



PSITTACOSIS

1. **Agent:** *Chlamydia psittaci* is an obligate intracellular bacterial pathogen.
2. **Identification:**
 - a. **Symptoms:** Infections range from mild, nonspecific illness to a systemic illness with severe pneumonia and, rarely, death. Cases usually have an acute onset of fever, chills, headache, malaise, and myalgia, with or without respiratory symptoms. A non-productive cough usually develops. Fever without increased pulse rate, enlarged spleen, or nonspecific rash is sometimes observed. Chest x-ray findings may include lobar, patchy, or interstitial infiltrates. Infection can result in myocarditis, endocarditis, superficial thrombophlebitis, hepatitis, encephalopathy, arthritis, keratoconjunctivitis, and ocular adnexal lymphoma.
 - b. **Differential Diagnosis:** Psittacosis-related pneumonia should be differentiated from other unusual causes of community-acquired pneumonia including *Coxiella burnetii*, *Histoplasma capsulatum*, *Mycoplasma pneumoniae*, *Chlamydia pneumoniae*, *Legionella* species, and respiratory viruses such as influenza.
 - c. **Diagnosis:** Historically, diagnoses had been established based on clinical presentation and serological results using microimmunofluorescence (MIF) with paired sera. Although MIF is generally more sensitive than complement fixation (CF) test, it still displays cross-reactivity with other species. Due to this a titer less than 1:128 should be interpreted with caution and true acute (obtained as close to onset of symptoms) and convalescent (ideally taken 2–4 weeks later) specimen tests are required for proper interpretation. Nucleic acid–based tests are more reliable, and serologic methods should be considered as supportive tests for diagnosis. Real-time PCR assays are now available within specialized laboratories. These tests can be run on respiratory specimens, blood, and tissues, if warranted. Because proper sample collection techniques and handling are critical to obtain accurate test results, clinical laboratories performing these tests should be contacted directly for specifics on specimen submission. Diagnostic tests should always be interpreted in light of a patient’s history, clinical presentation, and response to treatment.
3. **Incubation:** Usually 5-14 days, but longer periods have been reported.
4. **Reservoir:** Wild and domestic birds, especially psittacine birds (parrots and cockatoos), budgerigars (parakeets), pigeons, and some poultry (primarily turkey and ducks; not much in chickens). Some documentation of free-ranging birds, including doves, pigeons, birds of prey, and shorebirds.
5. **Transmission:** Infection occurs by inhalation of the organism, typically in dust from dried droppings or respiratory tract secretions of infected birds. Most infections are acquired from exposure to psittacine birds. Transmission has also been documented from poultry and free-ranging birds including doves, pigeons, birds of prey and shorebirds. Movement of birds in their cage can generate dust, but cage cleaning is probably a bigger problem. Workers may be exposed to contaminated dust during the clean-up/removal of pigeon droppings. Pet bird owners have also become infected when bitten by large psittacine birds. Veterinarians or bird pathologists have been infected by handling carcasses or performing necropsies on infected birds. Occupational exposure may take place in poultry processing or rendering plants where aerosols are generated by handling/processing of poultry viscera. Because not all patients report avian exposure, infection should be considered in patients with clinically compatible symptoms.
6. **Communicability:** Person-to-person transmission is possible but thought to be rare.



7. **Specific Treatment:** Tetracyclines are the drugs of choice. Clinicians should consult a current formulary for drug doses and treatment length recommendations. Severely ill patients typically require treatment with intravenous (IV) doxycycline hyclate. In addition, clinicians should consider consulting with an infectious disease specialist for guidance in regard to specific patient management. Although in vivo efficacy has not been determined, macrolide antibiotics are considered the best alternative agents in patients for whom tetracyclines are contraindicated.
8. **Immunity:** There are many strains of *C. psittaci* that can cause human disease, and cross-immunity is limited or non-existent. Even immunity to homologous strains is at best transient. New infections and clinical disease can develop within months or treatment and recovery, should the individual be re-exposed.

REPORTING PROCEDURES

1. Report any cases or suspected cases within 7 calendar days (Title 17, Section 2500, *California Code of Regulations*).
2. **Report Forms:**
[PSITTACOSIS CASE REPORT \(CDPH 8583\)](#)
3. **Epidemiologic Data:**
 - a. Place of residence (be specific with regard to address, city and state).
 - b. History of bird contact/ownership, occupations that would bring the case into contact with wild or domestic fowl or their droppings, or avocational pursuits that would result in these exposures.
 - c. Additional cases among other persons who may have had similar exposures (e.g., family, co-workers).
 - d. If the source of infection is a pet bird, obtain the history of ownership, date and place of acquisition, and the bird's health history. Provide the information to Veterinary Public Health. Veterinary

Public Health staff will determine if testing of birds or environment, quarantine and treatment of the bird(s), or investigation of the source of a recently purchased bird, are warranted.

CONTROL OF CASE, CONTACTS & CARRIERS

Investigate within 7 days. Investigated by ACDC.

CASE:

Precautions: Standard precautions are recommended.

CONTACTS: No specific measures other than case finding and education. No vaccine is presently available.

PREVENTION–EDUCATION

1. All birds suspected to be the source of human infection should be seen by an experienced avian veterinarian for evaluation and management. Exposed birds not showing signs of illness should be isolated. Criteria for release from isolation should be established in consultation with the avian veterinarian. Birds with confirmed or probable avian chlamydiosis should be isolated and treated under the supervision of an experienced avian veterinarian.
2. All surfaces should be thoroughly cleaned of organic debris before disinfection. *C. psittaci* is susceptible to many disinfectants and detergents as well as heat; however, is resistant to acid and alkali. Examples of effective disinfectants include 1:1000 dilution of quaternary ammonium compounds (eg, Roccal, Zephiran, Pet Focus), 1% Lysol, and freshly prepared 1:32 dilution of household bleach (one-half cup/gallon) or other oxidizing agents (eg, accelerated hydrogen peroxide–based disinfectant). Disinfectants can be respiratory irritants for both humans and birds and should be used in a well-ventilated area. Avoid mixing disinfectants with any other product.

People exposed to common sources of infection should be observed for development of fever or respiratory tract symptoms; early diagnostic tests should be



performed and therapy initiated if symptoms appear.

3. If prevention and education information related to animal care or testing is requested or required, this information can be provided by Veterinary Public Health staff.

DIAGNOSTIC PROCEDURES

Laboratory testing/diagnosis

1. Historically diagnoses were established based on MIF with paired sera. Although MIF is more sensitive than CF tests there still may be cross reactivity to other *Chlamydia* species. Because of this a titer of less than 1:128 must be interpreted with caution. All testing should be done within a single lab.
2. Molecular testing such as PCR has increased reliability and availability. Real time PCR assays are available within specialized laboratories. Assays can be run on respiratory specimens, blood, and tissues. Contact ACDC for submission instructions.

CASE CLASSIFICATION

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

1. 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
2. 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:

1. Isolation of *Chlamydia psittaci* from respiratory specimens (e.g., sputum, pleural fluid, or tissue), or blood, or
2. 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.