

Public Health

Seattle & King County Fact Sheet

Leptospirosis: Information for Health Care Providers

□ Epidemiology

- ✓ Leptospirosis is a bacterial zoonosis of worldwide distribution caused by infection with pathogenic *Leptospira* species.
- ✓ Leptospirosis may be under diagnosed and underreported due to:
 - Lack of clinical suspicion.
 - The variety of clinical manifestations.
 - Lack of readily available laboratory diagnostic tests.
- ✓ In the US about 100-200 cases are reported annually to the CDC, half of which are from Hawaii. Leptospirosis acquired in Washington State is reported rarely.
- ✓ Wild and domestic animals, especially rodents, are the natural reservoir for leptospires. Canine cases are reported from King County annually.
- ✓ Three epidemiologic patterns have been described:
 - Infection of humans in agricultural settings.
 - Infection in tropical wet areas with widespread environmental contamination, especially in rainy seasons, or following floods, hurricanes or other disasters.
 - Rodent-borne infection in urban environments.
- ✓ Human exposure most commonly occurs through contact of skin (especially abraded) or mucous membranes with water, moist soil or vegetation contaminated by urine of infected animals. Swallowing contaminated water, direct contact with urine or tissues of infected animals, or inhalation of aerosolized contaminated fluids are other possible routes of transmission.
- ✓ Leptospirosis is an occupational hazard in farmers, veterinarians, dairy, slaughterhouse and sewer workers, miners, rice and sugarcane field workers, and military troops.
- ✓ Recreational exposures can include rafting, canoeing and swimming in tropical and temperate climates. Cases have occurred after adventure travels, adventure races and triathlons both abroad and in the US.

□ Microbiology and Pathogenesis

- ✓ Leptospire are spirochetes. Disease is caused by infection with pathogenic leptospires of the species *L. interrogans*, which includes over 200 serovars.
- ✓ Leptospire may survive in water or moist soil for many weeks depending on temperature and acidity.
- ✓ Serovars vary by region and are associated with specific animals (maintenance hosts) who harbor the bacteria in their renal tubules.
- ✓ The pathogenesis may involve immune-mediated reactions and production of toxins that cause hemolytic disease; vasculitis is prominent.
- ✓ Infection can cause endothelial damage, inflammatory infiltrates and petechial hemorrhages. The liver, kidney, heart and lungs are the most affected organs, but any organ can be involved.

□ Clinical Presentation

- ✓ The incubation period ranges from 2-30 days, typically 7-14 days.
- ✓ Symptoms vary from a mild influenza-like illness to serious, life-threatening disease.
- ✓ Approximately 90% of patients have mild, self-limited illness.
- ✓ The acute leptospiraemic phase lasts approximately 4-10 days and often presents with:
 - Nonspecific symptoms, including, sudden onset of fever, chills, severe headache, myalgia, nausea, vomiting and diarrhea.
 - Physical findings include muscle tenderness, lymphadenopathy, pharyngeal injection, transient rash, hepatomegaly, and splenomegaly. Pulmonary involvement may also occur.
 - Conjunctival injection and myalgias of calf and lumbar region are suggestive of leptospirosis.
- ✓ In some cases, the illness is biphasic with onset of severe symptoms lasting 4-30 days after a brief period of apparent recovery (referred to as the "immune stage").
- ✓ Severe disease is characterized by meningitis, rash, hemolytic anemia, hepatorenal failure (Weil's

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disease), jaundice, mental confusion and depression, myocarditis and pulmonary involvement with or without hemorrhage or hemoptysis.

Clinical Presentation, continued

- ✓ Long-lasting immunity after infection is believed to be serovar-specific so that infection with a different serovar is possible.

Infection Control

- ✓ Person- to-person transmission is rare. Standard precautions are recommended, with contact precautions for items soiled with urine.

Diagnosis

- ✓ Definitive testing of acute and convalescent sera by the microscopic agglutination test (MAT) is done at the CDC. Contact Public Health for assistance with testing.
- ✓ Isolation of leptospire from blood (during first 7 days of illness) or CSF (days 4-10) or urine (after day 10) is possible but has low sensitivity and may require prolonged incubation and special culture media.

Treatment

- ✓ Treatment should be initiated as early as possible.
- ✓ Mild leptospirosis can be treated with oral doxycycline or ampicillin.
- ✓ Consultation with an infectious disease specialist should be considered for severe cases.
- ✓ For severe disease, intravenous treatment with penicillin, ceftriaxone, or ampicillin has been recommended.
- ✓ Jarish-Herxheimer reactions can occur with treatment, and patients receiving intravenous penicillin should be monitored.

Prevention and Prophylaxis

- ✓ Control of rodents in rural, urban and recreational areas with human presence.
- ✓ Education of the public, including travelers, to avoid contact with contaminated water, moist soil and vegetation and to wear protective clothing or footwear in areas suspected to be contaminated.
- ✓ Vaccines are available to prevent leptospirosis in farm animals and dogs, and are widely used. However, they may not protect against all types of *Leptospira* bacteria.
- ✓ No human vaccines are licensed in the US.

For additional information about leptospirosis see:

- ✓ Centers for Disease Control and Prevention's web site on leptospirosis, including advise for travelers: www.cdc.gov/ncidod/diseases/submenu/sub_lepto.htm
- ✓ This fact sheet is available on line from Public Health at: www.metrokc.gov/health/prevcont/leptospirosis.htm

Report all suspected cases of leptospirosis to Public Health – Seattle & King County within 3 working days by calling (206) 296- 4774. Public Health can arrange confirmatory testing at CDC.