

**EPISODE 8**

# DISEASE MANAGEMENT

*By Dr Andrew van Wijk*



# WHAT WE WILL BE COVERING TODAY:

- Omphalitis/mushy chick
- Aspergillosis
- Newcastle Disease (NCD)
- Infectious Bursal Disease (IBD)
- Identifying broiler health problems
- Preventing broiler health problems



# OMPHALITIS/MUSHY CHICKS

- Mixed bacterial infection of the yolk sac attached to the chicken embryo
- Most commonly E. coli
- Results in omphalitis and increased mortality (d3-4)
- Infection through contamination of eggs with faecal material and through unhealed navels after placement
- **Clinical signs:**
  - Birds appear depressed and dejected
  - Swollen abdomen
  - Loss of appetite
  - Diarrhea





# CHICK EMBRYO DEVELOPMENT



**INFERTILE**  
• No development.



**DAY 1**  
• Appearance of tissue development.



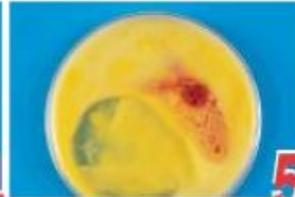
**DAY 2**  
• Tissue development very visible.  
• Appearance of blood vessels.



**DAY 3**  
• Heart beats.  
• Blood vessels very visible.



**DAY 4**  
• Eye pigmented.



**DAY 5**  
• Appearance of elbows and knees.



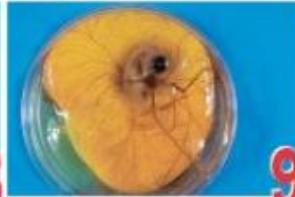
**DAY 6**  
• Appearance of beak.  
• Voluntary movements begin.



**DAY 7**  
• Comb growth begins.  
• Egg tooth begins to appear.



**DAY 8**  
• Feather tracts seen.  
• Upper and lower beak equal in length.



**DAY 9**  
• Embryo starts to look bird-like.  
• Mouth opening appears.



**DAY 10**  
• Egg tooth prominent.  
• Toe nails.



**DAY 11**  
• Comb serrated.  
• Tail feathers apparent.



**DAY 12**  
• Toes fully formed.  
• First few visible feathers.



**DAY 13**  
• Appearance of scales.  
• Body covered lightly with feathers.



**DAY 14**  
• Embryo turns head towards large end of egg.



**DAY 15**  
• Gut is drawn into abdominal cavity.



**DAY 16**  
• Feathers cover complete body.  
• Albumen nearly gone.



**DAY 17**  
• Amniotic fluid decreases.  
• Head is between legs.



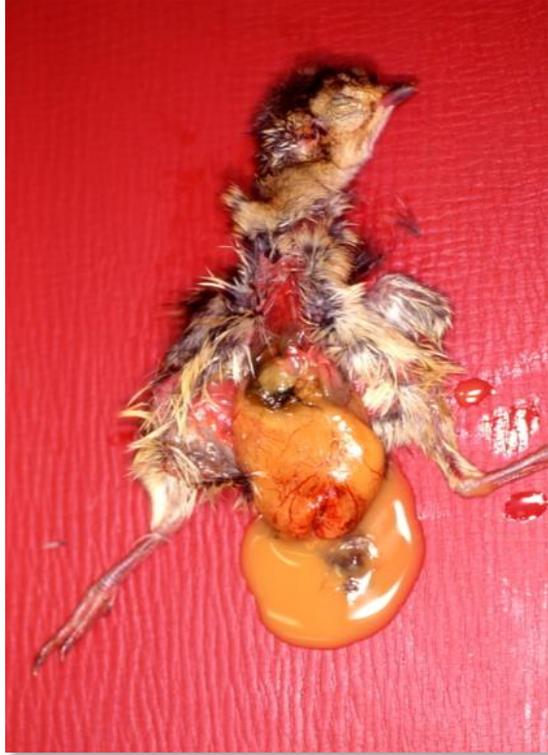
**DAY 18**  
• Growth of embryo nearly complete.  
• Yolk sac is still on outside of embryo.  
• Head is under the right wing



**DAY 19**  
• Yolk sac draws into body cavity.  
• Amniotic fluid gone.  
• Embryo occupies most of space within egg (not in the air cell).



**DAY 20**  
• Yolk sac drawn completely into body.  
• Embryo becomes a chick (breathing in air cell).  
• Internal and external pip.



# POTENTIAL SOURCES OF INFECTION:

1. Contamination of eggs in the nest boxes
2. Contaminated egg rooms
3. Contamination during egg collection
4. Breeders with enteritis and/or EYP
5. Eggs becoming wet from rain, or moisture from condensation
6. Egg truck contamination
7. Unhygienic hatchery conditions
8. Inadequate hatchery fumigation procedures





# MUSHY CHICK

- Post mortem – distended abdomen with foul smelling watery content, reddening and edema in umbilical region. Look for unhealed navels
- Diagnosis – through post mortem. Swabs of yolk for bacterial culture
- Treatment – antibiotics may be beneficial in the acute stages
- Prognosis is poor for chicks showing obvious yolk sac infections and most will die by 7 days
- Prevention through good hygiene and biosecurity practices at breeder farm and hatchery level. Optimal incubation conditions



# ASPERGILLOSIS

- A fungal infectious disease – fungal pneumoniae
- Mainly *Aspergillus fumigatus*
- Typical sign is gasping for air, especially in young chicks
- *Aspergillus* can infect many species of animals and plant materials
- Infection has incubation period of 2-5 days
- Mortality among young affected chicks can be 50%
- Exposure is through inhalation exposure from an environment with a high spore count
- Exposure is most often in the hatchery during final stages of incubation or take-off
- Bedding, especially shavings, also pose a big risk
- Bird-to-bird transmission is rare



# ASPERGILLOSIS

- Signs – inappetence, weakness, gasping, thirst, drowsiness
- Post mortem lesions: Yellow to grey nodules or plaques in lungs, airsacs, trachea and peritoneal cavity
- Diagnosis based on clinical signs and PM lesions together with microscopic confirmation
- Differentials – excessive formalin exposure, vaccine reactions and also heat stress in older birds
- Treatment – none. Spraying the broiler house environment with anti-fungal may help reduce the challenge.
- Aspergillosis should be addressed at the source!





# NEWCASTLE DISEASE (NCD)

- NCD is a highly contagious viral infection that affects many species of domestic and wild birds
- Caused by a Paramyxovirus
- Domestic poultry, pigeons and parrots are most susceptible
- Ducks, geese and pheasants are affected by a mild form of the disease
- Disease manifests as respiratory, nervous and/or GIT infections
- Incubation 2-15 days, average 4-5 days
- Range from mild inapparent resp. disease to very severe depression, increased respiration, profuse diarrhea followed by collapse, or nervous signs such as twisted necks
- Severe forms of the disease are highly fatal



# NEWCASTLE DISEASE (NCD)

- NCD spreads by direct contact physical contact with infected or diseased birds
- Also present in manure and breathed out
- Contaminated equipment, carcasses, food, water and clothing
- People can carry the virus





*Neurotropic form of ND*



*Haemorrhagic proventriculus*



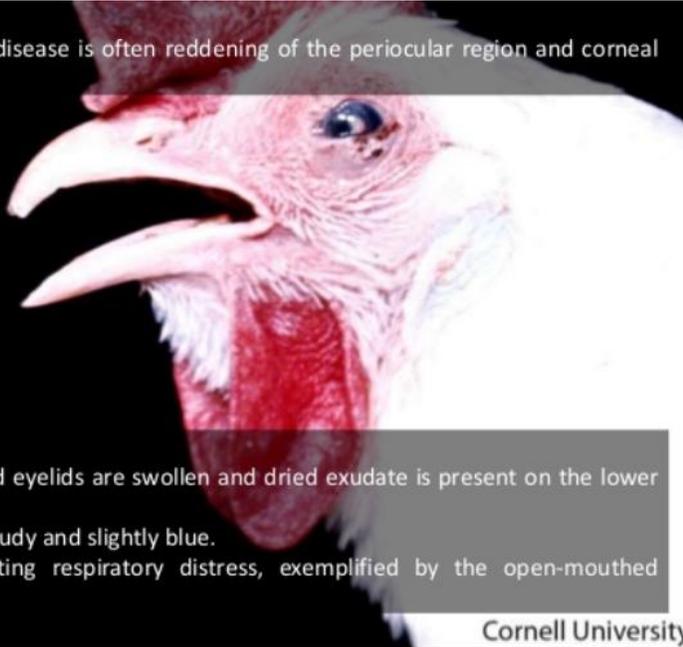
#### Clinical Description

- One of the first signs of disease is often reddening of the periocular region and corneal edema

#### Pathologic Description

- The periocular region and eyelids are swollen and dried exudate is present on the lower eyelid.
- The cornea is opaque, cloudy and slightly blue.
- This bird is also exhibiting respiratory distress, exemplified by the open-mouthed breathing.

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#### Clinical Description

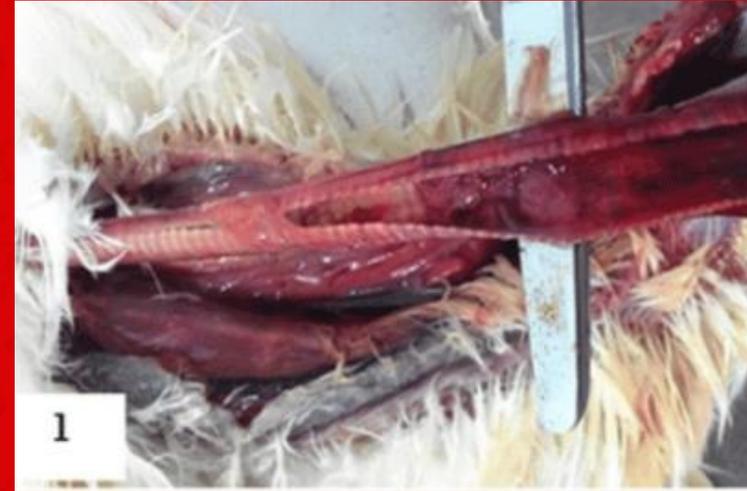
- The conjunctiva and infraorbital sinus have been incised to show the edema and hemorrhages present on these mucous membranes.

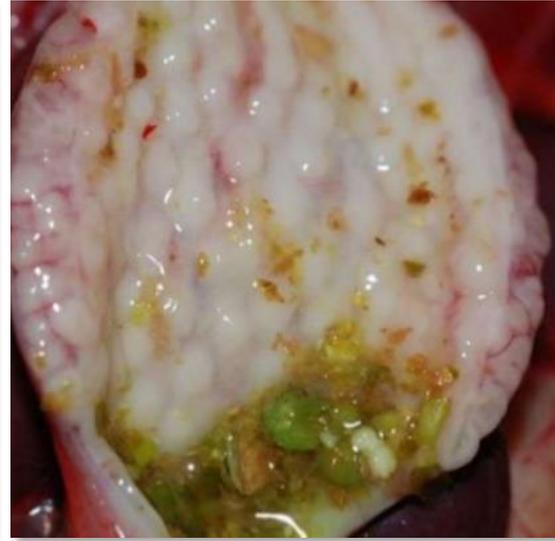


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# POST MORTEM LESIONS:

- Post mortem lesions:
- Edema of head and neck
- Edema, hemorrhage and necrosis of lymphoid tissue
- Hemorrhagic lesions of the trachea, proventriculus and intestinal mucosa
- Indistinguishable from HPAI





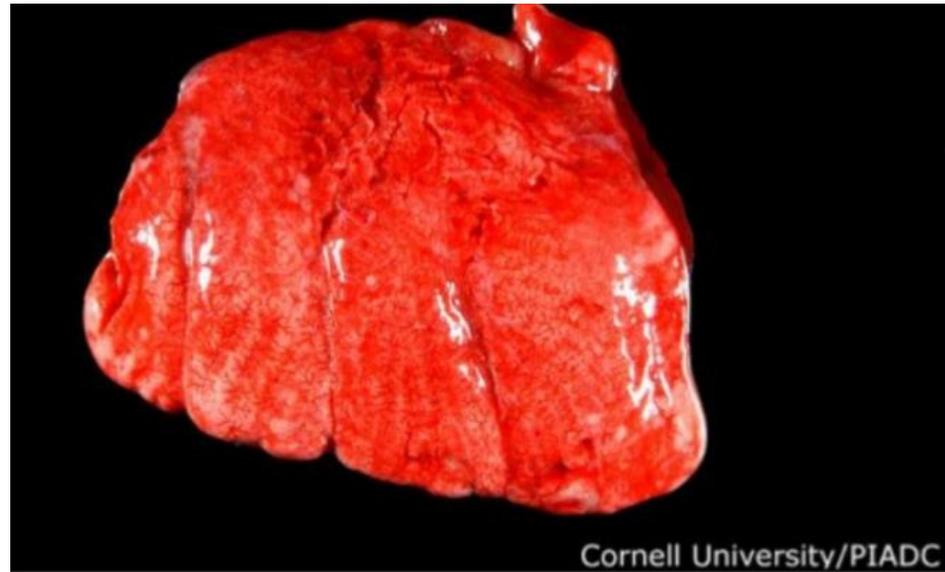
5 days P.I with Viscotropic  
Velogenic NDV

**Clinical Description**

- There is hemorrhagic proventriculitis. Often, these hemorrhagic lesions cluster around the esophageal-proventricular junction, as shown here.



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# TREATMENT

- No treatment. Antibiotics for secondary bacterial infections
- Virus remains infectious in manure for 2 months and on dead carcasses for 12 months
- Killed by disinfectants and sunlight
- Prevention relies on good biosecurity and quarantine procedures as well as vaccination
- Broilers are typically vaccinated at the hatchery and again once or twice at the broiler farm
- Vaccines used for broiler are either live vaccines or vectored vaccine with Marek's virus as the vector



# INFECTIOUS BURSA DISEASE (IBD)

- Highly contagious viral infection
- Caused by Birnavirus
- Also known as Gumboro Disease
- It targets the bursal component of the immune system
- Highly persistent virus – litter for up to 122 days
- Immunosuppressive effects – poor uniformity, wet litter, respiratory problems, poor response to vaccinations, coccidiosis, necrotic enteritis, runting-stunting.



# IBD SYMPTOMS

- Incubation period is 2-3 days
  - rapid drop in feed and water consumption
  - diarrhoea with urates in mucus
  - soiled vent feathers
  - ruffled feathers
  - listless chicks with unsteady gait or sitting in hunched position
  - picking at own vent
- 
- Birds <3 weeks usually subclinical
  - Birds 3-6 weeks are most susceptible to clinical disease
  - Mortality usually 0-20% but can be as high as 60%



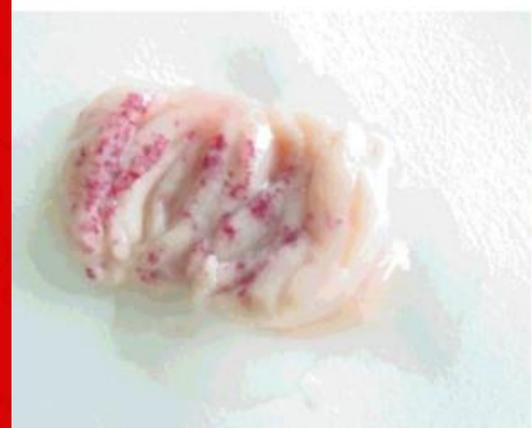
# IBD post mortem

- Edematous bursa (size depends on stage of infection)
- Hemorrhagic bursa proceeding to atrophy
- Hemorrhage in thigh muscles
- Hemorrhage in proventriculus
- Dehydration
- Swollen kidneys with urates



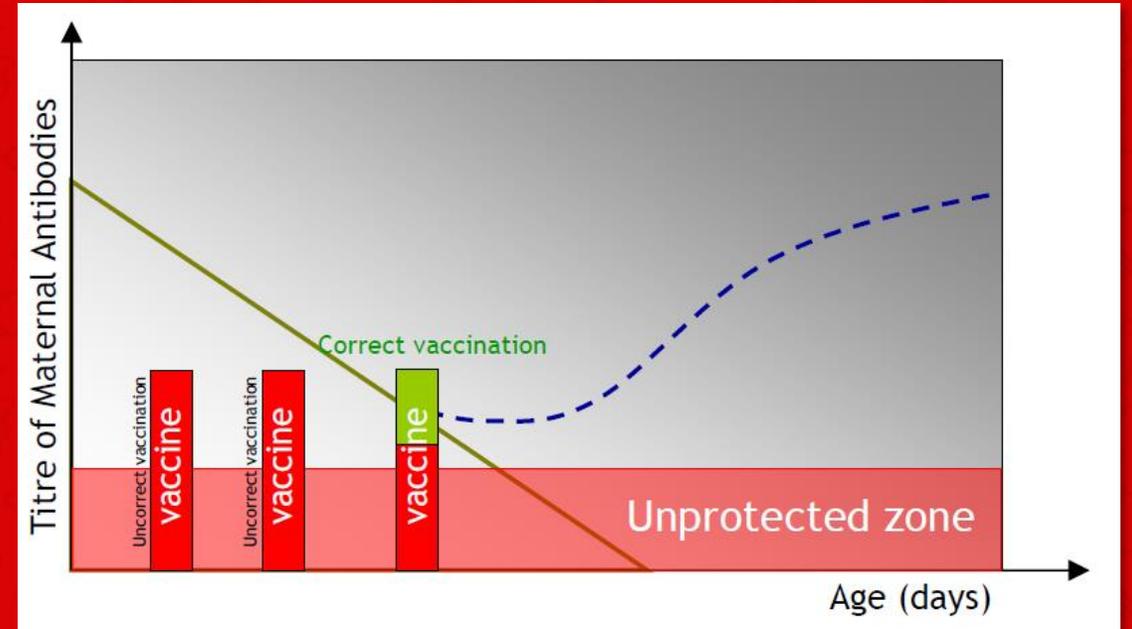
# BURSA OF FABRICIUS

- Primary lymphoid organ
- Maturation of B-lymphocytes
- Evolution until 10-12 weeks, then regress



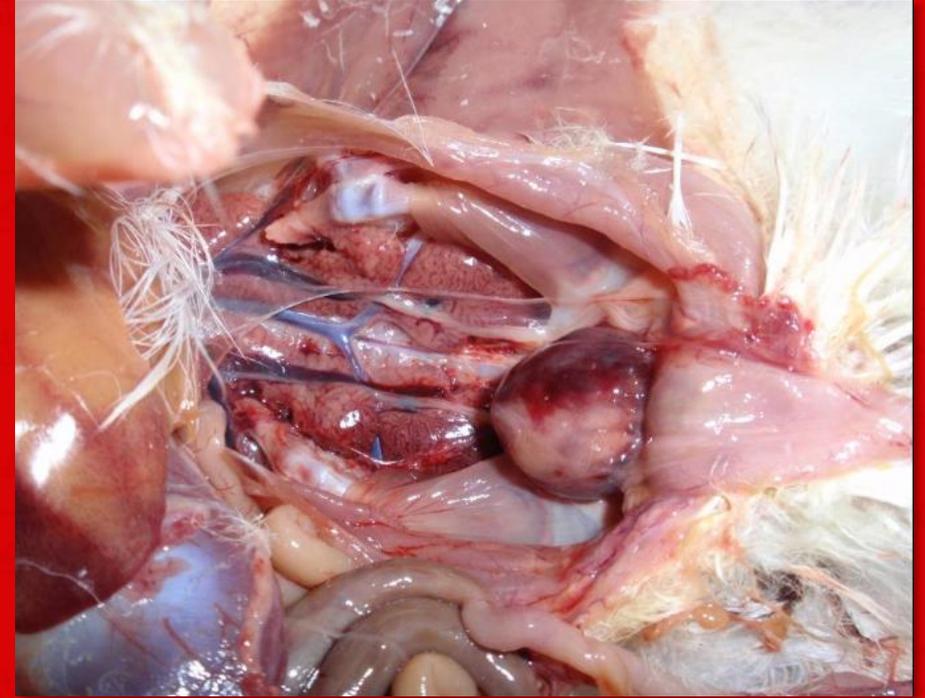
# PREVENTING IBD

- Biosecurity
- Chick quality
- Farms and integration specificity
- Vaccines:
  1. Type of IBD vaccine – mild, intermediate, strong
  2. Time to administer the vaccine
  3. Proper administration



# IBD

- Spread of IBD is through direct contact, equipment, dust, insects.
- Litter beetles and mites can harbor the virus for 8 weeks
- No vertical spread
- No treatment, only supportive therapies



# IBD

**Good quality chicks are vital for IBD prevention:**

- High and uniform level of maternal antibodies
- Good quality DOC with ability to absorb yolk sac
- Regular and uniform decline of MAB
- Reliable prediction of IBD vaccination time by means formulas
- Avoid mixing chicks from different parent flocks



# IDENTIFYING BROILER HEALTH PROBLEMS

- To identify problems you have to know what's normal
- How to you get to know what's normal?
- Limit “farm blindness”
- Don't only look at the technical aspects
- Use your senses!
- Also do frequent inspections beside the usual tasks
- Look from flock to chicken
- Evaluate bird distribution
- Are birds alert and active?
- Eating, drinking, resting
- Evaluate droppings
- Pick up birds and assess them



# 1. Intestinal droppings

Intestinal droppings are the main type of chicken faeces, produced in the intestines. White caps are urates, by-products of protein degradation. Intestinal droppings should be solid, with minimal liquid discharge and undigested feed visible.



Good



Acceptable



Below standard

### 3. Special cases

Faecal signs can be very distinct and are often linked to specific gut conditions. Bacterial enteritis and coccidiosis are conditions of special interest, as these can greatly affect performance. Feed composition and management are also key parameters influencing general gut health: make sure these are optimised before interpreting special cases.



Orange mucus



Undigested feed



Green droppings



Foamy droppings



Bloody droppings

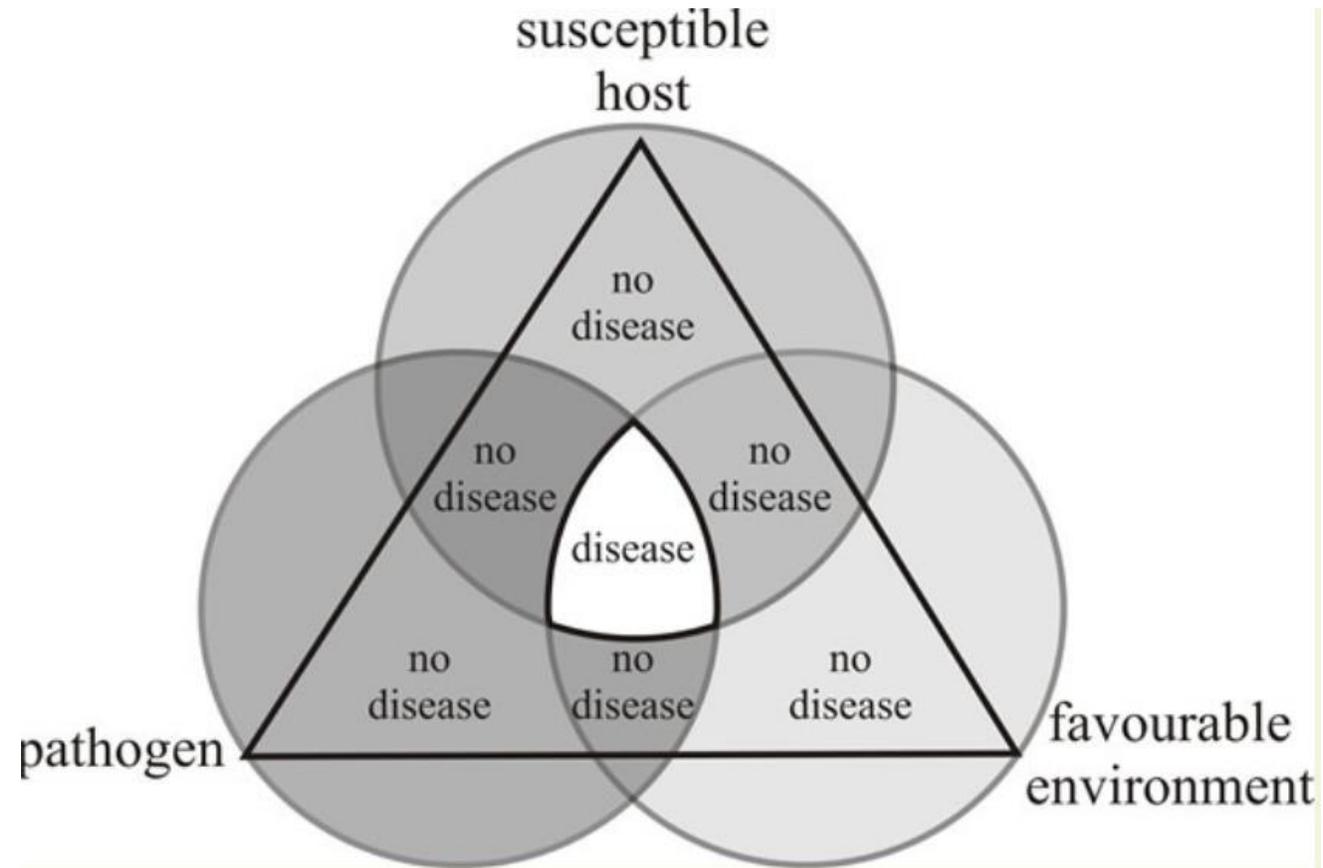


Diarrhoea

- Reliable records are vital:
- Daily mortalities and culls
- Daily feed intake and water consumption
- House temperatures



# PREVENTING BROILER HEALTH PROBLEMS



# PREVENTING BROILER HEALTH PROBLEMS

**Prevention is based on 3 pillars:**

1. Good biosecurity
2. Starting off with a good quality DOC
3. Good stockmanship and a good environment



# Thank you

