



Alberta Public Health Disease Management Guidelines

Influenza, Seasonal



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Public Health Division

Alberta Health

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Revisions

Revision Date	Document Section	Description of Revision
March 2023	Case definition	<ul style="list-style-type: none"> Updated clinical illness with symptoms from ILI definition
	Epidemiology	<ul style="list-style-type: none"> Title of this section changed to Clinical Assessment and Epidemiology Updated incidence section so that information is more generalized and refers to links for more detailed information Generalized treatment section and included links with more details
	Public Health Management	<ul style="list-style-type: none"> Updated management of Outbreaks section to only include influenza and ILI Management of RIO outbreaks moved to Appendix 1
	Appendix	<ul style="list-style-type: none"> Appendix 1: Revision history moved to front of guideline

Case Definition

Confirmed Case

A person with clinically compatible signs and symptoms ^(A) and laboratory confirmation of infection with seasonal influenza virus by:

- Detection of influenza virus RNA (e.g., via real-time reverse transcriptase polymerase chain reaction [RT-PCR]);
- OR**
- Demonstration of influenza virus antigen (e.g., via Rapid influenza diagnostic tests ^(B)) in an appropriate clinical specimen (e.g., nasopharyngeal/throat swabs);
- OR**
- Significant rise (e.g., fourfold or greater) in influenza IgG titre between acute and convalescent sera;
- OR**
- Isolation of influenza virus from an appropriate clinical specimen.

^(A) Clinical illness is characterized as an acute onset of respiratory illness which includes one or more of the following symptoms:

- cough (new or worsening chronic cough)
- fever
- shortness of breath
- sore throat
- arthralgia
- myalgia
- prostration that could be due to influenza virus.

NOTE: In children under five years of age, gastrointestinal symptoms may also be present. In patients under five years of age, or 65 years of age and older, fever may not be prominent.

^(B) Rapid influenza diagnostic tests (RIDTs) are immunoassays that can identify the presence of nucleoprotein antigens of influenza A and B, however these are not currently in use in Alberta

Reporting Requirements

Laboratories

- All laboratories shall report all positive seasonal influenza laboratory results by mail, fax or electronic transfer within 48 hours (two days) to the:
 - Chief Medical Officer of Health (CMOH) or designate, and
 - Medical Officer of Health (MOH) or designate of the Zone where the case resides.

Alberta Health Services and First Nations and Inuit Health Branch

- The Zone MOH (or designate) shall report all confirmed influenza hospitalizations/deaths ^(C) in hospitals and deaths in the community that come to the attention of public health. They shall forward the [COVID-19/Seasonal Influenza death and hospitalized case report form](#) to the CMOH (or designate) using existing processes (e.g., CDOM or confidential fax).
 - The report form must be submitted within **one week** of notification of hospitalization, discharge from hospital, resolution of the influenza case status or death.^(C)
- The Zone MOH (or designate) shall forward the [Alberta Outbreak Report Form \(AORF\)](#) for any new confirmed influenza outbreaks to the CMOH (or designate), using existing processes (e.g., CDOM or confidential fax).
 - The initial report form must be submitted within **24 hours** of opening the outbreak investigation and the final report must be submitted within **48 hours** of closing the outbreak investigation.
 - Aggregate numbers must be reported weekly for outbreaks in continuing care and acute care settings while they remain open.
- For out-of-province and out-of-country confirmed influenza cases that are reported as hospitalized/deceased, the Zone MOH (or designate) shall forward the following information to the CMOH (or designate) using existing processes (e.g., CDOM) within **48 hours** (two business days):
 - name,
 - date of birth,
 - out-of-province health care number,
 - out-of-province address and phone number,
 - positive laboratory report, and
 - other relevant clinical/epidemiological information.

^(C) Confirmed influenza deaths: deaths where a lab-confirmed influenza infection is the direct or contributing cause.

Clinical Assessment and Epidemiology

Etiology

Influenza viruses belong to the *Orthomyxoviridae* family.⁽¹⁾ There are four distinct types of influenza: A, B, C and D.⁽²⁾ Influenza A and B viruses cause the majority of seasonal influenza outbreaks. However, only influenza A viruses are known to cause pandemics.

Influenza A virus is further subtyped based on the 18 different hemagglutinin (H) and 11 different neuraminidase (N) surface glycoproteins.⁽²⁾ Current subtypes of influenza A viruses that routinely circulate in people include: A(H1N1) and A(H3N2). Influenza A subtypes can be further broken down into different genetic “clades” and “sub-clades.” Influenza B viruses have diverged into two antigenically distinct lineages, namely Yamagata and Victoria.

Influenza viruses undergo continuous change in two ways. The first, known as antigenic drift occurs when small changes in the genetic code of the virus (mutations) lead to changes in the surface proteins of influenza viruses. The second is when influenza A virus undergoes a significant and abrupt change which is known as antigenic shift, usually resulting from blending between different animal and human strains create novel strains of virus.^(3,4) Influenza pandemics occur when most humans have little or no immunity to a novel influenza A virus which leads to sustained human-to-human transmission and community-wide outbreaks.⁽⁵⁾

Clinical Presentation

Influenza typically begins with an abrupt onset of fever, chills, headache, prostration, myalgia and dry cough.⁽¹⁾ These symptoms are commonly followed by sore throat, nasal congestion and rhinitis.⁽⁶⁾ The cough can last two weeks or more with the fever and other symptoms resolving in five to seven days in uncomplicated cases.⁽¹⁾ Gastrointestinal (GI) involvement (nausea, vomiting and diarrhea) has been reported in children with influenza but is uncommon in adults.

Complications from influenza infection include primary influenza viral pneumonia, bacterial pneumonia (e.g., *Streptococcus pneumoniae*, *Staphylococcus aureus* and *Streptococcus pyogenes*), exacerbation of chronic pulmonary conditions, sinusitis, otitis media, febrile seizures, encephalitis, myositis and death.⁽¹⁾ Reye syndrome has also been associated with influenza infections in children.⁽⁶⁾ It is typically seen in children who have been given aspirin to treat fever from influenza.

Diagnosis

Diagnosis of influenza is made through a variety of molecular assays (e.g., RT-PCR) and antigen detection tests (e.g. RIDTs). Diagnosis can also be made using viral culture, however this testing method does not provide results in a timely manner to inform patient management. Some molecular assays that are routinely used are designed to detect an influenza A or B infection but not necessarily to differentiate the subtype of influenza (e.g., an individual may be infected with influenza A H1N1, but the test will only report that influenza A was detected in the specimen). There are other assays that are designed to detect influenza subtypes.^(7,8)

Treatment

- **For mild to moderate illness:** Treatment with antivirals is NOT generally indicated unless the individual is at high risk for influenza-related complications.⁽⁹⁾ (See [Host Susceptibility](#))
- **For severe illness:** Treatment with antivirals such as oseltamivir, zanamivir or peramivir should be considered and is the responsibility of the individual’s most responsible care provider.⁽⁹⁾ (See [Host Susceptibility](#))
 - For more information on treatment refer to [Government of Canada website](#).

Reservoir

The natural reservoir of influenza A viruses is aquatic birds.⁽¹⁾ Influenza A viruses can also circulate in birds, pigs, horses, ferrets, seals and other animals. Humans are considered the reservoir for current seasonal influenza viruses. Influenza B viruses only circulate in humans.

Transmission

Influenza virus particles are mainly spread via respiratory droplets and small particle aerosols which are released from infected people when they sneeze, breathe, cough, or talk. These droplets generally do not stay suspended in the air and usually travel less than two metres (six feet). They may enter another person's eyes, nose, or mouth, or fall onto surfaces in the immediate environment. Indirect transmission may also occur such as when touching surfaces contaminated with influenza virus and then touching the eyes, nose or mouth.^(6,9,10)

The virus can survive on hard surfaces (door handles, telephones, computer keyboards, light switches, countertops, etc.) for one to two days and on soft surfaces (cloth, tissues and paper) for 8–12 hours.⁽¹¹⁾ These fomites can serve as a source of infection for up to eight hours on hard surfaces and only a few minutes on soft surfaces.

Incubation Period

The incubation period for influenza is generally one to four days with an average of two days.⁽¹⁾

Period of Communicability

The period of communicability for seasonal influenza begins from one day before and up to seven days after illness onset. People with influenza are most infectious in the first 3 – 4 days after illness onset.⁽¹⁰⁾ People who are elderly, severely ill, immunocompromised or children may shed virus for longer periods.^(1,12)

Host Susceptibility

Susceptibility is universal.–Attack rates tend to be highest in young children, while over 90% of influenza deaths occur in individuals 65 and older; however, influenza-related deaths can occur in any age group.^(13,14)–Refer to the current [National Advisory Committee on Immunization \(NACI\) statement on influenza](#) for information on individuals who are at higher risk for complications related to influenza and who may be more likely to require hospitalization.

Incidence

The annual incidence of influenza varies depending on the strain that circulates and the susceptibility of the population it affects. For more information on global influenza trends refer to the [World Health Organization \(WHO\) Global Influenza Programme](#).

In Canada the burden of influenza varies from year to year. However an estimated average of 12,200 hospitalizations and approximately 3,500 deaths attributable to influenza occur annually, mostly in seniors.⁽¹⁵⁾ For more information on seasonal influenza activity in Canada refer to the [Fluwatch](#) website.

The rate of influenza in Alberta varies each year and current case counts can be found on the [Alberta influenza statistics](#) website. For more information on previous influenza seasons refer to the Government of Alberta [Seasonal Influenza Reports](#).

Public Health Management (Outbreak Only)

Key Investigation

- Refer to the [Management of Influenza and Influenza-Like-Illness \(ILI\) Outbreaks in Congregate Settings section](#).
- ILI or confirmed influenza outbreaks should be managed as per direction from the Zone MOH.
- The Zone MOH will determine the need and extent of outbreak control measures, including the use of antivirals.
- The most important control measure to prevent serious morbidity and mortality from influenza outbreaks is annual immunization. Refer to the [Alberta Immunization Policy \(AIP\)](#) for more information.

Management of Cases

- General guidance in high-risk settings should include site-specific infection prevention and control precautions to prevent disease transmission
- [Antiviral treatment](#) may be considered for severe illness or for individuals at high risk for severe outcomes.

Management of Contacts

- Post-exposure prophylaxis (PEP) may be recommended for the following in high risk settings unless a contraindication is present:
 - Contacts that are at high risk for influenza-related complications (regardless of their influenza immunization status),
 - Unimmunized healthcare workers^(D) in high risk settings

^(D) Health care workers (HCWs) are defined as: all health practitioners and all individuals (including nutrition and food services, housekeeping, recreation etc.) at increased risk for exposure to, and/or transmission of, a communicable disease because they work, study, or volunteer in one or more of the following health care environments: hospital, nursing home (facility living), supportive living accommodations, or home care setting, mental health facility, community setting (e.g. paramedics, EMS, firefighters, police officers), office or clinic of a regulated health professional, office, clinical laboratory.

Management of Influenza and Influenza-Like-Illness Outbreaks in Congregate Settings

- In congregate care facilities^(E) and congregate living settings (i.e., prisons/correctional facilities), the [Influenza-Like-Illness \(ILI\) definition](#) and the [ILI Outbreak definition](#) will be used to identify, report and manage outbreaks that may be caused by a variety of respiratory pathogens, including Influenza.

Influenza-Like-Illness (ILI) Definition

Acute onset of respiratory illness which includes cough (new or worsening chronic cough) and one or more of the following symptoms:

- fever,
- shortness of breath,
- sore throat,
- myalgia,
- arthralgia
- prostration.

NOTE: In children under five years of age, GI symptoms may also be present. In people under five years of age or 65 years of age and older fever may not be prominent.

Influenza-Like-Illness (ILI) Outbreak Definition

- Two or more cases of ILI within **7 days** with a common epidemiological link

AND

- NO respiratory pathogen identified **OR** only one case of any respiratory pathogen identified (e.g., influenza; COVID-19; RSV)

Confirmed Influenza Outbreak Definition

- Two or more confirmed influenza cases (patients/residents) within **7 days** with a common epidemiological link

AND

- NO other respiratory pathogen identified **OR** only one case of any other respiratory pathogen identified (e.g., COVID-19; RSV)

NOTE: Influenza outbreak investigation is important for appropriate case and contact management in congregate care (e.g., long term care and auxiliary hospitals; licensed supportive living including lodges; and hospices) and congregate living settings (e.g., correctional facilities) where treatment/prophylaxis may be offered to protect high-risk individuals that reside in these facilities. Further outbreak investigation in other settings may be conducted at the discretion of the MOH.

NOTE: Outbreaks can be closed 7 days after the last patient/resident case.

^(E) Licensed supportive living (including lodges), long-term care (nursing homes and auxiliary hospitals), and hospices.

Table 1: Mixed Pathogen Outbreak Classification in Congregate Care/Living Facility

Cases Identified	Outbreak Classification	Outbreak Closed
≥2 confirmed influenza cases with an epi link AND ≤1 confirmed case of any other respiratory pathogen (e.g. COVID-19, RSV)	Influenza	Outbreak remains open for 7 days after symptom onset for last Influenza case
≥2 confirmed COVID-19 cases with an epi link AND ≥2 confirmed influenza cases with an epi link	COVID-19/influenza	14 days from date of onset of symptoms in the last case*
≥2 confirmed COVID-19 cases with an epi link AND ≤1 confirmed influenza case	COVID-19	Outbreak remains open for 14 days after symptom onset for last COVID-19 case*
≥2- ILI cases with an epi link AND ≤1 confirmed influenza case AND ≤1 confirmed COVID-19 case	ILI Outbreak	Based on the organism identified (if applicable)

*NOTE: Outbreaks can be closed 14 days after symptom onset of the last patient/resident case regardless if additional staff cases are found at the tail end of an outbreak

Preventive Measures

- Provide general and ongoing public education regarding preventive measures against influenza such as staying away from people who are sick, staying home if sick, covering coughs and sneezes and practicing frequent hand hygiene.
- All Albertans six months of age and older are eligible to receive annual influenza vaccine under the provincially funded program. Refer to the [Alberta Immunization Policy \(AIP\)](#) for more information.
- Pneumococcal vaccine may be useful in preventing secondary bacterial infections in populations at high risk for influenza-related complications.

Appendix 1: Management of Respiratory Outbreaks

- In schools, childcare settings and homeless shelters/temporary housing, the [Respiratory Illness \(RI\) definition](#) and the [Respiratory Illness Outbreak \(RIO\) definition](#) will be used to identify, report and manage outbreaks that may be caused by a variety of respiratory pathogens, including Influenza.

Respiratory Illness (RI) Definition

- NEW onset of TWO or more symptoms with at least one must be from List A:
 - List A:** cough, shortness of breath (SOB), sore throat, runny nose/nasal congestion, loss or altered sense of taste/smell
 - List B:** fever, fatigue (significant and unusual), muscle ache/joint pain, headache, nausea/diarrhea

Respiratory Illness Outbreak (RIO) Definition

- Two or more cases of respiratory illness within **7 days** with a common epidemiological link

AND

- NO respiratory pathogen identified **OR** only one case of any respiratory pathogen identified (e.g., influenza; COVID-19; RSV)

Table 2: RIO Definitions

Setting	Confirmed Respiratory Illness Outbreak
Schools (K-12)	10% absenteeism due to respiratory illness OR an unusual number of students with similar respiratory symptoms AND at least two epidemiologically linked individuals within the school setting (who are not from the same household) with respiratory illness symptom onset within a 7 day period .
Childcare settings: Daycares, after school care, preschools	At least two epidemiologically linked cases with respiratory illness in individuals in the childcare cohort (not from the same household) with symptom onset within a 7 day period .
Homeless shelters/temporary housing	Unusual number of clients (above baseline) with respiratory illness and at least two epidemiologically linked individuals within the setting with respiratory illness symptom onset within a 7 day period .

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