

INFLUENZA (LABORATORY CONFIRMED)

Disease Overview

Influenza is an acute respiratory illness caused by a group of viruses that infect the nose, throat, and lungs. There are four types of influenza viruses A, B, C, and D. A and B are the most significant to humans, as the types that cause seasonal influenza cases each year.

Symptoms

Clinical illness defined as influenza-like illness (ILI) is characterized as an acute onset of respiratory illness. Symptoms may include:

- New or worsening cough
- Shortness of breath
- fever
- sore throat
- headache
- myalgia
- lethargy.

In a vulnerable setting testing is recommended when a resident has a cough or fever, or two or more of the above symptoms.

In children under 5, gastrointestinal symptoms may also be present. In patients under 5 years or 65 years and older, fever may not be prominent. Note: Illness associated with novel influenza viruses may present with other symptoms.

Influenza can lead to the following complications: lower respiratory tract involvement (bronchitis and pneumonitis); secondary bacterial pneumonia; viral pneumonia; exacerbation of underlying chronic conditions; sinusitis; otitis media; febrile seizures; encephalitis/ encephalopathy; rhabdomyolysis; myocarditis; and myositis. Seasonal influenza deaths can occur at any age, however more than 90% are persons 65 years or older.

Reservoir

Influenza A may infect humans and animals. Humans are the only known reservoir of influenza B and C viruses. Influenza D is not known to infect humans. Humans are the primary reservoir for human infection. Animal reservoirs are significant as the source for emergence of new human subtypes through genetic reassortment of the virus.

Mode of Transmission

All routes of transmission (droplet, and contact) have a potential role; however, influenza is typically transmitted through droplets or small particle aerosols spread when someone coughs, sneezes, talks, or even breaths. The length of time human influenza viruses can survive on surfaces varies depending on environmental factors such as temperature and type of surface. Because of this, it's important to keep in mind that it can also be transmitted through direct or indirect contact with these droplets or particles that are left on surfaces or objects.

Incubation period

1-4 days with an average of 2 days.

Period Communicability

Infected people are contagious one day before onset of symptoms until approximately five days after. In adults, viral shedding is the highest in the initial 3-5 days from clinical onset. In young children, viral shedding can be 7-10 days and even longer in severely immunocompromised individuals.

Risk Factors

Those at increased risk of acquiring and/or severe illness include:

- Adults (including pregnant women) and children with the following chronic health conditions:
 - cardiac or pulmonary disorders (including bronchopulmonary dysplasia, cystic fibrosis, and asthma);
 - diabetes mellitus and other metabolic diseases;
 - cancer, and other immune compromising conditions (due to underlying disease and/or therapy);
 - renal disease;
 - anemia or hemoglobinopathy;
 - conditions that compromise the management of respiratory secretions and are associated with an increased risk of aspiration;
 - morbid obesity (BMI \geq 40); and
 - children and adolescents (age 6 months to 18 years) with the following conditions
 - neurologic or neurodevelopment conditions (including seizure disorders, febrile seizures and isolated developmental delay);
 - undergoing treatment for long periods with acetylsalicylic acid, because of the potential increase of Reye's syndrome associated with influenza.
- People of any age who are residents of nursing homes and other chronic care facilities.
- People 65 years and older.
- All children 6 to 59 months of age.
- Pregnant individuals (the risk of influenza-related hospitalization increases with length of gestation, i.e., it is higher in the third than in the second trimester).
- First Nations, Inuit, and Metis people.

People capable of transmitting influenza to those at high risk include:

- Health care and other care providers in facilities and community settings who, through their activities, are capable of transmitting influenza to those at high risk of influenza complications.
- Household contacts (adults and children) of individuals at high risk of influenza-related complications (whether or not the individual at high risk has been immunized):
 - household contacts of individuals at high risk, as listed in the section above;
 - household contacts of infants <6 months of age as these infants are at high risk of complications from influenza but cannot receive influenza vaccine;
 - members of a household expecting a newborn during the influenza season.
- Those providing regular childcare to children \leq 59 months of age, whether in or out of the home.
- Those who provide services within closed or relatively closed settings to persons at high risk (e.g., crew on a ship).

Other groups to consider:

- People who provide essential community services.
- People in direct contact during culling operations with poultry infected with avian influenza.

Surveillance Case Definition

Confirmed Case

Clinical illness with laboratory confirmation of infection:

- isolation of influenza virus from an appropriate clinical specimen
- OR

- demonstration of influenza virus antigen in an appropriate clinical specimen
- OR
- significant rise (e.g., four-fold or greater) in influenza IgG titre between acute and convalescent sera
- OR
- detection of influenza RNA

Clinical illness defined as influenza-like illness (ILI) is characterized as follows: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Outbreak definition in a Vulnerable setting

An outbreak in a vulnerable setting (Nursing Home, Adult Residential Facility, or Correctional Facility) may be declared by the Medical Officer of Health when 2 or more laboratory confirmed cases among residents or staff with an epidemiological link within 7 days.

The Medical Officer of Health may declare the end of an outbreak 8 days after last high-risk exposure (close contact), and as per Public Health guidance.

Diagnosis and Laboratory Guidelines

The New Brunswick Public Health Laboratory is the reference laboratory for all influenza testing.

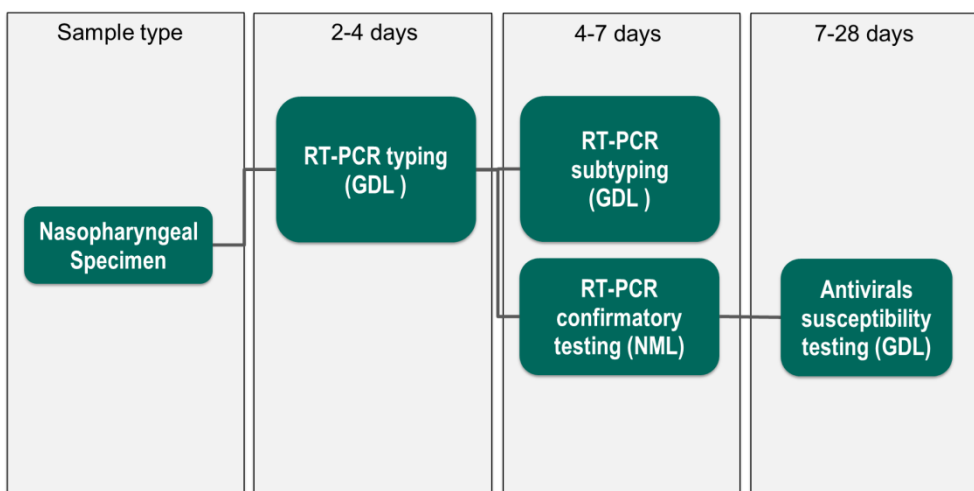
The most common laboratory test for influenza is done by RT-PCR. This test detects the presence of the virus' RNA in a clinical specimen. It can be done on a nasopharyngeal swab or a nasopharyngeal aspirate. Throat swabs, nasal swabs and sputum specimen are possible, but are not typically recommended.

The RT-PCR is separated in two steps: the typing and the subtyping. The typing PCR is done on every specimen and provides a confirmation of influenza and the type (A or B) of the virus. The subtyping PCR is done on a percentage of all specimens. It provides the H subtype for the virus.

In some specific time-sensitive situations, rapid testing will be performed. There are 2 main platforms being used in NB for rapid influenza testing: GeneXpert and BioFire. They are built to provide rapid results to a subset of pathogens, but they may not allow subtyping beyond what is provided by the platform.

The National Microbiology Laboratory in Winnipeg provides confirmatory testing, subtyping services for uncommon subtypes and antiviral susceptibility testing.

Figure 1: Influenza laboratory testing process:



Reporting

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

- RHA Public Health is required to report all lab-confirmed influenza outbreaks in long-term care facilities and other vulnerable settings as well as influenza-like illness outbreaks in schools to OCMOH on a weekly basis via the SOLAR module on CNPHI.
- A lab-confirmed influenza outbreak is defined as two or more cases of ILI within a seven-day period, including two laboratory confirmed cases where there is an epidemiological link.
- An influenza-like illness outbreak in a school is defined as greater than 10% absenteeism which is likely due to ILI.
- RHA Public Health is also required to submit the New Brunswick Long-Term Care Facility Respiratory Outbreak Surveillance Form to OCMOH upon declaration of an outbreak and once the outbreak is declared over.

Case and Contact Management

Not applicable

Management of Special Situations

Measures to contain an outbreak include case management, contact management, immunization, prophylaxis, cohorting, environmental cleaning, exclusion, masking, physical distancing, and others. Refer to Management of Infection and Outbreak due to Viral Respiratory Illness in NH or Management of Infection and Outbreak due to Viral Respiratory Illness in Adult Residential Care Facilities.

Education

The case or relevant caregiver and contacts should be informed about:

- Nature of the infection, length of the communicable period, signs and symptoms, and modes of transmission
- Hand hygiene
- Cough and sneeze etiquette (respiratory hygiene)
- Immunization and availability of treatment and prophylaxis if eligible
- Staying home if experiencing influenza like illness, particularly for those who work in vulnerable settings.

Immunization

Immunization of those not up to date remains the most effective prevention measure against severe health outcomes such as hospitalizations and death.

- Refer to eligibility criteria for publicly funded influenza vaccine.
- Refer to National Advisory Committee on Immunization (NACI) Statement on Seasonal Influenza Vaccine and *Canadian Immunization Guide* Chapter on Influenza.
- Continue to advise offering immunization to both residents and staff for the duration of the respiratory season.
- When an outbreak is declared by Public Health in a facility (or unit/area) whether due to influenza, covid, or other, it is recommended to cease or avoid any planned immunization activities in the affected outbreak areas/units until such time as the outbreak is declared over (or as otherwise directed by local Public Health).
- Resume all planned immunization activities as soon as the outbreak is declared over, or as otherwise directed by Public Health.

Chemoprophylaxis

In the event of an influenza outbreak in a nursing home or eligible adult residential facility, the attending physician or the facility's Medical Advisor/House Physician, or facility operator may consult with the Regional Medical Officer of Health (RMOH). The RMOH will make general recommendations regarding antiviral use in the facility based on guidelines from AMMI Canada (Association Medical Microbiology and Infectious Disease Canada). If recommended by the RMOH, publicly funded antivirals will be made available for eligible individuals who do not already have coverage under existing drug plans.

A prescription for prophylaxis is required from their primary care provider, pharmacist, or eVisitNB.

For Adult Residential Facilities eligibility for publicly funded prophylaxis will be limited to Level 3 Generalist (3G) and Memory Care (3B) Homes.

For Nursing Homes publicly funded antivirals remain available under the New Brunswick Prescription Drug Plan.

The responsibility for individual resident treatment decisions during the outbreak remains with the attending physician.