

## Q FEVER

(Query fever, Abattoir fever, Balkan grippe)

### REPORTING INFORMATION

- Class A(2)
- Report by the close of the next business day
- [Confidential Case Report Card](#) (3812.11, rev. 12/81), [lab report](#) (3833.11), or telephone

### AGENT

*Coxiella burnetii* is a rickettsial organism with two antigenic phases: phase I is found in nature and phase II after multiple laboratory passages in eggs or cell cultures.

### CASE DEFINITION (see comment)

#### Clinical Description

Acute infection: A febrile illness usually accompanied by rigors, myalgia, malaise, and retrobulbar headache. Severe disease can include acute hepatitis, pneumonia, and meningoencephalitis. Clinical laboratory findings may include elevated liver enzyme levels and abnormal chest film findings.

Asymptomatic infections may also occur.

Chronic Infection: Potentially fatal endocarditis may develop months to years after acute infection, particularly in persons with underlying valvular disease. A chronic fatigue-like syndrome has been reported in some Q fever patients.

#### Laboratory Criteria for Diagnosis

- Isolation of *C. burnetii* from a clinical specimen by culture, or
- Fourfold or greater change in antibody titer to *C. burnetii* phase II or phase I antigen in paired serum specimens ideally taken 3-6 weeks apart, or
- Demonstration of *C. burnetii* in a clinical specimen by detection of antigen or nucleic acid

#### Case classification

Probable: a clinically compatible or epidemiologically linked case with a single supportive IgG or IgM titer. Cutoff titers are determined by individual laboratories. CDC tests for IgG antibodies with an indirect immunofluorescence assay (IFA), and uses a 1:128 titer as the cutoff for significant antibody.

Confirmed: a clinically compatible or epidemiologically linked case that is laboratory confirmed.

#### Comment

There is currently no case definition for Q fever published in the CDC "Case Definitions for Infectious Conditions under Public Health Surveillance." The above case definition is from a Position Statement issued by the 1999 annual meeting of the Council of State and Territorial Epidemiologists and National Association of State Public Health Veterinarians.

### SIGNS AND SYMPTOMS

Acute Q fever is usually characterized by an abrupt onset of fever, chills, severe sweats, weakness, malaise, headache (especially retrobulbar), and anorexia. Other non-specific systemic symptoms may occur. Cough and chest pain may occur in about half the patients. Weight loss and weakness can be pronounced. Hepatosplenomegaly is frequently noted. A rash is unusual. The illness lasts 1-4 weeks and then resolves gradually.

Chronic Q fever is infrequent, but endocarditis and hepatitis are the major manifestations. Acute Q fever is rarely fatal, but mortality among patients with endocarditis is 30-60%.

## DIAGNOSIS

Isolation of *C. burnetii* from blood, although diagnostic, is hazardous for laboratory workers. Diagnosis can be made by demonstrating a rise in specific phase I and phase II antibodies between acute and convalescent stages by immunofluorescent, enzyme immunoassay, complement fixation, and immune adherence hemagglutination tests. Serum specimens should be taken 3-6 weeks apart. The organism may be identified in liver biopsies or heart valve immunostains and electron microscopy.

## EPIDEMIOLOGY

### Source

Sheep, cattle, goats, cats, dogs, some wild animals (such as feral rodents), birds and ticks are natural reservoirs. Infected animals, including sheep and cats, shed massive numbers of organisms in placental tissues at parturition. Tick transmission is not considered a major source of infection in the United States, but transovarial and transstadial transmission occurs where ticks are involved with wildlife cycles in rodents, larger animals, and birds. Consumption of unpasteurized (raw) milk may also be a source of infection.

### Occurrence

The disease occurs worldwide. The incidence is greater than reported cases because many cases are mild. The disease is considered endemic in areas where reservoir animals are present.

### Mode of Transmission

Q fever is transmitted by inhalation of dust from contaminated premises or contact with infected tissues. Of particular concern are placental tissues, birth fluids, and excreta of infected animals. People working in stockyards, meat packing or rendering plants, and necropsy areas are at higher risk. Transmission may also occur from direct contact with contaminated materials, such as wool, straw, fertilizer, or laundry from people working with infected animals.

### Period of Communicability

Q fever is rarely transmitted person-to-person. Contaminated clothing may be a source of infection for others.

### Incubation Period

The incubation period is usually 14-21 days, but varies from 7-40 days depending on the size of the infecting dose.

## PUBLIC HEALTH MANAGEMENT

### Case

#### Investigation

Routine investigation to determine source of infection.

#### Treatment

For acute disease, use doxycycline for 15-21 days. Treat again if relapses occur. For chronic Q fever cases (endocarditis), use doxycycline and ofloxacin for several years or doxycycline and hydroxychloroquine for several years.

#### Isolation

No isolation is required.

#### Public Health Significance

Person-to-person transmission is unlikely.

**Contact**

No prophylaxis is indicated, because person-to-person transmission is unlikely.

**Prevention and Control**

Educate sheep and dairy farmers, veterinary researchers, packing and rendering plant workers, and necropsy workers on sources of infection. Educate general public on importance of consuming only pasteurized dairy products.

Vaccination

No commercially available vaccine is available in the United States. An investigational inactivated vaccine, prepared from *C. burnetii* (phase I), is available through the Department of Defense in situations where laboratory staff are working with *C. burnetii* or for others in hazardous occupations.

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