National Pork Board Perspective & Response to Influenza

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Activities and Focus on Swine Influenza
Prior to Summer 2012
Influenza Activities Prior to 2012

• Prior to 2009, collaborative work was ongoing with CDC, AASV, USDA and NPB to develop a pilot for swine influenza surveillance
  – No public, coordinated plan existed at that time

• The identification of the influenza A (H1N1) pdm09 virus accelerated that surveillance program implementation
Swine Influenza Surveillance Plan

• Voluntary Program / Anonymous

• Objectives
  – Monitor genetic evolution and ecology
  – Provide isolates for research activities
  – Provide isolates for progressive development of
    • Diagnostic reagents
    • Diagnostic assays
    • Vaccines
Animal and Human Health Objectives

- Public health link
  - Further research
  - Sensitize the human health surveillance network in the state
  - Collaborate with animal health to ensure coordinated risk communication – when necessary
How Does the Plan Work?

- Surveillance streams
  - Case compatible accessions to diagnostic laboratories
  - First point of contact or commingling events
  - Swine linked to a human case of SIV
How Are Results Reported?

• Results are reported into the USDA Surveillance unit by NAHLN laboratories as anonymous data or traceable data
• An isolate of the virus is placed in the NVSL repository
• Selected virus isolates are sequenced and entered in GenBank
• Public health/research/industry/others can monitor GenBank for sequences of interest
Influenza Surveillance Program Data

- Thirty-seven NAHLN Laboratories are testing swine samples for SIV surveillance

- For FY2011 and 2012, more than 4,400 accessions have been tested
Surveillance Data

USDA SIV Surveillance Program Isolation and Characterization Activities - 10/1/2009-1/31/2013

- 23953 Samples (not graphed)
- 6619 Accessions
- 2439 Positive Accessions
- 1121 Accessions with viral isolates
- 1647 Accessions subtyped

Slide courtesy of John Korslund, USDA
Surveillance Data

USDA SIV Surveillance - 10/1/2009- 1/31/2013

Percentage of Each Subtype by Month

Slide courtesy of Dave Pyburn, USDA
Surveillance Data

USDA SIV Surveillance Program - Subtypes Identified by Month - 10/1/2009-01/31/2013

Slide courtesy of John Korslund, USDA
Pork Industry Outreach

- Brochure and newsletter sent to all 66,000 producers as of Nov. 1, 2010
- Sent to all state veterinarians and public health counterparts
- Also available on www.pork.org
- Coincided with increase in accession submissions in November 2010
Swine Veterinary Community Outreach

- Brochure sent to 1,350 U.S. AASV members and students
Current and Future Focus on Influenza
Influenza A (H3N2) Variant Virus

Influenza viruses that normally circulate in pigs are called “variant” viruses when they are found in people. Influenza A H3N2 variant viruses (also known as “H3N2v” viruses) with the matrix (M) gene from the 2009 H1N1 pandemic virus were first detected in people in July 2011. The viruses were first identified in U.S. pigs in 2010. From July – December 2011, 12 cases of H3N2v infection were detected in the United States (Indiana, Iowa, Maine, Pennsylvania, and West Virginia). From January to September 2012, 307 cases of H3N2v infection across 11 states were detected. These infections were mostly associated with prolonged exposure to pigs at agricultural fairs. Limited human-to-human
When Did This Start?

• Human infections:
  – Between August and December 2011, 12 U.S. residents were found to be infected with H3N2v
  – In April 2012, a case of H3N2v was detected in a child
When Did This Start?

- Human infections:
  - From July to September 2012, 307 cases of H3N2v infection across 11 states were detected
  - These human infections were mostly associated with exhibitors that were in close contact with pigs at agricultural fairs
When Did This Start?

- Pigs:
  - The USDA, in cooperation with states and industry, conducts voluntary surveillance for swine influenza virus in the US
  - The agency first identified this unique strain of H3N2 virus in samples collected from swine in late 2010.
  - From October 1, 2011 to July 31, 2012, 57 cases tested to date were positive for this strain of H3N2
What Did This Mean?

• Increased level of attention by public health officials
  – Possible that this virus was more transmissible from pigs to humans than other swine influenza viruses
  – Because influenza viruses are always changing it is possible that the H3N2v could change and begin to spread more easily from person to person
  – Studies conducted by CDC indicated that children younger than 10 years old have little to no immunity against H3N2v virus
National Pork Board Response

• 2012 experience different than 2009

• Show pig population is inherently different from commercial production

• Risk factors are different but control efforts can be applied universally
National Pork Board Response

• Re-activated the Crisis Management Team
  – Initially set up in 2009 for dealing with H1N1
  – Internal to NPB
  – Prioritize tasks for response
NPB Activities and Resources

• Worked closely with other stakeholders and partners on information needs and messaging
  – USDA
  – CDC
  – AASV
  – State pork associations
  – State vets/boards of animal health
  – State public health departments
  – Extension educators
  – Company communicators
  – International partners/USMEF
NPB Activities and Resources

• Talking points to state pork associations, company communicators, extension, fairs, etc.

• “Influenza Resources” at [www.pork.org/flu](http://www.pork.org/flu)
Understanding Influenza Naming

• November 2011 – NPB, NPPC and AASV met with CDC to discuss influenza terminology
• December 2011 – International health agencies (WHO, FAO and OIE) met to discuss influenza terminology
• January 2012 – International and national (CDC) health agencies announced a new virus naming convention
Standardization of terminology for the variant A (H3N2) virus recently infecting humans

Joint announcement of FAO, OIE and WHO

23 December 2011

FAO, OIE and WHO continue working closely together to address influenza issues related to public health and animal health.

Since July 2011, twelve human cases of infection with a variant influenza A(H3N2) virus have been detected in the United States. To date, no report has been received from elsewhere in the world. This virus has different virological characteristics from current circulating seasonal influenza viruses in humans, and has a new gene constellation: 7 genes from the triple reassortant A(H3N2) viruses known to have been circulating in pigs in the North America and the M gene from an A(H1N1) pdm09 virus, a seasonal virus currently circulating in humans.

In order to improve communications and avoid confusion, FAO, OIE and WHO have established a working group of experts to standardize the terminology for variant influenza viruses. The joint recommendation for the above mentioned A(H3N2) virus is: A(H3N2)v, where “v” stands for “variant”.

An example of use of the terminology:

- Sporadic human cases of infection with a variant influenza A(H3N2) virus A(H3N2)v have been reported in the USA. The A(H3N2)v virus is different from seasonal viruses currently circulating in humans.

For more information, please contact FAO at GLEWS@fao.org, OIE at scientific.dept@oie.int and WHO at gisrs-whohq@who.int.
Understanding influenza naming

Key Points

1. Influenza (I) viruses have circulated in humans and animals (birds, pigs, cats, dogs, horses, etc.) for centuries. Some will infect only one type of animal. Others have more ability to move between species but may cause different signs of illness in different animals. These viruses are very adaptable and can identify the presence of other viruses and create new viruses changing how well they spread and their ability to cause disease.

2. Influenza type A

One strain of influenza virus is called influenza A. It contains genetic materials that it has picked up from influenza viruses infecting birds, pigs, and people. It circulates in susceptible pig herds and can cause high fever, lethargy, and respiratory symptoms (coughing and sneezing). Most influenza A viruses in pigs are different from influenza A viruses that infect people. Most of the time, these pig influenza viruses stay in pigs and these people influenza viruses stay in people. Typically, influenza viruses can spread from people infected from pigs to pigs.

3. Nomenclature Challenges

Sometimes people get confused about what they should call influenza viruses in people and in pigs. To ensure accurate naming, the World Health Organization (WHO), in collaboration with other federal and international health organizations, introduced a standardized naming convention. Influenza viruses that normally circulate in pigs and may infect humans will be referred to as "variant influenza viruses" designated by a "v." "Variant" designates the virus as one that varies from infecting only the species that is its usual host.

4. Proper H3N2 Virus Naming

U.S. Centers for Disease Control (CDC) officials say that when influenza A (H3N2) viruses are found in swine, they should be called "swine influenza A (H3N2)" viruses. Another way of saying this is "swine H3N2." If human infections with these viruses occur, these viruses are then called "variant" viruses as designated by the WHO because they are infecting a different species and are called "influenza A (H3N2)v" or simply "H3N2v".

Calling a pig influenza virus that contains genes from birds, pigs, and people influenza viruses and infects people "swine flu" is misleading because it refers to the virus being in pigs - swine H3N2. When that virus crosses over and infects people, the accurate way to refer to it is "variant H3N2v" or "H3N2v".

This new standardized naming convention will allow the media to use more accurate terminology to communicate to consumers and will help reinforce to consumers that you cannot get the flu from eating or handling pork and pork products.
NPB Activities and Resources

- Exhibitors currently have available a “A Champions Guide to Youth Swine Exhibition: Biosecurity and Your Pig Project” – Outlines key measure to maintaining pig/herd health
NPB Activities and Resources

• Meeting of Influenza Working Group for Fairs and Exhibitions, Oct 9, 2012

Objective:

– Identification of potential risk factors for and measures to mitigate interspecies transfer of influenza virus for commercial swine production and swine exhibitions/fairs

– Identification of influenza risk management recommendations for consideration for commercial swine production and swine exhibitions/fairs
NPB Activities and Resources

• Participated in the *Swine Exhibitions Zoonotic Influenza Working Group* that has developed a set of measures to minimize influenza virus transmission between swine, from people to swine, and from swine to people at swine exhibitions
Committee Activities

• Producer/ Public Health and Workplace Safety Research - Tactics for 2013
  – Interspecies transfer
  – Current/new interventions
  – Epidemiology of influenza virus in show pigs/exhibitors

• Managing emerging zoonotic diseases and public health challenges
In Summary...

• Influenza is a common disease of swine with human health impact

• Producers want to protect both animal and public health

• Producer support continued research for influenza: animal and human applications
In Summary...

• There is a continued focus on improving swine health and monitoring for influenza

• Surveillance can benefit both animal and human health

• Continued engagement with key stakeholders in all aspects of production and health
Thank you

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