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RESPIRATORY DISEASES OF BIRDS

Jump to: Samples to submit, Epidemiology (aetiologic agents, clinical signs, *etc*) of common viral and bacterial respiratory diseases, or Miscellaneous causes of respiratory disease in birds.

NB: You can jump to the epidemiology of specific diseases by clicking on the disease name in the Samples to submit table (below).

RESPIRATORY DISEASES: Samples to submit

Disease	Species[a]	Samples to submit [b]
Aspergillosis	All	*Fresh:* Lung, air sacs, lesions *Fixed:* Lung, air sacs, lesions
Avian influenza ***ZOONOTIC***	All Reservoir: wild waterfowl & shorebirds	**Foreign Animal Disease:** contact MPI-IDC *Fresh:* **Whole bird** *or* Lung, Oropharyngeal swab (chicken, turkeys) or Cloacal swab (ducks, geese) *Fixed:* Lung
Avian Metapneumovirus (turkey rhinotracheitis)	C, T	**Foreign Animal Disease:** contact MPI-IDC *Fresh:* **Whole bird** *or* Nasal turbinates, lung, trachea, air sac, *or* Tracheal and/or choanal swabs *Fixed:* Nasal turbinates, lung, trachea
Bordetellosis (Turkey Coryza)	**T**, C	*Fresh:* Trachea, lung, or Tracheal swab *Fixed:* Trachea, lung
Chlamydiosis ***ZOONOTIC***	**P (psittacidae),** T, D, W	*Fresh:* Air sac, lung, pericardium *Fresh:* Air sac, lung, spleen, liver, pericardium
Colibacillosis	C, T, D (all birds can be infected)	*Fresh:* Lung, air sacs, heart, yolk sac, bone marrow, spleen, *Fixed:* Lung, air sacs, heart, yolk sac, bone marrow, spleen, liver, intestines, oviduct/shell gland, brain, synovium
Infectious bronchitis (IB)	C	*Fresh:* Trachea, lung, air sac, serum *Fixed:* Trachea, lung, air sac, kidney
Infectious Coryza (*Avibacterium paragallinarum)*	C, W (pheasant, guinea fowl)	*Fresh:* Sinus swab (exudate), trachea, lung, air sac *Fixed:* Trachea, lung, conjunctiva, air sac
Infectious Laryngotracheitis (ILT)	C, W (Rare: pheasant, peafowl)	*Fresh:* Trachea, lung, &/or serum *Fixed:* Trachea, lung, nasal turbinates, conjunctiva
Mycoplasmosis (MM, MS, MG)	C, T	*Fresh:* Trachea, lung, turbinates, serum, tracheal/sinus swab, synovium (MS) *Fixed:* Trachea, lung, turbinates, synovium (MS)
Newcastle disease	**C**, T, W, P	**Foreign Animal Disease:** contact MPI-IDC *Fresh:* **Whole bird** *or* Oropharyngeal swab, trachea, bronchus, lung, air sacs, spleen, brain, and kidney *Fixed:* Trachea, bronchus, lung, air sac, spleen, brain, and kidney
Ornithobacterium infection (ORT)	C, T (poultry)	*Fresh:* Tracheal or sinus swab, lung *Fixed:* Lung
Pasteurellosis (Fowl cholera)	C, T (poultry), D, W (waterfowl)	*Fresh:* Lung, spleen, heart blood *Fixed:* Lung, liver, spleen

[a]C = chicken, D = duck, G = Geese, P = Pet/caged birds (including exotic parrots/birds), T = turkey, W = wild birds (may include game birds and water birds, etc)

[b]Fresh or fresh frozen **whole bird** may always be submitted for necropsy

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RESPIRATORY DISEASES: EPIDEMIOLOGY

1. Aspergillosis

Synonyms: Brooder pneumonia, Mycotic pneumonia, Pneumomycosis
Aetiologic agent: *Aspergillus fumigatus* and *Aspergillus flavus* (fungi)
Ages: All ages (Aspergillus fumigatus can penetrate egg shells under ideal growth conditions and infect embryos)
Clinical signs: Dyspnoea, gasping, cyanosis, tachypnoea (also: diarrhoea, dehydration, and increased thirst)
Diagnosis: Clinical signs, Necropsy (gross lesions), Fungal culture, Histology

2. Avian Influenza *ZOONOTIC*

Foreign Animal Disease – This disease is reportable to MPI
Aetiologic agent: *Avian Influenza virus*, a type A Influenza virus (*Orthomyxoviridae*)
Ages: All ages
Clinical signs:
LPAI: Coughing, sneezing, rales, lacrimation (ocular discharge), sinusitis, depression
HPAI: Fatal infections with few premonitory signs, mortality approaches 100%
Diagnosis: History, clinical signs, gross lesions, PCR, virus sequencing (testing referred to MPI/IDC)
Differential diagnoses: Newcastle disease, Paramyxoviruses, Mycoplasmosis, Chlamydial infections, Fowl cholera

3. Avian Metapneumovirus (aMPV)

Foreign Animal Disease – This disease is reportable to MPI
Synonyms: Swollen head syndrome (in chickens), Turkey rhinotracheitis
Aetiologic agent: *Avian Metapneumovirus* (aMPV), a Paramyxovirus
Ages: All ages (young animals more susceptible)
Clinical signs: Coughing, swollen sinuses, nasal discharge, lowered feed and water consumption
Turkeys: Foamy conjunctivitis, swollen infraorbital sinuses with submandibular oedema (also see decreased egg production)
Chickens: Swollen head
Diagnosis: History, clinical signs, IHC (formalin fixed turbinates), PCR

4. Bordetellosis

Synonym: Turkey Coryza
Aetiologic agent: *Bordetella avium*
Ages: most commonly seen at 1-6 weeks; all affected
Clinical signs: Initially clear mucoid nasal discharge, frothy ocular exudate, sneezing, head flicking; chronically discharge becomes thicker with pasting of the nostrils and matting of eyelids, voice changes, tracheal rales
Diagnosis: Culture

5. Chlamydiosis (Avian Chlamydiophilus, Avian Chlamydiosis) *ZOONOTIC*

Synonyms: Psittacosis (in Psittacidae *i.e.* parrots, parakeets, cockatoos, macaws, *etc.*), Ornithosis (in all other avian species)
Aetiologic agent: *Chlamydophila psittaci* (*Chlamydia psittaci*), obligate intracellular bacterium

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Ages: All ages
Clinical signs: Nasal discharge, dyspnoea ± rales, conjunctivitis (pigeons), yellow-green watery diarrhoea, depression, weakness, unbalanced gait (ducks, geese and pigeons), inappetence/anorexia, loss of weight
Diagnosis: History & clinical signs, Histology or Cytology (impressions of exudate on air sacs, spleen, liver, lung, and pericardium)
Differential diagnoses: Mycoplasma gallisepticum (turkeys), Avian influenza, aspergillosis, septicaemia colibacillosis, and cholera

6. Colibacillosis
Aetiologic agent: *Escherichia coli*
Ages: All ages (E. coli has been isolated from eggs of normal hens, likely due to ovarian infection or salpingitis; chicks may hatch with a latent E. coli infection with active infection occurring following a stressor)
Clinical signs: Airsacculitis (respiratory signs that vary in severity), also accompanying pericarditis, coelomitis, septicaemia
Diagnosis: Culture ± typing; rule out other diseases (bacterial, viral, fungal infections)

7. Infectious bronchitis (IB)
Aetiologic agent: *Infectious bronchitis virus*, a Coronavirus
Ages: All ages
Clinical signs:
Chicks: Coughing, sneezing, rales, nasal and ocular discharge, weakness, depression, huddling
Adults: Coughing, sneezing, rales, decreased egg production with soft or misshapen eggs, airsacculitis, nephrogenic strains associated with pale, swollen kidneys and urolithiasis (pullets and mature birds)
Diagnosis: PCR, serology (referred test)

8. Infectious Coryza
Aetiologic agent: *Avibacterium paragallinarum* (formerly *Haemophilus paragallinarum* and *Haemophilus gallinarum*)
Ages: All ages susceptible; infection more common in chickens that are half grown or older
Clinical signs: Rapid onset and high morbidity; decreased feed consumption, decreased egg production, decreased growth rate, oculonasal discharge, conjunctivitis with adherence of eyelids, facial oedema, respiratory noises, wattle oedema, swollen infraorbital sinuses and/or exudate in the conjunctival sac; persistence of clinical signs seen with bacterial or viral co-infections
Diagnosis: History & clinical signs, Culture

9. Infectious Laryngotracheitis (ILT)
Aetiologic agent: *Infectious Laryngotracheitis virus*, a Herpesvirus
Ages: Highest incidence in broilers >4wks of age or in mature or nearly mature chickens; all ages are susceptible
Clinical signs:
High pathogenicity ILT: Marked dyspnoea, loud gasping sounds, coughing, wheezing sounds, expectoration of bloody mucus secondary to coughing and head shaking

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Low pathogenicity ILT: haemorrhagic conjunctivitis with watery eyes, lachrymation, persistent nasal discharged, swollen infraorbital sinuses, generalized unthriftiness, lowered egg production

Diagnosis: Clinical signs & gross lesions, Histology, PCR, Serology (referred test)

10. Mycoplasmosis (MM, MS, MG)

Aetiologic agents: *Mycoplasma gallisepticum* (MG), *Mycoplasma meleagridis* (MM), *Mycoplasma synoviae* (MS)

Synonyms: (MG) Chronic respiratory disease, Infectious Sinusitis of Turkeys; (MM) MM Infection; (MS) Infectious synovitis, Tenovaginitis

Aetiologic agent	Ages	Clinical signs	Diagnosis
***Mycoplasma gallisepticum* (MG)**	4-8-wk broilers and adult birds	Unilateral or bilateral sinusitis (infraorbital) ± lower respiratory disease Airsacculitis, adhesive pericarditis, fibrinous coelomitis, occasionally synovitis or salpingitis	History & Clinical signs PCR Serology (referred)
***Mycoplasma meleagridis* (MM)**	All ages	Airsacculitis in progeny (venereal infection in turkeys transmitted in semen), impaired hatchability	History & clinical signs PCR
***Mycoplasma synoviae* (MS)**	Young (4-12 wk) chickens & (10-12 wk) turkeys	Lameness: Swollen joints and tendon sheaths Occasionally causes airsacculitis in broilers and turkeys	History & clinical signs PCR Serology (referred) Rule out other causes of synovitis

11. Newcastle disease

Foreign Animal Disease – This disease is reportable to MPI

Aetiologic agent: *Newcastle disease virus* (*Avian paramyxovirus 1*, APMV-1)

Ages: All age groups (clinical signs differ between young birds and adult birds)

Clinical signs:

Lentogenic: *Some may be asymptomatic*

1. Respiratory infection
    a. Adult: mild
    b. Young: gasping, sneezing, coughing, rales, nasal and lachrymal discharge, swollen heads
2. Miscellaneous signs:
    a. Decreased egg production

Mesogenic:

1. Respiratory signs
    a. Adult: mild to inapparent
    b. Young: marked gasping, coughing, hoarse chirping, nasal discharge
2. Nervous signs (occasionally seen)
    a. Young: star gazers are common, paralysis, prostration
3. General signs:
    a. Low mortality, sudden onset

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b. Mild depression, anorexia
c. Eggs laid are low quality (soft shelled, roughened, or deformed)

Velogenic (neurotropic or viscerotropic): *HIGH MORTALITY*

1. Respiratory
    a. Adult: dyspnoea, conjunctivitis, ocular and nasal discharge
    b. Young: similar to Mesogenic strains but more acute
2. Nervous signs
    a. Adult: Paralysis, tremors, twisting of the head and neck, circling, paresis, paralysis, terminal clonic spasms
    b. Young: similar to Mesogenic strains
3. Gastrointestinal signs
    a. All: Haemorrhagic intestinal lesions
    b. Adult: diarrhoea
4. Wild & caged birds
    a. Infection may be inapparent*;* Usually presents as sudden death
    b. May have gasping, diarrhoea and later CNS involvement

Diagnosis: History & clinical signs, PCR, virus isolation & pathogenicity testing, serology

12. Ornithobacterium infection (ORT)

Aetiologic agent: *Ornithobacterium rhinotracheale*
Ages: All ages; older birds may experience worse clinical signs
Clinical signs: Mild to severe respiratory signs (including gasping, marked respiratory effort), mild sinusitis, tracheitis, unilateral or bilateral lung consolidation, serofibrinous pleuropneumonia, inflammation of air sacs
Diagnosis: Culture (slow growing and can be masked by other organisms), Necropsy (gross lesions), serology (referred)

13. Pasteurellosis (fowl cholera)

Aetiologic agent: *Pasteurella multocida*
Ages: usually seen in semimature or mature birds
Clinical signs:
Acute cholera: Common form seen in geese; sudden death without premonitory signs (poisoning is often suspected)
Subacute cholera: Anorexia, depression, cyanosis, rales, nasal and oral discharged of mucus and white watery or green mucoid diarrhoea
Chronic cholera: Usually seen in chickens; swelling of joints, wattle, foot pad or tendon sheath; caseous exudates in the conjunctival sac or infraorbital sinus; ± torticollis (due to abscesses in the infraorbital sinuses and middle ear; more common in Turkeys)
Turkey breeders: drop in egg production; increased mortality following insemination; Toms produce thin, watery, poor quality semen
Diagnosis: History & clinical signs, Culture

14. Miscellaneous

CS = clinical signs; Dx = diagnosis

a) Adenovirus
    a. CS: Discreet respiratory disorders
    b. Dx: Histology, serology (referred), PCR

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b) Ammonia intoxication
    a. CS: Non-specific and discreet respiratory signs, conjunctivitis
    b. Dx: Ammonia smell
c) Poxvirosis *(Poxvirus*)
    a. CS: Usually a cutaneous infection but occasionally forms diphtheritic membranes in the oral cavity
    b. Dx: Histology, mostly a clinical diagnosis
d) Cryptosporidiosis
    a. CS: Metazoan parasite that usually causes diarrhoea but can also infect the *respiratory* tract and lead to coughing, gasping, airsacculitis, and sometimes death
    b. Dx: Histology, faecal flotation
e) Syngamosis (*Syngamus trachea*)
    a. CS: “Yawning”, dyspnoea, parasites in the trachea, seldom seen in chickens
    b. Dx: Isolation of parasites in trachea on necropsy
f) Vitamin A deficiency
    a. CS: Upper respiratory squamous metaplasia
    b. Dx: Histology; [Vitamin A] in blood, liver and eggs
g) Vaccine reactions
    a. CS: Hypersensitivity reaction
    b. Dx: Clinical signs, peracute history of vaccination