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July 9, 2013 (***2 pages – Replaces version posted August 3, 2012***)

To: All North Carolina Health Care Providers
From: Megan Davies, MD, State Epidemiologist
Re: **Human infections with variant influenza H3N2v**

This memo is intended to provide information to North Carolina clinicians regarding continuing identification of human infections with a variant influenza A virus. Although this virus has not been identified in North Carolina, clinicians should consider this information when evaluating patients with influenza-like illness, particularly after recent swine contact or attendance at an agricultural fair.

Summary

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 and human infections have been reported sporadically in the United States since that time. These infections have mostly been associated with prolonged exposure to pigs at agricultural fairs. Limited human-to-human spread of this virus has been detected, but no sustained or community spread of H3N2v has been identified.

Clinical and Epidemiologic Features

- The incubation period, symptoms, and illness severity appear generally similar to seasonal flu. Most infections were mild.
- 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 has been identified in some cases.

Vaccination and Immunity

- The H3N2v virus is not included in the seasonal flu vaccine.
- Seasonal influenza vaccination does not provide protection against H3N2v virus infection.
- Early steps have been taken towards creating a vaccine against H3N2v vaccine, but no decision to mass produce such a vaccine has been made.
- Limited serologic data suggest that children younger than 10 years lack immunity to H3N2v virus and therefore are likely to be most susceptible to H3N2v virus infection. Adolescents and younger adults may have cross-protective antibodies, but some would be expected to be susceptible. Middle-aged adults and elderly may have lower levels of cross-protective antibodies and may also be susceptible to H3N2v virus infection.

Antiviral Susceptibility

- This virus is susceptible to neuraminidase inhibitors (oseltamivir and zanamivir) and resistant to adamantanes (amantidine and rimantidine), similar to other recently-circulating strains.

Laboratory Identification

- All state public health laboratories are able to detect this virus using reverse-transcription polymerase chain reaction (RT-PCR) assays.

- Negative rapid influenza diagnostic test results do not exclude infection with H3N2v or any influenza virus. In addition, these tests cannot distinguish between influenza A virus subtypes.
- Influenza testing at the North Carolina State Laboratory of Public Health (SLPH) is primarily intended for virologic surveillance, rather than diagnostic purposes.
    - Testing at SLPH will continue to focus on a sample of patients with influenza-like illness seen at facilities participating in the Influenza-Like Illness Network (ILINet).
    - Testing at SLPH can also be considered in other situations if the local health department determines that such testing is necessary for surveillance or to determine which control measures are needed. Examples include influenza-like illness in patients with recent swine exposure, outbreaks in institutional settings, and clusters of severe or unusual respiratory illness.
    - Local health department approval is REQUIRED for testing at SLPH, with the exception of specimens submitted from ILINet providers.

Recommendations

- RT-PCR testing should be considered for patients who present 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 and recent contact (< 7 days prior to illness onset) with swine or recent attendance at an agricultural event where swine are present and for those who can be epidemiologically linked to confirmed cases of variant influenza.
- Encourage annual vaccination with the seasonal flu vaccine for all persons ≥6 months of age as soon as it is available. Vaccination remains the best way to prevent infection with seasonal influenza and can help prevent the spread of flu between people and pigs.
- Antiviral treatment with oseltamivir or zanamivir should be considered for persons with suspected or confirmed H3N2v. Antiviral treatment is most effective when started as soon as possible after influenza illness onset.
- Please contact your local health department to report influenza-like illness in patients with recent swine exposure or any outbreaks of influenza-like illness (i.e. fever plus cough or sore throat), particularly among young children.

The NC Division of Public Health conducts active surveillance for influenza year-round. We will post updates with additional guidance as warranted on www.flu.nc.gov, along with general information and weekly surveillance reports during flu season. Additional information and guidance from CDC is available at www.cdc.gov/flu/swineflu.