

## **PSITTACOSIS**

(Ornithosis, Parrot Fever)

### **REPORTING INFORMATION**

- **Class B:** Report by the end of the next business day in which the case or suspected case presents and/or a positive laboratory result to the local public health department where the patient resides. If patient residence is unknown, report to the local public health department in which the reporting health care provider or laboratory is located.
- Reporting Form(s) and/or Mechanism:
  - [Ohio Confidential Reportable Disease form](#) (HEA 3334, rev. 1/09), [Positive Laboratory Findings for Reportable Disease form](#) (HEA 3333, rev. 8/05), the local public health department via the Ohio Disease Reporting System (ODRS) or telephone.
  - The Ohio Department of Health (ODH) [Psittacosis Human Case Surveillance Report form](#) is required. Information collected from the form should be entered into ODRS and sent to ODH. The mailing address for this form is: ODH, Outbreak Response & Bioterrorism Investigation Team (ORBIT), 246 N. High St., Columbus, OH 43215.
- Key fields for ODRS reporting include: import status (whether the infection was travel-associated or Ohio-acquired), date of illness onset, and all the fields in the Epidemiology module.

### **AGENT**

*Chlamydophila psittaci* (formerly called *Chlamydia psittaci*), an intracellular bacterium.

### **CASE DEFINITION**

#### **Clinical description**

Psittacosis is an illness characterized by fever, chills, headache, myalgia, and a dry cough with pneumonia often evident on chest x-ray. Severe pneumonia requiring intensive-care support, endocarditis, hepatitis, and neurologic complications occasionally occur.

#### **Laboratory criteria for diagnosis**

- Isolation of *Chlamydophila psittaci* from respiratory specimens (e.g. sputum, pleural fluid, or tissue), or blood, *or*
- Fourfold or greater increase in antibody (Immunoglobulin G [IgG]) against *C. psittaci* by complement fixation (CF) or microimmunofluorescence (MIF) between paired acute- and convalescent-phase serum specimens obtained at least 2-4 weeks apart, *or*
- Supportive serology (e.g. *C. psittaci* antibody titer [Immunoglobulin M (IgM)] of greater than or equal to 32 in at least one serum specimen obtained after onset of symptoms), *or*
- Detection of *C. psittaci* DNA in a respiratory specimen (e.g. sputum, pleural fluid or tissue) via amplification of a specific target by polymerase chain reaction (PCR) assay.

#### **Case classification**

Probable: An illness characterized by fever, chills, headache, cough and myalgia that has either:

- Supportive serology (e.g. *C. psittaci* antibody titer [Immunoglobulin M, IgM] of greater than or equal to 32 in at least one serum specimen obtained after onset of symptoms), *or*

- Detection of *C. psittaci* DNA in a respiratory specimen (e.g. sputum, pleural fluid or tissue) via amplification of a specific target by polymerase chain reaction (PCR) assay.

**Confirmed:** An illness characterized by fever, chills, headache, cough and myalgia, and laboratory confirmed by either:

- Isolation of *Chlamydophila psittaci* from respiratory specimens (e.g., sputum, pleural fluid, or tissue), or blood, or
- Fourfold or greater increase in antibody (Immunoglobulin G [IgG]) against *C. psittaci* by complement fixation (CF) or microimmunofluorescence (MIF) between paired acute- and convalescent-phase serum specimens obtained at least 2-4 weeks apart.

### **Comment**

Although MIF has shown greater specificity to *C. psittaci* than CF, positive serologic findings by both techniques may occur as a result of infection with other Chlamydia species and should be interpreted with caution. To increase the reliability of test results, acute- and convalescent-phase serum specimens should be analyzed at the same time in the same laboratory. A realtime polymerase chain reaction (rtPCR) has been developed and validated in avian specimens but has not yet been validated for use in humans.

### **SIGNS AND SYMPTOMS**

The incubation period is usually 1-4 weeks. The severity of the disease ranges from a mild, non-specific illness to a systemic illness with severe pneumonia. Humans with symptomatic infections typically have an abrupt onset of fever, chills, headache, malaise, and myalgia. A nonproductive cough is usually present and can be accompanied by breathing difficulty and/or chest tightness. A pulse-temperature dissociation (fever without increased pulse rate), enlarged spleen, and nonspecific rash are sometimes observed. Auscultatory findings may underestimate the extent of pulmonary involvement. Radiographic findings may include lobar or interstitial infiltrates. The differential diagnosis of *C. psittaci* pneumonia includes infection with *Coxiella burnetii*, *Histoplasma capsulatum*, *Mycoplasma pneumoniae*, *Legionella* spp, *C. pneumoniae*, and respiratory viruses such as influenza. *Chlamydophila psittaci* can affect organ systems other than the respiratory tract, resulting in endocarditis, myocarditis, hepatitis, arthritis, keratoconjunctivitis, encephalitis, and more recently, ocular adnexa lymphoma. Severe illness with respiratory failure, thrombocytopenia, and hepatitis has also been reported. Mortality has been extremely rare since the advent of antibiotics.

### **DIAGNOSIS**

Culture and serology are available through private laboratories.

**Culture:** *Chlamydophila psittaci* can also be isolated from the patient's sputum, pleural fluid, or clotted blood during acute illness and before treatment with antimicrobial agents; however, culture is performed by few laboratories because of the technical difficulty and occupational safety concerns..

**Serology:** Most diagnoses are established by clinical presentation and positive antibodies against *C. psittaci* in paired sera using MIF methods. The MIF is more sensitive and specific than the previously used complement fixation (CF) tests; however, there is still some cross-reactivity with other chlamydiae (*C. pneumoniae*,

*C. trachomatis*, and *C. felis*) so a titer result less than 1:128 should be interpreted with caution. Acute-phase serum specimens should be obtained as soon as possible after the onset of symptoms, and convalescent-phase serum specimens should be obtained at least two weeks after the first specimen. Because antimicrobial treatment can delay or diminish the antibody response, a third serum sample 4-6 weeks after the acute sample might help confirm the diagnosis. To increase the reliability of serologic results, acute and convalescent sera should be analyzed simultaneously at the same laboratory.

## **EPIDEMIOLOGY**

### **Source**

The natural reservoirs of infection are wild and domestic birds, including poultry. *C. psittaci* has been isolated from approximately 100 bird species and is most commonly identified in psittacine birds, such as parrots, macaws, cockatiels and parakeets. Among caged, non-psittacine birds, the organism occurs most frequently in pigeons, doves and mynah birds. Birds shed the organism in body secretions and feces.

### **Occurrence**

Occurrence is worldwide. Nationally, 100-200 cases are reported annually, of which 63% are associated with pet birds. Although the infection is commonly diagnosed in pet birds, because of the diagnostic difficulties, few cases in humans are confirmed in Ohio annually (less than 4). Pet store workers, bird hobbyists and workers in poultry processing plants are at increased risk of exposure.

### **Mode of Transmission**

Human infection with *C. psittaci* usually occurs when a person inhales organisms that have been aerosolized from dried feces or respiratory tract secretions of infected birds. Other means of exposure include mouth-to-beak contact and handling of infected birds' plumage and tissues. Even brief exposures to birds or bird waste can lead to symptomatic infection; therefore, certain patients with psittacosis might not recall or report having any contact with birds. Currently, pet birds are thought to pose a low risk to immunocompromized persons. Person-to-person transmission has been suggested but not proven.

### **Period of Communicability (Birds)**

Infected birds may shed the agent intermittently for a prolonged period – weeks to months. Shedding may be precipitated by stress on the birds such as cold, crowded conditions or shipping.

### **Incubation Period**

The incubation is usually 1-4 weeks.

## **PUBLIC HEALTH MANAGEMENT**

### **Case**

#### Investigation

Trace infection to bird exposure, either pet birds or a poultry operation.

#### Treatment

Antibiotics of the tetracycline group for 10-14 days after temperature returns to normal. Although in-vivo efficacy has not been determined, macrolide antibiotics are considered the best alternative agents in patients for whom tetracyclines are contraindicated (e.g. children <8 years of age, pregnant women, and persons allergic

to tetracyclines). Prophylactic antibiotics are not routinely administered after a suspected exposure to *C. psittaci*, but may be considered in some circumstances.

#### Isolation and Follow-up Specimens

Standard infection-control practices and droplet transmission precautions are sufficient for the medical management of humans with psittacosis, and specific isolation procedures (e.g. private room, negative pressure air flow, and masks) are not indicated

#### Public Health Significance

Person-to-person transmission of psittacosis has not been proven. Educate the public as to the danger of household or occupational exposure to infected birds.

#### **Contacts**

Search for other cases in coworkers if a poultry farm or a poultry processing plant is the suspected source or in family members if a pet bird is the suspected source.

#### **Prevention and Control**

##### Follow-up Specimens

Investigate bird contacts to find the source. Testing and treatment of infected birds should be conducted. Consultation with an experienced avian veterinarian will help when selecting tests and interpreting results. Because proper sample collection techniques and handling are critical to obtain accurate test results, clinical laboratories should be contacted for specifics on specimen submission. Post-treatment testing should be conducted no sooner than two weeks after treatment is completed.

Although treatment protocols are usually successful, knowledge is evolving and no single protocol ensures safe treatment or complete elimination of infection in every species of bird. Therefore, treatment for avian chlamydiosis should be supervised by an experienced veterinarian. Environmental management is also a critical component for treatment success as reinfection is possible. (See the reference to the National Association of State Public Health Veterinarians (NASPHV) Compendium listed below.)

Shedding birds should be treated with tetracycline-medicated feed for 45 days and retested at 2 weeks and 3-6 months following treatment. Treated birds can be reinfected with *C. psittaci*, so treated birds should not be exposed to untreated birds or other potential sources of infection. Aviaries should be thoroughly cleaned and sanitized. The Ohio Department of Agriculture (ODA) should be notified when the source is a poultry farm or poultry processing plant. Contact the Ohio Department of Agriculture, Division of Animal Industry, 8995 East Main Street, Reynoldsburg, Ohio 43068, 614-728-6220 or 800-282-1955.

#### Vaccination

There is no vaccination for psittacosis in humans or birds.

#### **SPECIAL INFORMATION**

For more information please visit these websites:

CDC Psittacosis Technical Information

[http://www.cdc.gov/ncidod/dbmd/diseaseinfo/psittacosis\\_t.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/psittacosis_t.htm)

*Compendium of Measures To Control Chlamydophila psittaci Infection Among Humans (Psittacosis) and Pet Birds (Avian Chlamydiosis)*, National Association of State Public Health Veterinarians <http://www.nasphv.org/documentsCompendiaPsittacosis.html>

**What is Psittacosis or Chlamydiosis?**

Psittacosis is caused by a bacterium called *Chlamydophila psittaci*. Psittacosis is also known as ornithosis or parrot fever, since it is usually transmitted to humans from pet or wild birds. There are other strains of animal-associated Chlamydia infections that can be transmitted to humans. They are usually acquired from infected sheep and cats. Also, animal strains of Chlamydia should not be confused with the human-to-human strains (*Chlamydophila trachomatis*, a sexually transmitted disease, and *Chlamydophila pneumoniae*, another cause of pneumonia in people).

According to the CDC fewer than 50 human cases of the animal-associated Chlamydia are reported in the United States each year. Ohio had 2 cases reported to the Ohio Department of Health between 2000 and 2012.

**Who gets psittacosis?**

Most human cases have been associated with pet birds such as parakeets, cockatiels, parrots, canaries, and lovebirds. Poultry such as chickens and turkeys have also spread psittacosis to humans. Those most at risk are people who work with birds and animals in aviaries, veterinary clinics, farms, slaughterhouses, and pet stores. Animal owners or those who frequent areas with a lot of bird activity may also contract the disease.

**How is psittacosis spread?**

Psittacosis is usually spread by inhaling dust from the feathers or dried droppings of infected birds. The bacteria can also be found in nasal secretions from infected animals and reproductive fluids from aborted animals. The organism can survive in dried feces and in the environment for a long time.

**How long after exposure before symptoms appears in humans?**

Symptoms generally appear within 1-4 weeks.

**What are the symptoms of psittacosis in humans?**

Humans usually experience a sudden onset of fever, chills, headache, and muscle pain similar to flu. This is usually followed by a nonproductive cough with tightness in the chest. Some cases develop breathing difficulty and pneumonia. Chlamydia in cats can cause conjunctivitis (inflammation of the eye). Before effective treatments were available, a small percentage of people died from psittacosis. Today, death is rarely associated with this disease.

**What are the symptoms of psittacosis in birds and other animals?**

Non specific signs of the disease include a lack of activity and appetite, and ruffled feathers. Specific signs include discharge from the nose and eyes, and green to yellow droppings. Severe cases may result in death. Some birds can appear healthy, yet they are still carrying the bacteria. They may only get sick or shed the organism when they become stressed. This makes the disease difficult to recognize in a group of birds.

The Chlamydia strain in sheep can cause abortion. In cats, Chlamydia causes eye and upper respiratory infections.

**How is psittacosis diagnosed?**

In humans, diagnosis can be made by blood tests that look for specific antibodies. Because there are so many strains, frequently a panel must be run. A second test several weeks later looking for a change in antibody titer may also be required.

In birds, diagnosis is usually made by testing fresh stool or blood, though other tests are available. As with people, sometimes multiple tests over time are necessary to confirm the diagnoses.

**Does past infection with psittacosis make a person immune?**

Infection does not provide immunity to this disease, so it may be acquired again.

**Can psittacosis be treated?**

Antibiotics are available that can treat both humans and birds for psittacosis. Commonly, tetracycline or doxycycline is used. In birds, antibiotic treatment may be necessary for 30 to 45 days to be sure the organism is eliminated.

**What precautions should I take if my bird has psittacosis?**

- Consult with an avian veterinarian on treatment and how to prevent spread of psittacosis to other birds.
- When cleaning cages or handling infected birds, caretakers should wear protective clothing including gloves, a disposable surgical cap, and an appropriately fitted respirator with N-95 or higher rating.
- Cage papers can be lightly misted with a disinfectant to dampen dry stool before removal.
- This will decrease the amount that becomes airborne.
- Stool and dirty cage papers placed in a plastic bag should be tied off and placed in another clean garbage bag before disposal.
- Always wash your hands thoroughly with soap and water and remove protective clothing when leaving any contaminated area.
- See your physician immediately if you or any others in contact with the infected bird signs of respiratory illness.

**For more information please visit the following websites:**

CDC Psittacosis Information: [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/psittacosis\\_t.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/psittacosis_t.htm)

National Association of State Public Health Veterinarians:  
<http://www.nasphv.org/documentsCompendiaPsittacosis.html>