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## Incidence Rates and Correlates of Risk of Herpes Zoster, US Armed Forces, 1998-2001

Primary infection with varicella-zoster virus (VZV) causes varicella (“chickenpox”), a common disease of children. Following varicella, VZV persists in latent form in the ganglia of sensory nerves. Herpes zoster (“shingles”) is the clinical manifestation of localized reactivation of VZV in spinal or cranial nerves. The clinical course of herpes zoster is characterized by neuralgia and the eruption of vesicles in the skin over the paths of affected nerves. Symptoms can range from mild itching and discomfort to intense pain and generally last from two to four weeks. Post-herpetic neuralgia (pain that persists after skin lesions have healed) is a serious complication of herpes zoster that primarily affects elderly and immunocompromised patients.<sup>1-3</sup> Depending on its anatomic location and severity, herpes zoster can be debilitating, especially to servicemembers in field operational settings.

Recent estimates of the overall incidence of herpes zoster range from 130 to 215 per 100,000 persons per year.<sup>4,5</sup> In general populations, risk factors for herpes zoster include increasing age, white race, and immunosuppression (e.g., HIV-1 infection, certain cancers, immunosuppressive drugs).<sup>3-7</sup> It is unclear whether risk is related to gender,<sup>7</sup> and there is no clear evidence of seasonality of herpes zoster incidence.<sup>4</sup>

Although an estimated 300,000 to 500,000 cases of herpes zoster occur in the United States each year, there have been few population-based studies of its epidemiology and none, to our knowledge, focusing on members of the US Armed Forces or on other generally healthy young adults. For this report, we estimated incidence rates, demographic correlates of risk, and seasonal patterns of incidence of herpes zoster among active duty members of the US Armed Forces.

**Methods.** Data were taken from the Defense Medical Surveillance System. The surveillance period was 1 January 1998 to 31 December 2001. Records of all hospitalizations and ambulatory visits during this period were searched to identify active duty personnel with primary diagnoses of herpes zoster (ICD-9-CM 053). Incident cases were defined as the first diagnosis

of herpes zoster per servicemember during the surveillance period. Crude incidence rates per 100,000 person-years were calculated overall and for demographic subgroups. Adjusted relative rates were estimated through Poisson regression.

**Results.** There were 6,247 incident cases of herpes zoster identified among active duty US servicemembers during the 4-year surveillance period (crude rate 114.20 per 100,000 person-years) (table 1). Overall, incidence rates were higher among female and white servicemembers than their respective counterparts and were higher among members of the Air Force than the other services (table 1).

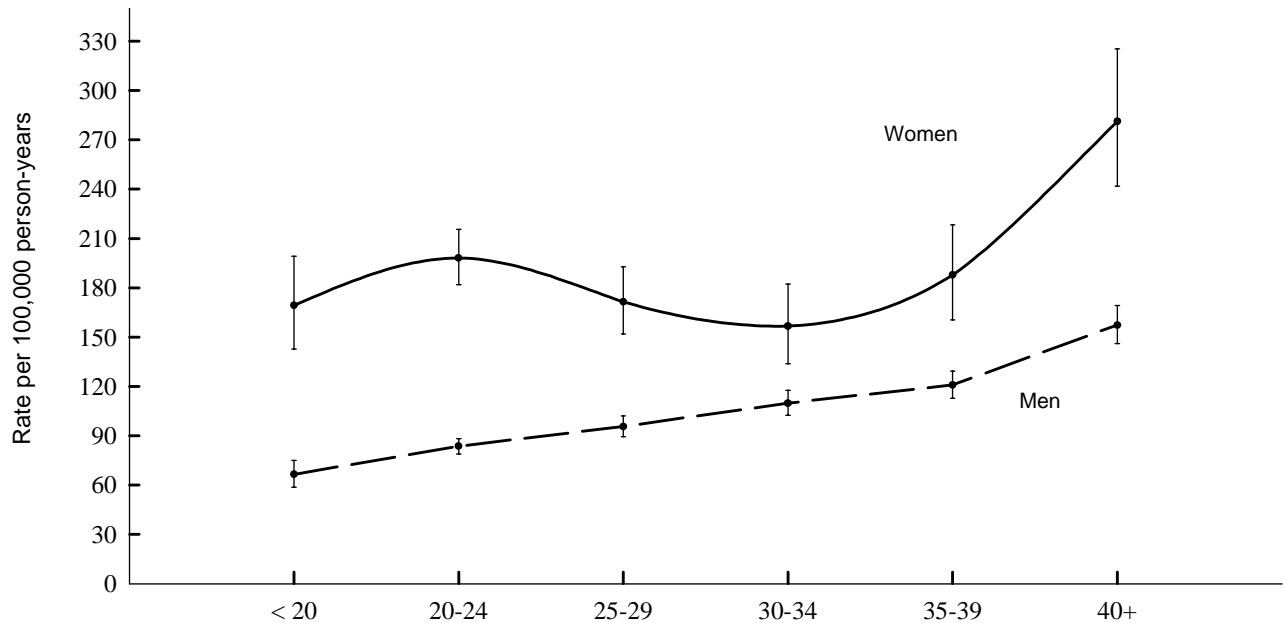
Incidence rates tended to increase with age. However, among females, rates were lower among those 25-39 than those younger than 25 and were highest among those 40 and older (figure 1). In contrast, among males, incidence rates increased steadily with age with no sharp increase in the 40 and older subgroup (figure 1).

Finally, there was no clear seasonal trend in incidence rates of herpes zoster; however, three (December, January, and February) of the four months with the lowest rates were in winter (figure 2)

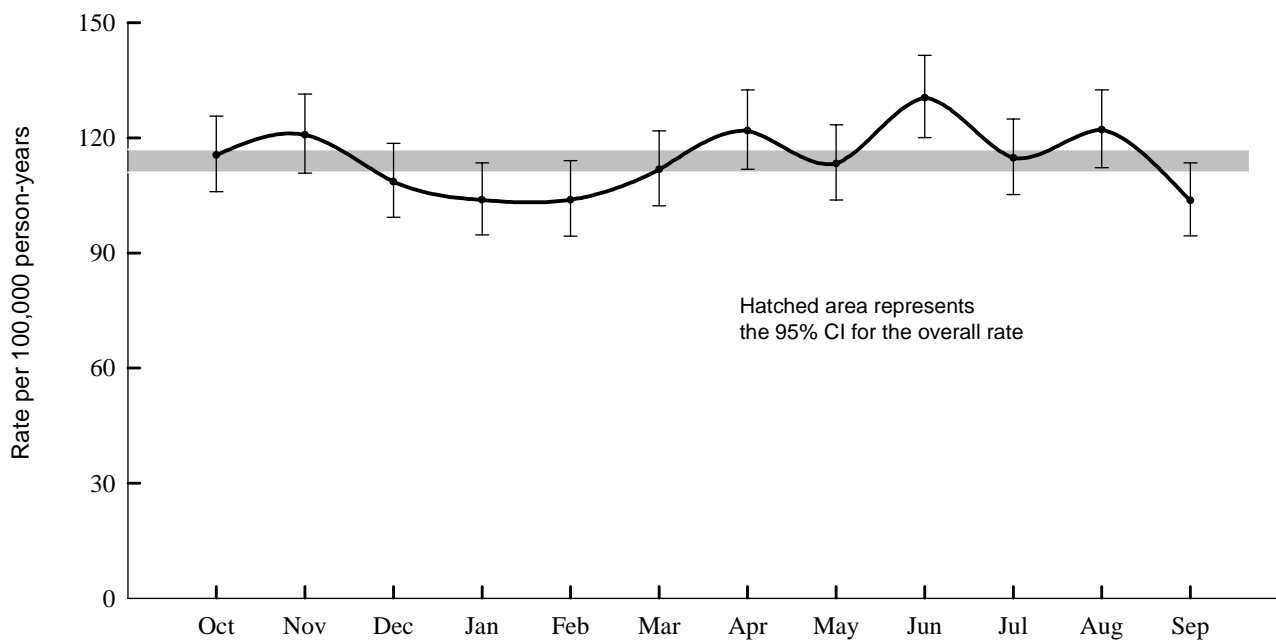
**Editorial comments.** Between 1998 and 2001, there were approximately 1,561 cases of herpes zoster per year among US servicemembers. The incidence rates documented in this surveillance are similar to those found in other population-based studies of US civilians in similar age groups.<sup>4,5</sup> As in other published reports, rates were relatively high among older and white servicemembers. However, rates in the US military were significantly higher among females compared to males; this difference was most pronounced in the 40-and-over age group.

In the United States, a live attenuated VZV vaccine was licensed for use and incorporated into routine childhood immunization schedules in 1995.<sup>8,9</sup> Since then, cases of varicella have declined significantly in the US, particularly in age groups (e.g., preschool children) with the highest vaccine coverages.<sup>10</sup> In November 1999, the Department of Defense required vaccination of all new accessions

**Figure 1. Herpes zoster incidence rates and 95% confidence intervals by gender and age group, US Armed Forces, 1998 - 2001.**



**Figure 2. Herpes zoster incidence rates and 95% confidence intervals by month, US Armed Forces, 1998 - 2001.**



who were not immune to VZV through natural infection or vaccination.<sup>11</sup>

The triggers of reactivation of latent VZV are not well understood; however, decreased cell-mediated immunity is thought to play a key role.<sup>3,7,12</sup> Among individuals with prior infections with VZV, repeated exposures to circulating VZV may boost cell-mediated immunity and thus enhance protection against reactivation and herpes zoster.<sup>12</sup> The long term effects of childhood immunization against VZV—with decreased transmission of wild strains of the virus—on the incidence of herpes zoster in the military are uncertain.<sup>12-17</sup> Surveillance to detect changes in incidence rates of varicella and herpes zoster in military populations will be informative regarding long-term effects of routine VZV immunization.

*Data analysis and report by Karen E. Campbell, Analysis Group, Army Medical Surveillance Activity.*

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**Table 1. Incident cases and rates of herpes zoster, US Armed Forces, 1998-2001**

Characteristics	Incident cases	Person-years	Crude rate per 100,000	Adjusted <sup>1</sup> rate ratio (95% CI)	
Total	6,247	5,470,161	114.2	-	-
Gender					
Male	4,760	4,685,058	101.6	1.00	-
Female	1,487	785,092	189.4	1.84	(1.69, 2.01)
Age group (years)					
Less than 20	407	479,422	84.9	1.00	-
20-24	1,742	1,708,474	102.0	1.19	(1.02, 1.39)
25-29	1,183	1,107,600	106.8	1.25	(1.04, 1.50)
30-34	991	856,082	115.8	1.37	(1.12, 1.68)
35-39	1,024	797,254	128.4	1.52	(1.23, 1.88)
40 and older	900	521,224	172.7	2.04	(1.63, 2.55)
Race					
White	4,552	3,803,093	119.7	1.00	-
Black	1,138	1,118,305	101.8	0.81	(0.74, 0.90)
Other	557	533,441	104.4	0.91	(0.80, 1.04)
Marital status					
Married	3,581	2,995,775	119.5	0.94	(0.86, 1.02)
Not married	2,666	2,464,567	108.2	1.00	-
Grade					
E1-E4	2,481	2,454,451	101.1	1.03	(0.85, 1.24)
E5-E9	2,539	2,139,261	118.7	1.01	(0.87, 1.17)
O1-O3	687	529,373	129.8	1.10	(0.91, 1.32)
O4-O9	540	344,202	156.9	1.00	-
Service					
Army	1,976	1,892,016	104.4	1.00	-
Navy	1,357	1,473,232	92.1	0.87	(0.78, 0.96)
Air Force	2,384	1,420,032	167.9	1.48	(1.36, 1.62)
Marines	530	684,881	77.4	0.82	(0.71, 0.94)

<sup>1</sup>Adjusted for gender, age group, race, marital status, grade, and service.

## Rates and Patterns of Readmission After Discharge from U.S. Military Hospitals, 2001

Hospital readmission rates, especially rates of readmission within 30 days or less of a prior discharge, are considered measures of outcomes of care and of overall health care quality. While some readmissions are elective, studies have estimated that between 9% and 48% of all readmissions are potentially preventable, because they were associated with potentially substandard care during the index hospitalizations. Higher rates of preventable readmissions are associated with shorter times between discharges and readmissions.<sup>2</sup> Outside the DoD, the percentages of admissions that are readmissions within 30 days of prior discharges range from roughly 5% to 35%.<sup>1,3</sup>

In general, crude readmission rates reflect both the quality of care and the burden of chronic diseases in the catchment populations of hospitals.<sup>4</sup> In general civilian populations, the leading diagnoses associated with 15% or greater chances of readmission within one month of a prior discharge are congestive heart failure, chronic obstructive pulmonary disease (COPD), dementia, stroke, and pneumonia.<sup>1</sup>

For this report, we examined the number and nature of readmissions within 10 and 30 days of hospital discharge from U.S. military hospitals during calendar year 2001.

**Methods.** The Standard Inpatient Data Record (SIDR) is used to document all hospitalizations in U.S. military hospitals. For this summary, we included all SIDR administrative data from 1 January 2001 through 30 January 2002 (with updates through February 2002).

In 2001, reporting of hospitalizations in SIDR was inconsistent across the services. For example, in SIDR, the Navy reported only one patient hospitalization in a civilian facility, whereas the Army reported 3,067 and the Air Force 3,054 such hospitalizations. In addition, based on SIDR records, approximately five percent of hospitalizations overlapped in time with other hospitalizations of the same individual. To deal with reporting inconsistencies, transfers, and overlapping individual hospitalization records, an empirical algorithm was developed and applied to the data. For purposes of

this analysis, (a) all hospitalization records that reported all bed days as "civilian" were excluded; (b) for records of hospitalizations of individuals that overlapped in time, the earlier were excluded and the later were considered the definitive discharge events; (c) hospitalizations that were contiguous in time with other hospitalizations and which had either a disposition code indicating a transfer to another DoD facility, had a zero length of stay, or had a different facility (DMSID) code than the subsequent record, were excluded; and (d) hospitalizations with less than a full day's length of stay and a diagnosis related group (DRG) code for radiation or chemotherapy were excluded (these discharges accounted for a large number of short-term readmissions among a small number of individuals who were obviously undergoing continuing, scheduled treatments). Records of hospitalizations with a radiation or chemotherapy DRG and lengths of stay of one day or more were retained.

The remaining numbers of live discharge events between 1 January and 31 December 2001 were used as denominators for readmission rate calculations. Crude rates of readmission within 10 days and 30 days of discharge were calculated for each DoD hospital, then summarized by service. The distributions of time lags between discharges and

**Table 1. Readmission rates within 10 and 30 days of discharge, 2001.**

MTF <sup>*</sup> parent service	Total discharges <sup>†</sup>	Readmission within 10 days	Readmission within 30 days
		Rate % ± SD <sup>¶</sup>	Rate % ± SD <sup>¶</sup>
Army	113,357	5.2 ± 1.6	9.5 ± 3.2
Navy	78,671	4.7 ± 1.2	8.9 ± 2.1
Air Force	50,225	5.0 ± 1.9	9.6 ± 3.1
Other <sup>§</sup>	2,536	4.7 ± 3.3	9.9 ± 7.0
Total	244,799	5.0 ± 1.8	9.3 ± 2.9

<sup>\*</sup> medical treatment facility

<sup>†</sup> excludes transfer discharges and single day chemotherapy or radiation therapy discharges

<sup>¶</sup> standard deviation

<sup>§</sup> includes one Veterans Administration and one private facility

subsequent readmissions were calculated, as were frequencies of DRGs assigned to hospitalizations associated with subsequent readmissions. Although illness severity can affect readmission rates, no case mix adjustments were undertaken for this preliminary report.

**Results.** In calendar year 2001, a total of 244,799 non-transfer, non-overlapping live discharges from DoD facilities were identified. Of the 219,639 patients discharged from a DoD hospital during the year, 31,264 (14.2%) were readmitted one or more times during the period of follow-up. Readmissions (n=46,514) accounted for 17.4% of all admissions during the 13-month surveillance period.

For the DoD overall, 5.0% of discharges were followed by readmissions within 10 days and 9.3% within 30 days. Service-specific rates were similar to the DoD-wide rate (table 1).

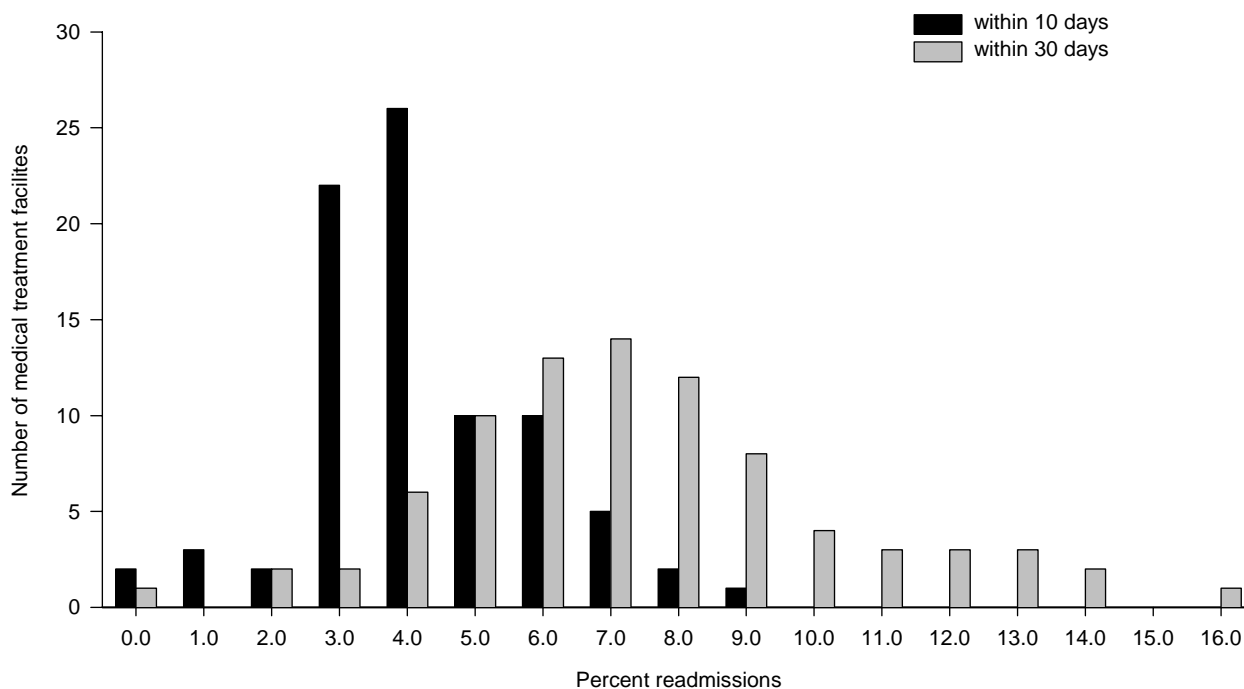
Just over a quarter (26.2%) of all readmissions occurred within 10 days of discharge, while just under half (49.2%) occurred within 30 days of discharge. As individuals had more hospitalizations during the year, the median times between subsequent

admissions steadily decreased (table 2).

There was a wide range in readmission rates among MTFs (figure 1). Larger facilities and tertiary care facilities tended to have higher readmission rates (figures 2, 3); in addition, there was greater variability in readmission rates among the larger facilities. For example, among the tertiary care medical centers with at least 4,000 non-transfer discharges during 2001, 10-day readmission rates varied from 4.2% to 8.6%, and 30-day readmission rates varied from 7.8% to 16.3%. Thus, there were more than two-fold differences between the lowest and highest readmission rates among tertiary care medical centers.

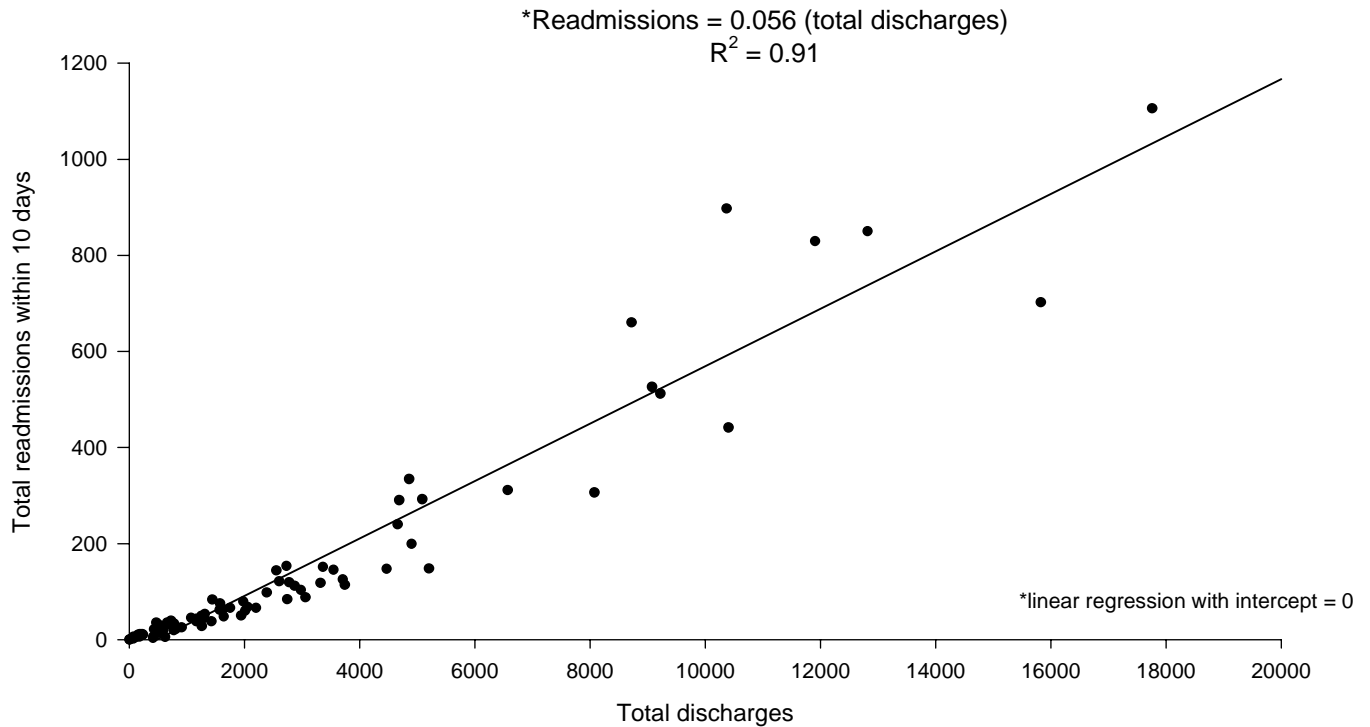
The DoD uses a modified and expanded set of diagnosis-related group (DRG) codes that includes higher numbered codes. The DRGs most frequently associated with subsequent readmissions, overall and by service, are presented in table 3. Of the ten DRGs with the highest readmission rates, five are associated with pregnancy or childbirth (these five pregnancy and childbirth-related DRGs were associated with 3,707 readmissions at DoD MTFs within 30 days of a prior discharge). Air Force MTFs appeared to differ from the overall DoD pattern in relation to DRGs

**Figure 1. Distributions of 10- and 30-day readmission percentages among military medical treatment facilities, 2001.**

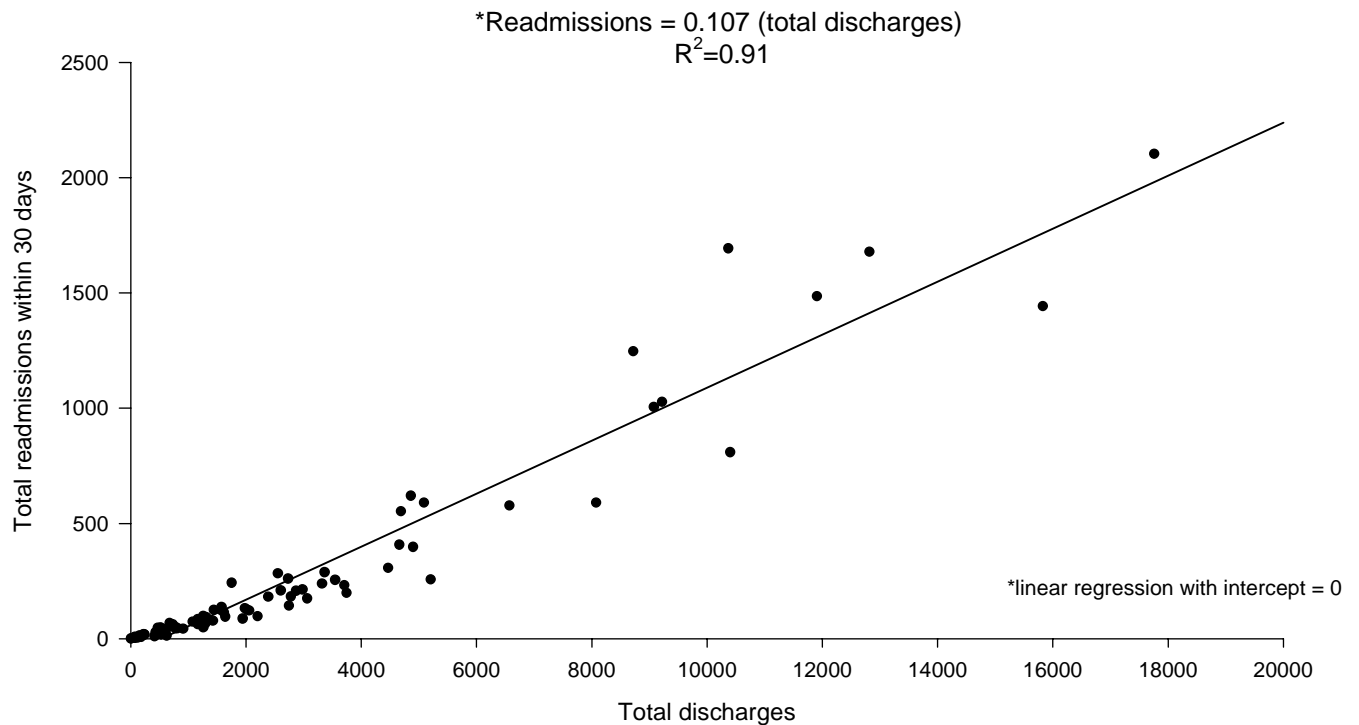




**Figure 2. Relationship between readmissions within 10 days and total discharges, US military hospitals, 2001.**



**Figure 3. Relationship between readmissions within 30 days and total discharges, US military hospitals, 2001.**



associated with the highest readmission rates (table 3).

Table 4 maps the most frequent DRGs during readmissions to the DRGs associated with the highest readmission rates (table 3). Overall, the most frequent readmission DRGs were 373 (vaginal delivery without complicating diagnosis), 391 (normal newborn) and 430 (psychoses), which accounted for 727, 623, and 477 readmissions, respectively. Of note, there were 1,280 readmissions that were “neonatal” in nature; these readmissions were identified under DRGs 391 (normal newborn), 628 (neonate, birth weight > 2.5 kg, without significant operating room procedure, with minor problems), and 630 (neonate, birth weight > 2.5 kg, without significant operating room procedure, with other problems).

*Comments.* Within DoD MTFs during 2001, 10- and 30-day readmission rates appeared to be within ranges expected of similar civilian facilities. Furthermore, readmission rates were fairly consistent across the services. However, the DRGs associated with readmissions in U.S. military hospitals differed from those typically associated with readmissions in civilian facilities; in addition, there was considerable variation in the readmission rates among DoD MTFs.

Some of the variation across MTFs may be attributable to variations in facility sizes and, of course, case mixes. Larger tertiary care facilities tended to have higher readmission rates, perhaps because patients admitted to them are often referred from other facilities and/or are sicker. Because no case-mix adjustments were done for this summary, the sources of the observed variation cannot be more clearly attributed. However, there was large variation among tertiary care facilities which are likely to have similar case-mixes. The findings suggest that there may be patient management practices at MTFs with relatively low readmission rates that could reduce readmission rates at other MTFs.

Another potential source of variability—and possibly bias—is inconsistent reporting. For example, some Army and Air Force (but not Navy) facilities report admissions to local civilian hospitals under their own military facility codes; and by the methods used for this analysis, MTFs that admit to local civilian hospitals necessarily have lower readmission rates than those that do not. Thus, differences in patient care and reporting procedures across MTFs may explain some of the variability in readmission rates,

especially among smaller facilities.

Furthermore, because of definitions used for this analysis and operational variations among the services, the DRG counts and percentages in tables 3, 4, and 5 do not provide accurate pictures of relative disease incidence rates or prevalences within specified patient populations. For example, according to SIDR records, the Air Force sends more than a third of its acute psychosis admissions to civilian facilities, whereas the Army and Navy send relatively few.

A large proportion of admissions to DoD facilities are for obstetrical diagnoses, even among active duty patients.<sup>5</sup> This alone could explain the finding that DRGs related to pregnancy and childbirth are the major sources of readmissions to military hospitals within 30 days. It is further possible that many of the neonatal readmissions identified under DRGs 391, 628, and 630 were largely observational—for fevers, for example—or perhaps due to real or perceived difficulties in interactions between neonates and their new parent(s). Examination of the actual ICD-9 codes associated with both initial and readmission hospitalizations would be the next logical step to help elucidate preventable readmissions.

**Table 2. Median time between discharge and readmission, US military hospitals, 2001**

Individual readmission event	Number of events	Median # of days since prior discharge	Time span range (days) <sup>*</sup>
1st	31,264	35	388
2nd	8,590	30	368
3rd	3,143	27	314
4th	1,463	23	290
5th	771	23	254
6th	431	20	215
7th	248	18	159
8th	162	18	174
9th	115	16	168
10th	82	15	98
11 <sup>th</sup> – 33rd <sup>†</sup>	245	12	86

<sup>\*</sup>Includes 30-day follow-up period through January 2002.

<sup>†</sup>Four individuals each had a total 24 readmission events, three had 26 events, one had 33 events.

*Data analysis, report, and comments by David R. Arday, MD, MPH; CAPT, USPHS; Population Health Program, U.S. Army Center for Health Promotion and Preventive Medicine.*

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**Table 3. Diagnosis Related Groups (DRGs) most often associated with hospitalizations that were followed by readmissions within 30 days, overall and by service, 2001\***

DRG	MTF Parent Service											
	Overall			Army			Navy			Air Force		
	Rank	No.	%	Rank	No.	%	Rank	No.	%	Rank	No.	%
391 Normal newborn	1	1074	4.7	1	408	3.8	1	464	6.6	1	202	4.2
379 Threatened abortion	2	826	3.6	4	352	3.3	2	359	5.1	4	115	2.4
383 Other antepartum diagnoses w/ medical complications	3	796	3.5	3	374	3.5	3	312	4.4	5	110	2.3
430 Psychoses	4	620	2.7	2	381	3.6	6	182	2.6	31	36	0.8
630 Neonate, birth weight $\geq$ 2.5 kg, w/o significant OR procedure, w/ other problems	5	611	2.7	5	289	2.7	4	230	3.3	9	92	1.9
410 Chemotherapy, w/o acute leukemia as a secondary diagnosis	6	525	2.3	7	238	2.2	5	208	3	11	79	1.6
127 Heart failure and shock	7	524	2.3	6	264	2.5	10	102	1.5	2	143	3
384 Other antepartum diagnosis w/o medical complications	8	400	1.8	9	178	1.7	7	155	2.2	13	67	1.4
143 Chest pain	9	393	1.7	8	179	1.7	13	82	1.2	3	128	2.6
88 Chronic obstructive pulmonary disease (COPD)	10	347	1.5	10	150	1.4	11	91	1.3	8	94	2

\* Numbers and percentages refer to discharges that were followed by readmissions within 30 days (not total discharges or readmissions).

**Table 4. Most frequent Diagnosis Related Groups (DRGs) during readmission hospitalizations, in relation to DRGs associated with the highest readmission rates within 30 days, 2001**

Index hospitalizations		Readmissions									
DRG	No. of discharges	DRG	% of readmits	DRG	% of readmits	DRG	% of readmits	DRG	% of readmits	DRG	% of readmits
391	1074	391	37.8	630	20.6	628	17.2	627	10.2	626	2.0
379	826	373	47.5	379	18.3	371	10.6	372	10.0	370	4.5
383	796	383	27.2	373	22.2	372	17.8	371	12.2	370	10.7
430	620	430	75.8	427	4.4	426	3.9	901	2.7	428	2.3
630	611	391	35.5	630	23.2	628	17.8	627	9.2	626	2.1
410	525	410	60.0	398	10.1	399	2.5	144	2.3	403	1.9
127	524	127	33.2	124	4.2	138	3.6	296	3.4	316	3.2
384	400	373	34.7	371	27.5	372	10.5	370	9.0	384	7.2
143	393	143	20.1	125	8.4	127	3.8	182	2.8	124	2.3
88	347	88	45.5	89	6.1	138	3.2	296	2.6	316	1.7

Key to DRG numerical codes used above:

DRG	Description	DRG	Description
88	Chronic obstructive pulmonary disease (COPD)	383	Other antepartum diagnoses w/ medical complications
89	Simple pneumonia & pleurisy age >17 yrs. w/ complication or comorbidity	384	Other antepartum diagnosis w/o medical complications
124	Circulatory disorders except AMI w/ cardiac catheterization & complex diagnosis	391	Normal newborn
125	Circulatory disorders except AMI w/o cardiac catheterization & complex diagnosis	398	Reticuloendothelial & immunity disorders w/ complication or comorbidity
127	Heart failure & shock	399	Reticuloendothelial & immunity disorders w/o complication or comorbidity
138	Cardiac arrhythmia & conduction disorders w/ complication or comorbidity	403	Lymphoma & non-acute leukemia with complication or comorbidity
143	Chest pain	410	Chemotherapy, w/o acute leukemia as 2 <sup>nd</sup> diagnosis
144	Other circulatory system diagnoses w/ complication or comorbidity	426	Depressive neuroses
182	Esophagitis, gastroenteritis, & misc. digestive disorders, age >17 yrs. w/ complication or comorbidity	427	Neuroses other than depressive
296	Nutritional & misc. metabolic disorders, age >17 yrs. w/ complication or comorbidity	428	Disorders of personality & impulse control
316	Renal failure	430	Psychoses
370	Cesarean section w/ complication or comorbidity	467	Other factors influencing health status
371	Cesarean section w/o complication or comorbidity	494	Laparoscopic cholecystectomy w/o common bile duct exploration w/o complication or comorbidity
372	Vaginal delivery w/ complicating diagnosis	626	Neonate, birth weight $\geq$ 2.5 kg, w/o significant O.R. procedure, w/ multiple major problems
373	Vaginal delivery w/o complicating diagnosis	627	Neonate, birth weight $\geq$ 2.5 kg, w/o significant O.R. procedure, w/ major problem
376	Postpartum & post abortion diagnoses w/o O.R. procedure	628	Neonate, birth weight $\geq$ 2.5 kg, w/o significant O.R. procedure, w/ minor problems
377	Postpartum & post abortion diagnoses w/ O.R. procedure	630	Neonate, birth weight $\geq$ 2.5 kg, w/o significant O.R. procedure, w/ other problems
379	Threatened abortion	901	Alcohol/drug abuse or dependency, detox or other symptomatic treatment, age > 21 w/o complications

**Sentinel reportable events for all beneficiaries<sup>1</sup> at US Army medical facilities,  
cumulative numbers<sup>2</sup> for calendar years through August 31, 2001 and 2002**

Reporting location	Number of reports all events <sup>3</sup>		Food-borne								Vaccine Preventable					
			Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
<b>NORTH ATLANTIC</b>																
Washington, DC Area	81	77	1	3	3	2	2	-	3	4	-	2	-	-	2	-
Aberdeen, MD	29	22	-	-	-	-	-	-	-	-	-	-	1	1	-	-
FT Belvoir, VA	47	49	5	4	4	-	1	2	-	-	-	-	-	-	-	-
FT Bragg, NC	852	1,112	2	5	-	-	2	3	1	2	-	-	5	1	2	-
FT Drum, NY	110	80	1	1	-	-	1	-	-	-	-	-	-	-	-	-
FT Eustis, VA	118	116	-	1	-	-	1	1	-	1	-	-	-	1	1	2
FT Knox, KY	129	113	-	3	1	1	1	1	-	-	-	-	-	-	1	-
FT Lee, VA	134	136	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Meade, MD	32	54	-	-	-	-	-	-	-	-	-	-	-	-	-	1
West Point, NY	35	63	1	-	-	-	1	-	-	-	2	1	-	1	-	-
<b>GREAT PLAINS</b>																
FT Sam Houston, TX	170	144	-	-	1	-	-	-	-	-	-	-	-	-	-	-
FT Bliss, TX	103	84	1	-	3	1	-	-	-	1	-	-	1	2	1	-
FT Carson, CO	356	277	-	6	2	1	2	-	-	-	-	-	1	1	-	-
FT Hood, TX	963	1,158	1	1	-	-	1	3	-	-	-	-	6	-	2	-
FT Huachuca, AZ	17	37	1	-	-	-	-	-	-	-	-	-	-	-	1	-
FT Leavenworth, KS	13	17	-	-	-	-	1	-	-	1	-	-	-	-	-	-
FT Leonard Wood, MO	123	141	-	-	-	-	-	1	-	-	-	-	-	-	5	2
FT Polk, LA	141	119	-	-	-	-	-	1	-	1	-	-	-	-	-	-
FT Riley, KS	126	143	-	-	-	-	-	-	-	-	-	-	1	-	-	1
FT Sill, OK	173	182	-	1	-	-	-	-	-	-	-	-	1	-	1	-
<b>SOUTHEAST</b>																
FT Gordon, GA	109	93	-	-	-	-	-	-	-	-	1	-	1	-	-	-
FT Benning, GA	202	232	1	-	1	1	2	3	-	-	-	-	-	-	4	3
FT Campbell, KY	406	336	2	1	3	-	2	1	1	2	-	-	-	-	-	1
FT Jackson, SC	197	182	-	-	-	-	-	-	-	-	-	-	5	1	2	1
FT Rucker, AL	41	37	-	1	-	-	1	-	-	-	-	-	-	-	-	-
FT Stewart, GA	276	315	-	-	-	1	1	-	-	1	-	-	1	-	-	1
<b>WESTERN</b>																
FT Lewis, WA	383	392	3	1	-	-	3	1	-	-	-	-	1	-	-	-
FT Irwin, CA	38	33	-	-	-	-	-	-	-	-	2	-	1	-	2	-
FT Wainwright, AK	53	65	-	1	-	-	-	-	-	-	-	-	-	-	-	-
<b>OTHER LOCATIONS</b>																
Hawaii	359	343	14	16	5	3	4	4	3	-	-	-	1	1	-	-
Europe	893	1,260	18	16	-	-	26	10	-	1	2	1	6	6	6	5
Korea	32	376	-	-	-	-	1	5	-	-	-	1	-	-	2	1
<b>Total</b>	<b>6,741</b>	<b>7,788</b>	<b>51</b>	<b>61</b>	<b>23</b>	<b>10</b>	<b>53</b>	<b>36</b>	<b>8</b>	<b>14</b>	<b>7</b>	<b>5</b>	<b>32</b>	<b>15</b>	<b>32</b>	<b>18</b>

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

2. Events reported by September 7, 2001 and 2002.

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 August 31, 2001 and 2002**

Reporting location	Arthropod-borne				Sexually Transmitted								Environmental				
	Lyme Disease		Malaria		Chlamydia		Gonorrhea		Syphilis <sup>3</sup>		Urethritis <sup>4</sup>		Cold		Heat		
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002	
<b>NORTH ATLANTIC</b>																	
Washington, DC Area	1	2	-	1	36	38	10	10	5	3	-	-	-	-	-	-	2
Aberdeen, MD	-	-	-	-	18	20	6	1	-	-	1	-	2	-	-	-	-
FT Belvoir, VA	-	2	-	-	25	26	6	8	-	1	-	-	-	-	3	2	-
FT Bragg, NC	-	-	8	3	306	759	179	137	-	-	188	96	7	-	148	105	-
FT Drum, NY	-	-	-	2	85	46	19	20	1	-	-	-	2	-	-	-	11
FT Eustis, VA	-	1	-	-	72	86	36	21	-	-	-	-	-	-	6	2	-
FT Knox, KY	-	-	1	-	99	83	21	20	2	-	-	-	-	-	2	3	-
FT Lee, VA	-	1	-	-	96	112	38	21	-	-	-	-	-	-	-	-	2
FT Meade, MD	-	3	-	-	24	43	7	5	1	-	-	2	-	-	-	-	-
West Point, NY	22	7	-	-	7	10	1	6	-	-	-	-	-	-	1	37	-
<b>GREAT PLAINS</b>																	
FT Sam Houston, TX	-	-	1	-	131	114	24	22	-	-	1	-	1	-	8	1	-
FT Bliss, TX	1	-	3	-	65	60	20	8	-	1	-	-	-	-	4	1	-
FT Carson, CO	-	1	-	1	252	184	38	32	-	-	60	45	-	1	-	-	-
FT Hood, TX	-	-	-	3	492	602	202	262	2	3	217	245	-	-	36	30	-
FT Huachuca, AZ	-	-	-	-	14	30	1	5	-	-	-	-	-	-	-	-	2
FT Leavenworth, KS	-	-	-	-	9	13	1	3	-	-	-	-	-	-	-	-	-
FT Leonard Wood, MO	-	-	-	1	72	96	21	24	-	-	5	2	3	-	12	11	-
FT Polk, LA	-	-	1	1	102	78	33	33	-	2	-	-	-	-	2	-	-
FT Riley, KS	-	-	1	-	80	99	16	28	-	-	-	-	3	11	24	3	-
FT Sill, OK	1	-	-	2	90	99	33	30	-	-	37	34	-	-	7	16	-
<b>SOUTHEAST</b>																	
FT Gordon, GA	-	1	-	1	91	68	9	13	-	1	-	-	-	-	2	1	-
FT Benning, GA	1	-	1	-	99	86	43	56	-	1	1	-	-	-	18	77	-
FT Campbell, KY	2	-	1	1	305	249	81	57	1	1	-	-	-	1	7	16	-
FT Jackson, SC	-	-	-	-	116	144	44	32	2	1	-	-	-	3	24	-	-
FT Rucker, AL	-	-	-	-	29	22	6	10	-	-	-	-	-	-	4	4	-
FT Stewart, GA	-	2	-	-	66	177	79	91	-	1	119	-	-	-	10	41	-
<b>WESTERN</b>																	
FT Lewis, WA	-	-	-	2	231	260	54	42	-	2	86	81	4	-	-	-	-
FT Irwin, CA	-	-	-	-	16	24	2	9	-	-	-	-	-	-	13	-	-
FT Wainwright, AK	-	1	-	-	42	43	1	4	-	-	-	-	10	13	-	-	-
<b>OTHER LOCATIONS</b>																	
Hawaii	-	-	-	2	280	249	40	49	-	1	1	-	-	-	-	-	6
Europe	1	5	2	4	673	905	139	284	1	4	1	3	9	4	2	7	-
Korea	-	-	4	7	4	270	14	73	1	-	1	1	-	3	4	12	-
<b>Total</b>	<b>29</b>	<b>26</b>	<b>23</b>	<b>31</b>	<b>4,027</b>	<b>5,095</b>	<b>1,224</b>	<b>1,416</b>	<b>16</b>	<b>22</b>	<b>718</b>	<b>509</b>	<b>41</b>	<b>36</b>	<b>337</b>	<b>392</b>	

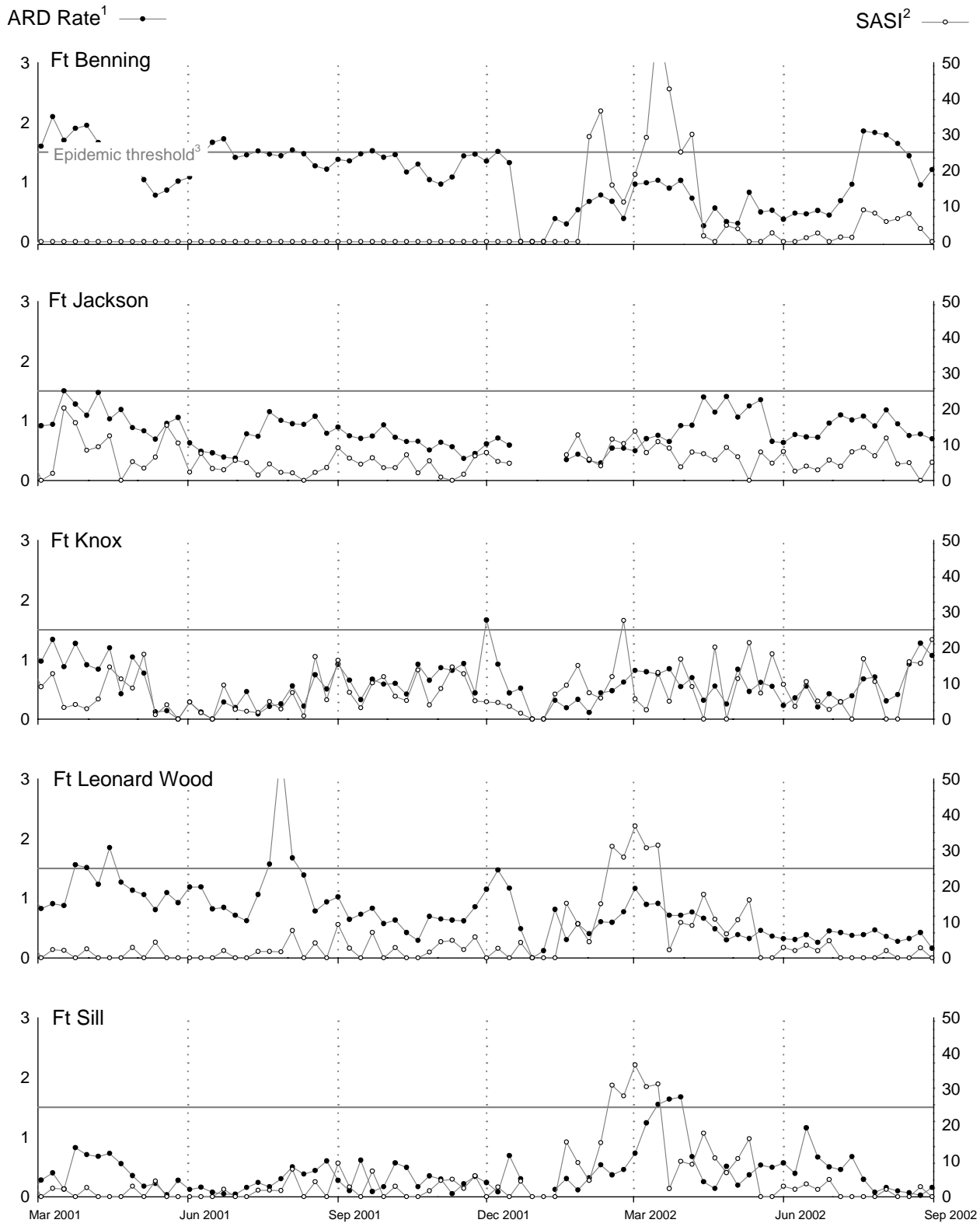
3. Primary and secondary.

4. Urethritis, non-gonococcal (NGU).

Note: Completeness and timeliness of reporting vary by facility.

Source: Army Reportable Medical Events Source: Army R Source: Army R Source: Army Reportable Medical Events System.

### Acute respiratory disease (ARD) and streptococcal pharyngitis (SASI), Army Basic Training Centers by week through August 31, 2002



<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  $\geq 1.5$  or SASI  $\geq 25.0$  for 2 consecutive weeks indicates an "epidemic"





Commander  
U.S. Army Center for Health Promotion  
and Preventive Medicine  
5158 Blackhawk Road  
Aberdeen Proving Ground, MD 21010-5403

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*Inquiries regarding content or material to be considered for publication should be directed to: Editor, Army Medical Surveillance Activity, Building T-20, Room 213 (Attn: MCHB-TS-EDM), 6900 Georgia Avenue, NW, Washington, D.C. 20307-5001. E-mail: editor@amsa.army.mil*

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