

Questions & Answers: Influenza A Virus in Swine (IAV-S)

Type A influenza viruses can infect swine and cause a respiratory disease called Influenza A Virus in Swine (IAV-S). Influenza is present at low levels in pigs throughout the world and regularly causes disease outbreaks. It typically causes only minor clinical signs of illness. IAV-S is not a disease that needs to be reported to the World Organization for Animal Health (OIE), nor is it a regulated disease in the United States.

There are many different subtypes of influenza A viruses. These subtypes differ and are classified based on a combination of two groups of proteins on the surface of the influenza A virus: hemagglutinin or “H” proteins, of which there are 17 (H1-H17), and neuraminidase or “N” proteins, of which there are 10 (N1-N10). Many different combinations of “H” and “N” proteins are possible. Each combination is considered a different subtype and each subtype can be further divided into many distinct strains.

Like human influenza viruses, there are multiple subtypes and strains of influenza in swine. There are currently three types of influenza A viruses commonly found in swine in the United States: H1N1, H1N2, and H3N2. Most influenza A viruses that affect swine are different from the ones that affect people. However, pigs may occasionally become infected by influenza viruses found in people or birds. This can potentially mix the viruses and create new and very different viruses that might be able to spread more easily to people from swine. It is important to remember that people cannot contract influenza from eating properly prepared pork.

IAV-S Surveillance

The U.S. Department of Agriculture (USDA) offers a voluntary influenza A virus in swine surveillance program. The cooperative program with State and industry swine health partners began in 2009 and was helpful when dealing with the pandemic H1N1 outbreak later that year.

Q. Why is it important to monitor IAV-S?

A. Over the years, various influenza A viruses have emerged in swine. Because these viruses can change over time and even affect other species—including people—it is important to monitor influenza in all species. This allows scientists to study any changes that appear, including those that could cause a vaccine to become ineffective. There’s also a benefit to human health, as public health officials can be alerted early if there are any changes that could potentially cause the virus to affect people.

Q. How does USDA monitor IAV-S?

A. USDA monitors influenza viruses in the U.S. swine population by looking for changes in how these viruses are made up over time. This knowledge helps animal and human health experts to update testing methods, anticipate new vaccine requirements, and develop disease response plans.

Q. How does the surveillance program work?

A. The program tests samples gathered in three ways:

1. Samples from sick swine that are routinely sent to the National Animal Health Laboratory Network by veterinarians (accounts for 99 percent of the surveillance program);
2. Samples from swine associated with public health investigations; and
3. Samples from swine that have influenza-like illness at events where many animals gather, such as auctions, markets, fairs, or other swine exhibition events.

USDA’s National Veterinary Services Laboratories tests samples associated with human cases, samples that require whole genome sequencing, and samples for which the results are inconclusive or unusual. USDA maintains the test results and a collection of IAV-S samples, but genetic sequence information is deposited into GenBank®, a publicly available database managed by the U.S. Department of Health and Human Services’ National Institutes of Health.

Q. How often do you find IAV-S through your surveillance program?

A. Because IAV-S is common, but usually causes minor clinical signs of disease, our surveillance

program does find many cases. From October 1, 2010, through December 31, 2015, the program tested nearly 27,000 herds and identified nearly 9,900 cases that were positive for swine influenza, with about one-third of those characterized via genetic analysis.

Q. How do you test for IAV-S?

A. Our surveillance program typically analyzes nasal swab samples and oral fluid collections from live pigs, as well as lung tissue samples from dead pigs, to look for the virus. The laboratories look at the virus's genetic material to determine what subtype of IAV-S is present.

Recognizing and Preventing IAV-S

Q. What are the signs of IAV-S?

A. Influenza viruses are common in swine, usually causing a high rate of illness but few deaths. In many instances, swine show no signs of illness. Ill animals typically begin showing signs 1-3 days after being infected with the virus, including:

- Coughing or barking
- Sneezing
- High fever
- Difficulty breathing
- Runny nose
- Not eating
- Not wanting to get up and move around

If you see any of these signs in your swine, contact your veterinarian and isolate the sick animal(s) from the rest of the herd, if possible.

Q. How does IAV-S spread?

A. IAV-S is believed to spread like human influenza viruses do—mostly through close contact, coughing, and sneezing. It is also possible that contaminated objects (such as farming equipment) can move the viruses around and indirectly spread the disease.

Q. How can I prevent or control IAV-S?

A. The best way to help keep your swine from getting sick, or reduce the severity of illness if they do, is to use the following management strategies:

- Vaccinate your herd for influenza A.
- Practice good biosecurity and hygiene.
- Use proper ventilation systems in all swine facilities.
- Ask that your staff get the seasonal flu vaccine and avoid contact with your animals if they have flu-like symptoms to lessen the chances of your swine being infected by human influenza A viruses.

Q. What biosecurity practices should I use?

A. Use these biosecurity measures to help keep your animals healthy:

- Permit only essential workers and vehicles onto your farm.
- Avoid visiting other livestock farms.
- Clean and disinfect shoes, clothes, hands, crates, vehicles, and tires—all of which can carry the virus from one location to another.
- Purchase animals from reputable sources and document their origin.
- Have new additions to your herd checked by a veterinarian.
- Do not share equipment or vehicles with other farms.
- Isolate and monitor new animals or animals returning from exhibitions.
- Feed and work with healthy animals first, and then care for sick animals to minimize the spread of disease among swine housed together.
- Use separate equipment, clothes, and shoes when working with healthy versus sick animals.
- Do not work with or handle swine if you are experiencing flu-like symptoms.

Q. What should I do if I am going to a fair or event with a lot of swine around?

A. Swine caretakers can contact their State animal health officials for guidance. General recommendations to lessen chances that exhibitors and fair visitors will become ill from swine at exhibitions can be found at: <https://secure.in.gov/isdh/files/NASAO-NASPHV-InfluenzaTransmissionAtSwineExhibitions2013.pdf>

Members of the general public can contact their State public health office or visit the Centers for Disease Control and Prevention (CDC) Web site on swine influenza: www.cdc.gov/flu/swineflu

For More Information

To learn more about IAV-S, visit the Web sites listed below.

- USDA Animal and Plant Health Inspection Service: www.aphis.usda.gov/animal_health/animal_dis_spec/swine
- CDC: www.cdc.gov/flu/swineflu
- National Association of Public Health Veterinarians: nasphv.org/documents/Compendia/ZoonoticInfluenza.html
- National Pork Board: www.pork.org/Resources/1389/influenza.aspx

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