



Investigating the Origin of the 2023 Equine Arteritis Virus Outbreak on Prince Edward Island

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Abstract

The aim of this study was to determine the origin of the EAV outbreak which swept through the Standardbred population and caused both loss of life and great financial loss. Historically, EAV is introduced to a population through a new carrier stallion being brought to the impacted region and so it is hypothesized that the virus was brought to PEI through a newly imported carrier stallion who shed the virus to other horses throughout the 2023 breeding season.¹



- 2. Serum neutralization testing confirms presence of EAV antibodies in blood
- Stallion's semen is collected
- 4. **RT-PCR determines if virus** is present in semen
- 5. Track-IT software is used to trace the movement & breeding of stallions, therefore also the movement of the virus

Results I September 2022 Stallion 03 is brought onto Farm AR. This is the only new stud brought to PEI within a year of the outbreak who is seropositive and actively shedding the virus through semen. Stallion **March 2023** AR3 spread the virus to Stallion AR1 The virus circulates and Stallion AR2, located on the to Farm S, a large breeding same farm. operation with frequent animal ~April 21, 2023 movement and minimal biosecurity. Stallions S1 and S7 become infected and

The foal of Mare S39 From Farm S dies of suspected EAV. Mare S23 is moved into the same foaling stall soon after.

May 01, 2023

Mare D11 is moved to farm D after being bred to Stallion S7 and is not quarantined. Other mares on Farm D broke out in hives soon after the arrival of D11.

May 30, 2023

The foal of Mare AR4 from Farm AR dies from EAV at AVC.

June 08, 2023

The foal of Mare AR5 from Farm 3 dies from EAV at AVC.

June 15, 2023

The foal of Mare Y10 from Farm Y dies from EAV.

April 03, 2024

Mare A2 from Farm A dies during parturition and the foal is brought to AVC for 'crashing'. The foal later dies from EAV.

Figure 2. Timeline of events which occurred from September 2022 through April 2024 which led to the outbreak and the 10 deaths which are either confirmed or suspected to be a result of EAV

shed the virus in their semen.

May 09, 2023

The foal of Mare D9 from Farm D dies of EAV.

~May 12, 2023

The foal of Mare S23 from Farm S dies of suspected EAV.

June 03, 2023

The foals of Mare AR5 and Mare AR6 are transported from Farm AR to AVC using a trailer from Farm A. The same trailer is then used to bring Gelding Y0 back to Farm Y, where Y0 is placed in the broodmare barn. The foal of Mare AR6 is euthanized 3 hours after presentation due to EAV.

June 14, 2023

The foal of Mare Y2 from Farm Y dies from EAV.

~June 18, 2023

The foal of Mare S18 from Farm S dies of suspected EAV.

Abortions



Results II

- 5 of 20 PEI stallions were confirmed **EAV** in their semen via RT-PCR
- 2 out of 4 trotting stallions tested po
- 186 mares were bred by the 5 stallion

Conclusion

- **Evidence points to Stallion AR3 from** most probable candidate for bringing
- Missing or incomplete breeding and records along with a lack of cooperat some stallion owners makes it impos determine the origin and spread of th complete certainty
- Improper biosecurity protocols and f management contributed to the sprea and some of the neonatal deaths
- A combination of increased awarenes of EAV, implementation of biosecurit the vaccine or naturally gained immu prevent such an outbreak from reocc

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Acknowledgements

Financial Support: AVC Veterinary Summer Rese Edward Island Harness Racing Industry Associa Standardbred Breeders Association, Sustainable Agricultural Partnership

Student Support: AVC Veterinary Summer Resea **Dairy Network for Antimicrobial Stewardship and** (CaDNetASR), Dr. J McClure, Natasha Robinson



Follow the QR code for a more detailed timeline

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