



# MSMR



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*Deployment-related condition of special surveillance interest:  
Leishmaniasis*

## Leishmaniasis among U.S. Armed Forces, January 2003–November 2004

Leishmaniasis is a zoonotic disease caused by protozoa of the genus *Leishmania*—the parasite is transmitted to humans through bites of female sand flies.<sup>1,2</sup> The disease is endemic in many regions of Africa, South and Central America, southern Europe, Asia, and the Middle East.<sup>1-7</sup>

Clinical expressions of leishmaniasis are dependent on the infecting species and host immune responses.<sup>1-8</sup> Cutaneous, mucosal, and visceral leishmaniasis, the three major clinical forms, are manifestations of skin, naso-oropharyngeal mucous membrane, and systemic infections, respectively.<sup>1-8</sup> The courses of cutaneous and mucosal leishmaniasis are characterized by papules that progress to nodules and eventually to ulcers. The manifestations of visceral leishmaniasis (which can be life threatening) include fever, weakness, hepatosplenomegaly, pancytopenia, hyperglobulinemia, and emaciation. Not all infected persons develop signs or symptoms of leishmaniasis; however, among those who do, times from infection to first clinical manifestations generally range from a week to many months, with much longer periods (e.g., up to 10 years) for visceral infections.<sup>1-8</sup>

Leishmaniasis is of current military medical surveillance interest because it is endemic in many areas of Iraq, Afghanistan, and Kuwait.<sup>2,4-9</sup> Many U.S. military members have been exposed to leishmaniasis risk during their service in Operations Enduring Freedom and/or Iraqi Freedom. A recent report in the MSMR<sup>9</sup> summarized the leishmaniasis experience of the U.S. military from 1999 through 2003 (based on data available at the time of the analysis). This report summarizes frequencies, rates, and demographic and military characteristics of U.S. servicemembers who were diagnosed/reported with leishmaniasis from January 2003 through November 2004.

**Methods.** For this summary, the surveillance period was 1 January 2003 to 30 November 2004. The surveillance population included all individuals who served in an active and/or Reserve component of the U.S. Armed Forces any time during the surveillance period. To identify cases, we searched the Defense Medical Surveillance System (DMSS) for all records of reportable medical events, hospitalizations, and

ambulatory visits of U.S. servicemembers that included a diagnosis (in any position) of leishmaniasis (ICD-9-CM: 085.0-085.9). Only one episode of leishmaniasis per individual was included in analyses. For surveillance purposes, the incident date of each case was the “date of onset” (if reported on a reportable medical event record) or the date of the earliest medical encounter with a diagnosis of leishmaniasis. Incidence rates of leishmaniasis (incident diagnoses per 100,000 person-years of military service) were calculated among active component servicemembers.

**Results.** From January 2003 through November 2004, there were 1,178 incident diagnoses of leishmaniasis among members of the U.S. Armed Forces. Most affected servicemembers were males (95%), in the Army (94%), and in the active component (76%) (table 1). More cases (36%) were reported among 20-24 years olds than other aged members (table 1). Among affected servicemembers with known assignment locations, most had recently served in Iraq and/or Kuwait (data not shown).

In the active components of the Services overall, annual incidence rates of leishmaniasis were 40.9 and 24.4 per 100,000 person-years (p-yrs) in 2003 and 2004, respectively (table 1). In general, incidence rates were much higher in the Army and among males compared to their respective counterparts (table 1). Of interest, in 2003 but not 2004, rates were higher among white nonhispanic and 20-24 year old servicemembers compared to their respective counterparts (table 1).

Finally, during the surveillance period, the mean number of incident cases per month was 51.2; however, range was 1 (January 2003) to 152 (November 2003) (figure 1). During the period, numbers of clinical onsets/diagnoses of leishmaniasis sharply increased through the summer of 2003; peaked in the fall of 2003; remained relatively high through the winter of 2004; sharply declined in the spring of 2004; and were relatively low through the summer and fall of 2004 (figure 1).

*Analysis by Jenny C. Lay, MPH, Analysis Group, Army Medical Surveillance Activity.*

**Editorial comment.** Since January 2003, nearly 1,200 U.S. servicemembers have been diagnosed/reported with leishmaniasis—the actual number of those affected is likely much higher. Consider, for example, that some infected servicemembers have no or early clinical manifestations of disease and have not sought evaluation; others have sought evaluation/treatment but have not been diagnosed with “leishmaniasis”; and others have been diagnosed with leishmaniasis but their cases have not been centrally reported (e.g., diagnoses were made outside of the Military Health System).

There is often a significant lag between the date of the first clinical manifestation of leishmaniasis and the date of clinical diagnosis and reporting. It is not surprising, therefore, that this summary documents many more cases with clinical onsets in 2003 than were documented in the January/February 2004 issue of the MSMR.<sup>9</sup> In turn, it is likely that the numbers and rates of leishmaniasis in calendar year 2004 (per this report) underestimate the actual numbers and rates of leishmaniasis infections acquired during the year. In

turn, it is likely that many cases of leishmaniasis acquired in 2004 will be diagnosed and reported in 2005 (the increases will be reflected in future MSMR surveillance reports regarding leishmaniasis).

Cases of leishmaniasis (particularly visceral leishmaniasis) can be clinically inapparent for long periods; and the first clinical manifestations can be non-specific and thus difficult to diagnose—especially when they present to practitioners (e.g., after returning to the United States from overseas) who are unfamiliar and/or have no experience with the disease. Physicians and other primary care providers should include leishmaniasis among possible diagnoses among veterans of military service in Iraq, Afghanistan, and Kuwait who have exposure histories and clinical presentations compatible with cutaneous or visceral leishmaniasis. Several recent reports in peer reviewed medical literature review clinical characteristics of leishmaniasis and present guidelines for identifying potential cases, confirming diagnoses, and providing treatment.<sup>2,5,8</sup>

**Table 1. Numbers and characteristics of servicemembers diagnosed with leishmaniasis, U.S. Armed Forces, January 2003-November 2004**

	Jan - Dec 2003			Jan - Nov 2004			Jan 2003 - Nov 2004				
	Active		Reserve No.	Active		Reserve No.	Active		Reserve No.	Total	
	No.	Rate*		No.	Rate*		No.	No.		No.	%
Total	577	40.9	126	319	24.4	156	896	282	1,178	100.0	
<i>Service</i>											
Army	551	112.4	112	296	65.3	146	847	258	1,105	93.8	
Navy	5	1.3	1	9	2.6	0	14	1	15	1.3	
Air Force	13	3.5	7	10	2.9	5	23	12	35	3.0	
Marines	8	4.5	6	4	2.5	5	12	11	23	2.0	
<i>Gender</i>											
Female	22	10.4	9	16	8.2	12	38	21	59	5.0	
Male	555	46.3	117	303	27.3	144	858	261	1,119	95.0	
<i>Race/eth</i>											
White nonhispanic	416	53.0	91	212	26.2	102	628	193	821	69.7	
Black, nonhispanic	88	37.1	26	69	29.3	37	157	63	220	18.7	
Hispanic	45	33.8	7	23	19.3	13	68	20	88	7.5	
Other racial/ethnic	28	11.0	2	15	10.6	4	43	6	49	4.2	
<i>Age group</i>											
<20	32	28.2	2	6	5.6	0	38	2	40	3.4	
20-24	256	52.5	27	116	25.4	27	372	54	426	36.2	
25-29	126	44.9	14	74	28.1	21	200	35	235	19.9	
30-34	93	46.0	19	49	26.4	24	142	43	185	15.7	
35-39	49	26.8	27	45	27.7	27	94	54	148	12.6	
40+	21	14.6	37	29	22.4	57	50	94	144	12.2	

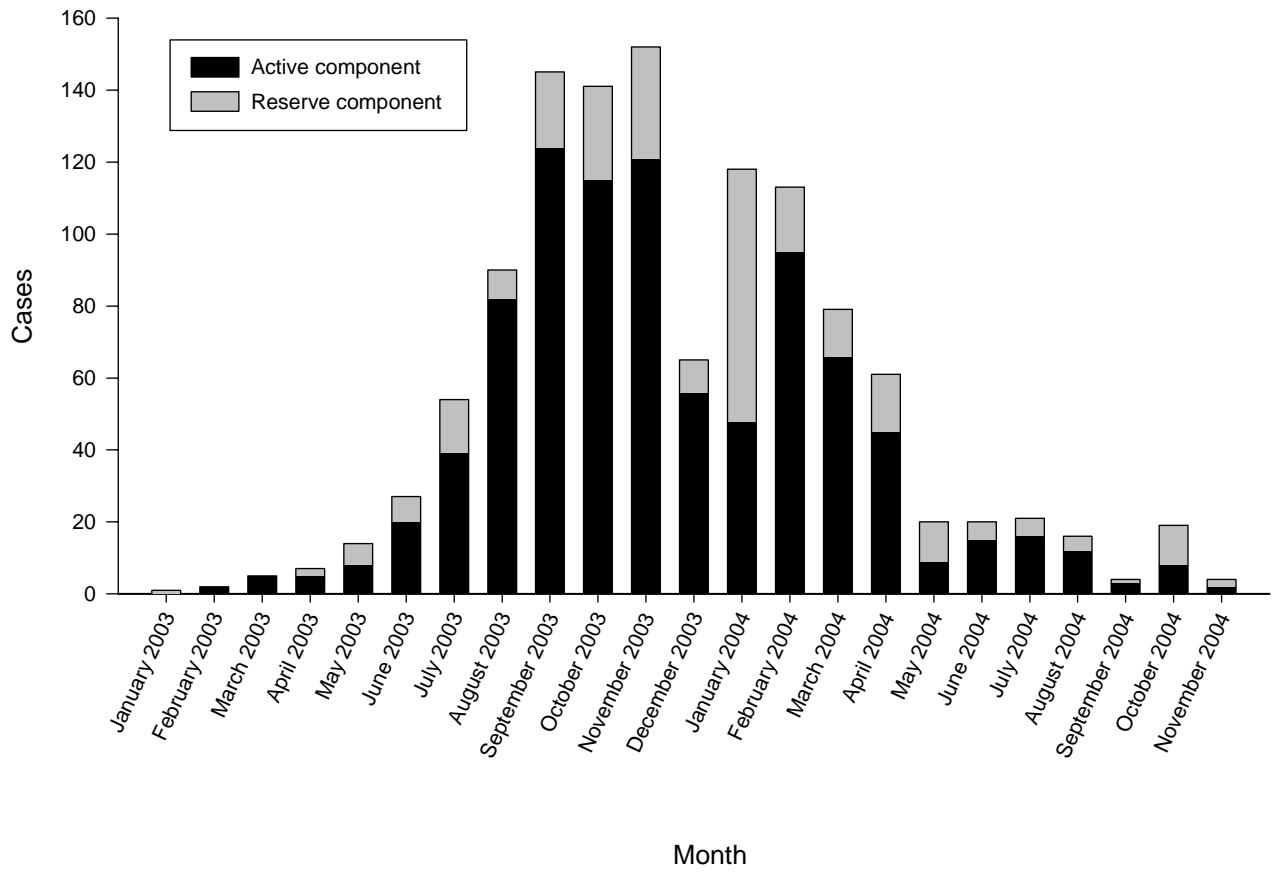
\* Rates expressed as incident cases per 100,000 person-years.

There are no vaccines or prophylactic medications against leishmaniasis. Thus, all military personnel who serve in leishmaniasis endemic areas should be informed of the nature of the risks and measures to counter them. Specifically, all servicemembers at risk of leishmaniasis should be trained, equipped, supplied, and supervised to ensure compliance (especially from dusk to dawn) with indicated personal protective measures to include the consistent and proper wear of permethrin-treated uniforms; the consistent use of military issued, DEET-containing insect repellent on exposed skin; and the consistent and proper use of permethrin-treated bednets to prevent sand fly bites.<sup>3,4,8,9</sup> Policies, information sheets, briefings, pocket cards, and other materials related to the prevention of leishmaniasis and other arthropod-transmitted infections are posted at the USACHPPM website: <http://chppm-www.apgea.army.mil/news/Leishmaniasis.asp> .

#### References

1. Leishmaniasis. In Control of Communicable Diseases Manual. 17<sup>th</sup> edition. Chin J, ed. Washington, DC: American Public Health Association, 2000: 284-9.
2. Weina PJ, Neafie RC, Wortmann G, Polhemus M, Aronson NE. Old world leishmaniasis: an emerging infection among deployed US military and civilian workers. *Clin Infect Dis* 2004 Dec 1;39(11):1674-80. Epub 2004 Dec 1.
3. Martin S, Gambel J, Jackson J, Aronson N, Gupta R, Rowton E, Perich M, McEvoy P, Berman J, Magill A, Hoke C. Leishmaniasis in the United States military. *Mil Med* 1998;163:801-7.
4. Aronson N, Coleman R, Coyne P, Rowton E, Hack D, Polhemus M, Wortmann G, Cox K, Weina P, Herwaldt BL. Cutaneous leishmaniasis in U.S. military personnel — Southwest/Central Asia, 2002-2003. *MMWR* 2003;52(42):1009-1012.
5. Centers for Disease Control and Prevention (CDC). Update: Cutaneous leishmaniasis in U.S. military personnel—Southwest/Central Asia, 2002-2004. *MMWR* 2004 Apr 2;53(12):264-5.
6. Magill AJ, Grogl M, Sun W. Viscerotropic leishmaniasis in persons returning from Operation Desert Storm – 1990-1991. *MMWR* 1992;41(08):131-4.
7. Magill AJ, Grogl M, Gasser RA, Sun W, Oster CN. Visceral infection caused by *Leishmania tropica* in veterans of Operation Desert Storm. *N Eng J Med* 1993;328(19):1383-7.
8. Pehoushek JF, Quinn DM, Crum WP. Cutaneous leishmaniasis in soldiers returning from deployment to Iraq. *J Am Acad Dermatol* 2004 Nov;51(5 Suppl):S197-200.
9. Army Medical Surveillance Activity. Leishmaniasis, US Armed Forces, 2003. *MSMR* 2004 Jan/Feb;10(1):2-5.

**Figure 1. Leishmaniasis, by month of clinical onset/first diagnosis, by component of US Armed Forces, January 2003-November 2004.**



*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, US Armed Forces, January 2003-November 2004**

During the spring-summer of 2003, 19 U.S. servicemembers assigned in the U.S. Central Command area of operations had rapid onsets of bilateral pneumonitis with respiratory failure/distress that required air evacuation out of the operational theater for medical care. All of the cases required mechanical ventilatory support; ten were associated with eosinophilia in peripheral blood, bronchial alveolar lavage fluid, and/or lung biopsy tissue; and two were fatal. There were few demographic, military, or geographic links among the cases; and specific causes were not identified.<sup>1,2</sup>

Because of its severity, unknown causes and risk factors, and association with service in southwest Asia/Middle East, "severe acute pneumonia" became a condition of special surveillance interest for the Army Medical Surveillance Activity.

**Methods.** For this report, the surveillance period was 1 January 2003 through 30 November 2004. The surveillance population included all individuals who served in an active component of the U.S. Armed Forces and were reported as deployed to OEF/OIF any time during the surveillance period. For surveillance purposes, a case was defined as a hospitalization of a member of the surveillance population with (a) a principal (first listed) diagnosis

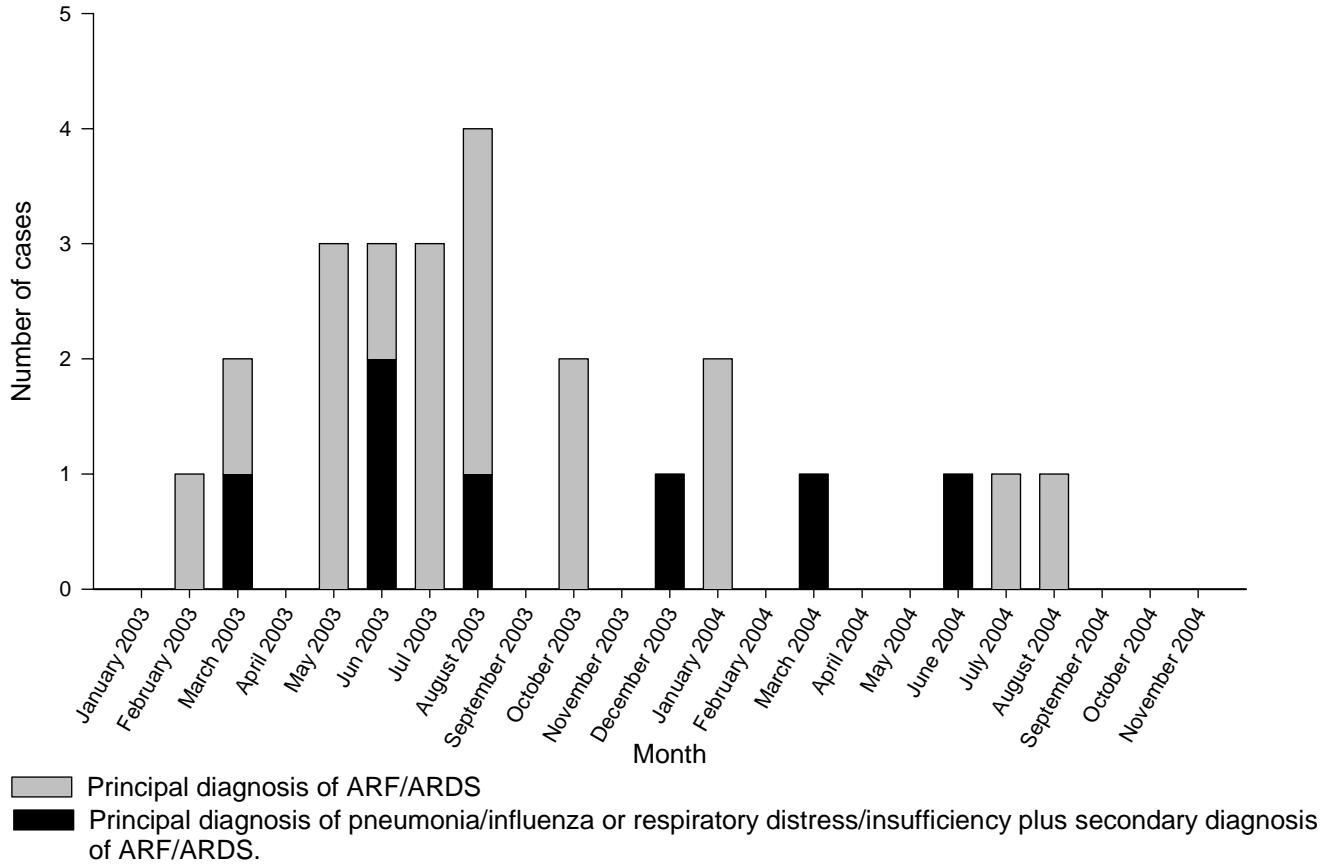
of "acute respiratory failure" (ICD-9-CM: 518.81) or "other disease of the respiratory system" (includes ARDS): (ICD-9-CM: 518.82); or (b) a principal (first listed) diagnosis of "pneumonia and influenza" (ICD-9-CM: 480-487) or "respiratory distress/insufficiency" (ICD-9-CM: 786.09) plus a secondary diagnosis of "acute respiratory failure" (ICD-9-CM: 518.81) and/or "other disease of the respiratory system" (includes ARDS): (ICD-9-CM: 518.82).

**Results.** During the surveillance period, there were 25 hospitalizations of U.S. military participants in/veterans of OEF/OIF for acute respiratory failure/acute respiratory distress. More than half (n=13) of the total cases during the 23-month surveillance period occurred between May and August 2003 (figure 1). Since August 2003, there have been 0 to 2 cases per month (figure 1).

### References

1. Severe acute pneumonitis among deployed U.S. military personnel—Southwest Asia, March—August 2003. *MMWR* 2003 Sep 12;52(36):857-9. 7-
2. Shorr AF, Scoville SL, Cersovsky SB, Shanks GD, Ockenhouse CF, Smoak BL, Carr WW, Petrucelli BP. Acute eosinophilic pneumonia among US Military personnel deployed in or near Iraq. *JAMA* 2004 Dec 22;292(24):2997-3005.

**Figure 1. Hospitalizations among OIF/OEF veterans for acute respiratory failure (ARF) and/or acute respiratory distress syndrome (ARDS), active components, US Armed Forces, January 2003-November 2004.**



## Update: Pre- and Post-deployment Health Assessments, US Armed Forces, September 2002-November 2004

The June 2003 issue of the MSMR summarized the background, rationale, policies, and guidelines related to pre-deployment and post-deployment health assessments of servicemembers.<sup>1-10</sup> Briefly, prior to deploying, the health of each servicemember is assessed to ensure his/her medical fitness and readiness for deployment. At the time of redeployment, the health of each servicemember is again assessed to identify medical conditions and/or exposures of concern to ensure timely and comprehensive evaluation and treatment.

Completed pre- and post-deployment health assessment forms are routinely sent to the Army Medical Surveillance Activity (AMSA) where they are archived in the Defense Medical Surveillance System (DMSS).<sup>11</sup> In the DMSS, data recorded on pre- and post-deployment health assessments are integrated with data that document demographic characteristics, military experiences, and medical encounters of all servicemembers (e.g., hospitalizations, ambulatory visits, immunizations).<sup>11-13</sup> The continuously expanding DMSS database can be used to monitor the health of servicemembers who participated in major overseas deployments.

The overall success of deployment force health protection efforts depends at least in part on the completeness and quality of pre- and post-deployment health assessments. This report summarizes characteristics of servicemembers who completed pre- (since 1 September 2002) and post- (since 1 January 2003) deployment forms, responses to selected questions on pre- and post-deployment forms, and changes in responses of individuals from pre-deployment to post-deployment.

*Methods.* For this update, the DMSS was searched to identify all pre- and post-deployment health assessment forms that were completed after 1 September 2002 (to include assessments of servicemembers who deployed in October 2002). For summary purposes, pre-deployment responses included all assessments (DD Form 2795) completed after 1 September 2002; and post-deployment responses included all assessments (DD Form 2796) completed after 1 January 2003.

*Results.* From 1 September 2002 to 30 November 2004, 815,823 pre-deployment health assessments were completed at field sites, shipped to AMSA, and integrated in the DMSS database (table 1). From 1 January 2003 to 30 November 2004, 673,190 post-deployment health assessments were completed at field sites, shipped to AMSA, and entered into the DMSS database (table 1).

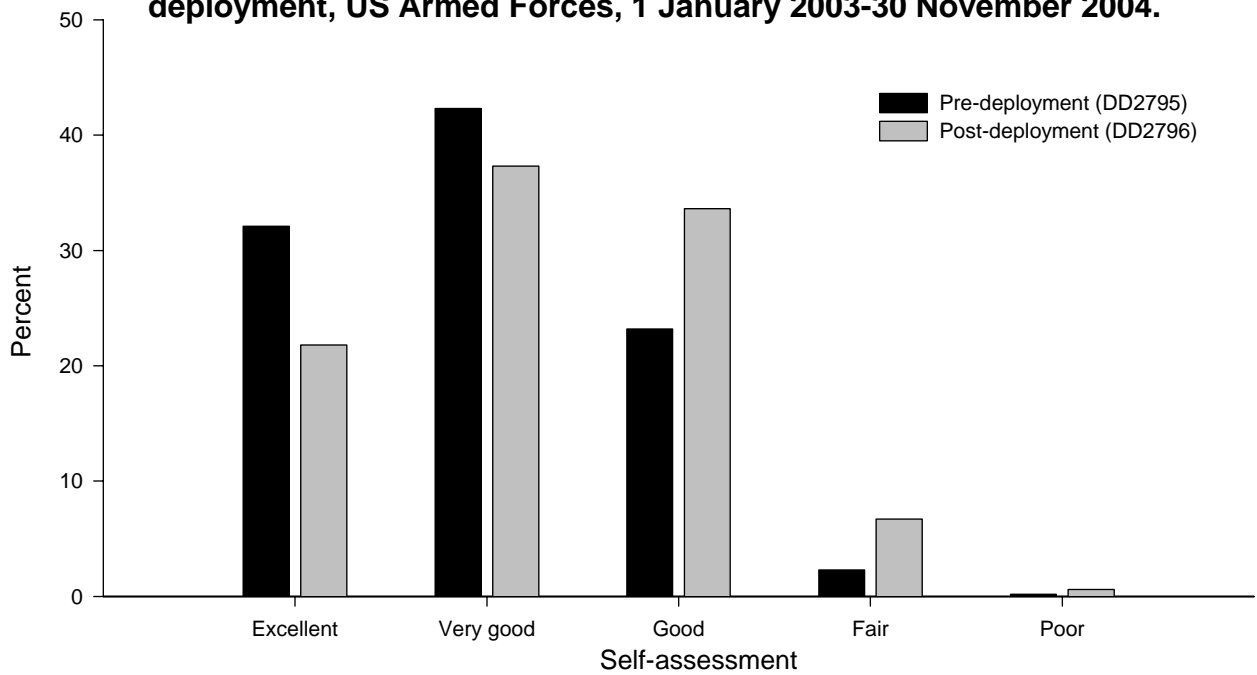
In general, the distributions of self-assessments of "overall health" were similar among pre- and post-deployment form respondents (figure 1). For example, on both sets of forms, the most frequent descriptor of "overall health" was "very good." Of note, however, relatively more pre- (32.1%) than post- (21.8%) deployment respondents assessed their overall health as "excellent"; while relatively more post- (40.9%) than pre- (25.7%) deployment respondents assessed their overall health as "good," "fair," or "poor" (figure 1).

Among servicemembers (n=354,078) who completed both pre- and post-deployment health assessments, nearly half (46.4%) chose the same descriptor of their overall health before and after deploying (figures 2, 3). Of those (n=189,797) who changed their assessments from pre- to post-deployment, approximately three-fourths (76.8%) changed by a single category (on a five category scale) (figures 2,3); and of those who changed by more than one category, many more indicated a decrement (n=37,517; 10.6% of all respondents) than an improvement (n=6,551; 1.9% of all respondents) (figure 3).

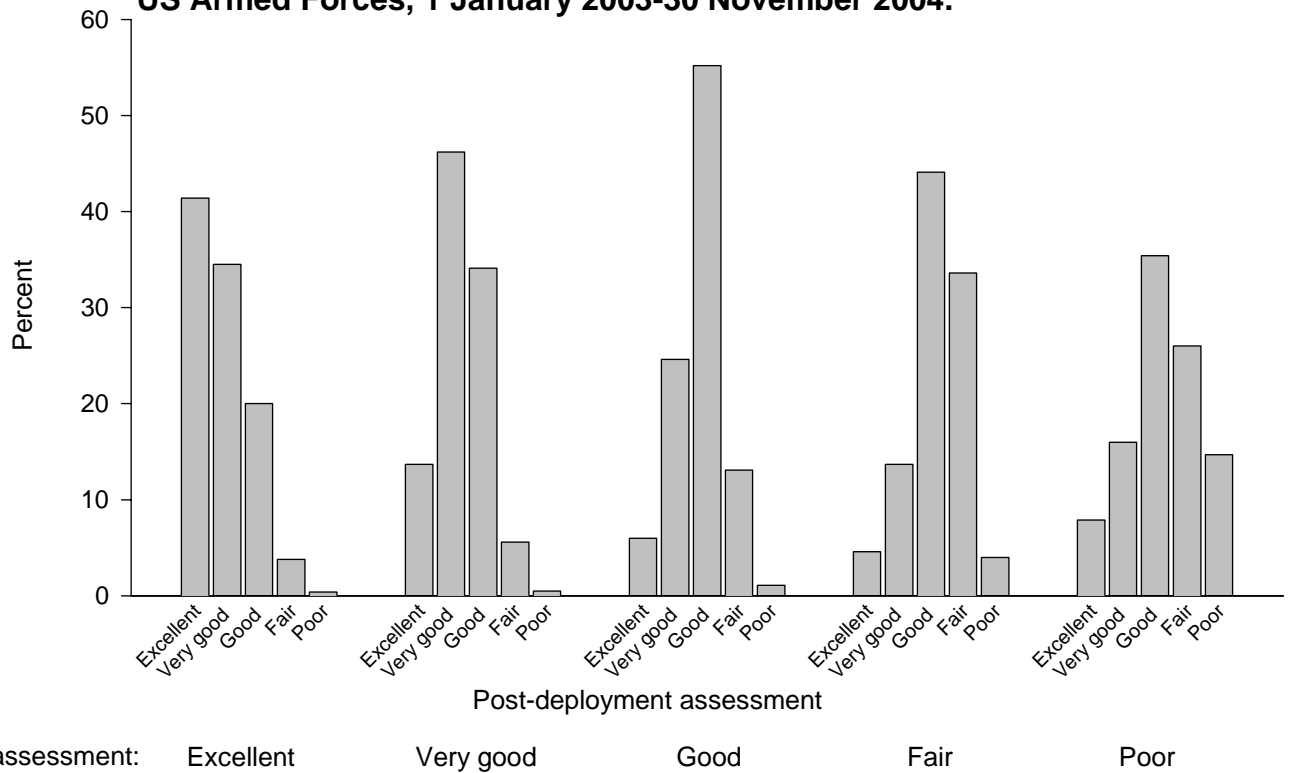
On post-deployment forms, approximately 21% of active and 37% of Reserve component respondents reported "medical/dental problems." In general, "medical/dental problems" were more frequently reported by soldiers and Marines than by members of the other Services (table 2). Approximately 3% and 5% of active and Reserve component respondents, respectively, reported "mental health concerns." Mental health concerns were reported relatively more frequently among soldiers (active: 5%; Reserve: 6%) than members of the other Services (table 2). From 6% (active component, Navy) to 26% (active component, Army) of post-deployment



**Figure 1. Percent distributions of self-assessed health status, pre- and post-deployment, US Armed Forces, 1 January 2003-30 November 2004.**



**Figure 2. Self-assessed health status on post-deployment form, in relation to self-assessed health status pre-deployment, US Armed Forces, 1 January 2003-30 November 2004.**



forms documented that “referrals” were indicated (table 2).

Overall, 15.2 % of all servicemembers who completed post-deployment forms reported deployment-related “exposure concerns.” The proportions of respondents who reported exposure concerns significantly varied from month to month and generally increased over time (range: 3.7% [April 2003]-19.3% [April 2004]) (figure 4). The likelihood of reporting an exposure concern increased monotonically with age (table 3). In addition, Reserve component members (20.9%); members of the Army (19.6%) and Marine Corps (14.3%); females (17.1%); and officers (16.7%) were more likely to report

“exposure concerns” than their respective counterparts (table 3). Of note, the higher prevalences of exposure concerns among Reserve versus active component members were consistent across all age groups (figure 5).

**Editorial comment.** Since September 2002, approximately three-fourths of U.S. servicemembers have assessed their overall health as “very good” or “excellent” when they are mobilized and/or prior to deploying overseas. Relatively fewer (59.1%) servicemembers assessed their overall health as “very good” or “excellent” at the end of overseas deployments. Most changes in assessments of overall

**Table 1. Pre-deployment and post-deployment health assessments, by month and year, US Armed Forces, September 2002-November 2004**

		Pre-deployment <sup>1</sup>		Post-deployment <sup>2</sup>	
		No.	%	No.	%
Total		815,823	100.0	673,190	100.0
2002	September	11,158	1.4		
	October	16,564	2.0		
	November	20,073	2.5		
	December	17,091	2.1		
2003	January	69,160	8.5	5,949	0.9
	February	109,797	13.5	4,688	0.7
	March	69,646	8.5	6,284	0.9
	April	37,390	4.6	19,176	2.8
	May	12,808	1.6	88,629	13.2
	June	14,379	1.8	65,006	9.7
	July	17,896	2.2	52,038	7.7
	August	16,111	2.0	34,792	5.2
	September	12,550	1.5	31,976	4.7
	October	23,838	2.9	26,178	3.9
	November	19,341	2.4	20,206	3.0
	December	35,568	4.4	20,946	3.1
2004	January	66,724	8.2	37,904	5.6
	February	38,601	4.7	31,898	4.7
	March	22,097	2.7	65,621	9.7
	April	19,174	2.4	43,451	6.5
	May	27,152	3.3	17,415	2.6
	June	23,887	2.9	27,016	4.0
	July	21,906	2.7	23,295	3.5
	August	31,028	3.8	20,043	3.0
	September	30,567	3.7	20,279	3.0
	October	31,317	3.8	10,400	1.5
	November	23,191	2.8	12,808	1.9

1. Total pre-deployment assessments (DD form 2795) since 1 September 2002-30 November 2004.

2. Total post-deployment assessments (DD form 2796) since 1 January 2003- 30 November 2004.

health from pre- to post-deployment were relatively minor (i.e., one category on a 5-category scale). Still, however, more than 10% of all post-deployers indicated relatively significant declines (i.e., two or more categories) in their overall health from pre- to post-deployment.

The findings are not surprising considering the extreme physical and psychological stresses associated with mobilization, overseas deployment, and harsh and dangerous living and working conditions.<sup>14,15</sup> The deployment health assessment process is specifically designed to identify, assess, and follow-up as necessary all servicemembers with concerns regarding their health and/or deployment-related exposures. Overall, for example, approximately one-fifth of all post-deployers had “referral indications” documented on post-deployment health assessments; and of those with referral indications, most (range, by service and

component: 56%-95%) had documented outpatient visits and/or hospitalizations within 6 months after they returned.

Overall, nearly one of every 6 servicemembers who completed post-deployment health assessments reported an “exposure concern.” Prevalences of “exposure concerns” significantly varied from month to month—and generally increased over time (figure 4). The strongest correlate of reporting an exposure concern was older age. In both the Reserve and active components, servicemembers older than 40 were approximately twice as likely as those younger than 20 to report exposure concerns (figure 5). In all age groups, Reserve component members were much more likely to report exposure concerns than their active component counterparts (figure 5).

**Table 2. Responses to selected questions from post-deployment forms (DD2796) submitted since 1 January 2003, by service and component, US Armed Forces<sup>1</sup>**

	Army	Navy	Air Force	Marines	Total
<b>Active component</b>					
SMs with DD 2796 at AMSA	176,702	65,267	62,142	58,018	362,129
Electronic Version <sup>2</sup>	57%	2%	23%	11%	37%
General health ("fair" or "poor")	9%	5%	2%	6%	6%
Medical/dental problems	28%	12%	11%	18%	21%
Currently on profile	10%	1%	2%	3%	6%
Mental health concerns	5%	2%	1%	2%	3%
Exposure concerns	17%	5%	6%	11%	12%
Health concerns	14%	6%	5%	8%	10%
Referral Indicated	26%	6%	9%	11%	17%
Med. visit following referral <sup>3</sup>	95%	68%	85%	58%	88%
Post deployment serum <sup>1</sup>	93%	77%	90%	77%	88%
<b>Reserve component</b>					
SMs with DD 2796 at AMSA	143,216	11,307	24,205	12,949	191,677
Electronic version <sup>2</sup>	52%	10%	12%	11%	43%
General health ("fair" or "poor")	11%	5%	3%	9%	9%
Medical/dental problems	41%	35%	17%	35%	37%
Currently on profile	15%	4%	2%	4%	12%
Mental health concerns	6%	3%	1%	3%	5%
Exposure concerns	22%	15%	11%	28%	21%
Health concerns	22%	21%	9%	23%	20%
Referral indicated	24%	17%	12%	24%	22%
Med. visit following referral <sup>3</sup>	82%	86%	63%	56%	79%
Post deployment serum <sup>1</sup>	92%	84%	71%	74%	89%

1. As of 30 November 2004

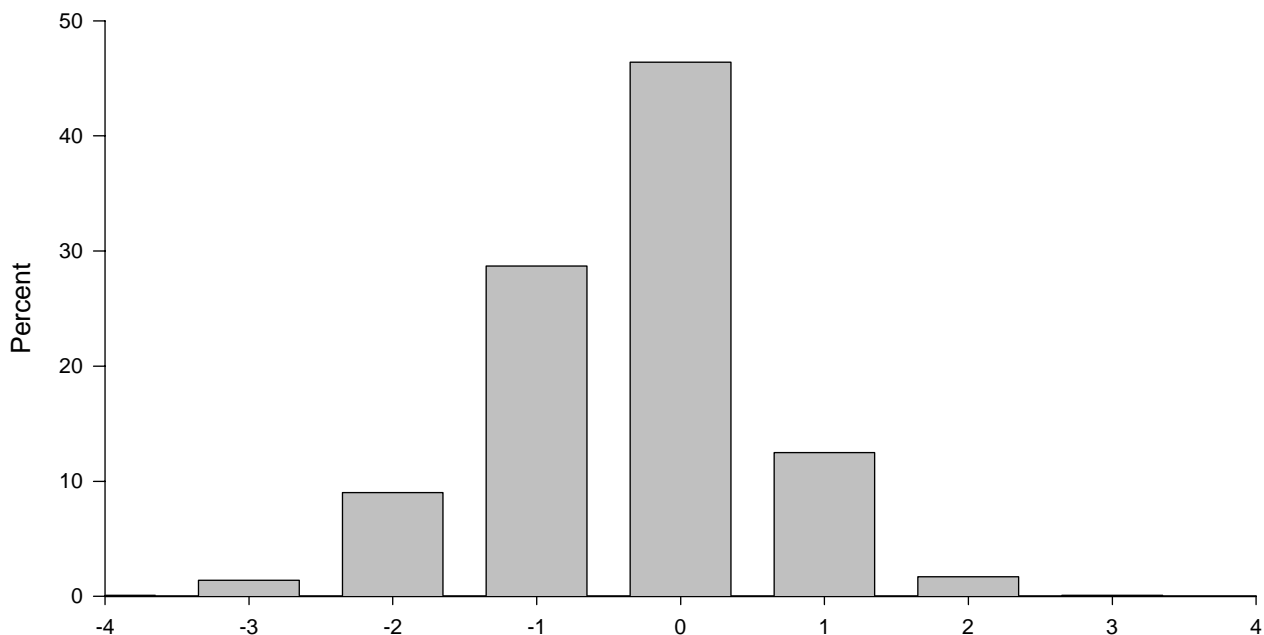
2. Only calculated for DD 2796 completed since 1 June 2003.

3. Inpatient or outpatient visit within 6 months after referral.

## References

1. Medical readiness division, J-4, JCS. Capstone document: force health protection. Washington, DC. Available at: < <http://www.dtic.mil/jcs/j4/organization/hssd/fhpcapstone.pdf> >.
2. Brundage JF. Military preventive medicine and medical surveillance in the post-cold war era. *Mil Med.* 1998 May;163(5):272-7.
3. Trump DH, Mazzuchi JF, Riddle J, Hyams KC, Balough B. Force health protection: 10 years of lessons learned by the Department of Defense. *Mil Med.* 2002 Mar;167(3):179-85.
4. Hyams KC, Riddle J, Trump DH, Wallace MR. Protecting the health of United States military forces in Afghanistan: applying lessons learned since the Gulf War. *Clin Infect Dis.* 2002 Jun 15;34(Suppl 5):S208-14.
5. DoD instruction 6490.3, subject: Implementation and application of joint medical surveillance for deployments. 7 Aug 1997.
6. 10 USC 1074f, subject: Medical tracking system for members deployed overseas. 18 Nov 1997.
7. ASD (Health Affairs) memorandum, subject: Policy for pre- and post-deployment health assessments and blood samples (HA policy: 99-002). 6 Oct 1998.
8. ASD (Health Affairs) memorandum, subject: Updated policy for pre- and post-deployment health assessments and blood samples (HA policy: 01-017). 25 Oct 2001.
9. JCS memorandum, subject: Updated procedures for deployment health surveillance and readiness (MCM-0006-02). 1 Feb 2002.
10. USD (Personnel and Readiness) memorandum, subject: Enhanced post-deployment health assessments. 22 Apr 2003.
11. Rubertone MV, Brundage JF. The Defense Medical Surveillance System and the Department of Defense Serum Repository: glimpses of the future of comprehensive public health surveillance. *Am J Pub Hlth.* 2002 Dec;92(12):1900-4.
12. Brundage JF, Kohlhase KF, Gambel JM. Hospitalization experiences of U.S. servicemembers before, during, and after participation in peacekeeping operations in Bosnia-Herzegovina. *Am J Ind Med.* 2002 Apr;41(4):279-84.
13. Brundage JF, Kohlhase KF, Rubertone MV. Hospitalizations for all causes of U.S. military service members in relation to participation in Operations Joint Endeavor and Joint Guard, Bosnia-Herzegovina, January 1995 to December 1997. *Mil Med.* 2000 Jul;165(7):505-11.
14. Hyams KC, Wignall FS, Roswell R. War syndromes and their evaluation: from the U.S. Civil War to the Persian Gulf War. *Ann Intern Med.* 1996 Sep 1;125(5):398-405.
15. Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *N Engl J Med.* 2004 Jul 1;351(1):13-22.

**Figure 3. Distribution of self-assessed health status changes from pre- to post-deployment, US Armed Forces, 1 January 2003-30 November 2004.**



Change in self-assessment of overall health status, pre- to post-deployment, calculated as: post deployment response - pre-deployment response, using the following scale for health status: 1= "poor"; 2="fair"; 3="good"; 4="very good"; and 5="excellent."

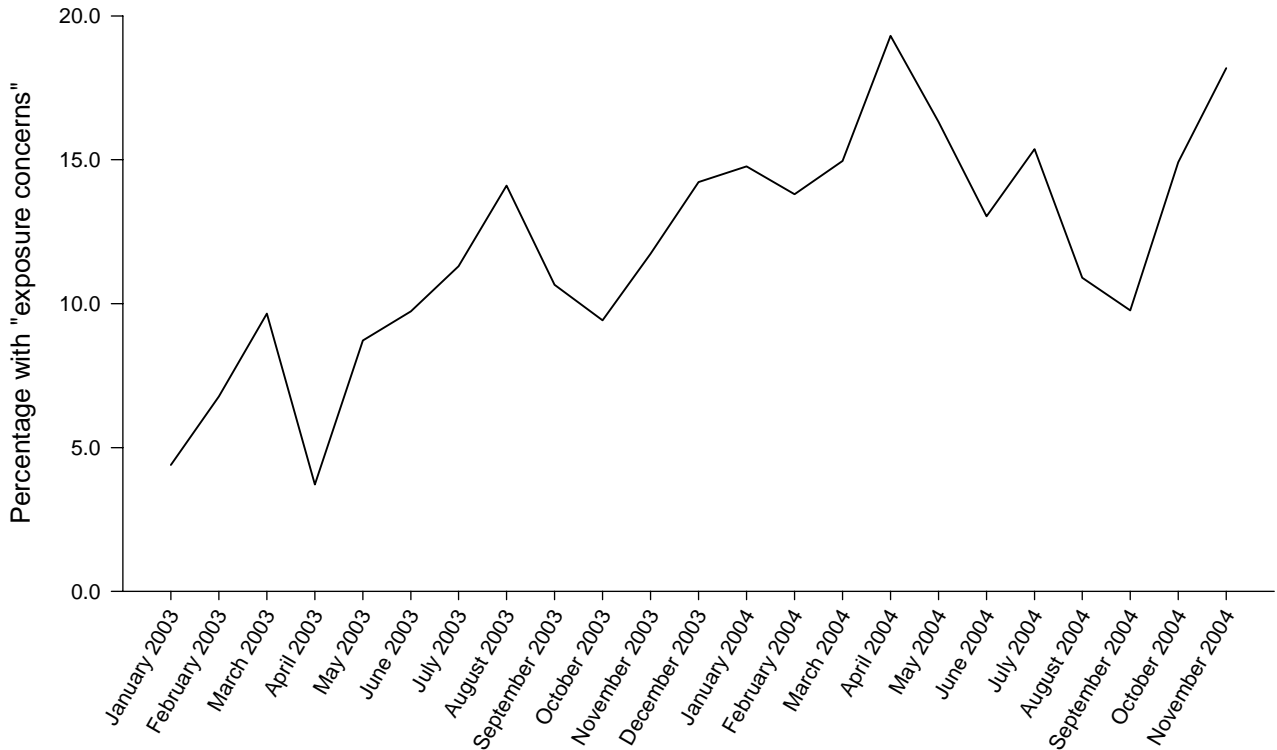
**Table 3. Deployment related "exposure concerns"  
on post-deployment health assessments,<sup>1</sup>  
US Armed Forces, January 2003-November 2004**

	Total <sup>2</sup>	Exposure concerns	No exposure concerns	% with exposure concerns
Total	555,123	84,171	462,882	15.2
Component				
Active	362,993	44,103	314,184	12.1
Reserve	192,130	40,068	148,698	20.9
Service				
Army	321,031	63,007	253,460	19.6
Navy	76,582	4,848	70,594	6.3
Air Force	86,373	6,113	79,056	7.1
Marine Corps	71,137	10,203	59,772	14.3
Age (years)				
<20	18,654	1,404	17,036	7.5
20-29	294,999	38,009	253,263	12.9
30-39	153,683	26,317	125,038	17.1
40+	87,784	18,440	67,543	21.0
Gender				
Men	492,779	73,516	412,222	14.9
Women	62,341	10,655	50,657	17.1
Race/ethnicity				
Black	99,665	16,156	81,908	16.2
Hispanic	55,951	9,105	45,996	16.3
Other	1,388	226	1,142	16.3
White	360,947	53,363	302,608	14.8
Grade				
Enlisted	484,074	72,276	404,809	14.9
Officer	71,039	11,889	58,069	16.7

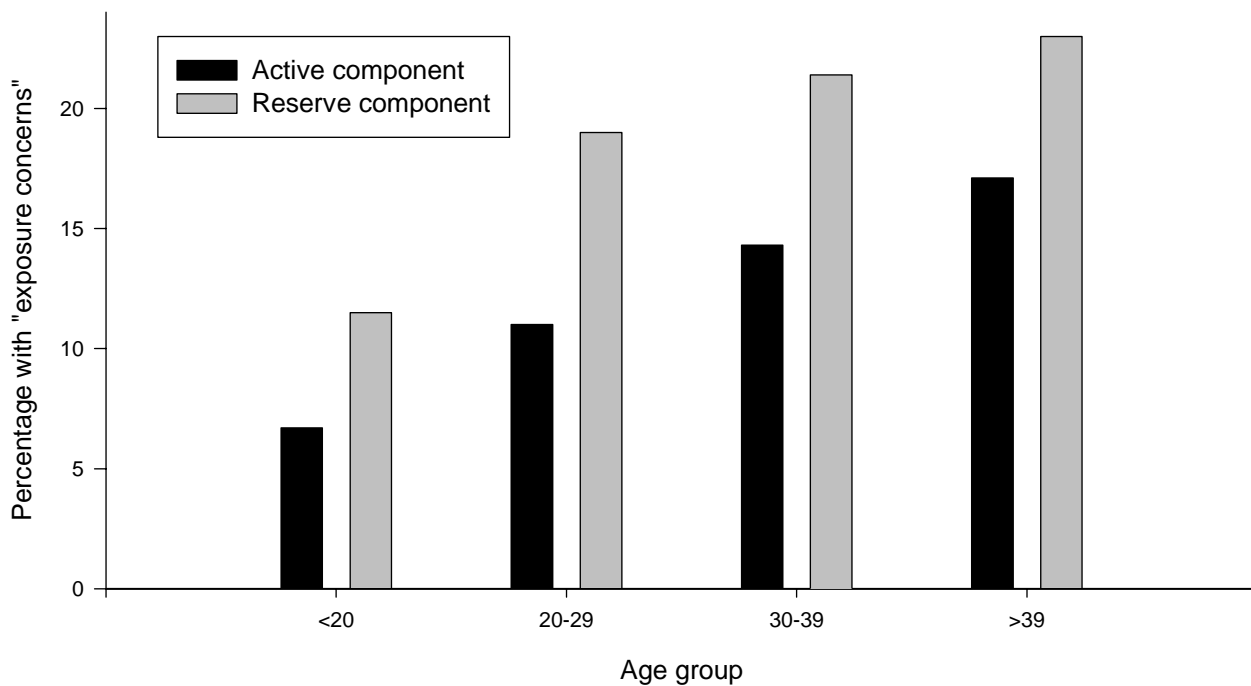
1. Post-deployment health assessments (DD Form 2796) with completion dates: 1 January 2003-30 November 2004.

2. Total does not reflect missing responses to exposure concerns or missing characteristics.

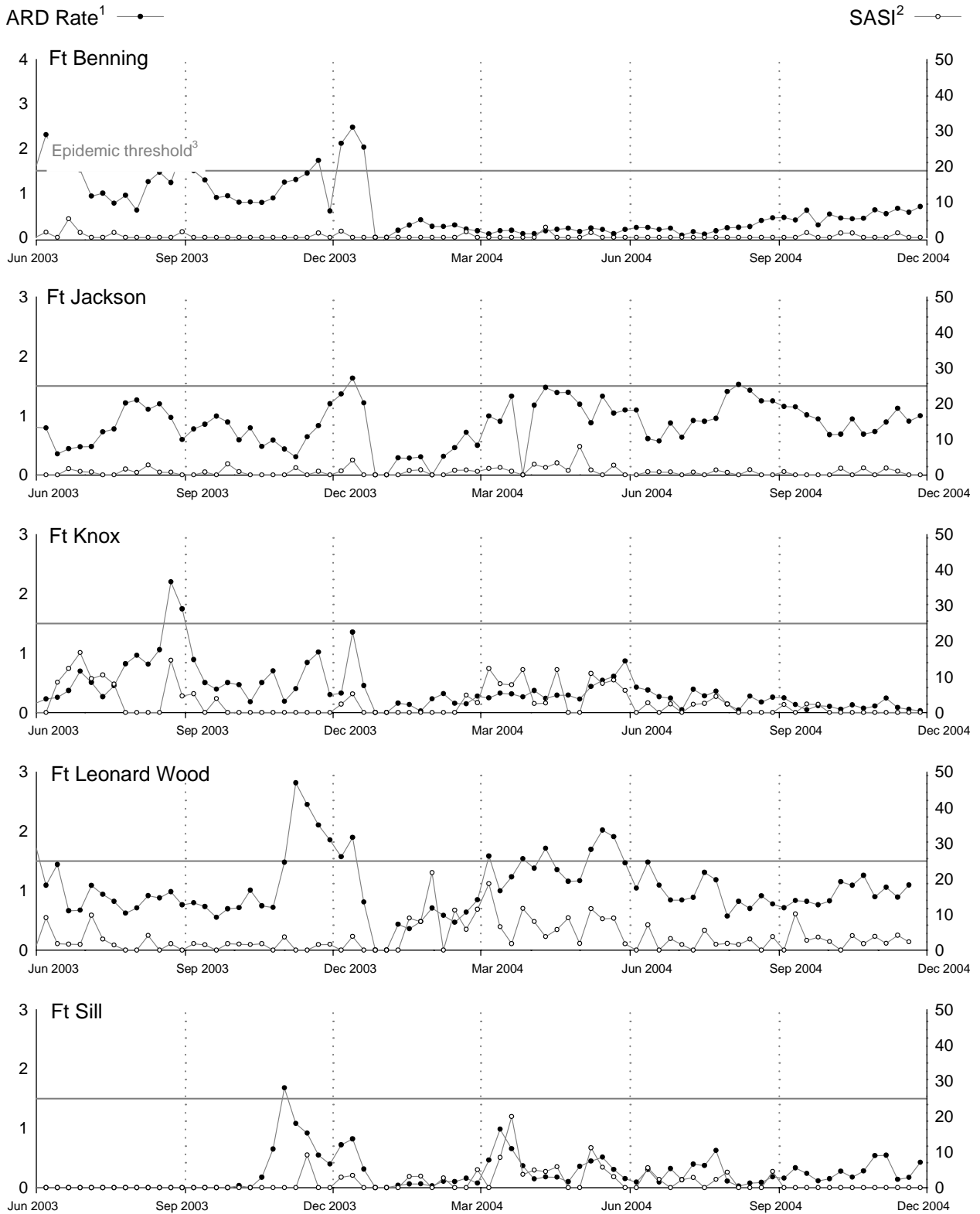
**Figure 4. Prevalence (%) of post-deployment forms that indicate "exposure concerns," by month, US Armed Forces, January 2003-November 2004.**



**Figure 5. Prevalence (%) of post-deployment forms that indicate "exposure concerns," by age group and component of respondent, US Armed Forces, January 2003-November 2004.**



### Acute respiratory disease (ARD) and streptococcal pharyngitis (SASI), Army basic training centers, by week through November 27, 2004.



<sup>1</sup>ARD rate = cases per 100 trainees per week  
<sup>2</sup>SASI (Strep ARD surveillance index) = (ARD rate)x(rate of Group A beta-hemolytic strep)  
<sup>3</sup>ARD rate >=1.5 or SASI >=25.0 for 2 consecutive weeks indicates an "epidemic"

**Sentinel reportable events for all beneficiaries<sup>1</sup> at US Army medical facilities,  
cumulative numbers<sup>2</sup> for calendar years through November 30, 2003 and 2004**

Reporting location	Number of reports all events <sup>3</sup>		Food-borne								Vaccine preventable					
	2003	2004	Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
			2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
<b>NORTH ATLANTIC</b>																
Washington, DC Area	304	257	.	3	4	1	3	2	3	4	.	.	.	3	2	4
Aberdeen, MD	84	59	.	.	.	.	.	.	1	.	.	.	.	.	.	.
FT Belvoir, VA	245	248	9	10	4	2	11	6	4	2	.	2	.	.	.	1
FT Bragg, NC	1,715	1,832	8	10	.	.	30	46	19	1	.	.	.	.	2	.
FT Drum, NY	161	110	.	.	1	.	.	1	.	.	.	.	.	.	2	.
FT Eustis, VA	317	217	.	1	.	.	1	1	.	.	.	.	.	.	2	.
FT Knox, KY	235	214	3	5	.	4	5	1	.	.	.	.	1	1	.	.
FT Lee, VA	195	173	.	.	.	.	2	.	.	.	.	.	.	.	.	.
FT Meade, MD	104	168	.	1	1	1	.	.	1	.	.	.	.	.	.	.
West Point, NY	74	71	2	1	.	.	2	1	.	.	1	.	1	1	.	.
<b>GREAT PLAINS</b>																
FT Sam Houston, TX	209	303	.	.	.	2	6	3	.	1	.	.	.	.	.	2
FT Bliss, TX	343	360	1	1	4	7	3	10	1	12	.	1	2	3	1	.
FT Carson, CO	471	603	12	2	7	1	2	4	1	1	4	.	.	1	1	.
FT Hood, TX	1,630	1,345	8	8	.	.	27	14	104	55	1	.	1	1	.	.
FT Huachuca, AZ	74	103	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Leavenworth, KS	43	40	2	2	.	2	1	1	1	.	.	.	.	.	.	.
FT Leonard Wood, MO	190	237	5	1	.	2	1	3	.	.	.	1	1	1	4	1
FT Polk, LA	212	201	1	2	.	.	2	10	1	.	.	.	1	2	.	.
FT Riley, KS	209	238	4	1	6	2	1	1	.	.	1	1	2	.	.	.
FT Sill, OK	210	192	.	.	.	1	.	3	.	5	.	.	.	.	.	.
<b>SOUTHEAST</b>																
FT Gordon, GA	318	212	.	1	1	.	3	6	.	.	.	.	2	2	.	.
FT Benning, GA	425	447	1	.	5	6	9	16	7	3	.	.	.	.	.	1
FT Campbell, KY	473	803	4	7	8	3	4	5	1	8	.	.	.	.	.	4
FT Jackson, SC	222	285	.	.	.	.	1	.	.	.	1	.	.	.	.	3
FT Rucker, AL	74	67	.	.	.	1	6	3	7	.	2	.	1	.	.	1
FT Stewart, GA	323	600	.	2	.	2	15	12	11	4	.	.	.	2	1	.
<b>WESTERN</b>																
FT Lewis, WA	562	518	3	6	6	2	7	5	3	2	1	.	.	1	.	.
FT Irwin, CA	55	63	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Wainwright, AK	153	192	1	1	.	.	.	2	.	.	.	1	.	1	.	.
<b>OTHER LOCATIONS</b>																
Hawaii	957	786	23	20	5	8	11	29	4	.	.	.	1	2	1	2
Europe	1,314	1,224	19	17	.	2	16	27	1	1	8	4	.	1	3	3
Korea	527	498	.	1	.	.	1	1	.	.	1	.	1	2	6	4
<b>Total</b>	<b>12,428</b>	<b>12,666</b>	<b>106</b>	<b>103</b>	<b>52</b>	<b>49</b>	<b>170</b>	<b>214</b>	<b>169</b>	<b>99</b>	<b>20</b>	<b>9</b>	<b>13</b>	<b>24</b>	<b>26</b>	<b>26</b>

1. Includes active duty servicemembers, dependents, and retirees.

2. Events reported by December 7, 2003 and 2004.

3. Seventy events specified by Tri-Service Reportable Events, Version 1.0, July 2000.

Note: Completeness and timeliness of reporting vary by facility.

Source: Army Reportable Medical Events System.



**(Cont'd) Sentinel reportable events for all beneficiaries<sup>1</sup> at US Army medical facilities, cumulative numbers<sup>2</sup> for calendar years through November 30, 2003 and 2004**

Reporting location	Arthropod-borne				Sexually transmitted								Environmental			
	Lyme disease		Malaria		Chlamydia		Gonorrhea		Syphilis <sup>4</sup>		Urethritis <sup>5</sup>		Cold		Heat	
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
<b>NORTH ATLANTIC</b>																
Washington, DC Area	2	4	2	.	144	111	22	19	3	4	.	.	1	29	.	11
Aberdeen, MD	2	.	.	.	36	55	12	2	.	.	.	.	9	.	.	.
FT Belvoir, VA	2	1	1	2	178	191	34	24	.	3	.	.	.	.	1	2
FT Bragg, NC	1	.	7	10	1,212	1,240	238	271	6	10	104	123	4	3	79	112
FT Drum, NY	.	.	.	4	127	96	25	5	1	.	.	.	4	1	.	.
FT Eustis, VA	.	2	.	.	174	178	41	19	1	1	.	.	.	.	.	3
FT Knox, KY	.	.	.	1	191	170	29	15	.	.	.	.	.	.	1	14
FT Lee, VA	.	1	.	.	132	144	27	26	.	.	.	.	.	.	.	1
FT Meade, MD	.	3	.	.	85	139	17	23	.	.	.	.	.	.	.	.
West Point, NY	34	23	.	.	21	38	3	1	.	.	.	.	.	1	8	4
<b>GREAT PLAINS</b>																
FT Sam Houston, TX	.	.	.	2	168	205	33	40	1	1	.	.	.	.	.	22
FT Bliss, TX	.	3	.	.	245	234	55	57	2	1	.	.	.	.	1	1
FT Carson, CO	.	.	.	1	333	479	37	54	1	1	40	55	2	.	1	.
FT Hood, TX	.	1	3	3	814	751	248	223	5	1	187	220	5	.	11	49
FT Huachuca, AZ	.	.	1	.	68	97	5	6	.	.	.	.	.	.	.	.
FT Leavenworth, KS	.	.	.	.	35	26	3	8	.	.	.	.	.	.	.	.
FT Leonard Wood, MO	.	.	.	1	155	171	18	42	1	.	.	.	2	1	3	8
FT Polk, LA	.	.	1	.	153	152	45	32	.	1	.	.	.	.	8	2
FT Riley, KS	.	1	.	1	179	162	9	40	.	.	.	.	.	5	4	22
FT Sill, OK	.	.	.	.	134	126	21	19	1	1	32	.	.	2	4	32
<b>SOUTHEAST</b>																
FT Gordon, GA	.	.	2	1	273	167	22	26	5	1	.	.	.	.	2	3
FT Benning, GA	.	.	25	4	242	230	106	106	.	.	.	.	.	.	29	80
FT Campbell, KY	1	.	2	3	349	560	90	100	1	1	.	.	2	.	9	81
FT Jackson, SC	.	.	.	1	166	179	26	29	.	1	.	.	4	6	22	61
FT Rucker, AL	.	.	.	.	39	45	12	12	.	.	1	.	.	.	4	4
FT Stewart, GA	.	.	2	.	162	324	75	137	.	3	35	41	.	.	14	46
<b>WESTERN</b>																
FT Lewis, WA	.	1	2	1	371	367	75	47	.	.	82	70	.	1	1	2
FT Irwin, CA	.	.	.	.	43	51	11	10	.	.	.	.	.	.	.	2
FT Wainwright, AK	.	.	1	2	105	109	22	12	.	.	.	.	22	55	.	.
<b>OTHER LOCATIONS</b>																
Hawaii	.	.	2	2	673	556	124	109	1	.	.	.	.	.	19	15
Europe	4	16	8	6	975	891	225	195	2	2	1	.	4	1	33	7
Korea	.	.	19	11	406	393	60	54	2	3	6	.	3	6	12	18
<b>Total</b>	<b>46</b>	<b>56</b>	<b>78</b>	<b>56</b>	<b>8,388</b>	<b>8,637</b>	<b>1,770</b>	<b>1,763</b>	<b>33</b>	<b>35</b>	<b>488</b>	<b>509</b>	<b>62</b>	<b>111</b>	<b>266</b>	<b>602</b>

4. Primary and secondary.

5. Urethritis, non-gonococcal (NGU).

Note: Completeness and timeliness of reporting vary by facility.

Source: Army Reportable Medical Events System.

### Assignment locations, active component, United States Army, June 30, 2004<sup>1</sup>

MTF/Post <sup>2</sup>	Males							Females							All <sup>3</sup>
	< 20	20-24	25-29	30-34	35-39	>= 40	Total M	< 20	20-24	25-29	30-34	35-39	>= 40	Total F	
<b>NORTH ATLANTIC RMC</b>															
Washington, DC area	166	2,974	1,357	1,114	957	1,460	8,028	33	694	488	349	309	406	2,279	10,307
Aberdeen, MD	309	594	250	306	304	302	2,065	51	76	60	56	40	32	315	2,380
FT Belvoir, VA	10	229	279	335	401	573	1,827	10	95	107	91	101	124	528	2,355
FT Bragg, NC	1,973	14,465	8,622	5,786	4,502	2,879	38,227	216	1,822	1,180	720	435	339	4,712	42,939
FT Drum, NY	528	4,486	2,404	1,519	1,041	651	10,629	98	555	234	130	70	69	1,156	11,785
FT Eustis, VA	280	1,198	870	748	539	438	4,073	67	390	199	128	79	74	937	5,010
FT Knox, KY	1,077	1,962	1,064	1,060	1,034	738	6,935	29	187	118	98	89	90	611	7,546
FT Lee, VA	363	943	644	558	458	355	3,321	301	482	233	185	149	87	1,437	4,758
FT Meade, MD	47	484	458	389	371	316	2,065	29	223	198	111	91	87	739	2,804
West Point, NY	4	112	90	364	229	356	1,155	3	51	40	63	23	51	231	1,386
<b>GREAT PLAINS RMC</b>															
FT Bliss, TX	426	2,681	1,707	1,294	1,281	1,243	8,632	146	797	400	223	174	188	1,928	10,560
FT Carson, CO	451	4,961	3,524	2,259	1,689	1,041	13,925	74	698	411	238	150	133	1,704	15,629
FT Hood, TX	1,329	13,891	8,607	5,623	4,245	2,944	36,639	330	2,591	1,498	899	612	455	6,385	43,024
FT Huachuca, AZ	347	1,282	932	658	513	451	4,183	113	314	217	115	90	86	935	5,118
FT Leavenworth, KS	20	203	175	333	677	631	2,039	19	85	30	60	81	67	342	2,381
FT Leonard Wood, MO	1,324	2,393	1,201	1,001	875	554	7,348	539	772	333	240	114	69	2,067	9,415
FT Polk, LA	293	2,896	1,724	1,366	932	503	7,714	51	584	246	172	118	75	1,246	8,960
FT Riley, KS	446	4,076	2,348	1,424	957	614	9,865	51	469	237	132	102	79	1,070	10,935
FT Sam Houston, TX	429	1,083	845	962	852	920	5,091	242	526	356	360	264	340	2,088	7,179
FT Sill, OK	1,438	4,591	2,260	1,653	1,254	755	11,951	42	319	214	146	86	72	879	12,830
<b>SOUTHEAST RMC</b>															
FT Benning, GA	4,014	6,949	3,632	2,357	1,495	835	19,282	73	540	340	228	146	109	1,436	20,718
FT Campbell, KY	1,022	8,514	5,221	3,609	2,543	1,486	22,395	181	1,202	634	379	232	147	2,775	25,170
FT Gordon, GA	705	1,997	1,330	1,023	824	682	6,561	192	557	411	285	207	196	1,848	8,409
FT Jackson, SC	1,215	1,828	818	956	791	521	6,129	1,024	1,171	488	371	204	104	3,362	9,491
FT Rucker, AL	91	862	961	684	501	510	3,609	41	193	129	64	55	51	533	4,142
FT Stewart, GA	1,132	5,881	3,141	1,931	1,434	929	14,448	159	883	498	315	201	161	2,217	16,665
<b>WESTERN RMC</b>															
FT Irwin, CA	162	1,507	968	674	519	358	4,188	30	251	155	96	60	34	626	4,814
FT Lewis, WA	649	6,161	4,094	2,732	1,952	1,416	17,004	102	1,057	608	373	252	223	2,615	19,619
FT Wainwright, AK	277	1,530	840	618	355	199	3,819	30	184	110	83	48	34	489	4,308
<b>PACIFIC RMC</b>															
Tripler, HI	498	4,788	3,331	2,107	1,418	1,068	13,210	153	865	535	335	219	203	2,310	15,520
<b>EUROPE RMC</b>															
Europe	2,377	16,212	11,327	7,796	6,184	4,466	48,362	751	3,511	2,016	1,318	899	708	9,203	57,565
<b>KOREA</b>															
	2,594	9,394	5,134	3,457	2,772	2,144	25,495	601	1,720	936	644	473	396	4,770	30,265
<b>OTHER</b>															
	1,920	10,671	9,306	9,187	9,294	10,231	50,609	533	2,626	1,858	1,590	1,382	1,415	9,404	60,014
<b>TOTAL</b>	<b>27,916</b>	<b>141,798</b>	<b>89,464</b>	<b>65,883</b>	<b>53,193</b>	<b>42,569</b>	<b>420,823</b>	<b>6,314</b>	<b>26,490</b>	<b>15,517</b>	<b>10,597</b>	<b>7,555</b>	<b>6,704</b>	<b>73,177</b>	<b>494,001</b>

1. Based on duty zip code. Does not account for TDY.

2. Includes any subordinate catchment areas not listed separately.

3. Includes unknown age groups and unknown gender.

Source: Defense Medical Surveillance System



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