INFLUENZA A (H3N2v)

Protocol Overview and Methods:

Influenza A virus subtype H3N2 can infect birds and mammals, including swine and humans. Influenza viruses that circulate in swine are called swine influenza viruses when isolated from swine, but are called variant viruses when isolated from humans. The first cases of Influenza A (H3N2v) in humans were reported in July 2011. The virus has also been isolated in U.S. swine in many U.S. states.

Since July 12, 2011, there have been 29 cases of H3N2v virus infection. The H3N2v viruses were reported in: Hawaii (1), Indiana (7), Iowa (3), Ohio (10), Maine (2), Pennsylvania (3), Utah (1), and West Virginia (2). As of Aug. 8, 2012, Delaware has not reported cases of Influenza A H3N2v virus.

According to the Centers for Disease Control and Prevention (CDC), all 29 cases were infected with H3N2v viruses that contain the matrix (M) gene from the influenza A (H1N1)pdm09 virus. This M gene may confer increased transmissibility to and among humans, compared to other variant influenza viruses. All cases were laboratory-confirmed at CDC.

Each of 16 cases identified since July 12, 2012, reported contact with swine prior to illness onset; in 15 cases, contact occurred while attending or exhibiting swine at an agricultural fair. While the viruses identified in these cases are genetically nearly identical, separate swine exposure events in each state were associated with human infections. There is no indication that the cases in different states are epidemiologically related.

Clinical characteristics of the H3N2v cases are consistent with signs and symptoms of seasonal influenza: fever, cough, pharyngitis, myalgia, and headache. No hospitalizations or deaths have occurred.

The best protection against Influenza A (H3N2v) is vaccination with the annual flu vaccine. Current CDC data indicate that seasonal vaccines may provide limited protection against infection with A(H3N2)v viruses among adults and no protection in children. While the effectiveness of current seasonal vaccines to protect against A(H3N2)v virus infections might be reduced compared with effectiveness of seasonal vaccines against seasonal influenza, CDC recommends their use.

Novel influenza A virus infection has been a nationally notifiable condition in the United States since 2007. Since that time, human infection with animal-origin influenza viruses has been rare, with six or fewer cases reported each year, until 2011 when 14 cases were identified. While most of the cases are thought to have been infected as a result of close contact with swine, limited human-to-human transmission of this virus was identified in some cases in 2011. Therefore, enhanced influenza surveillance is indicated, especially in regions and states with confirmed H3N2v cases.

Contact Information: DPHL Director: 302-223-1520. Answering service is available at the same number during non-business hours. Please indicate the nature of the call so that notification to DPHL is not delayed.

Acceptable Specimens For Testing Include:

a. Specimens from human patients with signs and symptoms of respiratory infection. Validated specimen types include: upper respiratory tract clinical specimens, including: nasopharyngeal swabs, nasal swabs, throat swabs, nasal aspirates, nasal washes and dual nasopharyngeal/throat swabs. Lower respiratory tract specimens include: bronchoalveolar lavage, bronchial wash, tracheal aspirate, sputum, or lung tissue. Viral culture material is also acceptable.

Specimen Collection:

a. Influenza virus isolation kits for specimen collection are available from the DPHL. These kits contain a requisition form, 1 screw-capped tube with 2 ml of sterile transport media and 1 flexible slender nasopharyngeal swab.

b. Contact the DPHL at (302) 223-1520 to obtain specimen collection kits and obtain information about specimen transport to the laboratory.

Handling of Specimens:

a. Biosafety practices: Latex or similar gloves should be worn while collecting specimen. Other personal protective equipment should be used as necessary. For suspected aerosols, a respirator should be worn.

b. Clinical specimens should be refrigerated (2-8°C) or kept in a cooler.

Packaging Instructions:

a. The swab or aspirate is to be placed into a screw-capped tube with 2 ml of sterile transport media. **Sample must be kept at 2-8°C, or frozen at -70°C.**

b. Specimens must be bagged in a biohazard bag, the bag decontaminated, and bagged again. Outside of outer bag must also be decontaminated with 10% bleach.

c. Receiving specimens at DPHL: Authorized specimens are accepted at the back of the building by the loading dock. Submitter must present a government-issued ID.

d. Other Information: For locations of courier pick-up sites, specimen submission forms, and other information, see the DPHL website at http://www.dhss.delaware.gov/dhss/dph/lab/labs.html.

Reporting Results: DPHL is using the reverse transcriptase-polymerase chain reaction (RT-PCR) assay to presumptively identify H3N2v virus. Commercially available rapid influenza diagnostic tests (RIDTs) may not detect H3N2v virus in respiratory specimens. Therefore, a negative rapid influenza diagnostic test result does not exclude infection with H3N2v or any influenza virus. Presumptively positive specimens will be referred to CDC for confirmation. Confirmation of influenza A (H3N2)v virus is performed only at CDC at this time.

Influenza virus real-time RT-PCR detection and characterization by the Public Health Laboratory is done free of charge and results are sent back to the requesting physician or hospital as soon as test results are available.

a. Results: A preliminary positive or negative test result may be issued upon completion of PCR. Most PCR results can be available within 24 hours from receipt of specimen.

b. Notification procedure: Results are available through the Laboratory Information Management System (LIMS) upon confirmation.

Provider Treatment:

Reverse-transcription polymerase chain reaction (RT-PCR) testing for influenza should be considered for patients with influenza-like illness prior to the start of the traditional influenza season in October. RT-PCR testing for influenza should be considered throughout the year for patients with influenza-like illness reporting recent swine exposure and for those who can be epidemiologically linked to confirmed cases of variant influenza.

Clinicians should consider antiviral treatment with oral oseltamivir or inhaled zanamivir in patients with suspected or confirmed H3N2v virus infection. Antiviral treatment is most effective when started as soon as possible after influenza illness onset. DPH strongly encourages providers (for example, school wellness centers, long term care facilities, physicians, etc.) to submit influenza specimens to the DPH Laboratory for molecular (RT-PCR) detection and subtyping.

References:

- "Interim Guidance on Case Definitions to be Used for Investigations of Influenza A (H3N2) Variant Virus Cases" for state and local health departments available at http://www.cdc.gov/flu/swineflu/case-definitions.htm.
- "Prevention Strategies for Seasonal and Influenza A(H3N2)v in Health Care Settings" available at http://www.cdc.gov/flu/swineflu/prevention-strategies.htm.
- "Interim Guidance on Specimen Collection, Processing and Testing for Patients with Suspected Influenza A (H3N2) Variant Virus Infection" for public health professionals available at http://www.cdc.gov/flu/swineflu/h3n2v-testing.htm.
- "Interim Guidance for Influenza Surveillance: Additional Specimen Collection for Detection of Influenza A (H3N2) Variant Infections" for state and local health departments available at http://www.cdc.gov/flu/swineflu/h3n2v-surveillance.htm.
- Compendium of Measures to Prevent Disease Associated with Animals in Public Settings, 2011 available at http://nasphv.org/documentsCompendiumAnimals.html.