

# DR MCMILLAN CASE REPORT: SURVIVOR EDITION

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# THE RULES

- We will have a description of a case that will unfold in real time
- There will be places where the story will stop and questions will be asked
- You will be able to answer the questions by entering your answer in the slido poll
- The number of each response will be shown
- If you answer correctly, you will still be “LIVE”



# THE RULES

- Once you make a mistake, you will be out of the running for the prize, but will still be asked to continue to answer subsequent questions
- The winner will be the person that is #1 in the standings.

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# THE CASE

- Layer Breeders
  - 4 barns
  - All birds are 23 weeks old
  - 3 different genetic strains
  - VERY attentive manager
    - Errs on the side of caution for vet calls



# THE CASE

- Sunday morning photograph sent:
  - “seeing a lot of birds like this, what is it?”
  - A lot of birds was around 1%



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**Should we visit the farm?**

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# THE CASE

- Of COURSE we go to the farm
- Ask manager to not cull some affected birds and keep them isolated until tomorrow (Monday) morning





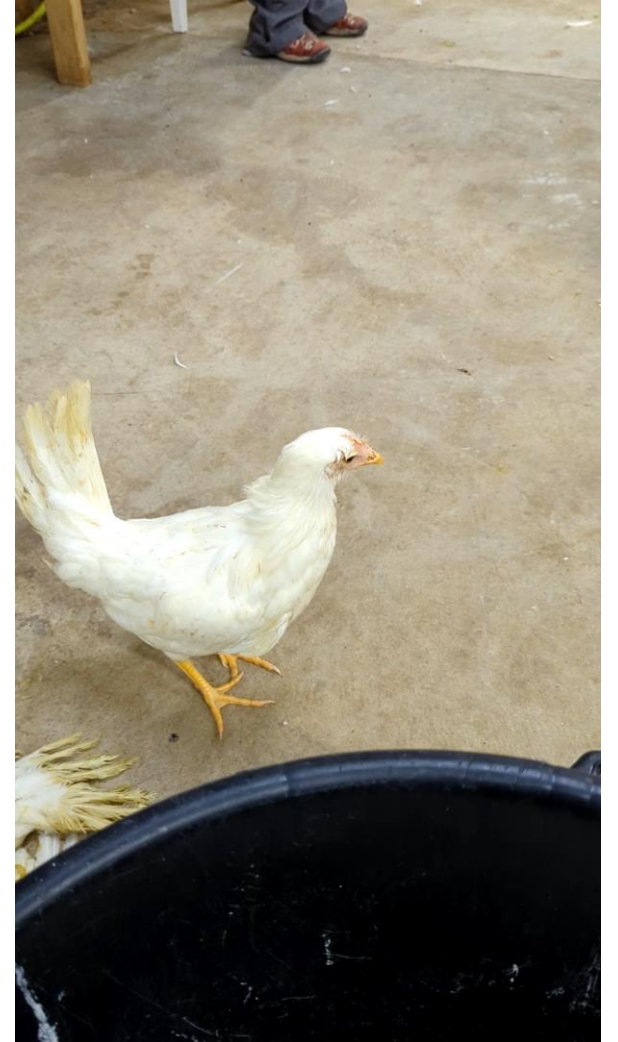
# MONDAY VISIT

- Affected birds in barn 2 and 3, none in 1 and 4





# MONDAY VISIT





## QUESTION #2

- WHAT ARE THE BODY SYSTEM(S) POSSIBLY AFFECTED?
- A) Muscular
- B) Respiratory
- C) Skeletal
- D) G.I.
- E) Neurological
- F) Cardiovascular

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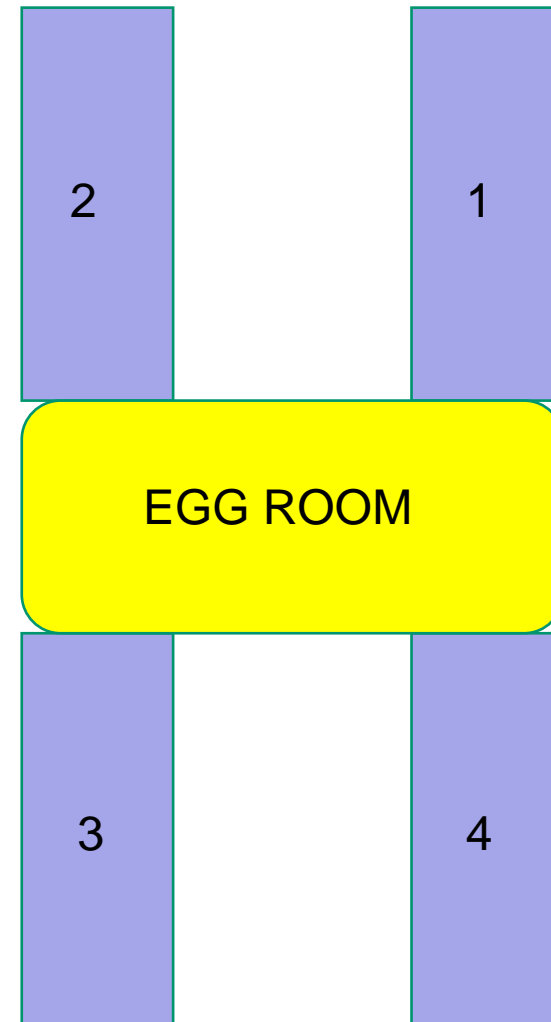
**WHAT ARE THE BODY SYSTEM(S)  
POSSIBLY AFFECTED?**

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# HISTORY

- Both on South side of farm
- Share a feed bin
  - Feed delivered on Thursday
- Separate ventilation controls and computer
- Different breeds in all 4 barns





# HISTORY

- Feed consumption decreased by 25% (from 115g/hen to 88g/hen) on Saturday
  - Recovered on Sunday (symptoms first noticed)
  - Seemed OK on Monday
- There was a water leak on Saturday morning in Barn 2
  - Bit of a flood
  - Manager complained about having to come in because weekend help couldn't make the repairs



# FURTHER EXAMINATION

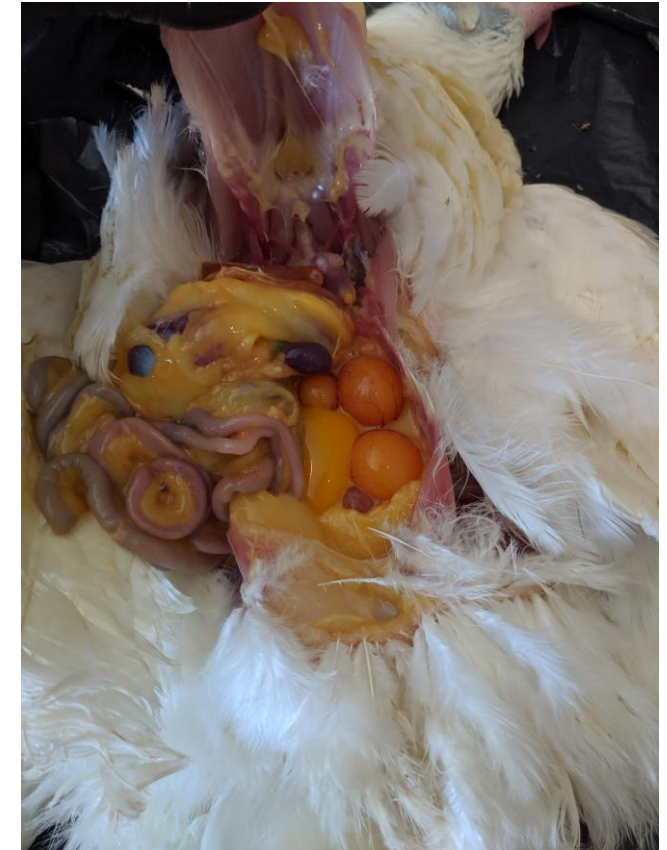
- Further investigation reveals that the water was accidentally left off for 3 hours after the leak was repaired
  - FURTHER, further investigation showed that the valve that was used to shut off the water affected both barns 2 and 3.



# Post-Mortem Exam



**SEVERELY AFFECTED**



**MILDLY AFFECTED**





## QUESTION #3

- What samples should be analyzed?
- A) Feed analysis
- B) Post-mortem / histology
- C) Water analysis
- D) Blood Samples for ELISA

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**What samples should be analyzed?**

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- **Feed Analysis – Errors happen to ANY mill**
  - Difficult to analyze for things like ionophores that could cause this, but will find out if it is the correct type of feed and if there were mixing errors for things like salt
- **Post-Mortem / Histology**
  - Things like AI / AE / Newcastle Disease will show histological changes that can't be seen by the naked eye
- **Water Analysis**
  - No reason to think that there is a water contamination, since nothing changed except for a possible water interruption in 1 barn
- **Blood test for ELISA**
  - Not in this case. Acute problems will not show up as increased ELISA numbers for several weeks



# Further Investigation

- With no obvious signs to the contrary, we proceed as if this is a neurological case

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**WHICH OF THE FOLLOWING ARE  
NOT A RULE-OUT**

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## ANSWER #4

- AE only causes neurological disease in pullets, especially when vertically transmitted from infected layers
- When mature birds (over 5-6 weeks of age) are infected, it is more of an enteric disease, and causes significant egg production drops

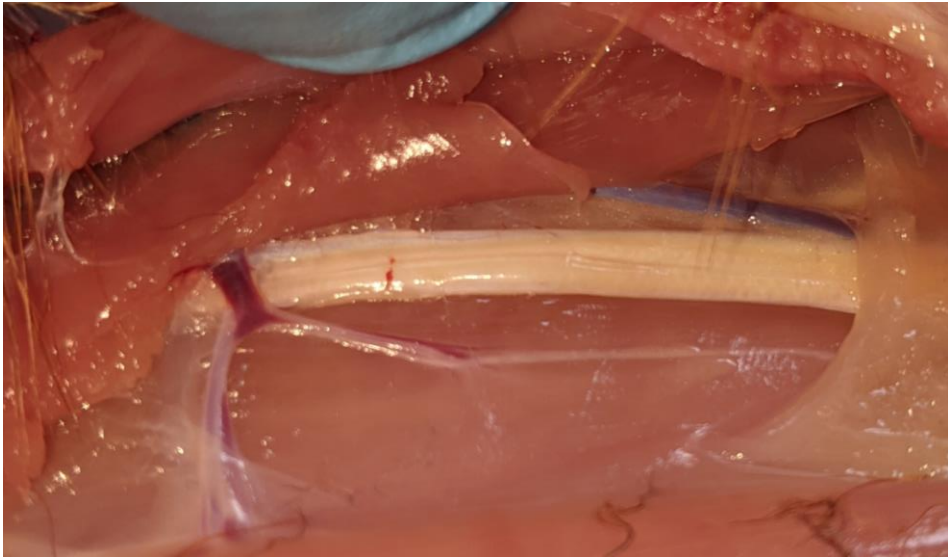


# FOCUSSED PM INVESTIGATION

QUESTION #5 : Is it Mareks?

1) PROBABLY

2) PROBABLY NOT



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**Is it Mareks?**

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## ANSWER #5

- 2) Probably Not
  - The nerves in the legs look normal, with no marked swelling
  - Mareks would not often hit a lot of birds simultaneously



# IONOPHORE TOXICITY

- Ionophore toxicity can look a lot like this
  - Weakness, quiet, loss of control of legs
  - Timing coincides pretty well with feed delivery
  - SOMETHING caused feed consumption decrease

**SGS**

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CANADA

Laboratory ID:  
Client Sample #:  
Description:

GM16-04105.001  
Lorraine  
Complete Feed

Moisture (%)	10.91
Protein {N x 6.25} (%)	19.34
Calcium (%)	4.76
Phosphorus (%)	0.55
Sodium (%)	0.17
Ca:P	8.62

Applied methods:

Moisture: A201/A202  
Minerals: A204a

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# IS THIS IONOPHORE TOXICITY?

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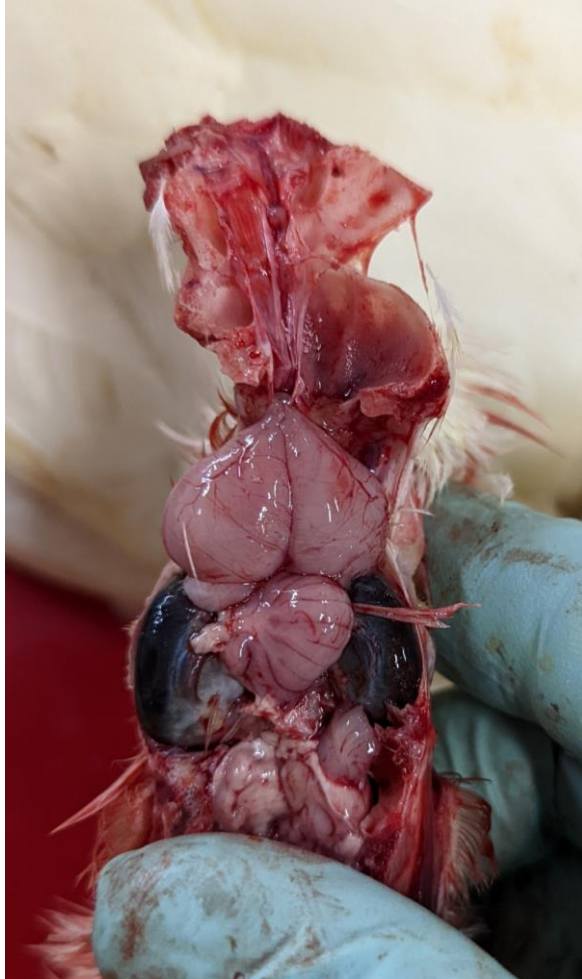


# ANSWER #7

- 2) PROBABLY NOT
  - This is more subtle (and we changed feed bins until we had full testing done)
  - Neuro signs looked more “central”
  - Ionophore toxicity is a neuromuscular issue



# FOCUSSED PM RESULTS





# OTHER OBSERVATIONS





# Histopath Results

## Histopathology Method ID: AHL-002

Date Authorized:

### HISTOPATHOLOGY

Brain (Slide 1, 2, 3): Five sections are evaluated. Multifocally in the parenchyma are small perivascular cuffs of mononuclear cells.

Liver (Slide 4): Seven sections are evaluated. In all sections there are few sinusoidal fibrin thrombi, and occasional adjacent hepatic necrosis.

Heart (Slide 5, 6): In two sections there is a heterophilic epicarditis. In two sections there is mononuclear epicarditis.

Lung (Slide 7): Five sections are evaluated. In one airway is an aggregate of eosinophilic debris and mucus admixed with cell debris and few heterophils.

Kidney (Slide 4): In one section there is a focus of interstitial mononuclear infiltrate.

No histologic lesions appreciate in: Spleen (Slide 5)

### HISTOLOGIC DIAGNOSES:

Brain: Mononuclear encephalitis (5/5)

Liver: Fibrin thrombi and mild multifocal hepatic necrosis (7/7)

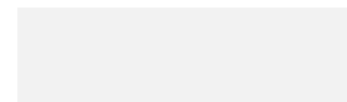
Heart: Mild heterophilic (2/4) and mononuclear (2/4) epicarditis

Lung: Mild focal bronchopneumonia/aspirated debris (1/5)

Kidney: Mild focal mononuclear infiltrate (1/3)

### COMMENT:

Mononuclear encephalitis is evident, but the lesions in the epicardium and liver are more fibrinous to heterophilic and typical of bacterial septicemia. Whether these lesions (brain and liver/heart) may represent two separate conditions was discussed at rounds by multiple pathologists. These birds are negative for avian influenza, avian encephalomyelitis and paramyxovirus by PCR. Culture (liver, heart, brain)





# DIAGNOSIS

- SALT TOXICITY
  - Even though salt level in feed is normal (0.17%)
  - Water deprivation (at least 3 hours)
  - Causes brain edema
    - Pressure causes central nervous signs





# Summary / Conclusion

- No evidence that there is an infectious disease that caused this
  - Mareks / AE / ND
    - Clinical picture doesn't really fit
    - No path support for any of them
- No conclusive evidence of ionophore toxicity
  - Still a concern, but should have affected more birds
  - Birds seem to have received appropriate (layer) ration



# Summary / Conclusion

- Water had been interrupted for several hours
- Affected birds were ones that had full GI tracts
- Birds recovered quickly after being water deprived
- Brains were “wet” and “swollen”
- Clinically normal birds had more folds and less glistening brains
- Birds that dehydrated improved clinically