Meningococcal disease

What is meningococcal disease?
Meningococcal disease is caused by the bacterium Neisseria meningitidis. At least 13 groups have been identified and of these groups A, B, C, Y and W-135 are the most likely to cause disease in humans. Patterns of infection differ throughout the world. In New Zealand groups B and C are most likely to cause disease.

How do you catch it?
Meningococcal bacteria are commonly carried in the nose and throat, and do not usually cause disease. The bacteria can be transferred from person to person through contact with saliva, e.g. intimate kissing. Saliva on shared drink bottles or pacifiers (dummies) may also have a limited role in passing the bacteria from one person to another.

What are the symptoms of meningococcal disease?
The initial symptoms are difficult to distinguish from other infectious illnesses, particularly flu-like illnesses. Symptoms usually start and progress quickly, often within 24 hours. However, infants may have a more gradual onset than adults.
Infants may have a fever, cry, appear unsettled, feed poorly, vomit, be sleepy or hard to wake, dislike bright light, or have a rash or spots. They may have a bulging fontanelle.
Older children and adults may have a fever, malaise, nausea, vomiting, muscle aches and pains, drowsiness, headache, dislike of bright light, neck stiffness, or have a rash or spots.
Almost 80% of cases will develop a rash that does not blanch (become pale/go white) when pressed on. This type of rash is often a late sign of infection.

How serious is meningococcal disease?
If meningococcal bacteria pass into the blood, the disease usually progresses very quickly. A person with meningococcal disease may develop:
- Inflammation of the membranes around the brain (meningitis).
- Blood infection (septicaemia).
- Pneumonia.
One to two people out of every 10 who survive meningococcal disease have long term complications, E.g. extensive skin scarring, limb amputation, hearing loss, seizures, or brain injury.
Even when the disease is identified and treated early, one to two people out of every 10 will die.

Who is at risk?
Infants, children aged less than five years and adolescents have an increased risk of meningococcal disease. Māori, particularly infants aged less than one year, and Pacific peoples have a higher risk of meningococcal disease than other ethnic groups in New Zealand.

What increases the risk?
- Being exposed to tobacco smoke, binge drinking, or having another respiratory infection, e.g. influenza.
- Living in close proximity to others, e.g. in a crowded household, at boarding school, in university halls of residence or in long-term institutional care.
- Being a household or other close contact of someone carrying the bacteria or with the disease.
- Having a medical condition or receiving treatment that affect the immune system, e.g. their spleen has been removed or doesn’t work properly, and those who are immune compromised from a disease or treatment of a disease.

How do you prevent infection?
The highest risk of infection for close contacts of someone with the disease is during the seven days after the person developed symptoms. Preventive antibiotics should be administered to close contacts as soon as possible, preferably within 24 hours of identification of the person with meningococcal disease.
During an outbreak a meningococcal immunisation programme may be commenced for those in the highest risk groups if a vaccine is available. High numbers of people immunised with a type of meningococcal vaccine called a conjugate vaccine can both protect individuals and also reduce the spread of disease to others.

Which vaccines protect against meningococcal disease?
New Zealand has two meningococcal vaccines on the National Immunisation Schedule for individuals with specific conditions that increase their risk of meningococcal disease (refer to Table 1: Who should be offered immunisation against meningococcal disease).
Three meningococcal vaccines are available for purchase through your general practice. Menactra® and Nimenrix® protect against groups A, C, Y and W-135, and NeisVac-C® protects against group C only. Talk to your nurse or doctor for more information. Stock of the Menomune® ACYW-135 vaccine is not expected in New Zealand until 2016.

How are the vaccines?
More than 20 years of studies and safety monitoring have shown both the conjugate and polysaccharide meningococcal vaccines have excellent safety profiles. Common and rare vaccines responses are listed in Table 2: Comparison of possible disease effects with vaccine responses.

Who should have meningococcal vaccine?
Table 1 outlines recommendations for who should be immunised against meningococcal disease and whether they can have the vaccine for free or have to purchase it.

Who should not have the vaccine?
Anyone with severe allergy (anaphylaxis) to a previous dose of the vaccine or any component of the vaccine should not receive the vaccine.
Immunisation should be postponed in subjects suffering an acute illness or high fever. The presence of a minor infection is not a reason to delay immunisation.

How protective are the vaccines?
Protection against meningococcal disease is dependent on an individual having existing circulating protection provided by antibodies because the bacteria cause disease more quickly than the immune system can generate protection.
Immunisation generates circulating antibodies. Over time the antibody levels decrease. The number and quality of antibodies and how long they last depend on what type of vaccine is used, the meningococcal group(s) covered by the vaccine, and the age of the person receiving the vaccine.
There are no vaccines currently available in New Zealand that protect against meningococcal group B. However, a new vaccine is available overseas.
A vaccine against a specific sub-group of meningococcal B, MenNZB™, was available in New Zealand between 2004-2011 and used to control an epidemic of this sub-group of B disease from 1991–2007. This vaccine is no longer available. Protection from this vaccine was not long lasting, those who received the MenNZB™ vaccine are not expected to still have immune protection against meningococcal B disease.
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Table 1: Who should be offered immunisation against meningococcal disease

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<th>Recommended and fully funded (order from ProPharma)</th>
<th>Recommended but NOT funded (purchased from Healthcare Logistics)</th>
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| • Children and adults who are pre/post-splenectomy or with functional asplenia.  
  NeisVac-C® is recommended for infants and children under 2 years.  
  Menactra® is recommended from 2 years of age.  
  HIV-positive individuals.  
  Individuals with inherited or acquired complement deficiency.  
  Pre/post-solid organ transplantation.  
  Following haematopoetic stem cell transplantation  
  Following immunosuppression therapy longer than 28 days.  
  Close contacts of a meningococcal disease case. | • Adolescents and young adults living in close proximity to each other, e.g. boarding school, university halls of residence, long-term institutional care.  
  Travellers to high-risk countries and Hajj pilgrims.  
  Laboratory workers regularly exposed to meningococcal cultures.  
  Infants and young children.  
  Adolescents and young adults. |

Table 2: Comparison of possible effects of disease with vaccine responses

<table>
<thead>
<tr>
<th>Disease</th>
<th>Effects of disease</th>
<th>Vaccine responses</th>
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| Meningococcal disease is caused by the bacterium Neisseria meningitidis and can cause meningitis, septicaemia, long term complications or death. | • Inflammation of the membranes around the brain (meningitis).  
  • Blood infection (septicaemia).  
  • Pneumonia.  
  • One to two people out of every 10 who survive have long term complications, e.g. extensive skin scarring, limb amputation, hearing loss, seizures or brain injury.  
  • Even when the disease is identified and treated quickly, about one to two people out of every 10 will die. | • Common responses  
  • Mild pain, redness and swelling around injection site.  
  • Mild fever.  
  • Decreased appetite, nausea, vomiting or diarrhea.  
  • Irritability.  
  • Headache.  
  • Fatigue, malaise, drowsiness.  
  • Rare responses  
  • Urticaria (allergic skin reaction).  
  • Anaphylaxis (severe allergic reaction). |

Vaccines are prescription medicines. Talk to your doctor or nurse about the benefits or any risks.

References