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**CDC HEALTH ADVISORY**

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**Advice to Clinicians about Leptospirosis in U.S. Travelers Returning from Northern Israel**

**Summary**

The Israeli Ministry of Health is reporting an outbreak of leptospirosis in persons with exposure to natural water sources in the Golan Heights region of northern Israel after July 1, 2018. As of September 6, 2018, three persons with leptospirosis who traveled to Israel have been identified in the United States, with additional suspected cases reported and under investigation. Early symptoms of leptospirosis include fever, headache, chills, muscle aches, vomiting, diarrhea, cough, conjunctival suffusion (conjunctival redness without exudates), jaundice, and sometimes a rash. Clinicians should consider leptospirosis as a diagnosis in any patient who develops an acute febrile illness within 4 weeks of travel to one of the areas in northern Israel listed below since July 1, 2018.

**Background**

Seven recreational water sites in the Golan Heights region have been linked to the outbreak:

- Gilabun (Jilbon)
- Yarden (Jordan) Park
- Majrase (Majrase-Beteha Nature Reserve)
- Meshushim (Meshushim Nature Reserve)
- Yehudiya (Yehudia Nature Reserve)
- Zaki (Zakhi)
- Zavitan

*Leptospira* species are spread by the urine of infected animals and can survive for weeks to months in fresh water, soil, and mud. The incubation period is usually 5-14 days, with a range of 2-30 days. Humans acquire the disease through direct contact with urine from animals infected with leptospirosis or with urine-contaminated water or mud. High-risk activities can include wading, swimming, or boating in floodwater or freshwater (rivers, streams, lakes) that may be contaminated with animal urine. Some actions like prolonged immersion in, submerging head in, or swallowing contaminated water can particularly increase risk. Other high risk activities can include direct contact with animals and activities that can lead to skin abrasions and water or soil exposure. Human-to-human transmission is very rare but has been documented through sexual intercourse and breastfeeding. Transmission has also rarely occurred through animal bites.

In humans, leptospirosis can cause a wide range of symptoms. Most patients have a mild flu-like illness with symptoms including fever, headache, muscle aches, conjunctival suffusion, vomiting, diarrhea, jaundice, and sometimes a rash. Some patients may go on to develop severe illness, including liver and renal failure, hemorrhage (especially pulmonary), aseptic meningitis, cardiac arrhythmias, and pulmonary insufficiency. Leptospirosis is fatal in approximately 5-15% of patients with severe illness.

**Recommendations**

Clinicians should evaluate patients for leptospirosis who have onset of an acute febrile illness within 4 weeks of travel to the Golan Heights region in northern Israel, especially with exposure to one of the seven natural water recreational sites listed above. If clinicians suspect leptospirosis in a patient, they

should initiate treatment with antibiotics (e.g., doxycycline or penicillin) prior to receiving results of diagnostic tests, as earlier treatment is associated with a decrease in duration and severity of disease. For more specifics about antibiotics and dosage, please see CDC's [leptospirosis fact sheet for clinicians](#).

Commercially available tests include:

- Polymerase chain reaction (PCR): a positive result is confirmatory, but a negative result does not rule out leptospirosis.
  - In the acute phase of illness, leptospire are present in the blood (septicemia) for approximately the first 4–6 days of illness. Leptospire may be shed intermittently in the urine after approximately the first week of illness onset.
- Screening (non-confirmatory) IgM-based serologic assays (ELISA, ImmunoDot): serologic test results may be falsely negative early in the course of the disease.
  - Antibodies to leptospire develop between 3-10 days after symptom onset, thus any serologic test must be interpreted accordingly. Negative serologic test results from samples collected in the first week of illness do not rule out disease. Repeat serologic testing on convalescent-phase samples collected 7-14 days after the first testing.

Samples can be sent to the Centers for Disease Control and Prevention (CDC) for confirmatory testing (PCR and confirmatory serologic testing by the microscopic agglutination test). Send all specimens through the state/territorial public health department, unless authorized to send directly to CDC. Specimen submission instructions are available at CDC's Zoonoses and Select Agent Laboratory website ([https://www.cdc.gov/ncezid/dhcpp/bacterial\\_special/zoonoses\\_lab.html](https://www.cdc.gov/ncezid/dhcpp/bacterial_special/zoonoses_lab.html)).

It is best to submit as many specimen types as possible (both in terms of type of body fluid and collection date within illness progression). Recommended specimens based on collection timing:

- Acute-phase illness (first week): whole blood and serum
- Convalescent-phase illness (after first week): serum, with or without urine

Leptospirosis is a nationally notifiable disease. Clinicians should report leptospirosis cases to their local/state health department according to their state's disease reporting requirements.

### **For More Information**

1. Leptospirosis diagnosis and management  
<https://www.cdc.gov/leptospirosis/index.html>
2. CDC leptospirosis fact sheet for clinicians  
<https://www.cdc.gov/leptospirosis/pdf/fs-leptospirosis-clinicians-eng-508.pdf>
3. Leptospirosis chapter in CDC [Health Information for International Travel](#) (Yellow Book)  
<https://wwwnc.cdc.gov/travel/yellowbook/2018/infectious-diseases-related-to-travel/leptospirosis>
4. Travel health notice on leptospirosis cases:  
<https://wwwnc.cdc.gov/travel/notices/watch/leptospirosis-israel>
5. New CDC "Think Travel" posters to remind clinicians and patients about the importance of travel history  
<https://wwwnc.cdc.gov/travel/page/infographics-travelers#thposters>
6. CDC-INFO  
<https://www.cdc.gov/cdc-info/index.html> or 1-800-232-4636

7. CDC Emergency Operations Center (EOC)  
770-488-7100
8. CDC's Bacterial Special Pathogens Branch  
[bspb@cdc.gov](mailto:bspb@cdc.gov) or 404-639-1711

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