



Ontario Update on Novel H3N2 Influenza A- Cluster 2010.1

Dr. Jordan Buchan from South West Ontario Veterinary Services provided an update to the CSHIN Q4 team on the status of a new strain of H3N2 known as cluster 2010.1. In the CSHIN Q2 reports, OAHN reported that this novel influenza strain was first detected in Ontario on April 7, 2023. This virus is not genetically similar to any of the current regional autogenous vaccine strains or to any other virus documented in Canadian databases. History indicates this virus originated in humans in 2010, but since has become established in the swine population likely from humans working closely with pigs. This virus was determined genetically similar to a strain first detected in swine in the U.S.A. in 2013 and became the dominant strain in the U.S.A by 2017. This new strain often clinically presents as a sudden onset of coughing across all stages of production. Sows go off feed with high fevers and abortions is common. Growing pigs present with a sudden onset of coughing, off feed, followed by an increase in mortality due to secondary bacterial pneumonia. To date, it appears that previous influenza vaccination did not have any effect.

Dr. Hannah Golightly from OMAFRA commented that the number of positive swine influenza submissions has been relatively stable over the last three Q4 periods. In Q4 2023, H3N2 detections were appreciably greater than any other subtype combined for each month of the quarter. This is a trend that has been ongoing since May 2023, and is markedly different than the last 2 years, where H3N2 detections only accounted for 20% to 28% of all positive cases in Q4 of 2021 and 2022, respectively. The majority of H3N2 detections in Q4 2023 were the novel cluster 2010.1, most of which were detected in grow-finish herds. As of January 2024, the novel cluster 2010.1 is now included in the regional autogenous swine Influenza vaccine in Ontario after receiving CFIA approvals and South West Ontario Veterinary Services will share the protocol for CFIA emergency use and approvals with other veterinary clinics interested in Ontario.

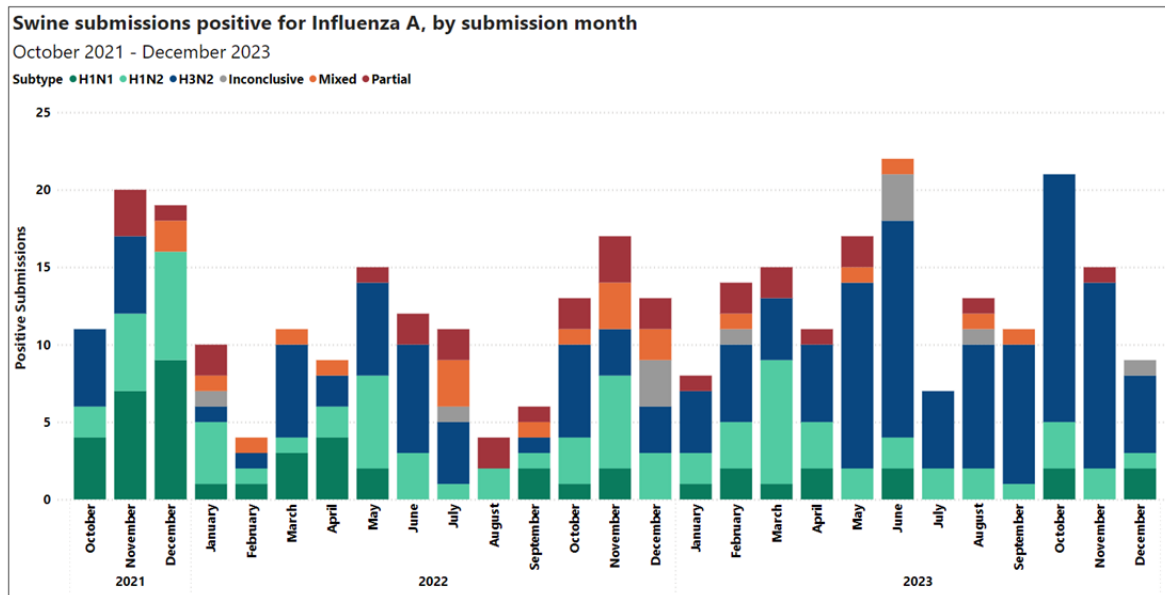


Figure 1. Submissions positive for influenza (not including ELISA tests) in swine by subtype and submission month, Ontario, October 2021 to December 2023. Most positive submissions in Q4 2023 (October-December) involve subtype H3N2. Figure 1 also shows counts of partial, mixed, and inconclusive subtypes isolated from Ontario swine herds. (see legend above graph).

Take Home Messages: No other provinces or territories in Canada have reported detections of this novel H3N2 influenza strain to date. The good news story is that routine Influenza A surveillance in Ontario provided early detection and warning of this outbreak. **Based on how this virus behaved in the U.S.A. it is anticipated that the number of cases will increase.** This is concerning with the next “flu season” upon us already. **Veterinarians, producers, and government have an opportunity to be proactive and prevent the spread of this virus.**

Those that work directly with swine should be encouraged to stay home whenever possible if sick or experiencing clinical signs of Influenza. People working with infected pigs need to ensure they follow good biosecurity practices and whenever possible, wear an N95 or equivalent mask, and wash their hands frequently. Any personnel that work with swine should be encouraged to get the “flu” shot for influenza yearly.

Circovirus (PCV-2) & (PCV-3)

OAHN (Ontario)

Dr. George Charbonneau reported that **there were 62% of practitioners that indicated that PCV-2 activity was increased when compared to the previous quarter. This is a very notable increase from previous quarters and previous years.** Usually there are about 21% to 29% of practitioners that would rank clinical PCV-2 as being “common” but in Q4 this number jumped to 64%. The cause for this perceived increase is unknown. In the past veterinarians have commented that sporadic cases of clinical PCV-2 have been related to vaccine storage or administration errors, fractionated dosages, or changes in vaccine timing. Sow herd instability with increased shedding by sows and the subsequent increased infectious pressure can also set off increased clinical disease. Another possibility is that increasing PRRS and Influenza virus challenges are undermining some of the PCV-2 control. Since 2006 when PCV-2 vaccines became available, the control of PCV-2 has been nothing less than remarkable even as the virus has slowly been evolving. Many in the industry are wondering if “the other shoe will drop” and we lose some of the control provided by the current vaccines. Has something changed with the virus? The U.S.A. has reported an increase in PCV-2 type d could this be the cause? Minimal genotyping of PCV-2 is currently conducted in Canada. Too early to tell on this but we will certainly keep an eye on this one.

Dr. Christine Pelland mentioned that they have conducted a veterinary practice clinical study on cases confirmed IHC and PCR positive for PCV-2. This study found that 60% of these cases are PCV-2 type d versus PCV-2 type a virus. She also mentioned that most clinical cases that she has seen to date have also had concurrent disease challenges like PRRS and Influenza viruses. Recently SHIC offered a swine Circoviruses PCV-2 seminar that was very interesting and can be reference [here](#).

CWSHIN (Western Provinces)

Dr. Jette Christensen reported that the laboratory data in the western provinces has seen a steady increase in porcine Circovirus positive tests over the past year. It is important to recognize that there have also been differences in how the labs are testing for porcine Circovirus over the years PCV vs. PCV-2 and PCV-3 testing now and also labs are now documenting mixed infections.

Dr. Kurt Preugschas reported that clinical presentations of Circovirus have changed in the last 1.5 years. He supported that vaccines for Circovirus are phenomenal vaccines! Two-three years ago this disease was extremely well controlled simply by using these vaccines. About 1.5 years ago something started to shift in this paradigm. Detections of PCV-3 are also a growing concern.

Senecavirus A (SVA)

RAIZO (Quebec)

Dr. Roxann Hart reported that in Quebec on December 15, 2023, there was a suspicious SVA PCR test from a transport trailer tested at an assembly site in Quebec. The sows at this assembly center were inspected for vesicular lesions, lameness, and any other clinical signs of disease. Some sows had the presence of vesicles on the snout and coronary bands of the hooves with associated lameness seen. SVA PCR tests completed from manure samples were highly positive for SVA virus.

In follow-up to this, SVA PCR tests were completed at several of the sow farms that ship to this assembly site and on transport trailers used to transport piglets from these farms. One sow farm had a suspicious PCR result and some sows had ulcers on their snouts (no other clinical signs). SVA ELISA tests were performed at the National Center for Foreign Animal Disease (NCFAD) CFIA's laboratory in Winnipeg and results were positive (but the PCR tests were all negative). This sow farm was declared a case by the EQSP. The nursery that received all piglets from this sow farm, that was reported as an epidemiological link, also was declared a positive site by the EQSP.

SVA PCR tests from a transport trailer transporting gilts tested suspicious. Rare vesicles at the coronary band in a very small number of animals within this sow farm were observed. This barn was quarantined, as was the nursery that received its piglets as a precautionary measure.

Cleaning and disinfecting procedures being used on declared positive SVA sites in Quebec include:

- Cleaning: preparing the rooms and soaking the surfaces
- Washing: wash every nook and cranny then inspect the quality of the washing
- Disinfection: disinfection of clean surfaces with the correct contact times and then limit any contamination of the disinfected areas
- Drying: dry all surfaces thoroughly
- White wash: white wash buildings when deemed appropriate
- Post washing/disinfection/drying assessment: assess the effectiveness of the disinfection and check the water quality

After the final disinfection of the buildings and equipment on a farm that has been infected with SVA, the downtime where barns contain no animals is a minimum of 7 days, but ideally 14 days are recommended whenever possible before receiving new pigs.

Take Home Messages: To date, hundreds of tests have been completed on sites with potential epidemiological links and all test results completed since January 23, 2024, have been negative for SVA. The steps toward eradication of the disease are progressing positively to date.

CWSHIN (Western Provinces)

Dr. Jette Christensen communicated that in Q4 2023 CWSHIN launched an outbreak support network that is being led by Dr. Betty Althouse. This network was created due to an identified need for producer support when dealing with a potential reportable disease e.g. SVA. The western provinces have had a few cases where reports of blisters on pigs were investigated. Through these cases, it was recognized that the process to complete these investigations was not easy for all involved. This support network will pair with WeCAHN (Western Canadian Animal Health Surveillance Network) and include diseases that affect other species e.g. Bovine Tuberculosis and Highly Pathogenic Avian Influenza.

CEZD Disease Signals of Interest from Q4

Dr. Andrea Osborn provided a review of disease signals that presented to the Community of Emerging and Zoonotic Disease (CEZD) over the past quarter.

African Swine Fever

- During 2023 Q4, there were a large amount of international ASF events >1700 and in Q1 2024 there have been 784 international events reported to the World Organisation of Animal Health (WOAH) so far ([source Empress i FAO website](#)).



Figure 1: Graph of the frequency of international ASF events reported to WOAHA by year.

- The second highest amount of international ASF events since 2019 peaked in 2023 Q3.
- In Q4 2023 two new countries detected ASF including Bangladesh and Montenegro. Also, Albania reported their first detection of ASF in Q1 2024.
- In September of 2023, Sweden reported its first case of ASF and was the first Scandinavian country to report a case. Since then, Sweden has detected 62 outbreak locations, all in wild boar, and has created a fence that spans 100 km² to aid with control and further spread of ASF which has proven to be successful. The Swine Health Information Center ([SHIC](#)) reported that a garbage dump located at the epicenter of these outbreaks appears to be a probable source of infection.
- China stopped reporting detections of ASF in early 2022. [Taiwan](#) recently reported that almost 10% of the pork products that originated from China have tested positive for ASF virus. They also reported finding both recombinant genotype 1 and genotype 2 ASF virus in seized food products.
- [Italy](#) reported a case of food fraud where sausage falsely labelled as vegetarian was found to contain chicken and pork. The sausage also tested positive for ASF virus.
- Another article mentioned “unprecedented volumes of illegal meat imported” into [Dover UK](#).

Take Home Message: There are illegal imports of meat and movement of meat happening all over the world. This remains an unquantified threat for the introduction of ASF to Canadian swine.

Influenza A Virus

- Cases were detected in the UK and Brazil recently where Influenza A viruses, typically seen in swine, were detected in humans with no documented exposure to swine.
- WOAHA assessed the risk to humans to be low for both cases and there was no evidence in either case of human-to-human transmission.

Actinobacillus Pleuropneumonia (APP)

- APP serotypes 15 and 1 have both been associated with high mortalities (51% mortalities reported in 9 finishing barns within a 21-mile radius, in the U.S.A). This outbreak challenged a few concepts previously thought for this pathogen including:
 - Risk factors for lateral transmission
 - Environmental persistence
 - A source herd was never identified
- [SHIC conducted research](#) on infected farms and found that these serotypes were most stable on concrete surfaces (could survive up to 7 days at -20 degrees C) for both APP serotypes 15 and 1. Pathogen stability was found to decrease with warmer temperatures.

Sapovirus

OAHN (Ontario)

Dr. Christine Pelland reported that this pathogen most commonly is associated with nursing piglet diarrhea (typically around 10 days of age). The Animal Health Lab (AHL) in Guelph has been testing in house for Sapovirus PCR since September, 2023. She communicated that her practice is adding this test to diarrhea cases where Rotavirus testing is requested. They are subsequently finding more cases of Sapovirus than they initially expected. It is often unknown whether Sapovirus is the primary cause of disease or not. Sapovirus was added to the OAHN clinical impression veterinary survey in Q3 2023. This is a good starting point for the network to monitor any changes in frequency seen by private practicing veterinarians.

Dr. Tim Pasma from the Animal Health Laboratory (AHL) in Ontario, reported that the most recent AHL newsletter published that 57% of Sapovirus cases detected were co-infected with Rotavirus. Between September 2023 and February 2024, a total of 83 samples from 32 Ontario swine herds were tested by PCR for Sapovirus. Of these, Sapovirus was detected in 30 samples from 16 herds. The age range of Sapovirus positive pigs was 3-28 days with an average of 9 days. For more information on this study please refer to the [AHL newsletter](#).

CWSHIN (Western Provinces)

Dr. Jette Christensen reported that Prairie Diagnostic Services (PDS) lab in Saskatchewan started to test for Sapovirus in July 2023. In 2023 Q4, every case submitted to this lab for diarrhea was tested for Sapovirus and 68% of samples were found to be positive. This number was even higher in Q3 2023. Attempts have been made in the western provinces to vaccinate gilts and investigate to see if immunity is passed onto their piglets (important to note that this was an attempt of prevention NOT a clinical trial). Although the vaccine may have reduced scours in piglets it is prudent first to treat for other co-infections and other factors e.g. environment, cleaning, and disinfecting. Sapovirus vaccine should be used as a last resort. It is important to note that the effect of Sapovirus vaccine is still undocumented and the vaccine is difficult to handle because it requires (-70 degrees C freezer capacity). The Veterinary Diagnostic Service (VDS) lab in Manitoba is also very close to being able to offer Sapovirus testing (expected to be available in the next few months).

Atlantic Provinces

Dr. Dan Hurnik communicated that the Maritimes has undertaken a triplex PCR project that will include Sapovirus, Rotavirus and Coronaviruses (including Porcine Epidemic Diarrhea virus (PED) and Porcine Deltacoronavirus (PDCoV)).

Porcine Epidemic Diarrhea (PED) and Porcine Deltacoronavirus (PDCoV)

OAHN (Ontario)

Jessica Fox, Manager of Swine Health Ontario (SHO) reported to the OAHN swine network that there has been a recent increase in both PED and PDCoV detections in Ontario that began in Q1 2024. A total of 16 cases were reported to be detected in Q1 2023, whereas only 2 cases were reported in Q4 2023. SHO continues to lead all PED and PDCoV case investigations working with the herd veterinarians. **All cases are pursuing elimination efforts.**

The PED and PDCoV Tracking map is available at the Swine Health Ontario website and shows current and annual cases by county: <http://www.swinehealthontario.ca/Disease-Information/PED-PDCoV-Tracking-Map>.

Dr. Jordan Buchan from South West Veterinary Services in Ontario, reported that 1 federal plant in Ontario continues to sample trucks at the time of receiving for PED and PDCoV virus. This testing within the last 4 weeks has seen a jump in positive PDCoV results.

RAIZO (Quebec)

Dr. Roxann Hart reported that Quebec remained free from PED and PDVCoV cases in 2023 Q4.

CWSHIN (Western Provinces)

The province of Manitoba continues to hold a presumptive negative status for PED. This is a huge accomplishment for the Manitoba response efforts that were ongoing from 2021-2023.

CanSpotASF Surveillance Q4 Update

Below is the quarterly report on the CanSpotASF surveillance project with the main objectives to enhance early detection and therefore limit its spread if ASF is ever detected in Canada.

Federal and Provincial Abattoir CanSpotASF Testing- 2023 Quarter 4 (Oct 1 to Dec 31)

Province/Region	Number tested in federal abattoirs	Number tested in provincial abattoirs	Number of negative cases	Number of positive cases
Maritimes	N/A	2	2	0
Quebec	13	3	16	0
Ontario	42	7	49	0
Western Provinces	40	13	53	0

Laboratory CanSpotASF Testing- 2023 Quarter 4 (Oct 1 to Dec 31)

Province/Region	Number of negative cases	Number of positive cases
Maritimes	0	0
Quebec	17	0
Ontario	28	0
Western Provinces	11	0

Disclaimer: The methodology used to calculate these numbers may differ amongst the reporting networks. CanSpotASF is a voluntary program

It is important to note that all testing conducted to date has yielded negative ASF results and to communicate the importance of Canada's ability to increase enhanced passive surveillance for ASF to veterinarians and to producers.

Neurological Syndrome

CWSHIN (Western Provinces)

Dr. Jette Christensen reported that the CWSHIN veterinary clinical impression survey results for Q4 identified a signal on neurological syndromes. Upon further investigation, this data seemed to be reported primarily from veterinarians located in the province of Alberta.

Dr. Kurt Preugschas commented that from his perspective this signal was accurate, and he believed that it was related to a late fall. The clinical impression was an increase in *Strep. suis* cases with meningitis and one practice reported increased cases with neurological tremors.

Take Home Message: This is a fantastic example on further investigations that were initiated based on information that was collected on the routine veterinary clinical impression survey. Without this information and further analysis this trend would have never been noticed. This is a great example that showcases the importance of routine networking and sharing of swine health and surveillance information both provincially/regionally (through CWSHIN, RAIZO, OAHN and Atlantic) and then further across Canada (through CSHIN).

Well Wishes to CSHIN Contributors

The CSHIN team provided well wishes to both Dr. George Charbonneau (OAHN) and Dr. Claudia Gagné-Fortin (RAIZO). George has decided to retire from being a provincial network lead for CSHIN (fun fact George has been involved in CSHIN for its entire existence 18 years), and Claudia has decided to take on a new career opportunity and has been involved in CSHIN since 2018. On behalf of the CSHIN team we wish you both well on your future endeavours and would like to sincerely thank-you for all of your contributions over the years to the CSHIN network. We will miss you both!

The Canadian Pork Council, the Canadian Association of Swine Veterinarians and the Canadian Animal Health Surveillance System support the reporting activities of the Canadian Swine Health Intelligence Network. This information is a professional communication for swine veterinarians. The information was obtained from a survey of the clinical impressions of participating practising veterinarians with input from other swine health professionals. This information is not validated and may not reflect the entire clinical situation. Your professional judgment is required in the interpretation and use of it. It is the intent of CSHIN to improve the health of the national swine herd.

MEET YOUR CSHIN Q4 NETWORK TEAM

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Western Provinces CWSHIN Representation

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