Small Scale Poultry Production
Health & Disease

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Poultry Anatomy
Signs of Good Health

• Normal consumption of feed & water.
• Normal production/growth rate
• Normal body temperature
  – Rectal: 105 - 107° F
• Normal pulse rate
  – 200 to 400 BPM
• Normal breathing rate
  – 15 – 36 per minute
Causes of Disease

• Indirect Factors
  – Those factors which may decrease the animal’s resistance to pathogens.
    • Genetic abnormalities, nutritional deficiencies, etc.

• Direct Factors
  – The actual pathogens that cause disease.
    • Bacteria, protozoans, viruses, parasites, etc.
How Contagious Disease is Spread

• Introduction of diseased birds into a healthy flock.

• Introduction of healthy birds that have recovered from a disease but are still carriers.

• Contact with inanimate objects (fomites) that are contaminated with pathogens.

• Improper carcass disposal.
How Contagious Disease is Spread

- Impure or contaminated water.
- Insects, rodents and other animals.
- Transfer of pathogens from one area to another by humans (clothing, footwear, etc.).
- Contaminated feed or feed containers.
- Contaminated soil/litter.
- Airborne pathogens.
Immunity
(Defense Against Disease)

• Two types of protective mechanisms:
  – Those that hinder or prevent invasion of the body.
    • Skin, mucous membranes, mucous, cilia
  – Those that actively combat pathogens that have entered the body.
    • White blood cells & antibodies
Immunity (Inherited vs. Acquired)

• Inherited Immunity
  – Genetic immunity by certain species to disease.
  – May be complete or partial.
  – Chickens are less susceptible to ‘blackhead’ disease than turkeys.

• Acquired Immunity
  – A reaction (immunity) to a disease based on the administration of a vaccine.
  – Can be active or passive.
Acquired Immunity (Active vs. Passive)

• Active Acquired Immunity
  – Based on the production of antibodies initiated by the vaccine.
  – Antibodies are specific (one antibody cannot protect against multiple diseases)
  – Antibodies numbers and production may decrease over time.
    • Booster vaccinations may be needed for certain diseases.
Acquired Immunity
(Active vs. Passive)

• Passive Acquired Immunity
  – Transfer of antibodies from one individual to another individual.
  – Can occur with a transfusion of antibodies.
  – Occurs naturally with some antibodies from mother to offspring.
Flock Health Guidelines

• Select a well-known, reliable source when purchasing chicks, pullets or hatching eggs.
• Regulate temperature, humidity and ventilation during brooding. Avoid drafts, overheating and chilling of the birds.
• Keep birds separate according to source and age.
  – Young birds tend to be more susceptible to disease.
Flock Health Guidelines

• Keep chickens and turkeys separate.
• Provide a well-balanced diet.
• Provide clean, fresh drinking water.
• Control outside pests.
  – Vermin, insects, other animals.
• Discourage persons other than the caretaker from entering the rearing area.
• Keep good flock records.
DISEASES THAT MAY AFFECT THE BACKYARD FLOCK
Botulism

• Neurotoxin
• Can be very lethal
• Decayed matter
  – Feed / water
• Epsom salts in water
  – 4.5 grams / 10 birds
• Botulism antitoxin
Fowl Cholera

- One of the oldest known poultry diseases.
- All domestic fowl are susceptible.
- Most cases occur in birds older than 6 weeks of age.
- Birds that recover will remain carriers.
Fowl Cholera

• Caused by *Pasteurella multocida*.

• Reservoirs include:
  – Wild birds
  – Raccoons
  – Opossums
  – Dogs
  – Cats
  – Pigs
Fowl Cholera

• Greenish-yellow diarrhea
• Swelling of the head, comb and wattles.
• Cyanotic (blue) heads.

• No effective treatment as survivors are carriers.
• Vaccinations are available, but very specific.
• Good management & sanitation is key.
*S. pullorum & S. gallinarum*

*S. gallinarum* = Fowl Typhoid

- Caused by strains of *Salmonella*.
- Incubation period of 4 – 5 days.
- Depression, diarrhea, loss of appetite, lethargy.
- Survivors will be asymptomatic carriers.
- Vaccination has virtually eliminated this disease in commercial flocks.
- Purchase only vaccinated birds.
Infectious Coryza

- Caused by bacterium
  - *Hemophilus paragallinarum*
- Bacterium does not survive long outside of host.
- Chickens are most susceptible.
  - Older chickens more than younger ones.
Infectious Coryza

• Commonly spread from bird to bird.
• Recovered birds remain carriers.
• Acute respiratory infection.
• Streptomycin, dihydrostreptomycin, tylosin and erythromycin.
• Sulfa drugs are useful, but only in broilers.
• Vaccination is available
• Purchase birds from Coryza-free breeders.
Avian Leucosis
(Lymphoid Leucosis & Marek’s Disease)

Lymphoid Leucosis

Marek’s Disease
Avian Leucosis

• Both are cancer-like diseases.
• Caused by unrelated viruses.
• Chickens are more susceptible.
• Younger birds are more susceptible than older.
• Lymphoid Leucosis
  – Bird-to-bird, environment, hen-to-chick.
• Marek’s Disease
  – Airborne transmission from infected animals.
Avian Leucosis

Lymphoid Leucosis
• 16 week incubation
• Birds over 4 months at onset of symptoms
• Liver and spleen lesions
• No skin lesions
• No ocular lesions
• No neural lesions
• Lesions on Bursa of Fabricius

Marek’s Disease
• 2 week incubation
• Birds under 5 months at onset of symptoms
• Generalized internal lesions
• Skin lesions present
• Ocular lesions present
• Neural lesions present
• No lesions on Bursa of Fabricius
Avian Leucosis

- No treatment for either disease.
- Good management is key to stop spread of lymphoid leucosis.
- Vaccination is available for Marek’s Disease.
Avian Pox

- 3 strains of virus that cause Avian Pox
  - Fowl Pox virus
  - Pigeon Pox virus
  - Canary Pox virus

- All three can infect other species than the one for which it is named.
Avian Pox

• Fowl Pox
  – Chickens, turkeys, pheasants, quail and ducks.

• Pigeon Pox
  – Pigeons, chickens and turkeys.

• Canary Pox
  – Canaries, chickens, pigeons and sparrows.

• All poultry in all age groups are susceptible.
Avian Pox

• Transmitted by direct or indirect contact with diseased animal.
  – Scabs contain the virus.
  – Mosquitoes are a vector for the disease.
• Birds that recover do not continue to carry the virus.
• May move slowly through a flock
  – Retarded growth, drop in production, decreased appetite.
Avian Pox

• Cutaneous (Dry) Pox
  – Wart-like nodules on the skin.
  – Scabs form before final healing.

• Diphtheric (Wet) Pox
  – Lesions in the oral cavity and upper respiratory tract.

• There is no treatment for Avian Pox, but it can be prevented by vaccination.
Coccidiosis

- Disease caused by a protozoan from the genus *Eimeria*.
- Nine (9) species that can infect chickens.
- Seven (7) species that infect turkeys.
- Host specific.
Coccidiosis

• Primarily affects young birds.
  – Older birds can become infected.

• Disease is spread via the environment, primarily the litter.
  – It is not passed from bird-to-bird.

• Symptoms include:
  – Unthriftiness, diarrhea, weakness, decreased water & food consumption.
Coccidiosis

• All coccidial species (except *E. truncata*) produce lesions in the intestines.

• Many drugs are effective:
  – Sulfa drugs, amprolium, ionophores, nicarbazin, quinalones, and robenidine.

• Use of an available coccidiostat in the feed and good management will help to prevent the disease.
Roundworms

- Also called ascarids.
- Spread via infected litter.
- Life cycle is 35 days.
- Habitat is intestine.
- Young poultry are especially susceptible.
- Piperazine is the only approved control.
Cecal Worms, Gape Worms, Capillaria Worms & Tapeworms

- All of these can infect chickens.
- No APPROVED drugs for poultry.
- Good management is key.
- Extra-label drugs include:
  - Levamisole Hydrochlorida
  - Albendazole
  - Oxfendazole
  - Fenbendazole
  - Ivermectin

See EDIS publication PS-6, Intestinal and Tracheal Parasites of Poultry.
Lice, Mites & other External Parasites

- Good management is key.
- Most are susceptible to over-the-counter insecticides.
- Precaution should be taken when applying to laying birds.

- Check all drugs (any disease) for withdrawal times.
Rickets

- Nutritional deficiency.
- Lack of calcium, phosphorus or Vitamin D$_3$.
- Young poultry (under 6 weeks) are often affected.
- Treated by correcting feed-related problems.
Perosis (Slipped Tendon)

- Deficiency of Manganese (Mn)
- All young poultry are susceptible.
- Affected birds cannot be helped.
- Make sure you are feeding a balanced ration.
Riboflavin (Vitamin B$_2$) Deficiency

- Curled-toe disease.
- All young poultry are susceptible.
- Most commercial feeds are fortified with riboflavin.
- Make sure you are feeding a balanced ration.
Questions?