PERTUSSIS

Public Health Management Considerations

This document outlines considerations for the public health management of pertussis. It is intended for use by public health unit (PHU) staff to supplement, and not replace Appendix A and B of Ontario’s Infectious Disease Protocol. The following topics are covered in this document:

1. **Background and context for pertussis**
2. **Diagnosis of pertussis**
   a. Clinically compatible signs and symptoms
   b. Diagnostic Laboratory Testing
3. **Public health management of pertussis**
   a. Case Management
   b. Contact Management
4. **Pertussis immunization considerations**
5. **Provincial surveillance and case definitions**
6. **References**

If you have questions about this document, please contact the Immunization and Vaccine-Preventable Diseases (IVPD) team of Public Health Ontario (PHO) at ivpd@oahpp.ca.

For additional information about pertussis including immunization, surveillance and laboratory testing please visit PHO's [pertussis webpage](#).
Background and context for pertussis

- Pertussis is an endemic disease in Ontario. Outbreaks tend to be cyclical in nature, with increased disease incidence approximately every 4 - 6 years.  
- Protection against pertussis is not lifelong. There is waning of immunity after both natural infection and vaccination.  
- Pertussis is a common and often unrecognized cause of cough persisting for over 2 weeks in adolescents and adults.  
- Young infants (less than six months of age) have the highest risk of complications and mortality and this risk is greatest before they are eligible to initiate their primary vaccine series.

Diagnosis of pertussis

Pertussis should be considered in individuals presenting with cough illnesses with specific features as outlined below. Due to the relatively non-specific nature of many clinical presentations of pertussis, pertussis tends to be under-diagnosed.

Clinically compatible signs and symptoms

Pertussis often begins with a mild respiratory illness which progresses over one to two weeks to prolonged cough episodes, which may lead to vomiting.

Clinically compatible signs or symptoms include any of the following:

- paroxysmal cough of any duration
- cough ending in vomiting, or associated with apnea
- cough with inspiratory “whoop”
- any cough illness lasting two weeks or more

Most cases of pertussis become apparent 9-10 days after exposure to the virus (the incubation period can range from 6-20 days). Cases are highly communicable in the first 2 weeks after onset and then communicability gradually decreases and becomes negligible about 3 weeks after onset. Cases are no longer communicable after 5 days of effective antibiotic treatment.

Diagnostic Laboratory Testing

Diagnostic laboratory testing consists of *Bordetella pertussis* detection by polymerase chain reaction (PCR) using nasopharyngeal (NP) swabs. Laboratory testing should only be done on patients with clinical signs and symptoms of pertussis.

PHO’s laboratory *Bordetella – Respiratory test information sheet* provides comprehensive information on specimen collection and submission.
The following points are intended to help health care professionals understand and optimize the use of PCR testing for pertussis by avoiding common pitfalls that might lead to false-positive or false-negative results.

- Optimal timing for PCR testing for pertussis is within three weeks of cough onset when bacterial DNA is still present in the nasopharynx.

- PCR testing following antibiotic therapy or as a test of cure is **NOT** recommended as the result may remain positive for some time following treatment and after cough symptoms resolve. 2,11

**UNDERSTANDING AND INTERPRETING TEST RESULTS**

PCR results should be interpreted in conjunction with information on the presence of clinically compatible signs and symptoms and available epidemiological information (i.e., exposure to pertussis).

**Public health management of pertussis**

**Case Management**

Treatment should be based on clinically compatible signs and symptoms of pertussis (as described above). Efficacy is related to early treatment and is unlikely to be beneficial if more than 21 days have passed since the onset of cough. Cases are not considered infectious after five days of treatment with appropriate antibiotic therapy. 2

**Contact Management**

Chemoprophylaxis is recommended for the following individuals: 2,12

- Household contacts (including attendees at family daycare centres) where there is an infant less than one year of age (regardless of vaccination status) and/or a woman in the third trimester of pregnancy.

- For out-of-household exposures, vulnerable persons defined as infants less than one year of age (regardless of vaccination status) and pregnant women in the third trimester who have had face-to-face exposure and/or have shared confined air for greater than one hour.

- Chemoprophylaxis should be implemented as soon as possible after exposure as efficacy is related to early implementation. It is not likely to be beneficial after 21 days following exposure to pertussis.

**Pertussis immunization considerations**

All individuals should ensure they are immunized according to the Publicly Funded Immunization Schedules for Ontario.

Up-to-date pertussis immunization status varies according to age. The current schedule for acellular pertussis vaccine starting in infancy is 2, 4, 6, and 18 months, 4-6 years, 14-16 years, and a single dose in adulthood. 11
- On-time administration of the 2, 4 and 6-month doses of acellular pertussis vaccine is essential in reducing hospitalization rates and infant mortality from pertussis. ¹

- Canada’s National Advisory Committee on Immunization (NACI) recommends Tdap vaccine in pregnancy to protect infants from pertussis. NACI recommends that it be given between 27 and 32 weeks of gestation, but notes that it may be provided from 13 weeks to time of delivery. ¹⁴

- Periods of increased pertussis activity provide an opportunity to update the vaccination status of contacts and encourage those who are not vaccinated to receive the vaccine. ¹,¹²

- It takes approximately two weeks to develop immunity after immunization.

- Although cases may occur in vaccinated individuals due to waning of immunity, these cases often have a shorter duration of symptoms, less severe symptoms and are less likely to be hospitalized. ¹⁵

**Provincial surveillance and case definitions for pertussis**

The provincial surveillance case definitions for pertussis are found in Appendix B of *Ontario’s Infectious Disease Protocol*. For guidance on how to enter cases into the integrated Public Health Information System (iPHIS), please refer to the *iPHIS User Guide for Vaccine Preventable Diseases*.

In the event of an outbreak or cluster of pertussis cases, PHUs may wish to consider developing an outbreak case definition as part of the public health response, to facilitate linking cases together in iPHIS and support communication with PHO Laboratory on cases that are epidemiologically linked. For support in the development of an outbreak case definition or questions related to case, contact or outbreak management of pertussis, please contact PHO at ivpd@oahpp.ca.
References


Public Health Ontario

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Public Health Ontario provides expert scientific and technical support to government, local public health units and health care providers relating to the following:

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- environmental and occupational health
- emergency preparedness
- health promotion, chronic disease and injury prevention
- public health laboratory services

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Citation


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