

Appendix A: Disease-Specific Chapters

Chapter: Influenza

Revised December 2014

Influenza

Communicable

Virulent

Health Protection and Promotion Act:

Ontario Regulation 558/91 – Specification of Communicable Diseases

Health Protection and Promotion Act:

Ontario Regulation 559/91 – Specification of Reportable Diseases

1.0 Aetiologic Agent

Causative agents include three types of influenza virus: A, B, and C. Types A and B are of public health importance since they both have been responsible for epidemics.¹ Influenza A subtypes are classified by the antigenic properties of their surface glycoproteins hemagglutinin (H) and neuraminidase (N). There are 16 different H and 9 different N subtypes. Frequent mutation of the genes encoding these surface glycoproteins results in the emergence of new strains.¹ Influenza A H1 and H3 subtypes and influenza B are associated with widespread seasonal epidemics; Influenza B viruses are comprised of two lineages, Victoria and Yamagata.

Influenza strains have a typical naming convention, by type (A, B or C), geographic site of isolation, strain number, year of isolation; for influenza A viruses, the H and N subtypes are also shown. Some examples include: A/New Caledonia/20/99(H1N1), A/Brisbane/10/2007(H3N2)-like virus, B/Malaysia/2506/2004.¹

Since 1997 avian influenza infections have been identified in sporadic human cases with high fatality (e.g. H5N1 and H7N9). Transmission has gradually increased among poultry and poultry outbreaks of influenza A have occurred in several Asian countries.¹

2.0 Case Definition

2.1 Surveillance Case Definition

[See Appendix B](#)

2.2 Outbreak Case Definition

The outbreak case definitions are established to reflect the disease and circumstances of the outbreak under investigation. The outbreak case definitions should be created in consideration of the provincial surveillance case definition. For example, confirmed outbreak cases must at a minimum meet the criteria specified for the provincial surveillance confirmed case classification. Consideration should also be given to the following when establishing outbreak case definitions:

1. Clinical and/or epidemiological criteria
2. The time frame of occurrence
3. The geographic location(s) or place(s) where cases live or became ill/exposed

4. Special attributes of cases (e.g. age, underlying conditions) and
5. Further strain characterization and molecular typing as appropriate, which may be used to support linkage

Outbreak cases may be classified by levels of probability (i.e. confirmed, probable and/or suspect).

3.0 Identification

3.1 Clinical Presentation

Influenza is an acute respiratory infection (ARI). Symptoms include, but are not limited to, new or worsening cough, shortness of breath, fever, sore throat, headache, myalgia, and lethargy. Infections in children may also be associated with some gastrointestinal symptoms such as nausea, vomiting and diarrhea, while the elderly may not mount a fever response. In most people, illness resolves within five to seven days, however the very young and old could develop complications such as pneumonia, or middle ear infections.¹ Many individuals infected with the influenza virus are asymptomatic.

3.2 Diagnosis

[See Appendix B](#)

The specimen of choice for seasonal influenza virus is the nasopharyngeal swab (NPS) taken within the first four days of illness.^{2,3} When indicated and possible, lower respiratory tract specimens (e.g. bronchoalveolar lavage) should also be submitted, as these may have greater sensitivity than NPSs.

For further information about human diagnostic testing, contact the Public Health Ontario Laboratories or refer to the Public Health Ontario Laboratory Services webpage:

<http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/default.aspx>

4.0 Epidemiology

4.1 Occurrence

Worldwide; as sporadic cases, epidemics occur almost annually and pandemics rarely. In Canada, the influenza season usually runs from November to April.⁴ During a typical influenza season in Ontario, peak influenza activity can occur anywhere from December to March.

The Ontario Respiratory Virus Bulletin and [the Laboratory Based Respiratory Pathogen Surveillance Report](#) provide the latest information on influenza activity in Ontario and are produced weekly from November to May and every other week in the ‘off-season’:

<http://www.publichealthontario.ca/en/ServicesAndTools/SurveillanceServices/Pages/Ontario-Respiratory-Virus-Bulletin.aspx>

<http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/PHO-Laboratories-surveillance-updates.aspx>

PHAC's [FluWatch](http://www.phac-aspc.gc.ca/fluwatch/13-14/def13-14-eng.php) provides Canada-wide influenza activity data.
<http://www.phac-aspc.gc.ca/fluwatch/13-14/def13-14-eng.php>

4.2 Reservoir

Humans are the primary reservoir for human infection. Birds and mammalian reservoirs such as swine are likely sources of new human subtypes thought to emerge through genetic reassortment.¹

4.3 Modes of Transmission

Influenza virus particles are predominantly spread via droplets larger than five microns in diameter, which are released or shed from infected persons when they sneeze, cough, or talk. These large droplets do not stay suspended in the air and usually travel less than two metres (six feet).⁵ They may enter the host's eyes, nose or mouth or fall onto surfaces in the immediate environment. Some of these viruses may remain viable for extended periods of time,¹ therefore contact transmission can occur by touching contaminated objects or surfaces and then touching one's face or eyes.

4.4 Incubation Period

Usually one to four days.¹

4.5 Period of Communicability

May become infectious 24 hours prior to onset of symptoms;⁶ viral shedding in nasal secretions usually peaks during the first three days of illness and ceases within seven days but can be prolonged in young children, the elderly and those who are immunocompromised.⁶

4.6 Host Susceptibility and Resistance

Vaccine preventable; new vaccine required annually because vaccine components included in the vaccine are based on circulating strains from the previous season. Immunity is generally achieved within two weeks following immunization and lasts less than a year. Immunity to a strain of a specific subtype may provide significant immunity against a different strain of the same subtype.¹

5.0 Reporting Requirements

5.1 To local Board of Health

Individuals who have or may have novel influenza shall be reported to the medical officer of health by persons required to do so under the *Health Protection and Promotion Act*, R.S.O. 1990 (HPPA).⁷

For possible cases of novel/emerging respiratory infections, the ministry will provide further guidance for reporting purposes.

Individuals who have or may have seasonal influenza viruses shall be reported as soon as possible to the medical officer of health by persons required to do so under the *Health Protection and Promotion Act*, R.S.O. 1990 (HPPA).⁷

5.2 To the Ministry of Health and Long-Term Care (the ministry) or Public Health Ontario (PHO), as specified by the ministry

Report only case classifications specified in the case definition

For laboratory confirmed cases of seasonal influenza, report confirmed cases using iPHIS or any other method specified by the ministry **within five (5) business days of receipt of initial notification** of a case as per the iPHIS Bulletin Number 17: Timely Entry of Cases.⁸

The minimum data elements to be reported for each case is specified in the following sources:

- *Ontario Regulation 569 (Reports) under the Health Protection and Promotion Act (HPPA)*;^{9,7}
- iPHIS User Guides published by PHO; and
- Bulletins and directives issued by PHO.

For possible cases of novel influenza, the ministry will provide further guidance for reporting purposes.

6.0 Prevention and Control Measures

6.1 Personal Prevention Measures

The best prevention measure is annual immunization:

Immunization is the most effective means to reduce the impact of influenza. All Ontario residents aged 6 months and older are eligible to receive publicly funded influenza vaccine yearly. The National Advisory Committee on Immunization (NACI) statement on influenza is published annually and is available on the Public Health Agency of Canada (PHAC) website:

<http://www.phac-aspc.gc.ca/naci-ccni/>

For healthcare workers refer to the Ontario Hospital Association, OHA/OMA Communicable Diseases Surveillance Protocols for Ontario Hospitals:

<http://www.oha.com/Services/HealthSafety/Pages/CommunicableDiseasesSurveillanceProtocols.aspx>

Other measures include:

- Travel Considerations: People at high risk of influenza complications embarking on travel to destinations where influenza is likely to be circulating should receive immunization.⁶
- General public education about the importance of hand hygiene, using proper respiratory etiquette, e.g. covering one's mouth and nose when coughing or sneezing and coughing and sneezing into the arm or using disposable tissues.

6.2 Infection Prevention and Control Strategies

- Promotion of hand hygiene and respiratory etiquette.

- Healthy work place strategies including: policies that support staff staying home when ill; and staff education about relevant policies.
- Droplet and Contact Precautions along with Routine Practices for cases in healthcare facilities.
- Appropriate use of antivirals for prophylaxis and treatment, according to provincial guidelines.

Refer to Public Health Ontario's website at www.publichealthontario.ca to search for the most up-to-date Provincial Infectious Diseases Advisory Committee (PIDAC) best practices on Infection Prevention and Control (IPAC). PIDAC best practice documents can be found at:

http://www.publichealthontario.ca/en/BrowseByTopic/InfectiousDiseases/PIDAC/Pages/PIDAC_Documents.aspx

6.3 Management of Cases

Treatment is under the direction of the attending health care provider. Please see the Association of Medical Microbiology and Infectious Disease Canada website for the most recent guidelines for influenza antivirals. <http://www.ammi.ca/guidelines/>

Advise the individual to stay home when ill and limit exposure to others, especially those at high risk for complications.

6.4 Management of Contacts

Not applicable for sporadic community cases.

6.5 Management of Outbreaks

The most important control measure to prevent serious morbidity and mortality from influenza epidemics is appropriate immunization annually.

For outbreak management in institutions refer to Ontario Ministry of Health and Long-Term Care, A Guide to the Control of Respiratory Infection Outbreaks in Long-Term Care Homes. Toronto: Queen's Printer for Ontario, 2004 (or as current).

7.0 References

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8.0 Additional Resources

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transmission of acute respiratory infection. 2013 revision. Annexed to: Routine practices and additional precautions in all health care settings. Toronto, ON: Queen’s Printer for Ontario; 2013. Available from: http://www.publichealthontario.ca/en/eRepository/PIDAC-IPC_Annex_B_Prevention_Transmission_ARI_2013.pdf

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9.0 Document History

Table 1: History of Revisions

| Revision Date | Document Section | Description of Revisions |
|---------------|------------------------------|---|
| December 2014 | General | New template. Title of Section 4.6 changed from “Susceptibility and Resistance” to “Host Susceptibility and Resistance” Title of Section 5.2 changed from “To Public Health Division (PHD)” to “To the Ministry of Health and Long-Term Care (the ministry) or Public Health Ontario (PHO), as specified by the ministry”. Section 9.0 Document History added. |
| December 2014 | 1.0 Aetiologic Agent | Entire section revised. |
| December 2014 | 2.2 Outbreak Case Definition | Entire section removed. |
| December 2014 | 3.1 Clinical Presentation | Addition of “(ARI)”. “Symptoms include sudden onset of high fever, headache, myalgia, lethargy, coryza, |

| Revision Date | Document Section | Description of Revisions |
|---------------|---------------------------|---|
| | | <p>sore throat and non-productive cough” changed to “Symptoms include, but not limited to, new or worsening cough, shortness of breath, fever, sore throat, headache, myalgia, and lethargy.”</p> <p>Addition of “while the elderly may not mount a fever response”.</p> <p>“Most people resolve within 2-7 days, however the very young and old could develop complications such as...” changed to “In most people, illness resolves within five to seven days, however the very young and old could develop complications such as...”</p> |
| December 2014 | 3.2 Diagnosis | <p>Addition of “When indicated and possible, lower respiratory tract specimens (e.g. bronchoalveolar lavage) should also be submitted, as these may have greater sensitivity than NPSs.”</p> <p>Addition of “For further information about human diagnostic testing, contact the Public Health Ontario...”</p> |
| December 2014 | 4.1 Occurrence | <p>Addition of “During a typical influenza season in Ontario, peak influenza activity can occur anywhere from December to March.”</p> <p>“The Ontario Influenza Bulletin provides information on influenza activity in Ontario it is produced...” changed to “The Ontario Respiratory Virus Bulletin and the Laboratory Based Respiratory Pathogen Surveillance Report ...”</p> <p>Addition of two links: http://www.publichealthontario.ca/en/ServicesAndTools/SurveillanceServices/Pages/Ontario-Respiratory-Virus-Bulletin.aspx http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/PHO-Laboratories-surveillance-updates.aspx</p> |
| December 2014 | 4.2 Reservoir | Removal of “as well as possibly horses.” |
| December 2014 | 4.3 Modes of Transmission | Entire section revised. |

| Revision Date | Document Section | Description of Revisions |
|----------------------|--|---|
| December 2014 | 4.4 Incubation Period | “Usually 1-3 days.” Changed to “Usually one to four days.” |
| December 2014 | 4.5 Period of Communicability | Addition of “the elderly and those who are immunocompromised.” |
| December 2014 | 4.6 Host Susceptibility and Resistance | “...the components of which depend on circulating strains” changed to “because vaccine components included in the vaccine are based on circulating strains from the previous season.” |
| December 2014 | 5.1 To Local Board of Health | Entire section revised. |
| December 2014 | 5.2 To the Ministry of Health and Long-Term Care (the ministry) or Public Health Ontario (PHO), as specified by the ministry | Entire section revised. |
| December 2014 | 6.1 Personal Prevention Measures | Addition of “and nose”. |
| December 2014 | 6.2 Infection Prevention and Control Strategies | Entire section revised. |
| December 2014 | 6.3 Management of cases | Removal of “Refer to Ontario Regulation 569 under the HPPA for relevant data to collect and where possible...” Addition of “Please see the Association of Medical Microbiology and Infectious Disease Canada website for the most recent...” |
| December 2014 | 6.5 Management of Outbreaks | Addition of “(or as current)”. |
| December 2014 | 7.0 References | Updated. |
| December 2014 | 8.0 Additional Resources | Updated. |

