

Psittacosis

Psittacosis

(Also Known as Parrot Fever and Ornithosis)

DISEASE REPORTABLE WITHIN 24 HOURS OF DIAGNOSIS

Per N.J.A.C. 8:57, healthcare providers and administrators shall report by mail or by electronic reporting within 24 hours of diagnosis, confirmed cases of psittacosis to the health officer of the jurisdiction where the ill or infected person lives, or if unknown, wherein the diagnosis is made. A directory of local health departments in New Jersey is available at <http://localhealth.nj.gov>

If the health officer is unavailable, the healthcare provider or administrator shall make the report to the Department by telephone to (609) 826-5964, between 8:00 A.M. and 5:00 P.M. on non-holiday weekdays or to (609) 392-2020 during all other days and hours.



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THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Chlamydophila psittaci (formerly *Chlamydia psittaci*) is the bacterium that causes psittacosis. *C. psittaci* infection in birds is known as avian chlamydiosis.

B. Clinical Description and Laboratory Diagnosis

The severity of this disease ranges from mild illness to systemic illness with severe pneumonia. Persons with symptomatic infections typically have acute onset of fever, chills, headache, malaise, myalgia (muscle aches), upper or lower respiratory tract disease and sometimes rash. They may develop a nonproductive cough that can be accompanied by breathing difficulty and chest tightness. Radiographic findings include lobar or interstitial infiltrates. Human disease can affect organ systems other than the respiratory tract and result in endocarditis, myocarditis, thrombocytopenia, and hepatitis, arthritis, keratoconjunctivitis, encephalitis, ocular adnexal lymphoma and fetal death has been reported in pregnant women. Relapses of illness may occur.

Laboratory confirmation is based on isolation of *C. psittaci* from respiratory secretions, blood, or postmortem tissue, or by demonstrating a fourfold or greater increase in Immunoglobulin G (IgG) by complement fixation (CF) or microimmunofluorescence (MIF) in serum collected after the onset of symptoms.

C. Reservoirs

C. psittaci is found primarily in psittacine birds (those that have a generally erect stance and a characteristic curved or hooked beak shape, including parrots, parakeets, macaws, love birds, and cockatoos) and free-ranging birds such as pigeons, doves, shore birds and birds of prey. Poultry (turkeys, chicken, geese, and ducks), and seabirds may also shed *C. psittaci*.

D. Modes of Transmission

Human illness occurs from inhalation of the bacteria, which have been aerosolized from dried droppings, secretions, and dust from feathers of infected birds. Many seemingly healthy birds may shed the bacteria when stressed by crowding or transport. Pet birds are often implicated, especially when owners clean a cage with dried droppings. Occupational exposure can also occur when workers are exposed to areas with dust contaminated with *C. psittaci* during cleanup, repair, or demolition. Laboratory infections have also occurred. Farms or rendering plants may also be a source of exposure for workers. *C. psittaci* is resistant to drying and can stay infectious for several months. Person-to-person

transmission (through paroxysmal coughing during acute illness) has been suggested but not proven.

E. Incubation Period

The incubation period for psittacosis can range from five to nineteen days, but longer periods have been reported.

F. Period of Communicability or Infectious Period

Infected birds, including those that appear to be healthy, can be lifetime carriers of *C. psittaci* or have continuous or intermittent shedding periods of weeks or even months. If humans are contagious at all, it is during paroxysmal coughing with acute illness.

G. Epidemiology

Psittacosis occurs worldwide and sporadically in any season. Most human cases are sporadic and are usually confined within families. Human outbreaks of psittacosis occasionally occur in individual households, pet shops, aviaries, and avian exhibits in zoos. Outbreaks among birds can occur in poultry flocks or other groups of birds such as in pet stores. Quarantine of imported birds and treatment of birds with antibiotics can reduce the risk of disease transmission from birds. Since 2010 there have been fewer than 10 confirmed cases in United States each year. From 2010 through 2016 there have been four cases reported to the New Jersey Department of Health.

2 CASE DEFINITION

New Jersey Department of Health (NJDOH) Case Definition

The NJDOH Zoonotic Disease Program follows the most current case definition as published on the CDC National Notifiable Disease Surveillance System (NNDSS) website.

Psittacosis Case Definition: <https://wwwn.cdc.gov/nndss/conditions/psittacosis/>

Case definitions enable public health to classify and count cases consistently across reporting jurisdictions, and should not be used by healthcare providers to determine how to meet an individual patient's health needs. Every year, case definitions are updated using CSTE's Position Statements. They provide uniform criteria of nationally notifiable infectious and non-infectious conditions for reporting purposes. To search for other notifiable diseases' case definitions by name and by year, use the search tools on the left side of the NNDSS website: <http://wwwn.cdc.gov/nndss/>

1. 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.

2. Laboratory Criteria for Diagnosis

Laboratory diagnosis is made by isolation of *C. psittaci* from respiratory secretions. Serological tests are valuable, especially when paired sera show a fourfold rise in antibody titer.

IgG titers of 1:128 or less may be a result of past exposure, cross-reactive antibodies, or a nonspecific stimulation. IgG titers in recently infected persons are usually greater than or equal to 1:512. IgM titers greater than or equal to 1:32 would meet the probable case definition. When a clinically compatible patient has a single IgG titer of 1:128 or less, request that the treating physician draw a sample two to four weeks later for evaluation of paired titers. A fourfold rise in titer will confirm the case.

3. Case Classification

CONFIRMED

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

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

PROBABLE

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

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

NOTE: Anti-chlamydophilia immunoglobulin is very cross-reactive and may demonstrate titers to more than one species. The serologic findings by CF also may occur as a result of infection with *C. pneumoniae* or *C. trachomatis*, which is a sexually transmitted disease. The MIF test might be more specific for infection with *C. psittaci*. IgG titers of 1:128 or less may be a result of past exposure, cross-reactive antibody, or a nonspecific stimulation of chlamydial antibody. IgG titers in recently infected individuals are usually greater than or equal to 1:512. IgA titers may be elevated in recurrent or chronic infection and may be helpful in identifying the infecting species of chlamydia when cross-reactive IgG is present.

3 LABORATORY TESTING AVAILABLE

Serologic testing is available through commercial laboratories. The NJDOH Public Health and Environmental Laboratories do not offer testing for this organism.

The infectious agent 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 of *C. psittaci* is performed by few laboratories because of technical difficulty and safety concerns. Clinical samples of *C. psittaci* should be handled under appropriate biosecurity.

4 PURPOSE OF SURVEILLANCE AND REPORTING AND REPORTING REQUIREMENTS

A. Purpose of Surveillance and Reporting

- To help identify the source of infection (e.g., pet stores) and prevent further transmission to humans or other birds
- To identify and control outbreaks

B. Laboratory Reporting Requirements

1. The New Jersey Administrative Code (NJAC 8:57-1.8) stipulates that laboratories report (by telephone, confidential fax, or over the Internet using the Communicable Disease Reporting and Surveillance System [CDRSS]) any suspect or confirmed case of psittacosis to the local health officer having jurisdiction over the locality in which the patient lives or, if unknown, to the health officer in whose jurisdiction the healthcare provider requesting the laboratory examination is located. If this is not possible, call the NJDOH Infectious and Zoonotic Diseases Program (IZDP) at (609) 826-5964 during business hours or (609) 392-2020 after business hours and on weekends and holidays.

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2. The report shall contain, at a minimum, the reporting laboratory's name, address, and telephone number; the age, date of birth, gender, race, ethnicity, home address, and telephone number of the person tested; the date of testing; the test results; and the healthcare provider's name and address.

C. Healthcare Provider Reporting Requirements

1. NJAC 8:57-1.6 stipulates that healthcare providers report (by telephone, confidential fax, or CDRSS) any suspect or confirmed case of psittacosis to the local health officer having jurisdiction over the locality in which the patient lives or, if unknown, to the health officer in whose jurisdiction the healthcare provider requesting the laboratory examination is located. If this is not possible, call NJDOH IZDP at (609) 826-5964 during business hours or (609) 392-2020 after business hours and on weekends and holidays.
2. The report shall contain, at a minimum, the age, date of birth, gender, race, ethnicity, home address, and telephone number of the ill or infected person; date of onset of illness; clinical laboratory data (e.g., date of testing, test results, reporting laboratory's name, address and phone number); and the healthcare provider's name and address.
3. Veterinarians diagnosing a case of avian chlamydiosis shall report the case to NJDOH IZDP using the Report of Known or Suspected Avian Chlamydiosis Form CDS-18, available at <http://www.state.nj.us/health/forms/cds-18.pdf>. NJDOH IZDP will categorize the case as confirmed, probable, or suspect and generate a letter to the owner of the bird or the pet store, dealer, or breeder. NJDOH IZDP will inform the local health department (LHD) of the required or recommended control measures. LHD receiving reports of avian chlamydiosis directly from veterinarians should consult with NJDOH IZDP.

5 CASE INVESTIGATION

A. Laboratory Reports

1. If the LHD receives the lab or provider report, the LHD should investigate the case by contacting the patient or a family member or the healthcare provider and enter the information into CDRSS as instructed below.
2. If the lab or provider report is received by NJDOH and includes the patient's address, the report will be entered into CDRSS and not mailed to the LHD.
3. If the lab or provider report received by NJDOH does not include the patient's address, the report will be returned to the sending laboratory or healthcare provider or they will be telephoned to obtain a complete address. Once it is received, the report will be entered into CDRSS as "PENDING."

B. Case Investigation

1. An epidemiologic investigation to identify the source of infection should be initiated by the local health officer. The NJDOH Psittacosis Investigation Worksheet may be used to help guide the patient or physician interview. Specifically, focus on the period beginning about five days before onset of disease date back to approximately 12 weeks before onset for the following exposures:
 - a. Animal contact: Ask the patient about potential direct or indirect residential, or recreational exposure to cockatiels, parrots, other pet birds or wild birds.
 - b. Occupational exposure: Ask the patient if they work in a pet shop, aviary, poultry slaughter house, poultry farm or bacteriologic laboratory. Include any additional comments regarding the case in the "COMMENTS" section.
2. An epidemiologic investigation to identify the source of infection should be initiated by the local health officer if a bird with confirmed or probable avian chlamydiosis was procured from a pet store, breeder, or dealer within 60 days of the onset of signs of illness or several suspect avian cases have been identified from the same source. Other situations can be investigated at the discretion of NJDOH IZDP or local health officers.
3. Investigations involving recently purchased birds should include a visit to the site where the infected bird is currently housed and identification of the location where the bird was originally procured (e.g., pet shop, dealer, breeder, or quarantine station). Local health authorities should document the number and types of birds involved, the health status of potentially affected persons and birds, locations of facilities where birds were housed, relevant ventilation-related factors, and any treatment protocol. Examination of sales records for other birds that had contact with the infected bird may be considered.
4. Institution of disease control measures is an integral part of case investigation. It is the responsibility of the local health officer to understand and, if necessary, institute the control guidelines listed below in section 6.

C. Other Reporting/Investigation Issues

1. It is not always possible to obtain all the information necessary to determine the case status of a patient. A minimum of three attempts (not necessarily to the same person, not at the same time during the day, and only one attempt through a letter/form by mail) should be made to obtain necessary information. If at this time information is not acquired, the case should be entered into CDRSS with as much information as is known, with attempts (dates and results of attempts) documented in the "COMMENTS" section and the case status changed to "NOT A CASE" and report status to "LHD CLOSED."

2. Every effort should be made to complete the investigation within three months of opening a case. Cases that remain open for three months or more and have no investigation or update notes will be closed by NJDOH and marked as “NOT A CASE.”
3. Once an LHD completes its investigation and assigns a report status of “LHD CLOSED,” NJDOH will review the case, and when it is complete will change the report status to “DHSS APPROVED.” At this time, the case will be locked for editing. If additional information is received after a case has been placed in “DHSS APPROVED,” an LHD will need to contact NJDOH to reopen the case. This should be done only if the additional information changes the case status of the report.

6 CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (NJAC 8:57-1.12)

1. Minimum Period of Isolation of Patient

None.

2. Minimum Period of Quarantine of Contacts

None.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Refer to the NASPHV document: *Compendium of Measures to Control Chlamydomphila psittaci Infection among Humans (Psittacosis) and Pet Birds (Avian Chlamydiosis)* for more information: <http://www.nasphv.org/documentsCompendiaPsittacosis.html>.

1. Disease in Birds

Avian chlamydiosis diagnosed in birds is reportable to NJDOH IZDP by calling (609) 826-4872 or complete the CDS-18 form on the NJDOH website (<http://nj.gov/health/cd/forms.shtml>). When a bird in a pet store or one recently purchased from a pet store has been diagnosed with avian chlamydiosis, whether human cases have occurred as a result of exposure to the diseased bird, control measures in birds will be instituted by the local health officer in collaboration with NJDOH IZDP. These measures can include quarantine and treating

exposed birds and properly disinfecting cages and other surfaces. Other control measures include notifying the pet store's owner and workers of the diagnosis and the need to see a physician if they have been exposed and develop respiratory illness. Also, depending on the situation, individuals who have purchased birds from the facility may be contacted to inform them about avian chlamydiosis, the possibility that their birds may be carriers, and the potential risks to their health, and the public who may have visited the store will be notified through the posting of public health notices at the store. Typically, NJDOH IZDP will generate a letter detailing the required control measures and discuss this information with the local health officer.

The purpose of imposing quarantine is to prevent further disease transmission. Reasonable options should be made available to the owners and operators of pet stores. For example, with the approval of state or local authorities, the owner of quarantined birds may choose to (1) treat the birds in a separate quarantine area to prevent exposure to the public and other birds; (2) sell the birds if they have completed at least seven days of treatment, provided that the new owner agrees in writing to continue the quarantine and treatment and is informed of the disease hazards; or (3) euthanize the infected birds. After completion of the treatment or removal of the birds, quarantine can be lifted when the infected premises are thoroughly cleaned and disinfected. The area can then be restocked with birds.

In addition to pet shops, avian chlamydiosis can occur in other high-risk environments (e.g., poultry farms). In the situation where an infected bird is identified, control measures similar to those described above (e.g., quarantine and treating exposed birds, disinfecting the animal's environment, and notifying exposed individuals about their disease risk) would be instituted by the New Jersey Department of Agriculture's Division of Animal Health in collaboration with NJDOH IZDP.

For any situation or questions involving the disease in birds and the risk to humans, contact NJDOH IZDP at (609) 826-4872.

2. Reported Incidence is Higher than Usual/Outbreak Suspected

If an outbreak is suspected, investigate to determine the source of infection and mode of transmission. A common source, such as a cluster of sick birds in a pet store, should be sought and applicable preventive or control measures should be instituted. See section 6C, Disease in Birds, above. Consult with NJDOH IZDP staff at (609) 826-4872.. NJDOH IZDP staff can help determine a course of action to prevent further cases and can perform surveillance for cases that may cross several jurisdictions and therefore be difficult to identify at a local level.

D. Preventive Measures

1. Environmental Measures

See section 6C, Disease in Birds, above.

2. Personal Preventive Measures/Education

Recommendations for controlling infection among humans and birds:

- **Protect persons at risk.** Inform all persons in contact with birds or bird-contaminated materials about potential health risks. By the time infection is recognized in a group of birds, a critical period for pathogen accumulation and possible dissemination to humans and other birds has already occurred. Bird caretakers with respiratory or influenza like symptoms should seek prompt medical attention and inform their healthcare providers about bird contact. Seeking healthcare early in the course of illness may improve clinical outcomes. Healthcare providers are encouraged to inquire about bird contact, particularly in cases of febrile respiratory illness where other, more common causes have been ruled out.
- **Maintain accurate records of all bird-related transactions to aid in identifying sources of infected birds and potentially exposed persons.** Records should include the date of purchase, species of birds purchased, individual bird identification, source of birds, and any identified illnesses or deaths among birds. In addition, the seller should record the name, address, and telephone number of the customer and individual bird identification (e.g., band or microchip number).
- **Avoid purchasing or selling birds that have signs of *C. psittaci* infection.** Signs are nonspecific and may include lethargy, ocular or nasal discharge, diarrhea, ruffled feathers or low body weight.
- **Isolate newly acquired birds.** Isolation should include housing in a separate airspace from other birds and non-caretakers. Isolate birds, including those that have been to shows, exhibitions, fairs, and other events, for at least 30 days, and test or prophylactically treat them before adding them to a group.
- **Test birds before they are to be boarded or sold on consignment.** House them in a room separate from other birds while test results are pending.
- **Practice preventive husbandry.** Position cages to prevent the transfer of fecal matter, feathers, food, and other materials from one cage to another. Use substrate/litter that will not produce dust (e.g., newspaper). Clean all cages, food bowls, and water bowls daily. Do not stack cages, and be sure to use solid-sided cages or barriers if cages are adjoining. The bottom of the cage should be made of a wire mesh. Litter that will not produce dust (e.g., newspapers) should be placed underneath the mesh.
- **Clean all cages, food bowls, and water bowls daily.** Soiled bowls should be emptied, cleaned with soap and water, rinsed, placed in a disinfectant solution, and rinsed again before reuse. Between occupancies by different birds, cages should be thoroughly scrubbed with soap and water, disinfected, and rinsed in clean, running water. Exhaust ventilation should be sufficient to prevent accumulation of aerosols.
- **Prevent the spread of infection.** Isolate birds requiring treatment. Rooms and cages where infected birds were housed should be cleaned immediately and disinfected thoroughly. When the cage is being cleaned, transfer the bird to a clean cage. Thoroughly scrub the soiled cage with a detergent to remove all fecal debris, rinse

the cage, disinfect it (allowing at least five to ten minutes of contact with the disinfectant), and rerinse the cage to remove the disinfectant. Discard all items that cannot be adequately disinfected (e.g., wooden perches, ropes, nest material, and litter). Minimize the circulation of feathers and dust by wet-mopping the floor frequently with disinfectants and preventing air currents and drafts within the area. Reduce contamination from dust by spraying the floor with a disinfectant or water before sweeping it. Do not use a vacuum cleaner because it will aerosolize infectious particles. Frequently remove waste material from the cage (after moistening the material), and burn or double-bag the waste for disposal. Care for healthy birds before handling isolated or sick birds.

- **Use disinfection measures:** 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, it 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). Many disinfectants are respiratory irritants for both humans and birds and should be used in a well-ventilated area. Avoid mixing disinfectants with any other product.

3. Recommendations for Treating and Caring for Infected Birds

All birds with confirmed or probable AC should be isolated and treated, preferably under the supervision of a veterinarian. Birds with suspected AC or birds previously exposed to AC should be isolated and retested or treated. Acceptable treatment is delineated in the *Compendium of Measures to Control Chlamydophila psittaci Infection among Humans (Psittacosis) and Pet Birds (Avian Chlamydiosis)*, published by the National Association of State Public Health Veterinarians. Because treated birds can be reinfected, they should not be exposed to untreated birds or other potential sources of infection. To prevent reinfection, contaminated aviaries should be thoroughly cleaned and sanitized. No AC vaccines are available. The following general recommendations should be followed when treating and caring for birds with confirmed, probable, or suspected cases of AC:

- Protect birds from undue stress (e.g., chilling or shipping), poor husbandry, and malnutrition. These problems reduce the effectiveness of treatment and promote the development of secondary infections with other bacteria or yeast.
- Observe the birds daily, and weigh them every three to seven days. If the birds are not maintaining weight, have them re-evaluated by a veterinarian.
- Avoid high dietary concentrations of calcium and other divalent cations because they inhibit the absorption of tetracyclines. Remove oyster shell, mineral blocks, and cuttlebone.
- Isolate birds that are to be treated in clean, uncrowded cages.
- Clean up all spilled food promptly; wash food and water containers daily.
- Provide fresh water and appropriate vitamins daily.

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- Continue medication for the full treatment period to avoid relapses. Birds can appear clinically improved and have reduced chlamydial shedding after one week.

Additional Information

A Psittacosis Fact and Psittacosis Investigation Worksheet is available at the NJDOH Web site at <http://www.state.nj.us/health/cd/topics/psitta.shtml>

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