Zoonotic Diseases of Common Pet Birds: Psittacine, Passerine, and Columbiform Species

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• Pet • Bird • Zoonoses • Psittacine • Avian • Parrot
• Passerine • Columbiform

Psittacine, passerine, and columbiform birds are among the most popular groups of avian species kept as pets. Fortunately, zoonotic transmission of disease from these species is uncommon, but there are some recognized dangers. Most notably, *Chlamydophila psittaci* can be transmitted from pet birds to humans. *Salmonella* spp, although more commonly a food-borne zoonotic agent, can also be transmitted through pet birds. Allergic responses to pet birds, including pneumonitis and contact dermatitis, have also been documented. Bite wounds from pet birds are rarely reported but can cause trauma and develop infection. The other diseases discussed here are considered potential zoonotic diseases of pet birds because of either isolated reports of suspected but unconfirmed transmission to humans or from reports of wild conspecifics being reported to have the disease. For most diseases, humans with underdeveloped or compromised immune systems, including the very young, the elderly, HIV patients, individuals undergoing chemotherapy, or people otherwise immunosuppressed due to other disease are the most at risk.

BACTERIAL ZOONOSES

Chlamydiosis

Chlamydiosis is a zoonotic disease of great interest to pet bird owners and has received a vast amount of attention. Recently, the National Association of State Public Health Veterinarians (NASPHV) has completed an updated compendium to assist in the prevention and control of chlamydiosis among humans and pet birds.[1] A free copy of the compendium along with other resources to aid pet owners with infected birds, pet stores, and aviaries working toward detection and prevention is available at the NASPHV Web site.[1]

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According to the Centers for Disease Control and Prevention, 66 human cases of psittacosis were reported through the Nationally Notifiable Diseases Surveillance System between 2005 and 2009[1]; these statistics are likely an underrepresentation due to incorrectly diagnosed or unreported cases.[2] Most of the cases reported between 2005 and 2009 were attributed to exposure to pet birds infected with the bacterium.[1] Cockatiels, parakeets, parrots, and macaws were the most commonly represented species. Populations considered to be most at risk include bird owners, pet shop employees, and veterinarians. Due to the zoonotic potential, *C psittaci* is reportable in most states.

Chlamydiosis is caused by a small bacterial organism called *C psittaci.*[2–4] This organism is a gram-negative, obligate intracellular bacterium that transitions through at least 2 states during its life cycle. There is an elementary body stage that can infect cells either within the same host or in another host, and a reticulate body stage, which undergoes replication but is not able to infect other cells. An elementary body is extracellular, highly infectious, and metabolically inactive. Elementary bodies are resistant to many environmental stressors and can survive in soil for up to 3 months and in bird droppings for up to 1 month. Elementary bodies are inhaled or ingested by a host and attach themselves to an eukaryotic cell, most commonly a respiratory epithelial cell. After attaching to the cell, the elementary body undergoes endocytosis and forms an endocytoplasmic vesicle. This vesicle allows for the elementary body to remain safe from the host's immune defense system while it undergoes transition into the reticulate body. The reticulate body is the intracellular, metabolically active state that is capable of replication via binary fission. After replication, the reticulate bodies convert to elementary bodies and are released from the cell. Depending on the strain, host, and environmental conditions, the developmental cycle takes 48 to 72 hours. There is also the possibility of a third persistent state in which the organism is present and viable but cannot be eliminated by the host's defense system.[5–6] If this state exists, it is unlikely that a culture could successfully be obtained. The existence of this persistent state is controversial and documentation of its existence in naturally infected birds is lacking.

Birds infected with *C psittaci* may be asymptomatic.[7,8(pp4–96)] This is especially likely for pigeons and passerine birds, but is also seen with psittacine birds. Stress due to reproduction, raising young, transportation, shipping, overcrowding, and inadequate husbandry can increase the likelihood that birds will begin shedding the organism and/or showing clinical signs. Immunosuppressed birds and very young birds are most likely to succumb to severe infection. The organism can be transmitted vertically, and the very young may die soon after hatching or while still in the nest.

The typical incubation period is anywhere from 3 days to several weeks, but clinical signs and active disease may appear without any known risk or exposure.[1] Many of the clinical signs seen in birds, such as lethargy, decreased appetite, weight loss, and ruffled feathers, are very nonspecific. Disease of the respiratory, gastrointestinal, and ocular systems may result in more visible clinical signs. Liver disease due to *C psittaci* commonly results in lime-green diarrhea or bright green urates. Conjunctivitis, dyspnea, and ocular and nasal discharge are often reported. Severely affected birds may become completely anorexic, depressed, and die. These clinical signs are not unique to chlamydiosis but may support a potential diagnosis.

When a person becomes infected with *C psittaci* due to contact with a psittacine bird, the disease process is called *psittacosis* and has historically been referred to as parrot fever.[9] If a person becomes infected with *C psittaci* as a result of contact with a nonpsittacine bird, the term *ornithosis* is applied. *Chlamydiosis* is a broader term