Influenza A (H3N2) Variant Virus (also known as “H3N2v”) - Key Points
September 7, 2012

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Influenza A (H3N2) Variant Virus (also known as “H3N2v”)

- Influenza A (H3N2) viruses with genes from avian, swine and human viruses that normally circulate in swine can sometimes infect humans.

- When human infections with these viruses occur, these viruses are called “variant” viruses (which also can be denoted with the letter “v”).

- When these viruses are found in swine, they are called swine influenza A (H3N2) viruses.

- In 2011, a new influenza A (H3N2)v virus was detected that had acquired the M gene from the influenza A(H1N1)pdm09 (2009 H1N1) virus.

- This summer, human infections with this H3N2v virus were detected beginning in July 2012.

- There are now multiple outbreaks occurring in a number of U.S. states. (See Situation Update for more information.)

- The vast majority of confirmed cases are associated with swine exposure.

- According to U.S. Department of Agriculture (USDA) swine influenza surveillance, this swine H3N2 virus with the pandemic M gene has been detected in swine in a number of U.S. states.

- This virus may be circulating widely in U.S. swine at this time.

- This virus seems to be more transmissible to humans from swine than previous variant viruses.

Situation Update (Updated)

- On September 7, CDC reported an additional 8 cases of H3N2v infection and one additional H3N2v associated hospitalization. In addition, CDC reported 3
cases of H1N2v. For more information on H1N2v, see the section entitled Influenza A (H1N2) Variant Virus (also known as “H1N2v”).

- The 8 H3N2v cases reported this week are from the states of Ohio (1), Pennsylvania (4) and Wisconsin (3). No new states are reporting H3N2v cases this week. Since July 2012, a total of 10 states have reported H3N2v cases to CDC.

- The 3 H1N2v cases reported this week were from the state of Minnesota.

- There are now 296 H3N2v total cases associated with the current outbreaks.

- Cases associated with the current outbreaks have occurred in:
  - Hawaii: 1 case
  - Illinois: 4 cases
  - Indiana: 138 cases
  - Maryland: 12 cases
  - Michigan: 5 cases
  - Minnesota: 2 cases
  - Ohio: 102 cases
  - Pennsylvania: 11 cases
  - West Virginia: 3 cases
  - Wisconsin: 18 cases

- CDC has prepared a table on its web site that shows the total number of H3N2v cases reported by state in 2011 and 2012 (the total for both years combined is now 309). The table is available at [http://www.cdc.gov/flu/swineflu/h3n2v-case-count.htm](http://www.cdc.gov/flu/swineflu/h3n2v-case-count.htm).

- Most cases have occurred in children who are exhibiting pigs, or helping to exhibit pigs and have occurred after very close contact with pigs over a relatively long period of time.

  - Studies conducted by CDC have indicated that children younger than 10 years old would have little to no immunity against H3N2v virus, whereas adults may have some cross-protective immunity.

- Most cases have had mild illness.
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- The severity of human illness associated with this virus continues to resemble that of seasonal flu. Like seasonal flu, however, serious illness with H3N2v infection is possible.

- To date, there have been 16 hospitalizations and one death associated with H3N2v infection.

- While investigations into H3N2v cases indicate that the main risk factor for infection is exposure to pigs, mostly in fair settings, CDC has previously reported the identification of likely cases of human-to-human spread of this virus during the current outbreaks.

- These instances of likely person-to-person spread of H3N2v were identified during investigation of cases and their household contacts and were not epidemiologically linked to one another.

- In all cases, transmission is thought to have occurred from one person to another person without further spread to additional people.

- More information about these cases is available in “New Cases Reported, Limited Person-to-Person Transmission Detected.” (http://www.cdc.gov/flu/spotlights/h3n2v-new-cases.htm)

- Limited human-to-human transmission of H3N2v virus is thought to have occurred in the fall and winter of 2011.


- It’s likely that additional instances of human-to-human spread will be identified.

- However, there is no sustained community transmission of this virus taking place at this time.

- CDC is monitoring for changes in the virus and potential person-to-person transmission of H3N2v.
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- So far, genetic analysis of the viruses submitted to CDC show that all viruses are nearly identical, and very similar to the H3N2v viruses found in 2011.

- CDC’s seasonal influenza surveillance indicates that seasonal influenza virus activity is low but small numbers of seasonal influenza viruses are being detected at this time in the United States. Infections with seasonal influenza A (H3N2) viruses are being reported to CDC.

- It is likely that additional cases of H3N2v virus infection and additional cases of seasonal influenza virus infection will be identified in the upcoming days and weeks.

- It also is possible that sporadic infections and even localized outbreaks of H3N2v virus may occur in other parts of the country, as this virus has been detected in swine in a number of U.S. states, according to USDA swine influenza surveillance.

- Another thing of note: as the school year gets underway and we move into fall and winter, the opportunities for spread of respiratory viruses like influenza increase.

- It is possible we could see isolated cases of H3N2v infection, and even some localized outbreaks, particularly in schools or day cares.

- It is important to remember, however, that influenza viruses are constantly changing. This is an evolving situation that could change quickly and CDC is continually monitoring and reassessing the situation.

Influenza A (H1N2) Variant Virus (also known as “H1N2v “) (New)

- In addition to H3N2v, there are other influenza viruses that normally circulate in swine but that can sometimes infect humans. One such virus is influenza A (H1N2) variant virus (also known as “H1N2v”).

- This week, three H1N2v cases in people were reported from the state of Minnesota.

- These cases were reportedly associated with prolonged contact with pigs at a fair.

- Rare human infections with H1N2v virus have been detected in the past.

- H1N2v virus is different from the H3N2v virus that, as of today, is reported to have caused 296 human infections across 10 U.S. states since July 2012.
One notable commonality between H1N2v and H3N2v influenza viruses is that both have the pandemic M gene from the 2009 H1N1 virus. This is the first time this H1N2v virus has been found to have the M gene from the 2009 H1N1 pandemic virus when isolated from a person.

These additional human infections with H1N2v underscore the fact that swine influenza viruses can spread to people after close contact with infected pigs, and support the importance of ongoing surveillance for both human and swine influenza viruses.

Of the three H1N2v cases in people reported, two of the people had underlying health conditions that placed them at high risk of serious flu complications. One of the two people with high risk facts was hospitalized. (Note: all three people have recovered from their illnesses at this time).

These hospitalizations highlight the importance of CDC’s recommendations for people with high risk factors. **People at high risk for serious flu complications should avoid close contact with pigs and pig arenas at fairs this season.**

People who are at high risk of serious flu complications include children younger than 5 years, people 65 years and older, pregnant women, and people with certain long-term health conditions (like asthma and other lung disease, diabetes, heart disease, weakened immune systems, and neurological or neurodevelopmental conditions). A full list of high risk factors is available on the CDC seasonal flu site at [http://www.cdc.gov/flu/about/disease/high_risk.htm](http://www.cdc.gov/flu/about/disease/high_risk.htm).

In addition to avoiding pigs and pig arenas at fairs this year, as always, people with high risk conditions who develop flu-like symptoms should seek prompt medical attention.

The H1N2v virus should be susceptible to both currently recommended influenza antiviral drugs [oseltamivir (Tamiflu®) and zanamivir (Relenza®)].

For more information about the H1N2v cases reported this week from Minnesota, see the CDC’s H1N2v spotlight article at [http://www.cdc.gov/flu/spotlights/h1n2v-cases-mn.htm](http://www.cdc.gov/flu/spotlights/h1n2v-cases-mn.htm).

**Fairs**

Thousands of fairs where swine are exhibited take place across the United States each year.
Fairs are a setting that can provide many opportunities for exposures to occur between pigs and people.

It’s estimated that more than 50 million people have attended fairs already this season; 30 percent of these people are thought to have visited swine arenas.

CDC has specific recommendations this year for people attending fairs. (See http://www.cdc.gov/flu/swineflu/h3n2v-fairs-factsheet.htm for information.)

These recommendations include that anyone with an age or medical factor which puts them at high risk for serious flu complications should avoid pigs and swine barns at fairs this season.

High risk factors include: being younger than 5 years, or 65 and older, pregnancy, and certain chronic medical conditions like asthma, diabetes, heart disease, weakened immune systems, and neurological or neurodevelopmental conditions. (A complete list of factors that place people at high risk of serious complications if they get the flu is available at http://www.cdc.gov/flu/about/disease/high_risk.htm.)

Recently, CDC and 4-H issued a fact sheet titled “Influenza H3N2v: Key Facts For People Exhibiting Pigs at Fairs.” (Available at http://www.cdc.gov/flu/swineflu/h3n2v-key-facts-exhibiting-pigs-at-fairs.htm.)

CDC and USDA have issued a fact sheet titled “Issues for Fair Organizers to Consider When Planning Fairs.” (Available at http://www.cdc.gov/flu/swineflu/h3n2v-fairs-planning.htm.)

Additionally, CDC has issued a fact sheet for fair goers entitled “Take Action to Prevent the Spread of Flu Between People and Pigs at Fairs.” (Available at http://www.cdc.gov/flu/swineflu/h3n2v-fairs-factsheet.htm.)

English and Spanish PDFs of each of the documents are available at http://www.cdc.gov/flu/swineflu/h3n2v-audiences.htm.

Public Health Guidance

CDC recommends annual seasonal influenza vaccination for all persons aged 6 months and older to protect against seasonal influenza viruses; however, seasonal influenza vaccine is unlikely to protect against variant influenza viruses, including H3N2v viruses.
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- Preventive measures now include avoiding or minimizing exposure to pigs or pig barns at fairs.

- Many more materials are available on the CDC Influenza H3N2v web site at http://www.cdc.gov/flu/swineflu/h3n2v-outbreak.htm.