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# MSMR

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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.*

USACHEPDM

Report from the field

## Rash Illness Outbreak among British Soldiers Ft Bragg, North Carolina

Following a joint training exercise at Ft Bragg (Operation "Purple Star") and Camp Lejeune (Operation "Royal Dragon"), twenty-eight British paratroopers from a unit of 400 (7%) developed a rash illness of unknown etiology. The total contingency involved in the joint exercise, which took place between 25 April and 20 May 1996, included approximately 10,000 soldiers. Only one British unit developed symptoms; there were no reported cases among U.S. soldiers who participated in the exercise.

The epidemiologist/microbiologist at the Royal Haslar Hospital, in conjunction with the Communicable Disease Surveillance Centre (CDSC), conducted an outbreak investigation and determined that two distinct types of skin rashes were involved, with the date of onset of symptoms approximately 5 June 1996. Preliminary data from a questionnaire was analyzed and it was determined that

The affected soldiers parachuted into the Camp Mackall area located on Ft Bragg and bivouacked around the Luzon Drop Zone, a heavily forested area. Nymphal ticks were removed by some of the British soldiers, all of whom carried tick identification cards and were instructed in the use of permethrin-impregnated uniforms.

Three soldiers had a febrile illness associated with a petechial rash resembling Rocky Mountain Spotted Fever (RMSF) and the remaining 25 soldiers had a rash described as a localized, expanding circular rash, similar to erythema migrans (EM). The involved soldiers were treated with Doxycycline 200 mg daily for 14 days. All clinical cases had serological tests for a variety of possible infective agents including Lyme, RMSF, Ehrlichia, and Leptospira. Only one specimen was found positive for RMSF. All serological tests for *Borrelia burgdorferi* (tickborne spirochete causing Lyme disease) were negative. The final results of the data analysis are pending and a case-control study to delineate other risk factors is underway.

*Information provided by Wing Commander AD Green, MBBS, MRCPATH, DTM&H, RAF, Defence Advisor in Communicable Disease Control*

**Editorial Comment:** A tick survey was conducted by CHPPM's Direct Support Activity-North on the 6th thru 9th of May, 1996. Indirect immunofluorescence assay (IFA)

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results showed evidence of *Borrelia spp.* in ten *Amblyomma americanum* ticks from Camp Mackall. No ticks, including *Ixodes scapularis* (the principle tick vector for Lyme disease in the north-eastern and north-central United States) were positive for *Borrelia burgdorferi* (Table 1).

There have been recent reports in the literature concerning a Lyme disease-like illness among patients in Georgia and Missouri who present with the chief complaint of a rash similar to erythema migrans with negative serology for *B. burgdorferi*. An uncultivable spirochete (*B. lonestari* sp. nov) identified in lone star ticks (*A. americanum*) has been recovered from Missouri, New Jersey, New

York, North Carolina, and Texas and has been implicated as the possible infectious agent.<sup>1</sup>

Ticks were also screened for the spotted fever group and one *D. variabilis* tick was positive for *Rickettsia rickettsii*, which would be capable of transmitting RMSF to man. It is noteworthy that sporadic cases of serologically-confirmed Lyme Disease and RMSF have been reported from Ft Bragg during this tick season. A total of 5 cases of Lyme disease and 2 cases of RMSF were reported within the Army so far in 1996.

#### References

- Centers for Disease Control. Lyme Disease - United States, 1995. MMWR 1996; 45:482-484.

Table 1. Indirect Fluorescent Antibody (IFA) Assay results of tick survey done at Ft Bragg, North Carolina - 6 thru 9 May 1996

Tick species	n	<i>Borrelia spp.</i>	<i>Rickettsia spp.</i>	<i>Ehrlichia spp.</i>
<i>Amblyomma americanum</i> (Lone Star Tick)	275	10**	22	*
<i>Dermacentor variabilis</i> (American Dog Tick)	3	0	1***	*
<i>Ixodes scapularis</i> (Deer Tick)	5	0	1	*
<b>Total</b>	<b>283</b>	<b>10</b>	<b>24</b>	<b>*</b>

\* Analysis for *Ehrlichia* to be repeated by PCR as initial IFA anti-sera cross-reacted with other organisms.

\*\* Initial screening was for *Borrelia spp.*, positive were then screened against *B. burgdorferi*-specific anti-sera. No ticks were positive for *B. burgdorferi*.

\*\*\* *Rickettsia rickettsii*. This tick would be capable of transmitting the pathogen to man. Due to the small sample size, prevalence of the pathogen in the vector population cannot be determined. The other positive ticks are of no significance to human disease.

Submitted by MAJ Richard N. Johnson, Chief, Entomological Sciences Division, DSA North

**TABLE I. Cases of selected notifiable conditions, United States Army\*  
August, 1996**

Reporting MTF/Post**	Total number of reports submitted August, 1996	Environmental Injuries			Viral Hepatitis			Malaria	Varicella	
		Active Duty		CO intox.	A	B	C	Active Duty	Active Duty	Other Adult
		Heat	Cold							
		Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996
<b>NORTH ATLANTIC RMC</b>										
Walter Reed AMC	31	-	-	-	1	1	-	1	4	1
Aberdeen Prov. Ground	1	1	3	-	-	-	-	-	-	-
FT Belvoir, VA	-	-	-	-	-	-	-	-	-	-
FT Bragg, NC	15	16	7	-	-	-	3	-	-	-
FT Drum, NY	19	6	21	-	-	1	-	1	5	-
FT Eustis, VA	8	1	-	-	1	-	-	-	-	-
FT Knox, KY	17	-	2	-	1	1	6	-	-	-
FT Lee, VA	15	-	-	-	-	-	-	-	-	-
FT Meade, MD	-	-	1	-	-	-	1	-	8	1
USMA, West Point, NY	-	-	-	-	-	-	-	-	-	-
<b>CENTRAL RMC</b>										
Fitzsimons AMC	-	-	-	-	-	-	-	1	-	-
<b>GREAT PLAINS RMC</b>										
Brooke AMC	-	-	-	-	-	-	-	1	-	-
FT Carson, CO	77	-	32	-	-	2	-	-	1	-
FT Hood, TX	-	2	1	-	1	3	-	-	6	-
FT Leavenworth, KS	4	-	-	-	-	-	-	-	-	-
FT Leonard Wood, MO	19	-	2	-	1	1	-	-	16	3
FT Polk, LA	-	-	-	-	-	-	-	-	-	-
FT Riley, KS	20	-	-	-	-	-	-	-	-	-
FT Sill, OK	52	4	-	-	3	5	1	-	-	-
Panama	-	2	-	-	4	4	3	-	-	1
<b>SOUTHEAST RMC</b>										
Eisenhower AMC	36	2	-	-	-	2	-	-	2	-
FT Benning, GA	5	8	-	-	-	-	-	-	9	-
FT Campbell, KY	75	2	-	-	-	-	-	-	-	-
FT Jackson, SC	-	-	-	-	-	-	-	-	-	-
FT McClellan, AL	16	-	1	-	-	-	-	-	1	-
FT Rucker, AL	3	3	-	-	-	-	-	-	-	-
FT Stewart, GA	-	-	-	-	-	1	-	-	-	-
<b>SOUTHWEST RMC</b>										
Wm Beaumont AMC	-	-	-	-	1	1	-	-	2	-
FT Huachuca, AZ	-	-	-	-	-	-	-	-	-	-
FT Irwin, CA	15	6	-	-	-	-	-	-	-	-
<b>NORTHWEST RMC</b>										
Madiqan AMC	-	-	-	-	-	-	-	-	-	-
FT Wainwright, AK	-	-	81	-	-	-	-	-	-	-
<b>PACIFIC RMC</b>										
Tripler AMC	57	-	1	-	1	1	-	1	-	-
<b>OTHER LOCATIONS</b>										
Europe	27	1	-	-	1	2	2	4	5	1
Korea	10	1	1	-	-	3	-	2	6	-
<b>Total</b>	<b>522</b>	<b>55</b>	<b>153</b>	<b>0</b>	<b>15</b>	<b>28</b>	<b>13</b>	<b>14</b>	<b>65</b>	<b>7</b>

\* Based on date of onset.

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

Date of Report: 7-Sep-96

**TABLE I. Cases of selected notifiable conditions, United States Army\* (continued)  
August, 1996**

Reporting MTF/Post**	Salmonellosis			Shigella			Campylobacteriosis			Tuberculosis	
	Active Duty	Other		Active Duty	Other		Active Duty	Other		Active Duty	Other
		Adult	Child		Adult	Child		Adult	Child		
Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996	Cum. 1996
<b>NORTH ATLANTIC RMC</b>											
Walter Reed AMC	2	2	2	-	3	1	4	9	1	-	-
Aberdeen Prov. Ground	-	-	-	-	-	-	-	-	-	-	-
FT Belvoir, VA	-	3	1	-	-	1	1	4	-	-	-
FT Bragg, NC	2	1	9	3	1	5	3	-	1	-	-
FT Drum, NY	2	-	-	-	-	-	-	-	-	-	-
FT Eustis, VA	-	-	1	-	-	-	-	-	2	-	-
FT Knox, KY	-	1	1	-	-	-	-	-	-	-	-
FT Lee, VA	-	-	-	-	-	-	-	-	-	-	-
FT Meade, MD	-	-	-	-	-	-	-	-	-	-	-
USMA, West Point, NY	-	-	-	-	-	-	-	-	-	-	-
<b>CENTRAL RMC</b>											
Fitzsimons AMC	-	-	-	-	1	-	-	-	-	-	-
<b>GREAT PLAINS RMC</b>											
Brooke AMC	-	-	-	-	-	-	-	-	-	-	-
FT Carson, CO	-	-	2	1	-	-	1	-	-	-	-
FT Hood, TX	-	-	-	-	-	-	-	-	-	-	-
FT Leavenworth, KS	-	-	-	-	-	-	-	1	-	-	1
FT Leonard Wood, MO	-	-	3	-	-	-	-	-	-	-	-
FT Polk, LA	-	-	-	-	-	-	-	-	-	-	-
FT Riley, KS	-	-	-	-	-	-	-	-	-	-	-
FT Sill, OK	-	-	-	-	-	-	-	-	-	-	-
Panama	-	2	14	3	-	5	1	3	14	-	-
<b>SOUTHEAST RMC</b>											
Eisenhower AMC	1	-	-	-	-	1	-	-	-	-	1
FT Benning, GA	-	-	-	-	-	-	-	-	-	-	-
FT Campbell, KY	-	-	-	-	-	2	4	3	-	-	1
FT Jackson, SC	-	-	1	-	-	-	-	-	-	1	1
FT McClellan, AL	-	-	-	-	1	-	-	-	-	-	-
FT Rucker, AL	-	-	-	-	-	-	-	-	-	-	-
FT Stewart, GA	1	-	1	-	-	-	-	-	-	-	-
<b>SOUTHWEST RMC</b>											
Wm Beaumont AMC	-	1	1	-	-	-	-	-	-	-	-
FT Huachuca, AZ	-	-	-	-	-	-	-	-	-	-	-
FT Irwin, CA	-	-	-	-	-	-	-	-	-	-	-
<b>NORTHWEST RMC</b>											
Madiqan AMC	-	-	-	-	-	-	-	-	-	-	-
FT Wainwright, AK	-	-	-	-	-	-	1	-	-	-	-
<b>PACIFIC RMC</b>											
Tripler AMC	-	-	2	1	-	-	7	6	7	-	2
<b>OTHER LOCATIONS</b>											
Europe	10	8	12	-	-	-	3	4	3	3	4
Korea	-	-	-	-	-	-	-	-	-	3	2
<b>Total</b>	<b>18</b>	<b>18</b>	<b>50</b>	<b>8</b>	<b>6</b>	<b>15</b>	<b>25</b>	<b>30</b>	<b>28</b>	<b>7</b>	<b>12</b>

\* Based on date of onset.

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

Date of Report: 7-Sep-96

**TABLE II. Cases of notifiable sexually transmitted diseases, United States Army  
August, 1996**

Reporting MTF/Post*	Chlamydia		Urethritis non-spec.		Gonorrhea		Herpes Simplex		Syphilis Prim/Sec		Syphilis Latent		Other STDs**	
	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996	Cur. Month	Cum. 1996
<b>NORTH ATLANTIC RMC</b>														
Walter Reed AMC	6	60	2	28	6	29	2	40	1	2	-	1	-	2
Aberdeen Prov. Ground	1	9	-	10	-	12	-	1	-	-	-	-	-	-
FT Belvoir, VA	-	33	-	-	-	6	-	1	-	-	-	-	-	-
FT Bragg, NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Drum, NY	8	49	1	17	2	49	1	11	-	-	-	-	-	-
FT Eustis, VA	-	26	-	-	-	12	-	-	-	-	-	-	-	-
FT Knox, KY	16	94	-	-	4	40	3	42	-	-	-	2	-	-
FT Lee, VA	10	60	-	1	3	29	-	2	-	-	-	-	-	-
FT Meade, MD	-	3	-	7	-	3	-	4	-	-	-	-	-	-
USMA, West Point, NY	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CENTRAL RMC</b>														
Fitzsimons AMC	-	1	-	-	-	-	-	-	-	-	-	1	-	-
<b>GREAT PLAINS RMC</b>														
Brooke AMC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Carson, CO	20	192	6	182	10	57	-	20	-	-	-	1	-	-
FT Hood, TX	-	231	-	81	-	75	-	30	-	2	-	-	-	2
FT Leavenworth, KS	2	11	-	-	1	6	-	2	-	-	-	-	-	-
FT Leonard Wood, MO	7	54	4	33	1	16	1	2	-	-	-	-	-	-
FT Polk, LA	-	23	-	-	-	12	-	2	-	-	-	-	-	-
FT Riley, KS	16	53	-	-	3	18	-	2	-	-	-	-	-	1
FT Sill, OK	2	93	6	32	7	51	2	15	-	-	-	-	1	7
Panama	-	62	-	-	-	3	-	6	-	-	-	-	-	10
<b>SOUTHEAST RMC</b>														
Eisenhower AMC	11	99	-	1	5	42	9	54	-	2	-	-	1	1
FT Benning, GA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Campbell, KY	10	287	-	-	3	95	-	20	-	3	-	-	-	1
FT Jackson, SC	-	278	-	-	-	15	-	11	-	-	-	-	-	3
FT McClellan, AL	1	19	-	-	1	9	-	-	-	1	-	-	-	-
FT Rucker, AL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Stewart, GA	-	14	-	24	-	11	-	7	-	1	-	-	-	2
<b>SOUTHWEST RMC</b>														
Wm Beaumont AMC	-	122	-	-	-	11	-	42	-	-	-	-	-	-
FT Huachuca, AZ	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Irwin, CA	-	9	-	-	-	2	1	2	-	-	-	-	-	-
<b>NORTHWEST RMC</b>														
Madiqan AMC	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FT Wainwright, AK	-	14	-	-	-	2	-	2	-	-	-	-	-	-
<b>PACIFIC RMC</b>														
Tripler AMC	19	133	-	-	3	31	11	61	-	-	-	2	-	-
<b>OTHER LOCATIONS</b>														
Europe	1	67	-	-	1	15	1	6	-	-	-	-	-	1
Korea	2	10	-	-	-	4	-	5	-	-	-	-	-	3
<b>Total</b>	<b>132</b>	<b>2106</b>	<b>19</b>	<b>416</b>	<b>50</b>	<b>655</b>	<b>31</b>	<b>390</b>	<b>1</b>	<b>11</b>	<b>0</b>	<b>7</b>	<b>2</b>	<b>33</b>

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

Date of Report: 7-Sep-96

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

## Case Reports

### Leptospirosis - Tripler Army Medical Center

#### Case #1

On 27 March 1996, a 14-year-old Micronesian boy was admitted to the local state hospital with a 7-day history of headache, abdominal pain, loose watery diarrhea, and shaking chills. On admission, he was hypotensive and severely jaundiced. Abdominal exam revealed hepatomegaly. A chest x-ray showed bilateral pleural effusions with pulmonary edema. He was started on ampicillin which was subsequently changed to nafcillin and Rocephin. After six days of minimal urine output, he was transferred to Tripler Army Medical Center (TAMC) for treatment of acute renal failure. Initial laboratory tests were remarkable for an elevated white blood cell count (WBC), blood urea nitrogen (BUN), and creatinine levels. His total bilirubin fluctuated between 20.7 mg/dl and 23.8 mg/dl. The patient was dialyzed for a short period during his 12-day hospitalization and he had a relatively brisk diuresis in response to IV fluids and furosemide. The patient was discharged in stable condition with no discharge medications. While acute titers for anti-leptospiral antibodies were negative, a serum sample obtained 4 weeks after acute onset of symptoms contained antibodies at a titer of 1:100.

#### Case #2

On 5 April 1996, an 8-year-old Micronesian boy presented to the local state hospital with a 6-day history of myalgias, headache, and fever of 102°F. He had been treated with amoxicillin as an outpatient but was admitted to the hospital when he developed non-bilious vomiting and watery diarrhea. Further questioning revealed that the boy's living conditions were poor and that he had frequent contact with pigs and rats. Significant laboratory findings on admission included a decreased hematocrit and platelet count and an increase in the BUN

and creatinine levels. During hospitalization his total bilirubin fluctuated between of 9.6 mg/dl and 19.1 mg/dl. He was transfused, started on IV penicillin, and transferred to TAMC. On admission to TAMC, he was extremely ill-appearing with injected, icteric conjunctiva. He was anuric and had a diffusely tender abdomen with hepatomegaly. A healing 3x3 cm lesion was observed on the dorsum of his left foot. He was immediately started on dialysis. On the second hospital day, he suffered a generalized seizure and was encephalopathic for several days. After 6 days of dialysis, his renal failure slowly resolved, but he developed severe pancreatitis and was placed on total parenteral nutrition. His amylase reached 367 mg/dl, with a lipase of 2,887 mg/dl. His diet was slowly advanced and, after 78 hospital days, he was discharged in stable condition. As in Case #1, acute titers for anti-leptospiral antibodies were negative. A late convalescent serum titer, however, contained antibodies at 1:200.

#### Case #3

On 24 April 1996, a 16-year-old Micronesian boy was admitted to the local state hospital with a 3-day history of fever, headache, and abdominal pain. One day prior to the onset of fever, he suffered a machete cut to his leg while tending the family's pigs. Prior to hospitalization, he developed watery diarrhea and markedly decreased urine output. On physical examination, he appeared ill with red, injected conjunctiva and a temperature of 102°F. He developed anuria with elevated BUN and creatinine levels. He was placed on IV ampicillin and flown to TAMC. Upon arrival, he was acutely ill, somnolent but arousable, with a diffusely tender abdomen and hepatomegaly. Significant laboratory values included a decreased platelet count, and elevated bilirubin, amylase, and lipase levels. During his 11-day hospitalization, he had episodes

*Continued on page 8*

of hypotension and bradycardia which resolved as his condition improved. His BUN rose to a level of 118 mg/dl with a peak creatinine level of 15.3 mg/dl. His acute renal failure responded to low doses of dopamine and furosemide, obviating renal dialysis. The patient was discharged in stable condition with no medications. The acute leptospiral serology was negative and the convalescent leptospiral serology is pending.

*Submitted by COL DA Person, MC, Chief, Department of Pediatrics, TAMC and CPT MW Burnett, MC, Chief Resident, Department of Pediatrics, TAMC*

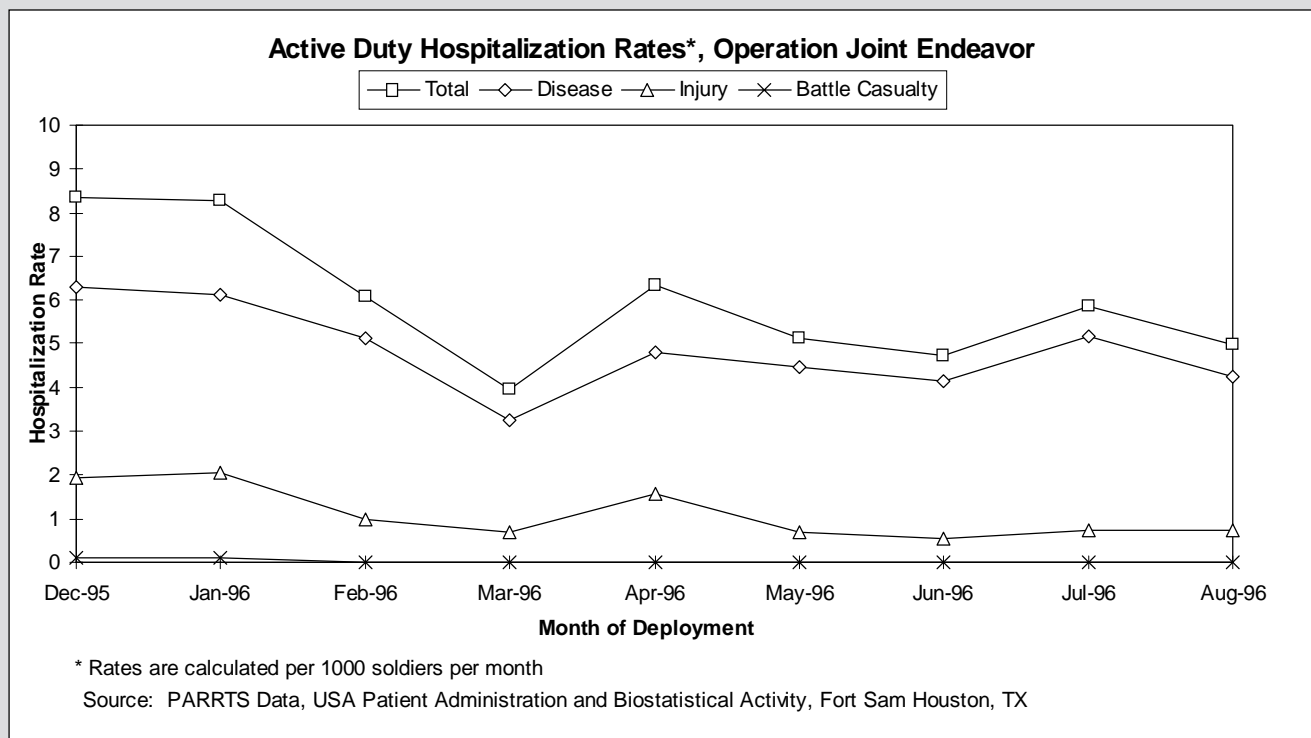
**Editorial Comment:** Leptospirosis is considered to be the most widespread zoonosis in the world.<sup>1</sup> It is a spirochetal infection caused by *Leptospira interrogans*, having its reservoir in the renal tubules of infected, asymptomatic, feral, domestic, and

peridomestic animals, mainly rodents and livestock. Humans are dead-end hosts in the chain of transmission with secondary cases exceedingly rare. Historically, leptospirosis has been considered an occupational hazard affecting farmers, veterinarians, and soldiers. More recently, infection has been acquired during recreational activities such as hiking, golfing, wading, and swimming in contaminated water. Infection is commonly acquired through skin (especially abraded skin) or mucous membrane contact with urine-contaminated fresh water, infected animals, or contaminated moist soil or vegetation. Two of our three cases had recent close contact with farm animals (i.e. pigs) and rodents.

The disease in man is characterized as a systemic vasculitis with multi-organ involvement. The incubation period is usually 10 days (range 2 to 26 days).<sup>2</sup> Classically, the disease is described as a biphasic illness, with the first phase or

*Continued on page 10*

### Surveillance Trends, Bosnia\*\*



\*\* Note: Due to the length of the deployment, monthly rates will now be graphed instead of weekly rates.



Bosnia Update**TABLE III. Active Duty Hospitalization Rates\*, Operation Joint Endeavor, 11Dec95 - 7Sep96**

ICD-9 Category	Males							Females							All
	< 20	20-24	25-29	30-34	35-39	>= 40	Total M	< 20	20-24	25-29	30-34	35-39	>= 40	Total F	
<b>Infectious and Parasitic Diseases</b>	20.4	4.9	4.1	4.6	1.8	1.4	<b>4.2</b>	12.7	6.3	4.4	11.4	0.0	0.0	<b>5.4</b>	<b>4.4</b>
<b>Neoplasms</b>	2.3	0.3	0.6	0.6	0.4	1.4	<b>0.6</b>	0.0	1.3	0.0	0.0	6.3	0.0	<b>1.2</b>	<b>0.7</b>
<b>Endocrine, Nutritional, and Metabolic Disease and Immunity Disorders</b>	2.3	0.3	0.7	0.3	0.0	0.9	<b>0.5</b>	0.0	0.0	0.0	4.6	0.0	0.0	<b>0.8</b>	<b>0.5</b>
<b>Diseases of the Blood and Blood-Forming Organs</b>	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	<b>0.0</b>
<b>Mental Disorders</b>	9.1	3.6	3.0	1.2	0.9	1.4	<b>2.5</b>	0.0	3.8	7.3	0.0	0.0	0.0	<b>3.1</b>	<b>2.6</b>
<b>Diseases of the Nervous System and Sense Organs</b>	9.1	3.2	3.1	1.7	3.1	1.4	<b>2.9</b>	0.0	3.8	8.7	4.6	6.3	0.0	<b>5.0</b>	<b>3.1</b>
<b>Diseases of the Circulatory System</b>	0.0	1.9	2.0	5.5	5.8	3.6	<b>3.2</b>	0.0	0.0	1.5	0.0	6.3	3.7	<b>1.5</b>	<b>3.0</b>
<b>Diseases of the Respiratory System</b>	0.0	4.6	3.5	2.6	2.2	2.3	<b>3.3</b>	0.0	12.7	5.8	0.0	6.3	3.7	<b>6.6</b>	<b>3.7</b>
<b>Diseases of the Digestive System</b>	18.1	11.8	8.3	6.6	5.4	4.1	<b>8.5</b>	38.0	11.4	5.8	2.3	6.3	3.7	<b>7.7</b>	<b>8.4</b>
<b>Diseases of the Genitourinary System</b>	9.1	3.1	4.4	4.0	2.7	4.1	<b>3.8</b>	12.7	29.2	14.5	9.1	6.3	7.3	<b>16.2</b>	<b>5.3</b>
<b>Complications of Pregnancy, Childbirth, and the Puerperium**</b>	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	0.0	3.8	1.5	2.3	0.0	0.0	<b>1.9</b>	<b>0.2</b>
<b>Diseases of the Skin and Subcutaneous Tissue</b>	9.1	3.4	1.5	2.0	0.9	0.9	<b>2.2</b>	0.0	1.3	0.0	4.6	0.0	0.0	<b>1.2</b>	<b>2.1</b>
<b>Diseases of Musculoskeletal System and Connective Tissue</b>	9.1	7.0	6.8	6.6	3.6	3.2	<b>6.1</b>	0.0	5.1	4.4	0.0	15.7	3.7	<b>5.0</b>	<b>6.0</b>
<b>Congenital Abnormalities</b>	0.0	0.3	0.7	0.0	0.0	0.0	<b>0.3</b>	0.0	0.0	0.0	0.0	0.0	0.0	<b>0.0</b>	<b>0.3</b>
<b>Symptoms, Signs, and ill-Defined Conditions</b>	6.8	8.7	6.7	6.6	4.9	4.5	<b>6.8</b>	114.1	31.7	11.6	13.7	6.3	3.7	<b>19.7</b>	<b>8.3</b>
<b>Injury and Poisoning</b>	20.4	16.4	12.2	11.8	8.1	2.7	<b>12.0</b>	50.7	21.6	5.8	9.1	6.3	0.0	<b>12.0</b>	<b>12.0</b>
<b>All Hospitalizations</b>	<b>115.5</b>	<b>69.6</b>	<b>57.7</b>	<b>54.3</b>	<b>39.9</b>	<b>31.6</b>	<b>57.0</b>	<b>228.1</b>	<b>132.1</b>	<b>71.1</b>	<b>61.7</b>	<b>65.7</b>	<b>25.6</b>	<b>87.4</b>	<b>60.5</b>

\* Rates are calculated per 1000 soldiers per year based on cumulative person time.

\*\* Includes normal delivery

*Continued from page 8*

"leptospiemic phase" lasting 4 to 7 days. This phase is characterized by fever, myalgias, headache, and conjunctival suffusion. During this phase, leptospirems may be recovered from the blood, CSF, and urine. There may be asymptomatic period lasting 1 to 5 days followed by the "leptoapiruric" or "immune phase" that may last 4 to 30 days or longer. This phase begins with a recurrence of fever and may include headache and other signs of aseptic meningitis.<sup>3</sup>

Leptospirosis usually manifests as a relatively benign, anicteric form (90%), as compared with the more severe, life threatening icteric form (10%) associated with renal failure, hemorrhage, and myocarditis (Weil Syndrome). All of the patients described here were diagnosed with severe, icteric leptospirosis with acute renal failure, classic Weil Syndrome. Treatment with IV penicillin is effective for severe leptospirosis,<sup>4</sup> while doxycycline is recommended for milder disease.<sup>5</sup> Maximum supportive therapy for severe disease, to include renal dialysis, may be life saving.

Presumptive identification of leptospirems may be made by direct, darkfield microscopy or direct fluorescent-antibody methods. Direct isolation of *L. interrogans* in Fletcher's, Ellinghausen's, or polysorbate 80 semisolid medium is diagnostic. In the 3 cases previously discussed antibiotics had been initiated and therefore all cultures including blood and cerebrospinal fluid were negative. The microscopic agglutination test (MAT), using live antigen, is the standard for detection of leptospiral antibodies using paired acute and convalescent sera.<sup>6</sup>

All three of these patients came from Kosrae, a high volcanic, single island state in the Federated States of Micronesia. It is 2,600 miles southwest of Honolulu, lying 5° north of the equator. This small island, 42 miles in diameter, has a population of approximately 8,000 people. Much of the native population was wiped out following western con-

tact when "wasting diseases" such as measles, smallpox, influenza, and other infectious diseases were introduced to the non-immune island population. Public health officials in Kosrae are well aware of the threat of leptospirosis, and highly contaminated streams are posted with warnings. In a retrospective study of the TAMC experience with acute renal failure in children due to leptospirosis, 16 out of a total of 19 cases (84%) were from the island of Kosrae.<sup>7</sup>

Doxycycline, in an oral dose of 200 mg once weekly, has been shown to be effective in preventing leptospirosis in exposed military personnel.<sup>8</sup> Such chemoprophylaxis should not be given to soldiers just because they are deploying to endemic areas; rather it should be reserved for those with high risk of exposure such as soldiers attending the Jungle Operations Training Center (JOTC) during Panama's rainy season (June - December).

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ARD Surveillance Update

<i>Legend</i>	
—	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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