

Recognition of Legionnaire's Disease Outbreaks

Outbreaks of Legionnaires' disease occur worldwide. These outbreaks are primarily associated with contamination of man-made aquatic environments, including air conditioners, evaporative condensers, humidifiers, whirlpool spas, decorative fountains, and hot water in potable water systems. A recent outbreak of Legionnaires' disease in Clark County was found to be associated with the potable water system at a timeshare/resort. Three persons who had stayed at the establishment between January and May 2001, were diagnosed with legionellosis after returning home. Following an investigation by the Clark County Health District in collaboration with the Centers for Disease Control, steps were taken by management of the property to remedy problems with the potable water system.

The vast majority of *Legionella* infections are associated with serogroup 1; Infections are classified into four categories:

1. Sub-clinical infection
2. Non-pneumonic disease
3. Pneumonia
4. Extrapulmonary inflammatory disease

Pneumonia is the most commonly recognized manifestation of *Legionella* infection. The onset is usually abrupt with high fever, malaise, myalgias, headache, and a nonproductive cough. Dissemination of bacteria through the bloodstream occurs frequently in severe *Legionella* pneumonia, and occasionally, a secondary focus of infection occurs after bacteremic spread. Middle-aged to elderly persons, especially those who are cigarette smokers or heavy drinkers, have chronic lung or heart disease, or are immunocompromised, constitute the majority of patients with Legionnaires' disease, although cases in infants and adolescents also have been described. The incubation period is usually 2-10 days. *Legionella* can also cause a non-pneumonic

illness, known as Pontiac fever, which is a self-limited illness with an absence of pulmonary infiltrates on chest radiographs. Additionally, sub-clinical infection can be inferred from the frequent occurrence worldwide of antibodies to *Legionella* spp. in the absence of recognized episodes of pneumonia.

Although twenty-five years have passed since Legionnaires' disease was first recognized, legionellosis is not well understood by the general public and many in the medical community. While most physicians know how to treat Legionnaires' disease, clinical and laboratory diagnosis remains problematic. Legionellosis is under-diagnosed because of the trend towards empirical treatment of community-acquired pneumonia without diagnostic testing. Many healthcare providers also rely on a single elevated antibody titer (serology) for diagnosis. However, this test lacks specificity (as many as 20% of the healthy adult population will have false-positive tests) and is rarely helpful in diagnosing either acute or prior legionellosis.

The diagnosis of legionellosis in a patient with a compatible clinical illness may be confirmed by any of the following:

- Isolation of *Legionella* from respiratory secretions, lung tissue, pleural fluid, or other normally sterile fluids. **Note that *Legionella*, will not grow on standard laboratory media. Clinicians must specifically request culture for *Legionella*.**
- Urine **antigen** (RIA or EIA) for demonstration of *L. pneumophila* serogroup 1.
- DFA of respiratory secretions, lung tissue, or pleural fluid for detection of *L. pneumophila* serogroup 1.

The genus *Legionella* consists of thin, faintly staining gram-negative non-spore-forming bacilli, and it is unlikely to be found by Gram stain on sputum specimens.

The Centers for Disease Control and Prevention (CDC) recommend a two-test approach consisting of a *Legionella* culture and urine antigen. Obtaining the results of a culture takes longer than other testing methods, however this is the only test that will detect all species of *Legionella*. In an outbreak, isolates are necessary for comparison with other cases and environmental samples. The urine antigen test is the most sensitive test for serogroup 1 and results are usually available within 48 hours.

Outbreak detection cannot occur unless physicians order the appropriate laboratory

tests and report confirmed cases of legionellosis to the local health department. Health district staff can then interview the cases to determine possible sources of illness. When two or more cases are identified that have an association with a particular place, environmental sources can be tested for *Legionella spp.* If positive, appropriate disinfection, retesting and monitoring of the sources can take place, thus preventing subsequent infections.

**When You See Unusual
Think Outbreak!**

24-hour phone: (702) 383-1378

Other News:

The Clark County Health District Bioterrorism Preparedness Training Program (BPTP) has conducted over 40 presentations since September 11, 2001. More than 1,100 professionals in Clark County have attended the training sessions, which focus on preparedness and early identification/reporting of unusual occurrence of disease. BPTP also provides the most current medical management information from CDC on anthrax, tularemia, botulism, viral hemorrhagic fevers, plague and smallpox. For more information about scheduling BPTP training, medical professionals can contact Paul Quiroz, Southern Nevada Area Health Education Center, at 320-4407. BPTP training is approved for 2.0 CME and 2.4 CNE credits.

The Bioterrorism Learning Center offers a series of free lectures on its website at http://bioterrorism.digiscript.com/index.cfm?selbut=blc_home_selected.gif Lectures are provided by some of the nation's leading experts on bioterrorism: Stephen Morse, Judith English and Amy Smithson.

Clark County Reportable Disease statistics are now available on the CCHD physician's website. http://www.cchd.org/physician/disease_statistics.htm