

Big Red Biosecurity Program

MODULE 6

Raising Healthy Poultry



Description of Module 6

Module 6 reviews the consequences of poultry diseases, how to determine if your birds are diseased, who to contact if you have a disease problem and ways to prevent diseases. It also briefly reviews the diseases caused by avian influenza and exotic Newcastle disease and the action you should take if you suspect your birds have these diseases.

Goal: Raise Healthy Poultry

Raise healthy poultry

- Promote health and well-being to produce a wholesome, nutritious product
 - Begins with the egg/hatchery/chick
 - Continues with the rearing of healthy birds
 - Ends with a safe, nutritious product



Losses from Disease

- Figures for the U.S.A. indicate that total **economic loss from disease** is about 20% of the value of **poultry** production and is about three times the **loss** from mortality. ... It is considered that infectious **disease** will continue to be the major cause of **economic loss from disease**.
- In 2014, the U.S. poultry industry produced 8.54 billion broilers, **99.8 billion** eggs, and **238 million** turkeys. The combined value of production from broilers, eggs, turkeys, and the value of sales from chickens in 2014 was **\$48.3 billion**, up 9 percent from \$44.4 billion in 2013.
- 20% of \$48.3 billion = \$9.66 billion

Economic impact of the Avian Influenza Outbreak of 2014-15 in Iowa

Decision Innovation Solutions estimated the total cost to the economy of Iowa at \$ 1.2 billion

Egg Production (Laying Hens)

	Number 1,000 head
United States	247,400
Iowa	51,866
Ohio	27,000
Pennsylvania	24,398
Indiana	22,446
California	19,252
Texas	13,251
Michigan	10,133
Minnesota	9,637
Nebraska	9,094
Florida	9,037

2010 American Egg Board



IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Reasons to be Concerned but **DO NOT PANIC!**

- Common diseases
 - Are typically always present and will always be a challenge
 - Controlled by:
 - Good management
 - Prevention and treatment options
 - Low mortality diseases = decreased profitability
 - The vast majority of diseases you will encounter fall into this category
 - Examples
 - Coccidiosis
 - Clostridiosis
 - Newcastle disease (ND) – there are different types
 - Common field strains = lentogenic and mesogenic and cause mild to moderate disease
 - Highly pathogenic strains = velogenic strains are not common and are reportable
 - IBD – Infectious Bursal Disease
 - IB – Infectious bronchitis
 - Etc.

Avian Influenza (AI) and Exotic Newcastle Disease (END)

- We are constantly vigilant for these two diseases
 - Both diseases can cause high mortality and we depopulate when found
 - Both diseases occur worldwide and can be spread by waterfowl
- Rare occurrences – but when occur, things happen
- These are considered reportable foreign animal diseases
- Emergency measures are used for controlling these diseases (State and Federal authorities involved)
 - Quarantine
 - Extensive testing
 - Depopulation
 - Disposal, clean-up, disinfection and down time
- **WE DO NOT WANT TO GO THERE!**

How Do I Know When My Chickens are Sick?

- Combinations of clinical signs and production parameters
 - Clinical signs
 - Mortality = death / death toll (as a %)
 - “Normal” or “expected” mortality
 - Will be determined by you and your company representative
 - Not all birds survive
 - Chick quality
 - Management issues
 - Etc.
 - Daily mortality records to be kept
 - Trends indicate disease
 - Sudden onset “spiking mortality”
 - Slow onset of mortality



Clinical Signs of Disease

- Intestinal / enteric disease
 - Diarrhea – watery droppings
 - Discolored loose droppings
 - Yellow
 - Red – bloody
 - Odor
 - Birds make a characteristic “chirp”
 - Necropsy lesions
 - Blood or lesions in intestinal tract
 - Litter in gizzard
 - Gall bladders distended – birds not eating



Clinical Signs of Disease

- Respiratory disease
 - Labored open mouth breathing
 - May hear
 - Snicks (sneezes/coughing)
 - Rales
 - Swollen sinuses
 - Mucus and/or blood
 - Necropsy lesions
 - Trachea
 - Airsacs affected
 - cloudy or exudates
 - Microbial growth
 - Lungs
 - Etc.



Clinical Signs of Disease

- Other
 - Depression/listless
 - Lethargic
 - Dirty
 - Poor feathering
 - Posture
 - Unable to walk or stand
 - Head twisting (torticollis or star gazing)
 - Leg problems
 - Feet problems
 - Many other clinical signs and necropsy lesions



Production Parameters

- Feed consumption
 - Birds “go off feed” and causes:
 - Flock unevenness
 - Weight gains decrease
 - Feed/gain ratios impacted
- Water consumption may be altered
- Egg production negatively impacted
 - Decrease number
 - Odd shapes and sizes
 - Decrease fertility/hatchability

What Do I Do if I Think My Birds Are Sick?

- Contact your veterinarian or person in charge of poultry health care
 - If you are a contract grower for a poultry company
 - Contact your service person
 - They will advise and direct you
 - They may have a veterinarian or other health official contact you or visit your farm
 - They may have you submit samples to the UNL Nebraska Veterinary Diagnostic Center (NVDC) or another lab
 - If you are an independent grower
 - Contact your veterinarian
 - Submit samples to the UNL NVDC or another lab
 - If you are a small flock owner/operator
 - Contact your veterinarian
 - If you can't find a veterinarian
 - Contact you university extension service / poultry veterinarian - at UNL, it is Dr. Reynolds
 - Contact the State Veterinarian's office

How Can I Protect My Birds from Disease?

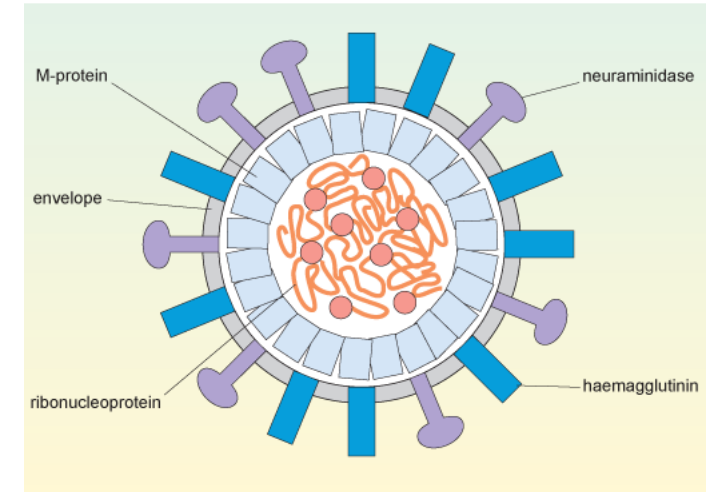
- Develop a health program for your operation
 - Health program for your flock
 - Medications / treatments
 - Vaccinations
 - Management practices
 - Consult with a veterinarian or poultry health official
- Have and use a biosecurity program for your operation

Avian Influenza (AI)

Basic Facts You Need to Know

What Causes AI?

- Viral disease
 - Influenza virus type A
 - Classified in two ways
 - Virus structure
 - Hemagglutinin (H) – there are 16 different subtypes
 - H5 and H7 are most common in poultry
 - Neuraminidase (N) – there are 9 subtypes
 - The combination of H + N = subtype of virus (example H5N2)
 - Pathogenicity – the ability to cause severe disease
 - Low pathogenicity avian influenza or LoPath (LPAI)
 - High pathogenicity avian influenza or HiPath (HPAI)



IMPORTANT TO KNOW!

Low path avian influenza viruses (LPAI) can spontaneously mutate into high path avian influenza viruses (HPAI).

LPAI  HPAI

What Does This Mean?

- We are concerned about healthy birds that harbor LPAI
 - Typically domestic poultry that test positive for LPAI are quarantined and depopulated
- Waterfowl and shorebirds can be naturally infected with LPAI and transmit it to domestic poultry

How the Virus Spreads

- Contact with wild waterfowl and / or their feces
 - Water, feed, etc., can become infected from AI infected droppings
- Spread through movement of poultry, poultry products and items that come into contact with infected birds/products
 - Contaminated equipment
 - Insects, rodents and wild animals
 - Personnel and feed trucks
- Airborne transmission can occur
- Live bird markets are a potential reservoir for AI viruses

Clinical Signs of LPAI

May show one or more of the following

- Decreased egg production
- Soft-shelled or misshapen eggs
- Ruffled feathers
- Listlessness/depression
- Off feed
- Coughing, sneezing, lacrimation (i.e., watery eyes), rales (i.e., sounds from breathing heavy)

Clinical Signs of HPAI

May show one or more of the following

- Sudden death with no other signs
- Lethargy and off feed
- Sudden decrease in egg production
- Soft shelled or misshapen eggs
- Swelling in head, sinuses (i.e. bulging under the eyes), eyelids, comb, wattles, hocks
- Petechiation (reddened areas) on feet and shanks
- Purple discoloration of wattles, combs and legs
- Coughing, sneezing, nasal discharge, respiratory distress (i.e. mouth breathing)
- Incoordination
- Diarrhea

The Clinical Disease May be Similar to Other Diseases

Other diseases include:

- Newcastle disease
- Infectious laryngotracheitis
- Infectious bronchitis
- Turkey rhinotracheitis
- Swollen head syndrome
- Mycoplasmosis
- Fowl Cholera
- Etc.

What Should You Do if You Suspect AI?

- Get professional help immediately
 - Call your service person or veterinarian
 - If you do not have a veterinarian:
 - Contact your state veterinarian's office
 - Contact your university/extension poultry veterinarian
 - At UNL this is Dr. Don Reynolds
- Don't hesitate or put it off
 - Don't feel embarrassed to call/ask for help
 - The state/federal/university veterinarians are there to help you
 - No one will blame you if you are wrong – in fact, EVERYONE will be happy if you are wrong (i.e., no AI)

What if My Birds Get AI?

In the unlikely, rare event that your birds become infected with AI:

- There are state and federal veterinarians that will guide and direct you
- Your operation will become quarantined (i.e., isolated from others and all traffic stopped)
- Extensive testing will be done
- If tests are positive, the flock will be depopulated and disposed of on site
- The premise will be biosecurely cleaned and disinfected

Other Important Points

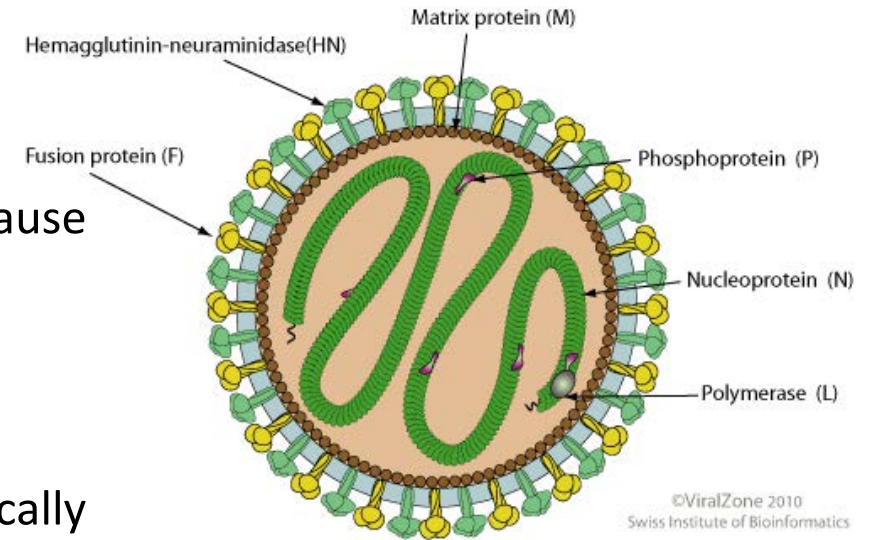
AI can infect other animal species including humans

- The strains of AI that infect birds typically do not infect people but it has, and it can, occur

Exotic Newcastle Disease (END) Basic Facts You Need to Know

What Causes END

- Viral disease
 - Caused by a paramyxovirus (PMV1)
 - Virus isolates classified based on pathogenicity (ability to cause disease)
 - Pathotypes
 - Asymptomatic – subclinical (no) disease signs
 - Lentogenic (least virulent) – mild signs of disease (typically respiratory)
 - Mesogenic (moderately virulent) – mild disease with mortality
 - Velogenic (very virulent) – severe disease and mortality
 - Viscerotropic (VVND)
 - Neurotropic (NVND)
 - Exotic Newcastle Disease (END) refers to those virulent strains that are not endemic (i.e., typically present) in the USA



Important to Know

- Newcastle disease (ND) is a common disease of poultry
 - All birds are susceptible to Newcastle disease virus (NDV)
 - Lentogenic and mesogenic NDV strains occur naturally
 - These strains are common within the US and are referred to as endemic strains
 - We routinely control endemic ND strains by vaccinating with ND vaccines
 - The vaccines are typically administered by spray, drinking water or injection
 - The vaccines are usually effective against all strains of ND virus
- Exotic Newcastle Disease (END) viruses
 - Are velogenic strains that are not common (endemic) to US
 - Vaccines will typically protect against these strains but birds can become infected
- All ND viruses can cause disease in people
 - The disease caused by NDV is conjunctivitis (pink eye)
 - The disease is not fatal or particularly injurious and is self-limiting
 - The disease causes irritation to the eye and it's associated tissues
 - People typically infect themselves by carelessly handling ND vaccines, not washing their hands and then rubbing their face and/or eyes or by not wearing appropriate PPE

How the Virus Spreads

- Direct contact with other infected birds
 - Feces, respiratory excretions (i.e., watery eyes, nasal discharge, etc.)
 - Inhalation of virus from infected birds
- Indirect contact
 - Contaminated feed, water, litter
 - Contaminated equipment
 - Equipment used to move/transport birds
 - Feed and service vehicles
 - People and animals

Most Likely Sources of Infection (Risk Factors)

- Primary Sources
 - People (i.e., employees) associated with poultry/birds
 - Show poultry
 - Gamebirds / fighting birds
 - Backyard flocks
 - Pet birds
 - Proximity to infected neighborhoods
 - Illegally imported birds (gamebirds, parrots, etc.)
- Secondary sources
 - Shared equipment
 - Egg racks, flats
 - Vehicles – feed, service, etc.

Clinical Signs of END

May show one or more of the following

- Decreased egg production
- Misshapen eggs
- Ruffled feathers
- Listlessness / depression
- Diarrhea
- Off feed
- Swollen head and eyes
- Coughing, sneezing, lacrimation (i.e., watery eyes), rales (i.e., sounds from breathing heavy)
- Tremors, paralysis, twisting of head (torticollis = star gazing)
- Sudden onset of high mortality

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End of Module 6