

REPORT TO THE BOARDS OF HEALTH

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Swine Flu

Influenza is group of viruses that cause respiratory illness. There are four known types of influenza viruses, A, B, C, and D, and they are different from each other as illustrated to the right. The influenza A virus subtypes are mostly derived from waterfowl, such as ducks, swans, and gulls. These avian (bird) influenza A viruses have an unusual ability to spread across warm blooded animals, which has been encouraged with the domestication of animals. It is suspected that our increased relationship with animals over history is how influenza A viruses first infected humans.

Influenza illness was first recognized in pigs during the Spanish flu pandemic of 1918-1919, which was caused by influenza A H1N1. Swine influenza virus was not isolated from a human until 55 years later. Pig cells are unique as they have receptors for, or can be infected by, bird (avian,) human, and pig (swine) influenza strains. When a pig is infected with more than one type of influenza virus at a time, the viruses can rearrange to create new strains. Since the late 1990s, triple rearrangements of influenza A viruses with genes from swine, human, and avian strains of influenza virus have been found in pig herds in North America and human cases caused by these new strains have also been found.

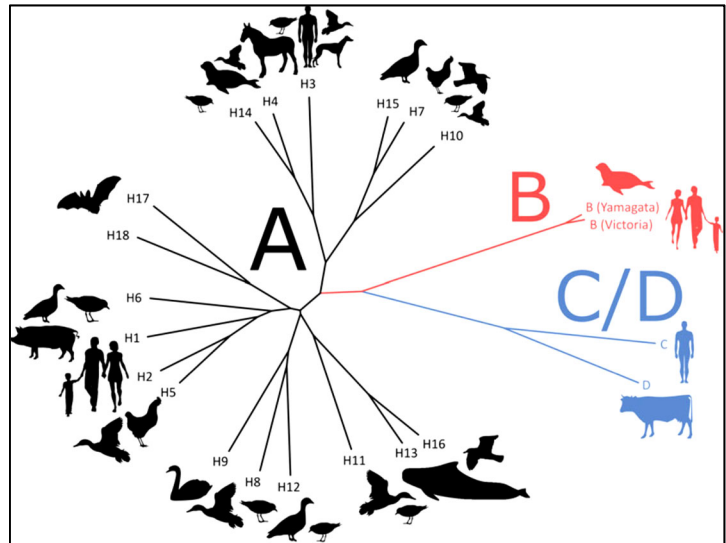


Fig. 2 from: Yamauchi, Y. (2018.) *Influenza virus: Methods and protocols.* Taxonomy and ecology of influenza.

The swine flu pandemic caused by an H1N1 influenza A virus that started in March 2009 was a product of a quadruple rearrangement of two swine strains, one human strain, and one avian strain of influenza. This outbreak was first identified in Mexico, spread rapidly to the United States, Canada, then worldwide via airline travel. This virus was very different from other H1N1 viruses circulating at that time, so few people had any immunity to it, allowing it to spread rapidly. The highest level of worldwide pandemic alert was declared in June 2009 and the pandemic was declared over August 2010. Influenza H1N1 is now established in the human population, circulating every year, and is part of the yearly influenza vaccine.

Swine influenza spreads through pig herds by close contact and possibly by contaminated objects that move between pigs. Swine flu can cause high number of ill pigs, however

Flu Season	Number of Human Swine Flu Cases in US	Number of Human Swine Flu Cases in Michigan
2010-11	7	0
2011-12	321	6
2012-13	22	2
2013-14	3	0
2014-15	6	1
2015-16	24	12
2016-17	65	2
2017-18	17	3
2018-19	1	1
Michigan Counties Affected: Allegan (2,) Berrien (2,) Cass (1,) Ingham (9,) Jackson (1,) Livingston (2,) Muskegon (2,) Ionia (1)		

some infected pigs will have no symptoms at all. Typically, swine flu causes few deaths in pigs. Swine flu rarely spreads to humans. When it does, it is typically through direct contact with pigs or with something or someone that has been in contact with pigs. Properly handling, preparing and eating pork and other products from pig will not spread swine flu. Most cases of swine flu in humans are mild and most that have had more severe illness have had some kind of risk factor. When a strain of influenza virus that normally infects pigs causes illness in a human, it is called a variant influenza virus and the name of the subtype is followed by a “v.” Since 2011, there have been 466 cases of human infections with swine flu reported to the CDC caused by either H1N1v, H1N2v, H3N2v, or H7N2, 27 of which have been in Michigan.

Prevention of Swine Flu (from <https://www.cdc.gov/flu/swineflu/prevention.html>):

- Don't take food or drink into pig areas; don't eat, drink or put anything in your mouth in pig areas.
- Don't 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.
- Anyone at high risk of serious flu complications should avoid pigs and swine barns.

Healthy Living Recommendations

1. Swine flu rarely infects humans, but these cases of variant influenza should be reported and followed to identify any oncoming pandemic strains as soon as possible.
2. Prevention steps as listed above, education of swine caretakers and visitors, and preparation for quick response to ill swine, are all very important steps in addressing swine flu.

Resources

- CDC Information on Swine/Variant Influenza Home Page <https://www.cdc.gov/flu/swineflu/index.htm>
- CDC “What People Who Raise Pigs Need to Know about Influenza” <https://www.cdc.gov/flu/pdf/swineflu/pork-producer-fact-sheet.pdf>
- MDHHS Swine Influenza Toolkit https://www.michigan.gov/documents/mdhhs/Swine_Variant_Influenza_Tool_Kit_654250_7.pdf
- MDHHS Toolkit Templates https://www.michigan.gov/documents/mdhhs/Swine_Variant_Influenza_Toolkit_Templates_654252_7.docx
- General CDC Educational Materials re: staying healthy around animals <https://www.cdc.gov/healthypets/publications/index.html>

References

- Thorner, A. Epidemiology of pandemic H1N1 influenza ('swine influenza'.) In: UpToDate, Hirsch, M, Baron, (E) (Ed,) UpToDate, Waltham, MA. (Accessed on June 11, 2019.)
- CDC FluView, Novel Influenza Virus Infections, https://gis.cdc.gov/grasp/fluview/Novel_Influenza.html
- CDC, Information on Swine/Variant Influenza. <https://www.cdc.gov/flu/swineflu/index.htm>