



## H3N2v: Preventive Measures during Agricultural Fairs and Petting Zoos

### Background

In 2011, 12 human cases of a newly emerging swine-origin influenza A(H3N2) variant (known as “H3N2v”) were reported in the United States.<sup>1</sup> In 2012, a multi-state outbreak of H3N2v resulted in 309 further human cases, including 16 hospitalizations and one death. Fourteen human cases have been reported to date in 2013 in the United States, including one in Ohio and 13 in Indiana. Most cases have been children and associated with exposure to pigs at agricultural fairs or exhibits typically held during the summer and fall months in the United States and in which children often take part. In swine, influenza infection may be asymptomatic and in humans, illness and severity of H3N2v are similar to that of typical seasonal strains. Hospitalizations due to H3N2v have primarily been among young children and those with comorbidity. While limited human-to-human spread has been reported, no sustained or community transmission has been identified at this time.

Published sero-surveys, including from BC, suggest young children and older adults mostly lack antibody to H3N2v; whereas, teens and young adults may have some pre-existing antibody protection owing to exposure to related human strains from the 1990s.<sup>2</sup> Underlying sero-susceptibility may in part explain epidemiologic patterns to date. Risk assessment based on these sero-survey estimates and a previously established contact network model for BC suggests that H3N2v does not currently pose a substantial pandemic threat, but higher attack rates in children are anticipated in the event of epidemic spread.<sup>3</sup>

### Overall risk assessment for BC

To date, no human cases of H3N2v have been reported in Canada. While the risk of H3N2v infection from swine in BC is low, the increased number of individuals visiting agricultural fairs and petting zoos during the summer and fall months warrants a general reminder about hygiene and other precautions when in contact with animals.<sup>4,5</sup> Such measures help protect both animals and humans from cross-species exchange of zoonotic pathogens. For a list of upcoming fairs in BC, please consult the following website: <http://bcfairs.ca>. The following information and guidance has been compiled from various sources (see references) and may be further adapted for local use.

### Recommendations for the Public<sup>6,7,8</sup>

- **People at high risk of serious complications of H3N2v infection should minimize close contact with pigs.** High risk individuals include children younger than 5 years old, pregnant women, people aged 65 years and over and people of any age with underlying medical conditions including immuno-compromise.
- **When in animal areas, visitors should be reminded to...**
  - Not eat, drink, chew gum, smoke or put anything in their mouths.
  - Not let children touch faces or mouths, suck their fingers or bite their nails; not give children bottles, pacifiers, or soothers; and not let children sit or play on the ground in animal areas.
  - Not take food, drink, toys, pacifiers, cups, bottles, strollers, or similar items into animal areas.
  - Avoid close contact with pigs, particularly those animals that appear to be sick.
  - Visitors with flu-like symptoms should avoid close contact with pigs.
- **After exposure to pigs and before eating or drinking, visitors should wash their hands with soap and water.** Alcohol-based hand sanitizers (60-95% alcohol) can be used in absence of soap and water.
- **Contact your health care provider if you develop flu-like symptoms.**
  - Symptoms of H3N2v infection are similar to seasonal influenza and include fever and respiratory symptoms (e.g., cough, runny nose), body aches, nausea, vomiting or diarrhea.
  - Individuals with flu-like symptoms should inform their health care provider about recent exposure to pigs (through direct or indirect contact) or attendance at agriculture fairs or petting zoos.
  - Antiviral drugs (e.g., oseltamivir and zanamivir) used to treat seasonal influenza infection are effective against H3N2v but work better when started early (within 48 hours of symptom onset).
  - No vaccine is currently available for H3N2v; vaccination against seasonal influenza strains does not induce a protective antibody response against H3N2v.<sup>2,3</sup>

## Recommendations for Fair Organizers and Exhibitors<sup>9,10,11</sup>

- **Preparing for the event...**
  - Facilities should be designed to minimize the contact between humans and animals.
  - Limit the amount of time that pigs are congregated or co-mingled.
  - Visitor traffic should be controlled to prevent overcrowding.
  - Hand-washing stations should be provided and easily accessible for visitors.
  - Adequate ventilation should be provided for animals and humans.
  - Animal equipment should be stored in designated areas that are restricted from public access; avoid transporting animal equipment or soiled bedding through non-animal or transition areas.
  - Where feasible, animal areas should be cleaned or disinfected at least once daily.
- **Educate visitors...**
  - People at high risk of serious complications should be instructed to minimize close contact with pigs.
  - Post hand-washing signs and provide information about minimizing disease risks associated with animals.
  - Visitors should be instructed to not carry any items into animal areas; if possible, establish storage or holding areas for these items.
  - Visitors should watch children closely to discourage hand-to-mouth activities or contact with soiled bedding.
  - Children should not be allowed to sit or play on the ground in animal areas.
- **Monitor animals for signs or symptoms of illness...**
  - Signs and symptoms of influenza in pigs include discharge from nose and/or eyes, lethargy, loss of appetite, fever, and sometimes coughing.
  - A veterinarian should be immediately notified of any ill animals.
  - Take protective measures if in close contact with pigs known or suspected to be sick; minimize contact with pigs and wear protective clothing such as gloves and masks.
  - Animals known/suspected to be sick, should be immediately isolated and not allowed in public areas.

## Recommendations for Clinicians<sup>12</sup>

- Patients presenting with influenza-like illness who have known swine exposure and/or who have recently attended agricultural fairs or petting zoos warrant evaluation in consultation with the local Medical Health Officer and the BC Public Health Microbiology and Reference Laboratory (PHMRL) with respect to possible testing, treatment, isolation and/or follow-up.
- Appropriate precautions for respiratory droplet or close contact transmission should be followed.

Please consult related BC Communicable Disease Control Guidelines for additional information and resources: <http://www.bccdc.ca/dis-cond/comm-manual/CDManualChap1.htm>.

## References

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- <sup>1</sup> Centers for Disease Control and Prevention (CDC). Case count: Detected U.S. human infections with H3N2v by state since August 2011. Last updated 5 July 2013. Available from: <http://www.cdc.gov/flu/swineflu/h3n2v-case-count.htm>.
  - <sup>2</sup> Skowronski et al. Cross-reactive and vaccine-induced antibody to an emerging swine-origin variant of influenza A virus subtype H3N2 (H3N2v). *J Infect Dis* 2012;206(12):1852-61. Available from: <http://jid.oxfordjournals.org/content/206/12/1852.full.pdf+html>.
  - <sup>3</sup> Skowronski et al. H3N2v and other influenza epidemic risk based on age-specific estimates of sero-protection and contact network interactions. *PLOS One*. 2013;8(1):e54015. Available from: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0054015>.
  - <sup>4</sup> Petting Zoo and Open Farm Visits. HealthLinkBC (No. 61b, July 2013): <http://www.healthlinkbc.ca/healthfiles/hfile61b.stm>
  - <sup>5</sup> Communicable Disease Control Guidelines for Prevention of Zoonotic Diseases from Petting Zoos and Open Farms. BC Centre for Disease Control (March 2011): <http://www.bccdc.ca/dis-cond/comm-manual/CDManualChap1.htm>
  - <sup>6</sup> Centers for Disease Control and Prevention (CDC). Take action to prevent the spread of flu between people and pigs at fairs. Last updated 28 June 2013. Available from: <http://www.cdc.gov/flu/swineflu/h3n2v-fairs-factsheet.htm>.
  - <sup>7</sup> Centers for Disease Control and Prevention (CDC). Fact sheet: Protect yourself against H3N2v. Last updated 5 July 2013. Available from: <http://www.cdc.gov/flu/swineflu/h3n2v-factsheet.htm>.
  - <sup>8</sup> Centres for Disease Control and Prevention (CDC). H3N2v and you. Last updated 9 July 2013. Available from: <http://www.cdc.gov/flu/swineflu/h3n2v-basics.htm>.
  - <sup>9</sup> Centers for Disease Control and Prevention (CDC). Issues for fair organizers to consider when planning fairs. Last updated 6 September 2012. Available from: <http://www.cdc.gov/flu/swineflu/h3n2v-fairs-planning.htm>.
  - <sup>10</sup> Centers for Disease Control and Prevention (CDC). Key Facts for people exhibiting pigs at fairs. Last updated 28 June 2013. Available from: <http://www.cdc.gov/flu/swineflu/h3n2v-pigs-at-fairs.htm>.
  - <sup>11</sup> National Assembly of State Animal Health Officials (NASAHO) and National Association of State Public Health Veterinarians (NASPHV). Measures to minimize influenza transmission at swine exhibitions, 2013. Atlanta: Centers for Disease Control and Prevention, March 2013. Available from: <http://www.cdc.gov/flu/swineflu/h3n2v-fairs-planning.htm>.
  - <sup>12</sup> Centers for Disease Control and Prevention (CDC). Variant influenza virus (H3N2v) infections. CDC Health Advisory. CHCHAN-00351, July 5, 2013. Available from: <http://www.bt.cdc.gov/HAN/han00351.asp>.