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Incidence, Severity, and Trends of Pneumonia/Influenza and Acute Respiratory Failure/Pulmonary Insufficiency, US Armed Forces, January 1990-June 2003

Throughout history, military populations have been at high risk of acute respiratory illnesses.[1-3] In the US military, acute respiratory illnesses continue to be leading causes of hospitalizations and ambulatory visits of servicemembers.[4,5]

The most frequent acute respiratory illnesses of US servicemembers are upper respiratory infections (URIs) that generally have mild and self-limited clinical courses. URI rates are particularly high among recruits, especially during fall-winter seasons. Infections of the lower respiratory tract (e.g., pneumonias) are less frequent, but more severe, than URIs.[4,6] Finally, there are sporadic cases and rare outbreaks of severe, life threatening acute respiratory illnesses, mainly in recruit camps and during rigorous field training.[7] For example, in November-December 2002, the Marine Corps Recruit Depot in San Diego, California, experienced the largest documented outbreak of Group A streptococcal pneumonias in the United States since 1968; one death was associated with the outbreak.[8] More recently, there were 19 cases of severe acute respiratory illnesses among US servicemembers deployed in the area of responsibility of the US Centeral Command (including Iraq, Afghanistan, Kuwait, Uzbekistan, and Djibouti). Most affected servicemembers recovered without sequelae; however, two of the cases were fatal. The etiologies of most of the cases remain unknown.[9]

There have not been overall assessments of the nature, incidence, or spectrums of severity of acute respiratory illnesses (including pneumonias) that affect military populations. This report is an overview of frequencies, severities, and trends since 1990 of respiratory illnesses among US servicemembers that were diagnosed as "pneumonia or influenza" or "acute respiratory failure/severe acute pulmonary insufficiency."

Methods. Records from the Defense Medical Surveillance System (DMSS) were searched to identify all medical encounters of US servicemembers from 1990 through June 2003 with primary diagnoses of pneumonia, influenza, acute respiratory failure, or severe acute pulmonary insufficiency.

An episode of "pneumonia/influenza" was defined as a hospitalization or outpatient encounter with a primary diagnosis of "pneumonia or influenza" (ICD-9-CM 480-487). To exclude multiple medical encounters for single illness episodes, only one "pneumonia/influenza" episode per servicemember per 30-day period was included.

An episode of "acute respiratory failure/acute pulmonary insufficiency" was defined as the first hospitalization per servicemember with a primary diagnosis of "acute respiratory failure" (ICD-9-CM 518.81) or "pulmonary insufficiency" (which includes acute respiratory distress, acute respiratory insufficiency, and adult respiratory distress syndrome (ARDS) not associated with trauma or surgery) (ICD-9-CM 518.82). (For this analysis, outpatient diagnoses of "acute respiratory failure/acute pulmonary insufficiency" were not included.)

Each episode of "pneumonia/influenza" and "acute respiratory failure/acute pulmonary insufficiency" was classified based on severity. Episodes that terminated in the deaths of affected servicemembers were classified as "fatal." Among non-fatal cases, those that required hospitalization and mechanical ventilation (ICD-9-CM procedure: 96.7 "continuous mechanical ventilation" and/or 96.04 "insertion of endotracheal tube") were classified as "severe, not fatal"; and those that required hospitalization but not mechanical ventilation were classified as "not severe, not fatal." Finally, episodes of "pneumonia/influenza" that were managed exclusively in outpatient settings were classified as "ambulatory." (By definition, there were no "ambulatory" cases of "acute respiratory failure/acute pulmonary insufficiency.")

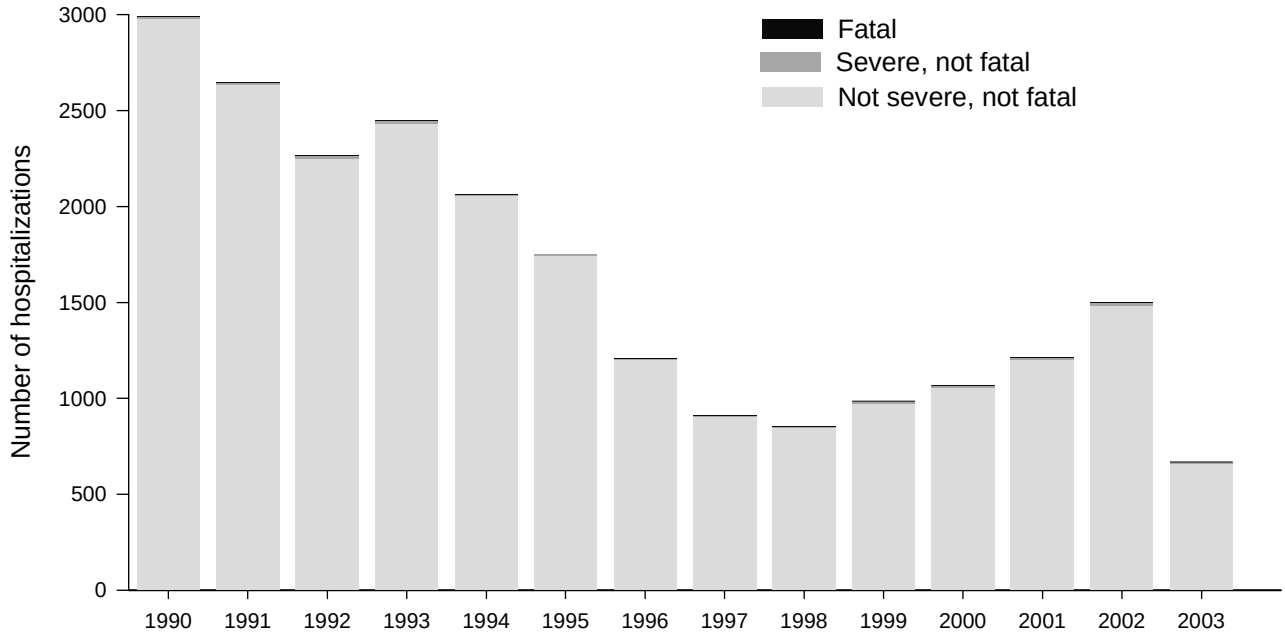
Pneumonia/influenza. From January 1990 to June 2003, there were 22,590 episodes of "pneumonia/influenza" that required hospitalization and/or were fatal (table 1). Of these, 31 (0.14%) were fatal and 157 (0.69%) required mechanical ventilation and survived ("severe, not fatal") (table 1). During the period, there were 0 to 4 fatal "pneumonia/influenza" cases per year and no clear trend (table 1). In addition,

Table 1. Episodes of "pneumonia/influenza" and "acute respiratory failure/ pulmonary insufficiency", by year and clinical severity, US Armed Forces, January 1990-June 2003

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Jun-03	**Total**
Pneumonia/influenza															
Fatal	4	4	2	3	2	0	4	2	2	1	1	3	2	1	31
Hospitalized, severe*	9	9	20	11	8	8	6	8	10	13	13	13	20	9	157
Hospitalized, not severe	2,977	2,635	2,246	2,434	2,055	1,742	1,200	903	844	972	1,054	1,200	1,481	659	22,402
Ambulatory									17,272	26,440	32,853	22,327	22,604	11,841	133,337
Total	2,990	2,648	2,268	2,448	2,065	1,750	1,210	913	18,128	27,426	33,921	23,543	24,107	12,510	155,927
Acute resp failure/ pulmonary insufficiency															
Fatal	1	2	3	0	1	2	1	4	3	0	0	3	2	0	22
Hospitalized, severe*	2	6	4	6	5	11	5	6	4	8	19	13	22	11	122
Hospitalized, not severe	18	16	17	7	15	14	10	9	6	10	7	11	14	10	164
Total	21	24	24	13	21	27	16	19	13	18	26	27	38	21	308

* severe: required mechanical ventilation

Figure 1. Hospitalizations with primary diagnosis of "pneumonia/influenza" by clinical severity and year, US Armed Forces, January 1990-June 2003.



there were 6 to 20 "severe, not fatal" episodes per year (table 1); the highest number of severe episodes occurred in 1992 and 2002 (figure 1).

"Pneumonia/influenza" cases that were hospitalized but not severe or fatal ranged from 844 to 2,977 per year (table 1). There were more "not severe, not fatal" episodes each year prior to 1995 than in any year after 1995 (table 1); however, the numbers increased steadily each year from 1998 through 2002 (figure 1).

From 1998 (when ambulatory data became widely available) through June 2003, there were 133,337 ambulatory cases of "pneumonia/influenza." Of note, there were approximately one-third fewer ambulatory cases in 2001 and 2002 than in 2000, the year with the most ambulatory cases (table 1). From 1998 to June 2003, 95.5% of all "pneumonia/influenza" episodes among US servicemembers were ambulatory and only 0.06% were "severe, not fatal" or "fatal" (table 1).

Finally, in regard to seasonality, the most episodes of "pneumonia/influenza" occurred in January and the fewest in July. Not surprisingly, cases per month declined steadily from January to July and then increased from July through December (figure 2).

Acute respiratory failure/acute pulmonary insufficiency. From January 1990 to June 2003, there were 308 episodes of "acute respiratory failure/acute pulmonary insufficiency" (range, per year: 13 to 38) (table 1). The year with the most cases was 2002 (table 1, figure 3).

There were 0 to 4 fatal cases of "acute respiratory failure/acute pulmonary insufficiency" each year and no clear trend (table 1). There were 2 to 22 "severe, not fatal" cases each year, and the most were in 2002 (table 1). Of note, prior to calendar year 2000, 37.8% of all episodes of "acute respiratory failure/acute pulmonary insufficiency" were "severe, not fatal" or "fatal"; and since 2000, nearly two-thirds (62.5%) of all episodes have been "severe, not fatal" or "fatal" (table 1). The year with the most cases that were "severe" or fatal was 2002 (table 1, figure 3).

Finally, in regard to seasonality, the most cases of "acute respiratory failure/acute pulmonary insufficiency" occurred in April and the fewest in August; however, in general, there were no clear relationships between incidence and season (figure 4).

Editorial comment. This report provides an overview of frequencies, trends, and clinical severities of episodes of acute lower respiratory tract infections, acute respiratory failure, and acute pulmonary insufficiency (not related to trauma or surgery) among US servicemembers. There are several findings of potential importance.

In regard to pneumonia/influenza, hospitalizations steadily increased from 1998 through 2002. Since 1998, approximately 1 (4.5%) of every 22 episodes of pneumonia/influenza required hospitalization; and approximately 1 (1.4%) of every 71 hospitalizations included mechanical ventilation and/or ended in death. There is distinct seasonality in the incidence of pneumonia/influenza, with the most cases in January-February and the fewest in June-July. Finally, in 2002, there were more cases of pneumonia/influenza that required mechanical ventilation and/or died than in any other year since 1992.

In regard to "acute respiratory failure/acute pulmonary insufficiency," numbers of episodes steadily increased from 1998 through 2002. In addition, since 2000, nearly two-thirds of all cases required mechanical ventilation and/or were fatal; and in 2002, there were more cases of "acute respiratory failure/acute pulmonary insufficiency" that required mechanical ventilation and/or were fatal than in any other year since 1990. Finally, there was no clear seasonality in overall incidence of "acute respiratory failure/acute pulmonary insufficiency."

The findings suggest that, in recent years, there have been increases in the incidence of relatively severe acute respiratory illnesses of US servicemembers. However, changes over time in hospital utilization (e.g., criteria for in-patient versus outpatient clinical management) and in coding of diagnoses and procedures, and other changes not related to case incidence or severity, may affect some of the findings of and possible conclusions related to this summary.

Analysis by Karen E. Johnson, MS, Analysis Group, Army Medical Surveillance Activity.

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Figure 2. Episodes with primary diagnosis of "pneumonia/influenza" by clinical severity and month, US Armed Forces, July 1990-June 2003.

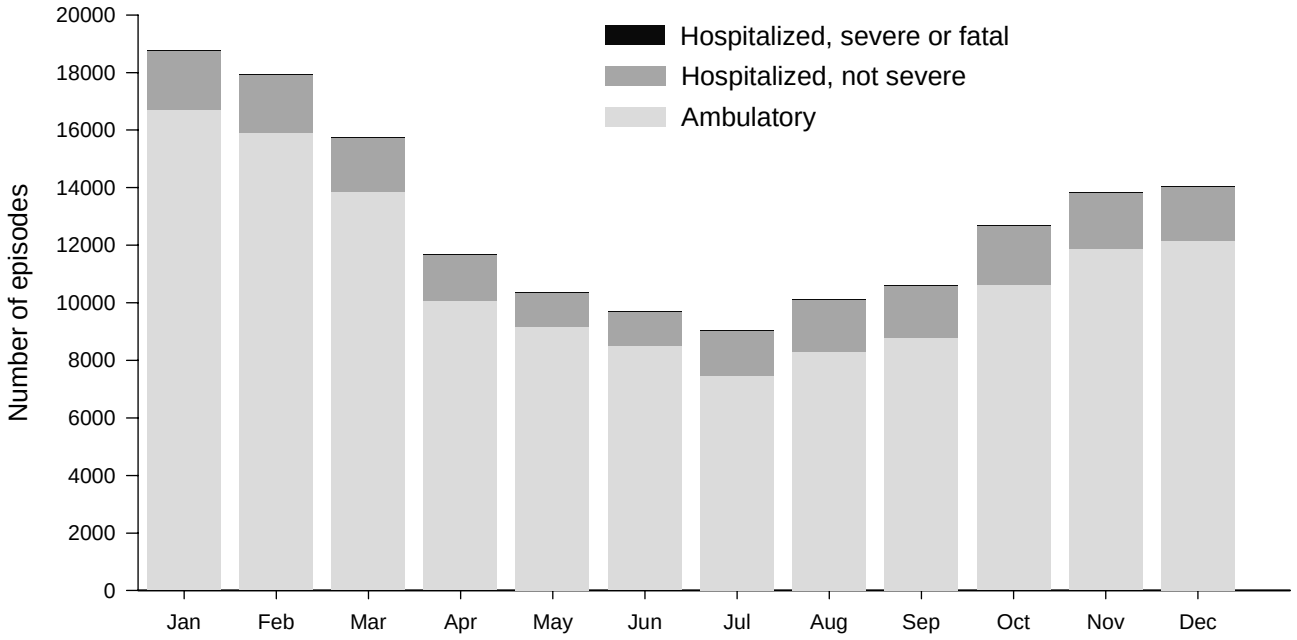

Figure 3. Hospitalizations with primary diagnosis of "acute respiratory failure/ acute pulmonary insufficiency" by clinical severity and year, US Armed Forces, January 1990-June 2003.

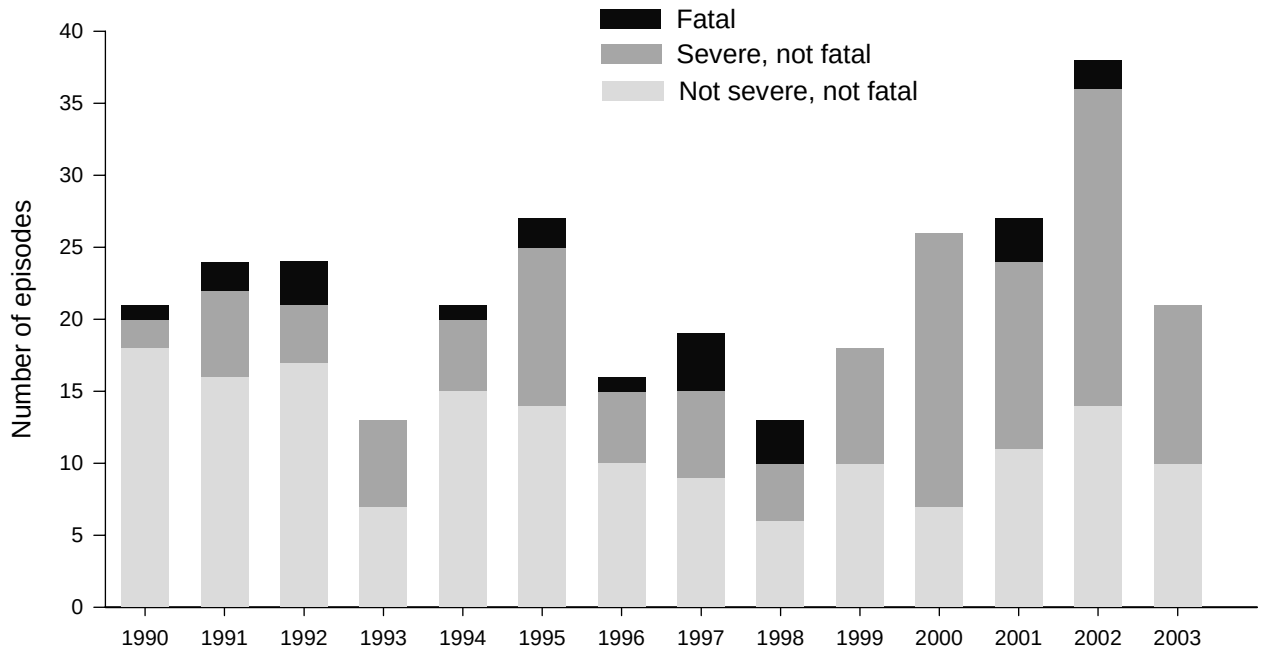

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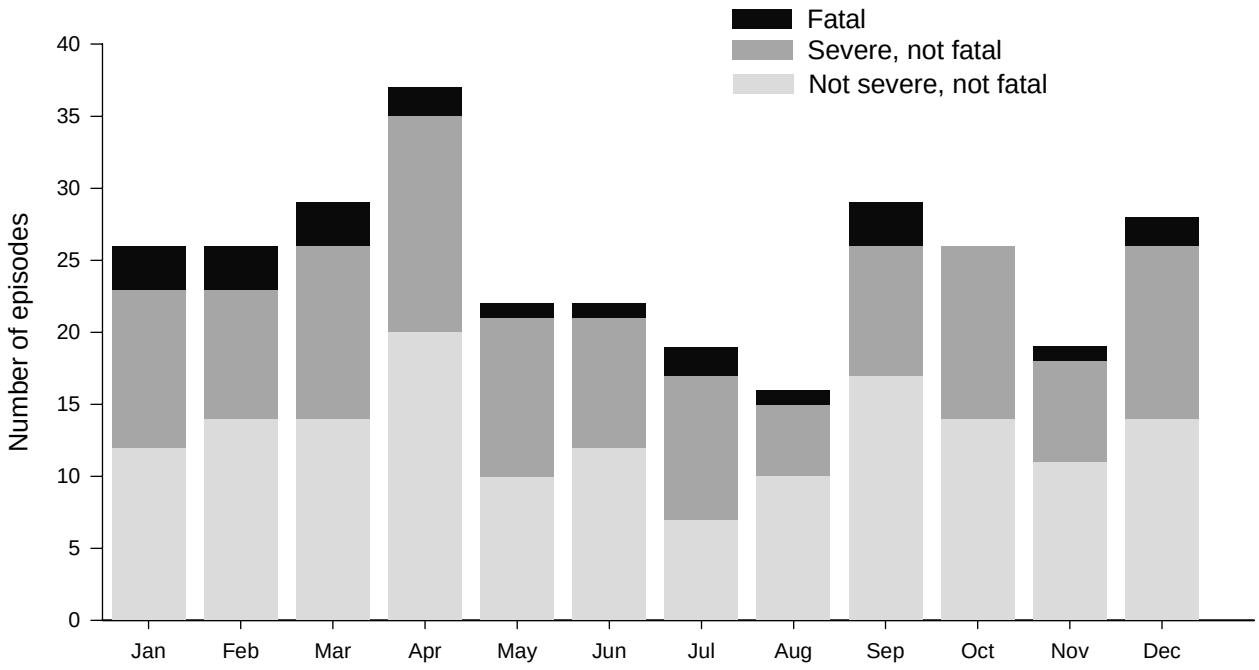
Figure 4. Hospitalizations with primary diagnosis of "acute respiratory failure/ acute pulmonary insufficiency" by clinical severity and month, US Armed Forces, July 1990-June 2003.



Carbon Monoxide Poisoning, US Armed Forces, January 1998-June 2003

In the United States, there are more than 2,000 unintentional carbon monoxide (CO) poisoning-related deaths each year[1,3]; and of these, more than 500 are attributable to occupational inhalations[4]. Unintentional poisonings with CO are most often related to malfunctioning and/or inadequately ventilated heating/cooking devices (e.g., furnaces, fireplaces, barbecues, clothes dryers, stoves), motor vehicles (e.g., automobiles, trucks, tractors, fork lifts), and gasoline-powered tools (e.g., pumps, compressors, power generators)[1-5]. By their natures, many military activities, materials, and settings[6-9] are CO hazardous. CO intoxication is a reportable medical event in the US Armed Forces.

This report updates previous reports in the MSMR regarding episodes of CO intoxication among US servicemembers.[9-11] For this report, CO intoxication episodes were ascertained from records of hospitalizations, ambulatory visits, and medical event case reports in the DMSS.

Methods. The surveillance period was 1 January 1998 to 30 June 2003. For analysis purposes, a case was defined as a US servicemember with a hospitalization, ambulatory visit, or reportable medical event case report that included a diagnosis of "toxic effect of carbon monoxide" (ICD-9 code 986). To exclude follow-up encounters for single CO intoxication episodes, only one episode per individual was included in any 30-day period.

Results. During the surveillance period, there were 541 episodes of carbon monoxide intoxication. Of these, 78 (14.4%) were hospitalized and 11 (2.0 %) were fatal. Numbers of cases approximately doubled from 1998 (n=66) to 2001 (n=133)—and then declined by 16.5% from 2001 to 2002 (figure 1). In regard to season, case counts generally increased from late summer through early fall, were highest in late fall and early winter, decreased from late winter through early spring, and were lowest in late spring and early summer (figure 2).

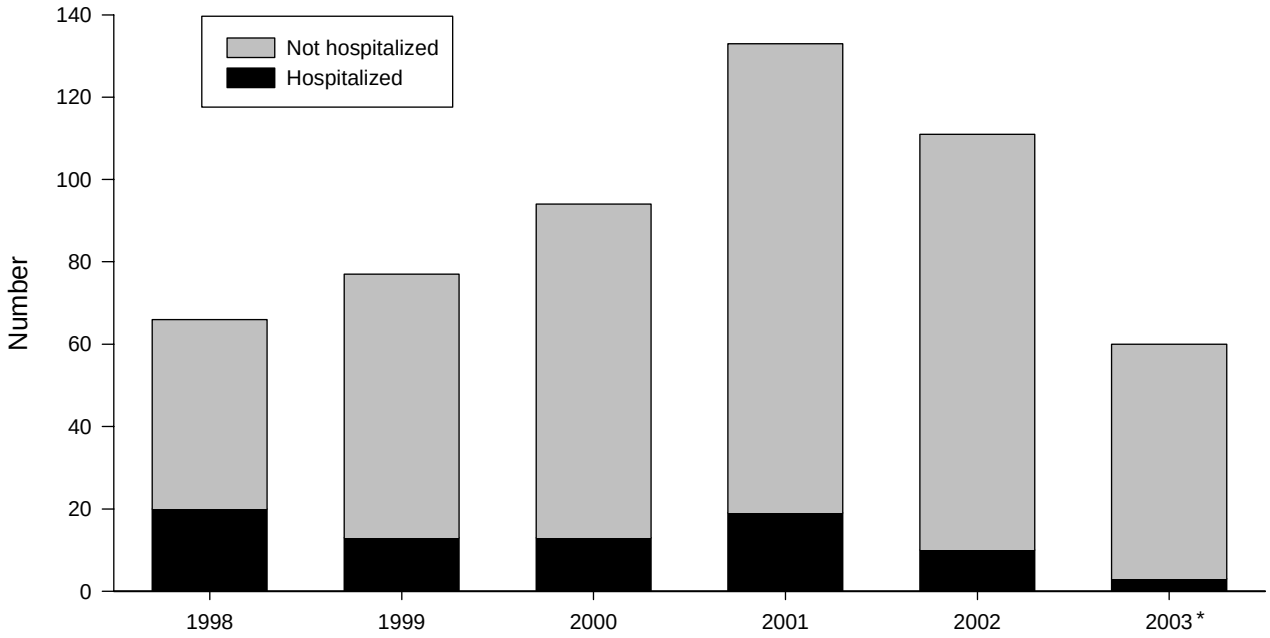
Finally, CO poisoning cases were widely distributed across demographic subgroups, Services, and units/installations in the United States. Installations in the continental US with the most CO intoxication cases were Fort Hood, Texas (24 cases); Fort Carson, Colorado (17 cases); Fort Sill, Oklahoma (15 cases); Fort Riley, Kansas (12 cases); Petersen AFB, Colorado (12 cases); and Fort Benning, Georgia (10 cases). Ninety cases (16.6%) were reported at duty locations outside the continental United States: 15 from Germany, 14 from Korea, and 7 from Japan.

Editorial comment. This report suggests that clinically recognized carbon monoxide intoxications among US servicemembers sharply increased from 1998 to a relative plateau from 2001 to June 2003. While some of the apparent increase may be related

Table 1. Episodes of carbon monoxide poisoning, US Armed Forces, January 1998-June 2003

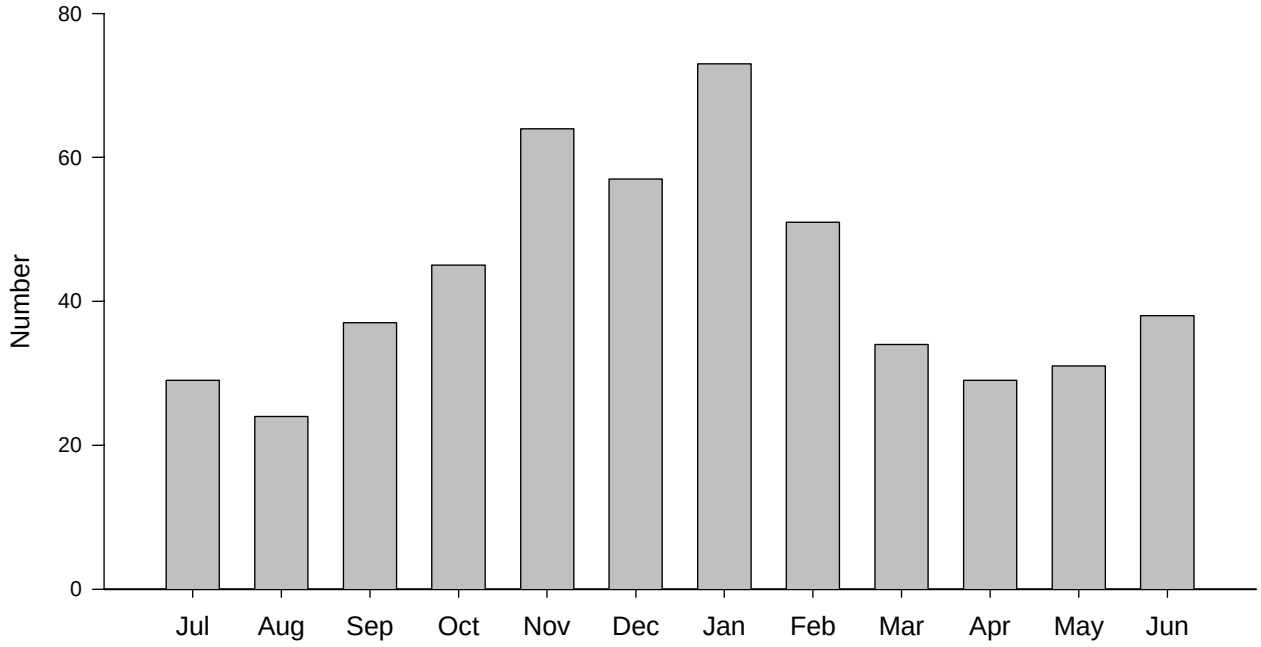
Total	541	100.0
Gender		
Male	433	80.0
Female	108	20.0
Age group		
< 20	36	6.7
20-24	198	36.6
25-29	99	18.3
30-34	90	16.6
35-39	69	12.8
≥ 40	49	9.1
Race/ethnicity		
White, nonhispanic	361	66.7
Black, nonhispanic	114	21.1
Hispanic	40	7.4
Asian/Pacific Isl	12	2.2
Amer Indian/Alaska native	8	1.5
Other/unknown	6	1.1
Grade		
E1-E4	276	51.0
E5-E9	198	36.6
O1-O3	48	8.9
O4-O9	19	3.5
Service		
Army	235	43.4
Navy	105	19.4
Air Force	167	30.9
Marines	34	6.3

Figure 1. Episodes of carbon monoxide poisoning by year, US Armed Forces, January 1998-June 2003.



*through June 2003

Figure 2. Episodes of carbon monoxide poisoning, by month, US Armed Forces, July 1998-June 2003.



to more complete ascertainment (i.e., detection, diagnosis, and reporting) of cases, the relatively high sustained incidence of this life threatening and preventable intoxication is cause for concern.

This report also suggests that CO intoxication risks increase through the late summer and early fall and are highest during the late fall and early winter. In general, this seasonal pattern mirrors trends in ambient outdoor temperatures and uses of indoor heating. The Consumer Products Safety Commission has published prevention guidelines that address, for example, hazards associated with furnaces and other heating devices (table 2).

Servicemembers, unit leaders, and supervisors at all levels should be knowledgable of the dangers of CO poisoning in general; CO hazards related to residential, recreational, occupational, and military operational circumstances, equipment, and activities; and appropriate preventive measures. Finally, primary medical care providers (including unit medics and emergency medical technicians) should be knowledgable of and sensitive to the clinical manifestations of early CO intoxication.[4]

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Table 2. General recommendations to prevent carbon monoxide poisoning

Install appliances in accordance with manufacturer's instructions and local building codes.
Inspect and service heating systems (including chimneys and vents) annually. Check chimneys and flues for blockages, corrosion, disconnections, and loose connections.
Install a CO detector/alarm that meets the requirements of the current UL standard 2034 or the requirements of the IAS 6-96 standard. A carbon monoxide detector/alarm can provide added protection, but is no substitute for proper use and upkeep of appliances that can produce CO.
Never burn charcoal (for cooking, heating, etc.) inside a home, garage, vehicle, or tent.
Never use portable fuel-burning camping equipment inside a home, garage, vehicle, or tent.
Never leave cars or other vehicles running in garages (even with doors open) if they are attached to living spaces.
Never service fuel-burning appliances without proper knowledge, skills, and tools. Always refer to the owner's manual when performing minor adjustments or servicing fuel-burning appliances.
Never use gas appliances such as ranges, ovens, or clothes dryers for heating living spaces.
Never operate unvented fuel-burning appliances in rooms/tents with closed doors or windows or in rooms/tents where people are sleeping.
Do not use gasoline-powered tools or engines indoors. If such uses are unavoidable, ensure that adequate ventilation is available and whenever possible, place engine unit to exhaust outdoors.

Source: Adapted from Consumer Product Safety Commission Document #466

Update: Pre- and Post-deployment Health Assessments, US Armed Forces, September 2002-August 2003

Recent issues of the MSMR have reviewed the background of, rationale for, and polices and guidelines related to pre- and post-deployment health assessments of deploying servicemembers.[1-10] Briefly, prior to deploying, the health of each servicemember is assessed to ensure his/her medical fitness and readiness for deployment; and at the time of redeployment, the health status of each servicemember is again assessed to identify medical conditions and/or exposures of concern to ensure their timely evaluation and treatment. Completed pre- and post-deployment health assessment forms are sent to the Army Medical Surveillance Activity (AMSA) where they are scanned, data entered, and archived in the Defense Medical Surveillance System (DMSS).[11] In the DMSS, data recorded on pre- and post-deployment forms are integrated with data that document demographic and military characteristics and medical experiences (e.g., hospitalizations, ambulatory visits, immunizations) of servicemembers.[11] The continuously expanding integrated DMSS database can be used to monitor the health of servicemembers who participated in various deployments.[11-13]

The population of interest for this report included servicemembers who were mobilized and/or deployed after 1 October 2002. The report summarizes responses to selected questions on pre- and post-deployment health assessments and changes in responses from pre- to post-deployment.

Methods. For this update, the DMSS was searched to identify all pre- and post-deployment forms that were completed after 1 September 2002 (in order that assessments of servicemembers who deployed in October 2002 were included in analyses). For summary purposes, pre-deployment responses included all assessments (DD Form 2795) that were completed after 1 September 2002; and post-deployment responses included all assessments (DD Form 2796) that were completed after 1 January 2003. Because numbers of processed forms change from day to day, dates of summaries are noted with tables and figures.

Results. During the surveillance period, 385,511 pre-deployment health assessment forms were completed at field sites, shipped to AMSA, and entered into the DMSS database—nearly two-thirds (62.7%) were completed in January, February, or March (table 1).

From January through August 2003, 213,251 post-deployment health assessments were completed at field sites, shipped to AMSA, and entered into the DMSS database—approximately three-fourths (76.0%) were completed in May, June, or July (table 1).

The distributions of self-assessments of "overall health status" were generally similar among pre- and post-deployment respondents (figure 1). However, relatively more pre- (74.2%) than post- (64.9%) deployment respondents assessed their overall health as "excellent" or "very good"; and relatively more post- (34.7%) than pre- (25.6%) deployment respondents assessed their overall health as "good" or "fair." During both phases, fewer than 0.5% of respondents assessed their overall health as "poor" (figure 1).

On post-deployment forms, approximately one of six (16%) active and one of four (25%) Reserve component respondents reported "medical/dental problems." Among active component respondents, relatively more members of the Army (23%) than the other Services reported "medical/dental problems"; however, among reserve component respondents, relatively more members of the Navy (32%) and Marines (35%) than the other Services reported "medical/dental problems" (table 2). Across the board, 1-4% of respondents reported "mental health concerns"(table 2). Approximately one-sixth (16%) of post-deployment forms overall—but one-fourth (27%) of active Army and reserve Marine respondents—included "indications for referrals." (table 2).

Among servicemembers (n=105,466) who completed both forms during the period, approximately half (50.4%) used the same descriptor of their "overall health" before and after deploying (figures 2, 3). Of those (n=52,399) who changed their assessments from pre- to post-deployment, most (79.0%) changed by one category (on a five category

Figure 1. Percent distributions of self-assessed overall health status, pre- and post-deployment health forms, US Armed Forces, September 2002-August 2003.

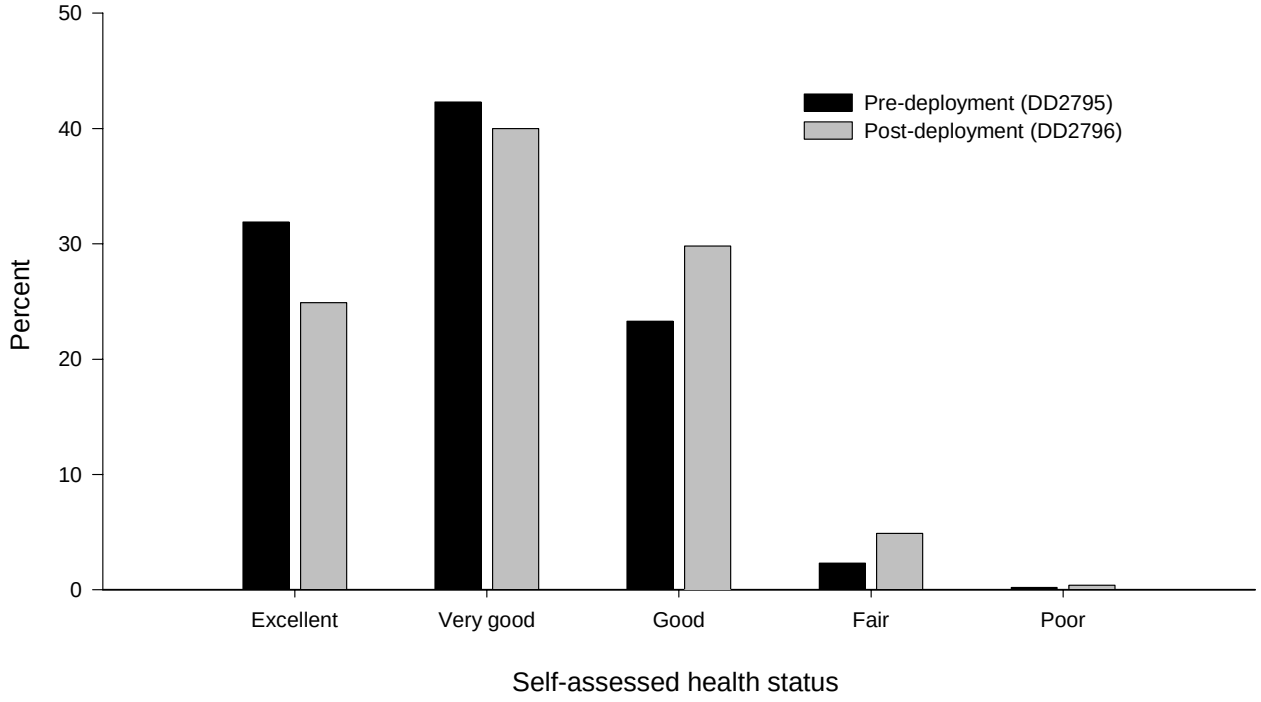

Table 1. Total pre-deployment and post-deployment health assessments, by month and year, US Armed Forces

	Pre-deployment *		Post-deployment **	
	No.	%	No.	%
Total	385,511	100.0	213,251	100.0
2002				
September	10,977	2.8		
October	16,384	4.2		
November	18,804	4.9		
December	15,802	4.1		
2003				
January	66,178	17.2	5,226	2.5
February	106,323	27.6	4,639	2.2
March	67,262	17.4	6,094	2.9
April	34,497	8.9	15,129	7.1
May	10,892	2.8	72,940	34.2
June	13,361	3.5	53,486	25.1
July	12,826	3.3	37,066	17.4
August	12,205	3.2	18,671	8.8

* Total pre-deployment assessments (DD form 2795), 1 September 2002-30 August 2003.

** Total post deployment assessments (DD form 2796), 1 January 2003-30 August 2003.

scale) (figure 2,3); and of those who changed by more than one category, more than 6-times as many indicated a decline (n=9,523) as an improvement (n=1,445) (figure 3).

Finally, approximately one of eight returning servicemembers reported a deployment-related "exposure concern." The likelihood of reporting an "exposure concern" increased with age; in addition, reservists, members of the Marine Corps and Army, females, officers, and individuals of Hispanic ethnicity were more likely to report "exposure concerns" than their respective counterparts (table 3).

Editorial comment. Most deploying and redeploying servicemembers describe their overall health as good, very good, or excellent; and most servicemembers do not significantly change their overall health assessments from pre- to post-deployment. Of note, however, of the relatively few servicemembers who changed their descriptions of their overall health by at least two categories from pre- to post-deployment, many more reported declines than improvements. This finding deserves more detailed analysis (findings will be reported in future MSMRs); however, it is not surprising for several reasons: first, many more servicemembers are "eligible" for significant decreases than increases in their perceived overall health—because prior to deploying, many more servicemembers describe their overall health as very good or excellent than fair or poor; and second, in general, the health and fitness statuses of very healthy and fit individuals would be expected to decline during prolonged exposures to extreme physical and psychological stresses.[14]

Across the board, relatively few returning servicemembers (1-4%) reported "mental health concerns." However, mental health problems may be more prevalent than suggested by responses on a self-adminstered general health questionnaire that is completed at the time of redeployment. Commanders, supervisors, careproviders, peers and family members should be vigilant for mental health problems that may emerge among servicemembers who have recently returned from overseas deployments.[12, 14, 15]

Table 2. Reponses to selected questions from post-deployment forms (DD2796) completed since 1 January 2003, by service and component, US Armed Forces*

Active component	Army	Navy	Air Force	Marines	Total
SMs with DD 2796 at AMSA	52,776	16,607	27,345	28,258	124,986
General health ("fair" or "poor")	8%	4%	2%	5%	5%
Medical/dental problems	23%	13%	11%	16%	17%
Currently on profile	11%	1%	1%	2%	5%
Mental health concerns	4%	2%	1%	1%	2%
Exposure concerns	14%	6%	5%	11%	10%
Health concerns	13%	7%	4%	8%	9%
Referral indicated	27%	10%	15%	11%	16%
Med. visit following referral***	88%	68%	81%	52%	80%
Post deployment serum**	94%	32%	93%	70%	82%
Reserve component					
SMs with DD 2796 at AMSA	39,654	7,114	11,079	5,893	63,740
General health ("fair" or "poor")	7%	4%	2%	10%	6%
Medical/dental problems	29%	32%	18%	35%	27%
Currently on profile	14%	4%	2%	4%	9%
Mental health concerns	3%	2%	1%	3%	2%
Exposure concerns	14%	12%	10%	32%	14%
Health concerns	16%	18%	9%	24%	15%
Referral indicated	22%	17%	18%	27%	17%
Med. visit following referral***	39%	82%	19%	50%	41%
Post deployment serum**	93%	66%	77%	73%	86%

* As of 27 October 2003.

** Only calculated for DD form 2796 completed since 1 June 2003.

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

Note: Subgroup totals may not equal the overall total due to missing/unknown data.

Overall, approximately one of eight servicemembers who completed post-deployment health assessments reported "exposure concerns." Older servicemembers were more likely to report exposure concerns than their younger counterparts. Interpretations of the finding require more detailed analyses.

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Figure 2. Self-assessed health status on post-deployment form, in relation to self assessed health status pre-deployment, US Armed Forces, September 2002-August 2003.

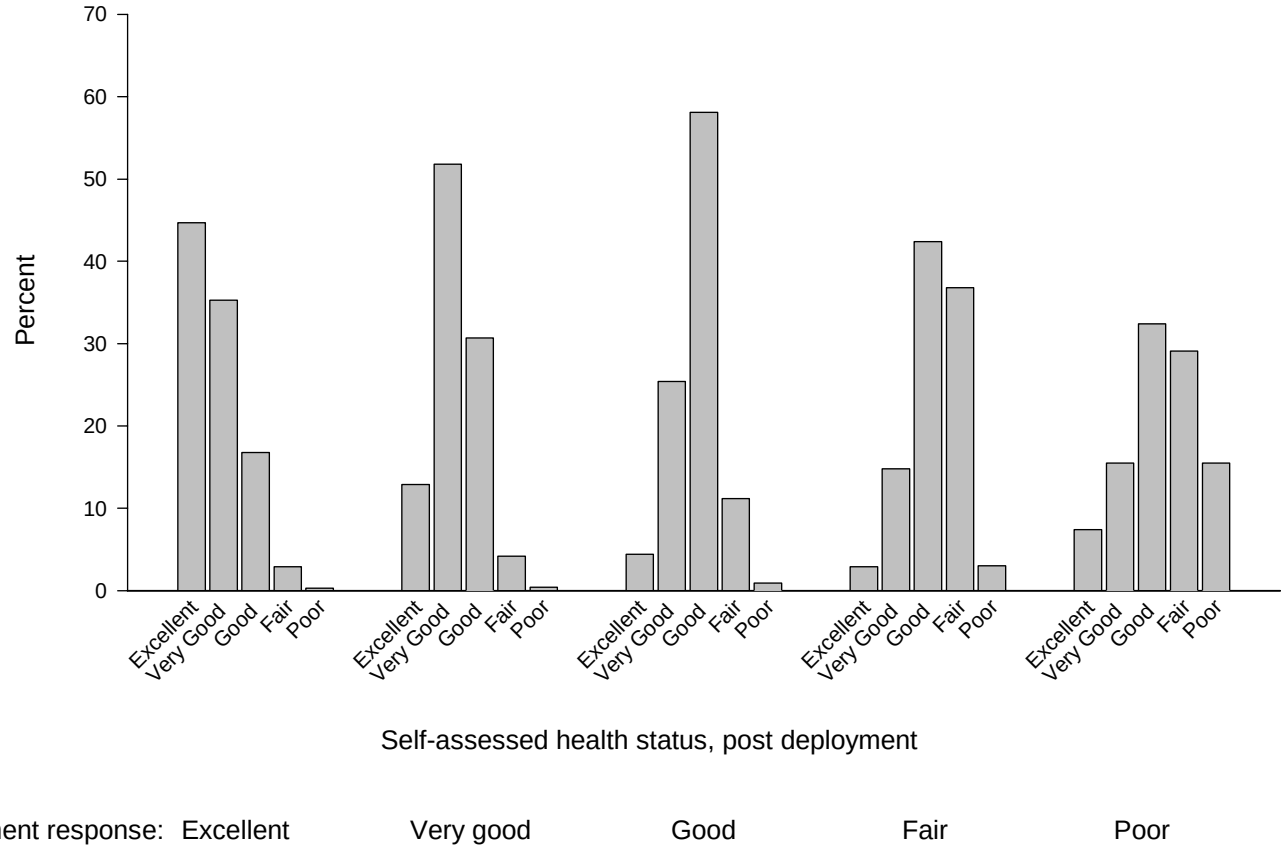

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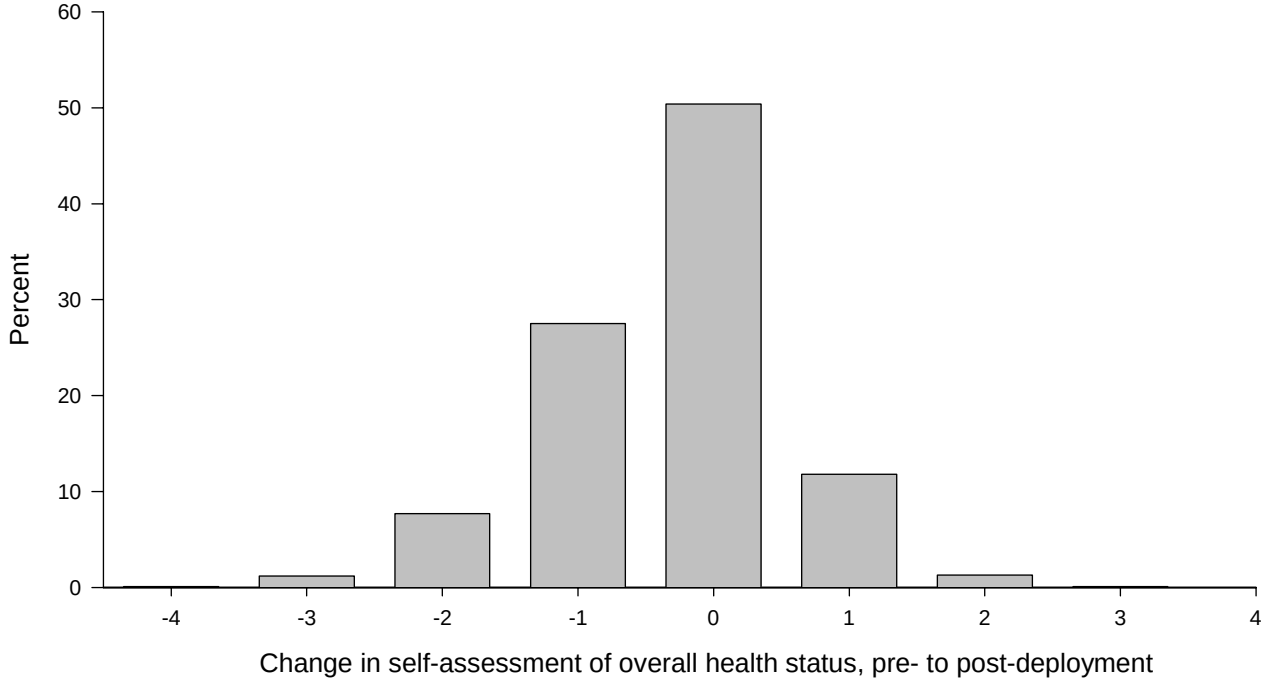
Figure 3. Distribution of self-assessed health status changes from pre- to post-deployment form, US Armed Forces, September 2002-August 2003.



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

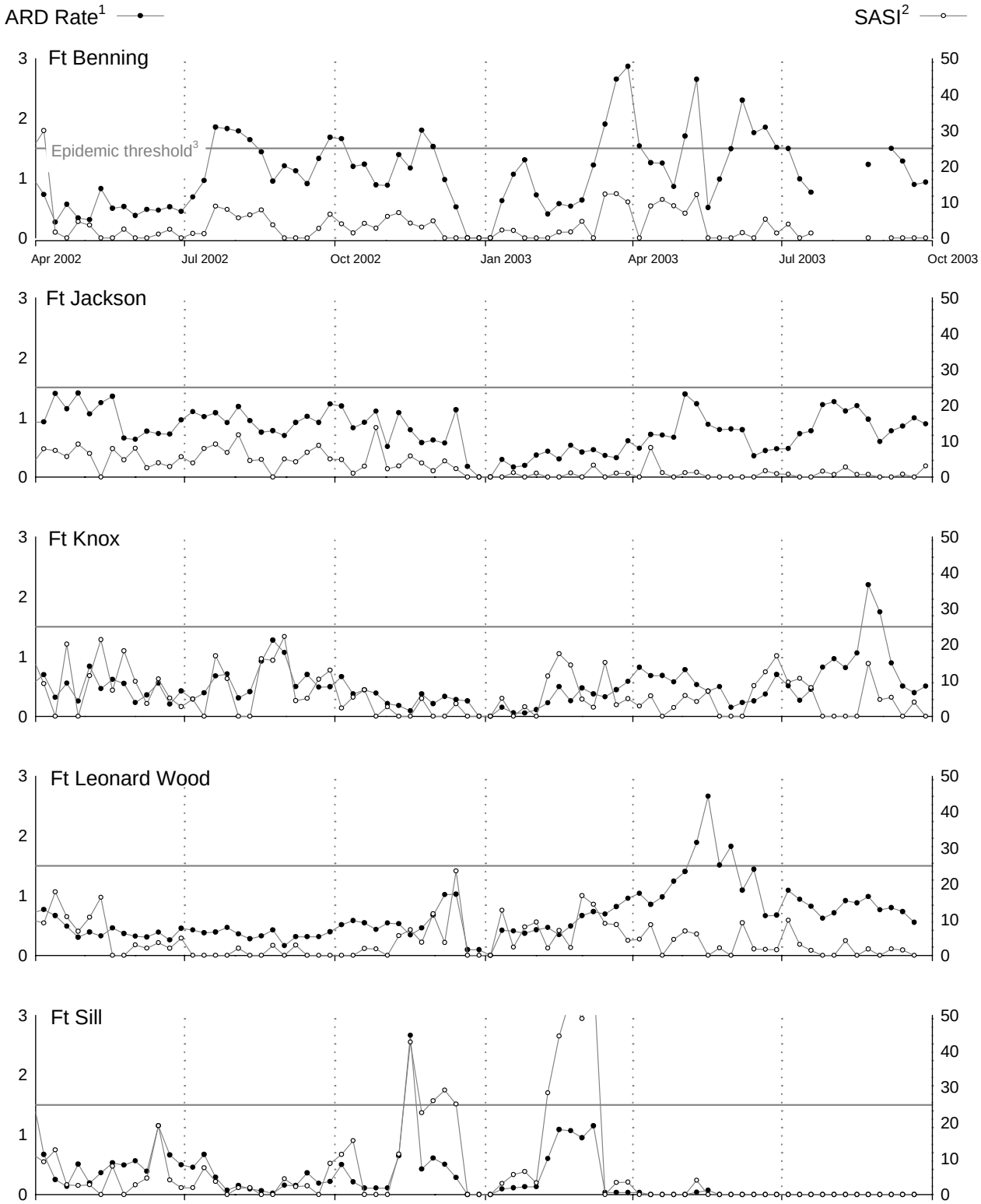
Table 3. Deployment-related "exposure concerns" reported on post-deployment health assessments*, US Armed Forces, January-August 2003

	Total respondents	Exposure concerns no.	Exposure concerns %
Total	184,784	22,343	12.1
Component			
Active	123,044	13,342	10.8
Reserve	61,665	9,428	15.3
Service			
Army	90,034	13,223	14.7
Navy	23,415	1,958	8.4
Air Force	37,772	2,573	6.8
Marine Corps	33,563	5,027	15.0
Age (years)			
<20	6,909	462	6.7
20-29	96,608	10,358	10.7
30-39	52,220	7,283	13.9
>39	29,047	4,678	16.1
Gender			
Male	163,998	19,933	12.2
Female	20,784	2,848	13.7
Race/ethnicity			
Black	33,658	4,596	13.7
Hispanic	8,751	1,307	14.9
Other	3,992	598	15.0
White	129,891	15,333	11.8
Grade			
Enlisted	159,012	19,051	12.0
Officer	25,768	3,729	14.5

* Post-deployment health assessments (DD Form 2796) with completion dates: 1 January-31 August 2003.

Note : Subgroup totals may not equal the overall total due to missing/unknown data.

Acute respiratory disease (ARD) and streptococcal pharyngitis (SASI), Army Basic Training Centers, by week through September 27, 2003



[1]ARD rate = cases per 100 trainees per week

[2]SASI (Strep ARD surveillance index) = (ARD rate)x(rate of Group A beta-hemolytic strep)

[3]ARD rate >=1.5 or SASI >=25.0 for 2 consecutive weeks indicates an "epidemic"

Active duty force strength by location, United States Army, June 2003*

MTF/Post**	Males							Females							All§
	< 20	20-24	25-29	30-34	35-39	>= 40	Total M	< 20	20-24	25-29	30-34	35-39	>= 40	Total F	
NORTH ATLANTIC RMC															
Walter Reed AMC	21	394	451	509	455	691	**2,521**	23	250	288	201	198	222	**1,182**	**3,703**
Abrdn Prv Grnd, MD	291	757	272	287	304	373	**2,284**	64	133	72	62	40	36	**407**	**2,691**
FT Belvoir, VA	17	207	282	326	401	593	**1,826**	3	99	103	100	96	120	**521**	**2,347**
FT Bragg, NC	1,682	14,243	8,399	5,936	4,533	2,939	**37,732**	207	1,926	1,168	742	440	351	**4,834**	**42,568**
FT Drum, NY	501	4,371	2,251	1,499	1,000	699	**10,321**	73	553	249	138	88	64	**1,165**	**11,487**
FT Eustis, VA	201	1,230	949	737	595	463	**4,175**	73	367	212	129	109	80	**970**	**5,145**
FT Knox, KY	849	2,078	1,183	1,129	1,103	760	**7,102**	31	193	149	100	99	98	**670**	**7,807**
FT Lee, VA	367	1,215	704	533	488	406	**3,713**	266	539	255	194	136	98	**1,488**	**5,202**
FT Meade, MD	42	429	456	435	406	353	**2,121**	19	184	173	119	103	88	**686**	**2,807**
West Point, NY	4	125	93	361	249	341	**1,173**	5	48	41	62	30	42	**228**	**1,401**
GREAT PLAINS RMC															
Brooke AMC	346	1,157	848	986	817	901	**5,055**	205	543	348	357	272	329	**2,054**	**7,109**
Wm Beaumont AMC	378	2,946	1,817	1,340	1,164	1,132	**8,777**	107	840	400	227	138	179	**1,891**	**10,668**
FT Carson, CO	431	4,877	3,419	2,208	1,601	1,032	**13,568**	64	786	439	228	159	122	**1,798**	**15,366**
FT Hood, TX	1,382	13,978	8,200	5,233	4,105	2,755	**35,653**	346	2,900	1,504	890	594	447	**6,681**	**42,339**
FT Huachuca, AZ	277	1,166	903	633	531	457	**3,967**	122	318	199	113	93	89	**934**	**4,901**
FT Leavenworth, KS	11	233	208	236	619	585	**1,892**	5	69	48	46	95	60	**323**	**2,215**
FT Leonard Wood, MO	1,028	2,102	1,075	1,039	877	580	**6,701**	422	740	301	232	119	78	**1,892**	**8,624**
FT Polk, LA	276	2,977	1,699	1,245	948	504	**7,649**	79	603	256	185	123	64	**1,310**	**8,959**
FT Riley, KS	406	3,936	2,170	1,338	931	571	**9,352**	51	481	210	139	99	75	**1,055**	**10,408**
FT Sill, OK	877	4,264	2,142	1,782	1,281	796	**11,142**	40	366	221	177	103	82	**989**	**12,137**
SOUTHEAST RMC															
Eisenhower AMC	658	2,073	1,306	1,015	794	715	**6,561**	189	588	445	286	212	183	**1,903**	**8,464**
FT Benning, GA	2,502	6,436	3,544	2,454	1,564	889	**17,389**	77	536	369	224	126	108	**1,440**	**18,860**
FT Campbell, KY	841	8,443	5,250	3,722	2,640	1,585	**22,481**	140	1,294	603	384	253	148	**2,822**	**25,304**
FT Jackson, SC	1,200	1,745	892	940	796	492	**6,065**	876	1,196	471	386	233	100	**3,262**	**9,337**
FT Rucker, AL	78	878	1,074	734	524	527	**3,815**	34	169	144	76	60	50	**533**	**4,348**
FT Stewart, GA	566	5,539	3,168	1,942	1,452	994	**13,661**	98	911	555	313	190	162	**2,229**	**15,890**
WESTERN RMC															
Madigan AMC	562	6,209	3,980	2,704	1,900	1,425	**16,780**	112	1,133	639	383	243	235	**2,745**	**19,525**
FT Irwin, CA	164	1,462	908	706	493	332	**4,065**	20	234	143	89	53	32	**571**	**4,636**
FT Wainwright, AK	117	1,349	930	686	398	221	**3,701**	32	197	147	106	53	33	**568**	**4,269**
OTHER LOCATIONS															
Tripler AMC	701	4,486	3,210	1,930	1,345	936	**12,608**	142	852	593	356	214	205	**2,362**	**14,970**
Europe	1,492	14,355	10,183	7,391	5,926	3,998	**43,345**	481	3,492	2,003	1,327	855	645	**8,803**	**52,148**
Korea	1,642	9,735	5,582	3,854	3,392	2,405	**26,610**	491	2,041	1,110	766	580	453	**5,441**	**32,052**
Other/Unknown	1,908	14,089	11,627	11,041	11,315	11,687	**61,667**	426	2,911	2,197	1,851	1,607	1,654	**10,646**	**72,316**
Total	**21,818**	**139,484**	**89,175**	**66,911**	**54,947**	**43,137**	**415,472**	**5,323**	**27,492**	**16,055**	**10,988**	**7,813**	**6,732**	**74,403**	**490,003**

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

§ Includes unknown age groups and unknown gender.

** Includes any subordinate catchment areas not listed separately.

Source: Defense Manpower Data Center (DMDC)

Sentinel reportable events for all beneficiaries[1] at US Army medical facilities, cumulative numbers[2] for calendar years through September 30, 2002 and 2003

Reporting location	Number of reports all events[3]		Food-borne								Vaccine Preventable					
			Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
NORTH ATLANTIC																
Washington, DC Area	198	220	6	.	3	5	5	3	7	3	2	.	.	.	.	2
Aberdeen, MD	40	55	.	.	.	.	.	.	1	.	.	.	1	.	.	.
FT Belvoir, VA	170	187	7	9	4	1	8	10	.	3	.	.	.	.	.	.
FT Bragg, NC	1,715	1,446	9	8	.	.	30	23	20	19	.	.	1	.	.	2
FT Drum, NY	118	155	1	.	.	1	.	.	.	.	.	.	.	.	.	2
FT Eustis, VA	216	183	1	.	.	.	2	1	7	.	.	.	1	.	2	2
FT Knox, KY	170	208	5	3	3	.	4	5	.	.	.	.	.	.	.	1
FT Lee, VA	188	143	.	.	.	.	1	2	.	.	.	.	.	.	.	.
FT Meade, MD	86	85	.	.	1	.	1	.	.	1	.	.	.	.	1	.
West Point, NY	99	56	.	2	.	.	1	2	.	.	2	1	1	1	.	.
GREAT PLAINS																
FT Sam Houston, TX	225	169	.	.	.	.	2	4	.	.	.	.	.	.	.	.
FT Bliss, TX	187	256	.	1	2	4	5	3	2	1	.	.	2	2	.	1
FT Carson, CO	488	388	6	10	4	5	1	2	4	.	.	4	2	.	.	1
FT Hood, TX	1,807	1,231	1	7	.	.	9	23	2	84	.	1	.	.	.	.
FT Huachuca, AZ	44	54	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Leavenworth, KS	36	36	.	2	.	.	.	1	1	.	1	.	.	.	.	.
FT Leonard Wood, MO	196	174	.	2	.	.	2	.	.	.	.	.	.	1	4	3
FT Polk, LA	175	174	.	1	.	.	2	2	1	.	.	.	.	.	.	.
FT Riley, KS	234	194	.	4	.	4	.	1	.	.	.	.	.	2	1	.
FT Sill, OK	269	181	1	.	.	.	.	.	5	.	.	.	.	.	.	.
SOUTHEAST																
FT Gordon, GA	178	257	.	.	.	1	.	3	1	.	1	.	1	2	.	.
FT Benning, GA	441	388	.	1	3	3	21	9	.	7	.	.	.	.	3	.
FT Campbell, KY	585	411	3	4	1	7	4	4	2	.	.	.	.	.	2	.
FT Jackson, SC	200	176	.	.	.	.	.	1	.	.	.	1	1	.	1	.
FT Rucker, AL	62	63	1	.	.	.	.	5	.	5	.	2	.	.	.	.
FT Stewart, GA	489	240	1	.	1	.	8	11	3	3	.	.	.	.	1	1
WESTERN																
FT Lewis, WA	594	448	2	1	.	6	5	5	.	3	.	1	.	.	.	.
FT Irwin, CA	53	44	.	.	.	.	.	.	.	.	.	.	1	.	.	.
FT Wainwright, AK	114	121	1	.	1	.	1	.	.	.	.	.	.	.	.	.
OTHER LOCATIONS																
Hawaii	662	799	38	17	10	4	10	10	1	4	.	.	2	.	.	.
Europe	1,680	1,046	23	14	.	.	36	15	2	.	.	7	6	.	5	3
Korea	423	431	2	.	.	.	6	1	.	.	1	1	1	1	1	5
Total	**12,142**	**10,019**	**108**	**86**	**33**	**41**	**164**	**146**	**59**	**133**	**7**	**18**	**20**	**9**	**21**	**23**

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

2. Events reported by October 7, 2002 and 2003.

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[1] at US Army medical facilities, cumulative numbers[2] for calendar years through September 30, 2002 and 2003

Reporting location	Arthropod-borne				Sexually Transmitted								Environmental			
	Lyme Disease		Malaria		Chlamydia		Gonorrhea		Syphilis[3]		Urethritis[4]		Cold		Heat	
	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003	2002	2003
NORTH ATLANTIC																
Washington, DC Area	4	2	2	2	76	128	21	18	4	3	.	.	.	1	2	.
Aberdeen, MD	.	2	.	.	35	33	3	11	.	.	.	.	.	9	.	.
FT Belvoir, VA	2	1	.	1	112	131	29	28	1	.	.	.	.	.	2	1
FT Bragg, NC	.	1	4	5	1,226	1,006	204	206	1	5	104	88	.	4	105	78
FT Drum, NY	.	.	2	.	74	113	27	23	.	1	.	.	.	4	14	.
FT Eustis, VA	1	.	.	.	164	140	34	35	1	1	.	.	.	.	3	.
FT Knox, KY	.	.	.	.	126	166	27	27	.	.	.	.	.	.	3	1
FT Lee, VA	2	.	.	.	154	118	29	23	.	.	.	.	.	.	2	.
FT Meade, MD	5	.	.	.	66	71	9	13	.	.	2	.	.	.	.	.
West Point, NY	37	25	.	.	12	15	8	1	.	.	.	.	.	.	37	7
GREAT PLAINS																
FT Sam Houston, TX	.	.	.	.	167	132	34	30	.	1	.	.	.	.	1	.
FT Bliss, TX	.	.	.	.	105	188	20	40	1	2	.	.	.	.	1	1
FT Carson, CO	.	.	2	.	325	281	41	34	.	1	54	37	1	2	.	1
FT Hood, TX	.	.	5	3	987	682	354	203	3	3	314	158	.	5	33	9
FT Huachuca, AZ	.	.	.	.	35	50	7	4	.	.	.	.	.	.	2	.
FT Leavenworth, KS	.	.	1	.	25	29	7	3	.	.	.	.	.	.	.	.
FT Leonard Wood, MO	.	.	1	.	138	143	30	16	.	1	2	.	.	2	12	3
FT Polk, LA	.	.	1	1	120	124	43	38	3	.	.	.	.	.	1	8
FT Riley, KS	.	.	2	.	170	166	46	9	.	.	.	.	11	.	3	4
FT Sill, OK	.	.	2	.	156	117	46	19	.	1	40	32	.	.	19	4
SOUTHEAST																
FT Gordon, GA	2	.	1	1	135	225	26	12	1	5	.	.	.	.	1	2
FT Benning, GA	.	.	.	26	206	198	108	88	1	.	.	.	.	.	94	55
FT Campbell, KY	.	1	2	2	429	293	109	76	1	1	.	.	1	2	23	9
FT Jackson, SC	.	.	.	.	160	125	34	20	1	.	.	.	1	4	2	22
FT Rucker, AL	.	.	.	.	43	33	13	11	.	.	.	1	.	.	5	4
FT Stewart, GA	3	.	.	2	304	114	122	52	1	.	.	35	.	.	42	14
WESTERN																
FT Lewis, WA	.	.	3	2	414	274	70	56	2	.	94	74	.	.	.	1
FT Irwin, CA	.	.	.	.	39	33	11	10	.	.	.	.	.	.	1	.
FT Wainwright, AK	1	.	.	1	84	85	8	14	.	.	.	.	13	15	.	.
OTHER LOCATIONS																
Hawaii	.	.	2	1	465	555	74	102	1	.	.	.	.	.	4	14
Europe	9	2	6	8	1,214	757	352	173	4	2	3	1	4	3	7	33
Korea	.	.	2	12	299	337	89	45	.	2	1	4	3	3	14	10
Total	**66**	**34**	**38**	**67**	**8,065**	**6,862**	**2,035**	**1,440**	**26**	**29**	**614**	**430**	**34**	**54**	**433**	**281**

3. Primary and secondary.

4. Urethritis, non-gonococcal (NGU).

Note: Completeness and timeliness of reporting vary by facility.

Source: Army Reportable Medical Events System.

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