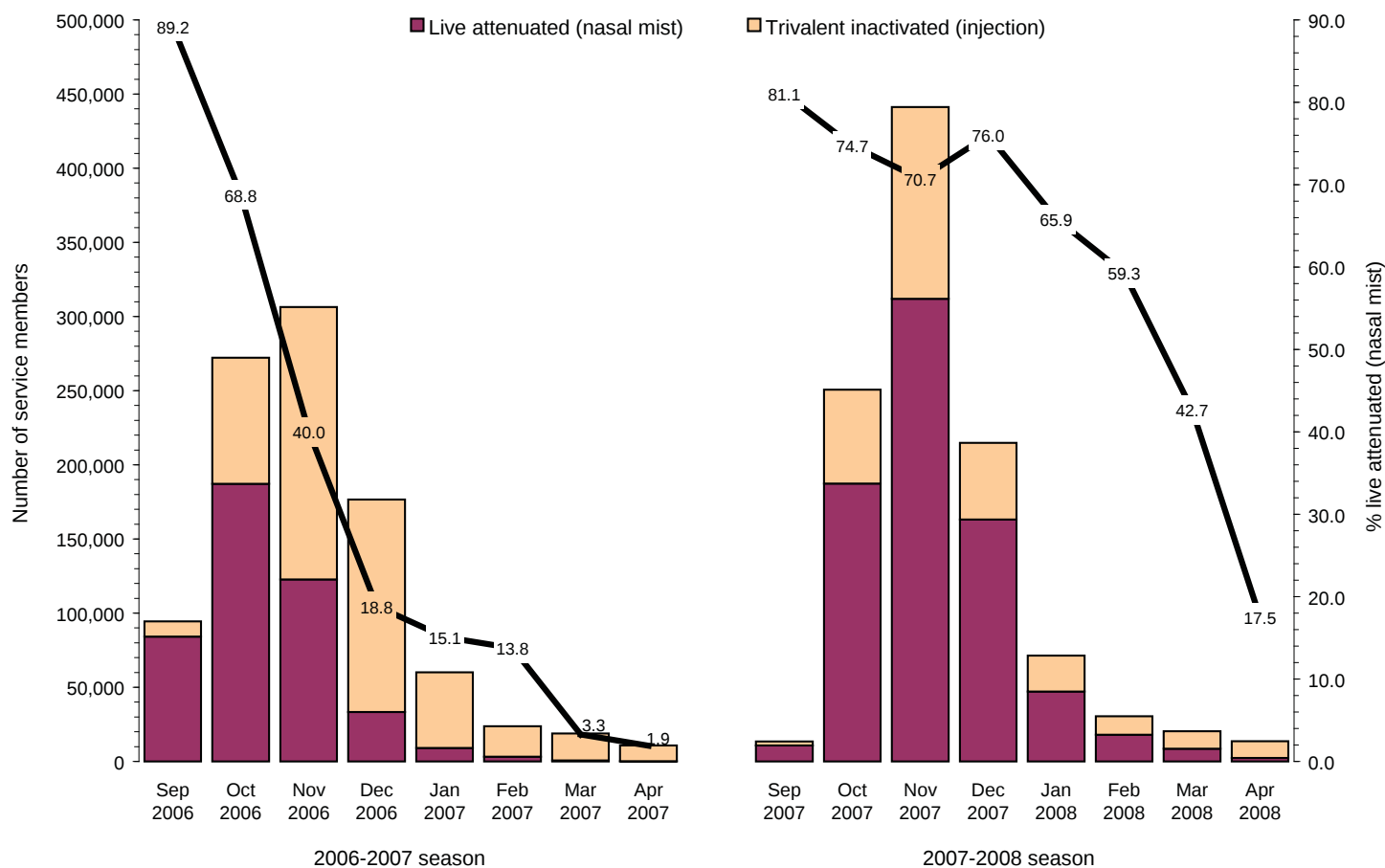
Numbers and rates of ambulatory visits with alcohol abuse (ICD-9-CM: 305.0) or acute intoxication (ICD-9-CM: 303.0) as primary (first-listed) diagnosis, among active component members less than 20 years old, by gender, U.S. Armed Forces, 1998-2007



Source: DMED

SURVEILLANCE SNAPSHOT: Influenza Immunizations

Number of service members, active component, U.S. Armed Forces, who received influenza immunizations during the 2006-7 and 2007-8 influenza seasons, by type (live attenuated [nasal mist] or inactivated [injection]), by month



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