INVASIVE PNEUMOCOCCAL DISEASE

Based on the Ministry of Health Communicable Disease Manual 2012: October 2016 update[1]

Associated Documents

Case Report Form:
Y:\CFS\ProtectionTeam\FinalDocs\NotifiableConditions\IPDInvasivePneumococcalDisease\FormsStdLettersQuest\IPD_Sep2016.pdf

Fact sheet:
K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\InvasivePneumococcalDiseaseFactSheet.pdf

Introduction

Invasive pneumococcal disease was added to the Notifiable Disease Schedule primarily for the purposes of surveillance – in particular to monitor the effect of introducing the pneumococcal vaccine for children in June 2008 and the incidence of disease in the community. This epidemiological information, along with information on the distribution of serotypes from laboratory-based surveillance, helps inform future immunisation policy.

Local public health action is not expected in response to individual notifications of this disease but note **Reporting** *requirements (see the Case Report Form).*

The Illness

Streptococcus pneumoniae (pneumococcus) is a gram-positive encapsulated coccus (gram-positive diplococcus). Most pneumococcal serotypes can cause disease, but only a few produce the majority of invasive pneumococcal infections. Invasive pneumococcal disease is defined as pneumococcal disease with detection of *S. pneumoniae* in a normally sterile site, such as the meninges, cerebrospinal fluid (CSF), blood, pleural fluid or joints.

Clinical description

Depending on the site of infection, the main presenting condition is meningitis, pneumonia or septicaemia.

In approximately 25 percent of the population, the bacteria are carried asymptomatically at the back of the nasopharynx. Invasive pneumococcal disease occurs most commonly in the winter months. The risk of disease is higher in infants, the elderly and those with predisposing conditions such as immune deficiency states. It is the most common cause of community-acquired pneumonia in all ages and probably the most common cause of bacterial meningitis in children.

Clinical Description

Incubation: Variable, but may be as short as 1–3 days. Illness usually occurs within 1 month of acquiring a new serotype in the respiratory tract.

Transmission: By droplet inhalation or direct contact with respiratory tract secretions. Person-to-person transmission is common, but illness in casual contacts and hospital staff is uncommon.

Communicability: Usually not communicable after 24 hours of effective antibiotics.

Prevention: Maintain a healthy lifestyle with good nutrition and exercise and avoidance of overcrowding and smoking. Routine pneumococcal vaccinations for children and for children and adults with certain conditions provide protection not only for the individual but also for the wider community.[2]

Notification Procedure

- Case identification is solely on laboratory evidence of invasive disease due to *S. pneumoniae*.
- Only invasive disease is notifiable. (Note: in the absence of invasive disease, isolation of *S. pneumoniae* from a non-sterile site such as sputum, nasal aspirates and ear discharge is not notifiable. A positive urine antigen test is also not notifiable.)
- The laboratory undertaking the testing must notify the local medical officer of health of all confirmed cases of invasive pneumococcal disease.

Case Classification

- **Under investigation:** Not applicable.
- **Probable:** Not applicable.
- **Confirmed:** A clinically compatible illness that is laboratory confirmed.
- **Not a case:** A case that has been investigated and subsequently found not to meet the case definition.

Laboratory Testing

Laboratory confirmation requires at least one of the following:

- isolation of *S. pneumoniae* from blood, CSF or another normally sterile site (for example, joint fluid, pleural fluid)
- detection of *S. pneumoniae* nucleic acid from blood, CSF or another normally sterile site
- a positive newer generation *S. pneumoniae* antigen test on CSF or pleural fluid.[1, 2]

Note: detection of *S. pneumoniae* from CSF by microscopy (detection of gram-positive diplococci) can be a useful diagnostic test, but is not sufficient for case confirmation.

1. Occasionally, antigen test results are positive when culture results are negative.
2. Isolation of pneumococcus is preferred as this allows for serological identification and so informs the vaccination programme.

Management of Case

Not applicable

Management of Contacts

Not applicable

Other Control Measures

Not applicable

Reporting

- Ensure complete case information (from case Report Form) is entered into EpiSurv.
- The Communicable Disease nurse/HPO should review the hospital case notes and the NIR and if necessary contact the attending clinician or general practice to obtain information about immunisation history, clinical presentation, clinical course and outcome, and risk factors (such as prematurity, chromosomal or congenital abnormality, immunocompromised, chronic illness, smoking) and to ask about earlier vaccinations with either the pneumococcal polysaccharide or conjugate vaccine. It should only be necessary to contact the case or their family/whānau in

exceptional circumstances.
- If an outbreak occurs, contact the Ministry of Health Communicable Diseases Team and liaison staff at ESR, and complete the Outbreak Report Form.
- File.

References and further information

1. NZ Communicable Diseases Control Manual 2012, October 2016 Update of Invasive Pneumococcal Disease http://www.health.govt.nz/system/files/documents/publications/cd-manual-invasive-pneumococcal-disease-oct16.pdf
2. Ministry of Health. 2016. *Chapter 15 Pneumococcal vaccine, (Herd immunity). Immunisation Handbook 2014* (2nd edn). Wellington: Ministry of Health. http://www.health.govt.nz/system/files/documents/publications/imm-handbk-15-pneumococcal-disease-dec16.pdf

Further information

Heffernan HM, Martin DR, Woodhouse RE, et al. 2008. Invasive pneumococcal disease in New Zealand 1998–2005: capsular serotypes and antimicrobial resistance. *Epidemiology and Infection* 136: 352–9.

Heymann D (ed). 2008. *Control of Communicable Diseases Manual* (19th edition). Washington: American Public Health Association.

Ministry of Health. 2014. *Immunisation Handbook 2014*. Wellington: Ministry of Health.

Nua M, Lennon D, Martin D, et al. 2002. *Epidemiology of Invasive Pneumococcal Disease in New Zealand Children: Opportunities for vaccine prevention*. Paper presented at Paediatric Society of New Zealand meeting, Napier.

Voss L, Lennon D, Okensene-Gafa K, et al. 1994. Invasive pneumococcal disease in a pediatic population, Auckland, New Zealand. *Pediatric Infectious Disease Journal* 13: 873–8.