



Highly Pathogenic Avian Influenza in Dairy Cattle

Dr. Douglas Bazinet, DVM, Extension Veterinarian

In January 2024, Texas dairy herds experienced a sudden illness in mature lactating cows. Symptoms included loss of appetite, minimal rumen activity, mild respiratory issues, variable fevers, and drastically reduced milk production, which became yellow and thick. Antibiotics were ineffective, but supportive care helped. Recovery took 3-4 weeks, though some cows didn't return to normal milk production. Morbidity was 5-30% with no deaths.

On March 25, the USDA confirmed HPAI H5N1 in affected herds. As of June 24, 126 herds in 12 states were affected. Gene sequencing revealed the virus strain in cattle was nearly identical to that in poultry, suggesting a single transmission event from poultry in Texas. Initially, positive herds were linked by animal movements, but recent cases lack such connections. Poultry flocks in the same states have contracted HPAI from cattle, confirmed by gene sequencing.

The virus prefers mammary tissue and is shed in large numbers in milk and urine but not significantly in nasal secretions. It spreads quickly within herds, mainly affecting lactating cows, with occasional cases in dry cows and pregnant heifers. No signs are seen in calves, open heifers, bulls, or steers, and no beef cattle have been affected. Three mild human cases of bovine HPAI were reported, all involving close contact with affected herds. Canadian and US officials deem it low risk to human health, with no human-to-human transmission.

No bovine HPAI cases have been confirmed in Canada. Retail milk samples in Canada tested negative for Influenza type A. **Voluntary HPAI surveillance for dairy cattle is available, with lab fees covered by the CVO's Disease Investigation Program.** Manitoba's CVO is coordinating with Dairy Farmers of Manitoba and other partners for preparedness, updating veterinarians, and implementing biosecurity measures.

The CFIA and provincial CVOs have developed strategies to prevent HPAI from entering Canada, focusing on enhanced biosecurity on dairy farms. These measures are ready to be implemented if HPAI is detected in Canadian dairy cattle. For more information, please visit relevant website resources.

[HPAI in cattle: Guidance for private veterinarians - inspection.canada.ca](https://inspection.canada.ca)
[HPAI Detections in Livestock | Animal and Plant Health Inspection Service \(usda.gov\)](https://www.usda.gov/animal-plant-health/inspection-service)

Chief Veterinary Officer Departure

As of May 1, 2024, Dr. Scott Zaari has left the role of Manitoba's Chief Veterinary Officer. While the Department proceeds through the competition for a new CVO, Dr. Glen Duizer and Dr. Dale Douma will be covering the CVO duties along with their regular work until the position is filled.

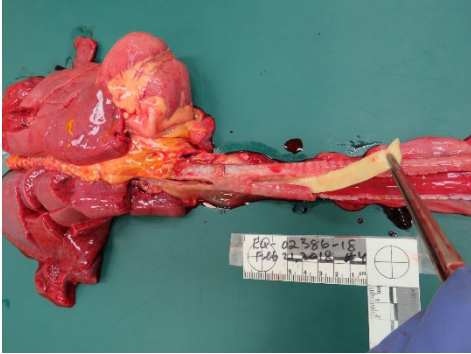
VDS Team

Dr. Md Niaz Rahim – Chief Scientific Officer
Dr. Neil Pople – Anatomic Pathologist/ Veterinary Microbiologist
Dr. Marek Tomczyk – Anatomic Pathologist
Dr. Brenda Bryan – Anatomic Pathologist
Dr. Vasyl Shpyrka – Anatomic Pathologist
Dr. Karlyn Bland – Clinical Pathologist
Shannon Korosec – Supervisor, Microbiology
Tracy Scammell-LaFleur – Supervisor, Virology
Rhonda Gregoire – Supervisor, Clinical Pathology
Agnieszka Gigiel – Supervisor, Accessioning
Genedine Quisumbing – Quality Assurance Officer
Sharon Niebel – SAP/Revenue Clerk
Lindsay McDonald Dickson – SAP Clerk
Barb Bednarski – Client Services Coordinator/Reception

Equid Herpes Virus Abortion

Dr. Brenda Bryan, DVM, MVetSc, VDS Pathologist

Four aborted equine fetuses, of 6-9 months gestation, with placentas, were received by VDS following a history of several equine abortions in the early spring. The mares had been vaccinated with Prodigy the previous November and January and were not sick.

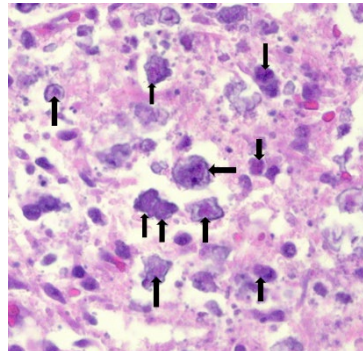


Pluck, equine fetus with fibrin cast in tracheal lumen.

On necropsy, 2 of 4 fetuses had tracheal and bronchial fibrin casts in the lumen. Lungs in 2 of 4 fetuses had multifocal to coalescing pink foci suspicious of bronchopneumonia. There was serosanguineous hydrothorax and hepatomegaly in 3 of 4 fetuses. The placentas were unremarkable.

Microscopically, the spleen had lymphoid follicles with germinal center necrosis. Lung exhibited generalized multifocal necrosis, diffuse interstitial pneumonia with edema, fibrin and syncytial cells, few neutrophils and macrophages in the alveoli. Lung bronchiolar and bronchial epithelium had multifocal intranuclear eosinophilic inclusion bodies and numerous luminal syncytia. In the liver, there were areas of hepatic lytic necrosis with hepatocellular eosinophilic intranuclear inclusion bodies. The adrenal gland zona glomerulosa had multifocal to coalescing lytic necrosis with eosinophilic intranuclear inclusion bodies adjacent to and within the areas of necrosis.

The PCR on the lung was positive for Equid herpes virus 1. The equine fetuses had gross and microscopic lesions typical of EHV1 abortion (equine viral rhinopneumonitis). There were no bacterial pathogens in lung, liver or placenta, and no growth in stomach contents. Lesions of necrosis and eosinophilic intranuclear inclusion bodies typical of EHV1 fetal infection were found microscopically in the liver, adrenal gland, spleen and lung with most severe necrosis in the latter three tissues.



Adrenal gland with intranuclear pink inclusion bodies (arrows) in area of necrosis.

EHV1 is an alpha herpes virus associated with upper respiratory disease of foals and adult horses. EHV1 abortions occur during periods of asymptomatic reactivation of the virus as a result of transportation, change in accommodation, overcrowding, stress of training/performance, or mares coming from sales yards or abroad. EHV1 viremia ensues and leukocytes laden with virus go to the uterus leading to endometrial vasculitis, thrombosis, and infarction, resulting in placental separation and abortion. The virus spreads to the fetus via infected leukocytes resulting in widespread necrosis in many tissues.

Certain strains of EHV1 have predilection for vascular endothelium of nasal mucosa, lung, adrenal gland, thyroid, uterus, and CNS.

Pet Spotlight: Nala



Nala, also known as Nala bear, hunny bunny, or Nonu, is 2 years old and counting. She belongs to the best friend of our branch's analyst, Kemi. When you call at her with a high-pitched voice, she gets giddy. Food, treats, and outside are her favourite words. When visitors come to the house, she has to be greeted or she will bark and whine your ears off! She can shake a paw, sit, roll over, and lie down. She has no concept of personal space – she likes to leave a lasting impression! She also may be the culprit responsible for all the missing socks in the house... Jokes aside, she is the most playful and friendly dog you will ever meet.

We love sharing photos!

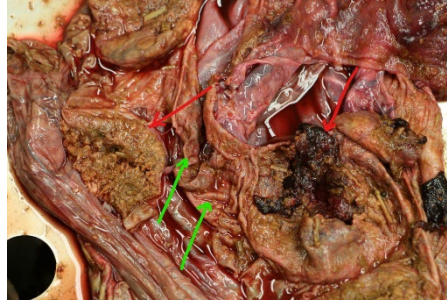
We encourage VDS clients and Animal Health & Welfare staff to send any great animal photos or Manitoba moments our way to share with the veterinary community.

Photos can be sent to chiefveterinaryoffice@gov.mb.ca with the subject "VDS Lab Notes Pet Photos".

Mycotic Abortion in Cattle

Dr. Marek Tomczyk, DVM, Dipl. Anat. Path., VDS Pathologist

Abortions in cattle are usually sporadic, with herd incidence reaching 5-10% of pregnant cows. Unlike some other conditions, there are no common prodromal or post-abortion signs in affected cows. Mycotic abortions occur more frequently in cattle than in sheep, goats, and swine, with the highest number of aborted fetus submissions during winter.



Placentitis with cupping of cotyledons (red arrows) and leathery intercotyledonary tissues (green arrows)

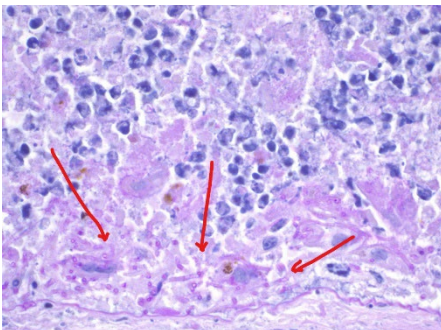
Fetuses evaluated were usually between 180 to 240 days of gestation, although mycotic placentitis can manifest as early as 120 days. Aborted fetuses often had a full hair coat, with occasional grey/white, dry, raised, circumscribed, ringworm-like lesions. Some fetuses appeared dehydrated and emaciated. When the placenta was received and gross lesions were present, placentitis was indicated by thickened and cupped cotyledons, as well as opaque, thickened, leathery intercotyledonary areas.



Skin lesions on dorsal side of neck (red arrow)

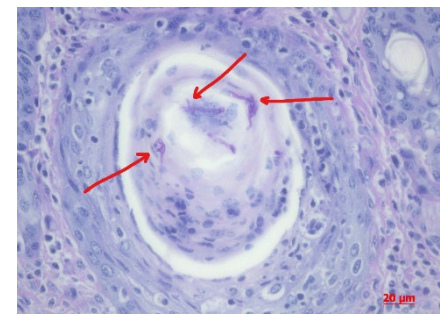
Diagnostic tissues collected included histopathology samples (brain, eye, skin, tongue, eyelid, trachea, thyroid gland, salivary gland, thymus, heart, lung, liver, spleen, adrenal gland, kidney, urinary bladder, rumen, reticulum, omasum, abomasum, jejunum, ileum, colon, rectum, mesenteric lymph node, umbilicus, and placenta), microbiology samples (culture and fungal culture of lung, liver, abomasal contents, placenta, and skin), virology tests (Bovine herpesvirus 1, BVD virus, *Ureaplasma diversum*, *Neospora caninum*, *Leptospira* spp.), and toxicology (mineral panel, liver).

Histopathology of the placenta revealed multifocal necrosis with moderate to severe accumulation of macrophages, neutrophils, and plasma cells, leukocytes in vessel walls, and perivascular edema with fibrin, macrophages, and plasma cells. Multiple vessels in the chorioallantois contained fibrin thrombi and fungal hyphae. Severe suppurative inflammation was noted, with fungal hyphae, bacterial colonies, fibrin, macrophages, and cell debris. Skin histopathology showed hyperkeratotic epidermitis and folliculitis with intralesional fungal hyphae. Periodic Acid-Schiff's stain revealed parallel and septate dichotomous fungal hyphae (*Aspergillus* sp.) within hair follicles.



Placentitis with intralesional fungal hyphae (*Mucor* sp.)

Mycotic bovine abortion typically occurs hematogenously to the placentomes or via respiratory infections due to moldy feeds. *Aspergillus* sp., *Mucor* sp., *Absidia* sp., *Rhizopus* sp., and *Candida* are common causes. Diagnosing mycotic etiology of abortion is challenging without the placenta for evaluation.



Periodic Acid-Schiff's stain was used to accentuate fungal elements within lesions (red arrows). They were prominent numbers of parallel and septate dichotomous fungal hyphae (*Aspergillus* sp.) within hair follicles.

VDS Dashboard

Visit here for the latest information on cases counts, tests conducted, and pathology diagnoses.

Veterinary Diagnostic Services Contact Information

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