

Human Infections with Novel Influenza A Viruses

Key Points

August 24, 2018

Summary Key Points

- CDC is reporting an additional 4 human infections with influenza viruses that normally circulate in swine and not people.
- Sporadic human infections with swine influenza viruses do occur, most often in the context of exposure to pigs at agricultural fairs.
- In general, the risk to the public from these infections is considered low, however, CDC does have information on swine influenza viruses and guidance for people attending fairs or other venues on its website at <https://www.cdc.gov/flu/swineflu/keyfacts-variant.htm>.

More Information

- This week's [FluView](#) includes 4 reports of human infections with a novel influenza A virus.
- These are infections in people with influenza viruses that normally circulate in swine and not people.
- None of the patients were hospitalized and all are recovering or have fully recovered.
- All 4 of these infections are with influenza A(H1N2) variant viruses, or "A(H1N2)v." Two infections are being reported by California and two by Ohio.
- When an influenza virus that normally infects pigs is found in people, it is called a variant influenza virus and is designated with the letter "v."
- Swine flu viruses do not normally infect people, however, sporadic human infections with influenza viruses that normally infect swine have occurred.
- In recent years, human infections with A(H1N1)v, A(H1N2)v, and A(H3N2)v viruses have been detected in the United States (see <https://www.cdc.gov/flu/swineflu/variant.htm> and https://gis.cdc.gov/grasp/fluview/Novel_Influenza.html).
- Most human infections with variant viruses have occurred in people exposed to infected pigs (e.g., children near pigs at a fair or workers in the swine industry), but there have been some instances of limited person-to-person spread of variant viruses.
- Three patients reported exposure to swine at agricultural fairs in the week preceding illness onset, and ill swine were reported at both fairs.
- One patient reported they did not attend an agricultural fair nor did they have contact with swine; it is possible that human-to-human transmission occurred, but no ongoing human-to-human transmission has been identified.
- Limited spread of variant influenza viruses from person-to-person has been documented in the past.
- Influenza viruses can be directly transmitted from pigs to people and from people to pigs. These infections have most commonly been reported after close proximity to infected pigs, such as in pig barns or agricultural fairs.

Human Infections with Novel Influenza A Viruses

Key Points

- Infected pigs cough or sneeze and droplets with flu virus in them can spread through the air and infect people through the nose, mouth or by inhalation. There's also evidence that people might get infected by touching a surface with virus on it and then touching their nose or mouth. Another possible way to get infected is to inhale droplets or dust containing flu virus.
- Human-to-human transmission of variant flu viruses is thought to occur in the same way that seasonal flu transmits in people, which is mainly through coughing or sneezing by people who are infected. People also may become infected by touching something with flu viruses on it and then touching their mouth or nose.
- A total of 13 variant viruses have been reported to CDC during 2018. One of these has been an A(H3N2)v virus (Indiana [1]) and 12 have been A(H1N2)v viruses (California [6], Michigan [3], and Ohio [3]). (Note: A new feature on [FluView Interactive](#) displays information collected on human infections with novel influenza A viruses in the United States and allows users to view characteristics of cases and counts by geographic location, virus subtype, influenza season, and calendar year.)
- Illnesses associated with variant virus infections have been mostly mild with symptoms similar to those of seasonal flu. However, variant virus infections also can result in serious illness, causing hospitalization and death.
- While the vast majority of human infections with variant influenza viruses do not result in person-to-person spread, should be fully investigated to a) be sure that such viruses are not spreading in an efficient and ongoing way in humans, and b) to limit further exposure of humans to infected animals if infected animals are identified.
- Additional information on influenza in swine, variant influenza infection in humans, and strategies to interact safely with swine can be found at <http://www.cdc.gov/flu/swineflu/index.htm>.

CDC Recommendations

- CDC has long-standing guidance for people attending agricultural fairs or other settings where swine might be present, including additional precautions for people who are at high risk of serious flu complications. (<http://www.cdc.gov/flu/swineflu/variant/preventspreadfactsheet.htm>)
- CDC recommendations for people at high risk:
 - Anyone who is at [high risk of serious flu complications](#) (http://www.cdc.gov/flu/about/disease/high_risk.htm) and planning to attend a setting where pigs will be present should avoid pigs and swine barns.
 - 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

Human Infections with Novel Influenza A Viruses

Key Points

health conditions (like asthma and other lung disease, diabetes, heart disease, weakened immune systems, and neurological or neurodevelopmental conditions).

- CDC recommendations for people not at high risk:
 - Do not take food or drink into pig areas; do not eat, drink or put anything in your mouth in pig areas.
 - Do not take toys, pacifiers, cups, baby bottles, strollers, or similar items into pig areas.
 - Avoid close contact with pigs that look or act ill.
 - Take protective measures if you must come in contact with pigs that are known or suspected to be sick. This includes minimizing contact with pigs and wearing personal protective equipment like protective clothing, gloves and masks that cover your mouth and nose when contact is required.
 - Wash your hands often with soap and running water before and after exposure to pigs. If soap and water are not available, use an alcohol-based hand rub.
 - To further reduce the risk of infection, minimize contact with pigs in the pig barn and arenas.
 - Watch your pig (if you have one) for illness. Call a veterinarian if you suspect illness.
 - Avoid contact with pigs if you have flu symptoms. Wait to have contact with pigs until 7 days after your illness started or until you have been without fever for 24 hours without the use of fever-reducing medications, whichever is longer. If you must have contact with pigs while you are sick, take the protective actions listed above.
- People with high risk factors who develop flu symptoms should call a health care provider. Tell them about your high risk condition and any exposure to pigs or swine barns you have had recently. Providers should alert the local or state public health department if variant influenza infection is suspected. Prescription influenza antiviral drugs can treat infections with these viruses in people, especially when initiated early.
- People who go to a health care provider for flu symptoms following direct or close contact with swine (pigs) should tell their health care provider about this exposure. CDC recommends that people at high risk of flu complications get influenza antiviral treatment as quickly as possible if they have confirmed or suspected influenza, including variant influenza.

What CDC Does

- CDC recently released a new graphic novel called “The Junior Disease Detectives: Operation Outbreak,” which is intended to raise youth awareness of the potential human health risks associated with variant influenza (flu) virus infections. The graphic novel was developed in collaboration with the U.S. Department of Agriculture (USDA) and 4-H, the youth development

Human Infections with Novel Influenza A Viruses

Key Points

organization affiliated with USDA. It is available for free download from the CDC flu website at <https://www.cdc.gov/flu/resource-center/freeresources/graphic-novel/index.html> and the [Apple iBook store](#).

- Along with the graphic novel, CDC released education materials for K-12 teachers for use with the “Junior Disease Detectives: Operation Outbreak” Graphic Novel. The new educational materials include the following:
 - A classroom activity called the “Operation Outbreak Team” that is intended to teach students about the various roles and responsibilities of the professionals involved in an infectious disease outbreak response.
 - An “Educational Overview,” which is a resource for teachers and students that describes the learning objectives associated with the graphic novel. The activities highlight themes in the graphic novel that teach youth about public health science, epidemiology, biology, outbreak investigations and associated career skills.
- CDC works to improve global control and prevention of seasonal and novel influenza, including variant influenza viruses.
- In collaboration with domestic and global partners, CDC’s Influenza Division:
 - Builds surveillance and response capacity.
 - Monitors and assesses influenza viruses and illness.
 - Improves vaccines and other interventions.
 - Applies research to provide science-based enhancement of prevention and control policies and programs.
- In addition, to prevent and respond to variant influenza and other zoonotic diseases, the Centers for Disease Control and Prevention (CDC) established the Public Health Youth Agriculture Education partnership pilot program in 2011.
- At a national level, this program is designed to educate youth about zoonotic infections and deliver prevention and mitigation messages targeting these infections. More information about this program is available at <https://www.cdc.gov/flu/swineflu/youth-agriculture-education-program.htm>.