Q fever Information for Professionals

Agent: Coxiella burnetii, a gram-negative coccobacillus, is resistant to heat and desiccation and is highly infectious by the aerosol route. It is very stable in the environment.

Reporting Requirements for Disease: Report any suspect cases of Q fever to your local health authority within one working day; or, call the Texas Department of State Health Services at 1-800-252-8239. Case clusters or multiple cases should be reported immediately.

Infection Control: Standard Precautions should be practiced. Decontaminate surfaces with soap and water and a hospital grade disinfectant.

Incubation Period: 10 - 40 days, inversely proportional to dose

Signs/Symptoms: In addition to asymptomatic infections, Q fever has a panoply of acute and chronic, usually nonfatal, manifestations that vary probably related to the dose, and perhaps to the local strain of Q fever organism. Acute pictures include a self-limiting febrile illness of 2-14 days duration, pneumonia, hepatitis, and aseptic meningitis or encephalitis; chronic manifestations include endocarditis, fever of unknown origin, and a variety of other symptoms in immunosuppressed individuals. Febrile illness usually includes a severe frontal or retro-orbital headache, chills, fatigue, sweats, and myalgias; though cough may occur, coryza and arthralgias are absent. Gastrointestinal symptoms of nausea, vomiting, and diarrhea occur in <20%. Pneumonia occurs in about half of all patients. Patients may have either radiographic or physical evidence of pneumonia, or both. Pneumonia may present as fever with no pulmonary symptoms, atypical pneumonia, or rapidly progressive pneumonia. In addition to the nonspecific symptoms listed above, pleuritic chest pain may also occur. Rales are probably the most common physical finding. Patients with rapidly progressing pneumonia often have the signs of pulmonary consolidation.

Patients may present with an acute hepatitis (particularly in sheep- or goat-breeding areas) or elevated liver function tests may simply be an ancillary finding. Finally, altered mental status may lead to suspicion of meningitis or encephalitis; although the CSF is usually normal, an increased WBC count with a mono-nuclear predominance may be observed.

Diagnosis:
Differential Diagnosis: Since naturally occurring outbreaks of Q fever are reported, an outbreak from a terror source could be difficult to distinguish from a natural one. Further, the protean manifestations require differentiation from diseases ranging from a wide variety of diseases. The acute febrile illness would need to be distinguished from influenza and dengue as well as the prodrome of a variety of bacterial or viral illnesses. The rounded densities evident on chest radiograph call to mind Legionnaire's disease and tularemia. Other causes of atypical pneumonia such as Mycoplasma pneumoniae, Legionella pneumophila, Chlamydia psittaci, and

Chlamydia pneumoniae as well as agents such as Yersinia pestis associated with rapidly progressive pneumonia should also be considered. Acute hepatitis would need to be differentiated from the usual causes of hepatitis (e.g., A, B, and C). Likewise, the occasional case that presents with primary meningitis /encephalitis would need to be differentiated from the usual viral causes of aseptic meningitis/encephalitis and occasionally form agents associated with pleocytic CSF with a mononuclear predominance-listeriosis, leptospirosis, lymphocytic choriomeningitis, tuberculosis, and Rocky Mountain spotted fever.

Diagnostic Tests: A fourfold rise in IgG titer between acute and convalescent serum samples drawn > 14 days apart or a single specimen with IgM antibody (seen as early as 10-14 days into illness) is diagnostic of Q fever. Antibody to C. burnetii may be demonstrated by indirect fluorescent antibody (IFA), enzyme-linked immunosorbent assay (ELISA), and complement fixation (relatively insensitive). Isolation is impractical as the organism is rarely found in sputum, is difficult to culture, and is a significant hazard to laboratory personnel.

Specimen Submission: Specimens should not be submitted for isolation. Serum specimens must be triple contained in an approved shipping container and have biohazard labels. Before transport is arranged the receiving laboratory must be alerted prior to transport by calling (800) 252-8239 ("press 1"). Newly available diagnostic tests may be discussed at that time. Specimens must be accompanied by a Specimen Submission Form (G-1A) and submitted to the Texas Department of State Health Services Laboratory, 1100 West 49th Street, Austin, TX 78756.

Additional Tests: Chest x-ray abnormalities may be seen in just over half of patients. Nonsegmental and segmental pleural-based opacities are common. Rounded opacities and hilar adenopathy are not uncommon. Small pleural effusions may be seen in about 35% of cases. There may be mild elevation (2-3 times the normal) of hepatic transaminase levels. Although serum bilirubin is usually normal, jaundice may occur. The white blood cell count is increased in one-third of patients. C. burnetii has been isolated from the cerebrospinal fluid of patients with central nervous system infection, suggested by fever and severe headache; however, csf is usually normal.

Treatment: Most cases of acute Q fever will resolve without antibiotic treatment. Tetracycline, 500 mg q6h po x 5-7 days or doxycycline 100 mg q12h x 5-7 days are the treatments of choice. A combination of erythromycin 500 mg q6h and rifampin 600 mg qd is also effective. Chronic infection, especially involving endocarditis, often requires extended treatment and appropriate specialists should be consulted. In children, erythromycin (40 mg/kg/day in 4 divided doses given every 6 hours with a maximal dosage of 2 grams/day may be provided. Doxycycline may be used in children over 8 years of age in a dose of 2.2 mg/kg twice daily (up to 100 mg twice daily).

Prophylaxis: Tetracycline 500 mg q6h po x 5days or doxycycline 100 mg q12h po x 5 days started 8-12 days postexposure.