

**National Assembly of State Animal Health Officials (NASAHO)  
National Association of State Public Health Veterinarians (NASPHV)**

**Measures to Minimize Influenza Transmission at Swine Exhibitions, 2016**

It is estimated that 150 million people visit agricultural fairs each year in North America. Agricultural exhibitions provide meaningful opportunities for the public to learn about animal agriculture, observe animal behavior, and experience the human-animal bond. Equally important, livestock shows are an important learning opportunity for thousands of 4-H and FFA youth across the United States. For these youth, exhibiting at their county or state fair is the culmination of many months of work dedicated to the care and training of their animals.

Influenza can spread whenever animals or people congregate, and fairs are no exception. While rare, influenza A viruses can spread from people to pigs and from pigs to people. When a person is infected with a swine origin influenza A virus, it is termed a variant virus infection, and denoted with a “v” after the subtype (e.g. H3N2v).<sup>1</sup> (Note that the same virus when found in pigs does not carry the “v” denotation.) In the past 6 years, human cases of influenza A H1N1v, H1N2v, and particularly, H3N2v have been associated with swine exhibitions. Between 2011 and September 2016, 364 human H3N2v cases were reported from 14 states.<sup>2</sup> The largest outbreak occurred in 2012 when a total of 309 human cases of H3N2v flu were identified, including 16 hospitalizations and one death.<sup>3</sup> The majority of cases were exhibitors and others in close contact with pigs at agricultural fairs.

The Swine Exhibitions Zoonotic Influenza Working Group was assembled in December 2012 to develop a set of measures to minimize influenza virus transmission between swine, and bidirectionally between people and swine, at swine exhibitions. The group reviewed the document again in 2014 and 2015, and minor updates were made. This year, because of important new data that has become available regarding the dynamics of influenza transmission between swine at exhibitions, measures for prevention have been strengthened and augmented.

Previous surveillance efforts have established that the prevalence of influenza A-infected swine detectable at the end of agricultural fairs is high, commonly greater than 60%.<sup>4,5</sup> However, the prevalence of influenza-infected swine entering fairs was previously unknown. Furthermore, how the virus was likely transmitted between swine at fairs was unknown; swine-to-swine transmission was hypothesized to be mainly “pen-to-pen.” To answer these questions, in July and August of 2014, swine entering nine agricultural fairs in Indiana and Ohio were swabbed by Bowman et al., using a snout-wipe method,<sup>6</sup> at entry, and every day of the fair. They found that the frequency of influenza A virus isolation from exhibition swine arriving at fairs in the Midwest was low at 1.5% (53/3547); therefore control efforts should focus on limiting spread *during* swine exhibitions rather than attempting to prevent entry of influenza-infected swine.<sup>7</sup> Secondly, Bowman and his team found that corralling pigs for weighing, tagging and other activities, with contamination of chutes and other equipment, likely enhanced spread of influenza at some of the exhibitions, suggesting that cleaning and disinfection of surfaces and equipment during an exhibition may be very important.<sup>7</sup> Lastly, they corroborated other studies that found that the prevalence of influenza A-positive pigs increases substantially at 72 hours.<sup>8</sup> This finding supports the recommendation that exhibition swine should be kept on the exhibition grounds no longer than 72 hours.

The suggested measures in this document are organized to address activities before, during, and after swine exhibitions. Measures are further divided into actions that may minimize risk to swine and risk to humans, although there is significant overlap between those two groups. It may not be possible to prevent all transmission of influenza viruses at swine exhibitions. The measures described here are offered for careful consideration depending on the needs of the specific exhibition and can be implemented in part or in total. They are not intended to supersede local, state, or federal regulations. These measures were formulated based on current evidence and the collective knowledge of the Swine Exhibitions Zoonotic Influenza Working Group. It is expected that this document will be updated regularly as additional information becomes available.

### **Measures to Consider BEFORE the Exhibition**

State animal health officials should develop a testing protocol for use at exhibitions when there are swine that have clinical signs consistent with influenza, and establish a method to distribute any test results to the appropriate animal health and public health agencies. Likewise, state or local public health officials should coordinate with exhibition organizers and any youth agriculture organizations associated with the exhibition to develop a testing protocol for exhibitors who develop influenza-like-illness during the exhibition.

Each state should establish and maintain a communications network that includes the state animal health agency, state and local public health officials, exhibition organizers and managers, veterinarians, Cooperative Extension Service educators, vocational agriculture instructors and other stakeholders.

### **Swine Measures**

#### **For Exhibition Organizers**

- Limit the time pigs are congregated, co-mingled, and held at an exhibition:
  - Exhibition swine should be kept on the exhibition grounds no longer than 72 hours.
  - Discourage “holdover pigs” that are held on the exhibition grounds and exhibited in additional shows.
  - Release pigs from the exhibition grounds as soon as possible following their respective show(s).
  - If offering both terminal pig and breeding swine shows, schedule the terminal show after the breeding swine show or schedule a break between shows. Use this break to clean and disinfect the facility.
  - Locate longer-term swine exhibits (i.e. big boars, birthing center animals, display exhibits of pigs) away from areas where competition swine are housed.
- Clean and disinfect gates, chutes, sort panels, and any equipment that will be used during weighing and identification procedures.
  - Use approved disinfectants that are safe for human and animal contact (<https://www.epa.gov/sites/production/files/2015-09/documents/list-m-avianflu.pdf>).
  - Establish a protocol and prepare for cleaning and disinfection of chutes and equipment between groups of animals on entry day and during the fair: <http://www.cfsph.iastate.edu/Disinfection/index.php>
- Establish a relationship with a veterinarian who will be present or on call for the duration of the

exhibition. The veterinarian will be responsible for monitoring the animals for clinical signs, evaluating sick animals and taking steps as warranted to ensure that ill swine are removed from the exhibition area and isolated.

- The designated veterinarian should consider testing swine with signs consistent with influenza.
  - Influenza test results should be shared with animal health and public health officials.
- Establish a protocol to immediately remove sick swine from the exhibition area.
- Establish a temporary isolation area for sick pigs on or near the exhibition or fairgrounds.
- Maintain records of individual swine identification and source farms to enhance the speed and accuracy of an animal disease investigation associated with the exhibition.

### **For Exhibitors**

- Consult a veterinarian to help outline and implement applicable biosecurity and swine health practices at home.
- Become familiar with the clinical signs of influenza and other illnesses in pigs (off feed, lethargic, fever, nasal discharge, and cough).
- Seek veterinary assistance if a pig becomes sick.
- Understand the risks to both humans and animals of taking a sick pig to a show. Sick pigs and sick people need to stay home so they do not risk infecting other pigs or people.
- Ask the exhibition organizer about any specific actions that may be required if a pig becomes sick at the show.
- Clean and disinfect all tack, feeders, waterers, and show supplies before bringing them to the fair.
- Allow at least 7 days of “down time” (i.e. on-farm quarantine) after returning from a previous exhibition before showing a pig or pen-mates, to reduce the risk of spreading influenza.
- Discuss the use of swine influenza vaccines with a veterinarian and check the exhibition rules for any requirements. Vaccines are available commercially and may be used prior to an exhibition as long as slaughter withdrawal times are observed as appropriate. Swine vaccinated for influenza may be less likely to become ill, and if they become sick, they may be contagious for a shorter time period.

### **Human Measures**

It is recommended by the Centers for Disease Control and Prevention (CDC) that everyone 6 months of age or older be vaccinated annually against seasonal influenza. Seasonal influenza vaccine is usually distributed in late summer and early fall, and people should be vaccinated by the end of October, if possible.<sup>9</sup>

Most people who get the flu will have mild illness, will not need medical care or antiviral drugs, and will recover in less than two weeks. Some people, however, are more likely to experience complications from influenza that can result in hospitalization and sometimes death. People at high risk for developing severe complications include children younger than 5 years of age, people 65 years of age and older, pregnant women, and people with certain long-term health conditions (such as asthma, diabetes, heart disease, chronic respiratory disease, weakened immune systems, and neurological or neurodevelopmental conditions).<sup>10</sup> People in these high risk groups should avoid contact with infected

swine.

### **For Exhibition Organizers**

- Collect sufficient contact information (i.e. email addresses and cell phone numbers) from all exhibitors to be able to rapidly and reliably communicate procedural changes, requests for information, or incidents associated with the exhibition.
- Collect contact information for local or state public health officials to ensure they can be reached if they are needed during an event.
- Locate food service areas away from animal barns.
- Host non-animal-related activities (i.e. dances, pizza parties, etc.) in locations other than animal barns.
- Ensure that handwashing stations with running water, soap and paper towels will be available near the exit of the exhibition area.

### **For Exhibitors**

- Sick people can be infectious to pigs and other people. People with influenza-like illness should stay away from pigs and other people until they are fever-free for at least 24 hours without the use of fever-reducing medication.<sup>11</sup>

## **Measures to Consider DURING the Exhibition**

### **Swine Measures**

#### **For Exhibition Organizers**

- Host a meeting with exhibitors and their family members at the start of the exhibition to:
  - Review exhibition regulations
  - Provide contact information for the designated exhibition veterinarian
  - Review animal disease control measures to be utilized during the exhibition, including the daily monitoring of the animals during the show
  - Provide instructions on how to report animal illnesses and explain any specific actions that may be required if a pig becomes sick at the show
  - Provide instructions on actions to take if exhibitors or family members develop influenza-like illness
- Clean and disinfect gates, chutes, sort panels, and any equipment used during weighing and identification procedures frequently, ideally between each group of pigs.
  - For information on how to use disinfectants:  
<http://www.cfsph.iastate.edu/Disinfection/index.php>.
  - For disinfectants that are approved and safe for human and animal contact:  
<https://www.epa.gov/sites/production/files/2015-09/documents/list-m-avianflu.pdf>
  - Keep the environment as dry as possible to avoid animal injury.

## **For Exhibitors**

- Avoid sharing tack with other exhibitors, but if you must, clean and disinfect in-between uses.
- Observe swine regularly for signs of influenza-like illness (e.g. off feed, lethargic, fever, nasal discharge, and cough).
  - Report any influenza-like illness to the designated exhibition veterinarian or the appropriate exhibition staff so the pig can be evaluated right away.
  - Swine deemed to be ill should be removed from the exhibition immediately or moved to a temporary isolation area on or near the exhibition or fairgrounds.
- Use precautions when caring for sick pigs to minimize the opportunity for disease transmission to other swine or people; for example:
  - Limit the number of people caring for sick pigs
  - Wash hands thoroughly with soap and water after working with sick pigs
  - Avoid moving bedding and other materials from sick pig areas into areas where healthy pigs are kept
  - Clean and disinfect equipment

## **Human Measures**

### **For Exhibition Organizers**

- Post informational signage at the entrance of the exhibition area that includes the following messages:<sup>12</sup>
  - People and animals can share germs
  - Wash your hands with soap and water when you leave the barn
  - No food or drink in animal areas
  - Remove pacifiers and avoid hand-to-mouth contact
  - People 65 years and older, children younger than 5 years of age, pregnant women, and people with chronic health conditions or a weak immune system are at higher risk for serious illness and should take extra care around animals.
- Provide conveniently located hand washing stations accessible to exhibitors and visitors near the exit of the exhibition area. Keep stocked with soap and paper towels.
- Discourage sleeping in the animal areas.
- When there is an outbreak of influenza-like-illness among pigs or people at an exhibition, animal health and public health officials should be notified immediately. Public health measures to consider include:
  - Public health and animal health officials should work together to investigate the source of illness and take appropriate actions to prevent transmission.
  - Public health officials should facilitate human testing for influenza, and attempt to identify additional human cases.
  - People who have influenza-like illness should be advised to leave the exhibition and seek medical care. They should inform their health care provider about their exposure to swine, and should be tested for influenza with guidance from public health. Special testing is required to identify variant influenza infections.
  - People at high risk for developing severe complications from influenza, as listed previously,

- should be discouraged from entering swine areas. Additional signage should be posted warning people about the occurrence of influenza in people and/or pigs, including information about increased risk of serious illness for persons in high-risk groups.
- When the situation warrants, public and animal health officials should consider limiting entrance to the exhibition area to exhibitors and their families.

### **Measures to Consider AFTER the Exhibition**

#### **Swine Measures**

##### **For Exhibit Organizers**

- Clean and disinfect the swine exhibition areas, including chutes and equipment.

##### **For Exhibitors**

- Isolate and observe animals daily for illness after returning home and before allowing contact with other animals
  - The isolation/observation period for clinical signs of influenza should be no fewer than 7 days.
  - Clean and disinfect tack, waterers, feeders, show equipment, clothing, shoes, and vehicles/trailers that were at the exhibition.
  - Consult a veterinarian if pigs become ill.

#### **Human Measures**

##### **For Exhibitors**

- Consult a health care provider and your state or local public health department if exhibitors or family members develop influenza-like illness.
  - Inform the health care provider of exposure to swine.
  - Persons with influenza-like-illness should be tested for influenza virus with guidance from public health. Special testing is required to identify variant influenza infections.
  - Ill people should avoid contact with swine and stay away from other people until they are fever-free for at least 24 hours without the use of fever-reducing medications.

## **References**

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12. National Association of State Public Health Veterinarians website: The Compendium of Measures to Prevent Disease Associated with Animals in Public Settings, 2013. Retrieved October 25, 2016, from <http://nasphv.org/documentsCompendiumAnimals.htm>

## **Other Resources**

- National Pork Board Website: A Champion's Guide to Youth Swine Exhibition: Biosecurity and Your Pig Project, 2013. Retrieved October 25, 2016. from <http://porkcdn.s3.amazonaws.com/sites/all/files/documents/NPB%20A%20Champions%20Guide%20to%20Youth%20Swine%20Exhibition.pdf>

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