

# Invasive Pneumococcal Disease (IPD)



Region of Waterloo  
PUBLIC HEALTH AND  
EMERGENCY SERVICES

## What is Invasive Pneumococcal Disease (IPD)?

Pneumococcal disease is caused by the bacterium *Streptococcus pneumoniae*, often referred to as pneumococcus. It can cause many types of illnesses including infections of the ears and sinuses. It is spread from person-to-person by direct contact with respiratory secretions, like saliva or mucus.

Pneumococcus is also the cause of invasive pneumococcal disease (IPD) and a common cause of community acquired pneumonia. IPD is a severe form of infection that occurs when the bacteria invade normally sterile sites, such as the bloodstream (bacteremia) or central nervous system (meningitis). About 25-30 per cent of persons with pneumococcal pneumonia will also have bacteremia. Persons are often hospitalized and usually recover with antibiotic treatment. Occasionally, this infection can cause long term complications or death.

## What are the risk factors for IPD?

- $\geq 65$  years of age and  $< 2$  years of age
- No spleen or a spleen that does not work properly
- Chronic heart, liver, lung or kidney disease
- Asthma – if medical attention was required in the past 12 months
- Diabetes mellitus
- Cancer – including solid tumors and blood cancer such as leukemia and lymphoma
- Diseases or medications that suppress the immune system
- Chronic cerebrospinal fluid leak
- Cochlear implants
- Sickle cell disease or other genetic disorders of the hemoglobin
- Chronic neurologic conditions that impair the ability to clear oral secretions

- Residents of long term care facilities, regardless of age
- Alcoholism
- Smoking
- IV drug use
- Homelessness

## How common is IPD in Waterloo Region?

Only invasive pneumococcal disease is reported to Region of Waterloo Public Health and Emergency Services. IPD is one of the most common reportable infectious diseases, with about 60 cases reported each year. Many more cases of pneumonia caused by pneumococcus are diagnosed by clinical symptoms and chest x-ray and are not reportable.

## How can I prevent IPD?

The best prevention is vaccination, especially if you have a high risk medical condition. One or both of the available vaccines may be recommended. Also, getting vaccinated against influenza each year is recommended because bacterial pneumonia is a common complication of influenza.

Other prevention strategies include good hand hygiene practices, eating a nutritious diet, maintaining a healthy weight and avoiding excessive alcohol use, illicit drug use, and smoking.



## What are the two vaccines available?

### Pneumococcal Conjugate (Pneu-C-13) [Pneumovax 13™]

- Publicly funded for infants and young children (3 doses required; 4 for high-risk children)
- Publicly funded for immune suppressed adults  $\geq 50$  years
- Long lasting protection against vaccine-serotype invasive disease (86-97% in children, about 75% in adults)
- Prevents pneumonia (about 45% lower risk in adults 65+)
- Recommended but not publicly funded for use in Ontario for high risk children 5-17 years (who have not previously received Pneu-C-13) and adults who are immune suppressed ages 18 to 49 years
- Although not publicly funded, some experts recommend for all high-risk adults; can be considered for healthy adults 65+

### Pneumococcal Polysaccharide (Pneu-P-23) [Pneumovax 23™]

- Publicly funded for high risk children  $\geq 2$  years
- Publicly funded for adults  $\geq 65$  years and high risk adults
- 50-70% effective against vaccine-serotype invasive disease
- Protection not as long lasting, particularly for certain high risk medical conditions
- One single booster recommended after 5 years for higher risk persons (see next page)
- Some evidence that it prevents pneumonia (up to 28% lower risk)

**See next page for eligibility.**

**Table Sources:** [Canadian Immunization Guide, 2016](#); [CDC Pink Book, 2015](#); [Bonten et al. \(2015\) Polysaccharide conjugate vaccine against pneumococcal pneumonia in adults. NEJM](#); [Kraicer-Melamed et al. \(2016\) The effectiveness of pneumococcal vaccine 23 \(PPV23\) in the general population of 50 years of age and older: A systematic review and meta-analysis. Vaccine](#); [Diao et al. \(2016\) Efficacy of 23-valent pneumococcal polysaccharide vaccine in preventing community-acquired pneumonia among immunocompetent adults: A systematic review and meta-analysis of randomized trials. Vaccine](#)

## Who are the high risk groups eligible for the publicly funded vaccine in Ontario?

### Pneumococcal Conjugate (Pneu-C-13)

#### [Pneumovax 13™] ≥ 50 years

1. HSCT (stem cell transplant) recipient (3 doses)
2. HIV (1 dose)
3. Other immunocompromising conditions (1 dose):
  - Asplenia (anatomical or functional)
  - Sickle cell disease or other hemoglobinopathies
  - Congenital immunodeficiencies involving any part of the immune system, including B-lymphocyte (humoral) immunity, T-lymphocyte (cell) mediated immunity, complement system (properdin, or factor D deficiencies), or phagocytic functions
  - Immunosuppressive therapy including use of long term corticosteroids, chemotherapy, radiation therapy, post-organ transplant therapy, biologic and non-biologic immunosuppressive therapies for rheumatologic and other inflammatory diseases
  - Malignant neoplasms including leukemia and lymphoma
  - Solid organ or islet cell transplant (candidate or recipient)

### What if I have a high risk condition and the vaccine is recommended but I am not eligible for publicly funded vaccine?

- Vaccination is recommended in the Canadian guidelines for some high risk persons, but not publicly funded in Ontario (see *Canadian Immunization Guidelines below for recommendations*)
- For example, a single dose of Pneu-C-13 is recommended for the following groups but not funded:
  - High risk children 5-17 years who have not previously received the vaccine
  - Immunosuppressed adults 18-49 years
- These vaccines can be purchased from pharmacies by prescription from your health care provider. Some third party benefit plans may cover the cost.

### Pneumococcal Polysaccharide (Pneu-P-23)

#### [Pneumovax 23™] ≥ 2 years

1. Asplenia (functional or anatomic), splenic dysfunction
2. Cardiac disease (chronic)
3. Cerebral spinal fluid leak (chronic)
4. Cochlear implant recipients (pre/post implant)
5. Congenital (primary) immunodeficiencies involving any part of the immune system, including B-lymphocyte (humoral) immunity, T-lymphocyte (cell) mediated immunity, complement system (properdin or factor D deficiencies), or phagocytic functions
6. Diabetes mellitus
7. HIV
8. Immunocompromising therapy including use of long-term systemic corticosteroid, chemotherapy, radiation therapy, post-organ transplant therapy, certain anti-rheumatic drugs and other immunosuppressive therapy
9. Liver disease (chronic), including hepatitis B and C, and hepatic cirrhosis due to any cause
10. Malignant neoplasms, including leukemia and lymphoma
11. Renal disease (chronic), including nephrotic syndrome
12. Respiratory disease (chronic), excluding asthma, except those treated with high-dose corticosteroid therapy – Canadian Immunization guidelines recommend for persons that required medical attention in the past 12 months regardless of high dose steroid use (not funded in Ontario but available by prescription)
13. Sickle-cell disease and other sickle cell hemoglobinopathies
14. Solid organ or islet cell transplant (candidate or recipient)
15. Neurologic conditions (chronic) that may impair clearance of oral secretions
16. HSCT (candidate or recipient)
17. Residents of nursing homes, homes for the aged and chronic care facilities or wards

### Intervals between vaccines if receiving both Pneu-C-13 and Pneu-P-23: Applies to children ≥ 2 years and adults

Preferred schedule	Pneu-C-13 first, Pneu-P-23 ≥ 8 weeks later
If Pneu-P-23 already received	Pneu-C-13 ≥ 1 year after Pneu-P-23

– Does not apply to persons who have had a hematopoietic stem cell transplant (HSCT), refer to schedule below.

## Who is eligible for a booster and when?

### Pneu-C-13

At this time there are no recommendations for boosters for Pneu-C-13 after the initial dose/series

### Pneu-P-23

For Pneu-P-23, most high risk persons are advised to have only one dose. A single booster ≥ five years after the first dose is recommended only for certain persons with higher risk medical conditions. Multiple doses are not recommended because there is less of a response with each booster received. Those who have received one or two doses before age 65 years for any indication, should receive another dose of the vaccine at age ≥ 65 years (if it has been at least five years since previous dose).

### Eligibility to receive a second dose (one lifetime reimmunization) of Pneu-P-23

- Asplenia (no spleen or spleen that doesn't work properly) or sickle cell disease
- Hepatic cirrhosis
- HIV
- Immunosuppression related to disease or therapy
- Renal failure (chronic) or nephrotic syndrome

### For Canadian immunization recommendations for pneumococcal vaccines:

[www.phac-aspc.gc.ca/publicat/cig-gci/p04-pneu-eng.php#ru](http://www.phac-aspc.gc.ca/publicat/cig-gci/p04-pneu-eng.php#ru)

For publicly funded immunization schedule for pneumococcal vaccines in Ontario: [www.health.gov.on.ca/en/pro/programs/immunization/docs/immunization\\_schedule.pdf](http://www.health.gov.on.ca/en/pro/programs/immunization/docs/immunization_schedule.pdf)

Alternate formats of this document are available upon request.

## Region of Waterloo Public Health

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