

INFLUENZA CAUSED BY A NEW SUBTYPE

Disease Overview

Novel influenza viruses are different subtypes than currently circulating human influenza viruses (seasonal influenza) that causes annual winter outbreaks. Novel (new) influenza viruses arise due to genetic changes—antigenic drift (slight variation of an existing strain) or antigenic shift (the appearance of a completely different strain). Novel subtypes are very different from the usual human viruses and can originate from non-human species or from genetic re-assortment between animal and human viruses. Occasionally, strains of influenza (variant influenza viruses) that normally affect birds, pigs, and other animals can infect humans.

Novel influenza viruses have the potential to lead to a pandemic if the virus causes significant human illness and can be easily and sustainably spread from person-to-person. All novel influenza viruses infecting humans, regardless if they are easily spread or not, warrant concern and require urgent notification.

Emerging respiratory pathogens newly adapting to the human host may demonstrate epidemiologic characteristics atypical for other viruses within the same family. For example, the incubation period may differ and transmission characteristics may vary and evolve. As an emerging respiratory virus adapts to the human host, and case investigation becomes more complete, clinical and epidemiologic understanding may change.

Symptoms

Patients with uncomplicated seasonal influenza typically have a sudden onset of fever and cough, and may include one or more of the following symptoms: headache; sore throat; other upper respiratory tract symptoms; myalgias; arthralgias; fatigue; vomiting; and diarrhea.

Clinical illness with novel influenza viruses is usually consistent with seasonal influenza virus infection. However, severe respiratory symptoms could occur (pneumonia, breathing difficulty or other severe and life-threatening complications) and gastrointestinal symptoms may be more common.

Reservoir

Aquatic birds are natural reservoirs of influenza A viruses, predominantly ducks, geese, and shorebirds. Avian influenza subtypes have infected a variety of mammals including pigs, whales, seals, horses, ferrets, cats, dogs, and tigers. Other animal species (for example horses and dogs) also have distinct influenza viruses that are not easily transmitted among humans.

Bird and animal reservoirs are suspected as sources of novel influenza subtypes (for example swine).

Mode of Transmission

Seasonal influenza is spread person to person primarily through droplet, droplet nuclei, and contact transmission routes. The virus, host, and environment determine the process, and thus transmission may occur via multiple routes for novel influenza viruses. Infection can occur as a result of close contact between humans, birds, pigs, and other animals.

Incubation period

To be determined, estimated as 2-14 days

Period Communicability

To be determined

May be similar to seasonal influenza: typically adults with seasonal influenza may be able to infect others beginning 1 day before symptoms develop and up to 5 days after the onset of illness. Children may be infectious for up to 7 days after onset of symptoms.

The period for H5N1 can last up to 3 weeks.

Risk Factors

To be determined.

Potential risk factors are exposure/direct contact to birds, pigs, etc. Also live poultry markets.

Historically, high risk populations included pregnant women, First Nations, children, and elderly.

Surveillance Case Definition

The initial laboratory indication of a novel influenza A virus from an animal source is the inability of existing tests to subtype the detected influenza A virus. {reference: Heymann, D. (n.d.). Control of communicable diseases manual: An official report of the American Public Health Association (20th ed.)}

Confirmed case

The case has laboratory confirmation of novel influenza A virus.

Probable Case

- A case meeting the clinical criteria and epidemiologically linked to a confirmed case, but for which no confirmatory laboratory testing has been performed or test results are inconclusive for a novel influenza A virus infection.

OR

- Residence or travel history to affected areas (if defined by identification of animal or human infections).

Criteria for epidemiologic linkage:

- The patient has had contact with one or more persons who either have or had the disease, AND
- Transmission of the agent by the usual modes of transmission is plausible.

A case may be considered epidemiologically linked to a laboratory-confirmed case if at least one case in the chain of transmission is laboratory confirmed.

Clinical Evidence

An illness compatible with influenza virus infection (fever, with cough and/or sore throat).

{Reference: CDC National Notifiable Diseases Surveillance System (NNDSS)- Novel influenza A virus infections 2014 Case Definition}.

Diagnosis and Laboratory Guidelines

For many new subtypes, the detection RT-PCR may detect the virus and type it as a type A, but it would show up as unsubtypeable. If required, additional typing can be performed at the National Microbiology

Laboratory in Winnipeg. Unless it is specified otherwise, a regular specimen, either a nasopharyngeal swab or a nasopharyngeal aspirate.

Viral isolation from a clinical specimen may be used if the RT-PCR results are inconclusive, but it takes a longer time to get the results. In some specific cases where a nasopharyngeal swab or a nasopharyngeal aspirate can't be obtained, diagnosis can be confirmed by using paired acute and convalescent sera. A fourfold or more increase in total antibodies confirms an influenza diagnosis. Serological methods can confirm an influenza diagnosis, but will not inform on the subtype of the virus.

Point of care testing is not recommended for influenza caused by a new subtype. If such a test is used, any negative result should not be considered conclusive and a clinical specimen should be collected and sent for either RT-PCR or viral isolation.

Reporting

Per Policy 2.2 Disease and Event Notification to OCMOH and Disease and Event Reporting section.

- CD Urgent Notification for all confirmed and probable cases of a novel influenza virus.
- Enhanced surveillance: Complete the NB Emerging Pathogens and Severe Acute Respiratory Infection (SARI) Case Report Form for all confirmed and probable cases.

Case Management

Education

The case or relevant caregiver should be informed about

- Nature of the infection length of communicable period and mode of transmission
- Handwashing
- Respiratory Disease Precautions,
- Cough/Sneeze Etiquette

Investigation

Rapid identification and reporting of novel influenza A human infections is necessary to enable the rapid implementation of effective communicable disease control measures with the goal of preventing a pandemic.

Investigation of the source of infection and inquiry about potential exposure to novel viruses such as recent travel, exposure to ill persons who have recently traveled, and exposure to animals such as wild birds, poultry and swine.

Exclusion/Social Distancing

Isolation of case with appropriate infection control measures.

Treatment

As prescribed by health care provider. For information regarding antiviral use in the context of Avian Influenza A virus infection, please consult AMMI Canada: <http://www.ammi.ca/guidelines/>.

Immunization

Immunization against seasonal influenza for unvaccinated individuals which will provide protection against the circulating influenza serotypes.

Contact Management

Contact investigations should be performed for all confirmed cases of novel influenza.

Education

Per case management

Investigation

Identification and surveillance of contacts for presence of illness including daily temperature monitoring. If contacts develop clinical symptoms, they should be tested.

Exclusion/Social Distancing

Isolation of contacts that develop clinical symptoms.

Prophylaxis

Refer to guidelines from AMMI Canada.

Outbreak Management

Activate the local outbreak plan when an outbreak is declared.

Activate NB pandemic influenza plan if outbreak is declared.