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# MSSMR

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## Medical Surveillance Monthly Report

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

USACEPMM

## Surveillance Trends

### **Malaria Experience Among US Active Duty Soldiers, 1997-1999**

For centuries, malaria has been a consistent and significant threat to the health and operational effectiveness of military forces. Malaria remains endemic throughout the tropics and continues to emerge in regions of the world that were recently considered malaria-free. For example, in 1993, *Plasmodium vivax* malaria reemerged in Korea, and its incidence in both civilian and military populations has increased steadily.<sup>1,2</sup> Due to the frequency and geographical scope of US military operations, soldiers are often exposed to malaria risk.

Medical surveillance of malaria in US servicemembers is necessary to characterize risks and to monitor the effectiveness of prevention strategies in operationally important regions. This report summarizes malaria cases reported through the Army's Reportable Medical Events System (RMES) from 1997 through mid-December 1999.

**General characteristics:** From January 1997 through mid-December 1999, 129 cases of malaria were reported among active duty soldiers, excluding Korean augmentees to the US Army (KATUSAs). All but two of the affected soldiers

were male; otherwise, cases generally reflected the demographic makeup of the Army. The majority of cases (n=108, 84%) were reported as *P. vivax*, seven (5%) were *P. falciparum*, and one (1%) was *P. ovale*. For the remainder (n=13, 10%), type was unknown or unspecified (figure 1). There were more cases reported in 1999 than in 1997 or 1998, which had similar case frequencies. In all three years, however, *P. vivax* cases were predominant.

**Locations of exposure:** For this summary, where not specified on case reports, military assignments in known malaria-endemic areas (e.g., Korea) at the time of or in the year prior to malaria diagnoses were considered the location of exposures. The majority of cases (n=95, 74%) were assigned to Korea at the time of or in the year prior to diagnoses (figure 2). Twenty-two (17%) other cases had presumed high-risk exposures in Africa, Southeast Asia, or Central America. Of the remaining 12 cases with unknown exposures, 7 were assigned in Hawaii or elsewhere in the Pacific. Consistent with prior surveillance, 74% of malaria cases with known or inferred locations of exposures were of Korean origin.

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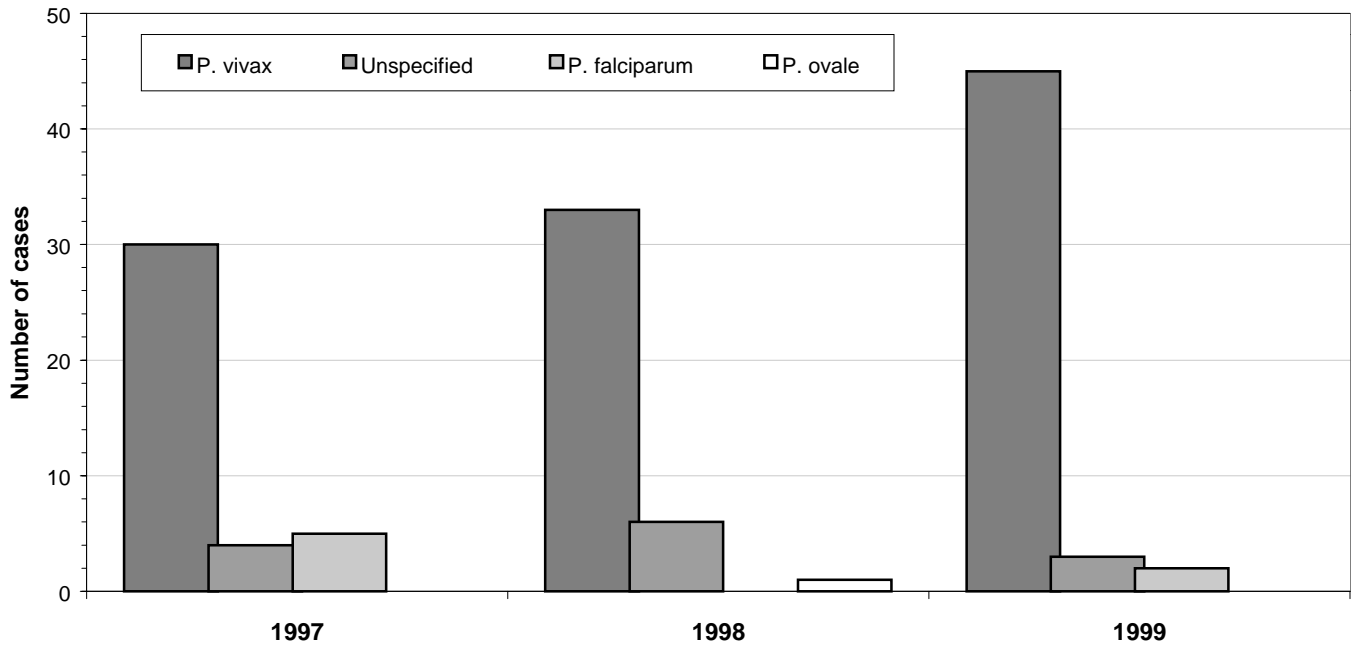
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**Figure 1. Malaria cases by year and type, active duty soldiers, 1997 - 1999**

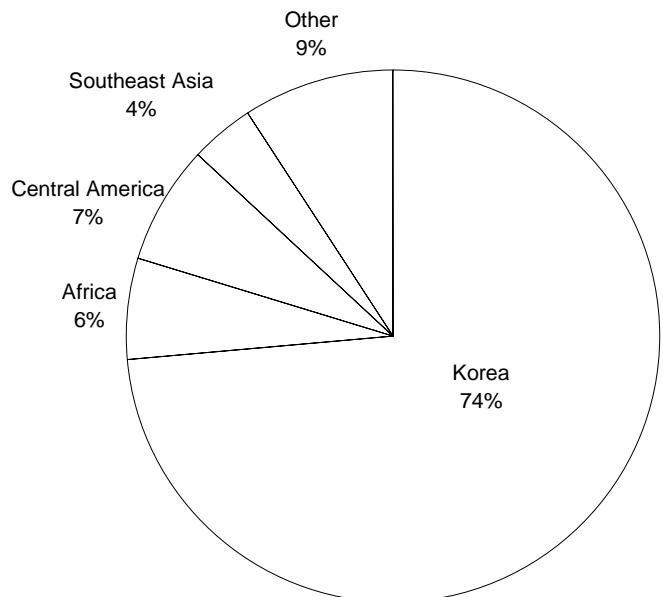


*Locations of treatment:* Malaria cases were diagnosed at 23 different military medical treatment facilities worldwide (figure 3, page 7). Eight medical treatment facilities diagnosed and treated 78% of all cases. Forty-two cases were reported from Yongsan (Korea); 12 from Fort Campbell, Kentucky; 11 from Fort Shafter, Hawaii; 11 from Fort Lewis, Washington; 8 from Fort Bragg, North Carolina; 7 from Fort Hood, Texas; 6 from Fort Stewart, Georgia; and 4 from Fort Bliss, Texas. Fifteen other military medical treatment facilities each reported three or fewer malaria cases. More than half (51/95, 54%) of the Korean-exposure malaria cases presented at 18 different medical treatment facilities outside of Korea.

**Editorial comment:** Current surveillance data indicate that the most significant malaria risk to US soldiers is related to service in Korea. Outside of Korea, malaria affects US soldiers only infrequently and sporadically. Almost half of malaria cases of presumed Korean origin have delayed clinical

presentations of generally 6-9 months after infection; more than half of malaria cases with a Korean origin are diagnosed and treated at medical *continued on page 7*

**Figure 2. Presumed locations of malaria acquisition, active duty soldiers, January 1997 - December 1999**



**Table I. Sentinel reportable events, US Army medical treatment facilities<sup>1</sup>**  
**Cumulative events for all beneficiaries, calendar year through November 30, 1998 and 1999<sup>2</sup>**

Reporting Facility	Number of reported events <sup>3</sup>		Environmental				Food- and Water-borne							
			Cold		Heat		Campylobacter		Giardia		Salmonella		Shigella	
	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999
<b>NORTH ATLANTIC RMC</b>														
Walter Reed AMC, DC	203	166	0	0	0	0	7	4	5	5	9	3	0	0
Aberdeen Prov. Grd., MD	39	24	0	0	2	0	0	0	0	0	0	0	0	0
FT Belvoir, VA	230	202	0	0	6	2	5	9	3	10	10	11	1	3
FT Bragg, NC	348	1,157	1	9	131	109	6	8	0	2	54	33	19	0
FT Drum, NY	180	200	14	15	0	3	1	1	2	4	1	1	0	0
FT Eustis, VA	220	202	0	1	21	3	2	2	0	0	4	4	5	1
FT Knox, KY	259	286	0	2	4	15	2	3	0	2	0	1	0	3
FT Lee, VA	68	169	0	0	0	1	0	0	0	0	0	2	0	0
FT Meade, MD	118	66	0	0	0	0	0	0	2	1	1	0	0	0
West Point, NY	48	63	0	0	1	2	0	0	0	0	1	0	0	1
<b>GREAT PLAINS RMC</b>														
Beaumont AMC, TX	363	276	0	0	0	5	0	0	0	0	3	4	4	2
Brooke AMC, TX	248	381	2	0	3	9	1	0	2	0	7	7	1	4
FT Carson, CO	687	697	2	2	5	0	5	5	4	10	3	6	0	1
FT Hood, TX	1,409	1,354	0	0	10	8	0	2	0	1	10	10	4	8
FT Huachuca, AZ	43	56	0	0	0	2	0	1	0	0	2	1	0	1
FT Leavenworth, KS	40	20	0	0	0	0	0	2	4	1	1	0	0	0
FT Leonard Wood, MO	193	167	1	4	5	3	0	0	1	1	1	2	0	0
FT Polk, LA	197	195	0	0	17	1	0	0	0	0	0	0	0	0
FT Riley, KS	328	220	1	1	0	11	0	0	5	0	1	0	3	0
FT Sill, OK	287	271	0	0	11	9	0	0	0	0	2	0	0	2
<b>SOUTHEAST RMC</b>														
Eisenhower AMC, GA	252	195	0	1	3	4	1	0	0	0	0	5	0	0
FT Benning, GA	334	380	2	0	28	100	4	1	5	2	8	14	3	2
FT Campbell, KY	579	560	1	2	1	10	7	19	12	8	4	18	35	87
FT Jackson, SC	338	402	1	0	3	0	1	0	0	0	2	1	1	0
FT Rucker, AL	35	52	0	0	0	4	0	0	0	0	0	0	0	1
FT Stewart, GA	454	462	1	0	29	20	0	0	0	3	2	5	2	0
<b>WESTERN RMC</b>														
Madigan AMC, WA	562	617	0	0	0	0	19	2	5	7	3	7	1	1
FT Irwin, CA	46	38	0	0	0	0	0	0	1	0	0	0	0	0
FT Wainwright, AK	69	117	9	44	0	0	1	0	0	0	0	0	0	0
<b>OTHER LOCATIONS</b>														
Tripler, HI	433	474	0	0	2	1	20	22	10	12	8	11	1	1
Europe	1,110	1,004	25	3	1	0	23	29	9	0	56	19	1	6
Korea	158	433	1	8	7	5	0	1	0	0	0	0	0	0
<b>Total</b>	<b>9,878</b>	<b>10,906</b>	<b>61</b>	<b>92</b>	<b>290</b>	<b>327</b>	<b>105</b>	<b>111</b>	<b>70</b>	<b>69</b>	<b>193</b>	<b>165</b>	<b>81</b>	<b>124</b>

1. Main and satellite clinics

2. Events reported by December 7, 1998 and 1999

3. Tri-Service Reportable Events, Version 1.0, July 1998

**Table I. (Cont'd) Sentinel reportable events, US Army medical treatment facilities<sup>1</sup>**  
**Cumulative events for all beneficiaries, calendar year through November 30, 1998 and 1999<sup>2</sup>**

Arthropod-borne				Vaccine Preventable						Sexually Transmitted							
Lyme Disease		Malaria		Hepatitis A		Hepatitis B		Varicella		Chlamydia		Gonorrhea		Syphilis <sup>4</sup>		Urethritis	
Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999	Cum. 1998	Cum. 1999
4	1	1	4	3	1	0	0	5	3	73	81	29	19	1	3	13	1
0	0	0	0	0	0	2	0	0	1	26	8	7	13	0	0	2	2
1	0	0	0	0	1	0	0	1	0	151	128	46	34	4	0	0	0
2	4	4	3	0	0	8	0	0	1	79	511	22	236	1	2	0	234
0	0	1	3	0	0	2	0	6	6	99	109	46	52	1	0	4	3
0	0	0	1	0	0	0	1	8	2	121	135	55	49	0	0	0	0
1	0	1	0	0	0	0	0	20	1	173	199	52	56	0	1	0	0
0	0	0	0	0	0	1	1	0	0	45	134	22	28	0	3	0	0
2	3	0	0	0	0	0	0	7	1	55	52	11	6	3	0	34	0
9	18	0	0	1	0	1	2	2	1	24	33	6	3	0	0	0	0
0	0	2	1	0	1	0	0	10	2	265	220	69	20	1	0	0	13
0	2	1	2	4	3	4	4	2	2	159	171	46	54	1	0	0	1
0	0	0	0	0	0	0	1	3	2	457	503	92	90	1	0	113	69
0	1	1	4	0	1	10	1	3	3	791	788	361	221	3	4	203	264
0	0	0	0	0	1	0	0	0	0	28	43	11	5	0	0	0	0
0	0	2	0	0	0	0	0	0	0	28	14	5	3	0	0	0	0
0	0	0	1	0	0	0	1	21	13	98	94	36	29	0	1	24	8
0	0	1	1	0	0	0	0	0	0	137	154	40	35	1	2	0	0
0	0	2	0	0	0	0	0	3	0	242	153	69	55	1	0	0	0
0	0	1	1	0	0	10	6	1	6	134	146	91	59	0	2	36	30
0	0	1	0	0	1	1	3	0	2	217	154	26	13	0	1	0	0
0	0	1	1	0	1	2	0	2	2	190	137	82	86	0	1	3	0
1	1	2	5	0	0	0	0	5	1	348	277	155	127	2	0	0	0
0	0	1	0	3	0	0	0	7	6	231	330	84	51	2	6	0	0
0	0	0	0	0	0	0	0	0	0	30	34	5	13	0	0	0	0
0	0	1	4	0	0	1	1	3	4	135	148	112	91	1	0	164	184
1	0	3	6	0	1	0	1	3	0	328	396	53	72	0	1	136	112
0	0	0	0	0	0	2	5	0	0	38	29	5	4	0	0	0	0
0	0	0	1	0	0	2	1	0	2	53	58	3	9	0	0	0	0
0	0	3	6	1	0	3	1	0	0	265	293	77	72	0	0	0	0
14	16	3	2	3	2	25	10	13	13	703	684	124	198	13	3	0	1
0	0	17	24	4	0	14	14	2	3	77	325	22	12	3	15	0	0
<b>35</b>	<b>46</b>	<b>49</b>	<b>70</b>	<b>19</b>	<b>13</b>	<b>88</b>	<b>53</b>	<b>127</b>	<b>77</b>	<b>5,800</b>	<b>6,541</b>	<b>1,864</b>	<b>1,815</b>	<b>39</b>	<b>45</b>	<b>732</b>	<b>922</b>

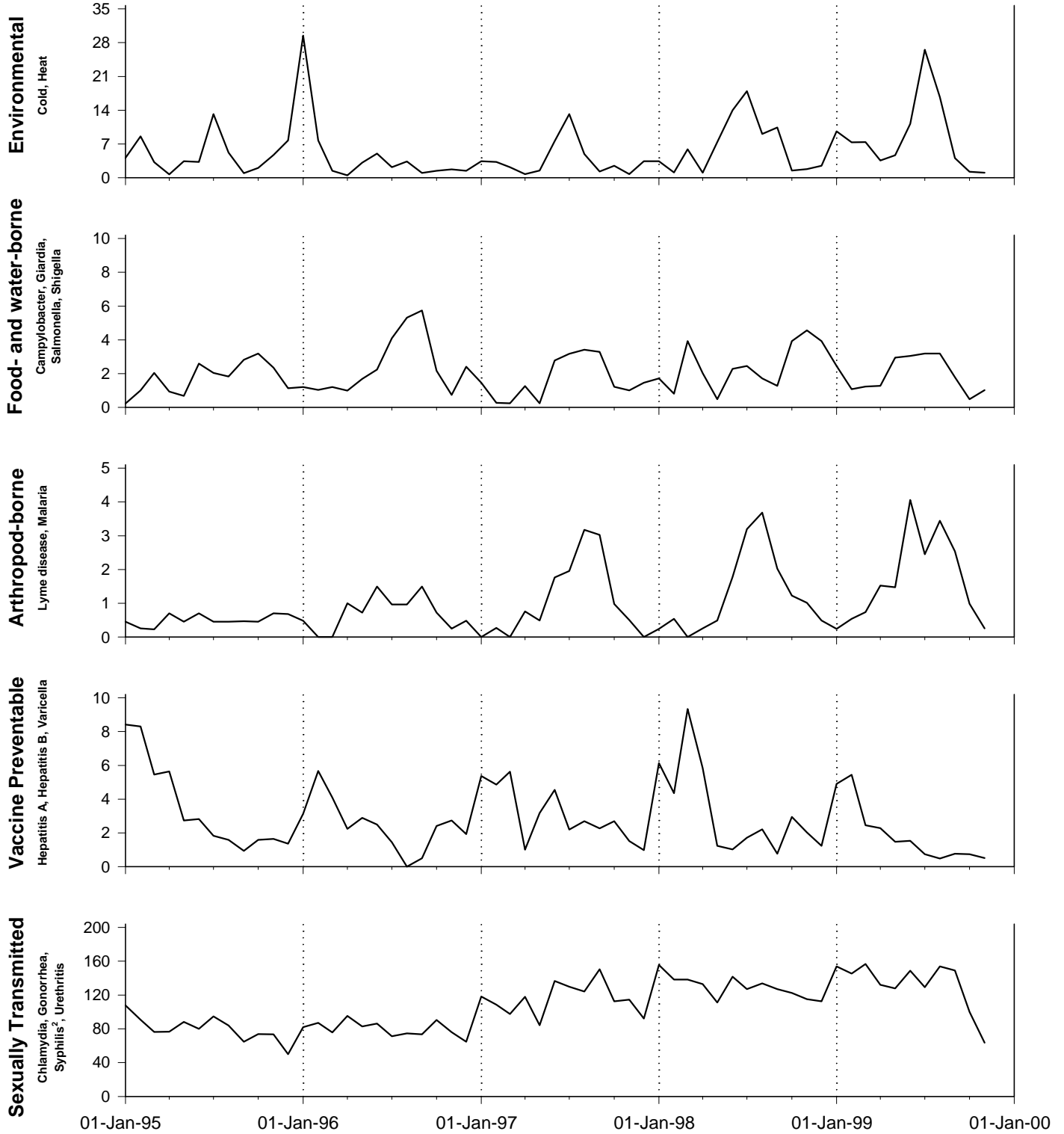
## 4. Primary and Secondary

Note: Completeness and timeliness of reporting varies by facility

Source: Army Reportable Medical Events System

**Figure I. Sentinel reportable events (grouped), active duty soldiers, January 1995 - November 1999<sup>1</sup>**

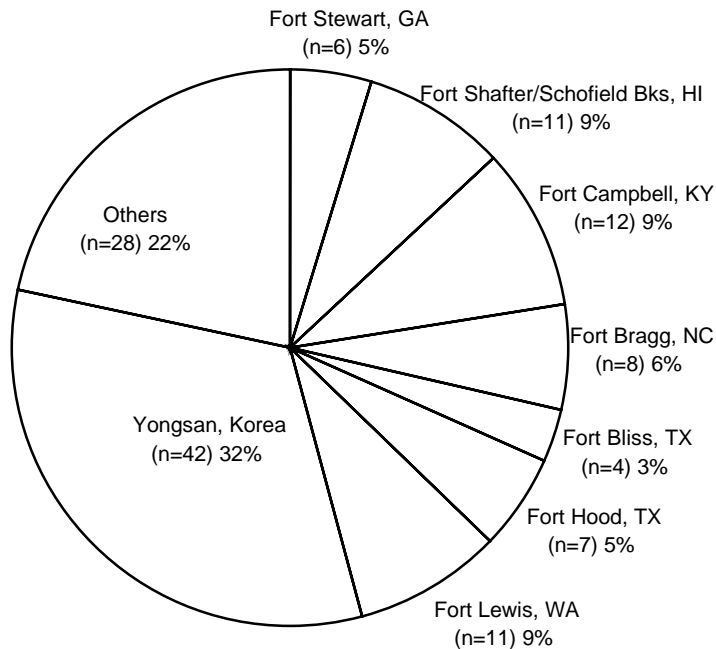
Cases / 10,000 person-years



1. Events reported by December 7, 1999  
 2. Primary and Secondary

Continued from page 3

**Figure 3. Treatment location for malaria cases, active duty soldiers, January 1997 - December 1999**



facilities outside of Korea. Thus, medical providers throughout the military health system should consider malaria in differential diagnoses of febrile servicemembers with compatible clinical syndromes, particularly when there is a history of service in Korea. Military medical providers and public health officials must maintain vigilance regarding malaria prevention, diagnosis, treatment, and surveillance.

*Analysis and report provided by Sandra Lesikar, PhD, Analysis Group, Army Medical Surveillance Activity.*

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## Surveillance Trends

### **Incidence of Diabetes Mellitus Among Active Duty Servicemembers, US Armed Forces, 1998**

Diabetes mellitus is a chronic disorder of carbohydrate metabolism that leads to abnormally high levels of glucose in the blood. Type I, or insulin-dependent, diabetes is caused by little or no secretion of insulin by the pancreas and is typically first diagnosed in childhood. Type II, or non-insulin-dependent, diabetes occurs later in life and is caused by either inadequate secretion of, or abnormal physiologic responses to, insulin. Type I diabetes requires daily insulin injections. Type II diabetes often is controlled through combinations of weight control, diet management, oral hypoglycemic drugs, and exercise. Complications of diabetes include coronary, cerebral, and peripheral vascular diseases, end-stage renal disease, neuropathies, and blindness. Diabetes

affects an estimated 15.7 million people in the United States.<sup>1</sup>

Insulin-dependent diabetes mellitus is a disqualifying condition for entry to US military service.<sup>2</sup> However, there remains the potential for persons already in service to develop non-insulin-dependent diabetes. The purpose of this study was to estimate the incidence of diabetes mellitus overall and in subgroups of active duty US military servicemembers.

*Methods:* Incident cases were defined as active duty US military personnel with primary diagnoses (inpatient or outpatient) of diabetes mellitus (ICD-9-CM code: 250) during calendar year 1998. Servicemembers diagnosed with diabetes prior to 1998, those with diagnoses within 45

days of entering active service (n=9), and those with concurrent diagnoses of gestational diabetes (ICD-9-CM code: 648) (n=9) were excluded.

Exposure to risk was quantified in terms of person-time, which was calculated by summing the periods of military service of all active duty personnel during calendar year 1998. Incidence rates (per 1,000 person-years) were calculated by dividing the number of incident cases per stratum by the appropriate stratum-specific person-time estimates.

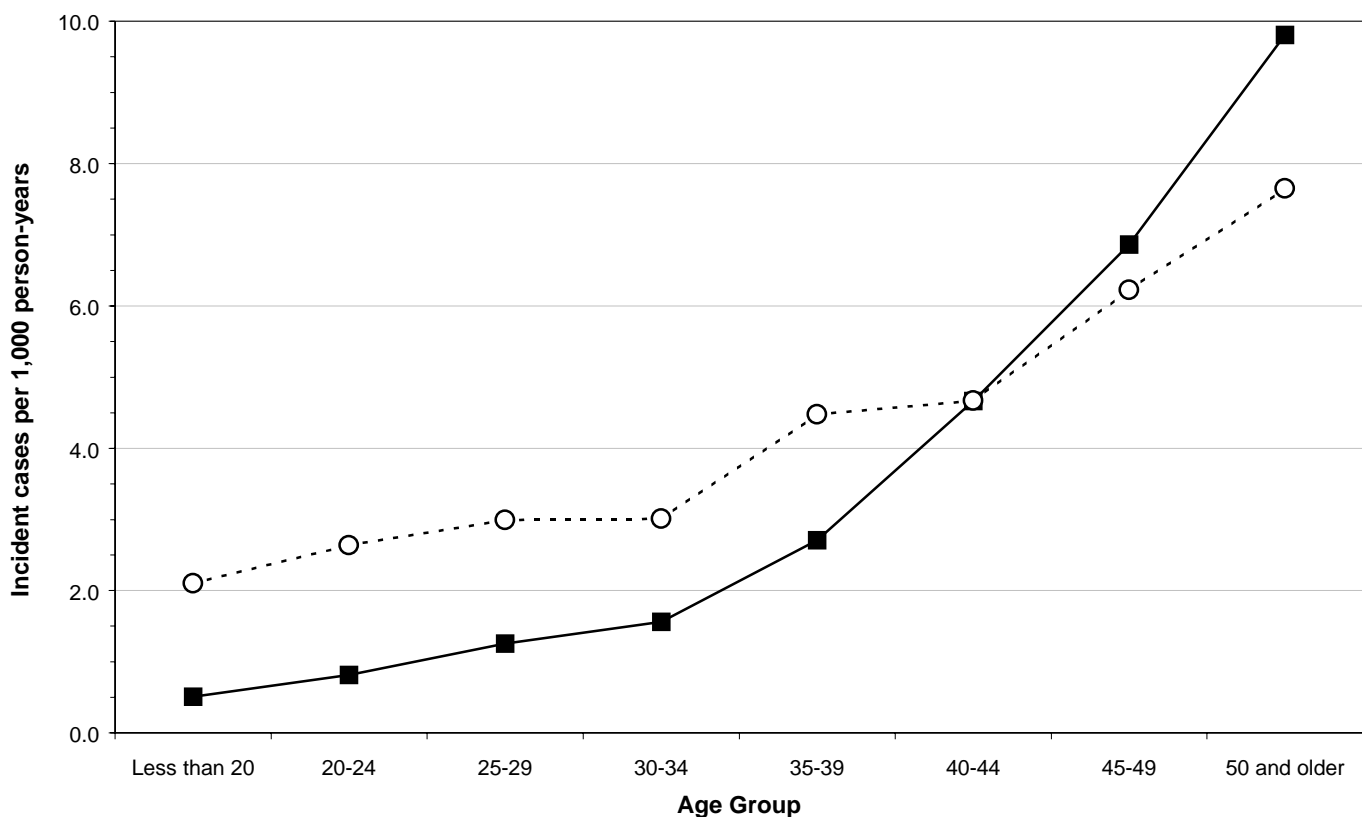
**Results:** In 1998, there were 2,662 cases of diabetes mellitus diagnosed among active duty servicemembers. The crude annual incidence was 1.9 per 1,000 person-years. Among both males and females, rates increased monotonically with age. Below age 35, rates were higher among females than males; after age 35, rates were higher among males. In addition, the incidence rates increased with age much more rapidly among males than females after age 35 (figure 1).

Compared to white non-Hispanic (WNH) servicemembers, crude incidence rates were more than twofold higher among Asian (rate ratio [RR] vs WNH: 2.66) and black non-Hispanic (RR vs WNH: 2.02) and approximately one-third higher among Hispanic (RR vs WNH: 1.32) and Native American (RR vs WNH: 1.33) servicemembers (table 1).

**Editorial comment:** Military servicemembers are required to maintain (and to regularly demonstrate) their physical fitness and to comply with height-weight standards. Servicemembers who are overweight or unfit by military standards must either regain compliance or leave military service. Since risk factors for adult onset diabetes mellitus include obesity and sedentary lifestyle, active duty servicemembers should constitute a relatively low risk population for diabetes mellitus.

In this study, the crude incidence of diabetes mellitus was 1.9 per 1,000 person-years. The rate is approximately fourfold higher than that esti-

**Figure 1. Diabetes mellitus incidence, active duty servicemembers, US Armed Forces, 1998**





**Table 1. Incident diabetes cases, by gender, race, age, and service, 1998**

Characteristics	Males		Females		Total	
	N	Rate/1,000 person-years	N	Rate/1,000 person-years	N	Rate/1,000 person-years
<b>Age group</b>						
Less than 20	53	0.51	45	2.10	98	0.82
20-24	287	0.81	172	2.64	459	1.11
25-29	313	1.25	124	2.99	437	1.54
30-34	317	1.56	84	3.01	401	1.72
35-39	481	2.71	102	4.48	583	2.93
40-44	352	4.67	51	4.67	403	4.66
45-49	177	6.86	22	6.22	199	6.65
50 and older	76	9.81	6	7.65	82	9.11
<b>Race/ethnicity</b>						
Asian	160	3.97	24	3.86	184	3.96
Black	588	2.72	241	3.93	829	3.01
Hispanic	152	1.77	40	3.09	192	1.97
Indian	10	1.15	10	5.21	20	1.98
Other	48	2.33	11	2.86	59	2.37
White	1,098	1.33	280	2.60	1,378	1.49
<b>Service</b>						
Army	740	1.82	281	3.98	1,021	2.16
Air Force	570	1.90	168	2.57	738	2.03
Marines	104	0.64	14	1.46	118	0.70
Navy	642	1.95	143	2.94	785	2.09
<b>Total</b>	<b>2,056</b>	<b>1.72</b>	<b>606</b>	<b>3.12</b>	<b>2,662</b>	<b>1.91</b>

mated in a study of US Army aviators<sup>3</sup> (who are younger and more often male than the general military population). In 1994, the rate of new diagnoses of diabetes mellitus in the general US population (younger than 44 years old) was estimated as 1.6 per 1,000 person-years. It is estimated that nearly one-third of all diabetes cases are undiagnosed.<sup>4</sup>

In this study, incidence rates increased with age, especially among men, and were higher among members of racial or ethnic minorities. These demographic relationships are consistent with those documented in civilian populations.

There are several sources of error inherent to the case definition methodology used for this study. Cases were defined from diagnoses recorded on routine hospitalization and outpatient clinic records. These diagnoses were not independently confirmed; therefore, some cases may

have been misclassified. On the other hand, an unknown number of incident cases undoubtedly remained undetected during the study period. The overall effect of these sources of bias with competing impacts is unclear.

*Analysis and report provided by Karen E. Campbell, MS, and Scott D. Barnett, PhD, Analysis Group, Army Medical Surveillance Activity.*

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## Surveillance Trends

### Completeness and Timeliness of Reporting of Hospitalized Notifiable Cases, US Army, January 1999 - June 1999

The US Army began conducting automated reporting of notifiable medical conditions in 1994. In June 1998, the Office of the Army Surgeon General informed medical activity commanders of the requirement to report medical events specified in the tri-service consensus list (*Tri-service Reportable Events: Guidelines and Case Definitions, Version 1.0, July 1998*).<sup>1</sup> In November 1998, the Assistant Secretary of Defense for Health Affairs directed that the consensus list be used by all the Service medical departments for medical events reporting and that the case reports of all the Services be integrated in the Defense Medical Surveillance System (DMSS).<sup>2</sup> This report is the sixth semiannual assessment of Armywide reporting of hospitalized notifiable medical events among active duty soldiers.

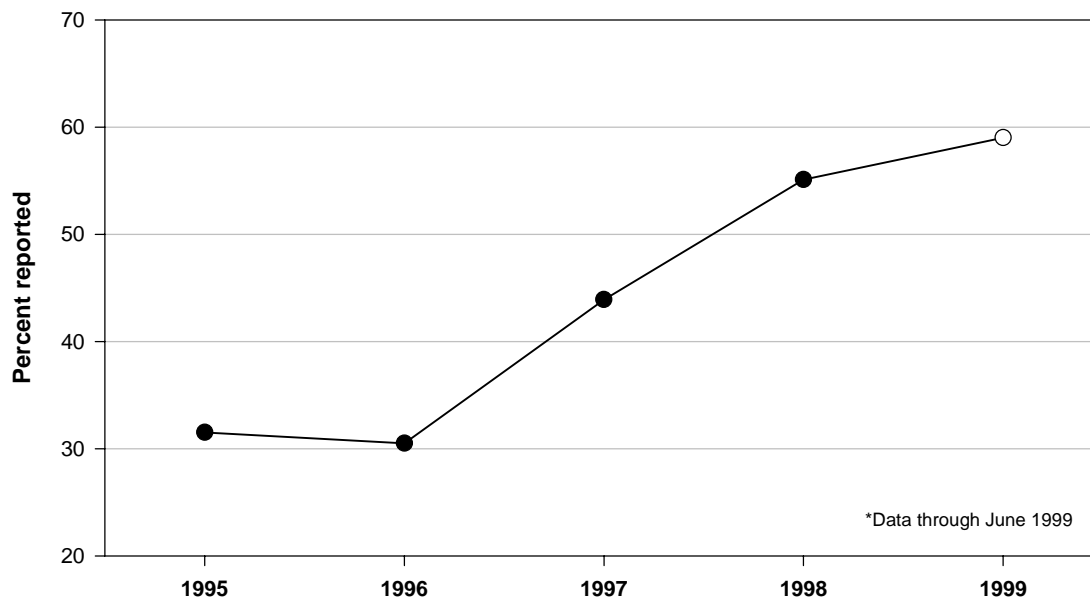
**Completeness of reporting, hospitalizations overall:** Between January and June 1999, there were 134 hospitalizations of active duty soldiers for conditions considered reportable (based on

ICD-9-CM coded discharge diagnoses). Of these, 79 (59%) were reported through the Army's Reportable Medical Events System (RMES). The completeness of reporting in 1999 exceeded that in 1998, continuing the long-term trend of increasing reporting completeness (figure 1).

**Completeness of reporting, hospitalizations by diagnosis:** During the first six months of 1999, the largest number of reportable hospitalizations were for heat injuries (n=47), varicella (n=44), and malaria (n=12). Completeness of reporting of these diagnoses were 72%, 50%, and 92%, respectively (table 1).

**Completeness of reporting, by site:** There continued to be significant variability in reporting completeness across sites. Of the 24 military treatment facilities with at least one reportable hospitalization, two reported all their cases, thirteen reported 50% or more, three reported less than 50% of their cases, and 6 reported none (table 2, page 12).

**Figure 1. Completeness of reporting, reportable hospitalizations among active duty soldiers, 1995 - 1999\***



*Timeliness of reporting, hospitalized cases* (figure 2, page 12): Of hospitalized cases reported during the period, approximately half were reported within 1 week of hospital discharge (approximately 90% were reported within 1 month). The timeliness of reporting during 1999 continued a gradual but inexorable trend towards less timely reporting of hospitalized notifiable cases.

**Editorial comment:** For the past 3 years, AMSA has periodically compared reported cases of

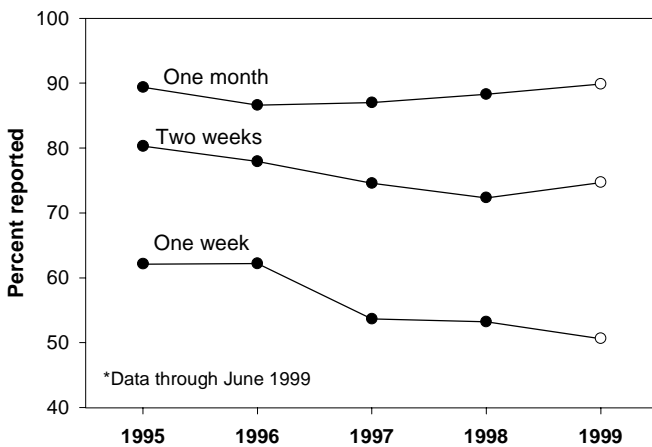
notifiable conditions with counterpart diagnoses reported through standard inpatient data systems. These assessments suggest that the completeness of notifiable disease reporting Armywide continues to gradually but steadily improve. Further improvements could most easily be achieved through enhanced vigilance of the most frequently missed diagnoses (e.g., heat injuries and varicella) and by improvements at sites that do minimal or no reporting. Finally, estimates of completeness that are based on methods used for semiannual

**Table 1. Completeness of reporting, reportable hospitalizations among active duty soldiers, by diagnosis, 1997-1999\***

Reportable event	1997			1998			1999*		
	Number reported	Total	Percent	Number reported	Total	Percent	Number reported	Total	Percent
Amebiasis	-	-	-	0	1	0	0	1	0
Campylobacter infection	0	2	0	-	-	-	-	-	-
Carbon monoxide poisoning	0	6	0	3	9	33	-	-	-
Coccidioidomycosis	0	3	0	-	-	-	1	1	100
Cold weather injury	1	4	25	6	6	1	1	2	50
Dengue fever	-	-	-	1	1	1	-	-	-
Giardiasis	1	1	100	-	-	-	-	-	-
Gonorrhea	3	4	75	5	6	83	0	1	0
Heat	55	89	62	86	135	64	34	47	72
Hepatitis A, acute	1	5	20	2	3	67	0	2	0
Hepatitis B, acute	2	6	33	2	4	50	3	5	60
Hepatitis C, acute	0	3	0	0	1	0	0	1	0
Influenza	0	4	0	1	11	9	0	4	0
Leishmaniasis	17	30	57	1	2	50	-	-	-
Leprosy	1	3	33	-	-	-	-	-	-
Lyme disease	1	2	50	1	1	1	0	1	0
Malaria	26	31	84	25	29	86	11	12	92
Measles	-	-	-	0	1	0	0	0	0
Meningococcal disease	-	-	-	-	-	-	2	3	67
Pneumococcal pneumonia	0	17	0	0	16	0	4	7	57
Rocky Mountain spotted fever	-	-	-	0	1	0	-	-	-
Salmonellosis	6	9	67	2	4	50	-	-	-
Shigellosis	0	1	0	0	1	0	-	-	-
Syphilis	1	2	50	0	1	0	-	-	-
Tetanus	-	-	-	1	1	100	-	-	-
Tuberculosis	1	7	14	3	6	50	1	3	33
Tularemia	1	1	100	-	-	-	-	-	-
Vaccine adverse event	-	-	-	0	1	0	0	0	0
Varicella	60	173	35	49	100	49	22	44	50
<b>Total</b>	<b>177</b>	<b>403</b>	<b>44</b>	<b>188</b>	<b>341</b>	<b>55</b>	<b>79</b>	<b>134</b>	<b>59</b>

\*Data through June 1999

**Figure 2. Timeliness of reporting, reportable hospitalizations, active duty soldiers, 1995-1999\***



assessments may underestimate actual reporting completeness since (a) some ICD-9-CM codes are not specific for the reportable condition alone (i.e., they include clinical states that are not reportable); and (b) diagnoses made during hospitalizations may not be based on criteria required to confirm reportable cases.

#### References

1. Memorandum, HQ, US Army Medical Command, 17 June 1998, subject: Tri-service reportable events list.
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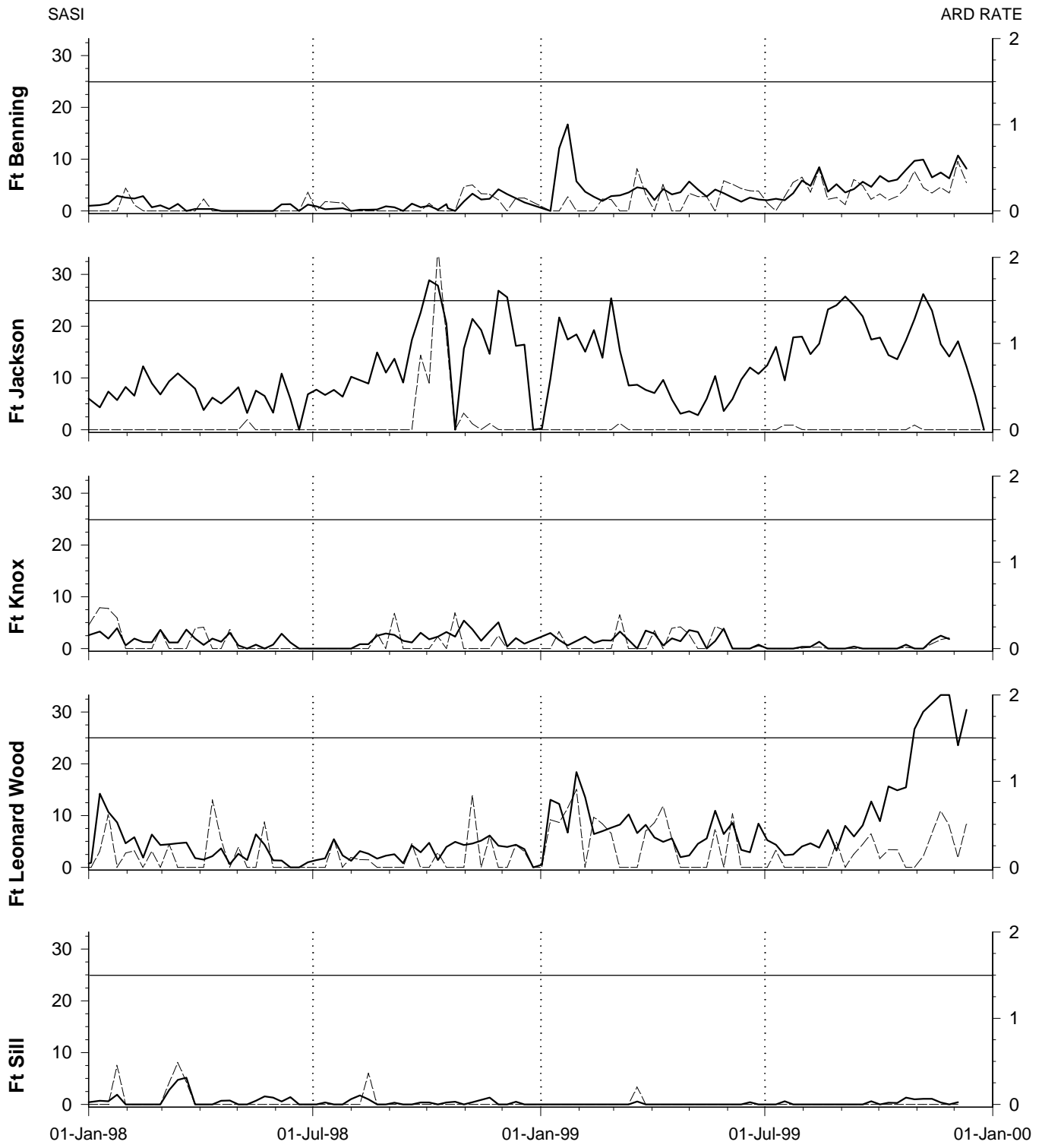
**Table 2. Reportable events and hospitalizations among active duty soldiers, by MTF, 1997-1999\***

MTF	1997			1998			1999*		
	Number reported	Total	Percent	Number reported	Total	Percent	Number reported	Total	Percent
A	2	24	8	2	14	14	6	6	100
B	0	1	0	-	-	-	1	1	100
C	3	43	7	22	32	69	12	13	92
D	12	15	80	6	8	75	5	6	83
E	10	23	43	9	14	64	3	4	75
F	6	17	35	22	28	79	3	4	75
G	33	39	85	29	52	56	21	29	72
H	24	32	75	17	26	65	9	13	69
I	17	18	94	7	8	88	4	6	67
J	2	14	14	2	5	40	2	3	67
K	0	2	0	1	4	25	2	3	67
L	6	9	67	3	5	60	2	3	67
M	1	5	20	8	12	67	3	5	60
N	9	13	69	7	19	37	2	4	50
O	3	8	38	1	3	33	1	2	50
P	9	12	75	2	10	20	1	3	33
Q	20	33	61	7	12	58	1	5	20
R	9	35	26	9	17	53	1	6	17
S	0	4	0	2	4	50	0	4	0
T	0	5	0	2	4	50	0	4	0
U	1	7	14	19	21	90	0	3	0
V	9	23	39	9	20	45	0	3	0
W	0	8	0	2	16	13	0	2	0
X	1	12	8	0	6	0	0	2	0
Y	0	1	0	0	1	0	-	-	-
<b>Total</b>	<b>177</b>	<b>403</b>	<b>44</b>	<b>188</b>	<b>341</b>	<b>55</b>	<b>79</b>	<b>134</b>	<b>59</b>

\*Data through June 1999

**Figure II. Acute respiratory disease (ARD) surveillance update  
US Army initial entry training centers**

<p>— ARD rate = (ARD hospitalizations / # trainees) x 100</p> <p>- - - SASI* = (ARD rate x strep rate**)</p>	<p>SASI ≥ 25 or ARD rate ≥ 1.5% for 2 weeks defines an ARD epidemic</p>
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\* SASI (Strep ARD Surveillance Index) is a reliable predictor of serious strep-related morbidity

\*\* Strep rate = (Group A beta-hemolytic strep(+) / # cultures) x 100

*Surveillance Trends*

## Completeness and Timeliness of Reporting of Notifiable Medical Events, Navy Disease Reporting System, January 1998 - June 1999

The Navy Disease Reporting System (NDRS) is the notifiable medical events<sup>1</sup> reporting system of the US Navy. Briefly, regional Navy Environmental and Preventive Medicine Units (NEPMUs) are responsible for tracking notifiable medical events in their areas of responsibility and for transmitting reports to the Navy Environmental Health Center (NEHC). NEHC is responsible for tracking the overall experiences of the Navy and Marine Corps and for transmitting reports to the Army Medical Surveillance Activity for inclusion in the Defense Medical Surveillance System (DMSS).<sup>2</sup> This report summarizes the completeness and timeliness of reporting of hospitalized cases of reportable medical events by US Navy medical treatment facilities during the period January 1998 through June 1999. Data for the analyses were ascertained from records pro-

vided to the DMSS by NEHC. Estimation methods were identical to those used to track US Army reporting performance since 1997.<sup>3</sup>

*Completeness of reporting, overall* (table 1): Between January 1998 and June 1999, there were 254 hospitalizations of Navy and Marine servicemembers that were presumed reportable. Thirty-three (13%) of all presumably notifiable hospitalizations were reported through NDRS. In general, reporting completeness (and numbers of NDRS reports overall) declined over the period (Jan-Jun 1998: 15%; Jul-Dec 1998: 13%; Jan-Jun 1999: 11%).

*Completeness of reporting, by site* (table 1): Three sites (Portsmouth, San Diego, Camp LeJeune) were responsible for 79% of reported notifiable hospitalizations and 86% of NDRS reports overall. Twelve sites reported no notifiable

**Table 1. Completeness of reporting, reportable hospitalizations among active duty sailors and marines, by medical treatment facility, January 1998 - June 1999\***

MTF	Jan - Jun 1998				Jul - Dec 1998				Jan - Jun 1999			
	Number reported	Total	%	NDRS reports	Number reported	Total	%	NDRS reports	Number reported	Total	%	NDRS reports
A	1	5	20	284	5	13	39	229	3	10	30	197
B	4	10	40	674	2	17	12	670	1	6	17	352
C	0	12	0	0	0	12	0	0	1	7	14	3
D	8	16	50	85	2	9	22	30	1	9	11	20
E	0	7	0	0	0	12	0	0	0	11	9	0
H	0	9	0	0	2	8	25	25	0	5	0	0
I	0	1	0	63	0	1	0	45	0	3	0	18
L	0	3	0	27	0	1	0	18	0	3	0	26
M	0	2	0	13	0	1	0	4	0	3	0	12
F	0	6	0	0	2	3	67	4	0	2	0	2
K	0	3	0	0	0	6	0	0	0	2	0	0
G	1	7	14	3	0	2	0	2	0	1	0	37
J	0	4	0	22	0	6	0	28	0	1	0	26
N	0	3	0	0	0	2	0	0	0	1	0	0
O	0	1	0	0	-	-	-	0	0	1	0	0
P	0	1	0	0	0	1	0	0	-	-	-	4
Q	0	1	0	8	-	-	-	8	-	-	-	3
R	0	1	0	0	-	-	-	5	-	-	-	0
S	-	-	-	0	0	2	0	0	-	-	-	0
T	-	-	-	0	0	1	0	0	-	-	-	0
<b>Total</b>	<b>14</b>	<b>89</b>	<b>15</b>	<b>1146</b>	<b>13</b>	<b>93</b>	<b>13</b>	<b>1025</b>	<b>6</b>	<b>65</b>	<b>11</b>	<b>630</b>

hospitalizations, and six sites made no NDRS reports of any kind.

*Completeness of reporting, by diagnosis* (table 2): Varicella (n=69), heat stroke (n=41), and heat exhaustion (n=30) accounted for more than half (140/254, 55%) of all reportable hospitalizations. Of these relatively frequent reportable events, 17%, 10%, and 2%, respectively, were reported. All hospitalized cases of vivax malaria (n=2), mumps (n=1), and *E.coli* O157 (n=1) were reported.

*Timeliness of reporting, hospitalized cases* (figure 1): Overall and during each 6-month interval, more than two-thirds of notifiable hospitalized cases were reported within 1 week, and more than 90% within 30 days of hospital discharge.

**Editorial comment:** Summaries of performance such as those in this report may assist local sites, NEPMUs, and NEHC to identify systematic and focal problems in their current notifiable medical events surveillance operations. Endeavors to improve overall performance should include periodic assessments of NDRS reporting completeness and timeliness.

*Analyses for this report contributed by LT Kimberly McDonald, MD, MPH, MC, USN.*

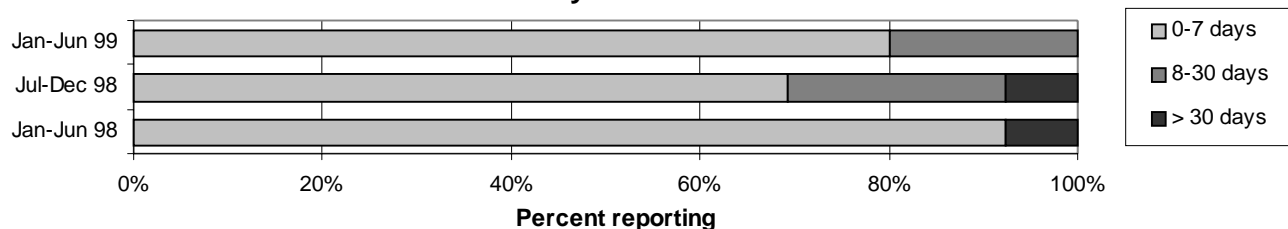
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1. Tri-service reportable events: guidelines and case definitions, version 1.0, July 1998.
2. Navy Environmental Health Center. Naval disease reporting system (NDRS). *Naval Medical Surveillance Report (NMSR)*, 1998, 1:4, 2.
3. USACHPPM. Completeness and timeliness of required disease reporting: reportable hospitalizations among active duty soldiers, CY1996. *MSMR*, 1997, 3:3, 8.

**Table 2. Completeness of reporting, reportable hospitalizations among sailors and marines, by diagnosis, January 1998 - June 1999**

Reportable event	Number reported	Total	%
Amebiasis	0	1	0
Campylobacteriosis	0	4	0
Carbon monoxide intoxication	0	1	0
Coccidioidomycosis	0	2	0
Cold weather inj, frostbite	0	1	0
Cold weather inj, hypothermia	0	3	0
Cold weather inj, immersion type	0	1	0
Dengue fever	0	1	0
E Coli O157:H7	1	1	100
Encephalitis	0	6	0
Gonorrhea	2	6	33
Heat exhaustion	3	30	10
Heat stroke	1	41	2
Hepatitis A, acute	1	3	33
Hepatitis B, acute	3	7	43
Hepatitis C, acute	0	1	0
Influenza	0	3	0
Legionellosis	0	8	0
Leptospirosis	0	5	0
Lyme disease	1	2	50
Malaria, falciparum	1	2	50
Malaria, unspecified	0	3	0
Malaria, vivax	2	2	100
Meningococcal meningitis	0	1	0
Meningococcal septicemia	1	2	50
Mumps	1	1	100
Pneumococcal pneumonia	1	22	5
Rheumatic fever	0	2	0
Rocky Mountain spotted fever	0	1	0
Salmonellosis	0	2	0
Shigellosis	0	1	0
Toxic shock syndrome	0	1	0
Tuberculosis, pulmonary	3	17	18
Typhoid	0	1	0
Varicella, adult only	12	69	17
<b>Total</b>	<b>33</b>	<b>254</b>	<b>13</b>

**Figure 1. Timeliness of reporting, reportable hospitalizations among sailors and marines, January 1998 - June 1999**



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