



What is meningococcal disease?

Meningococcal disease is caused by the bacterium *Neisseria meningitidis*. At least 12 groups have been identified, including groups A, B, C, Y and W (previously called W-135).

On average in New Zealand (NZ), around two-thirds of meningococcal disease is caused by group B each year. Meningococcal group A rarely causes disease in NZ. There has been a decrease in disease caused by group C and an increase in disease caused by meningococcal groups Y and W in 2016 and 2017, including cases caused by a very virulent sequence type of meningococcal group W (ST-11).

Other countries, Canada (2014–2016), and Australia and the United Kingdom (2016–2017), have also seen an increase in disease caused by the very virulent group W sequence type ST-11.

How do you catch it?

Meningococcal bacteria are commonly carried in the nose and throat, and do not usually cause disease. Carriage rates are highest in older teenagers and young adults. The bacteria can be transferred from person to person through contact with saliva, e.g. intimate kissing. In rare cases, the bacteria can invade and rapidly lead to severe disease. The underlying reasons for why invasion occurs in some individuals are not well understood.

How serious is it?

If meningococcal bacteria pass into the blood, the disease usually progresses very quickly. A person with meningococcal disease may develop:

- » Meningitis (inflammation of the membranes around the brain).
- » Septicaemia (blood infection).
- » Pneumonia (lung infection).

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

The groups with the highest rates of meningococcal disease are over 2009–2016 in NZ are shown in table 1.

Meningococcal group B disease	Meningococcal groups C, Y and W disease	By ethnicity
» Infants and children aged under 5 years	» Infants and children aged under 5 years » Adolescents aged 15–19 years	» Pacific peoples » Māori

What increases the risk?

- » Exposure 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 in a household or other close contact of someone carrying the bacteria or with the disease, e.g. those who have been intimate, or infants and children attending an early childhood education centre.
- » Having a medical condition or receiving treatment that affects the immune system, e.g. functional asplenia, post-splenectomy, or taking disease modifying immunosuppressive medication.
- » Age and ethnicity.

Vaccines to protect against meningococcal disease

Meningococcal vaccines are classified by the type of vaccine manufactured and by the meningococcal bacteria groups they protect against. In NZ, conjugate vaccines protect against groups A, C, Y and W (Menactra® or Nimenrix®) or group C only (NeisVac-C®), and the multicomponent recombinant vaccine protects against group B only (Bexsero® from mid-October).

There have been vaccines against the groups A, C, Y and W for more than 20 years but it has taken much longer to develop vaccines that protect against the different types of meningococcal group B. This is because the immune response to group B is different to the immune response to groups A, C, Y and W.

The MeNZB™ vaccine used in NZ between 2004 and 2011 was designed to target a specific type of meningococcal group B bacteria that caused a prolonged epidemic here in NZ. Protection from this vaccine was not long lasting; those who received the MeNZB vaccine are not expected to still have protection against this type of meningococcal B disease. The active component of MeNZB has contributed to the successful development of Bexsero.

Table 2 summarises the available meningococcal vaccines and the percentage of meningococcal disease cases covered by the vaccines in NZ over 2009–2016. For best protection against all meningococcal disease in NZ, separate vaccinations against group B disease and groups A, C, Y and W disease are recommended.

Meningococcal group	Vaccines	2009–2016
Group C	NeisVac-C	10–34%
Groups A, C, Y and W	Menactra, Nimenrix	25–46%
Group B	Bexsero (mid-October 2018)	53–72%

Meningococcal vaccines currently available on the National Immunisation Schedule

NeisVac-C (group C) and Menactra (groups A, C, Y and W) are funded for individuals with a medical condition that increases their risk of meningococcal disease AND is listed on the Pharmaceutical Schedule. NeisVac-C and Menactra for funded individuals can be ordered from ProPharma.

Meningococcal vaccines available for purchase

NeisVac-C and Menactra for those not covered by the Pharmaceutical Schedule, Bexsero and Nimenrix can be purchased through general practice. Non-funded vaccines can be ordered from Healthcare Logistics. Vaccinators MUST have a prescription or standing order to administer these vaccines.

Who should be offered immunisation against meningococcal disease?

Vaccines to protect against meningococcal disease should be offered to individuals at increased risk of infection with or exposure to meningococcal bacteria. These groups are described in Table 3 on the next page.

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Vaccine safety

More than 20 years of studies and safety monitoring have shown the conjugate meningococcal vaccines have excellent safety profiles. Bexsero was first approved for use in Europe in 2013 and is now approved for use in over 40 countries including England and Australia. Bexsero has an excellent safety record.

With Menactra, NeisVac-C and Nimenrix, the most common vaccine responses are around the injection site and include redness, swelling, or discomfort or pain. However, fever, headache, fussiness/irritability, drowsiness, nausea/vomiting or diarrhoea, or dizziness can also occur.

With Bexsero, the most common vaccine responses include fever, and discomfort or pain around the injection site. Infants and children may also be irritable, have unusual crying or a decreased appetite. Adolescents and adults may experience headache, muscle or joint aches, malaise or nausea.

When administering Bexsero in children aged under 2 years, either alone or with other vaccines, prophylactic paracetamol is recommended to reduce the risk of high fever and injection site pain that occurs more commonly with this vaccine than other childhood vaccines. Please refer to our fact sheet *Paracetamol use with Bexsero in children aged under 2 years* for more information.

For any vaccine, the most serious but very rare response is a severe allergic reaction (anaphylaxis). The risk of this happening after meningococcal vaccination is less than once per million vaccine doses. Common and rare vaccine responses are listed in *Table 4: Comparison of possible disease effects with vaccine responses*.

Who should not have meningococcal vaccines?

- » Anyone with severe allergy (anaphylaxis) to a previous dose of the vaccine or any component of the vaccine should not receive the vaccine.
- » Immunisation for any vaccine 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?

Meningococcal bacteria can cause disease more quickly than the immune system can generate protection. Therefore, having existing circulating antibodies is required for protection against meningococcal disease. 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.

As there are generally low numbers of meningococcal disease cases in countries such as Australia, England, Germany, NZ and the United States, it is not possible to determine exactly how many cases of disease are prevented by vaccination or how long protection after vaccination lasts. Instead, the immune system response and antibody levels are used as an alternative measure of how well and how long meningococcal vaccines can protect from disease. Table 4 shows the expected protection against meningococcal disease after completion of an age appropriate course of vaccinations.

Recommended vaccine administration schedules

Table 5 on the last page shows the vaccine brands, costs and recommended vaccine administration schedules.

References

A list of references is available in a separate document on the Written Resources page of our website.

Table 3: Who should be offered immunisation against meningococcal disease

- » Individuals pre/post-splenectomy or with functional asplenia.**
- » HIV positive individuals.**
- » Individuals with inherited or acquired complement deficiency.**
- » Pre/post-solid organ transplantation.**
- » Following stem cell/bone marrow transplantation.**
- » Prior to immunosuppression for longer than 28 days.
- » Following immunosuppression for longer than 28 days.**
- » Close contacts of a meningococcal disease case. **
- » Other infants and young children aged under 5 years, adolescents and young adults.
 - » Particularly adolescents and young adults living in close proximity to each other, e.g. boarding school, university halls of residence or in long-term institutional care.
- » Travellers to high-risk countries and Hajj pilgrims.
- » Laboratory workers regularly exposed to meningococcal cultures.

** NeisVac-C is funded for infants and children under 2 years.

** Menactra is funded for children from 2 years of age and adults.

Table 4: Expected protection against meningococcal disease after immunisation[‡]

Age group	Group B disease	Group C disease	Group A, C, Y, or W disease
	Bexsero	NeisVac-C, Menactra, Nimenrix	Menactra, Nimenrix
Under 2 years	63–100%	95–100%	86–100%
2–3 years	72–100%	63–100%	63–97%
4–10 years	91–100%	79–100%	79–99%
Adolescents	99–100%	92–100%	82–97%
Adults	91–100%	89–100%	73–92%
Duration of protection			
Children under 5 years of age	1–3 years	3–5 years	
Older children, adolescents and adults	Not yet established	At least 5 years	

[‡]Based on the proportion of vaccine recipients mounting a protective immune response to the vaccine.



Table 5: Vaccine brands, costs and recommended vaccine administration schedules

Vaccine brand	Cost	Number of doses required
Bexsero (group B)	\$96.50/single ^{a,b}	<p>Infants ≥8 weeks to ≤5 months 3 doses* with a minimum interval of 4 weeks between each dose. Booster dose a minimum of 6 months later <u>and</u> aged ≥12 months.</p> <p>Infants ≥6 months to ≤11 months 2 doses separated by 8 weeks. Booster dose a minimum of 2 months later <u>and</u> aged ≥12 months.</p> <p>Children ≥12 months to ≤10 years 2 doses separated by 8 weeks. The need for a booster dose has not yet been established.</p> <p>Adolescents and adults ≥11 years to ≤50 years 2 doses separated by 4 weeks. The need for a booster dose has not yet been established.</p>
NeisVac-C# (group C)	\$50.00/single ^{a,b}	<p>Infants ≥8 weeks to ≤11 months 2 doses separated by 8 weeks plus 1 dose after 12 months of age. Booster dose after 2-3 years if at increased risk.</p> <p>Children ≥12 months to ≤6 years 1 dose. Booster dose after 2-3 years if at increased risk.</p> <p>Children ≥7 years, adolescents and adults 1 dose. Booster dose after 5 years if at increased risk.</p>
Menactra# (groups A, C, Y, and W)	\$89.95/single ^{a,b}	<p>Children ≥9 months to ≤23 months 2 doses separated by 3 months. Booster dose after 3 years if at increased risk.</p> <p>Healthy children ≥2 years to ≤6 years 1 dose. Booster dose after 3 years if at increased risk.</p> <p>Healthy children, adolescents and adults ≥7 years to ≤55 years 1 dose. Booster dose after 5 years if at increased risk.</p> <p>Note: Menactra and Prevenar 13[®] MUST be administered at least 4 weeks apart.</p>
Nimenrix (groups A, C, Y, and W)	\$80.00/single ^{a,b}	<p>Children, adolescents and adults ≥12 months to ≤55 years 1 dose.</p> <p>Booster doses children ≥12 months and adults » Meningococcal group A: Consider a booster dose after 1 year if at increased risk. » Meningococcal groups C, Y and W: Consider a booster dose after 5 years if at increased risk.</p>

Funded vaccines for eligible individuals are ordered from ProPharma.

* This recommendation may change to a two-dose course in future after thorough consideration of recently published data.

a. Vaccine prices as at 24 October 2018

b. Order from Healthcare Logistics. Price excludes small ordering handling fee of \$45 for orders of 1-4 (mixed) units or \$25 for orders of 5-9 (mixed units), manual order processing fee of \$10 per order for faxed or emailed orders and GST. Vaccine administration fee will also need to be added to the vaccine cost.