Western Disease Update 2023




Gigi Lin, DVM, Dip ACPV

Poultry Service Industry Workshop 2023

October 5th 2023

POULTRY SERVICE INDUSTRY WORKSHOP

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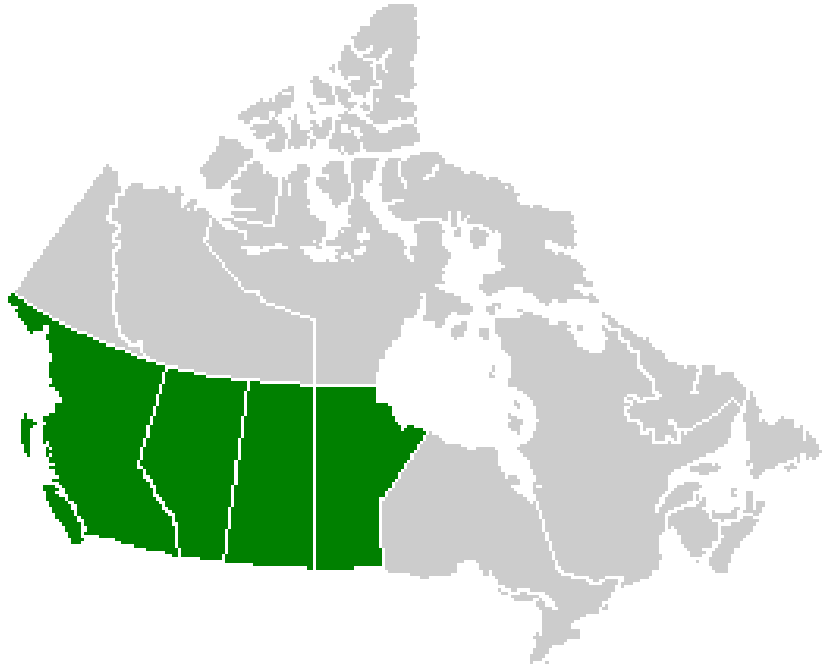
Agenda

General disease trend over the past year (Jan-Sep 2023)

- Across the 4 western provinces
  - Turkey
  - Broiler
  - Broiler breeders
  - Table-egg layers



General comments:

- A relatively stable year ☺
- Case studies – interesting cases/emerging diseases

Turkeys

AB
- Poult quality
- Septicemia (E. coli)
- Aspergillosis pneumonia
- Gangrenous dermatitis
- Neurological

MB (all RWA)
- Septicemia
- Coccidiosis
- Neurological

BC
- Poult quality
- Septicemia (E. coli/HE)
- Resp (BA, ORT)
- Histomoniasis
- Gangrenous dermatitis
- Neurological

SK
- Poult quality
- Septicemia (E. coli)
- Neurological

NOTE: only the most common and/or emerging diseases are shown on the map

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- S
- A
- G
- N

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- Resp (BA, ORT)
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- Gangrenous dermatitis
- Neurological

Liver (left) and cecal (right) lesions
Histomoniasis (a.k.a. Blackhead Disease)

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- A
- G
- N

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- Septicemia (E. coli/HE)
- Resp (BA, ORT)
- Histomoniasis
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- Neurological

Skin and muscle lesions

Gangrenous Dermatitis

- Causes: *Clostridium sp., Staphylococcus sp.*
- Risk: poor litter conditions, scratches, immunosuppression (HEV)

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- Septicemia (E. coli)
- Aspergillosis pneumonia
- Gangrenous dermatitis
- Neurological

Normal lungs

SK

- Poult qualit
- Septicemia
- Neurologica

Lung lesions

Fungal Pneumonia

- Cause: Aspergillosis sp.
- Risk: poor sanitation (hatchery & farm), immunosuppression.

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Poult with neurological signs across all 4 provinces:

<u>Case History</u>

April to June

Onset: 2 to 4 weeks

<u>Clinical signs:</u>

Lethargy

Twisted neck

Star-gazing

Ataxia

Underweight

Mortalities/culls

Diagnostic Findings

Gross lesions	Not significant (starvation/dehydration)
Histopathology	Brain: inflammation (encephalitis)
PCR (brain tissue)	

Diagnostic Findings

Gross lesions	Not significant (starvation/dehydration)
Histopathology	Brain: inflammation (encephalitis)
PCR (brain tissue)	Avian encephalomyelitis (AE) = negative Reovirus = positive (in some cases)

Probable Diagnosis

Turkey Reovirus

- Some cases were more definitive than others
  - Reovirus in brain tissues & tendons

Avian encephalomyelitis (AE)-like cases

- October 2022 – 2 cases reported from Purdue and PDRC*
  - Histo lesions were suggestive of AE
  - Initial AE PCR was negative
  - Subsequent AE PCR (with Goto 2019 primer) was positive

*https://aaap.memberclicks.net/assets/2023_Annual_Meeting/2023%20AAAP%20Proceedings.pdf

Clinical Outcomes

Some cases resulted in very high mortality rates: 5 to 30%

Some birds subsequently develop:

- **Lameness with reoviral-consistent lesions in the heart and tendons** (**reovirus +** in the tendons)

Common hatchery/breeder sources (probable vertical transmission – AE/REO)?

Some Common Differential Diagnosis of Poults with Neurological Symptoms

Viral	Bacterial/Fungal	Nutritional/ Management
Avian Encephalomyelitis Reovirus Avian Influenza NewCastle Disease	Salmonella arizonae E. Coli Pseudomonas Aspergillus	Salt toxicity Vitamin E deficiency Hypoglycemia

Broilers

AB
- IBH
- Variant (BC strain) IBD
- Reoviral tenosynovitis
- YSI (E. coli, Klebsiella)

BC
- Omphalitis/YSI
- IBH (late infection)
- IBV (condemns + CS)
- Enterococcus cecorum
- ILT

MB
- IBH
- Omphalitis/YSI
- Septicemia (E. coli, Enterococcus)

SK
- IBH
- Omphalitis/YSI
- Septicemia (E. coli)

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IBH: Serotype 8b, 11

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- IBH (late infection)
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MB
- IBH (less # & %)
- Omphalitis/YSI
- Septicemia (E. coli, Enterococcus)

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- Septicemia (E. coli)

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Infectious Bursal Disease (IBD)

Viral disease – **Infectious Bursal Disease Virus**

Very stable virus, resistant to many environmental conditions

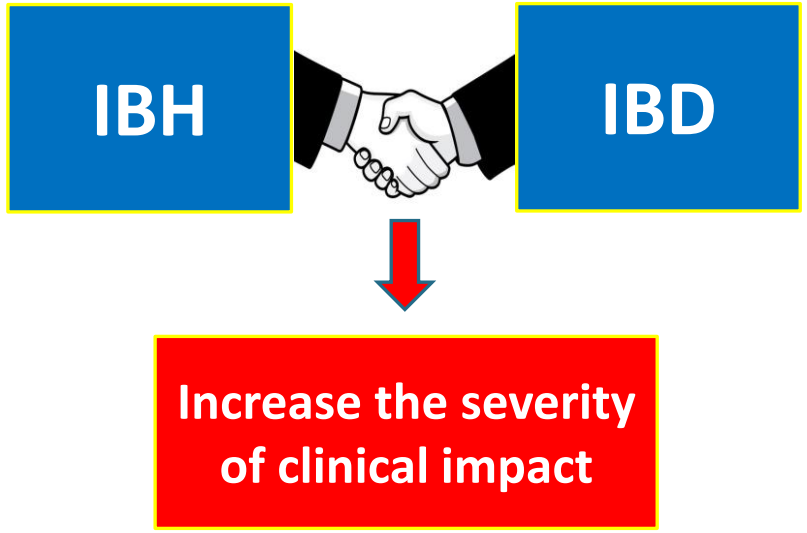
Different viral strains **(BC variant strain – first reported in BC)**

Continue to see immunosuppressive cases in BC, AB

Vague clinical signs:

- Poor general performance: FCR, condemnations
- Secondary infection (E. coli, airsacculitis, coccidiosis)
- IBH*

Diagnosis: serology, PCR, genome sequencing, histopathology



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Infectious Bronchitis Virus (IBV)

Acute, highly contagious viral disease of chickens (Coronavirus)

- No public health significance
- Ubiquitous
- Many strains with varying levels of virulence
- All ages are susceptible

Transmission via inhalation of virus-containing droplets expelled by infected chickens (aerosol transmission)

No treatment – protection based on vaccine, biosecurity, management

Swollen Head Syndrome
IBV + E. coli

- Depression
- Huddling
- Snick/rales
- Swollen head
- Conjunctivitis
- Underweight
- High condemn – airsacculitis

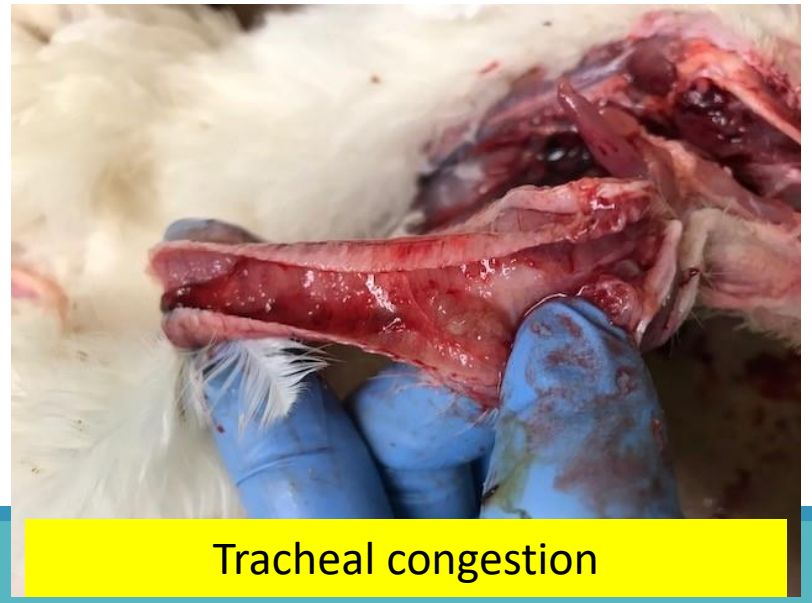
Infectious Bronchitis Virus (IBV)

Significant challenge in BC – fall/winter seasons

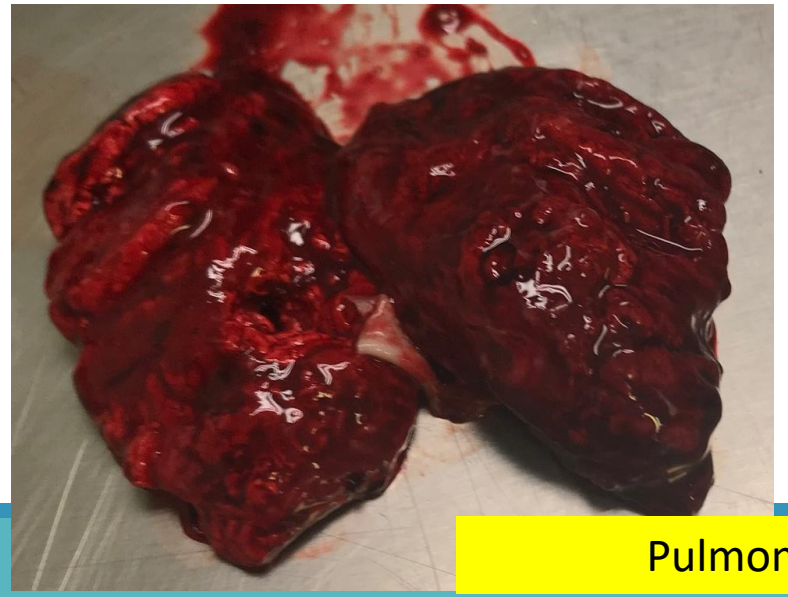
Occasionally see severe tracheal lesions (rule out ILT)

Clinical impacts exacerbated by cold temperatures, poor ventilation/air quality

Stunted growth, sudden stall in feed/water intake



Tracheal congestion



Pulmonary changes

Infectious Bronchitis Virus (IBV) = RRR

Respiratory Disease	Renal Disease	Reproductive Disease
Respiratory Depression Secondary infection Mortality Airsacculitis	Increased water intake Diarrhea Acute, high mortality	Drop in egg production Poor shell quality

Broiler Breeders

AB

- First week mortality
- Staph arthritis
- Cecal coccidiosis
- Yolk peritonitis (E. coli)

MB

- Staph arthritis

BC

- Staph arthritis
- Cecal coccidiosis
- Yolk peritonitis (E. coli)

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- YSI
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- One IBH (18 days old FAdV11 - US Import)

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Broiler Breeders

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- First week mortality
- Staph arthritis
- Cecal coccidiosis
- Yolk peritonitis (E. coli)

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- Staph arthritis

BC
- Staph arthritis, septicemia
- Cecal coccidiosis
- Yolk peritonitis (E. coli)

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- Yolk peritonitis (E. coli)
- One IBH (18 days old FAdV11 - US Import)

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- First week mortality
- Staph arthritis
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Staphylococcus Infection

Very common in breeder pullets

Staphylococcus aureus - commensal bacteria

Entry via: compromised skin, respiratory & intestinal tracts

Joint, tendon, bone, foot pad infections

13-week-old breeder with vaccine induced granulomatous myositis in the breast muscle & septic arthritis

Volume 1, Number 1

AviaTech
Technical information for the broiler industry

Staphylococcus Infections in Broiler Breeders

Eric L. Jensen, DVM, MAM, Diplomate ACPV and Carolyn L. Miller, DVM, MAM, Diplomate ACPV • Aviagen North America • Huntsville, Alabama

Introduction

A staphylococcus infection, or staphylococcosis, refers to a variety of diseases in poultry caused by staphylococci bacteria (Table 1). Approximately 20 species have been isolated, of which only one, *Staphylococcus aureus*, is of veterinary importance in broiler breeders. In such birds, the most common form of infection involves tenosynovitis (inflammation of the tendon sheaths) and arthritis of the hock and stifle joints.

Staphylococcus infections tend to occur more frequently during the following four periods of a breeder's life:

0 - 2 weeks — Omphalitis and femoral head necrosis (or bacterial chondronecrosis) are often related to egg or hatchery contamination and minor surgeries.

4 - 6 weeks — Infected hock and stifle joints secondary to

Eric L. Jensen, DVM, MAM, Diplomate ACPV

Dr. Eric Jensen earned his Doctor of Veterinary Medicine and Master of Avian Medicine degrees from the University of Georgia. He is a diplomate of the American College of Poultry Veterinarians and has more than 17 years of experience in technical support for the poultry industry. At Aviagen, Dr. Jensen is involved with preventive medicine, biosecurity, health monitoring and regulatory issues for the grandparent division.

Carolyn L. Miller, DVM, MAM, Diplomate ACPV

https://aviagen.com/assets/Tech_Center/Broiler_Breeder_Tech_Articles/English/AviagenBrief_RearingMales_OptimalLegHealth_EN_23.pdf

Layers

AB
- Focal duodenal necrosis
- Egg drop (unknown)

MB
- Egg drop (suspect AE)
- Cannibalism

BC
- Yolk peritonitis
- Egg drop
- Cannibalism

SK
No report

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Focal Duodenal Necrosis (FDN)

An intestinal disease in layers

- Suspect Clostridium – not definitive

Typical case presentation (Case reported by Dr. Frank Marshall and Dr. Teryn Girard):

- Pullets (16 weeks) to layers (46 weeks)
  - Reduced case weights
  - Increased off-grades
  - +/- drops in egg production
- No change in mortality pattern in general
- On-farm euthanized layers with gross lesions in the duodenum:
  - 1-10mm diameter foci on the duodenal surface

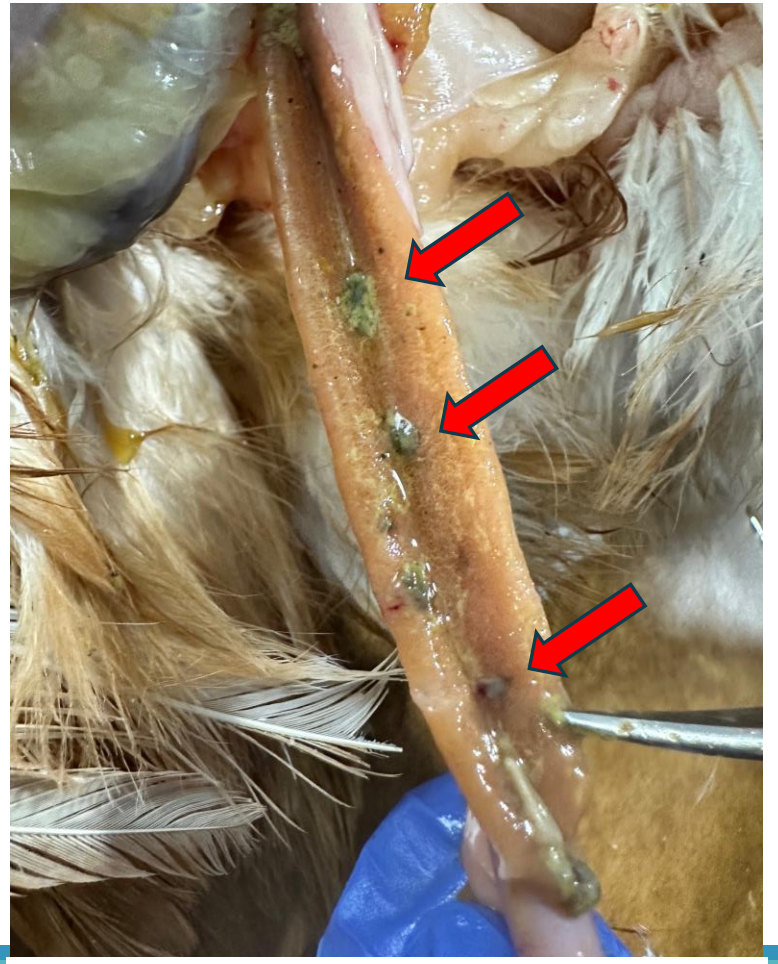

Photo Courtesy of Dr. Teryn Girard

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Troubleshooting Egg Production Issues

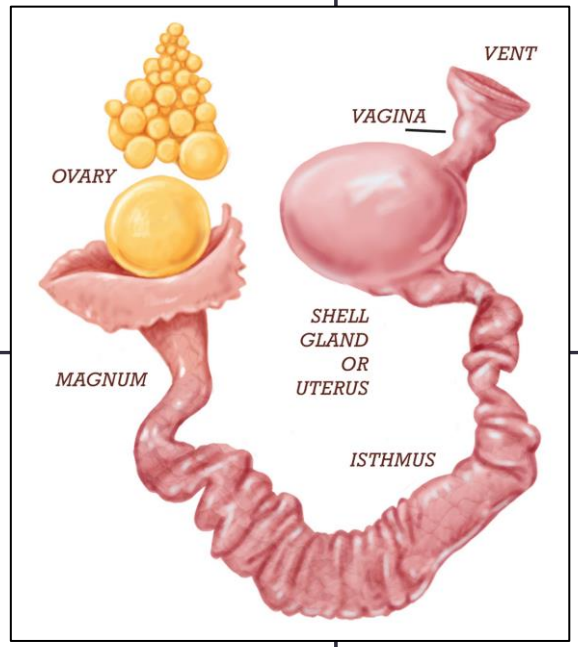
Pullet training

Pullet quality

Management – TFLAWS

Equipment failure

Floor/system eggs



Nutrition

Feed mixing errors

Water supply

Viral: IBV, AE, Egg drop syndrome

Bacterial: MG, Coryza

Parasite

https://backyardpoultry.iamcountryside.com/chickens-101/a-hens-reproductive-system/

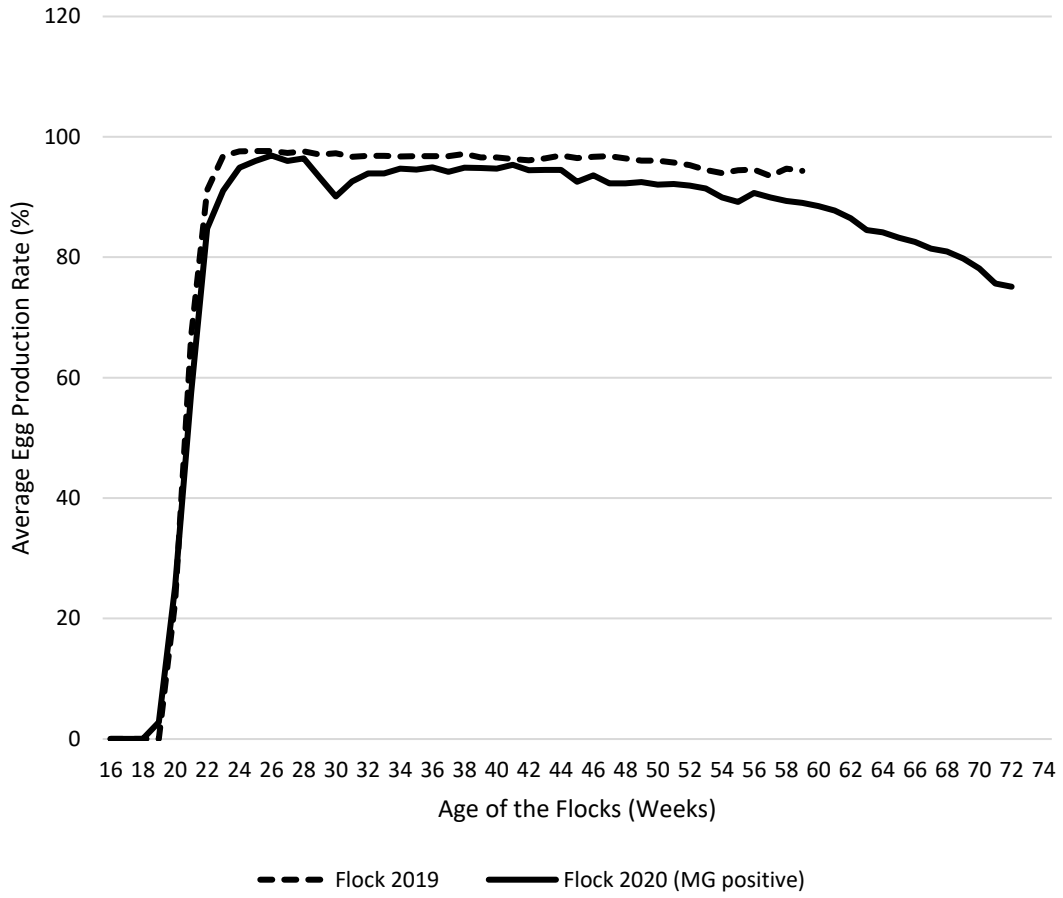
Collect & Share the Right Data

Egg production (rate, off-grades)
- Provide relevant data

Mortality, clinical signs

Vaccine program (the value of baseline serology)

Pullet data (if available)
- Weight, lighting program, feed program
- General performance



Summary

A relatively stable year ☺

Interrupted supply chains and chick/poult quality

No major natural disasters

What HPAI has taught us so far?

Communicate! Communicate! Communicate!
Educate! Educate! Educate!
Biosecurity! Biosecurity! Biosecurity!

Acknowledgements

Dr. Neil Ambrose

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Dr. Victor Palomino

Dr. Barb Wilhelm

Western Canadian Animal Health Network

Thank You!

Questions and feedbacks are always welcome

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