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Medical Surveillance Monthly Report

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Data in the MSMR is provisional, based on reports and other sources of data available to the Medical Surveillance Activity. Notifiable conditions are reported by date of onset (or date of notification when date of onset is absent). Only cases submitted as confirmed are included.

Deployment Surveillance

Hospitalizations, Operation Joint Endeavor, Bosnia. Part I. Temporal and Demographic Correlates of Hospitalization Risk

In December 1995, the United States deployed a joint task force to Bosnia as part of a multinational peacekeeping mission called Operation Joint Endeavor (OJE). Daily, during the operation, data regarding hospitalizations of US soldiers were transmitted electronically to the Patient Administration Systems and Biostatistics Activity (PASBA) in San Antonio, Texas. In turn, PASBA periodically transmitted deployment hospitalization data to the Army Medical Surveillance Activity (AMSA) for integration with data from other sources (e.g., deployment rosters, reportable diseases, stored serum specimens, personnel information). This report summarizes the OJE hospitalization experience of soldiers in relation to time in theater, demographic factors, prior hospitalization and major deployment histories.

Methods: Data for analyses related to soldiers who were listed on OJE deployment rosters provided by the Defense Manpower Data Center (DMDC), Monterey, California. Only active component soldiers who had a "date entered" and a "date departed" theater were included. Deployment-related data were merged with contemporaneous Army personnel rosters to validate soldier identities and to access up-to-date demographic and military service information. Data regarding predeployment hospitalizations in military hospitals were obtained from records routinely provided by PASBA. Prior major deployment experiences (i.e., Somalia, Rwanda, Kuwait, Haiti) were ascertained from routinely updated deployment rosters provided by the DMDC.

The cumulative incidence of hospitalizations ("hospitalization attack rate") was calculated as the proportion of all soldiers – overall and in subgroups of interest – who were hospitalized during their OJE service, regardless of their "exposure times" (i.e., times in theater).

Hospitalization trends have been routinely tracked since the beginning of OJE (see MSMR, February 1996 – April 1997). However, for this analysis, hospitalization rates and other time-dependent analyses were calculated in relation to each soldier's time in theater (i.e., each soldier's date of entry was assigned as his/her t=0) rather than the date the overall operation began. For each week in theater (n), the rate was calculated by dividing the hospitalizations in week n by the number of soldiers with at least n weeks in theater. Time-in-theater trends were then summarized by fitting a line to week-in-theater-specific hospitalization rates. The slope (m) of the resulting regression line estimated the change in the hospitalization rate per additional week in theater. The square of the correlation coefficient (R^2) estimated the proportion of the variability in the weekly hospitalization rate that was explainable by its linear relationship

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with time in theater. Finally, multivariate analyses were conducted using Cox's proportional hazards regression model (PROC PHREG, release 6.12 of SAS).

Population (table 1, page 8): Complete data were available for 22,479 soldiers who deployed to and returned from OJE in Bosnia. Females were relatively underrepresented (9.8%) compared to their representation in the Army overall (14.3%). Nearly two-thirds of Army OJE veterans were white nonhispanic, black nonhispanic and hispanic soldiers accounted for nearly all others. More than half of deployed soldiers were married — and nearly two-thirds were between 20 and 30 years old. Approximately one-fourth of OJE veterans had at least one hospitalization in a military hospital prior to deployment, and only 1 of 30 had documented service in a recent major deployment.

Hospitalization rates: For the entire operation, the hospitalization rate was 1.46 hospitalizations per 1000 soldiers per week. Rates were highest during the first weeks of exposure to the theater — and they generally declined as time-in-theater progressed (figure 1).

Throughout the deployment, females had significantly higher hospitalization rates than males, and as time in theater progressed, hospitalization rates decelerated at remarkably similar rates among both men and women (figure 2, page 9). Thus, the difference in rates (approximately 2.0 per 1000 per week) between men and women remained relatively constant throughout the deployment.

Finally, in the early weeks of exposure to the theater, soldiers with prior military hospitalizations were hospitalized at significantly higher rates than those without such histories. However, as time in the theater progressed, rates decelerated approximately three times more rapidly among those with, compared to those without, prior hospitalizations. Thus, after 52 weeks in the theater, hospitalization

Continued on page 8

Figure 1. Hospitalization rates, OJE (Army active duty)
By time in theater

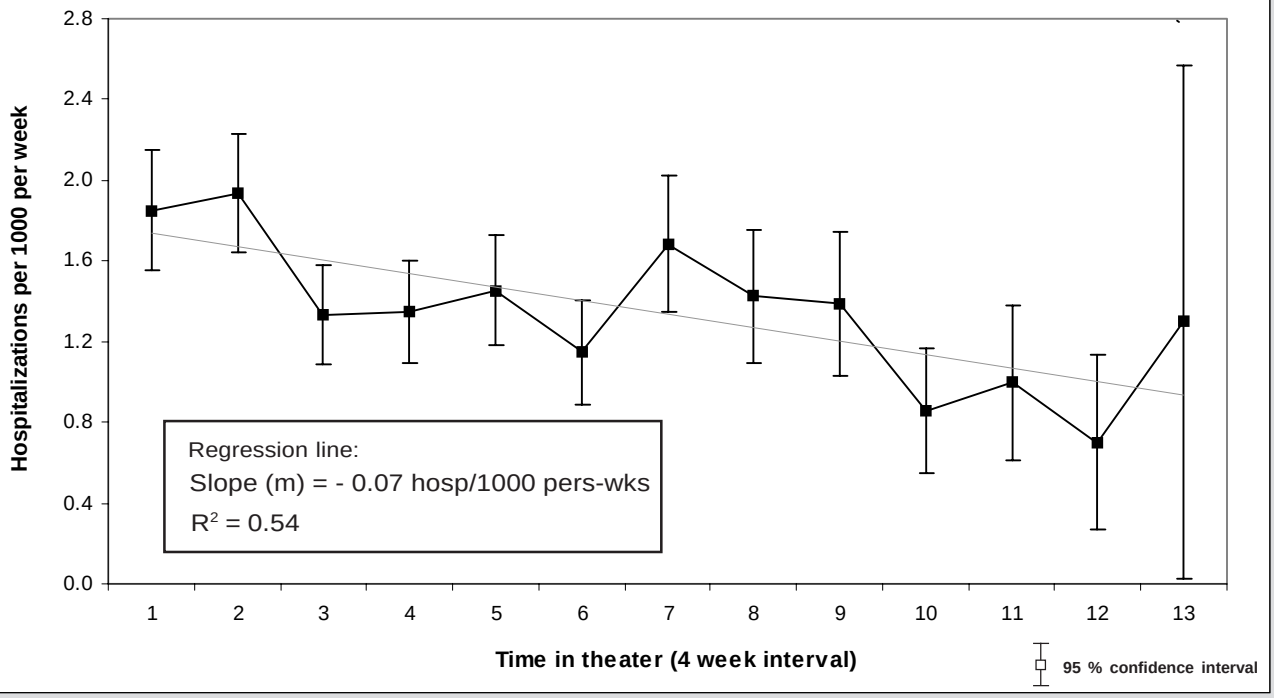


TABLE I. Selected sentinel reportable diseases, US Army Medical Treatment Facilities*
May, 1997

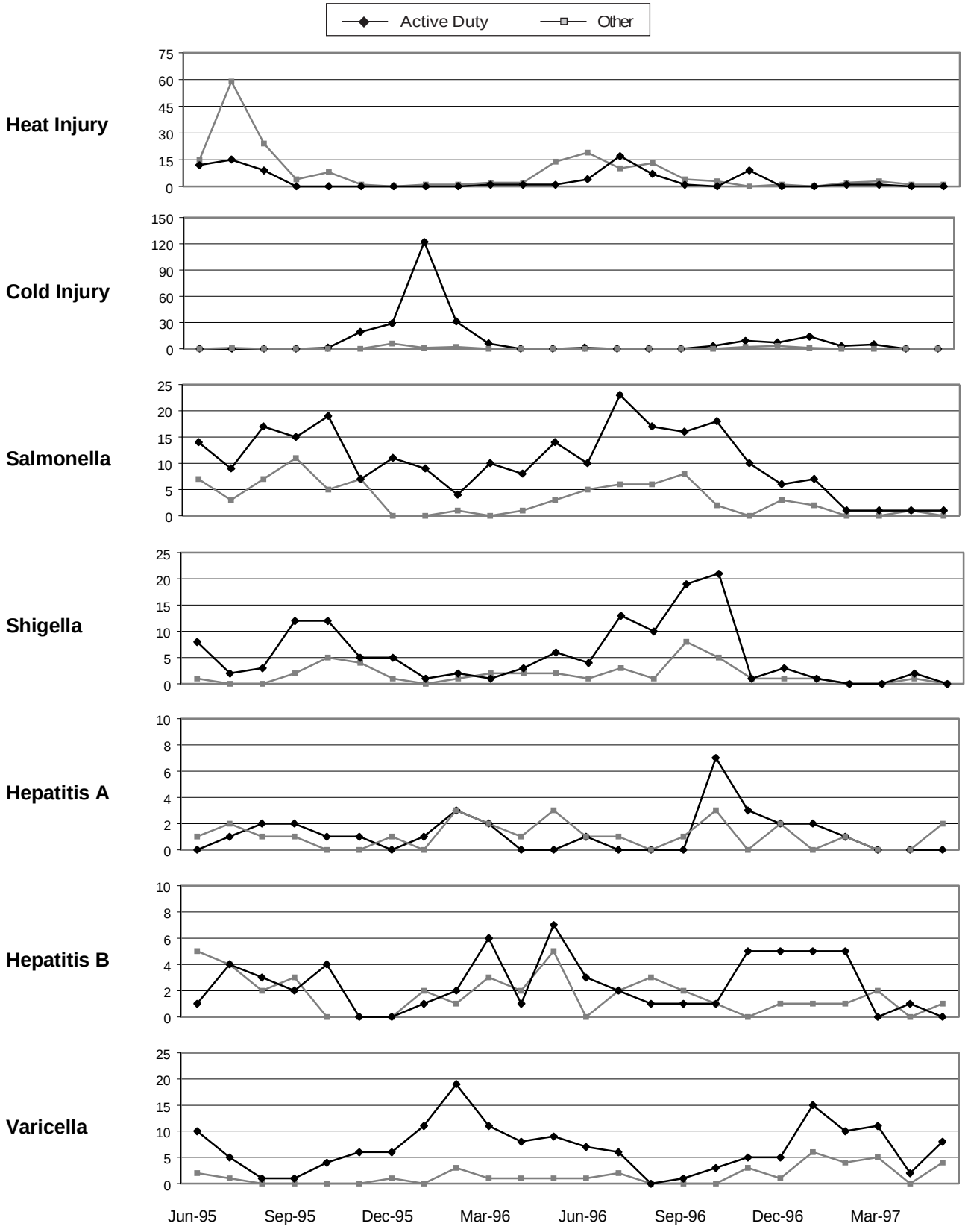
Reporting MTF/Post**	Total number of reports submitted May 1997	Environmental Injuries		Viral Hepatitis		Salmonellosis		Shigella		Varicella	
		Active Duty				Active Duty	Other	Active Duty	Other	Active Duty	Other Adult
		Heat	Cold	A	B						
		Cum. 1997	Cum. 1997	Cum. 1997	Cum. 1997	Cum. 1997	Cum. 1997	Cum. 1997	Cum. 1997	Cum. 1997	Cum. 1997
NORTH ATLANTIC RMC											
Walter Reed AMC	8	0	0	0	0	0	1	0	0	1	2
Aberdeen Prov. Ground	17	0	0	0	0	0	0	0	0	0	0
FT Belvoir, VA	0	0	0	0	1	0	0	0	0	0	0
FT Bragg, NC	0	0	3	0	0	1	4	0	1	0	0
FT Drum, NY	7	0	1	0	0	0	0	0	0	4	0
FT Eustis, VA	14	0	0	0	0	0	0	0	0	1	0
FT Knox, KY	11	0	0	0	0	0	0	0	0	0	0
FT Lee, VA	0	0	0	0	0	0	0	0	0	0	0
FT Meade, MD	0	0	0	0	0	0	1	0	0	0	0
USMA, West Point, NY	1	0	0	0	0	0	0	0	0	0	0
CENTRAL RMC											
Fitzsimons AMC	0	0	0	0	0	0	0	0	0	0	0
GREAT PLAINS RMC											
Brooke AMC	30	0	0	0	0	0	0	0	1	0	0
FT Carson, CO	97	0	0	1	0	0	0	0	0	0	0
FT Hood, TX	114	0	0	1	1	0	2	0	0	1	0
FT Leavenworth, KS	4	0	0	0	1	0	0	0	0	0	0
FT Leonard Wood, MO	12	1	2	0	0	0	0	0	0	13	5
FT Polk, LA	0	0	1	0	0	0	0	0	0	0	0
FT Riley, KS	19	0	0	0	0	0	1	0	0	0	0
FT Sill, OK	0	0	0	2	2	0	0	0	0	0	0
Panama	0	0	0	0	0	0	0	0	0	0	0
SOUTHEAST RMC											
Eisenhower AMC	13	0	0	0	1	0	0	0	0	0	0
FT Benning, GA	17	3	0	0	0	0	0	0	0	10	0
FT Campbell, KY	39	0	13	0	0	0	0	1	0	9	4
FT Jackson, SC	0	0	0	0	0	0	0	0	0	0	0
FT McClellan, AL	0	0	0	0	0	0	0	0	0	0	0
FT Rucker, AL	1	0	0	0	0	0	0	0	0	0	0
FT Stewart, GA	0	0	0	0	1	0	0	0	0	8	1
SOUTHWEST RMC											
Wm Beaumont AMC	0	0	0	0	0	0	0	0	0	1	0
FT Huachuca, AZ	8	0	0	0	0	0	0	0	0	0	0
FT Irwin, CA	0	0	0	0	0	0	0	0	0	0	0
NORTHWEST RMC											
Madigan AMC	112	0	0	2	0	0	2	0	0	0	0
FT Wainwright, AK	0	0	0	0	0	0	0	0	0	0	0
PACIFIC RMC											
Tripler AMC	0	0	0	0	0	0	0	0	0	0	0
OTHER LOCATIONS											
Europe	135	1	1	1	13	4	5	0	4	12	0
Korea	0	0	0	0	3	0	0	1	0	1	0
Total	**659**	**5**	**21**	**7**	**23**	**5**	**9**	**2**	**6**	**61**	**12**

* Based on date of onset.

** Reports are included from main and satellite clinics. Not all sites reporting.

Date of Report: 7-Jun-97

FIGURE I. Selected sentinel reportable diseases, US Army Medical Treatment Facilities*
Cases per month, Jun 95 - May 97



* Reports are included from main and satellite clinics. Not all sites reporting.

Date of report: 7-Jun-97

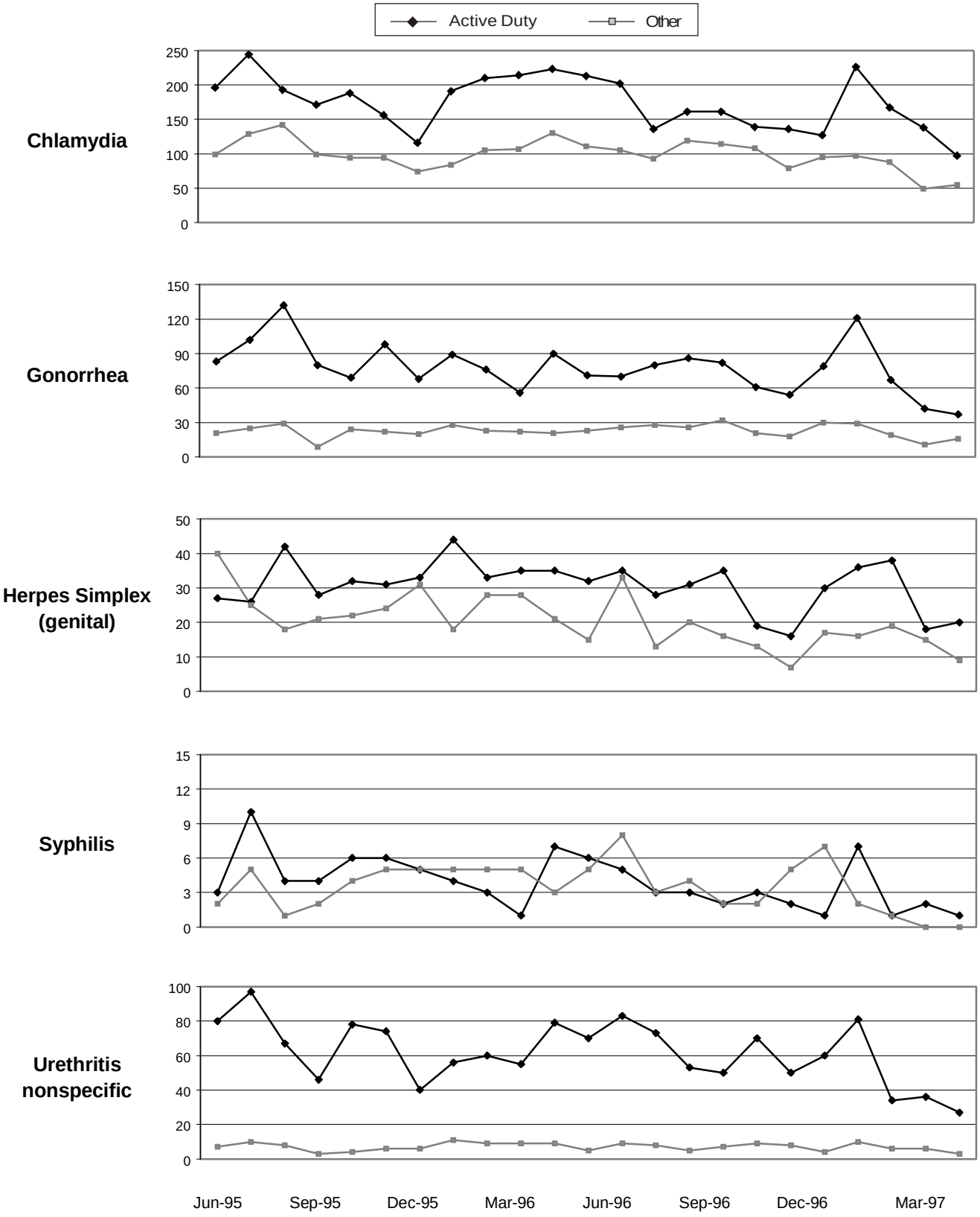
TABLE II. Reportable sexually transmitted diseases, US Army Medical Treatment Facilities*
May, 1997

Reporting MTF/Post**	Chlamydia		Urethritis non-spec.		Gonorrhea		Herpes Simplex		Syphilis Prim/Sec		Syphilis Latent		Other STDs**	
	Cur. Month	Cum. 1997	Cur. Month	Cum. 1997	Cur. Month	Cum. 1997	Cur. Month	Cum. 1997	Cur. Month	Cum. 1997	Cur. Month	Cum. 1997	Cur. Month	Cum. 1997
NORTH ATLANTIC RMC														
Walter Reed AMC	1	25	0	4	1	8	0	10	0	0	0	1	0	6
Aberdeen Prov. Ground	1	10	0	2	1	19	0	1	0	0	0	0	0	0
FT Belvoir, VA	0	3	0	0	0	0	0	0	0	0	0	0	0	0
FT Bragg, NC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FT Drum, NY	0	16	0	4	0	10	1	1	0	0	0	0	0	0
FT Eustis, VA	10	42	0	0	2	4	0	0	0	0	0	0	0	0
FT Knox, KY	0	60	0	0	0	28	0	25	0	0	0	2	0	1
FT Lee, VA	0	18	0	0	0	2	0	0	0	0	0	0	0	0
FT Meade, MD	0	8	0	4	0	1	0	2	0	0	0	0	0	0
USMA, West Point, NY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CENTRAL RMC														
Fitzsimons AMC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GREAT PLAINS RMC														
Brooke AMC	0	19	0	0	0	2	0	4	0	0	0	0	0	0
FT Carson, CO	32	137	29	121	12	36	2	21	0	0	0	1	0	0
FT Hood, TX	0	187	0	87	0	89	0	27	0	0	0	0	0	5
FT Leavenworth, KS	1	13	0	0	0	3	0	0	0	0	0	0	0	0
FT Leonard Wood, MO	2	37	1	10	1	16	0	0	0	0	0	0	0	0
FT Polk, LA	0	37	0	0	0	13	0	2	0	0	0	0	0	3
FT Riley, KS	20	90	0	0	2	17	0	0	0	0	0	1	0	0
FT Sill, OK	6	59	1	13	2	25	0	5	0	0	0	0	0	2
Panama	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOUTHEAST RMC														
Eisenhower AMC	1	78	0	0	0	29	0	32	0	0	0	0	1	9
FT Benning, GA	0	18	0	0	0	22	1	16	0	0	0	1	0	0
FT Campbell, KY	20	134	0	0	15	73	1	11	0	0	0	1	0	1
FT Jackson, SC	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FT McClellan, AL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FT Rucker, AL	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FT Stewart, GA	0	87	0	0	0	14	0	23	0	0	0	1	0	0
SOUTHWEST RMC														
Wm Beaumont AMC	0	39	0	56	0	42	0	13	0	0	0	1	0	1
FT Huachuca, AZ	0	63	0	0	0	10	0	2	0	0	0	0	0	0
FT Irwin, CA	0	50	0	0	0	11	0	6	0	0	0	1	0	1
NORTHWEST RMC														
Madigan AMC	4	124	2	26	2	44	2	19	0	0	0	1	0	0
FT Wainwright, AK	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PACIFIC RMC														
Tripler AMC	0	67	0	0	0	29	0	30	0	0	0	0	0	0
OTHER LOCATIONS														
Europe	7	228	0	11	5	79	0	13	0	0	0	0	0	1
Korea	0	4	0	0	0	0	0	0	0	0	0	0	0	0
Total	**105**	**1653**	**33**	**338**	**43**	**626**	**7**	**263**	**0**	**0**	**0**	**11**	**1**	**30**

* Reports are included from main and satellite clinics. Not all sites reporting. Date of Report: 7-Jun-97

** Other STDs: (a) Chancroid (b) Granuloma Inguinale (c) Lymphogranuloma Venereum (d) Syphilis unspec. (e) Syph, tertiary (f) Syph, congenital

FIGURE II. Reportable sexually transmitted diseases, US Army Medical Treatment Facilities*
Cases per month, Jun 95 - May 97



* Reports are included from main and satellite clinics. Not all sites reporting.

Date of report: 7-Jun-97

Table 1. Cumulative incidence of hospitalizations ("attack rate"), US Army component, OJE

	Pop'n (%)	Attack Rate	p-value*
Overall	22479 (100)	4.70%	
Gender			0.001
Males	20274 (90.2)	4.0%	
Females	2204 (9.8)	10.9%	
Unknown	1 (0.0)		
Racial/ethnic			0.001
Black, nonhisp	5907 (26.3)	5.5%	
Hispanic	2052 (9.1)	5.8%	
Other	143 (0.6)	4.9%	
White, nonhisp	14377 (64.0)	4.2%	
Age Group			0.03
< 20 years	1349 (6.0)	6.4%	
20-24	8224 (36.6)	4.6%	
25-29	6017 (26.8)	4.7%	
30-34	3694 (16.4)	4.6%	
35-39	2196 (9.8)	4.2%	
≥ 40	999 (4.4)	3.6%	
Marital Status			0.525
Married	12781 (56.9)	4.6%	
Single	8983 (40.0)	4.7%	
Other/unknown	715 (3.1)	5.2%	
Prior Hospitalization			0.001
Yes	5888 (26.2)	7.4%	
No	16591 (73.8)	3.7%	
Previous Deploy			0.401
Yes	607 (2.7)	4.0%	
No	21872 (97.3)	4.7%	

* chi square

Continued from page 3

rates among soldiers with and without prior hospitalizations were comparable (figure 3).

Hospitalizations, cumulative incidence (table 1): During the deployment, there were 1,048 hospitalizations among Army OJE veterans; thus, the overall cumulative incidence of hospitalizations ("hospitalization attack rate") was 4.7%. Hospitalization attack rates were higher among females (10.9%) than males (4.0%); among black (5.5%) and hispanic (5.8%) soldiers than white (4.2%); among soldiers with (7.4%) compared to those without (3.7%) prior military hospitalizations; and among the youngest soldiers (< 20 years: 6.4%) compared to the oldest (>40 years: 3.6%). Hospitalization experiences did not significantly vary in relation to marital status or recent major deployment experience. Among females (figure 4), hospitalization attack rates declined significantly with increasing age, while prior hospitalization history was relatively less important. In contrast, among males (figure 4), attack rates were similar across age groups, but males with prior hospitalizations had approximately twice the risk of hospitalization during OJE than those without such histories.

Proportional hazards regression analyses (table 2): Multivariate regression analyses were conducted to identify factors prognostic of hospitalization risk during the deployment, while controlling for potentially confounding effects of other factors. Females (RR = 2.38) and soldiers with prior military hospitalizations (RR = 1.95) had the highest relative risks of hospitalization during the deployment. Black and hispanic soldiers (RR = 1.22) compared to white and those younger than 25 also had significantly increased risks of hospitalization.

Table 2. Adjusted relative risks of hospitalization, Active duty soldiers, Operation Joint Endeavor

	Risk ratio	P value
Gender (f:m)	2.38	0.0001
Prior hospitalization (y:n)	1.95	0.0001
Race/ethnicity (bnh or hisp:wnh)	1.22	0.002
Age (< 20:20-24:≥ 25)	1.16	0.003

Summary: Nearly 5% of soldiers who participated in OJE were hospitalized during the deployment. Hospitalization risks were highest in the first weeks soldiers were in the theater. Females, soldiers with prior hospitalizations, young, black, and hispanic soldiers also had relatively high hospitalization risks. Further analyses of OJE data (Part II) will examine relative impacts and risk correlates of hospitalizations in diagnostic subgroups.

Figure 2. Hospitalization rates, OJE (Army active duty)
By gender and time in theater

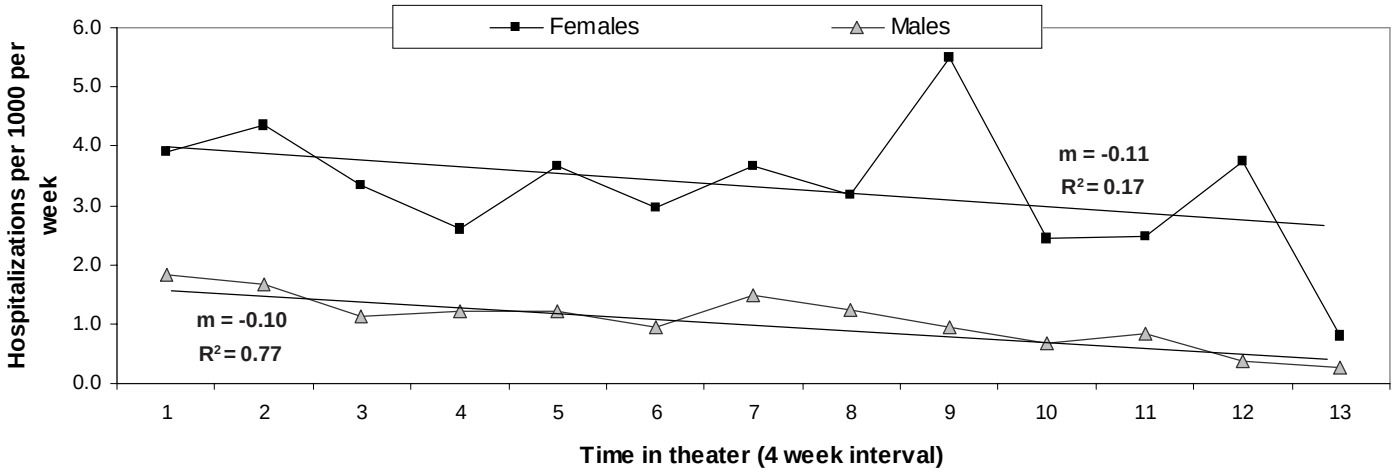


Figure 3. Hospitalization rates, OJE (Army active duty)
By prior hospitalization history and time in theater

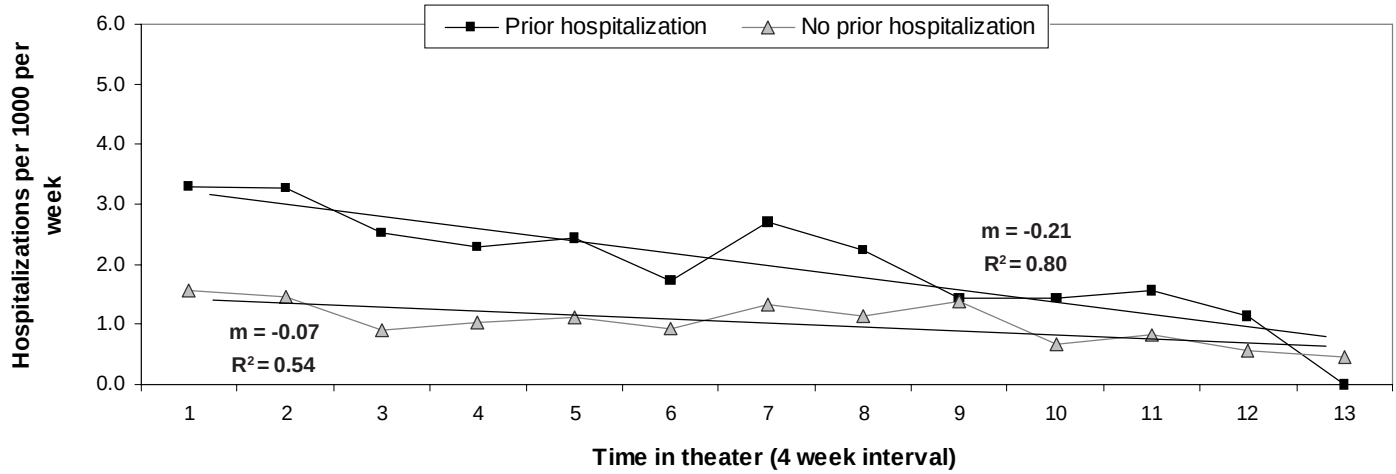
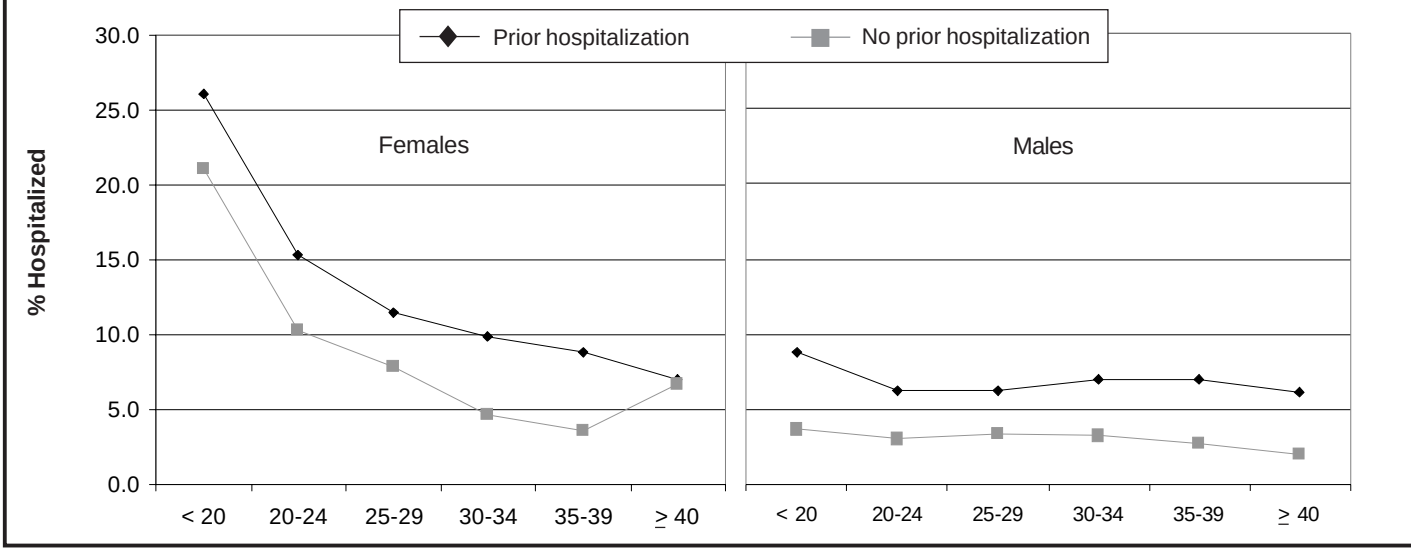


Figure 4. Cumulative incidence of hospitalizations ("attack rates"),
by gender, age, and prior hospitalization history



Outbreak Investigation

Brown Recluse Spider Bites Among Infantry Trainees, Fort Benning, Spring 1997

Loxosceles reclusa, commonly known as the brown recluse or fiddle-back, is a small and normally unaggressive spider that may respond with a venomous bite when perturbed. Because it is passive and solitary by nature, reports of clusters of *L. reclusa* envenomation are rare[1,2].

Loxoscelism, the clinical response to envenomation with the *L. reclusa*, presents in two forms: cutaneous and viscerocutaneous. Cutaneous loxoscelism accounts for 89-98% of all cases and develops 12-36 hours after envenomation. First signs include pustule formation, non-specific erythema, and edema at the bite site. These signs are soon followed by the development of hemorrhagic and ischemic areas, local increasing pain, and sometimes fever. Over the following week, an eschar forms over the enlarging area of tissue necrosis. Finally, the expanding ulcer may drain and break down repeatedly before final healing. Scarring is not uncommon[1,3].

During March and April 1997, an outbreak of suspected spider bites occurred among trainees of five basic training companies at Fort Benning, Georgia. Wound appearances, clinical courses, patient histories, and spider sightings implicated brown recluse spiders as the cause[4].

Methods: In the course of a systematic review (for another purpose) of medical records of seven basic training companies, a high incidence of spider bites was noted. In response, all cases of spider and insect bites – as well as all cases of cellulitis related to insect bites — were abstracted. For survey purposes, a "spider bite case" was defined as a patient history and clinical examination consistent with a spider bite during March or April 1997. Frequencies and cumulative incidences ("attack rates") were calculated for battalions and companies. Chi square and Fisher's exact tests were used to assess the statistical significance of differences in attack rates between units.

Entomologists from the Preventive Medicine Service, Fort Benning, Georgia, and the USACHPPM Direct Support Activity-South inspected barracks of affected trainees and facilities (e.g., laundry) that were implicated as potential sources of exposure.

Case detection: Review of medical records (n=980) revealed 36 trainees with 37 bites that accounted for 76 clinic visits. The majority of bites occurred during a 4-week period between March and April — prior to and during trainee bivouacs. Clinical notes revealed that most bite lesions (62%) were below the waist.

In addition, the study staff examined soldiers representative of one "typical" and one "severe" case. These examinations revealed one with a 2-3 mm. eschar surrounded by a 6-7 cm. area of induration and cyanosis and the other with a deep, slow healing ulcer which had broken down repeatedly over the previous few weeks.

Attack rates: Among all trainees surveyed, the cumulative bite incidence was 3.6%. Attack rates were significantly different between the two battalions involved in the survey (1st Battalion, 50th Infantry: 12.0%; 1st Battalion, 38th Infantry: 1.1%, RR=11.5, $p<.0001$). While cases occurred in five of the seven companies surveyed, company-specific attack rates varied widely (range: 0% to 19.2%). Of note, adjacent companies of one battalion had the highest company-specific attack rates: (C Company, 1-50 Bn: 19.2%; B Company,1-50 Bn: 4.8%).

Entomological surveys: Because the distribution, ecology, and nature of *L. reclusa* mediate against bite epidemics, investigators sought a spider-infested common exposure. Inspections of barracks revealed no clues. A molted *L. reclusa* skin case was found in the post laundry facility, but no live spiders were found or trapped there. A contracted laundry facility cleaned all trainee linen

and TA-50 (i.e., individual field equipment). This facility obtained its industrial and paper supplies from a distributor in Rollo, Missouri, a highly endemic area for *L. reclusa*. Inspection of the contract laundry facility revealed no evidence of spider infestations, however.

Discussion: This unusual outbreak of bites was attributed to brown recluse spiders. While patient reports may be unreliable, the distinctive wound appearances and clinical courses were consistent with *L. reclusa* envenomation. Most reports of brown recluse spider bites have been individual case reports or case series over long periods. To our knowledge, this is the largest outbreak of brown recluse spider envenomation in a defined population over a short period[2].

The normally solitary and timid nature of *L. reclusa* - unless threatened - and the overrepresentation of bites below the waist suggested that sleeping bags may have been the common source of spider contact. It is possible that sleeping bags were infested at a common laundry or storage facility before they were issued to and used by trainees in March-April 1997.

Other North American spider species (*Lycosa, Phiddipus, Argiope, Tegenaria*) have the potential to induce necrotic bites and significant disability similar to those of *Loxosceles*[1,3,5]. However, the geographic distributions and living habits of these species argue against their involvement in this outbreak.

While outbreaks of venomous spider bites are rare, soldiers are at risk when they encroach on spider habitats during field operations and in garrison. Venomous spiders (including brown recluses) have a worldwide distribution. Soldiers and their leaders should be aware of indigenous venomous spiders in areas of operations and avoid them if possible. Medical staffs should be cognizant of early signs, natural courses, and appropriate therapies of spider envenomation syndromes.

Reported submitted by Nee, MA; Craig, SC; Milstrey EG; Chandler JH; Hewitson WC, Canham M; Marquez J; Towle C; Corr W, and Jones BH.

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Surveillance Trends

Sexually Transmissible Diseases — Trends, Risk Correlates, and Recurrences, US Army, 1995-1996

Of all reportable diseases in the Army, those that are sexually transmissible are by far the most common. This report summarizes the experience of active duty soldiers regarding sexually transmissible disease (STD) during calendar years 1995 and 1996. Analyses consider only cases of gonorrhea, chlamydia, herpes simplex, and non-specific urethritis (NSU) that were reported to the Army Medical Surveillance Activity through the MSS, the Army's automated disease reporting system.

Overall (table 1): During 1995 and 1996, there were 4,307 and 3,852 STD case reports respectively – a decline between the years of 10.6%. In comparison, between December 1995 and December 1996, active force strength declined by 3.1% (source: Defense Manpower Data Center). Nearly half (48%) of all reported STDs were caused by chlamydia, gonorrhea and NSU accounted for 24% and 19% of STD case reports, respectively.

Table 1. Reported sexually transmitted diseases, active duty soldiers, 1995-1996

	1995	1996
Gender		
Male	2879	2359
Female	1428	1493
Racial/ethnic		
Black	2772	2363
White	1168	1186
Other	300	287
Age group		
< 25	2924	2551
>= 25	1384	1302
STD type		
Gonorrhea	1123	827
Chlamydia	1950	1928
Urethritis, non-specific	826	719
Herpes Simplex	344	335
Other	65	44
Marital Status		
Married	1300	1133
Single	2348	2164
Other	182	177

Gender (table 1): Between 1995 and 1996, STD case reports declined by approximately 18% among men but increased by approximately 5% among women. During the period, approximately one third (35.8%) of all STDs were reported among women – this proportion is more than two-fold higher than female representation in the active force (14.3%).

Age (table 1): Between 1995 and 1996, STDs declined among both younger (< 25 years old) and older soldiers. Two-thirds of all STDs were among younger soldiers – this proportion is nearly two-fold higher than the representation of younger soldiers in the active force (37%).

Race/ethnicity (table 1): Of all STD cases reported, approximately two-thirds were among black and 30% among white soldiers. Between 1995 and 1996, STD reports slightly increased (1.5%) among white soldiers but decreased among others — the largest relative decline (15%) occurred among black soldiers.

Recurrent STDs: To identify correlates of risk of recurrent STDs, among all soldiers with at least one STD, AMSA estimated incidence rates of a second. For rate estimation, denominators were calculated as the sum of all follow up times of all STD cases, i.e., date of onset of first STD until either a second STD ("recurrence date") or 31 December 1996 (end of follow up). Thirty days were subtracted from each follow up time to differentiate relapses (e.g., treatment failures) from recurrences. Finally, to quantify independent associations between demographic factors and STD

recurrence risk, we used a Cox proportional hazards regression model to simultaneously control for confounding effects among factors.

During the period, there were 123 soldiers with at least two reported STDs (at least 30 days apart). The observed rate of recurrence was 14.8 per 1000 per year. Table 2 shows STD recurrence rates in various subgroups. The highest recurrence rates were among male (19.6 per 1000/year), black (19.2 per 1000/year), and single (18.4 per 1000/year) soldiers. The lowest recurrence rate was among females (7.7 per 1000/year).

Table 3 shows estimated strengths of associations (adjusted for confounding) between gender, race, age, marital status and etiology of initial STD, and recurrence. Males were nearly three times as likely as females to have a recurrent STD. Cases that were black (versus white) and those younger than 25 years old (versus older) were approximately twice as likely to have a recurrent STD. Finally, soldiers with STDs other than gonorrhea (versus those with gonorrhea) were more likely to have a recurrence.

Table 2. Rates of recurrent sexually transmitted diseases, active duty soldiers, 1995-1996

	Cases	Rate*
Gender		
Female	21	7.7
Male	102	19.59
Racial/ethnic		
Black	94	19.22
White	26	12.1
Age Group		
< 25	86	15.92
>= 25	37	14.25
Marital Status		
Married	35	13.78
Single	86	18.43
Diagnosis		
Gonorrhea	27	13.73
Non-gonorrhea	96	16.05

* Rate calculated per 1000 per year

Editorial comment: STDs reported through the MSS underestimate the total burden of sexually transmissible infections in the Army. For example, many sexually transmissible infections are asymptomatic, an unknown number of soldiers with STDs seek and receive medical care outside the Army system, an unknown proportion of STD cases are treated by Army careproviders but not reported to Army preventive medicine services, and – despite the requirement – all medical treatment facilities do not report STDs through the MSS. However, analyses may be informative and useful to the extent that reported cases reflect the STD experience of the active force.

Between 1995 and 1996, STD case reports declined Army-wide by more than 10% – the decline exceeded by approximately three-fold the contemporaneous decline in active force strength. Over the period, STD reports also declined in most demographic subgroups of soldiers – exceptions were white soldiers and females in whom STDs slightly increased. On first reflection, findings regarding STDs among females may be surprising and alarming. However, the relatively high frequency of STDs among females may be attributable to enhanced detection of asymptomatic infections among women (in contrast to males) during periodic and other "well woman" examinations. This assessment is supported by the finding that women had a significantly lower recurrence rate than men.

The estimated recurrence rate of less than 2% per year — overall and in all demographic subgroups — is remarkably low. However, recurrence rates in this report underestimate actual rates for at least two important reasons. First, the estimation method assumes that all recurrent STDs are detected, diagnosed, and reported through the MSS – numerators for rate calculations are too low to the extent that this assumption is untrue. Second, the estimation method assumes that all STD cases are

Table 3. Recurrent sexually transmitted diseases among active duty soldiers, adjusted relative risks, 1995-1996

		Risk Ratio	CI	p-value
Gender	Male vs Female	2.83	1.74 - 4.61	0.001
Race	Black vs White	1.95	1.23 - 3.13	0.004
Age group	< 25 vs > 25	2.00	0.90 - 4.55	0.09
STD type	Non-gonorrhea vs Gonorrhea	1.79	1.13 - 2.81	0.01
Marital Status	Single vs Married	1.24	0.82 - 1.88	0.31

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maintained under surveillance until the end of the follow up period. Clearly some cases are lost to follow up (e.g., soldiers leave military service). Thus, estimated recurrence rates should be interpreted with caution.

The same caveats may not apply to interpreting estimated relative risks of recurrence, however. If biases to rate estimation are comparable across demographic subgroups, then estimates of relative risks are reliable. In this analysis, young, black, single, and male soldiers were at relatively higher risk of recurrent STDs than others. It is not surprising that these are the same demographic subgroups with relatively higher risks of acquiring HIV-1 on active duty[1].

Current military STD prevention programs (including screening, education, contact tracing, suppression of prostitution, early diagnosis and treatment) have evolved over centuries of lessons learned – both good and bad[2]. Current data suggest that Army STD control programs are generally effective. However, programs should assure that services (e.g., education, counseling) are provided to all soldiers with STDs – particularly those with histories of recurrent STDs or those with relatively higher risks of acquiring recurrent infections.

References

1. Renzullo, PO, McNeil, JG, Wann, ZF, et al. Human immunodeficiency virus type-1 seroconversion trends among young adults serving in the United States Army, 1985-1993. J Acq Imm Def Syn Hum Retro, 10:2 (October), 1995, 177-85.

2. Emerson, LAC. Sexually transmitted disease control in the Armed Forces, past and present. Mil Med, 162:2 (February), 1997, 87-90.

ARD Surveillance Update

Legend

—— ARD Rate = (ARD cases / Trainees) * 100

▪ ▪ ▪ SASI* = ARD Rate * Strep Rate**

Ft Benning

Ft Jackson

Ft Knox

Ft Leonard Wood

Ft McClellan

Ft Sill

Table IV. ARD surveillance rates, submitted by Army TRADOC posts

* Strep/ARD Surveillance Index (SASI)

**Strep Rate= (GABHS(+) / Cultures) *100

Note: SASI has proven to be a reliable predictor of serious strep-related morbidity, especially acute rheumatic fever.

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