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Bulletin No. 14 July 25, 2012

## Psittacosis Update

### Background

In March 2012, the Alaska Section of Epidemiology (SOE) was notified by the Office of the State Veterinarian (OSV) of two suspected cases of psittacosis in parakeets sold at Pet Store A in Fairbanks. A local veterinarian reported illness in the birds to the OSV. OSV staff worked with the veterinarian, Pet Store A, and SOE to manage ill birds and notify customers who had also purchased parakeets during the time the ill birds were at Store A. No human cases were identified.

### What is Psittacosis?

Psittacosis is a bacterial infection caused by *Chlamydophila psittaci*, (formerly called *Chlamydia psittaci*) that can cause severe disease in birds and humans. Birds serve as a reservoir and may shed bacteria in feces and nasal discharges. Most human infections are acquired from exposure to birds in the Family Psittacidae (e.g., cockatiels, parakeets, parrots, and macaws), although infections have occurred after exposure to poultry, pigeons, birds of prey, and shore birds.<sup>1</sup>

Humans usually acquire *C. psittaci* infections after inhaling organisms aerosolized from dried feces or respiratory tract secretions. The incubation period is typically 5–14 days. Other exposure routes include mouth-to-beak contact and contact with plumage or tissues of infected birds. Commonly reported symptoms include fever, headache, non-productive cough, and pneumonia. Even brief exposures to birds or bird waste can lead to symptomatic infection; therefore, some psittacosis patients may not report having significant contact with birds.<sup>1</sup>

### Epidemiology and Public Health Importance

In 2009, nine cases of psittacosis were reported nationwide.<sup>2</sup> Psittacosis is a condition reportable to SOE by health care providers and laboratories. Since 2000, two Alaska cases have been reported. Because psittacosis can be a mild illness and laboratory confirmation is challenging, cases are believed to be under-diagnosed.<sup>1</sup> Human cases (Box) are investigated to ascertain whether common or public sources of exposure exist, to ensure that ill persons seek appropriate medical counsel, and to ensure that birds are treated or quarantined to prevent spread to other birds or humans.

#### Box. Psittacosis Case Definitions

##### Laboratory-confirmed Case

A clinical illness compatible with psittacosis with either:

- Isolation of *C. psittaci* from respiratory specimens or blood; OR
- Fourfold or greater increase in *C. psittaci* IgG antibody by microimmunofluorescence or complement fixation between paired sera obtained at least 2-4 weeks apart.

##### Probable Case

A clinical illness compatible with psittacosis with either:

- Supportive serology (e.g., *C. psittaci* IgM antibody titer of >1:32 in a single serum specimen); OR
- Detection of *C. psittaci* DNA in a respiratory specimen via amplification of a specific target by real-time polymerase chain reaction assay.

### Laboratory Testing

Laboratory confirmation of *C. psittaci* infections is imperfect. Microimmunofluorescence methods to detect antibodies in paired sera are more sensitive and specific than complement fixation tests; however, other chlamydiae (i.e., *C. felis*, *C. pneumoniae*, and *C. trachomatis*) can cross-react, so titers <1:128 should be interpreted cautiously. Obtain acute sera as soon as possible after symptom onset, and convalescent sera

>2 weeks later. Antimicrobials can delay or mute antibody response; in some circumstances, a third serum sample 4–6 weeks after the acute sample may help confirm the diagnosis.<sup>1</sup>

*Chlamydophila psittaci* can also be isolated from sputa, pleural fluid, or clotted blood collected during acute illness and prior to antimicrobial treatment. Real-time polymerase chain reaction (rt-PCR) assays have recently been developed that distinguish *C. psittaci* from other chlamydiae, and can demonstrate different genotypes. While the assays appear to be highly sensitive and specific in avian samples, they have not yet been validated for use in human samples. Few laboratories have capacity for testing by culture and rt-PCR.<sup>1</sup>

### Treatment

Tetracyclines are the drugs of choice for *C. psittaci* infection in humans. Mild to moderate cases can be treated with oral doxycycline (100mg every 12 hours) or tetracycline hydrochloride (500mg every 6 hours) for a minimum of 10 days. Severely ill patients should be treated with intravenous doxycycline hyclate (4.4mg/kg/day divided into two infusions, max. 100mg/dose). Antimicrobials should be continued for at least 10–14 days after fever abates. Most *C. psittaci* infections are responsive to antimicrobials within 1–2 days; however, relapses can occur. Although in-vivo efficacy has not been determined, macrolide antibiotics are the best alternative agents in patients for whom tetracyclines are contraindicated (e.g., children aged <8 years, pregnant women, and persons with a tetracycline allergy). Prophylactic antibiotics are not routinely administered after exposures to *C. psittaci*, but may be considered if exposed persons are at high risk for complicated disease.<sup>1</sup>

### Surveillance in Birds

In birds, *C. psittaci* infection is called avian chlamydiosis, and is a reportable condition to the Alaska OSV.<sup>3</sup> The OSV investigates birds diagnosed with chlamydiosis, and works with veterinary practitioners, SOE, pet industry officials, fair boards, and the public to appropriately quarantine, test, and treat infected and/or exposed birds.

### Recommendations

1. Health care providers and laboratories should report confirmed or suspected psittacosis cases to SOE via telephone at 907-269-8000 or fax at 907-561-4239.
2. Health care providers should consider a diagnosis of psittacosis in persons presenting with a fever, non-productive cough, and pneumonia, who also have even a vague history of bird exposure.
3. Serologic testing is available commercially; however, contact SOE to facilitate possible testing by other methods at the Centers for Disease Control and Prevention, Atlanta, GA.
4. Report suspected or confirmed cases in birds to the OSV via telephone at 907-375-8214 or fax at 907-929-7335.
5. Resources are available for current or prospective bird owners to learn about good bird husbandry which can reduce potential for any illness, e.g., Association of Avian Veterinarians (available at: <http://www.aav.org/resources/>).

### References

1. National Association of State Public Health Veterinarians, Inc. Compendium of Measures To Control *Chlamydophila psittaci* Infection Among Humans (Psittacosis) and Pet Birds (Avian Chlamydiosis), 2010. Available at: <http://www.nasphv.org/Documents/Psittacosis.pdf>
2. CDC. Summary of Notifiable Diseases – United States, 2009. *Morb Mort Wkly Rpt MMWR* 2009;58(53):1-100.
3. Alaska Division of Environmental Health. “Reportable Diseases for Animals and Animal Products to the State Veterinarian.” Available at: <http://dec.alaska.gov/eh/docs/vet/Disease/Disease%20reporting%209-052.pdf>