Flock Health Protection: Poultry Diseases and Biosecurity

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Development of Infectious Disease

The development of an infectious disease depends on three variables:

1) resistance of the chicken
2) virulence of the disease organism
3) dosage of the organism to which birds are exposed
Infectious Disease

- Through effective biosecurity practices, the dosage of the disease organism is reduced or even eliminated.
- Through proper vaccination practices, the resistance of the bird can be increased.
- The only factor over which there is little control is the virulence of the disease organism in the field.
Disease Prevention & Control

- Sanitary environments
- Flock management
- Disease Transmission
Sources of infection

- Humans
- Neighbors
- Contract work crew
- Visitors
- Recovered carriers
- Multiple age
- Started pullets
- Poultry show stock
Sources of infection

- Breeding stock
- Mixed species of poultry
- Live-bird market
- Egg-borne diseases
- Backyard and pet fowl
- Equipment
- Wild birds, Rodents, insects
- Feed
Sanitary environments

- Ground around buildings; Rodent control, Insect control
- Dead-bird Disposal; foci of infection, burning, burying, composting
- Building and runs; clean building, litter removal, outside runs, washing and disinfecting, built-up litter and un-cleaned buildings
Flock management

- Handling the young
- Brooder temperature
- Coccidiostates
- Feed and water consumption and medication
- Immunization and Beak trimming
- Adult flock
Disease Transmission

- approximately 90 percent of the time poultry diseases spread from one farm to another by:
  - contaminated people
  - poultry equipment
  - farm vehicles
- Exceptions to this include direct ovarian transmission (example: *Mycoplasma gallisepticum*), eggshell penetration (example: Salmonella) and hatcher contamination (example: *Aspergillus sp*).
Lifespan of Disease Organisms

- Another important factor in developing a biosecurity program is determining the stability of poultry disease organisms in the environment.
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Important Diseases
Infectious Bursal Disease

- It is an acute, highly contagious viral infection of young chickens
- Lymphoid B cells and Bursa of Fabricius is the primary target
- Economic importance
- Mortality in chickens 3 weeks of age and older
- Immunosuppression
Edema prominent- fatal case
Coccidiosis

- Protozoal disease of poultry and many other birds
- Characterized by Diarrhea and Enteritis
- Except for renal coccidiosis in geese, coccidiosis in poultry affects intestinal tract
Fowl Chloera

- Chronic FC follow an acute stage of disease
- Generally localized infections
- Wattles, sinuses, leg or wing joint, foot pads and sternal bursae become swollen
- Exudative conjunctival and pharyngeal lesions
- Torticollis, and tracheal rales may results
Swollen wattles in male broiler breeder
Cross-section of lung
Chickens, pheasants and guinea fowl
Characterized by conjunctivitis,
Swelling of sinuses
Edema of the face
Field infection with IC showing caseopurulent air sac lesions.
AI Signs

- Extremely variable depend on the species, age, sex and environment factors etc
- Abnormalities of the respiratory, enteric, reproductive, or nervous systems
- Pronounced depression, decreased activity, feed consumption, egg production and emaciation
- Birds dead without previous signs
“Read this book, and after the inevitable nightmares, take a deep breath. Then start pestering your politicians, demanding they read it and do something, before pandemic influenza claims millions of lives.”
—LAURIE GARRETT, PULITZER PRIZE-WINNING AUTHOR OF THE COMING PLAGUE

MIKE DAVIS

THE MONSTER AT OUR DOOR

THE GLOBAL THREAT OF AVIAN FLU
Signs of ILT

- Viral respiratory tract infection
- Marked dyspnea, often loud gasping sounds and coughing
- High morbidity (up to 70%), mortality 10-20%
- Decreased egg production
- Longer course of infection, 2-6 weeks as compare to other viral infections
Marek’s disease

- Very common lymphoproliferative disease of **Chickens**
- Characterized by a mononuclear infiltration of one or more of the following:
  - Peripheral nerves, gonads, iris, various viscera, muscle and skin
Newcastle disease, Clinical signs (Exotic)

- Violent diarrhea
- Conjunctivitis, airsacculitis and tracheitis
- Paralysis and Death in 2-3 days (mortality up to 100%)
- Some birds that survive a few days exhibit signs of CNS involvement
- Swelling and darkening of tissues around eyes
STLE DISEASE

- Clinical signs are dependent on the pathogenicity of the infecting virus

- may even go unnoticed.
Mycoplasma gallisepticum

- Chronic respiratory disease of chickens and infectious sinusitis in turkeys
- Characterized by respiratory rales, coughing and nasal discharge
- In turkeys, it is characterized as sinusitis
- Clinical manifestation are usually slow to develop and disease has long course
Infraorbital sinuses swelling in turkey
Airsacculitis and pneumonia
Avian pox, Signs

- On set is gradual, undetected until cutaneous lesions are numerous
- Two forms of pox lesions
  - Cutaneous
  - Diphtheritic
- Disease may occur in one or both forms
Salmonella enteritidis infection

- In the late 1980’s, clean and intact eggs were responsible for the transmission of *S. enteritidis* infection to humans
- Many laying flocks were implicated as the source of eggs that caused humans Salmonella outbreaks
Oophoritis
Colibacillosis

- Any localized or systemic infection caused entirely or partly by Escherichia coli
- Colisepticemia
- Peritonitis
- Coligranuloma
- Airsac disease
- Avian cellulitis
- Omphalitis, Salpingitis, synovitis
Egg yolk Peritonitis
Acute peritonitis in laying chicken
Coli Sepicaemia in turkey
Handling disease outbreaks

- Observe the normal
- Look for non infectious conditions
- Quarantine the flock
- Submit specimens or call Veterinarian
- Diagnosis
- Special precautions
- Drugs
Biosecurity

- An effective biosecurity program allows one to keep diseases off poultry farms
- or if diseases organisms are present, such a program would eliminate them
- or at least reduce them to a level of little or no significance
The objective of any poultry management program should be disease PREVENTION through effective biosecurity practices.

If there is a breakdown in biosecurity, and a disease outbreak occurs, be sure the chickens are immunologically competent.

This will limit the resulting losses.
Serology

- Routinely, serum samples are submitted to a poultry diagnostic laboratory to determine antibody titer levels as an aid in the diagnosis of disease or as part of a routine monitoring program.
- However, it is important to keep in mind that the ELISA serologic test system commonly used measures only Ig G levels in the blood.
- Although serology can be very useful in a poultry health program it is important to understand its limitations.
ELISA serology, commonly used in the poultry industry, has limitations.

- Measures IgG response only, not Ig A, Ig M, CMI or the nonspecific immune mechanisms.
- Antigenic specificity may lead to inaccurate results.
- Serum samples must be properly selected (randomly, sufficient number).
- Selection of birds is critical (representative of the disease problem - diagnostic; or of the flock-monitoring). Lack of consistency of results between laboratories.