Virginia Department of Health
Q Fever: Overview for Healthcare Providers

Organism	*Coxiella burnetii*: obligate intracellular bacterium, gram-negative coccobacillus which can persist in spore-like form in environment for years
Reporting to Public Health	Suspected or confirmed cases require immediate notification to the local health department (LHD). See www.vdh.virginia.gov/LHD/index.htm.
Infectious Dose	1–10 organisms
Occurrence	Occurs worldwide. In US, Q fever is rare, but is likely under-recognized; incidence in U.S. in 2010 was 0.4 cases per million persons and in Virginia, an average of 2.4 cases per year were reported in 2008–2012.
Natural Reservoir	Sheep, cattle, goats. Also, cats, dogs, some wild mammals, birds and ticks.
Route of Infection	• Most commonly by inhalation of contaminated airborne particles from birth products, excreta or tissue. • Also from inhalation of contaminated airborne particles from wool or bedding of infected animals. • Laboratory exposure via infective aerosols, droplets or parenteral inoculation may occur. • Other reported routes: inhalation of wind-borne organisms; ingestion of unpasteurized dairy products from infected animals; transmission by blood or bone marrow transfusion; sexual transmission; possibly by tick bites.
Communicability	Person-to-person transmission is extremely rare, but has occurred (e.g., during autopsy, delivery of baby).
Risk factors	• Working with animals (e.g., livestock farms, meat processing plants, slaughterhouses, veterinary clinics, animal research facilities; attending birth by infected animals; consuming unpasteurized dairy products; handling infective laboratory specimens; living near livestock). • Chronic Q fever is more likely in those with valvular prosthesis or aneurisms, pre-existing cardiac valve disease, immunosuppression or pregnancy.
Case-fatality Rate	• Acute Q fever: low (< 2%) in untreated infections; negligible in treated infections • Chronic Q fever endocarditis: 25% –65% if untreated, <10% with appropriate treatment
Incubation Period	• Acute Q fever: Depends on dose, but typically 2 –3 weeks (range 3–30 days) • Chronic Q fever: months to years
Clinical Description	• Severity varies and approximately half of infections are asymptomatic. • Acute Q fever: nonspecific febrile illness usually accompanied by rigors, myalgia, malaise, and retrobulbar headache. GI symptoms (e.g., diarrhea, vomiting) might occur, particularly in children. Severe disease can include acute hepatitis, pneumonia and meningoencephalitis. Fever usually lasts 5-14 days but may continue for as long as 2 months. Placentitis and miscarriage possible in pregnancy. • Chronic Q fever (occurs in <5% of acute cases) : endocarditis, hepatitis, osteomyelitis, post-Q fever fatigue syndrome
Differential Diagnosis	Variable depending on affected system
Radiography	• Chest x-ray may be normal or have nonspecific abnormalities, including segmental or lobar consolidation (unilateral or bilateral), involving upper or lower lobes, or feature multiple or single opacities; pleural effusions in ~35% of cases. • Endocarditis may cause vegetative lesions on heart valve visible with echocardiography.

For additional guidance, refer to VDH Q Fever: Guidance for Healthcare Providers at: http://www.vdh.virginia.gov/oep/Agents/ or CDC at http://www.cdc.gov/qfever/.

Specimen Collection and Laboratory Testing[†]	• Paired serology (acute-phase serum collected as soon as possible after onset of disease; convalescent-phase serum collected 2–4 weeks after acute phase) with PCR (blood, serum, or tissue) before antibiotic administration. • [†]If Q fever is suspected, notify LHD immediately to discuss the case and laboratory testing. Specimens should be sent to Division of Consolidated Laboratory Services (DCLS) after LHD has been consulted and testing has been approved by LHD/DCLS. The DCLS Emergency Duty Officer can be reached 24/7 at (804) 335-4617.
Treatment*	• Doxycycline is the preferred treatment for Q fever in adults and patients of any age with severe illness; however, contraindications may exist for some groups (e.g., pregnant women). • Refer to CDC's Diagnosis and Management of Q Fever — United States, 2013. MMWR 2013; 62(No. RR-03):[1–29] at http://www.cdc.gov/mmwr/pdf/rr/rr6203.pdf and VDH Q Fever: Guidance for Healthcare Providers at http://www.vdh.virginia.gov/oep/Agents/. • Antibiotic treatment should never be withheld pending laboratory tests or discontinued on basis of a negative acute specimen; however, treatment of chronic Q fever should be initiated only after diagnostic confirmation. • *For additional information on dosing, please consult with the package inserts.
Post-Exposure Prophylaxis*	Prophylaxis following potential exposures is generally not recommended; however, self-monitoring for symptoms and periodic serologic testing might be recommended.
Vaccine	In U.S., a vaccine is not commercially available.
Infection Control	• Use standard precautions; if aerosol-generating procedures, use additional precautions. • Transmission in healthcare settings is usually not a concern, except for exposure to infective birth products.