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Army Medical Surveillance Activity (AMSA)

Current and past issues of the MSMR can be viewed online at the following internet address: *amsa.army.mil*

Data in the MSMR are 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.

Surveillance trends

Tri-service Consensus List of Reportable Medical Events: Completeness and Timeliness of Reporting in the Army, January – June 1998

For the past two years, the AMSA has periodically assessed the completeness and timeliness of reporting of notifiable medical events by comparing hospitalizations of active duty soldiers for presumed reportable conditions with reports submitted through the Army's automated reporting system. This report updates the assessment of Army performance through June 1998. In addition, this report describes major enhancements to DoD and service-specific notifiable medical events surveillance efforts and introduces procedures for assessing the reporting of notifiable medical events that are managed in outpatient settings.

Tri-service list of reportable medical events: In 1997, the DoD's Joint Preventive Medicine Policy Group endorsed the need for a tri-service consensus list of reportable medical events. During the latter half of 1997, public health officers representing each of the services established the following criteria for reportable medical events: first, the event must have a clear case definition and a single code in the International Classification of Diseases, 9th revision (ICD-9-CM); second, for each reportable event, an intervention must be available and/or a public health response must be indicated; third, a sufficient and timely source of the required information must not already exist; and fourth, the event must represent an inherent and significant public health (i.e., potential to affect large numbers of people, to be widely transmitted within a population, or to have severe clinical manifestations) and/or military operational (i.e., potential to disrupt military training, deployment, or operations) threat, and/or the event must be commonly reportable by state or federal laws, regulations, or guidelines. Seventy medical events that met these preestablished criteria were included in the Tri-Service consensus list of reportable medical events (table 1).

The document *Tri-service Reportable Events: Guidelines and Case Definitions, Version 1.0, July 1998* specifies clinical case definitions, diagnostic criteria, and applicable ICD-9-CM diagnostic codes for the 70 reportable events. This document was distributed to medical treatment facilities (MTFs) beginning in June 1998 and is accessible electronically through the Army Medical Surveillance Activity (AMSA) web site at *amsa.army.mil*. Also in June 1998, the Office of the Army Surgeon General informed medical activity commanders worldwide of the requirement to report medical events included in the new tri-service consensus list.[1] Finally, in November 1998, the Office of the Assistant Secretary of Defense for Health Affairs directed the services to use the

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Table 1. Tri-Service List of Reportable Events

- Amebiasis
- Anthrax
- Biological warfare agent exposure*
- Botulism
- Brucellosis
- Campylobacter
- Carbon monoxide poisoning
- Chemical agent exposure
- Chlamydia
- Cholera
- Coccidioidomycosis
- Cold weather injury (all)
  - Frostbite
  - Hypothermia
  - Immersion type
  - Unspecified
- Cryptosporidiosis*
- Cyclospora*
- Dengue fever
- Diphtheria
- E. coli O157:H7*
- Ehrlichiosis
- Encephalitis
- Filariasis*
- Giardiasis
- Gonorrhea
- H. influenzae, invasive
- Hantavirus infection*
- Heat injuries (all)
  - Exhaustion
  - Stroke
- Hemorrhagic fever
- Hepatitis A
- Hepatitis B
- Hepatitis C
- Influenza
- Lead poisoning
- Legionellosis
- Leishmaniasis (all)
  - Cutaneous
  - Mucocutaneous
  - Unspecified
  - Visceral
- Leprosy
- Leptospirosis
- Listeriosis
- Lyme disease
- Malaria (all)
  - Falciparum
  - Malariae
  - Ovale
  - Unspecified
  - Vivax
- Measles
- Meningococcal disease*
  - Meningitis
  - Septicemia
- Mumps
- Pertussis
- Plague
- Pneumococcal pneumonia
- Poliomyelitis
- Q Fever
- Rabies
- Relapsing fever
- Rheumatic fever, acute
- Rift valley fever
- Rocky mountain spotted fever
- Rubella
- Salmonellosis
- Schistosomiasis
- Shigellosis
- Smallpox*
- Streptococcus, group A, invasive*
- Syphilis (all)
  - Congenital
  - Latent
  - Primary/Secondary
  - Tertiary
- Tetanus
- Toxic shock syndrome
- Trichinosis
- Trypanosomiasis
- Tuberculosis, pulmonary
- Tularemia
- Typhoid fever
- Typhus fever
- Urethritis, non-gonococcal
- Vaccine, adverse event
- Varicella, active duty only
- Yellow fever

* New to Army Service in 1998

Figure 1. Completeness of reporting, reportable hospitalizations among active duty soldiers, 1995 - 1998*

* Data through June 1998

TABLE I. Selected sentinel reportable diseases, US Army medical treatment facilities* November, 1998

Reporting MTF/Post**	Total number of reports submitted November 1998	Environmental Injuries		Viral Hepatitis		Salmonellosis		Shigella		Varicella	
		Active Duty				Active Duty	Other	Active Duty	Other	Active Duty	Other Adult
		Heat	Cold	A	B						
		Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998	Cum. 1998
NORTH ATLANTIC RMC											
Walter Reed AMC	15	0	0	3	0	3	6	0	0	5	0
Aberdeen Prov. Ground, MD	4	1	0	0	2	0	0	0	0	0	0
FT Belvoir, VA	20	0	0	0	0	0	10	0	1	1	0
FT Bragg, NC	32	126	1	0	8	16	41	2	17	0	0
FT Drum, NY	3	0	14	0	2	0	1	0	0	2	4
FT Eustis, VA	16	13	0	0	0	1	3	1	4	5	2
FT Knox, KY	20	6	0	0	0	0	0	0	0	20	0
FT Lee, VA	12	0	0	0	2	0	0	0	0	0	0
FT Meade, MD	0	0	0	0	0	0	1	0	0	6	1
West Point, NY	0	0	0	1	1	0	1	0	0	0	2
GREAT PLAINS RMC											
Brooke AMC	20	1	0	4	3	1	6	0	1	2	0
Beaumont AMC	1	0	0	0	0	0	3	0	4	9	1
FT Carson, CO	42	5	2	0	0	1	2	0	0	3	0
FT Hood, TX	29	9	0	0	11	12	1	1	2	2	1
FT Huachuca, AZ	2	0	0	0	0	0	2	0	0	0	0
FT Leavenworth, KS	2	0	0	0	0	0	1	0	0	0	0
FT Leonard Wood, MO	9	5	1	0	0	1	0	0	0	14	7
FT Polk, LA	14	11	0	0	0	0	0	0	0	0	0
FT Riley, KS	22	0	1	0	0	1	0	1	3	3	0
FT Sill, OK	8	11	0	0	10	0	2	0	0	1	0
SOUTHEAST RMC											
Eisenhower AMC	12	3	0	0	1	0	0	0	0	0	0
FT Benning, GA	29	24	1	0	2	1	7	0	3	2	0
FT Campbell, KY	41	1	1	0	0	1	3	4	30	1	4
FT Jackson, SC	24	3	1	2	0	0	2	0	1	5	0
FT McClellan, AL	1	6	0	0	0	0	0	0	0	0	0
FT Rucker, AL	0	0	0	0	0	0	0	0	0	0	0
FT Stewart, GA	30	28	1	0	1	0	2	0	2	3	0
WESTERN RMC											
Madigan AMC	42	0	0	0	0	0	4	0	1	3	0
FT Irwin, CA	0	0	0	0	2	0	0	0	0	0	0
FT Wainwright, AK	7	0	11	0	2	0	0	0	0	0	0
OTHER LOCATIONS											
Tripler	39	1	0	1	3	0	8	0	1	0	0
Europe	38	1	24	3	25	33	23	1	0	8	5
Korea	12	7	0	4	16	0	0	0	0	2	0
Total	**546**	**262**	**58**	**18**	**91**	**71**	**129**	**10**	**70**	**97**	**27**

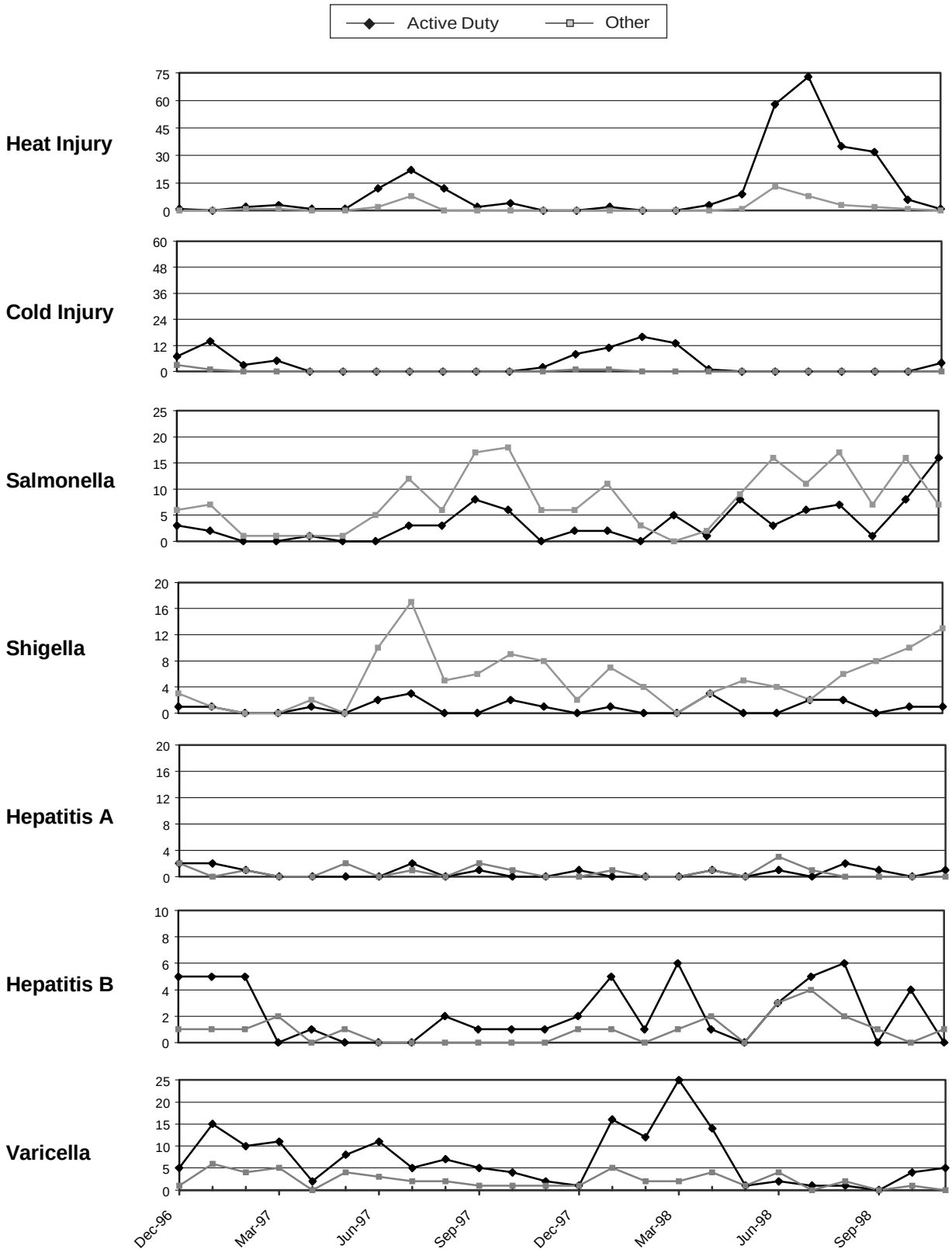
* Based on date of onset.

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

Date of Report: 7-Dec-98

FIGURE I. Selected sentinel reportable diseases, US Army medical treatment facilities*

Cases per month, Dec 96 - Nov 98



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

Date of report: 7-Dec-98

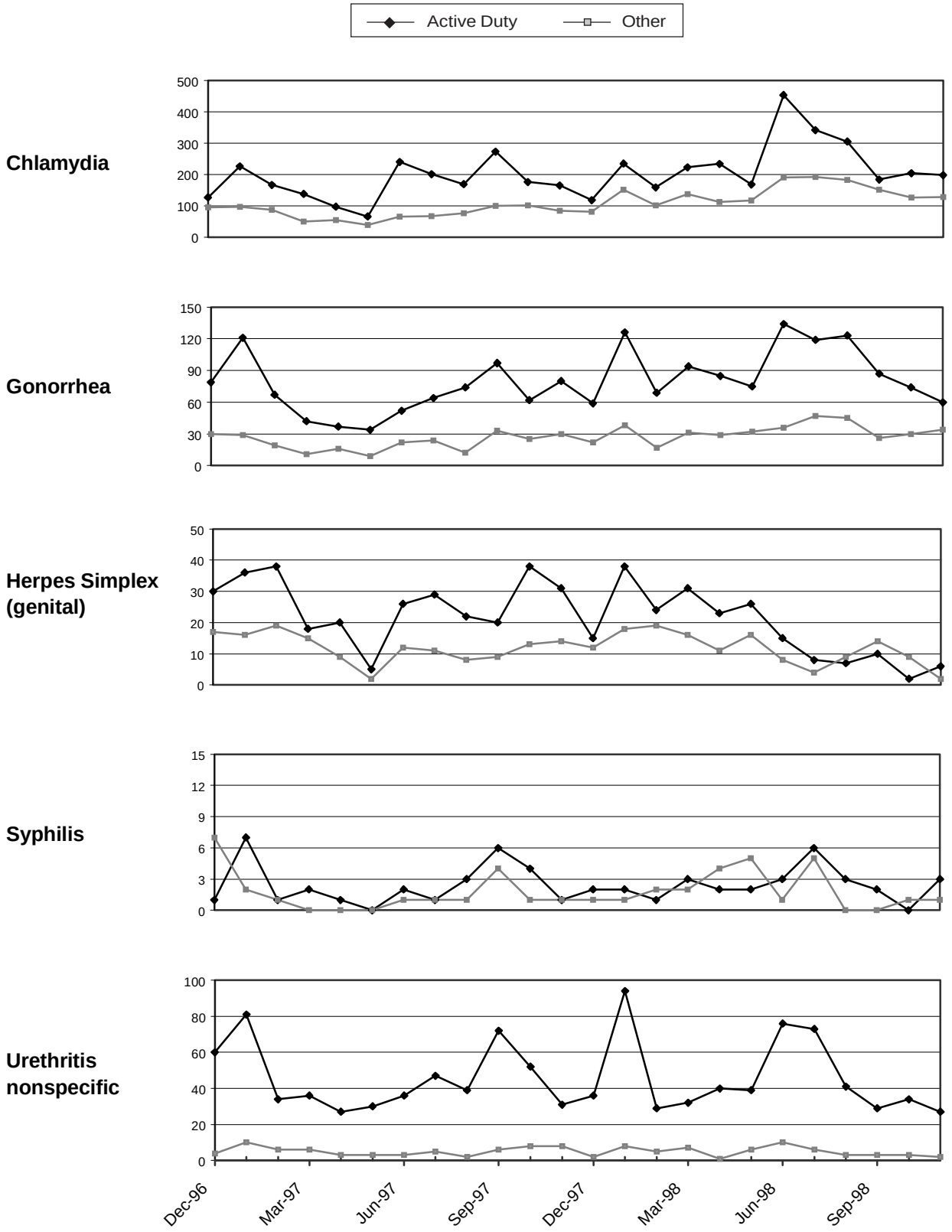
TABLE II. Reportable sexually transmitted diseases, US Army medical treatment facilities* November, 1998

Reporting MTF/Post**	Chlamydia		Urethritis non-spec.		Gonorrhea		Herpes Simplex		Syphilis Prim/Sec		Syphilis Latent		Other STDs**	
	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998	Cur. Month	Cum. 1998
NORTH ATLANTIC RMC														
Walter Reed AMC	5	74	1	13	3	29	0	10	0	1	0	4	1	3
Aberdeen Prov. Ground, MD	2	25	0	2	2	7	0	1	0	0	0	0	0	0
FT Belvoir, VA	13	150	0	0	5	46	2	46	0	4	0	0	0	13
FT Bragg, NC	26	79	0	0	3	23	0	0	0	1	0	0	0	0
FT Drum, NY	2	100	0	4	1	46	0	9	0	1	0	1	0	0
FT Eustis, VA	10	120	0	0	5	55	0	0	0	0	0	2	0	0
FT Knox, KY	12	174	0	0	2	52	0	28	0	0	1	2	0	0
FT Lee, VA	10	49	0	0	2	22	0	0	0	2	0	0	0	0
FT Meade, MD	0	54	0	34	0	11	0	25	0	3	0	0	0	0
West Point, NY	0	24	0	0	0	6	0	4	0	0	0	0	0	0
GREAT PLAINS RMC														
Brooke AMC	13	159	0	0	5	46	0	1	0	1	0	0	0	0
Beaumont AMC	1	262	0	0	0	69	0	18	0	1	0	2	0	1
FT Carson, CO	32	460	6	113	3	92	0	18	0	1	0	0	0	0
FT Hood, TX	10	905	1	244	2	394	0	48	0	3	0	3	0	3
FT Huachuca, AZ	2	26	0	0	0	10	0	0	0	0	0	0	0	0
FT Leavenworth, KS	2	29	0	0	0	5	0	0	0	0	0	0	0	0
FT Leonard Wood, MO	4	97	1	25	4	37	0	0	0	0	0	0	0	1
FT Polk, LA	9	134	0	0	4	39	1	2	0	1	0	0	0	0
FT Riley, KS	19	231	0	0	3	69	0	1	0	1	0	0	0	0
FT Sill, OK	4	130	0	36	4	91	0	7	0	0	0	0	0	3
SOUTHEAST RMC														
Eisenhower AMC	12	231	0	0	0	26	0	22	0	0	0	0	0	0
FT Benning, GA	14	191	0	3	11	79	0	15	0	0	0	0	0	0
FT Campbell, KY	13	339	0	0	12	154	0	9	0	1	0	1	0	1
FT Jackson, SC	23	228	0	0	0	84	0	3	0	1	0	0	0	5
FT McClellan, AL	1	16	0	0	0	7	0	0	0	0	0	0	0	0
FT Rucker, AL	0	30	0	0	0	5	0	3	0	0	0	0	0	0
FT Stewart, GA	10	135	12	163	6	112	0	46	1	1	0	2	0	0
WESTERN RMC														
Madigan AMC	23	329	8	132	8	53	0	14	0	0	0	1	0	0
FT Irwin, CA	0	35	0	0	0	5	0	0	0	0	0	0	0	0
FT Wainwright, AK	5	59	0	0	0	3	0	2	0	0	0	0	0	0
OTHER LOCATIONS														
Tripler	17	275	0	0	6	84	5	89	0	0	0	1	0	0
Europe	24	701	0	0	2	126	0	22	1	13	0	1	0	4
Korea	8	77	0	0	1	22	0	7	0	3	0	0	0	1
Total	**326**	**5928**	**29**	**769**	**94**	**1909**	**8**	**450**	**2**	**39**	**1**	**20**	**1**	**35**

* Reports are included from main and satellite clinics. Not all sites reporting. Date of Report: 7-Dec-98

** 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, Dec 96 - Nov 98



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

Date of report: 7-Dec-98

Table 2. Completeness of reporting, reportable hospitalizations among active duty soldiers, January - June 1998

Reportable Event	Reportable hospitalizations	Number reported	Percent reported
Cold weather injury	4	4	100.0%
Hepatitis B	2	2	100.0%
Dengue fever	1	1	100.0%
Hepatitis A	1	1	100.0%
Lyme disease	1	1	100.0%
Tetanus	1	1	100.0%
Gonorrhea	5	4	80.0%
Carbon monoxide poisoning	4	3	75.0%
Heat injury	53	33	62.3%
Malaria	5	3	60.0%
Tuberculosis, pulmonary	2	1	50.0%
Varicella	80	37	46.3%
Salmonellosis	3	1	33.3%
Influenza	11	1	9.1%
Pneumococcal pneumonia	13	0	0.0%
Leishmaniasis	1	0	0.0%
Measles	1	0	0.0%
Shigellosis	1	0	0.0%
Vaccine, adverse event	1	0	0.0%
Total	**190**	**93**	**48.9%**

Continued from page 2

consensus list for medical events reporting and to integrate standard data from reports of each of the services into the Defense Medical Surveillance System (DMSS) database.[2]

Completeness of reporting of hospitalized cases, US Army: Standard Inpatient Data Record (SIDR) files were searched to identify all hospitalizations of active duty soldiers with discharge diagnoses indicative of reportable medical events. To enhance the comparability of reporting assessments over time, only the 57 diagnoses that were previously reportable in the Army and are now reportable throughout the DoD were included in the analysis (table 1, page 3). For each calendar year since 1995 (through the first six months of 1998), reporting completeness was estimated as the proportion of presumed reportable hospitalized cases that were reported through the Army's automated reporting system.

During the first half of 1998, approximately one-half (93 of 190) of all presumed reportable hospitalizations of active duty soldiers were reported. The most recent estimate of reporting completeness continued the two-year trend of increasing completeness (figure 1). Between January and June 1998, nearly 90% (86 of 97) of all unreported cases were due to four conditions: varicella, pneumococcal pneumonia, heat injury, and influenza (table 2). Table 3 documents the wide variation in reporting completeness across reporting sites. Of 22 sites with at least one reportable hospitalization, three reported all of their cases, three others reported 60% or more, and five reported none.

Timeliness of reporting of hospitalized cases: During the first half of 1998, approximately 50% of cases were reported within one week and approximately 70% of cases were reported within two weeks of hospital admission. Reporting timeliness during the first half of 1998 lagged slightly behind that during calendar year 1997 (figure 2).

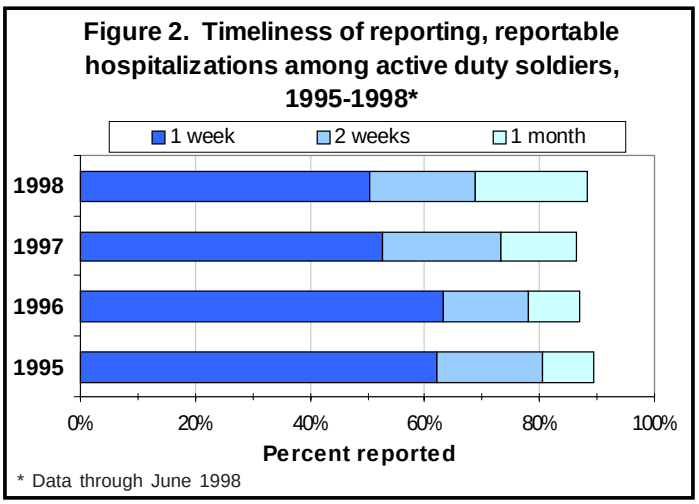


Figure 2. Timeliness of reporting, reportable hospitalizations among active duty soldiers, 1995-1998*

Completeness of reporting, selected notifiable outpatient events, US Army: While the routine collection of standardized Armywide ambulatory data began in 1996, there have been no assessments of completeness or timeliness of notifiable medical events reporting in outpatient settings. As a first attempt to assess outpatient reporting performance, Standard Ambulatory Data Records (SADR) were searched to identify clinic visits of active duty soldiers with diagnoses indicative of reportable conditions. This initial assessment targeted reportable conditions that are commonly managed in outpatient settings and are reliably diagnosed in a single visit without sophisticated or time consuming laboratory, radiographic, or other diagnostic support. Hence, environmental injuries (i.e., cold injury, heat injury, carbon monoxide intoxication) and sexually transmitted diseases (i.e., chlamydia, gonorrhea, syphilis, nongonococcal urethritis) were selected as endpoints for this initial assessment. Between January 1998 and June

Table 3. Completeness of reporting, reportable hospitalizations among active duty soldiers, by MTF, January - June 1998

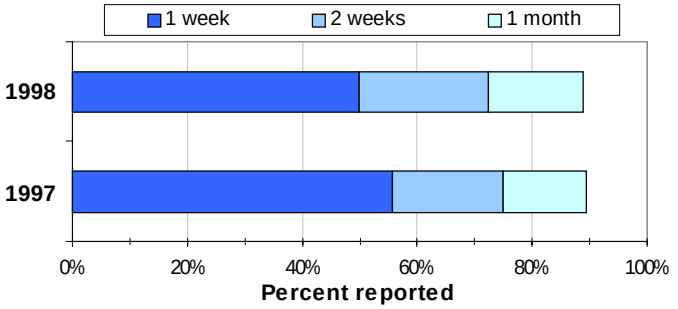
MTF	Reportable hospitalizations			All reports		
	Number reported	Total	Number reported/ total number	Reports received Jan - Jun 1998	Non-STD reports received	STD reports received
A	15	15	100.0%	191	31	160
B	3	3	100.0%	240	22	218
C	1	1	100.0%	267	46	221
D	5	6	83.3%	132	39	93
E	11	16	73.3%	275	17	258
F	6	10	60.0%	108	108	0
G	5	9	55.6%	388	21	367
H	6	11	54.5%	190	20	170
I	7	14	50.0%	760	202	558
J	6	12	50.0%	129	80	49
K	5	10	50.0%	1144	163	981
L	4	8	50.0%	150	81	69
M	2	4	50.0%	144	26	118
N	1	2	50.0%	167	7	160
O	14	29	44.8%	204	32	172
P	1	3	33.3%	306	20	286
Q	1	5	20.0%	344	28	316
R	0	13	0.0%	163	3	160
S	0	11	0.0%	179	17	162
T	0	5	0.0%	76	10	66
U	0	2	0.0%	108	25	83
V	0	1	0.0%	46	11	35
Total	**93**	**190**	**48.9%**	**5711**	**1009**	**4702**

1998, approximately one-fifth of presumably reportable outpatient visits for environmental injuries (95 of 445) and one-third of those for sexually transmitted diseases (469 of 1502) were reported through the Army's disease reporting system (table 4). While nearly identical proportions of heat- and cold-related injuries were reported (21.7% and 21.6%, respectively), gonorrhea was reported much more completely (43.0%) than other sexually transmitted diseases.

Timeliness of reporting, selected outpatient medical events, US Army: During the first half of 1998, approximately one half of outpatient cases were reported within one week and more than 70% were reported within two weeks of the clinic visit. Reporting during the first half of 1998 lagged slightly behind that during calendar year 1997 (figure 3).

Conclusions: For the first time in history, there is a consensus list of reportable medical events (with specific case definitions) that apply to all the US military services. This significant milestone will allow comparisons of morbidity experiences across services, facilitate the detection and assessment of multi-service outbreaks and trends, and enhance reportable medical events surveillance in joint and multi-service training and operational settings.

Figure 3. Timeliness of reporting, reportable ambulatory visits among active duty soldiers, 1997-1998*



* Data through June 1998

Analyses to date suggest that completeness of reporting of hospitalized cases has consistently and markedly improved since 1995 when automated systematic Armywide reporting began. Still, there are opportunities for significant improvement: for example, during the first six months of 1998, varicella, influenza, pneumococcal pneumonia, and heat injuries accounted for nearly 90% of all unreported hospitalized reportable events Armywide. Reporting sites should examine and refine local procedures to ascertain, assess, and report cases of soldiers who are hospitalized with these conditions.

There are significant seasonal influences on the incidence and reporting of notifiable events. For example, heat-injuries are much more common

Table 4. Completeness of reporting, reportable ambulatory visits among active duty soldiers, January - June 1998

Reportable Event	Reportable visits	Number reported	Percent reported
Environmental injuries			
Carbon monoxide poisoning	6	0	0.0%
Cold weather injury	162	35	21.6%
Heat injury	277	60	21.7%
Total	**445**	**95**	**21.3%**
Sexually transmitted diseases			
Chlamydia trachomatis, genital	399	121	30.3%
Gonorrhea	405	174	43.0%
Syphilis	115	0	0.0%
Urethritis, non-gonococcal	583	174	29.8%
Total	**1502**	**469**	**31.2%**

in the summer while cold-injuries and influenza occur most frequently in the winter. Since some events occur more frequently and/or are reported more completely than others, reporting performance can vary significantly from season to season. To control for effects of such seasonal variations, reporting trends are most reliably assessed, and will be routinely reported in the MSMR, in calendar year intervals (with interim reports, such as this, for the first six months of current calendar years).

Finally, periodic analyses of reportable ambulatory cases may be useful for monitoring reportable events surveillance in outpatient settings. For example, the initial analysis of outpatient data suggests that Army public health officials may be unaware of a significant proportion of sexually transmissible disease cases (e.g., syphilis) that are diagnosed at their installations.

References

1. Memorandum, HQ, US Army Medical Command, 17 June 1998, Subject: Tri-Service Reportable Events List.
2. Memorandum, Office of the Assistant Secretary of Defense (Health Affairs), 6 November 1998, Subject: Tri-Service Reportable Events Document.

Deployment surveillance

Tick-borne Encephalitis Vaccine and Natural Infection with Central European Encephalitis (CEE) Virus, US Military Experience in Operation Joint Endeavor, Bosnia-Herzegovina

The Central European Encephalitis virus (CEE) is one of a complex of flaviviruses that causes tick-borne encephalitis (TBE).[1] CEE viruses are endemic to central, eastern, and southeastern Europe and are transmitted by *Ixodes ricinus* ticks.[1] In endemic regions, risk factors for infection include male gender, age between 20 and 40 years old, and occupational exposure to forested, tick-endemic areas.[1,2] TBE is considered a major regional public health problem in the Balkans.[1,2,3]

In December 1995, US forces deployed to Bosnia-Herzegovina to participate in Operation Joint Endeavor (OJE), a US-led multinational peacekeeping operation. TBE was considered a significant threat to OJE participants, and to counter the threat, an inactivated TBE vaccine (FSME-Immun Inject^{R}, Immuno AG, Vienna, Aus-

tria) which had been shown to be safe and effective through 25 years of routine use in central Europe[4,5] was made available to US personnel on a voluntary basis using an accelerated, 3-dose schedule (0, 7, 28 days). Adverse reactions among vaccinated persons were passively monitored.

To assess the TBE experience of OJE participants, 1,913 pre- and post-deployment serum pairs were assembled from among specimens routinely collected from servicemembers who deployed to Bosnia. Pre-deployment samples were retrieved from the inventory of the Department of Defense Serum Repository (DoDSR) which is maintained by the Army Medical Surveillance Activity (AMSA), US Army Center for Health Promotion and Preventive Medicine (USACHPPM). Post-deployment samples were collected during medical examinations conducted just prior to each individual's departure from Bosnia. Of OJE veterans with retrievable pre- and post-deployment serum pairs, 954 were recipients of one to three doses of TBE vaccine while 959 were unvaccinated.

For analysis purposes, a protective anti-TBE antibody titer was defined as a titer > 1:100 and seroconversion was defined as a four-fold or greater increase in titer between pre- and post-deployment samples.

Seroconversion rates for individuals who received 1, 2, and 3 vaccine doses were 20%, 60%, and 80%, respectively. Seroconversion rates and post-immunization antibody titers did not differ significantly in relation to gender, race, or military rank. Seven (0.17%) of 3,951 immunized individuals reported possible side effects that were all mild and transient.

Four (0.42%) unvaccinated individuals seroconverted during the approximately 6-month deployment suggesting that there were low rates of natural infection with CEE (or a closely-related variant). All naturally acquired infections were asymptomatic, and there were no associations between natural infection and assignment to a particular military camp.

Editorial Comment: This study documents that FSME-Immun Inject[R] vaccine was safely administered on an accelerated schedule to US personnel who deployed to Bosnia and that 80% of those who received the full, 3-dose regimen were immunologically protected. The low rate of natural infection among unvaccinated participants in OJE is similar to the rate (0.9 per 1,000 person-months) reported in a previous study of US soldiers who were stationed and trained in TBE endemic areas of southern Europe.[3] The findings suggest that CEE had low endemicity in areas occupied by US forces in Bosnia, that tick exposures were limited due to uses of personal protective (e.g., repellents, bed nets, permethrin-impregnated uniforms) and area control measures, and/or that the tick vector of TBE, *Ixodes ricinus*, was relatively absent from areas of US field operations or contiguous to US camps.

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References

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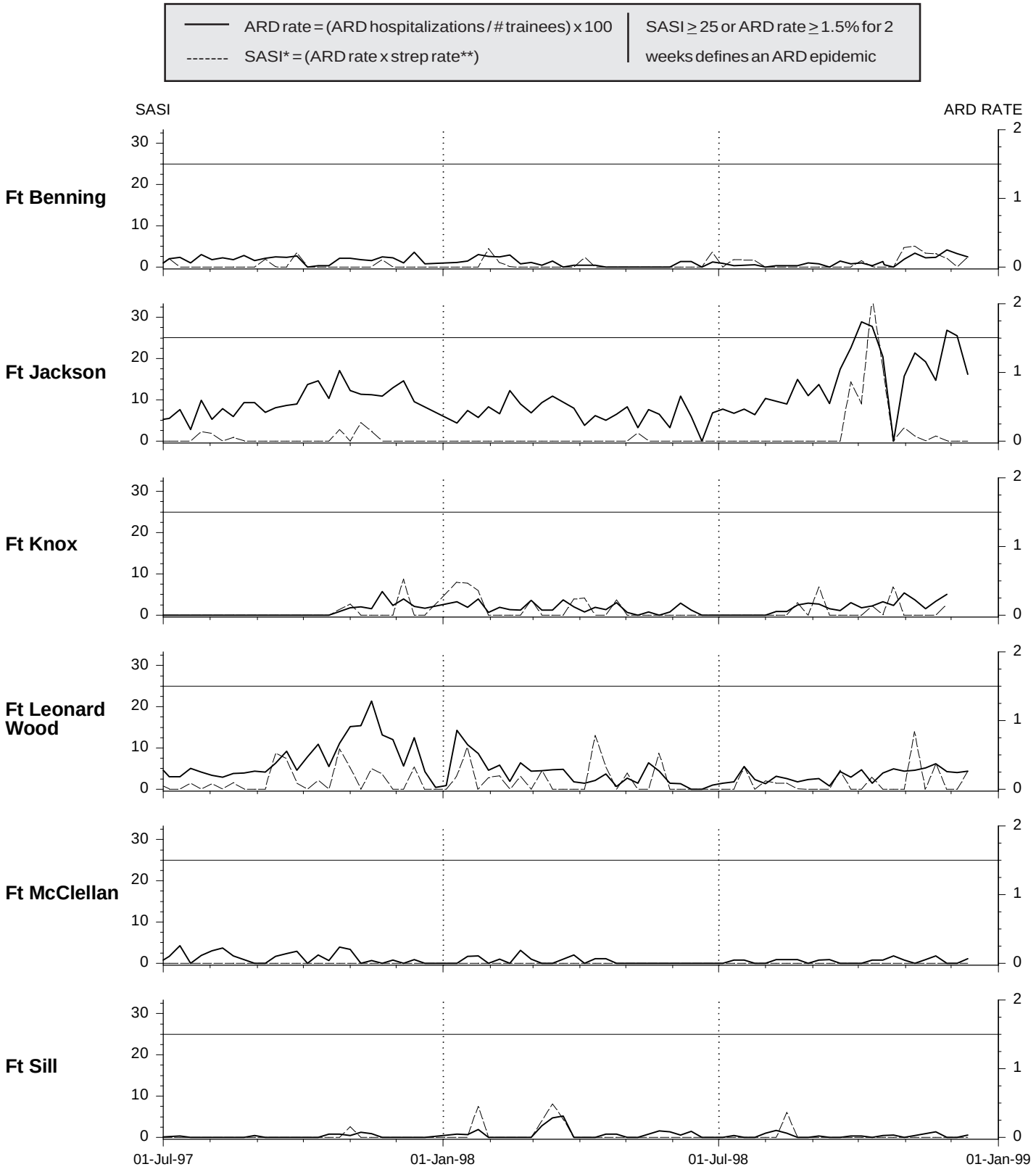
Figure III. Acute respiratory disease (ARD) surveillance update
US Army initial entry training centers



* SASI (Strep ARD Surveillance Index) is a reliable predictor of serious strep-related morbidity

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

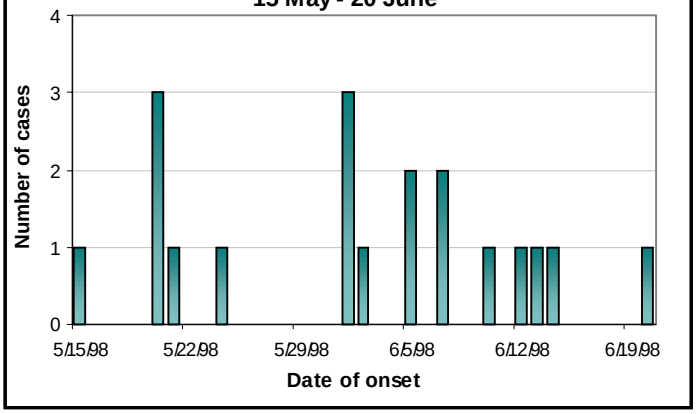
Outbreak report

An Outbreak of Parainfluenza Type 1 Acute Respiratory Illnesses Among Basic Trainees, Fort Sill, Oklahoma, June 1998

On 17 June 1998, the Preventive Medicine Activity at Fort Sill, Oklahoma was notified by a basic training drill instructor that he, his platoon leader, and many trainees in his platoon were ill with similar upper respiratory symptoms. Since adenovirus vaccines had not been given to new trainees since the end of the 1997-1998 influenza season, an investigation was conducted with particular concern that the outbreak was related to adenovirus.

In an initial assessment, 40 (78%) of 51 soldiers assigned to the affected platoon were surveyed for symptoms, and the throats and nasopharynges of ten soldiers with active complaints were cultured for group A beta hemolytic streptococci, *Bordatella pertussis*, and common respiratory viruses. Ninety percent of soldiers assigned to the affected platoon reported respiratory complaints (primarily cough, sore throat, and runny nose) during the three weeks prior to the survey, and half of them had attended sick call. Fevers were not part of the syndrome, and affected soldiers were not severely debilitated. The affected platoon resided in a "starship-type" barracks (with platoon-sized, open sleeping bays and central heating and air conditioning systems) in which beds were placed head-to-toe. An industrial hygiene evaluation of the barracks found no significant deficiencies. The members of the affected platoon were instructed in measures to avoid the spread of infection (e.g., wash hands frequently, cover nose and mouth when coughing or sneezing, and avoid sharing utensils); to minimize contact between units, a recommendation was issued that trainees of the affected battery use the dining facility after all others.

Figure 1. Dates of symptoms onset among culture confirmed parainfluenza type 1 cases, 15 May - 20 June



Initial surveillance cultures identified two soldiers with parainfluenza type 1, two with group A beta hemolytic streptococcus, one with influenza A, and one with both streptococcus and influenza A infections. The soldiers with streptococcal infections were treated with antibiotics. Almost concurrently with receipt of the viral culture results, however, the battery commander reported that the illness had spread to the other two platoons of the battery. A second round of investigation was initiated by local preventive medicine personnel.

During the second visit, the commander reported that the greatest increase in illness seemed to occur after the unit had returned from field training. He reported that while in the field many soldiers shared canteens or drank water directly from spigots of lister bags (these behaviors were specifically proscribed in a battery-wide meeting). Including the initial respondents, a total of 136 soldiers completed symptom questionnaires. An additional 48 nasopharyngeal swabs were submitted for viral cultures, since the syndrome seemed most compatible with a viral etiology. Of all 58 viral cultures submitted, 26 (46%) were positive for parainfluenza type 1 and three for influenza A. Of the 26 soldiers from whom parainfluenza type 1 was isolated, three were asymptomatic and two did not complete a survey (figure 1).

Based on self-reported symptoms of the 21 culture-confirmed symptomatic soldiers (table), for purposes of the investigation, a presumed parainfluenza type 1 respiratory illness case was defined as a soldier in the affected battery

Symptons of soldiers culture positive for parainfluenza 1 (n=21)	
Symptom	**Frequency - % (#)**
Sore throat	95% (20)
Rhinorrhea	95% (20)
Cough	95% (20)
Cough with sputum	65% (14)
Headache	62% (13)
Myalgias	38% (8)
Chills	33% (7)
Arthralgias	29% (6)
Vomiting	10% (2)
Documented fever	10% (2)
Diarrhea	0
Visited sick call	45% (9)
Placed on quarters	5% (1)
Placed on antibiotics	14% (3)

who complained of sore throat, runny nose, and cough. Excluding soldiers with culture-confirmed influenza A infections or with diarrhea (since no soldiers with culture-confirmed parainfluenza type 1 infections reported diarrhea), the attack rate was estimated as 50% (68/137). By the middle of the seventh week of training, the outbreak ended, perhaps due to exhaustion without replacement of the pool of immunologically susceptible trainees.

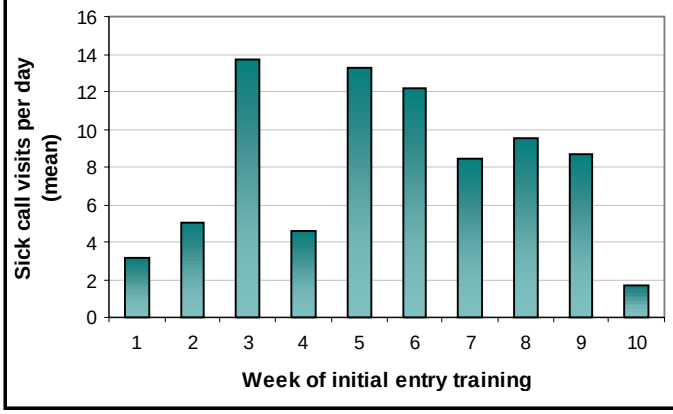
The most striking clinical manifestation among the most seriously ill soldiers was persistence of cough for two weeks or longer. For example, one soldier was hospitalized twice, treated with multiple courses of antibiotics, and still had a positive parainfluenza type 1 culture more than two weeks after symptomatic recovery. Another soldier was seen three times in the emergency room and nine times at sick call over a three week symptomatic period.

The military operational impact of the outbreak was assessed by reviewing sick call records. During the outbreak, sick call rates were two to three times higher in later weeks of training compared to the initial weeks (figure 2). Although the majority of affected soldiers were not severely ill, training was significantly disrupted. For example, seven of the eleven drill instructors/command staff of the battery were ill during the outbreak, and at its peak, up to 35 soldiers (nearly one fourth of all trainees assigned to the battery) visited sick call in one day. Training cadre conducted make-up training on evenings and weekends, and largely as result, no trainees were "recycled" due to the outbreak.

Editorial Comment: Heightened vigilance on the part of the local preventive medicine staff (largely due to the recent cessation of adenovirus immunization of new trainees) led to the rapid detection and etiologic characterization of the parainfluenza type 1 outbreak described in this report. Parainfluenza infections are common among infants and young children and can cause severe respiratory illnesses among them (e.g., croup, bronchiolitis, pneumonia). However, the common cold syndrome (i.e., low grade or no fever, runny nose, sore throat, persistent cough) that predominated in this outbreak is the typical clinical manifestation of parainfluenza infection of an otherwise healthy young adult. While the spread of the outbreak was limited to a single battery and the clinical manifestations were not severe, the military operational impact in the affected unit was significant.

Report submitted by MAJ Mark Kortepeter, MC, former Chief, Preventive Medicine Activity, Fort Sill, Oklahoma.

Figure 2. Sick call visits in affected battery, by week of training



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