



Protecting against invasive pneumococcal disease: Be wise — immunize!

What species of bacteria is a leading cause of community-acquired pneumonia and a major cause of invasive infections such as bacteremia and meningitis in Canada? What vaccine has been available in Canada since 1983 to protect against these infections?¹⁻³

Streptococcus pneumoniae (formerly called *Diplococcus pneumoniae*) is the species, and pneumococcal vaccine can prevent or reduce the morbidity and mortality associated with invasive pneumococcal disease caused by 23 of the most common types of *S. pneumoniae*.³

Invasive pneumococcal disease is characterized by the detection of *S. pneumoniae* from a normally sterile site (e.g., blood, cerebrospinal fluid or pleural fluid);⁴ the name does not imply any measure of severity of illness. Each year in Canada, pneumococcal disease is responsible for an estimated 3000 cases of invasive pneumonia, 750 cases of bacteremia and 240 cases of meningitis.² People with pneumococcal pneumonia often present with high fever and chills of abrupt onset, accompanied by chest pain and productive cough, with rust-coloured, mucopurulent sputum. Pneumococcal meningitis is often preceded by pulmonary or mild upper respiratory tract infection. Pneumococcal bacteremia is a complication in 25% of cases of *S. pneumoniae* pneumonia and 80% of cases of

S. pneumoniae meningitis.⁴ The mortality rates for invasive pneumococcal disease are surprisingly high. Among people with coexisting chronic disease, case fatality rates are estimated at 15% for those under 65 years of age and 30% for those 65 years of age and older.⁵ Among people with no risk factors, the case fatality rate is 5.6%.⁵

Despite increasing antimicrobial resistance, penicillin administered intravenously remains the first-line treatment of choice for invasive pneumococcal disease.⁶ Lovgren and associates⁷ recently found that 26.0% of *S. pneumoniae* isolates from across Canada showed reduced susceptibility to one or more of 9 antibiotics studied; 9.7% of the isolates showed reduced susceptibility to penicillin and 3.9% showed reduced susceptibility to ceftriaxone.⁷ Interestingly, 19.5% of the isolates showed reduced susceptibility to trimethoprim-sulfamethoxazole,⁷ which is commonly used to treat otitis media. Up to 50% of bacteriologically confirmed cases of otitis media are associated with *S. pneumoniae*.⁴ Vaccination may help to prevent antimicrobial resistance by reducing the number of people infected and subsequently treated with antibiotics.⁸

The *Canadian Immunization Guide*³ recommends immunization for 3 groups (see box). Routine revaccination is not currently recommended. However, for those at greatest risk for invasive infection, a single revaccination is recommended after 5 years if older than 10 years of age and after 3 years if up to 10 years of age.³

Vaccine coverage rates, particularly in high-risk groups, are poor, likely because of low levels of aware-

Who should be vaccinated against *Streptococcus pneumoniae*?

- People 65 years of age or older (pneumococcal vaccine may be administered simultaneously with influenza vaccine, at a separate anatomic site; those with unknown vaccination histories should receive the vaccine)
- People older than 2 years of age who have asplenia, splenic dysfunction or sickle cell disease (pneumococcal vaccine can be given simultaneously with *Haemophilus influenzae* type b conjugate and meningococcal vaccines)
- People older than 2 years of age who have any of the following conditions: chronic cardiorespiratory disease (except asthma), cirrhosis, alcoholism, chronic renal disease, nephrotic syndrome, diabetes mellitus, chronic cerebrospinal fluid leak, HIV infection and other conditions associated with immunosuppression (Hodgkin's disease, lymphoma, multiple myeloma, induced immunosuppression for organ transplant)

Recommendations from the *Canadian Immunization Guide*³