

# LEPTOSPIROSIS

(Weil's disease, Pretibial (Fort Bragg) fever, Swineherd's disease, Swamp fever, Mud fever, Hemorrhagic jaundice, Canicola fever)

## REPORTING INFORMATION

- Class A(3)
- Report by the close of the work week
- [Confidential Case Report Card](#) (3812.11, rev. 12/81), [lab report](#) (3833.11), or telephone
- Request completion of [CDC Leptospirosis Case Investigation Report](#) (CDC 4.173 12/74). To be sent by the local health department to ODH Bureau of Infectious Disease Control, 246 N. High Street, P.O. Box 118, Columbus, OH 43266-0118

## AGENT

All pathogenic leptospires belong to the species *Leptospira interrogans* (a bacterium). There are more than 300 serovars grouped into about 23 serogroups.

## CASE DEFINITION

### Case description

An illness characterized by fever, headache, chills, myalgia, conjunctival suffusion, and less frequently by meningitis, rash, jaundice, or renal insufficiency. Symptoms may be biphasic.

### Laboratory criteria for diagnosis

- Isolation of *Leptospira* from a clinical specimen, or
- Fourfold or greater increase in *Leptospira* agglutination titer between acute- and convalescent-phase serum specimens obtained  $\geq 2$  weeks apart and studied at the same laboratory, or
- Demonstration of *Leptospira* in a clinical specimen by immunofluorescence

### Case classification

Probable: a clinically compatible case with supportive serologic findings (i.e., a *Leptospira* agglutination titer of  $\geq 200$  in one or more serum specimens)

Confirmed: a clinically compatible case that is laboratory confirmed

## SIGNS AND SYMPTOMS

Clinical picture can vary, with many individuals having inapparent or subclinical infections. In general, two clinical types are distinguished: anicteric and icteric.

**Anicteric:** Initial symptoms last 4-7 days and can mimic flu, including fever, myalgia, conjunctivitis, neck stiffness, nausea, and sometimes vomiting. In the second or immune stage of anicteric leptospirosis, fever is usually not present or is low-grade. Headaches, meningitis, myalgia, nausea, vomiting, and abdominal pain are also common in this stage. Patients usually recover in about a month, although leptospiuria may continue for several months.

**Icteric:** Only 5-10 percent of cases have this severe form of leptospirosis (Weil's Disease), where the infection progresses to hepatitis, nephritis, meningitis, respiratory distress, and hemorrhagic tendencies, with associated jaundice and azotemia. Convalescence may take several months.

## DIAGNOSIS

All specimens are sent to ODHL, which will forward specimens to CDC as necessary. Leptospires can be isolated from the blood (first 7 days) or CSF (days 4-10) during the acute illness. Afterwards, it can be isolated from the urine. See Section 4 in this manual for details of sending specimens and contact telephone numbers at ODHL.

**Blood Specimens**

For culture, use EDTA tube, preferably heparinized, with no citrate. Send at room temperature.

**Serum Specimens**

Need 2 cc frozen serum. Send frozen to ODHL.

**Urine Specimens**

For PCR, send >5 cc frozen.

For culture, need 0.5 cc diluted to 5 cc in phosphate buffered saline. Send at room temperature. If phosphate buffered saline is not available, a 1% solution of bovine serum albumin in water can be used.

**EPIDEMIOLOGY****Source**

Most wild and domestic animals can serve as reservoirs for leptospirosis. Swine, cattle, rodents, dogs, and many wild animals can shed the organism in their urine, contaminating soil and surface water.

**Occurrence**

Leptospirosis occurs worldwide in both humans and animals. There are about 100-200 human cases reported each year in the United States. Seven cases were confirmed in Ohio between 1990-1997. Several occupational groups are particularly at risk, including workers in rice fields, mines, sewer systems, and slaughterhouses, and animal caretakers and veterinarians. Hunters or summer vacationers can be exposed while swimming and camping.

**Mode of Transmission**

Infection in humans and animals is contracted directly or indirectly, through the skin and the nasal, oral, and conjunctival mucosa. Indirect exposure through water, soil, or foods contaminated by urine from infected animals is the most common route. Person-to-person transmission is rare even though excretion in the urine may continue for up to 11 months.

**Incubation period**

Usually 10 days with a range of 4-19 days.

**PUBLIC HEALTH MANAGEMENT****Case**

Investigation: Search for the source of infections, such as exposure to contaminated waters and animal contact. Complete the CDC Leptospirosis Case Investigation Report.

Treatment: Penicillin in large doses, streptomycin, tetracycline, doxycycline, erythromycin, and chloramphenicol are leptospirocidal in vitro. Evidence concerning the influence of drugs on leptospirosis in humans is conflicting and to be effective should be given before the fourth day of illness. Penicillin G and amoxicillin may be effective as late as seven days into the illness.

Isolation: Blood and body fluid precautions.

Follow-up specimens: Convalescent serum obtained  $\geq 2$  weeks after acute serum.

Public Health Significance: Transmission is usually through contact with wild or domestic animals and contaminated water. When a case is identified and potential mode of transmission is determined, education should be provided to others with similar environmental or occupational exposure.

**Contacts**

Contacts should be alerted to the symptoms in case they have a history of exposure to infected animals or contaminated waters by virtue of being in one of the high-risk occupations or by similar

exposure as the case.

### **Prevention and Control**

#### Follow-up specimens

Generally, no environmental specimens are indicated. Public education about the mode of transmission and control of reservoir animals, especially raccoons, opossums, skunks, and rodents, should be considered. Drainage of potentially contaminated waters and soil can be recommended, if feasible.

#### Vaccination

There are no effective vaccines for humans. Vaccines for domestic livestock and canines give protection for specific serovars, but not for emerging serovars or existing serovars which cross to other species.