

## **PSITTACOSIS**

Revised 11/3/2011

Psittacosis is an acute generalized disease caused by *Chlamydia psittaci*, one of the four species of *Chlamydia*. The others are *Chlamydia trachomatis* (which causes trachoma and genitourinary infection), *Chlamydia pneumoniae* (a cause of pneumonia and possibly coronary disease), and *Chlamydia pecorum* (at present considered an animal pathogen).

### **Epidemiology**

*C. psittaci* is common in birds and domestic animals.

Anyone in contact with an infected bird or animal is at risk. Infection is therefore a hazard to pet owners, pet shop employees, poultry farmers (turkey-associated psittacosis has the highest attack rate in psittacosis epidemics), workers in abattoirs and processing plants (psittacosis is the most common abattoir-associated pneumonia), and veterinarians.

Infection is usually acquired by inhaling the agent from desiccated droppings and secretions of infected birds (parakeets, parrots, pigeons, turkeys and ducks) in an enclosed space. Other sources of exposure can include bird bites, mouth to beak contact and handling the plumage and tissues of infected birds.

Apparently healthy birds can be carriers and occasionally shed the infectious agent. Usually the bird was recently acquired or was ill.

Infection may appear in birds years after exposure. Infected birds may be asymptomatic or obviously sick. In the latter case, birds may exhibit shivering, depression, anorexia, emaciation, dyspnea and diarrhea, frequently with closed eyes and ruffled feathers. Spontaneous relapse and remittance of the illness may occur, although it is during periods of illness that infected birds excrete the largest numbers of organisms. Discharge from their beaks and eyes and feces and urine are all infective; their feathers and the dust around their cage become contaminated. If left untreated, 10% of infected birds become chronic asymptomatic carriers.

Birds transmit the infection to their nestlings, which in turn shed the organism during periods of both illness and good health. In bird populations studied, there is a baseline prevalence of 5% to 8% of *C. psittaci* carriage. This may increase to 100% when birds are subjected to the stress of shipping, crowding and breeding. It is likely that all birds are susceptible. More than 130 avian species have been documented as hosts of *C. psittaci*.

Strains from turkeys and psittacine birds (parrots, lorries, cockatoos, parakeets) are the most virulent for humans.

Human cases occur both sporadically and as outbreaks. Human-to-human transmission is rare and it is therefore thought unnecessary to isolate patients in the hospital or to give antibiotic prophylaxis to contacts. However, cases acquired from humans tend to be more severe than avian-acquired disease.

The incubation period is 5 to 15 days.

## Clinical Description

The infection may be subclinical, or it may resemble

- a nonspecific viral illness with fever and malaise
- a mononucleosis-like syndrome with fever, pharyngitis, hepatosplenomegaly and adenopathy
- a typhoidal form manifests as fever, bradycardia, malaise, and splenomegaly
- the presentation most suggestive of the etiology is that of atypical pneumonia, with nonproductive cough, fever, headache and chest film abnormalities more dramatic than would be suggested by the physical findings. The most common symptom is fever, occurring in 50% to 100% of patients. Cough has been reported in 50% to 100%, but it often appears late in the illness and is not present initially. Headache, myalgias and chills are reported in 30% to 70% of patients. The nonspecificity of these signs and symptoms may be puzzling until cough supervenes. Even then, the long list of other signs and symptoms that occur in less than half the patients may be particularly confusing: diaphoresis, photophobia, tinnitus, ataxia, deafness, anorexia, nausea and vomiting, abdominal pain, diarrhea, constipation, sore throat, dyspnea, hemoptysis, epistaxis, arthralgia and rash. Chest soreness is reported, but true pleuritic pain is rare.

The illness ranges in severity from an inapparent or mild disease to a fatal systemic illness with prominent respiratory symptoms.

## Laboratory Tests

Isolation of *Chlamydia psittaci* from sputum and/or blood Recovery of the organism may be difficult, especially if the patient has received broad-spectrum antibiotics. Culture is dangerous.

A four-fold or greater change in an appropriate complement-fixing (CF) antibody titer between two serum specimens obtained two or more weeks apart Collect one red-topped tube of venous blood for each specimen. When sending serum samples into the laboratory, it is usually better to hold the acute serum until the convalescent serum has been collected and forward both at the same time. (The blood should either be spun down and the sera sent or the whole blood sent refrigerated). A CF titer of 1:32 or greater in one or more specimens obtained after onset of symptoms. Usually the titer is 1:64 or higher.

For surveillance purposes, the Centers for Disease Control and Prevention (CDC) considers a *confirmed* case one with a positive culture result or associated with clinical illness compatible with psittacosis plus a four-fold or greater change in antibody titer to at least 1:32 or IgM by microimmunofluorescence (MIF) testing of at least 1:16; a *probable* case is one associated with psittacosis-compatible illness linked epidemiologically with a confirmed case or a titer of at least 1:32 in a single specimen. There are false-positive and false-negative reactions. Also, the complement fixation test is only genus-specific and does not distinguish *C. psittaci* from *C. trachomatis* or *C. pneumoniae*, both of which are common pathogens. MIF testing has greater sensitivity and specificity and can measure both IgM and IgG, but cross-reactions still occur. Thus, serologic testing remains imperfect. In addition, antibiotic therapy can delay or diminish the antibody response.

Newer techniques such as polymerase chain reaction (PCR) and antigen detection by direct fluorescence antibody testing or enzyme-linked immunosorbent assay (ELISA) are promising but remain investigational.

## Treatment

The treatment of choice is tetracycline hydrochloride, 500 mg PO qid, or doxycycline, 100 mg PO bid, for 10 to 21 days. Some observers recommend the longer course to prevent relapse, but this is controversial. Erythromycin therapy is the alternative treatment but may be less efficacious in severe cases. Most patients respond within 24 hours subjectively. Without treatment, the fatality rate is approximately 20%; with treatment, it drops to 1%.

## Surveillance

Psittacosis is a condition reportable within five business days.

## Case Definition

Clinical description: An illness characterized by fever, chills, headache, photophobia, cough and myalgia.

### Laboratory criteria for diagnosis

- Isolation of *Chlamydia psittaci* from respiratory secretions, or
- Four-fold or greater increase in antibody against *C. psittaci* by complement fixation or microimmunofluorescence (MIF) to a reciprocal titer of greater than or equal to 32 between paired acute- and convalescent-phase serum specimens, or
- Presence of IgM antibody against *C. psittaci* by MIF to a reciprocal titer of greater than or equal to sixteen

### Case classification

Probable: a clinically compatible case that is epidemiologically linked to a confirmed case or that has supportive serology (e.g., *C. psittaci* titer of greater than or equal to 32 in one or more serum specimens obtained after onset of symptoms)

Confirmed: a clinically compatible case that is laboratory confirmed

Comment: The serologic findings by CF also may occur as a result of infection with *Chlamydia pneumoniae* or *Chlamydia trachomatis*. The MIF might be more specific for infection with *C. psittaci*, but experience with and availability of this newer test is more limited.

## Investigation

The purpose of investigation is to identify cases, to trace the source or infection and to institute disease control measures to minimize transmission.

- Upon receipt of a report of a case of psittacosis, contact the physician and/or hospital to confirm the diagnosis.
- Attempt to identify the source of the infection (recently purchased bird, occupation, etc).
- Coughing patients should be instructed to cough into paper tissue. (Patients are potentially communicable during the acute illness, particularly with heavy coughing; but person-to-person transmission has occurred rarely and only from severely ill persons with productive cough.)
- All contaminated bird caging and housing areas should be thoroughly disinfected and aired before re-use as these areas contain viable organisms. Care should be taken in cleaning cages and other bird housing areas to avoid scattering the contents.

## Control

- Environmental sanitation is important because the organism is resistant to drying and can remain viable for months at room temperature.
- Regulate the importing, raising and trafficking of birds of the parrot family to prevent or eliminate infections by quarantine and appropriate treatment.
- Surveillance of pet shops and aviaries where psittacosis has occurred or where birds epidemiologically linked to cases were obtained, and of farms or processing plants to which human psittacosis was traced epidemiologically.

**Hospital precaution and isolation:** Standard precautions

**Model letters to be used if a group was exposed to psittacosis. The first example is geared at a school setting. The second example is for stores that sell pets/birds.**

Dear \_\_\_\_\_

The Infectious Disease Epidemiology Section (IDE) received information that a bird that had been housed in a classroom at your school was recently diagnosed as being infected with *Chlamydophila psittaci*, the causative agent for a bacterial disease known as ornithosis or psittacosis. This disease can be transmitted to human beings. We understand your concern that either students or employed personnel at your school may have been exposed.

Psittacosis can cause respiratory disease in humans. From 1998 to 2004, only 146 human cases of psittacosis were reported to health authorities in the United States, therefore the disease is rarely reported. This disease causes influenza-like symptoms and is usually characterized by a non-productive cough and fever, but can progress to pneumonia. The disease can be treated with antibiotics. Treatment is routinely successful.

Infected birds shed the bacteria through feces and nasal discharges. Humans become infected from exposure to these materials or from direct exposure to infected birds; therefore the most likely people to be exposed are those responsible for maintaining, cleaning and feeding the bird on a regular basis. The time from exposure to onset of illness is usually 5 to 14 days, however longer periods of time have been reported.

I recommend that your school and school health officials adhere to the following recommendations:

- \* Identify the date that the bird was last in residence in the classroom.
- \* The parents or guardians of any children reporting an onset of symptoms similar to those described above during the period that the bird was present in the classroom, or during a period up to 30 days after removal of the bird from the premises, should inform their physician of potential contact with a bird that was infected with *Chlamydophila psittaci* or psittacosis. The same procedure should be employed by any faculty or staff that was exposed.
- \* If physicians require guidance on testing for the disease, they can contact the State Public Health Veterinarian or the State Epidemiologist (504-219-4563).

As stated above, the most likely persons to have been exposed to the disease are those persons who cared directly for the bird. It is very common for pet birds to be displayed in a classroom environment, yet reports of transmission of this disease to students remain infrequent and sporadic. Therefore the probability of transmission of the disease to students is low, unless the students had prolonged direct contact with the bird or its secretion and cage dander. Proper follow up should ensure successful resolution of this event.

If you have any further questions, please contact us at your convenience.

Sincerely,



**State of Louisiana**  
Department of Health and Hospitals  
Center for Community and Preventive Health

[Date]

To: \_\_\_\_\_ Store(s)

Dear [Store Name] Officials and Personnel:

The Infectious Disease Epidemiology Section (IDE) of the Department of Health and Hospitals received information that birds housed at a [Name] store in [City], Louisiana, were recently diagnosed as being infected with *Chlamydomphila psittaci*, the causative agent for a bacterial disease known as ornithosis or psittacosis. This disease can be transmitted to human beings.

IDE is concerned that personnel at your store may have been exposed. Psittacosis can cause respiratory disease in humans. From 1998 to 2004, only 146 human cases of psittacosis were reported to health authorities in the United States, therefore the disease is rarely reported. This disease causes influenza-like symptoms and is usually characterized by a non-productive cough and fever, but can progress to pneumonia. The disease, however, can be successfully treated with antibiotics.

Infected birds shed the bacteria through feces and nasal discharges. Humans become infected from exposure to these materials or from direct exposure to infected birds; therefore the most likely people to be exposed are those responsible for maintaining, cleaning and feeding the bird on a regular basis. The time from exposure to onset of illness is usually five to fourteen days, however longer incubation periods have been reported.

I recommend that your employees adhere to the following recommendations:

- Identify the date that employees were last exposed to the infected birds.
- Anyone experiencing an onset of symptoms similar to those described above during the period of contact with the bird, or during a period up to 30 days after cessation of contact with the bird, should inform his or her physician of potential contact with a bird that was infected with *Chlamydomphila psittaci* or psittacosis. Contact with the bird's caging, dander or waste is also considered potential contact, and the same recommendations apply.
- Physicians are welcome to contact the State Public Health Veterinarian for additional information about psittacosis (504-568-8315).

As stated above, the most likely persons to have been exposed to the disease are those persons who cared directly for the bird. It is very common for pet birds to be displayed in pet stores and similar environments, yet reports of transmission of this disease to caretakers remain infrequent and sporadic. Therefore the probability of transmission of the disease to attendants is low, unless these personnel had prolonged direct contact with the birds or their secretions and/or cage dander. Proper follow up should ensure successful resolution of this event.

If you have any further questions, please contact IDE at your convenience.

Sincerely,

Gary A. Balsamo, DVM, MPH&TM  
State Public Health Veterinarian and Assistant State Epidemiologist