MSMR

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Contents

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Disease and Non-Battle Injury Surveillance among Deployed US Armed Forces: Bosnia-Herzegovina, Kosovo, and Southwest Asia, July 2000-September 2001

Surveillance of the disease and non-battle injury (DNBI) experience of deployed US forces is required for all deployments of at least 30 continuous days.[1,2] The goal of DNBI surveillance is to detect and characterize ongoing and emerging threats to the health, safety, and operational effectiveness of deployed forces. Data gathered through DNBI surveillance are useful to monitor the health of deployed forces and to target disease and injury prevention efforts at base camp and unit levels.

Currently, the Defense Medical Surveillance System (DMSS) receives weekly DNBI reports from Bosnia-Herzegovina, Kosovo, and Southwest Asia. These reports summarize, for each camp/base in each theater, average troop strengths, sick call diagnoses, light duty days, lost duty days, and hospitalizations. Initial sick call or outpatient visits are classified into 10 disease and 5 non-battle injury categories. Dental, administrative, and follow-up visits are tracked but not included in overall DNBI counts.

This report summarizes DNBI visits and rates (per 100 servicemembers per week) overall and by category from 1 July 2000 to 30 September 2001 in the Bosnia-Herzegovina, Kosovo, and Southwest Asia theaters. DNBI-related light and lost duty days are also summarized for the Bosnia and Kosovo theaters.

Overall DNBI, all theaters. During the 15-month surveillance period, there were 73,640 DNBI-related clinic visits among servicemembers deployed to Bosnia-Herzegovina, Kosovo, or Southwest Asia. Approximately one-third of all DNBI visits were for medical conditions not included in specific categories (figure 1). Injuries (from all causes) accounted for approximately one-fourth of all DNBI visits (figure 1). Respiratory (17.4%) and dermatologic (12.6%) conditions also accounted for relatively large proportions of all DNBI visits (figure 1).

Bosnia-Herzegovina. During the surveillance period, there were 19,082 DNBI-related visits among servicemembers deployed to Bosnia-Herzegovina. During the period, weekly DNBI rates ranged from 5.2 to 12.2 visits per 100 servicemembers per week. More than 40% of all DNBI-related visits were for medical conditions not included in specific categories (figure 2). Injuries (from all causes) accounted for approximately 20% of all DNBI visits (figure 2). Respiratory infections (16%) and dermatologic conditions (10%) were also significant sources of DNBI (figure 2).

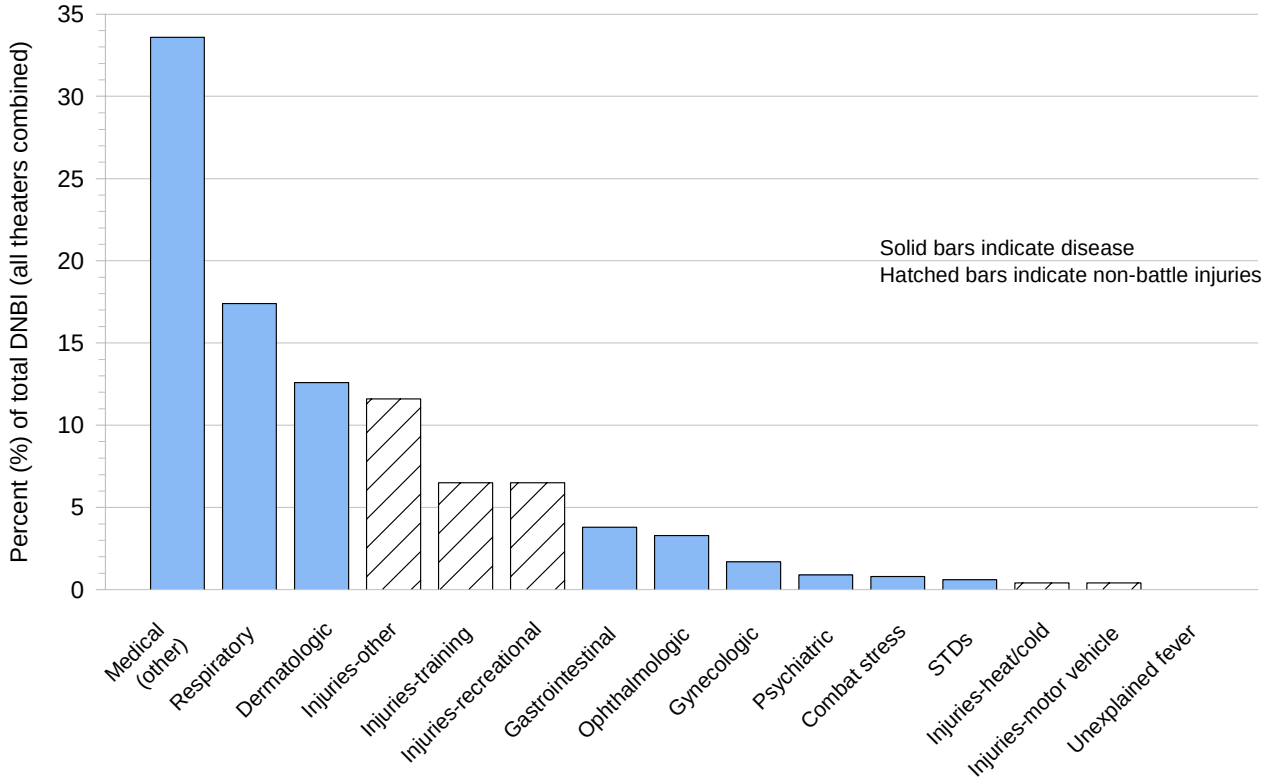
During the period, there were reports of 18,244 light duty days and 682 lost duty days due to DNBI. Injuries, respiratory infections, dermatologic conditions, and medical conditions not included in specific categories accounted for the most light duty days. Respiratory and gastrointestinal infections were the leading causes of lost duty days.

Kosovo. During the surveillance period, there were 25,594 DNBI-related visits among servicemembers deployed to Kosovo. Throughout the period, weekly DNBI rates ranged from 5.0 to 10.1 visits per 100 servicemembers per week. Approximately one-third of all DNBI visits were related to injuries (from all causes) (figure 2). Medical conditions not included in specific categories, respiratory infections (particularly during winter months), and dermatologic conditions also accounted for significant proportions of DNBI (figure 2).

During the period, there were reports of 15,508 light duty days and 1,879 lost duty days due to DNBI. Light duty days were most often related to injuries, respiratory infections, dermatologic conditions, and "other" medical conditions. As in Bosnia, respiratory and gastrointestinal infections were the leading causes of lost duty days.

Southwest Asia. During the surveillance period, there were 28,964 DNBI-related visits among servicemembers (soldiers and airmen only) deployed to Southwest Asia. Weekly DNBI rates ranged from 2.6 to 7.3 visits per 100 servicemembers per week. Medical conditions not included in specific categories accounted for the largest proportion of DNBI-related visits (figure 2). Injuries, respiratory infections, and dermatologic conditions were also significant sources of DNBI (figure 2).

Figure 1. Distribution of ambulatory visits by DNBI category, US servicemembers deployed to Bosnia-Herzegovina, Kosovo, or Southwest Asia, July 2000 - September 2001.

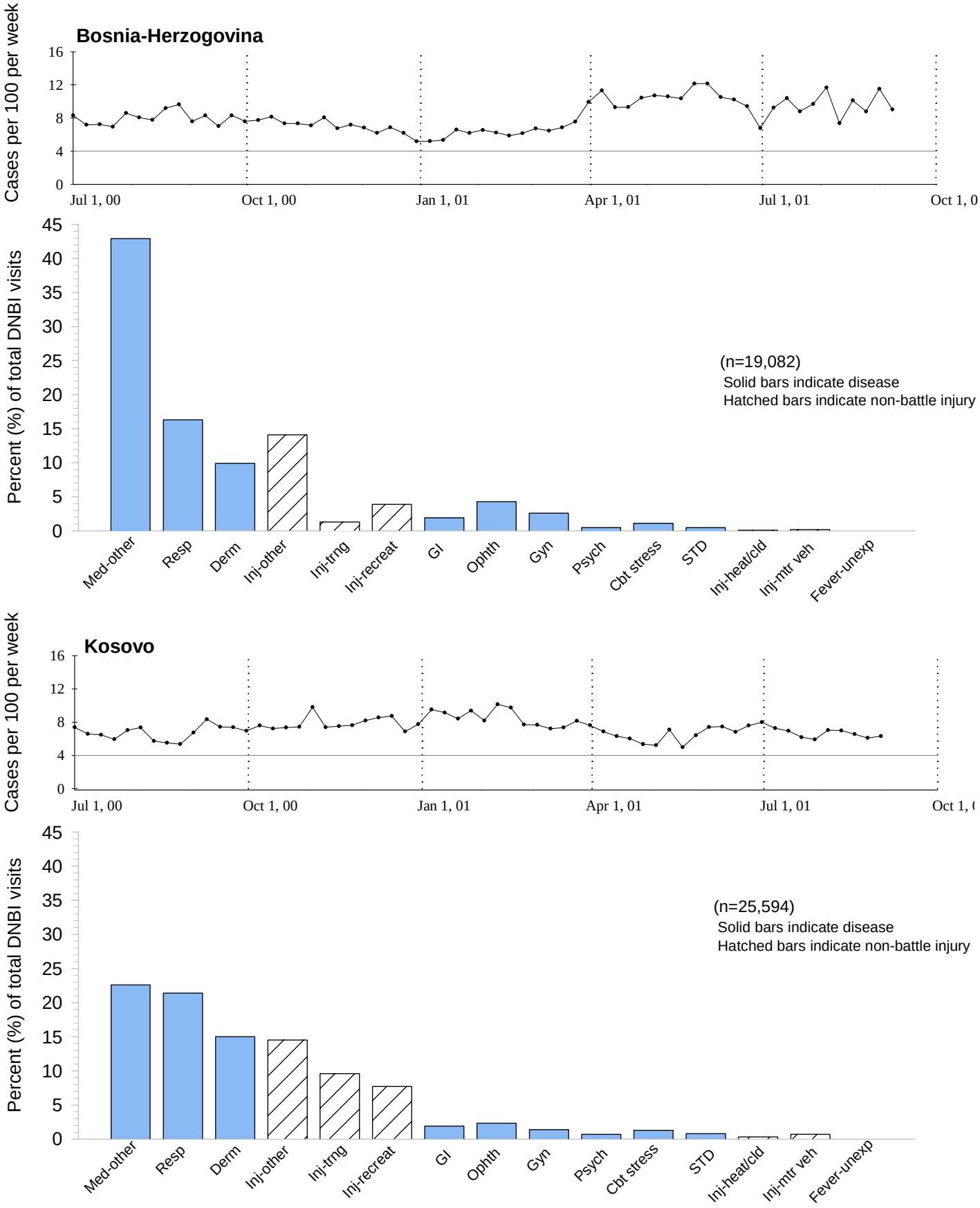


Editorial comment. Throughout history, diseases and non-battle injuries have accounted for a majority of hospitalizations of US participants in wars.[2] Since the end of the cold war, US military deployments have become more frequent, more diverse (e.g., peacekeeping, humanitarian, drug interdiction, counterterrorism), and more geographically widespread; in turn, threats to the health of servicemembers have become more numerous and varied. In response to new strategic objectives and circumstances, a new medical support strategy for the US Armed Forces was formulated.[2] The new strategy emphasizes the delivery of healthy, fit, and medically prepared forces to deployed commanders and the protection of the health of US forces while deployed. DNBI surveillance is an important component of the new strategy.

Comparisons of experiences across different operations and settings provide insights into determinants of deployment-related DNBI. For example, in the Bosnia, Kosovo, and Southwest Asia theaters, the spectrums and rates of DNBI were generally similar. In Bosnia and Kosovo, DNBI rates ranged from 5-12% per week—somewhat higher than rates reported from Southwest Asia (3-7% per week). In each theater, the most frequent causes of DNBI visits were medical conditions not specified in other categories; however, injuries (Bosnia-Herzegovina: 19.7%; Kosovo: 32.7%; Southwest Asia: 22.5%), respiratory infections (especially in winter), and dermatologic conditions were also major sources of DNBI-related visits. In Bosnia and Kosovo, respiratory and gastrointestinal infections accounted for the most lost duty days.

The DNBI experiences summarized here are generally similar to those reported from recent past operations. For example, shortly after Operation Joint Endeavor began in Bosnia (beginning in March 1996), the average DNBI

Figure 2. Weekly rates and distributions of ambulatory clinic visits by DNBI category and theater, deployed US servicemembers, July 2000 - September 2001.

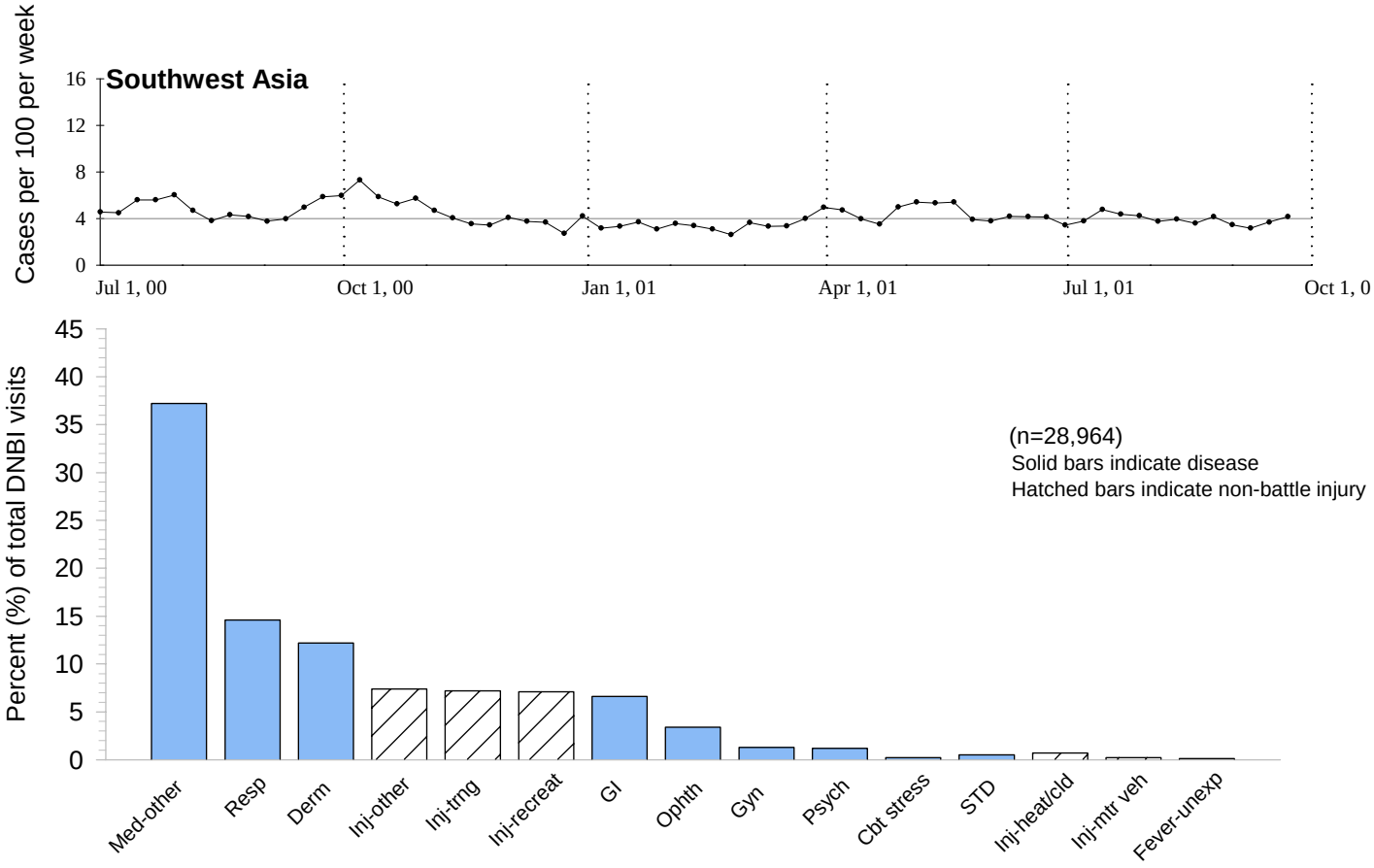


rate among US servicemembers was reported as 7.1% per week. "Undefined/other" medical conditions (33%), injuries (28%), and respiratory (14%) and dermatologic conditions (10%) were reported as the leading causes of DNBI-related visits.[3] During calendar year 1997, US forces in Bosnia had a mean DNBI rate of 8.1% per week. The most frequently reported causes were injuries (27%) and respiratory (26%), "other" medical (13%), and dermatologic (12%) conditions.[4] Among British forces in Bosnia between December 1995 and March 1996, DNBI rates were approximately 11-13% per week.[5] Injuries (32%) and dermatologic conditions (12%) were considered significant causes of DNBI visits.[5-7] Among United Nations troops in Haiti between June and October 1995, DNBI visit rates ranged from 9.2-13% per week. Outpatient visits were most frequently related to injuries, dermatologic, and respiratory conditions, while suspected dengue fever, gastroenteritis, and other febrile illnesses were the most frequent inpatient diagnoses.[8] Finally, during operations in Somalia, 2.5-3.5% of the entire deployed force sought treatment for an injury or orthopedic problem per week.[9]

In summary, injuries, respiratory infections, and dermatologic conditions are consistently leading sources of DNBI visits during major deployments. Acute infectious illnesses (e.g., respiratory, gastrointestinal) are major sources of more serious (e.g., hospitalizations, lost duty days) DNBIs during deployments.

Analysis and report by Karen Campbell, MS, Analysis Group, Army Medical Surveillance Activity

Figure 2 (con't.) Weekly rates and distributions of ambulatory clinic visits by DNBI category and theater, deployed US servicemembers, July 2000 - September 2001.



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Correction:

There was an error in the MSMR, 7:6 (July) 2001, page 12, "Table 5: Summary of HIV-1 testing, active duty Reserve, and National Guard, US Army 2000." The numbers should have read:

	Active duty	Reserve	Nat'l Guard	Total
Clinical, STD	21,749	1,034	1,001	23,784
Force testing	244,021	25,757	34,729	304,507
Physical exam	48,704	10,272	39,110	98,086
Other, unknown	13,772	997	1,413	16,182
Total tests	328,246	38,060	76,253	442,559

The table has been corrected in the July 2001 MSMR that is posted on the AMSA website. We regret any confusion or inconvenience that the errors may have caused.

Monthly Installation Injury Surveillance Reports: Surveillance of Injuries and their Impacts at the Installation Level, US Armed Forces

Injuries are the leading cause of hospitalizations, ambulatory visits, light and lost duty days, and deaths among members of the US Armed Forces.[1] In the military, injury risks vary in relation, for example, to natural environments (e.g., weather, terrain), socio-cultural settings (e.g., US vs. overseas, urban vs. rural), and activities, equipment, and characteristics (e.g., demographic, occupational) of units and individuals. In turn, injury risks vary across military installations, and interventions that target *specific* threats at specific installations should be incorporated into comprehensive injury prevention programs.

In support of Army efforts to reduce injuries and their impacts, beginning in June 2001, the Army Medical Surveillance Activity began to produce monthly installation-specific injury surveillance reports. The AMSA now produces monthly reports for 32 Army, 78 US Air Force and 69 Navy/Marine Corps installations and regions. Each monthly report summarizes frequencies, rates, and trends of hospitalizations and ambulatory visits for injuries, overall and by anatomic sites. In addition, injuries that result in hospitalizations are summarized by their causes, and medical and military operational impacts are characterized by the numbers and proportions of injuries associated with multiple visits, hospitalizations, and light/lost duty dispositions. Monthly reports are posted at the AMSA website (<amsa.army.mil>).

In this report, we provide examples for the Army overall of figures and tables that are included in monthly installation-specific injury surveillance reports. Future issues of the MSMR will provide injury surveillance summaries for the other Services.

Methods. All data for monthly reports are derived from the Defense Medical Surveillance System. For rate calculations, cases are defined as hospitalizations or ambulatory visits with injury-specific primary diagnoses. Injury-specific diagnoses are defined by 5-digit-level diagnostic codes of the ICD-9-CM that indicate acute traumatic, repetitive stress, or environmental injuries or their direct sequelae (codes used for this surveillance are listed at the AMSA website). Injuries from psychological trauma and chemical poisonings are not included. Only one injury-specific diagnosis per individual per month is used for rate calculations. Denominators for rate calculations are the numbers of active duty servicemembers who are permanently assigned to military units with ZIP codes that match the ZIP codes of installations/regions of interest. Causes of injuries that result in hospitalizations are specified by codes in NATO Standardization Agreement (STANAG) No. 2050.[2,3] "Lost duty" injuries are those that result in hospitalizations or "sick in quarters" dispositions. "Light duty" injuries are those that result in "return to duty with limitations" dispositions.

Results. During August 2001, 39,997 (8.5%) of 472,293 active duty soldiers in the US Army had injuries that required medical attention. The injury rate in August was unchanged from the mean monthly rate during the previous 12 months (figure 1).

From September 2000 through August 2001, there were 2,570 injuries of soldiers that required hospitalizations. Falls and miscellaneous (29%), land transport (22%), and athletics (17%) were the leading general causes of hospitalized injury cases.

During August 2001, approximately one-third of soldiers with injuries had more than one injury-related medical encounter (figure 2a). Nearly 40% of soldiers who injured their shoulders/arms or legs, but only 16% of soldiers with "environmental" injuries (e.g., heat, insect bite), had multiple injury-related medical encounters during the month.

During August 2001, approximately half of injured soldiers were returned to duty without limitations (figure 2b). Injuries of knees, ankles, and trunks (including backs) accounted for the highest numbers, and leg injuries the highest percentage (54%), of light and lost duty dispositions.

Editorial comment. Installation-specific injury surveillance reports are designed to give installation commanders and their staffs insights into the natures and relative impacts of injuries at their installations. The reports may be useful for targeting injuries of particular types and causes-and monitoring the effects of interventions.

References

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2. Military Agency for Standardization. North Atlantic Treaty Organization (NATO). Standardization Agreement (STANAG) No. 2050, Subject: Statistical classification of diseases, injuries, and causes of death.
3. Army Medical Surveillance Activity. Causes of injury and poisoning-related hospitalizations, US Army, 1998**.** *MSMR* 1999 Aug/Sept;5(6): 17-19.

Figure 1. Monthly rates of injury, overall and by anatomical region, active duty, US Army, July 2000-August 2001.

Overall Rate of Injury

Rate of Injury by Anatomical Region

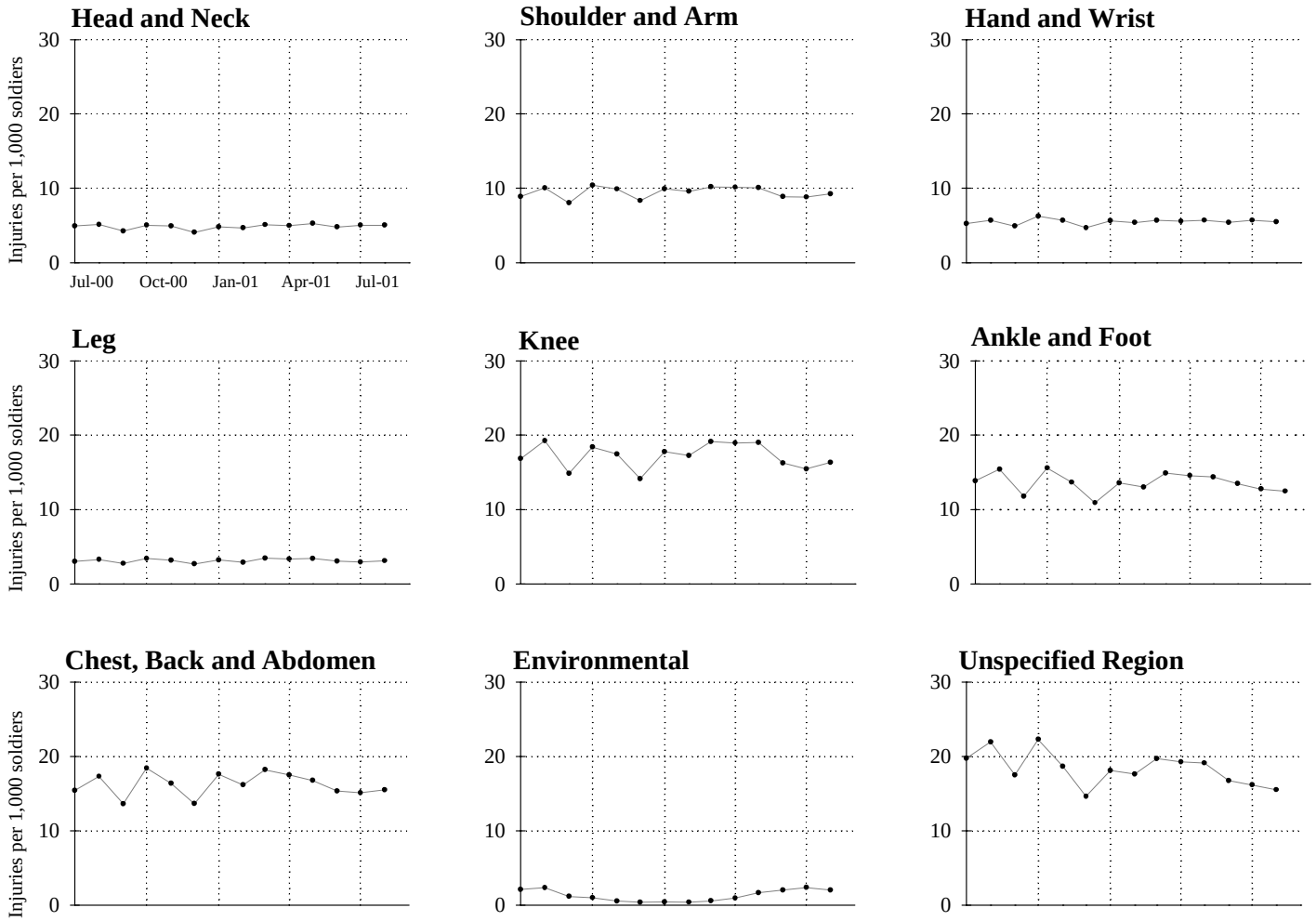


Table 1. Causes of injuries that resulted in hospitalizations ("serious injuries"), US Army, September 2000 - August 2001

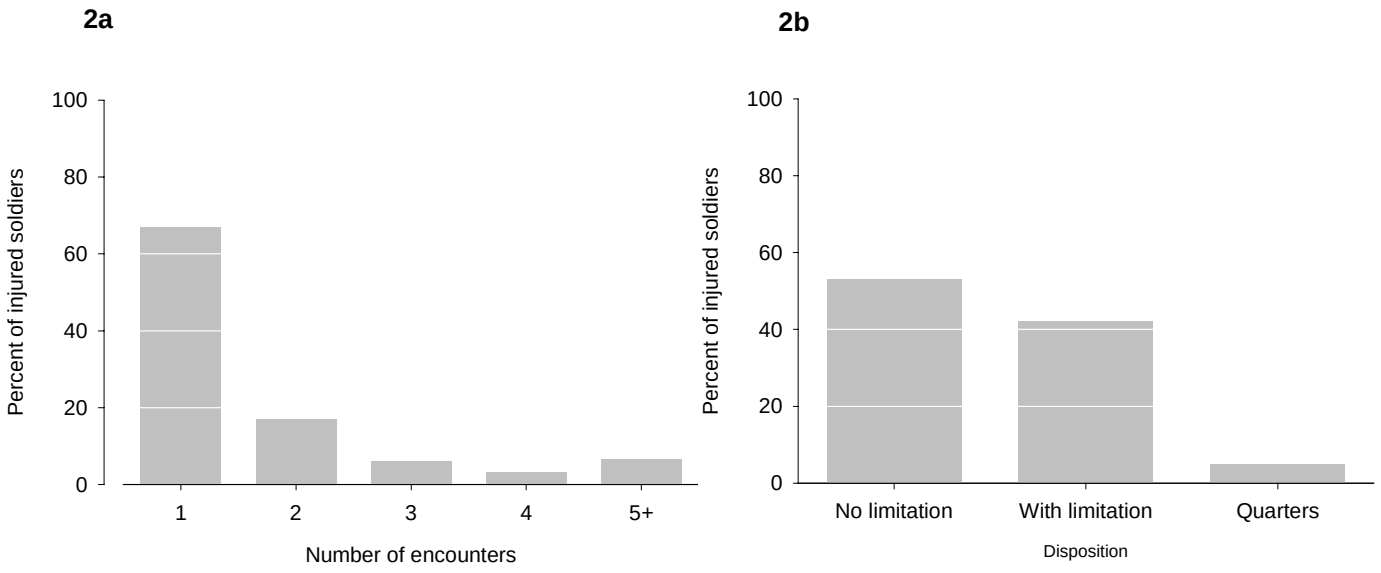
Cause	Soldiers with serious injuries	%
Unintentional		
Falls and miscellaneous	736	29
Land transport	575	22
Athletics	427	17
Air transport	225	9
Machinery, tools	197	8
Environmental factors	173	7
Poisons and fire	48	2
Guns, explosives, except war	42	2
Water transport	1	0
Intentional		
Self-inflicted	35	1
Violence	111	4
War	0	0
Total	2,570	100

Note: Causal agents were determined by NATO STANAG codes[2]

Report date: September 21, 2001

Data source: Defense Medical Surveillance System

Figure 2. Number of medical encounters per injured soldier per month and dispositions after injuries, US Army, August 2001.



Sentinel reportable events for all beneficiaries[1] at US Army medical facilities, cumulative numbers[2] for calendar years through September 30, 2000 and 2001

Reporting location	Number of reports all events[3]		Food-borne								Vaccine Preventable					
			Campylobacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
NORTH ATLANTIC																
Washington, DC Area	151	144	2	2	6	6	9	6	5	3	1	-	1	-	3	2
Aberdeen, MD	28	50	-	-	-	-	-	-	-	-	-	-	2	1	1	-
FT Belvoir, VA	171	144	11	8	5	7	7	8	2	-	-	1	3	-	1	-
FT Bragg, NC	1050	1188	1	6	-	-	13	29	1	1	-	-	-	6	4	2
FT Drum, NY	139	141	-	2	-	2	-	1	-	-	-	-	-	-	6	-
FT Eustis, VA	173	201	4	-	-	-	5	1	-	-	-	-	1	-	1	1
FT Knox, KY	195	228	1	1	1	4	1	2	-	-	-	-	1	-	6	1
FT Lee, VA	196	189	-	-	-	-	-	-	-	-	1	-	-	-	-	-
FT Meade, MD	78	55	-	-	-	-	2	1	-	-	-	-	-	-	-	-
West Point, NY	27	60	-	1	-	-	-	1	-	-	-	2	-	-	-	-
GREAT PLAINS																
FT Sam Houston, TX	242	302	-	-	-	2	7	4	3	-	3	-	-	-	1	-
FT Bliss, TX	235	195	2	3	4	5	4	1	5	5	-	-	-	2	2	1
FT Carson, CO	478	571	1	2	1	8	1	5	6	2	-	-	-	2	-	-
FT Hood, TX	1,401	1,493	3	2	1	1	9	8	4	7	1	-	1	9	2	2
FT Huachuca, AZ	23	28	-	1	-	-	-	1	-	-	-	-	-	-	-	1
FT Leavenworth, KS	22	29	1	1	2	-	1	2	-	-	-	-	-	-	-	-
FT Leonard Wood, MO	135	178	1	-	1	-	-	-	-	-	-	1	-	-	13	5
FT Polk, LA	226	212	-	-	-	-	-	1	-	-	-	-	-	-	-	-
FT Riley, KS	157	171	-	-	-	1	-	1	-	-	-	-	-	1	-	-
FT Sill, OK	245	232	-	-	-	-	-	-	-	-	-	-	-	1	4	2
SOUTHEAST																
FT Gordon, GA	191	182	-	-	-	-	2	-	-	-	-	2	2	2	2	-
FT Benning, GA	259	410	1	1	1	2	11	5	-	2	-	-	1	-	6	4
FT Campbell, KY	356	677	3	5	5	3	16	7	12	1	-	1	1	-	2	-
FT Jackson, SC	347	220	-	-	-	-	-	-	-	-	-	1	-	5	3	2
FT Rucker, AL	64	72	-	-	-	-	3	4	-	-	-	-	-	-	-	-
FT Stewart, GA	428	391	-	-	-	-	5	12	-	-	-	-	-	3	-	-
WESTERN																
FT Lewis, WA	560	585	5	4	5	2	2	7	1	-	1	-	2	2	-	-
FT Irwin, CA	43	63	-	-	-	-	-	-	-	-	-	2	-	3	1	2
FT Wainwright, AK	74	82	-	-	-	1	-	-	-	-	-	-	-	-	-	-
OTHER LOCATIONS																
Hawaii	623	688	35	36	6	13	10	26	-	7	1	1	2	1	1	-
Europe	1228	1230	13	28	1	4	24	46	-	-	-	2	7	9	9	6
Korea	423	44	-	-	-	-	5	2	-	-	-	1	1	-	1	2
Total	**9,968**	**10,445**	**84**	**103**	**39**	**61**	**137**	**181**	**39**	**28**	**8**	**14**	**25**	**47**	**69**	**33**

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

2. Events reported by October 7, 2000 and 2001.

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, 2000 and 2001

Reporting location	Arthropod-borne				Sexually Transmitted								Environmental			
	Lyme Disease		Malaria		Chlamydia		Gonorrhea		Syphilis[3]		Urethritis[4]		Cold		Heat	
	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001	2000	2001
NORTH ATLANTIC																
Washington, DC Area	3	3	1	-	51	60	21	14	1	6	-	-	-	-	-	-
Aberdeen, MD	3	-	-	-	11	31	3	11	2	-	2	2	-	3	-	-
FT Belvoir, VA	-	-	1	-	100	94	19	16	3	1	-	-	-	-	8	3
FT Bragg, NC	1	-	6	9	391	499	197	238	3	-	289	205	-	7	141	177
FT Drum, NY	-	-	1	-	86	105	33	25	-	1	2	-	9	2	1	-
FT Eustis, VA	1	-	-	-	123	137	26	50	-	-	-	-	-	-	8	10
FT Knox, KY	-	-	-	1	136	174	36	39	1	2	-	-	-	-	10	2
FT Lee, VA	-	-	-	-	149	140	45	49	-	-	-	-	-	-	1	-
FT Meade, MD	-	-	-	-	56	42	11	11	-	1	1	-	-	-	-	-
West Point, NY	5	42	-	-	16	12	3	1	1	-	-	-	1	-	-	1
GREAT PLAINS																
FT Sam Houston, TX	-	-	-	1	180	239	33	39	-	-	4	2	-	1	6	8
FT Bliss, TX	-	1	3	3	128	107	41	42	2	1	-	-	-	-	4	4
FT Carson, CO	-	-	1	-	375	426	55	53	-	-	32	68	-	-	-	-
FT Hood, TX	-	1	1	2	738	825	274	284	1	3	311	272	1	-	32	60
FT Huachuca, AZ	-	-	-	-	16	21	6	3	-	-	-	-	-	-	1	-
FT Leavenworth, KS	1	-	-	-	12	18	1	5	-	-	-	-	-	-	2	-
FT Leonard Wood, MO	1	-	-	-	67	113	28	30	-	-	8	5	3	3	10	15
FT Polk, LA	-	-	-	1	198	158	24	46	-	-	-	-	-	-	4	2
FT Riley, KS	-	-	-	1	88	114	42	22	1	-	-	-	22	3	1	26
FT Sill, OK	2	1	-	1	140	124	47	50	-	-	38	41	-	-	8	7
SOUTHEAST																
FT Gordon, GA	2	-	3	1	160	155	13	15	-	-	-	-	-	-	1	2
FT Benning, GA	-	1	8	1	111	235	63	79	3	-	-	1	-	-	51	43
FT Campbell, KY	1	2	8	1	175	529	121	117	1	1	-	-	2	-	3	8
FT Jackson, SC	-	-	-	-	304	133	37	46	-	2	-	-	-	-	1	27
FT Rucker, AL	-	-	1	-	41	49	14	12	-	-	-	-	-	-	1	4
FT Stewart, GA	-	-	1	1	146	129	94	105	-	-	155	130	-	-	26	10
WESTERN																
FT Lewis, WA	2	-	5	-	363	388	50	71	-	1	103	99	-	4	-	-
FT Irwin, CA	-	-	1	-	34	37	6	4	1	-	-	-	-	-	-	13
FT Wainwright, AK	-	-	-	-	67	68	2	2	-	-	-	-	4	11	-	-
OTHER LOCATIONS																
Hawaii	-	-	5	-	430	474	73	65	-	-	1	1	-	-	3	-
Europe	5	4	-	4	941	926	206	164	2	2	-	1	5	11	-	2
Korea	-	-	12	7	331	6	35	18	11	1	9	1	2	-	5	4
Total	**27**	**55**	**58**	**34**	**6,164**	**6,568**	**1,659**	**1,726**	**33**	**22**	**955**	**828**	**49**	**45**	**328**	**428**

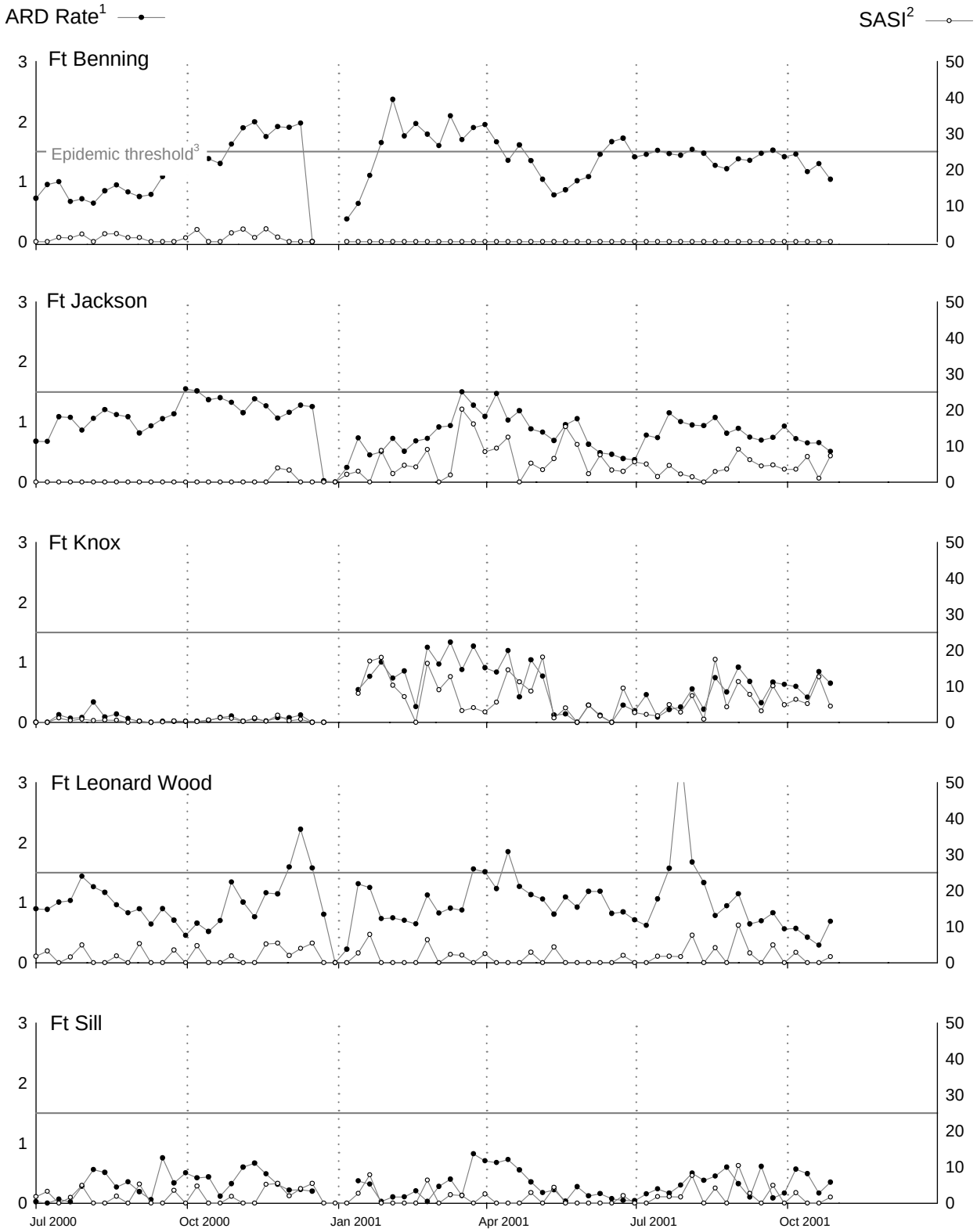
3. Primary and secondary.

4. Urethritis, non-gonoccal (NGU).

Note: Completeness and timeliness of reporting vary by facility.

Source: Army Reportable Medical Events System.

Acute respiratory disease (ARD) surveillance update, US Army initial entry training centers by week through October 2001



[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"

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