Diagnosis, Treatment and Prevention of Respiratory Diseases in Small Flocks

The Backyard Poultry Hobby Continues to Grow!!!

- Significant practice potential for veterinarians, esp. with the coming VFD.
- Many urban/suburban owners get erroneous advice from feed/Ag stores, hatchery employees or Dr. Google!!
- Great need for accurate information on disease control, nutrition and food safety!!

Preventing Diseases in Small Backyard Flocks:

1. Good husbandry and sanitation
2. Obtain poultry from reputable sources
   - National Poultry Improvement Plan (NPIP) or suggest pre-purchase testing chickens.
3. External and internal parasite examination.
4. Vaccination
   - Marek's vaccination for all chickens!!!
     - Need to give only once, but before exposure to the virus (in the hatchery the best)
   - Infectious Laryngotracheitis vaccine (for people showing their birds, at LEAST 4 weeks before the show). Yearly booster recommended.
   - Other vaccines if indicated
5. Get birds ideally on a commercial, age appropriate diet.
6. Keep birds safe from predators and vermin.
   - Most common cause of mortality, can also introduce pasteurellosis, Salmonella.

#1 finding in the history given by clients submitting sick birds to the laboratories

- **Owner brought in some new birds within the last 1-3 months or just brought back birds from a show.**
  - Strongly discourage obtaining birds from auctions, swap meets, neighbors, internet sources (Craig's list, etc.)

Respiratory Diseases Seen in Small Flocks at the Diagnostic Laboratories (in descending order of frequency)

- ❑ *Mycoplasma gallisepticum*
- ❑ Infectious Bronchitis (corona v.)
- ❑ Infectious Laryngotracheitis (herpes v.)
- • *Pasteurella multocida*
  - – Avian Cholera
- • Avian Pox Infections (pox v.)
- • Gapeworm (*Syngamus trachea*)
  - – Upland gamebirds mostly
- • Aspergillosis
  - – moldy feed or bedding
- • Avian Coryza (rare!!); *Hemophilus paragallinarum*
- • Newcastle Disease
- ❑ Avian Influenza (rare!!!)

Mycoplasma gallisepticum (MG)

- A bacterial infection of chickens, turkeys, upland gamebirds, peafowl, wild finches
- A high percentage of hobby flocks, backyard flocks are infected.
- Bird to bird infection can occur.
- Indirect contact with secretions from affected birds can spread illness.

Mycoplasma gallisepticum

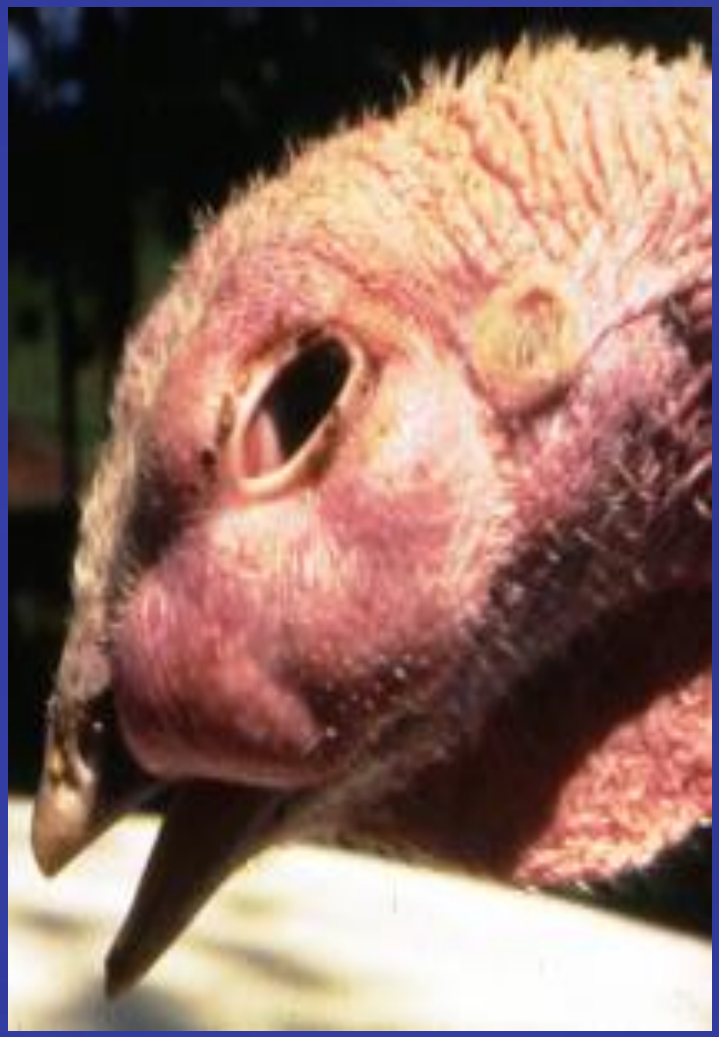
- Disease causes catarrhal sinusitis, rhinitis, tracheitis, airsacculitis.
- Adult chickens are often asymptomatic carriers unless stressed. This is often how the disease gets spread.
- Turkeys usually get severe sinusitis and cough. Often called “swollen head or bubble-eye”

Mycoplasma gallisepticum infection consequences for small flocks

- Significantly less eggs produced.
- Turkeys and broilers will get chronic respiratory infection (CRD). MG + E. coli polyserositis
  - Carcass quality suffers.
  - Increased death loss in flock.
- Disease will remain on the farm until all live birds are gone and clean-up and disinfection occur.

Additional Mycoplasma (MG) Facts

- Antimicrobials will not eliminate mycoplasma infection, remission of symptoms only.
- Treatments include:
  - Tylosin, Aivlosin, tetracycline
  - Prescription only
- Mycoplasma infected breeders may produce infected offspring.
- Vaccines are available to reduce symptoms but not widely used by small flock owners or exhibition flocks.



Mycoplasma Prevention and Control

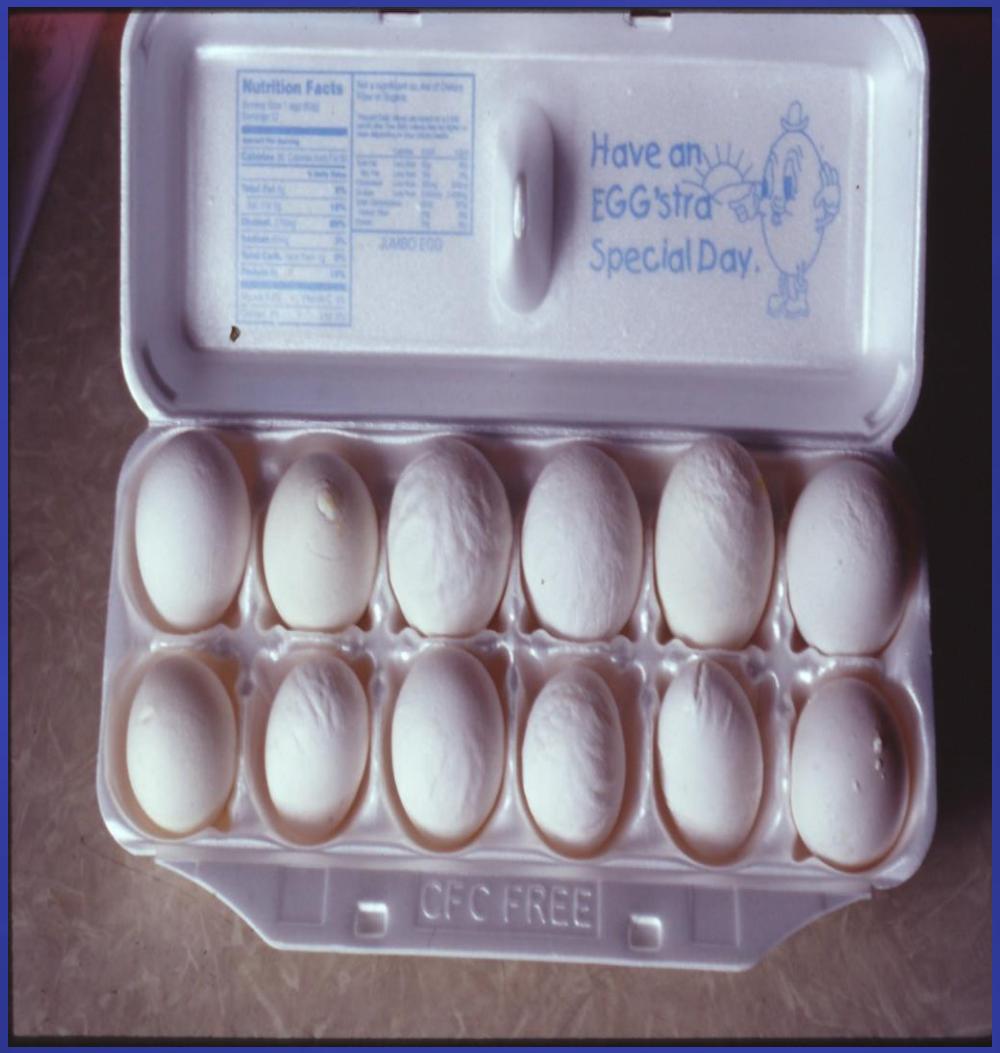
- Purchase birds from NPIP MG-clean hatchery/breeders
- Practice isolation & biosecurity
  - Keeping birds away from other poultry (neighbors chickens)
  - Visitor policy
  - Not sharing equipment unless disinfected.
  - Esp. important if your clients breed rare heritage poultry

Infectious Bronchitis (IBV)

- IBV is a rapidly spreading, highly contagious corona virus-induced respiratory disease of chickens.
- Infected birds develop coughing, sneezing and if laying, an egg production drop is seen.
- Symptoms in the flock may reach 100%
- Death loss: May be as high as 20-30% in young chickens between 1-4 weeks of age.
- Death loss in older chickens often low unless additional diseases (MG) present.

Infectious Bronchitis in Laying Hens

- Decline in egg production
- Poor shell quality
  - soft/rough, misshapen eggs
- Kidney damage (+/-)
- Oviduct lesions (+/-)
  - infection at early age may lead to “false layers”



How IBV Disease Spreads

- Bird to bird contact with respiratory secretions, fecal matter.
- The virus can also “hitch a ride” on equipment, or the hands, clothing, shoes of the people walking between pens.
- Disease worse in MG infected chickens and/or poor ventilation/high ammonia conditions.
- Supportive care, treating secondary bacterial infections.
- Serology, virus isolation, tracheal PCR testing used to diagnose.

Infectious Laryngotracheitis (ILT)

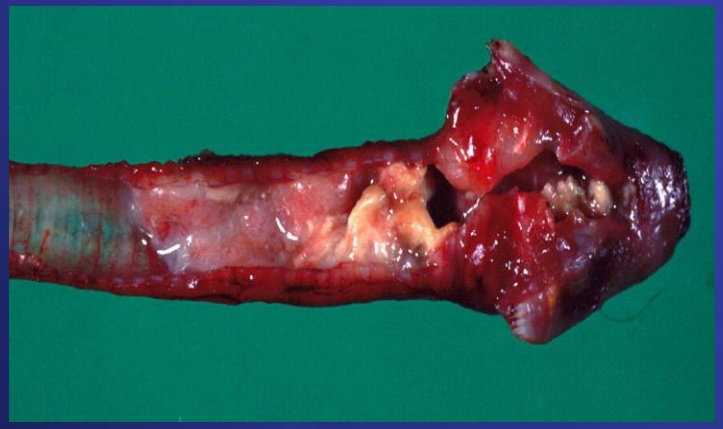
- ILT is a herpes viral disease of chickens.
- The main symptoms observed are watery eyes, cough, respiratory distress, slow spread and high death loss (10-30% on average).
- Can be seen in any age bird.
- Classic symptoms: Coughing up blood (not always present however), conjunctivitis

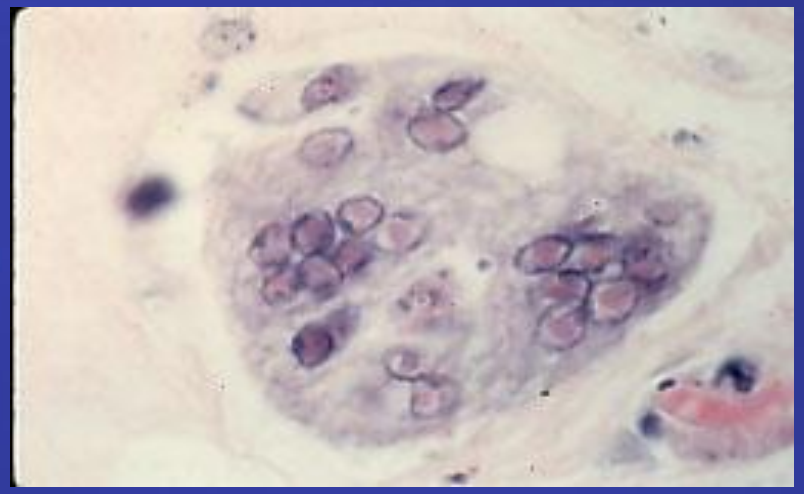
Infectious Laryngotracheitis

- The spread of the disease can be stopped if caught early by vaccinating unaffected birds in the flock.
- However, diagnosis requires laboratory testing (histopathology, VI, Elisa test.
- Recovered birds are carriers so if vaccinating, every chicken on the farm must be vaccinated.
- LT-IVAX (tissue culture product)
- http://www.firststatevetsupply.com/store2/vaccines/live-vaccines.html

Infectious Laryngotracheitis

- Vaccination procedure: Conjunctival drop.
- Once reconstituted, must use up vaccine in two hours.
- Do not mix vaccinated and unvaccinated flocks as this can result in vaccine-related outbreak.
- ILT is a reportable disease in PA



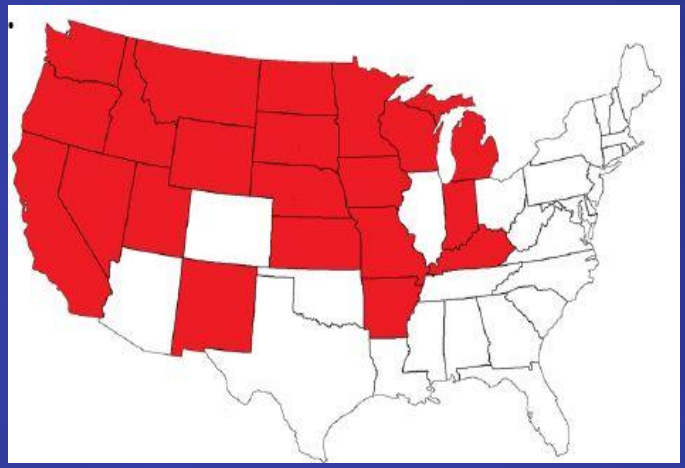


Avian Influenza (AI)

- Still an uncommon disease of poultry as they are NOT the primary hosts.
- Wild waterfowl and shorebirds are natural hosts for AI.
- Usually very few symptoms in waterfowl.
- Infection of poultry requires adaptation of the virus in them.
- Highly pathogenic (HPAI)
  - High death loss in poultry
- Low path (LPAI)
  - Little to no death loss in poultry
- All Avian Influenza cases are reportable.

HPAI Statistics from 2014-15 outbreak

- Most devastating animal disease event in US History
- 21 states affected
- 7.4 million turkeys (7%) and 43 million layers, pullets, egg breeders (10%) affected.
- 232 farms involved
- 3400 personnel involved to stop outbreak
- 40 countries had an export ban on poultry products from the US during the outbreak
- Loss to US economy: 3.3 billion dollars



When to Seriously Consider HPAI In A Poultry Flock? High Unexplained Mortality

11 AM

24 hours later

HPAI Clinical Signs, Lesions

Keeping Avian Influenza Out of Flocks

- Avoid direct or indirect contact with wild waterfowl
  - Make pastures inhospitable for wild waterfowl
  - Do not use surface water as drinking source.
  - Change clothing, disinfect boots if out hunting waterfowl or fishing before taking care of your poultry
  - Domestic waterfowl also become infected so have some separation between the poultry and domestic waterfowl.

Basic approach to the flock with a respiratory infection

- If there is mortality, strongly encourage submission of up to 4 whole birds to one of the PADLS laboratories (refrigerated, not frozen)
- http://www.padls.org/index.html
  - Still $40.00/necropsy includes serology, histopathology, virus isolation, mycoplasma PCR, bacteriology

If there is high mortality, recommend calling PDA hotline for further instructions:

717-772-2852 (weekdays 8-4)

717-836-3240 (weekend on-call PDA veterinarian)

Submitting Samples To Your Diagnostic Laboratory

- Pennsylvania has 3 laboratories that do testing; call laboratory for instructions
- Submission forms on website.
- Use next day shipping (UPS/Fed Ex) no later than Thursday.
- Indicate box contains diagnostic specimens!!!

Approach if no mortality or client does not want to euthanize an animal to ship

- Obtain serum samples from the birds. In larger flocks at least 10 blood samples recommended.
  - Can provide fast information in unvaccinated birds
- Repeat serology in 2-4 weeks.
  - Labs can test for MG, MS , Newcastle Disease (ELISA), Avian Influenza (AGID or ELISA), Infectious Bronchitis (ELISA), Bordetella avium (turkeys, ELISA), ILT (ELISA)
- Bacterial culture sites
  - Trachea, sinus aspirate for aerobic culture, fungal, mycoplasma culture (slow process)

Oral Cavity with Tongue and Choanal Cleft

Location of Infraorbital Sinus: Very Large Globe. For Aspirate, Insert Needle Rostrally.

Molecular Testing Capabilities

- PCR testing available for AI, MG, IBV, NDV
  - dacron/polyester swabs are acceptable.
  - See handout for more instructions.
  - Do not use swabs with wooden handles or gel swabs or calcium alginate.
  - Dry swabs are ok if submitting immediately or use BHI media. Keep refrigerated.
  - Call the lab with recommendations

Virus Isolation

- Tracheal/choanal/sinus swab for virus isolation (in VI media or BHI broth)
- Cloacal swabs can also be used for VI in many cases (not recommended for ILT)
- Generally the slowest procedure (2-3 weeks)
- May be necessary along with other tests.

Diagnosis and Treatment Summary

- **MG**: serology, PCR, culture (slowest)
  - Treatment: antimicrobials
- **Infectious Bronchitis**: serology, PCR, VI
  - Treatment: supportive, possible vaccination
- **Infectious Laryngotracheitis**: Histopathology, serology, PCR, VI
  - Treatment: Vaccination in face of outbreak!!
- **Fowl Pox**: Histopathology (biopsy), VI
  - Treatment: Can vaccinate in face of outbreak!!
- **Pasteurella multocida**: Culture, necropsy
  - Treatment: Antimicrobials, rodent, varmint control, vaccines
- **Aspergillosis**: Culture, necropsy
  - Treatment: Remove offending source, improve sanitation, moisture control, very difficult to treat (surgery, antifungal systemic or nebulization)
- **Gapeworm**: Parasitology, necropsy, upland gamebirds mostly
  - Treatment: Monthy worming with fenbendazole, levamisole, ivermectin
- **Avian Influenza**: Serology, PCR, virus isolation
  - Treatment: None, report immediately to PDA if any testing is positive or the disease is strongly suspected.

Congratulations PVL on Your 20th Anniversary

Questions??