

# **Q Fever**

**(*Coxiella burnetii* Infection)**

## **Investigation Guideline**

### **CONTENTS**

#### **Investigation Protocol:**

- **Investigation Guideline**

#### **Investigation Forms / Documentation Worksheets:**

- **General Investigation Form(s)**
- **Q Fever Supplemental Form**

#### **Supporting Material:**

- **Fact Sheet**

# Q Fever (*Coxiella burnetii* Infection)

## Disease Management and Investigative Guidelines

---

### CASE DEFINITIONS

#### Acute (CDC 2009)

##### A. Clinical Evidence for Surveillance:

Acute fever and one or more of the following:

- rigors,
- severe retrobulbar headache,
- acute hepatitis,
- pneumonia, or
- elevated liver enzyme levels.

##### B. Laboratory Criteria:

###### **Confirmatory laboratory:**

- Serological evidence of a fourfold change in IgG antibody titer to *C. burnetii* phase II antigen by IFA between paired serum samples, (antibody titers to phase I antigen may be elevated or rise as well), or
- Detection of *C. burnetii* DNA in a clinical specimen via amplification of specific target by PCR assay, or
- Demonstration of *C. burnetii* in a clinical specimen by IHC, or
- Isolation of *C. burnetii* from a clinical specimen by culture.

###### **Supportive laboratory:**

- Single supportive IFA IgG titer of  $\geq 1:128$  to phase II antigen (phase I titers may be elevated as well).
- Serologic evidence of elevated phase II IgG or IgM antibody reactive with *C. burnetii* antigen by ELISA, dot-ELISA, or latex agglutination.

#### Chronic (CDC 2009)

##### A. Clinical Evidence for Surveillance:

Newly recognized, culture-negative endocarditis, particularly in a patient with previous valvulopathy or compromised immune system, suspected infection of a vascular aneurysm or vascular prosthesis, or chronic hepatitis, osteomyelitis, osteoarthritis, or pneumonitis in the absence of other known etiology.

##### B. Laboratory Criteria:

###### **Confirmatory laboratory:**

- Serological evidence of IgG antibody to *C. burnetii* phase I antigen  $\geq 1:800$  by IFA (while phase II IgG titer will be elevated as well; phase I titer is higher than the phase II titer), or
- Detection of *C. burnetii* DNA in a clinical specimen via amplification of specific target by PCR assay, or
- Demonstration of *C. burnetii* in a clinical specimen by IHC, or
- Isolation of *C. burnetii* from a clinical specimen by culture.

###### **Supportive laboratory:**

- An IgG antibody titer to *C. burnetii* phase I antigen  $\geq 1:128$  and  $< 1:800$  by IFA.

#### Abbreviations:

**IgG:** immunoglobulin G

**IFA:** indirect immunofluorescence assay

**PCR:** polymerase chain reaction

**IHC:** immunohistochemical methods

**IgM:** immunoglobulin M

**ELISA:** enzyme-linked immunosorbent assay

### C. Case Classification:

- **Confirmed acute Q fever:** A laboratory confirmed case that either meets clinical case criteria or is epidemiologically linked to a lab confirmed case.
  - **Probable acute Q fever:** A clinically compatible case of acute illness (meets clinical evidence criteria for acute Q fever illness) that has laboratory supportive results for past or present acute disease (antibody to Phase II antigen) but is not laboratory confirmed.
  - **Confirmed chronic Q fever:** A clinically compatible case of chronic illness (meets clinical evidence criteria for chronic Q fever) that is laboratory confirmed for chronic infection.
  - **Probable chronic Q fever:** A clinically compatible case of chronic illness (meets clinical evidence criteria for chronic Q fever) that has laboratory supportive results for past or present chronic infection (antibody to Phase I antigen).
- 

### D. Laboratory Testing:

- The State Public Health Laboratory forwards all specimens and isolates to the CDC. Specimens sent to CDC must have prior authorization from the State Epidemiology Program before they are processed.
  - Laboratory Kit: Miscellaneous infectious substance kit for isolates and/or KHEL Serology kit with yellow top blood tubes or any other red topped, clot separator blood tubes for serology.
  - Specimen: Call for specific information.
  - Amount: Call for specific information.
  - For additional information and/or questions concerning isolate submission, specimen collection/transport and laboratory kits call (785) 296-1620 or refer to [http://www.kdheks.gov/labs/lab\\_ref\\_guide.htm](http://www.kdheks.gov/labs/lab_ref_guide.htm).
- Recommendations and notes from CDC:
  - Paired serum samples: take one sample during the first week of illness and a second sample 3-6 weeks later.
  - For acute testing: The CDC uses in-house IFA IgG testing (cutoff of  $\geq 1:128$ ), preferring simultaneous testing of paired specimens, and does not use IgM results for routine diagnostic testing.
    - IgM tests are not strongly supported for use in serodiagnosis of acute disease, as the response may not be specific for the agent (resulting in false positives) and the IgM response may be persistent.
    - Serologic profiles of pregnant women infected with acute Q fever during gestation may progress frequently and rapidly to those characteristic of chronic infection
  - For chronic testing: Samples from suspected chronic patients should be evaluated for IgG titers to both Phase I and Phase II antigens.

- o Current commercially available ELISA tests (which test only for phase 2) are not quantitative, cannot be used to evaluate changes in antibody titer, and hence are not useful for serological confirmation.
- Complement fixation (CF) tests and other older test methods are neither readily available nor commonly used.
- Serologic test results must be interpreted with caution, because baseline antibodies acquired as a result of historical exposure to Q fever may exist, especially in rural and farming areas.
- Serological testing – Phase I and II antigens:
  - In acute cases of Q fever, the antibody level to Phase II is usually higher than that to Phase I, often by several orders of magnitude, and generally is first detected during the second week of illness. In chronic Q fever, the reverse situation is true.
  - Antibodies to Phase I antigens of *C. burnetii* generally require longer to appear and indicate continued exposure to the bacteria. Thus, high levels of antibody to Phase I in later specimens in combination with constant or falling levels of Phase II antibodies and other signs of inflammatory disease suggest chronic Q fever.
  - Antibodies to Phase I and II antigens have been known to persist for months or years after initial infection.

#### **E. Bioterrorism Potential:**

- Q Fever is a potential bioterrorism weapon.
- If the case has no known exposures or is not employed in an occupation that is prone to exposure, then a bioterrorist event should be considered.
- If you suspect that you are dealing with a [bioterrorism situation](#) contact the local Health Officer, the on-call epidemiologist (local) and KDHE (1-877-427-7317) immediately.

#### **F. Outbreak Definition:**

- There are no formal outbreak definitions; however, the investigator may consider the possibility of an outbreak when there is an unusual clustering of cases in time and/or space.

## **INVESTIGATOR RESPONSIBILITIES**

### **A. Investigation Related Tasks and Activities:**

- 1) Confirm diagnosis with appropriate medical provider.
  - Before contacting the patient or family, first determine what information has been released about the patient's diagnosis and identify if the needed epidemiologic data can be found in the clinical record alone.
  - Obtain information that supports clinical findings in the [case definition](#) and information on the onset date of the symptoms.
  - Obtain information on any laboratory tests performed and results.
  - For hospitalization, obtain medical records, including admission notes, progress notes, lab report(s), and discharge summary.

- 2) Conduct [case investigation](#) to identify potential source of infection and/or the presence of additional cases in the community.
- 3) Identify contacts that may have been exposed to the source of infection and monitor them for symptoms of disease.
- 4) Public health interventions may be needed to limit contact to a potential source of infection. (e.g., imported wool, livestock, or soil)
- 5) Examine possibility of [bioterrorist event](#) based on information available. Report suspicions to proper authorities.
- 6) Report all confirmed and probable cases to the KDHE Office of Surveillance and Epidemiology, using established methods.

#### **B. Notifications:**

- 1) Immediately contact the local Health Officer, the on-call epidemiologist (local) and KDHE (1-877-427-7317) for the following situations:
  - A bioterrorism situation is suspected.
  - A patient dies.
- 2) As appropriate, use the notification letter(s) and the disease fact sheet to notify the case, contacts and other individuals or groups.

## **EPIDEMIOLOGY**

A zoonotic disease, Q fever is caused by *C. burnetii*. It is unable to replicate outside a host but the spore-like form of the organism is resistant to heat, dehydration and many antiseptic compounds. *C. burnetii* is very infectious and is usually associated with direct contact to domestic goats, cattle or sheep. The risk is greatest when humans are exposed to these animals during the birthing process when the organism may be aerosolized from the uterus.

## **DISEASE OVERVIEW**

#### **A. Agent:**

*Coxiella burnetii* is a pleomorphic intracellular coccobacillus.

#### **B. Clinical Description:**

Acute symptoms include fever usually accompanied by rigors, myalgia, malaise, and a severe retrobulbar headache. Fatigue, night-sweats, dyspnea, confusion, nausea, diarrhea, abdominal pain, vomiting, non-productive cough, and chest pain have also been reported. Severe disease can include acute hepatitis, atypical pneumonia with abnormal radiograph, and meningoencephalitis. Pregnant women are at risk for fetal death and abortion. Clinical laboratory findings may include elevated liver enzyme levels, leukocytosis, and thrombocytopenia. Asymptomatic infections may also occur.

Chronic disease is characterized by an infection that persists for more than 6 months. Potentially fatal endocarditis may evolve months to years after acute infection, particularly in persons with underlying valvular disease. Infections of aneurysms and vascular prostheses have been reported. Rare cases of chronic hepatitis without endocarditis, osteomyelitis, osteoarthritis, and pneumonitis have occurred.

**C. Reservoirs:**

Domestic and wild animals.

**D. Mode(s) of Transmission:**

Dissemination often occurs by the airborne dissemination of *C. burnetii* in the dust from premises contaminated by placental tissues, birth fluid and excreta of infected animals. Transmission may also occur from direct contact with infected animals and/or other contaminated materials, such as: wool, straw and laundry.

**E. Incubation Period:**

Usually 14-22 days; range 9-39 days.

**F. Period of Communicability:**

Direct transmission from person-to-person rarely, if ever, occurs.

**G. Susceptibility and Resistance:**

Susceptibility is general and immunity following illness is life-long.

**H. Treatment:**

Q fever usually resolves without treatment within 15 days; however, tetracycline or doxycycline have been shown to shorten the duration of illness and are the drugs of choice; chloramphenicol may be used in children.

## STANDARD CASE INVESTIGATION AND CONTROL METHODS

Standard investigation activities include the following:

- 1) Confirmation of diagnosis using [case definition](#).
- 2) Collection of demographic data (birth date, county, sex, race/ethnicity)
- 3) Collection of clinical data and laboratory results.
- 4) Determination of risk factors and transmission settings. (i.e., animal exposure)

Standard investigation **includes** completion of the [General Investigation Form](#) and [Q Fever Supplemental Form](#). Further investigative activity should include:

**A. Case Investigation - Identify Potential Source of Infection:**

To help identify the source of the infection, the investigator should focus within the incubation period on the following potential source(s) of infection.

- Exposure: usually via aerosol but may be unknown (especially for chronic infection), but often includes the presence of goats, sheep, or other livestock, especially during periods of parturition. Direct contact with animals is not required, and variable incubation periods may be dose dependent.
  - Infectious particles can be carried downwind a half-mile or more, contributing to sporadic cases with no apparent animal contact.
- Occupation: Laboratory worker, veterinarian, farmer, dairyman, wool-processor or in a packinghouse, stockyard or rendering plant. Also consider rural construction workers, laundry workers and undertakers.
- Exposure to cattle, sheep and goat byproducts (e.g., wool, fertilizer, birth products, etc.) and dust from contaminated corrals.
- Use and source of unpasteurized dairy products or imported foods.
- Travel (location and dates) to areas with large concentrations of cattle, sheep, and goats.

**B. Contact Investigation – Identify Exposed Individuals / Populations:**

- Contacts are defined as those with possible exposure to the source of infection.
- Symptomatic acquaintances contacts should be strongly urged to contact their physician for a medical evaluation.

**C. Isolation, Work and Daycare Restrictions**

- Q fever is not transmissible from person-to-person. No respiratory isolation is needed.
- No restrictions are indicated for outpatient management.

**D. Case Management, Including Follow-up of cases:**

- None.

**E. Contact Management, Including Protection of Contacts:**

- If any are ill, inform them (or their physician) of possible exposure, in order to facilitate proper diagnosis and therapy.
- Persons who are not ill but who were potentially exposed should be educated on the signs and symptoms and incubation period and instructed to inform their medical providers of the potential exposure if symptoms do develop.

**F. Environmental Measures:**

- Pasteurize all milk and dairy products.
- Exercise care when handling placenta and fetus from aborted animals.
- Disinfect contaminated areas with a bleach solution or other commercial disinfectant.

**G. Education:**

- Discuss availability of medical services for people engaged in activities associated with farm animals, their body wastes and by-products.
- Educate public on sources of infection and the need to pasteurize milk.
- Counsel persons at highest risk for developing chronic Q fever, especially persons with pre-existing cardiac valvular disease or individuals with vascular grafts.

## **MANAGING SPECIAL SITUATIONS**

**A. Outbreak Investigation:**

- Notify KDHE immediately, 1-877-427-7317.
- Active case finding will be an important part of any investigation.

**B. Intentional Contamination**

Q fever has been proposed as a biological warfare agent. *Coxiella burnetii* is a highly infectious agent that is rather resistant to heat and drying. It can become airborne and inhaled by humans. A single *C. burnetii* organism may cause disease in a susceptible person. Because the laboratory confirmation could be delayed, specific epidemiological, clinical, and microbiological findings that suggest the possibility of an intentional release of *C. burnetii* should result in the immediate issue of a health alert.

If suspected:

- Notify local law enforcement and state public health officials.
- Implement “[Chain of Custody](#)” procedures for all samples collected, as they will be considered evidence in a criminal investigation.
- Work to define population at risk which is essential to guide response activities. Public health authorities will play the lead role in this effort, but must consult with law enforcement, emergency response and other professionals in the process. The definition may have to be re-evaluated and redefined at various steps in the investigation and response.
- Once the mechanism and scope of delivery has been defined, identify symptomatic and asymptomatic individuals among the exposed and recommend treatment and/or chemoprophylaxis.
- Establish and maintain a detailed line listing of all cases and contacts with accurate identifying and locating information.

Safety Considerations:

- Risks to public health, health care and emergency response personnel are not significant.

Risk Communication Materials:

- Factsheet for Q fever:  
<http://www.kdheks.gov/cphp/download/FactSheetGrid/English/QFever.pdf>
- Factsheets formatted for non-English speakers:  
[www.kdheks.gov/cphp/non\\_english\\_factsheets.htm](http://www.kdheks.gov/cphp/non_english_factsheets.htm)

Vaccination:

- A vaccine for Q fever has been developed and has successfully protected humans in occupational settings in Australia. However, this vaccine is not commercially available in the United States.
- Persons wishing to be vaccinated should first have a skin test to determine a history of previous exposure. Individuals who have previously been exposed to *C. burnetii* should not receive the vaccine because severe reactions, localized to the area of the injected vaccine, may occur.

Treatment:

- Drug-resistant organisms might be used as a weapon, conduct antimicrobial susceptibility testing quickly and alter treatments as needed.
- Antibiotics for treating patients infected with Q Fever in a bioterrorist event are included in the national pharmaceutical stockpile maintained by CDC, as are ventilators and other emergency equipment.

Postexposure prophylaxis (PEP):

- Not recommended for contacts. However, after a known terrorist event, all those exposed should be considered for treatment or monitored closely to allow for quick initiation of antibiotics upon onset of symptoms.

Surveillance:

- Arrange for medical monitoring of contacts for 6 weeks to detect the sudden onset of one or more of the following: high fevers (up to 104-105° F), severe headache, general malaise, myalgia, confusion, sore throat, chills, sweats,

non-productive cough, nausea, vomiting, diarrhea, abdominal pain, and chest pain.

## **DATA MANAGEMENT AND REPORTING TO THE KDHE**

- A. Organize, collect and report data with the “[General Investigation Form\(s\)](#)” and [Q Fever Supplemental Form](#).
- B. Report data electronically via KS-EDSS or by fax, include:
- At a minimum, data collected during the investigation that helps to confirm or classify a case.
  - All information collected on the General Investigation and supplemental form(s).

**Notes:** Laboratory reports received by KDHE indicating Q Fever will be entered by the Epidemiologist-on-call as a suspect “Q-fever “ and the local health department will be notified of the need to investigate.

Depending on the clinical signs and symptoms that are collected by the local health department and reported back to the KDHE, the event will be changed to a confirmed or probable “Q-fever, acute” or “Q-fever, chronic” case.

It is very important for the local health department to report to the KDHE what is learned about the signs and symptoms, as soon as possible.

## **ADDITIONAL INFORMATION / REFERENCES**

- A. **Treatment / Differential Diagnosis:** Red Book: 2009 Report of the Committee on Infectious Diseases. 28th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2009: 550-552.
- B. **Epidemiology, Investigation and Control:** Heymann. D., ed., Control of Communicable Diseases Manual, 18th Edition. Washington, DC, American Public Health Association, 2004.
- C. **Case Definitions:** CDC Division of Public Health Surveillance and Informatics, Available at: [http://www.cdc.gov/ncphi/diss/ndss/casedef/case\\_definitions.htm](http://www.cdc.gov/ncphi/diss/ndss/casedef/case_definitions.htm)
- D. **Chain of Custody:** KDHE Chain of Custody Standard Operating Guide, [http://www.kdheks.gov/cphp/operating\\_guides.htm#coc](http://www.kdheks.gov/cphp/operating_guides.htm#coc)
- E. **CDC Q-Fever Case Investigation Report.** Access online at: [www.cdc.gov/ncidod/dvrd/qfever/case\\_rep\\_fm.pdf](http://www.cdc.gov/ncidod/dvrd/qfever/case_rep_fm.pdf)
- F. **Additional Information (CDC):** <http://www.cdc.gov/health/default.htm>

# **General Investigation Form(s)**

# Kansas Disease Investigation Guidelines

## General Investigation Form

Investigation Information		
<b>Case Type:</b> <input type="checkbox"/> Human Case <input type="checkbox"/> Non-human Case	<b>Disease Name:</b> _____	
<b>Classification:</b> <input type="checkbox"/> Suspect <input type="checkbox"/> Probable <input type="checkbox"/> Confirmed	<b>KS-EDSS Investigation ID:</b> _____	
<b>Outbreak:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>Outbreak Name:</b> _____	<b>Outbreak #:</b> _____
<b>Onset Date:</b> _____	<b>Diagnosis Date:</b> _____	<b>Report Date:</b> _____
<b>Assigned to (Investigator):</b> _____	<b>Patient Died:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
Patient Information		
<b>Name Type:</b> <input type="checkbox"/> Default/Common <input type="checkbox"/> Legal <input type="checkbox"/> Maiden <input type="checkbox"/> Nickname		
<b>Last:</b> _____	<b>First:</b> _____	<b>Middle:</b> _____
<b>Street:</b> _____	<b>City/State:</b> _____	<b>Zip:</b> _____
<b>Evening Phone #:</b> _____	<b>Daytime Phone #:</b> _____	
<b>Sex:</b> <input type="checkbox"/> Failure to Report <input type="checkbox"/> Female <input type="checkbox"/> Male <input type="checkbox"/> Other <input type="checkbox"/> Transexual <input type="checkbox"/> Unknown		
<b>Race:</b> <input type="checkbox"/> American Indian or Alaska Native <input type="checkbox"/> Asian <input type="checkbox"/> Black or African American <input type="checkbox"/> Native Hawaiian or Other Pacific Islander <input type="checkbox"/> White <input type="checkbox"/> Unknown		
<b>Hispanic / Latino Ethnicity:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>Date of Birth:</b> _____	<b>Age:</b> _____	<b>Age Unit:</b> <input type="checkbox"/> Days <input type="checkbox"/> Weeks <input type="checkbox"/> Months <input type="checkbox"/> Years
Parent Information (if under 18)		
<b>Last:</b> _____	<b>First:</b> _____	<b>Middle:</b> _____
<b>Street:</b> _____	<b>City/State:</b> _____	<b>Zip:</b> _____
<b>Evening Phone #:</b> _____	<b>Daytime Phone #:</b> _____	
Work / Occupation or School / Grade		
<b>Worksites / School:</b> _____		
<b>Occupations / Grade:</b> _____		
Travel History		
<b>1<sup>st</sup></b>	<b>Destination:</b> _____	<b>Depart Date:</b> _____ <b>Return Date:</b> _____
<b>2<sup>nd</sup></b>	<b>Destination:</b> _____	<b>Depart Date:</b> _____ <b>Return Date:</b> _____
<b>3<sup>rd</sup></b>	<b>Destination:</b> _____	<b>Depart Date:</b> _____ <b>Return Date:</b> _____
<b>4<sup>th</sup></b>	<b>Destination:</b> _____	<b>Depart Date:</b> _____ <b>Return Date:</b> _____



# Supplemental Laboratory Report Form

**Lab Reports**

Laboratory Name: \_\_\_\_\_

Lab Report Date: \_\_\_\_\_

Ordering Provider Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Facility: \_\_\_\_\_

Specimen Accession Number: \_\_\_\_\_

Specimen Collection Date: \_\_\_\_\_

Organism Name: \_\_\_\_\_

Organism Species: \_\_\_\_\_

Organism Serogroup: \_\_\_\_\_

Organism Serotype: \_\_\_\_\_

**PFGE Results**

Pattern 1      KS: \_\_\_\_\_

Other State: \_\_\_\_\_

CDC: \_\_\_\_\_

Pattern 2      KS: \_\_\_\_\_

Other State: \_\_\_\_\_

CDC: \_\_\_\_\_

Pattern 3      KS: \_\_\_\_\_

Other State: \_\_\_\_\_

CDC: \_\_\_\_\_

**Additional Results Information**

Reported Test Name:

Coded Result:

Text Result:

Numeric Result:

Comments:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# Supplemental Contact Form

**Contacts**

**Last:** \_\_\_\_\_ **First:** \_\_\_\_\_ **Middle:** \_\_\_\_\_

**Street:** \_\_\_\_\_ **City/State:** \_\_\_\_\_ **Zip:** \_\_\_\_\_

**Evening Phone #:** \_\_\_\_\_ **Daytime Phone #:** \_\_\_\_\_ **E-mail:** \_\_\_\_\_

**Sex:**  Failure to Report  Female  Male  Other  Transexual  Unknown

**Race:**  American Indian or Alaska Native  Asian  Black or African American  Native Hawaiian or Other Pacific Islander  White  Unknown

**Hispanic / Latino Ethnicity:**  Yes  No

**Date of Birth:** \_\_\_\_\_ **Age:** \_\_\_\_\_ **Age Unit:**  Days  Weeks  Months  Years

**Worksites / School:** \_\_\_\_\_

**Occupations / Grade:** \_\_\_\_\_

**Exposure Information**

**Contact Type:**  Household  Sexual  Other: \_\_\_\_\_ **Partner / Cluster Code:** \_\_\_\_\_

**Date of First Exposure:** \_\_\_\_\_ **Date of Last Exposure:** \_\_\_\_\_ **Frequency:** \_\_\_\_\_

**Nature of Exposure:** \_\_\_\_\_ **Comments:** \_\_\_\_\_

**Testing and Treatment Information**

**Clinic Code:** \_\_\_\_\_ **Examination Date:** \_\_\_\_\_

**Examination Test:** \_\_\_\_\_ **Examination Result:** \_\_\_\_\_

**Prophylaxis/empiric treatment date:** \_\_\_\_\_ **Drug / Dosage:** \_\_\_\_\_

**Provider (Name / Facility):** \_\_\_\_\_

**Disposition and Diagnosis Information**

**Initiation Date:** \_\_\_\_\_ **Disposition Date:** \_\_\_\_\_ **Disposition:** \_\_\_\_\_

**Diagnosis:** \_\_\_\_\_ **Referral Type:**  Patient  Provider **Post-test Counseled :**  Yes  No

**Currently Assigned To:** \_\_\_\_\_ **Follow-up Date:** \_\_\_\_\_

**Risk Factors**

**Pregnant:**  Yes  No **If Yes, # of Weeks:** \_\_\_\_\_

**Risk factors for complications in contact:**  None  Pregnant Woman  HIV Seropositive  Unimmunized  Index case is a super-spreader

Child younger than 5  Age > 65  Otherwise immunosuppressed (s/p transplant, high dose steroids, etc)

# Q Fever Supplemental Form

## Kansas Department of Health

### Epidemiologic Case History

\* indicates required fields

<b>Case Type*</b> <i>Human Case    Non Human Case</i>	<b>Classification*</b> <i>Confirmed    Not a Case    Probable    Suspect    Deleted    Unknown</i>
<b>Supplemental Form Status</b> <i>Not Done    Form Complete    Form in Progress    Form Approved    Form Sent to CDC</i>	

<b>Report Date*</b> <small>mm/dd/yyyy</small>
--

### Patient Demographic Information

\* indicates required fields

<b>Last Name*</b>	<b>First Name*</b>	<b>Middle Name</b>	<b>Name Type*</b>	<b>Age</b>
-------------------	--------------------	--------------------	-------------------	------------

<b>Age Unit</b> <i>Days    Weeks    Months    Years</i>	<b>Date of Birth</b> <small>mm/dd/yyyy</small>
--	---

<b>Race*</b> <small>(Check all that apply)</small>			
<i>American Indian or Alaska Native</i>	<i>Asian</i>	<i>Black or African American</i>	
<i>Native Hawaiian or Other Pacific Islander</i>	<i>White</i>	<i>Unknown</i>	

<b>Ethnicity*</b> <i>Hispanic or Latino    Not Hispanic or Latino    Unknown</i>
---

<b>Sex*</b> <i>Failure to Report    Female    Male    Other    Transexual    Unknown</i>
---

<b>Street Address</b>
-----------------------

<b>City</b>	<b>County</b>	<b>State</b>	<b>Zip</b>
-------------	---------------	--------------	------------

<b>Evening Phone</b> <small>###-###-####</small>	<b>Daytime Phone</b> <small>###-###-####</small>
---	---

<b>Occupation</b>
-------------------

### Person Providing Report

<b>Name of Reporting Facility*</b>
------------------------------------

# Epidemiological Investigation

**Occupation at date of onset of illness**

(Check all that apply)

<i>Wool or felt plant</i>	<i>Tannery or rendering plant</i>	<i>Dairy</i>
<i>Veterinarian</i>	<i>Medical research</i>	<i>Animal research</i>
<i>Slaughterhouse worker</i>	<i>Laboratory worker</i>	<i>Rancher</i>
<i>Live in household with person occupationally related to above</i>	<i>Other (Please specify) _____</i>	

**Any contact with animals within 2 months prior to onset?**

(Check all that apply)

*Cattle*   *Sheep*   *Goats*   *Pigeons*   *Cats*   *Rabbits*   *Other (Please specify) \_\_\_\_\_*

**Any exposure to birthing animals?**

*Yes*   *No*   *Unknown*

**If yes, which animal**
**Exposure to unpasteurized milk**

*Yes*   *No*   *Unknown*

**If yes, which animal**
**Any travel in the last year?**

*Yes*   *No*   *Unknown*

**State**
**Foreign Country**
**Other family member with similar illness in last year**

*Yes*   *No*   *Unknown*

## Clinical Findings

**Date of Onset of Symptoms**

mm/dd/yyyy

**Clinical signs and syndromes**

(Check all that apply)

<i>Fever (&gt;100.5)</i>	<i>Myalgia</i>	<i>Retrobulbar pain</i>	<i>Malaise</i>	<i>Rash</i>
<i>Cough</i>	<i>Headache</i>	<i>Splenomegaly</i>	<i>Hepatomegaly</i>	<i>Pneumonia</i>
<i>Hepatitis</i>	<i>Endocarditis</i>	<i>Other (Please Specify) _____</i>		

**Any pre-existing medical conditions**

*Immunocompromised*   *Valvular heart disease or vascular graft*   *Pregnancy*   *Other \_\_\_\_\_*

**Was patient hospitalized because of this illness?**

*Yes*   *No*   *Unknown*

**Did the patient die from complications of this illness**

*Yes*   *No*   *Unknown*

**Date of Death:**

mm/dd/yyyy

## Laboratory Data

**Name of Laboratory**
**City**
**State**
**Zip Code**
**Phase 1 Antigen**
**Serology 1 Collection Date**

mm/dd/yyyy

**Serology**
**Serology 1 Titer or OD\***
**Positive**

(Check only if Specific assay was performed)

~IFA or CF and "Titer" or Other test:  
ELISA (EIA) Optical Density "OD" value.

IFA-IgG

IFA-IgM

Complement Fixation

Other test (specify below)

Laboratory Data cont.

**Other Test (Phase 1, Serology 1)**

**Serology 2 Collection Date**

mm/dd/yyyy

Serology	Serology 2 Titer or OD*	Positive
IFA-IgG		
IFA-IgM		
Complement Fixation		
Other test (specify below)		

**Other Test (Phase 1, Serology 2)**

**Phase 2 Antigen**

**Serology 1 Collection Date**

mm/dd/yyyy

Serology	Serology 1 Titer or OD*	Positive
(Check only if Specific assay was performed)	~IFA or CF and "Titer" or Other test: ELISA (EIA) Optical Density "OD" value.	
IFA-IgG		
IFA-IgM		
Complement Fixation		
Other test (specify below)		

**Other Test (Phase 2, Serology 1)**

**Serology 2 Collection Date**

mm/dd/yyyy

Serology	Serology 2 Titer or OD*	Positive
IFA-IgG		
IFA-IgM		
Complement Fixation		
Other test (specify below)		

**Other Test (Phase 2, Serology 2)**

Laboratory Data cont.

**Was there a fourfold change in antibody titer between the two serum specimens?**

*No Yes*

Other Diagnostic Tests? (Check only if specific assay was performed)

<b>PCR Test</b> <i>Positive Negative</i>	<b>Immunostain</b> <i>Positive Negative</i>	<b>Culture</b> <i>Positive Negative</i>
---	--	--

**Sample(s) tested**

**Final Diagnosis**

**Classify case based on the CDC case definition**

*Confirmed Probable*

Confirmed Q Fever:

**A clinically compatible case that is laboratory confirmed with 1) a fourfold change in antibody titer to *Coxiella burnetii* antigen by IFA or CF antibody test, or 2) a positive PCR assay, or 3) culture of *C. burnetii* from a clinical specimen, or 4) positive immunostaining of *C. burnetii* in tissue.**

Probable Q Fever

**A clinically compatible case with single supportive IgG or IgM titer as defined by testing lab.**

# Public Health Fact Sheet

## Q Fever

### What is Q fever?

Q fever is a bacterial disease caused by *Coxiella burnetii*. It occurs worldwide and is spread to humans from infected animals, such as goats, sheep, cows, cats, dogs, rodents, and some birds.

### What are the symptoms?

Most people infected with Q fever have either no symptoms or have an illness that is often mistaken for another infection like influenza. Symptoms include: sudden onset of fever, chills, headache, weakness, abnormal liver function tests, and severe sweating. In most cases, the illness is of short duration, lasting less than 2 weeks, even without treatment. Complications may occur but are rare.

### How is Q fever spread?

Q fever is spread to humans through the inhalation of dust from premises contaminated by placental tissues, birth fluids, and excreta of infected animals. Direct contact with infected animals and contaminated materials, such as wool, straw, fertilizer, and laundry has been associated with spread of the disease. Raw or unpasteurized milk from infected cows or goats may also spread Q fever.

### Who gets Q fever?

Q fever is a rare disease in people; Q fever outbreaks have resulted mainly from occupational exposure involving veterinarians, meat processing plant workers, sheep and dairy workers, livestock farmers, and researchers at facilities housing sheep.

### How is it diagnosed?

Blood tests can be used to diagnose Q fever.

### How is Q fever treated?

Most people infected with Q fever recover without any treatment. Those who become more seriously ill may require treatment with antibiotics.

### Is there a vaccine for Q fever?

A vaccine for Q fever has been developed and has successfully protected humans in occupational settings in Australia. However, this vaccine is not commercially available in the United States. Persons wishing to be vaccinated should first have a skin test to determine a history of previous exposure. Individuals who have previously been exposed to *C. burnetii* should not receive the vaccine because severe reactions, localized to the area of the injected vaccine, may occur. A vaccine for use in animals has also been developed, but it is not available in the United States.

*This fact sheet is for information only and is not intended for self-diagnosis or as a substitute for consultation. If you have any questions about the disease described above or think that you may have an infection, consult with your healthcare provider. This fact sheet is based on the Centers for Disease Control and Prevention's topic fact sheets.*

### **How can you prevent Q fever?**

Those at risk for coming into contact with Q fever should follow these important guidelines to avoid becoming infected:

- Appropriately disinfect and dispose of placenta, birth products, fetal membranes, and aborted fetuses at facilities housing sheep and goats.
- Restrict access to barns and laboratories used in housing potentially infected animals.
- Use only pasteurized milk and milk products.
- Use appropriate procedures for bagging, autoclaving, and washing of laboratory clothing.
- Vaccinate (where possible) individuals engaged in research with pregnant sheep or live *C. burnetii*.
- Quarantine imported animals.
- Ensure that holding facilities for sheep should be located away from populated areas. Animals should be routinely tested for antibodies to *C. burnetii*, and measures should be implemented to prevent airflow to other occupied areas.

### **Where can you get more information?**

- Your Local Health Department
- Kansas Department of Health and Environment, Epidemiologic Services Section at (877) 427-7317
- <http://www.cdc.gov/health/default.htm>
- Your doctor, nurse, or local health center

*This fact sheet is for information only and is not intended for self-diagnosis or as a substitute for consultation. If you have any questions about the disease described above or think that you may have an infection, consult with your healthcare provider. This fact sheet is based on the Centers for Disease Control and Prevention's topic fact sheets.*