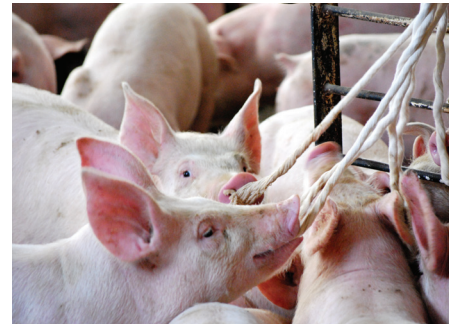
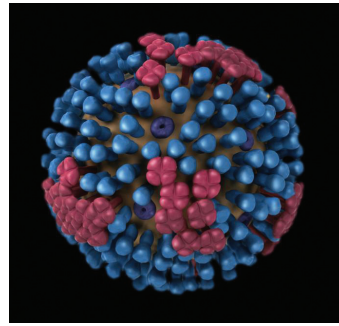


Influenza Virus Surveillance in Swine Program Overview for Veterinarians



There is a Need for National Influenza Surveillance in Swine

Endemic strains of influenza viruses (particularly of the sub-type H1N1) have been circulating in U.S. swine populations for over 75 years. Various surveillance efforts have been ongoing to better understand the viruses and manage animal health due to the economic impact on swine producers of endemic swine influenza virus (SIV) strains. University, state, and private diagnostic laboratories maintain and update extensive databases of influenza viruses in swine, including genomic sequences. However, these efforts have provided only a limited national picture, and there are challenges associated with proprietary restrictions on isolate sharing.

Animal health, public health, and industry partners recognized the need for a more integrated and coordinated surveillance strategy. This resulted from common concerns related to mutation and reassortment of Influenza A virus gene segments and documented sporadic episodes of human infection with a swine epidemiological link.

Influenza in swine is not a reportable or regulated disease. New subtypes or strains of influenza that result from viral genetic shift or drift can result in an increased threat to animal health. Reports of human infection having an epidemiological link to swine also escalate concerns over its zoonotic potential. Emerging influenza variants that may be a public or animal health threat can be identified by monitoring changes in circulating influenza virus strains in swine. This knowledge allows animal and human health experts to update diagnostic tests and diagnostic reagents, anticipate vaccine component requirements, and develop response plans (if necessary).

Objectives of Influenza Virus Surveillance

The objectives of this surveillance program are to:

1. Monitor genetic evolution of endemic influenza in swine to better understand endemic and emerging influenza virus ecology;
2. Make available influenza isolates for research and to establish an objective database for genetic analysis of these isolates and related information; and
3. Select proper isolates for the development of relevant diagnostic reagents, updating diagnostic assays, and vaccine seedstock products.

Differentiation of Anonymous and Traceable Submissions

Two data entry protocols exist for swine accessions tested for influenza. Anonymous submission is the default. In order for a submission to be entered as traceable, the producer must make the decision to participate in the traceable surveillance option and provide written permission.

Anonymous (Default)	Traceable
All routine samples collected from clinical respiratory cases and submitted to participating diagnostic labs are eligible for influenza surveillance.	Same as anonymous surveillance.
“Client-requested” diagnostic lab results will be reported back to the submitter as usual, under current laboratory confidentiality protection.	Influenza surveillance data will be available in addition to “client-requested” results.
All test results for the Influenza Surveillance Program will be submitted to USDA anonymously — with no owner or submitting veterinarian information. Aggregate results will only be identified to the state level.	Test results for the Influenza Surveillance Program will be submitted to USDA as traceable — owner and submitting veterinarian information will be included — only when producers provide written permission.
Anonymous surveillance adds to the confidentiality of the diagnostic lab results in the surveillance program by removing the identity of the owner and submitting veterinarian.	Traceable surveillance provides additional information that may help lead to a more detailed analysis of influenza change and movement. If submitted samples are selected, producers and their veterinarians get sequence and other test information with the costs paid by USDA.

Animals to be Included in the Program

The surveillance program will target the following swine populations:

1. **Case-compatible swine accessions submitted to veterinary diagnostic laboratories.** This surveillance will cover on-farm swine populations exhibiting influenza-like illness (ILI). Producers, veterinarians, or other personnel who observe pigs exhibiting ILI on farms and collect samples for routine diagnostic testing may be included in the Influenza Surveillance Program. Nasal swabs, oral fluid, or lung tissues are appropriate samples for influenza testing.
2. **Swine exhibiting ILI at first points of concentration or commingling events such as auctions, markets, fairs, or other swine exhibition events.** This surveillance stream targets pigs moving to sites with an increased potential for influenza transmission and/or elevated human exposure. Animal health officials or licensed veterinarians that observe pigs with ILI at these events should be aware of influenza virus in pigs and its zoonotic potential. By the decision of the veterinarian in charge or the state animal health official, swine exhibiting ILI should be segregated, examined and appropriate samples should be submitted to a veterinary diagnostic lab participating in the Influenza Surveillance Program.
3. **Swine populations epidemiologically linked to a confirmed isolation of SIV in a human. When a person tests positive for influenza that may be linked to swine exposure, that individual’s identity is known to public health officials and possible sources for infection will be known to them.** Animal health officials, in cooperation with public health investigators and the owner/producer, may collect samples from swine that are epidemiologically linked with a human Influenza A infection. The extent of swine sampling will be determined on a case-by-case basis and performed in cooperation with the owner/producer and the herd veterinarian.

Because swine practitioners will play a direct role in the case-compatible swine accessions submitted to veterinary diagnostic laboratories, we will focus on this option.

How Influenza Surveillance Works

1. Producers, veterinarians, or other personnel collect and submit samples from swine exhibiting ILI.
 - a. Animals to be sampled should be in the acute phase of the disease, febrile with serous nasal discharge and cough.
 - b. Samples are submitted as part of a routine respiratory diagnostic case submission.
 - c. Nasal swabs, oral fluid, and lung tissue are the appropriate samples for testing.
 - i. Use Dacron swabs for nasal swab submissions. After swabbing both nostrils, break the swab into the tube containing TBTB or BHI viral transport media. Do not pool nasal swabs. Each swab should be submitted as a separate sample.
 - ii. Use cotton ropes to collect oral fluid. Extract the fluid from the rope and ship only the oral fluid in a tube. Do NOT include the rope. The oral fluid collected from each rope should be submitted as a separate sample.
 - d. Up to ten (10) samples from case-compatible animals may be sampled per diagnostic case.
2. Samples should be chilled until shipped or shipped as soon as possible with ice packs.
3. Ship samples overnight to a participating veterinary diagnostic laboratory. A list of participating labs can be found at http://www.aphis.usda.gov/animal_health/nahln/downloads/siv_lab_list.pdf
4. Diagnostic labs will conduct the tests requested by the veterinarian as part of the routine diagnostic work-up and report these results to the submitting veterinarian as usual. This includes influenza sequence results if requested. Diagnostic tests performed outside the scope of the Influenza Surveillance Program will be billed as usual to the veterinarian.
5. Diagnostic labs may conduct additional testing of samples from routine respiratory submissions for the Influenza Surveillance Program. If in the anonymous surveillance stream, results of these additional tests will not be reported back to the producer or submitting veterinarian.
6. The tests conducted in accordance with the Influenza Surveillance Program will result in no additional charge to the veterinarian or producer.
7. Influenza test results are entered as anonymous into the Influenza Surveillance Program unless the producer requests in writing to participate in the traceable surveillance option. If submitted samples are selected, producers participating in the traceable surveillance option will receive surveillance test results paid for by USDA.

What Practitioners Can Expect After Submitting Samples

After practitioners submit routine respiratory diagnostic cases, they can anticipate the following type of communication with the diagnosticians.

1. “Client-requested” diagnostic lab results will be reported back to the practitioner as usual, under current laboratory confidentiality protection. On the laboratory submission form, practitioners request specific tests be conducted on the samples they submit, or they may leave the decision of which tests to conduct up to the diagnostician. The results of these requested diagnostic tests will be reported to practitioners in the same manner as they have communicated with their diagnostic lab previously. In cases where practitioners request influenza testing, including sequencing, the laboratory will conduct the testing and report back to them. Practitioners will be billed for tests requested as part of the diagnostic work-up, and the results will be reported back to them.
2. Diagnosticians will select some of the samples from these routine respiratory diagnostic submissions to enter into the Influenza Surveillance Program. Additional testing may occur. The samples will enter the program under anonymous surveillance with only the state in which the sample came from included, unless the producer provided written permission to include those samples into traceable surveillance. The practitioner will not receive any of the test results from samples entered into anonymous surveillance. (Practitioners may have received influenza test results if they requested testing as part of the diagnostic work-up. This is separate from the surveillance testing.) If the producer provides written permission to enter the samples into traceable surveillance, the test results will be reported back to the practitioner and/or producer. In this case, the samples entering traceable surveillance will include additional information, such as the producer’s name and production location, and the influenza diagnostic fees for these traceable samples that are selected for testing will be paid by USDA.

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