

Influenza A Surveillance in Swine Virtual Session Notes

January 20, 2022

Agenda:

1. Introductions
2. Review Information Obtained from the Survey
3. Introductory Comments from the CCVO Dr. Mary-Jane Ireland
4. Roles and Responsibilities
5. Discussion of Identified Gaps
6. Next Steps/ Asks/ Closing Remarks

Attendance: 38 participants

Facilitators: Christa Arsenault, Theresa Burns, Doris Leung

Participants: Alex Zakartchouk, Andrea Osborn, Christian Klopfenstein, Claudia Gagne-Fortin, Christian Savard, Daniel Hurnik, Dave Svab, Egan Brockhoff, Gabriela Guigou, George Charbonneau, Gita Malik Dahiya, Glen Duizer, Hussein Keshwani, Jessica Fox, Jette Christensen, Jim Fairles, John Pasick, Jonathan Grondin, Kalena Statutiak, Kevin Vilaca, Kuldeep Chattham, Mao Dong Zhang, Maria Bravo, Maria Spinato, Marie-Claude Poulin, Mary Jane Ireland, Matheus Costa, Patricia Sorel, Rajiv Arora, Raphael Bertinotti, Ryan Tenburgen, Sevak Bhandary, Sonja Laurendeau, Steve McManus, Susan Detmer, and Tim Pasma

Welcome statement from Canada's Chief Veterinary Officer (CCVO)

- Two important topics: One health and vaccines
 - **One Health** for swine variant influenza infections
 - Low mortality for pigs
 - Uncommonly described event in humans but zoonotic →so needs national coordination for One Health
 - National coordination and effort of 3 cases in MB and 1 case in AB
 - **Vaccines for swine influenza**
 - Important tool for protection and control of disease
 - 6 commercially licensed vaccines last one licensed in 2012
 - Existing licenses may not be effective for current strain/ subtype; limited cross protection between different strains (quick re assortment); regional differences across Canada – need updated vaccines based on surveillance data
 - Canadian Center for Veterinary Biologics (CCVB) of the Canadian Food Inspection Agency (CFIA) – Licensing of veterinary biologics (e.g.: vaccine, in vitro diagnostic kits, etc.)

- National coordination is important for vaccine development; and need surveillance to allow for vaccine development. We know vaccine and effective vaccine reduces use of antimicrobials. **How do we get more pigs vaccinated? And how do we make vaccines mores effective?**

Part 1: Summary of Current State

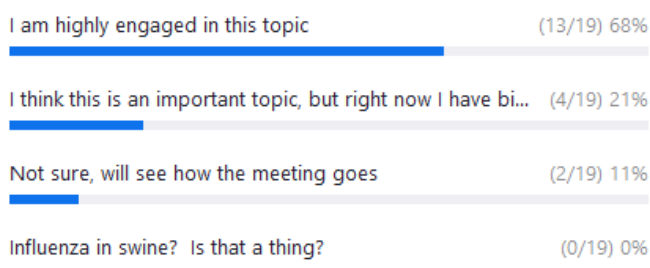
In-session Poll: How engaged are you in the topic of enhancing surveillance information about influenza in swine?

Introduction Poll Question

Poll | 1 question | 19 of 25 (76%) participated

1. How engaged are you in the topic of enhancing surveillance information about influenza in swine? (Single Choice) *

19/19 (100%) answered



Survey results

A summary of survey results was presented. The slide deck has been shared with attendees as a separate attachment.

Notes from participants re information products about influenza in swine

- **ON Report** – reports twice a year (in January and July)
 - Main stakeholders of report are industry
 - Takes about a week to summarize the information contained within this report
- **QC Report** - MAPAQ annual report for swine network
 - Make every quarter for swine influenza and produce annual table like this one
 - Takes about a day to get this summarized (doesn't include work of labs to get data)
 - Included in veterinary quarterly report for swine network – sent only to vets
 - Annual table is publicly available on our website
- **OFFLU Swine Report** – 3 participants indicated that have used this before
 - CEZD - We use OFFLU in the same manner as USDA reports, to identify important signals to report on.

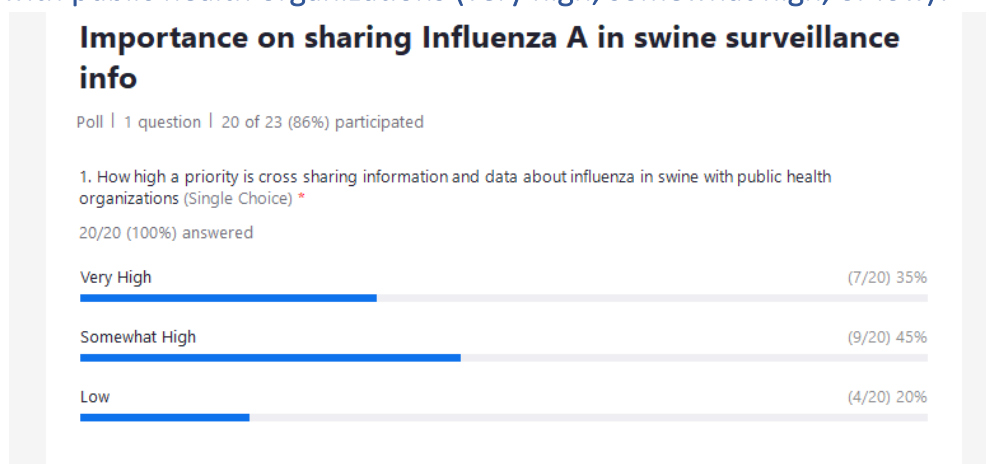
- We look at the USDA reports routinely as part of environmental scanning to produce the CEZD weekly reports.
 - Every time there is a negative covid test and when someone has influenza like illness, they are tested for influenza – usually are very sick
- **CSHIN Report** – available every quarter
 - Sent to vets/ producers
 - Good to have these updates from vets’ perspective – there is value with consumable information, high level view
 - CSHIN report is absolute go to for national information in terms of what’s happening in Canada especially from trading partners and national partners
 - Important to note that the CSHIN reports are focussed on information sharing and capturing the discussions that occur on this topic, but do not analyze raw data.
- **CPC** -- Why we need communication
 - Challenge arose as we found variant strains of influenza in Canada
 - Communication is important, challenges with creating concise report to calm people down – need to communicate that Influenza is not out of control in swine sector
 - Great deal of information (CEZD) – now more interest in public health → good news story of what’s happening in swine industry, should be told in multiple places
 - Get engaged with public health side
- **CEZD** – Report many types of influenzas
 - Use CWSHIN and CSHIN, share information at those calls
 - Human network discussion -more in depth than in report; so valuable for contextualizing information
 - Reports used → algorithm → hunt specific sources → which signals matter, what signals stakeholders care about

Notes from participants re One Health approach to influenza in swine

- Surveillance systems that cover multiple species are usually created with a “One Health” approach, but in reality, this is a one-way information flow system where surveillance in animals is reported into public health, but information doesn’t get reported back from public health into animal health surveillance systems.
- Why should we do surveillance?
 - Public health
 - Animal health
 - Maintaining public confidence in the food system
- Influenza strains found in pigs often come from humans – one trigger point from One Health -- may not be the only approach
- CFIA and Public Health Agency of Canada (PHAC) through national advisory on immunization → part of it was to understand vaccination practices of swine and poultry workers.
- CSHIN often reports on the importance of influenza vaccines in those that work with swine.
- Are autogenous vaccines ever used on humans?
 - Unsure

- Increasing the number of swine case isolates to the Winnipeg lab seems to be an important step to be able to make links to human strains
 - In the near past there were very few Québec swine strains arriving in Winnipeg. Québec is now (as of May 2021) pushing more strains to Winnipeg.
 - Not all provinces contribute swine influenza strains isolated to the Winnipeg lab. How can we create consistency and communicate more widely ongoing testing available through this lab?
- Importance of sharing human strains between provinces with National Center of Foreign Animal Disease (NCFAD) to get information on human side?

In-session Poll: How high a priority is cross sharing information and data about influenza in swine with public health organizations (very high, somewhat high, or low)?



Other comments?

- Finances and human resources needed to enhance surveillance moving forward
- First time in 20 years with a nationally lensed discussion on Influenza in swine surveillance.
- Blue Sky View, One Central (Funded) body that oversees Influenza on a national body. Its mandate would be to work for the industry but communicate with other sectors and public health. Its goal is to supply early detection on significant strains as well as communication with industry and do epi analysis. Regions would help feed into this organization.

Summary of Current Roles and Responsibilities

Attendees were asked to provide a summary of their current roles and responsibilities with regards to influenza in swine surveillance. Roles were defined as activities or tasks that an organization has historically performed as part of their work, while responsibilities were defined as more formally documented (e.g. in legislation, TORs, multiparty agreements).

Table 1. Overview of current roles and responsibilities for key organizations with regards to influenza surveillance in swine.

Organization	
CFIA	<p>Canadian Centre for Veterinary Biologics (CCVB): Responsibility: Licensing of veterinary biologics (e.g.: vaccine, in vitro diagnostic kits, etc.)</p> <p>National Centre for Foreign Animal Disease (NCFAD): Responsibility: Obtains swine influenza virus isolates or diagnostic specimens from the provinces (mainly Quebec, Ontario and Manitoba) and carries out virus isolation, whole genome sequencing and phylogenetic analysis. This activity is being funded by PHAC not CFIA. This information gets reported to OFFLU and variants of interest are reported to WHO. There may be some antigenic cartography with other members of OFFLU (UK).NCFAD:</p> <ul style="list-style-type: none"> ▪ Routinely receives PCR positive samples from QC, ON and MB (2020 – AB, SK via Dr S. Detmer ~200) ▪ Sequencing conducted directly on clinical specimens/isolates ▪ Sequence analysis, virus isolation and antigenic characterisation on divergent strains ▪ Phylogenetic analysis and reports issued when requested ▪ Member of the OFFLU global swine influenza technical expert working group <ul style="list-style-type: none"> ○ Shares biannually sequence data and strains (if required) to WHO Global Influenza Surveillance Network (GISN) for influenza vaccine virus selection ▪ Collaborates with PHAC on “variant” case investigations ▪ Production of reference antiserum for antigenic characterisation <p>Disease response:</p> <ul style="list-style-type: none"> ▪ When CFIA is notified of an animal health incident for which the roles are unclear, the role of CFIA and other partners would be evaluated using the “Decision-analysis tool for the characterization of CFIA involvement and role in animal health and zoonotic events” (oct. 2020, RDIMS # 5911954). ▪ For the 2009 AB pH1N1 case (emerging disease/zoonotic potential unclear), ▪ CFIA a “CFIA collaborator”. ▪ We have in the past initiated control measures (movement restrictions; diagnostics) on swine farms where a potentially zoonotic emerging strain of Influenza A was found (ie pH1N1 in Alberta). ▪ There may be an obligation on the part of CFIA to report to OIE if and only it meets the provisions of very specific notification criteria of an Emerging Disease as per the relevant OIE terrestrial code chapter.
AAFC	

PHAC	Provides funding support to NCFAD for laboratory analysis Works in collaboration with the swine industry and the animal health authorities on prevention and preparedness to the detection of a human pandemic strain coming from swine
Provincial government (examples)	General: Funding swine flu testing for surveillance, organizing surveillance programs with provincial laboratories, link with provincial health authorities on a OneHealth perspective, working in collaboration with the swine industry and the health authorities on prevention and preparedness to the detection of a human pandemic strain coming from swine
	<p>PEI</p> <ul style="list-style-type: none"> ▪ CVO reviews all applications to import swine into the province and ensures testing for several diseases, including influenza, have been performed and are negative. ▪ If swine influenza was diagnosed on PEI, it is considered a “named” disease and so there would be some discussion between the office of the Provincial Veterinarian, Public health, and the herd veterinarian as to whether a response was required. ▪ Accept PID applications and enter premises housing swine in our Premise ID system. Use this database for communicating with swine owners when deemed appropriate. ▪ Keep veterinary community up to date on emerging concerns regarding swine health and what their reporting obligations are. <p>ON</p> <ul style="list-style-type: none"> ▪ OMAFRA produces an annual report on influenza in swine in Ontario. ▪ Under the authority of the Animal Health Act, OMAFRA has a mandate to protect animal health and take action on animal diseases that may affect human health. Therefore, influenza in all animal species is designated as an immediately notifiable hazard which requires all veterinary laboratories in Ontario to notify OMAFRA when the virus is identified by a laboratory test. ▪ If a case of influenza virus from swine is identified in a person, the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) will assist the Ontario Ministry of Health and the federal Public Health Agency of Canada with an investigation.
CPC	Role: Assistance and coordination (where applicable) of national and regional influenza control and awareness plans and programs. Communication to industry, government, media and the public on influenza related issues. Support CSHIN efforts pertaining to Influenza. Represent its members in matters of public, animal and One Health concerns.
CASV	Role: Disseminating information to members, promoting existing programs; contributing to the development of national programs
CAHSS	Role: Providing epi and tech writing capacity to bring together data and info and share reports, FPTI networking support
CSHIN	Role: Communicating Influenza A in swine information reported by the regional networks

Regional swine networks	<p>CWSHIN: collate, analyse, present existing data from PDS, VDS and WCVM-D. Provide a forum for discussion among vets and other swine health experts in the region.</p> <p>RAIZO: organizing and promoting surveillance programs with provincial laboratories and government, compiling and sharing surveillance data</p>
Provincial and regional Laboratories	<p>LSA (Québec) - All influenza positive tests in Ontario are immediately notifiable. Providing free PCR testing for swine flu within the Swine flu surveillance program. Collaboration with NCFAD for sequencing. Collaboration with the Quebec swine industry for the provincial vaccine project by sharing sequences and sending samples for virus isolation to Susan Detmer.</p> <p>AHL- Responsibility: All influenza positive tests in Ontario are immediately notifiable – at 9AM and 3PM daily, an auto email is generated and sent to OMAFRA for the results that have been finalized and positive</p> <p>PDS- Responsibility- report to SK government when results are positive. Role- share influenza test number and results with CWSHIN network each quarter</p>
Researchers	
Others?	

Part 2: Identifying Gaps and the Strategies that Could be Used to Enhance Canadian Influenza in Swine Surveillance

The first part to this session was geared at identifying the gaps that exist currently for the topic of Canadian swine influenza surveillance. Participants were asked to add identified gaps by use of Google Jamboard technology. These identified gaps by participants were then sorted into common themes. The themes that were identified as part of this exercise included the following:

Theme One- Consistency of Reporting

- There is a need for being able to clearly understand the differences of testing methodologies being used for influenza in swine surveillance across the country.
- There is a need for being able to clearly understand the differences of how results are reported from lab to lab, in different regions and across the country.
- Potential need for a centralized group that can compile information from all of the regions and provinces across the country.
- Consistency is needed in data formatting to aid with a national analysis.

Theme Two- Confidentiality and Data Sharing

- There is a need to abide by confidentiality that can cause issues with the ability to further share data/information.
- There is a need to link surveillance to their location e.g. specific premises/regions. This allows for the highest level of information that could further be applied to decision making. This was suggested as a very important epidemiological link.
- Concerns for protecting the privacy of surveillance sample submitters.
- Influenza in swine surveillance information is often shared at the regional level, but becomes more difficult to share at the national level.

Theme Three- Laboratory and Epidemiological Needs- Utilizing Existing Data Better

- A gap was identified that there can be a lack of volume when looking for new strains at the individual lab. This is where coordination between labs becomes vitally important.
- Availability of swine influenza isolate sequences is lacking for some labs.
- There is a need for more information from practitioners detailing the disease severity in order to link strains identified to their overall pathogenicity.

Theme Four- Lack of Efficacious Commercially Available Influenza Vaccines and Issues with the Autogenous Vaccine Approval Process

- Zero interest for pharmaceutical companies to want to change and produce different Influenza vaccines for swine. This is due to a very small market in Canada and the overall associated costs to pharmaceuticals to do this.
- The commercial vaccines that exist for Influenza in swine in most cases are not efficacious/sufficient.
- Autogenous vaccines are often used to supplement the fact that Canada does not have access to efficacious influenza vaccines for swine.
- There is a legislative requirement that isolates used in autogenous vaccines must be re-isolated every 2 years. The use of any one autogenous vaccine cannot be longer than this 2-year time limit. Participants understood the importance of an expiry date for autogenous vaccines, but mentioned the need to investigate into expanding this 2-year limit. U.S.A is using a 5-year expiry limit now.
- There is a need to better understand the regulations that govern the use of autogenous vaccines by participants. This was suggested to be unclear.
- There is a need for national sharing of autogenous vaccine efficacy results. Currently done at the regional or individual farm levels.

Theme Five- Importance for Two-Way Sharing of Influenza surveillance information

- Participants noted the importance for ensuring that there is two-way sharing of Influenza surveillance information between animal health and public health.

- Currently this flow was classified to be one-way sharing with animal health sharing surveillance with public health only.

Surveillance Linked to Actions

The second part to this session was geared at answering a few important questions on why the group is focused on surveillance and how this surveillance is linked to specific actions.

The participants documented the following reasons of why the group is focussed on surveillance:

- Identification of emergent strains of Influenza A
- Ability to document zoonotic links
- Ability to document circulating strains. This information is further used to develop autogenous vaccines.
- Surveillance is the interface between poultry, swine and human influenza strains and provides the much-needed interspecies connectivity AND animal health information.
- Surveillance allows for early warning to allow veterinarians, pathologists and producers to be proactive in detecting the arrival of new strains/viruses.
- Social contract

All participants agreed that the reasons to conduct surveillance must match with specific actions that will be taken based on this surveillance information.

The second part to this session also set out to develop some potential strategies/solutions to two of the main themes on gaps that were identified in part one of this session.

Strategies and Solutions

Strategies/Solutions Captured for Theme Four- Lack of Efficacious Commercially Available Influenza Vaccines and Issues with the Autogenous Vaccine Approval Process:

- HA gene needs to be sequenced and shared for the purposes of vaccine production. Would be nice if public health would also support this strategy.
- Provide clarity to the process that exists for autogenous/regional vaccine production/usage.
- Work with CFIA's Veterinary biologics to see if the 2-year expiry date for autogenous vaccine use could be extended.
- Swine industry members to ensure that their needs of having an efficacious commercially available vaccine are well known to pharmaceutical companies operating in Canada. Would be best to do this through a national organization e.g. Canadian Pork Producers (CPC), Canadian Association of Swine Veterinarians (CASV) or Canadian Veterinary Medical Association (CVMA).

Strategies/Solutions Captured for Theme Three- Laboratory and Epidemiological Needs- Utilizing Existing Data Better:

- Work with existing data platforms rather than creating new ones.

- Need to ensure that data is analyzed. In order to do this resources and budget must be dedicated to this task.
- Need to consider incentives to all involved and communicate the importance of contributing to surveillance initiatives.
- Leverage other reports that are already being created on a regular basis e.g. Flu Watch for human data, OFFLU report, OMAFRA's Influenza in swine report summary, MAPAQ Influenza in swine report summary, others?
- Need to report on analyzed data and combine information captured in the above reports nationally.

Conclusions

All participants agreed that the reasons to conduct surveillance must match with specific actions that will be taken based on this surveillance information.

This session was deemed to be a success by the participants. Unfortunately, time ran short in the session to flush out more on the “who” and “how” some of the above documented strategies or solutions could be implemented. It is recommended that through CSHIN and CAHSS network meetings that this could be further fleshed out and determined.

On behalf of CSHIN, CAHSS and CPC, we would like to thank all of the participants that took the time to participate in this session and who prioritize the topic of swine influenza surveillance.

Acknowledgement of Support

Support for the influenza in swine planning activities is provided by the Canadian Pork Council (CPC), the Canadian Association of Swine Veterinarians (CASV) and the Canadian Animal Health Surveillance System (CAHSS).

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