NCIRS National Centre for Immunisation Research and Surveillance

FactSheet

Meningococcal vaccines for Australians

This fact sheet provides information for immunisation providers on meningococcal disease and the use of meningococcal vaccines in Australia. It can be used in conjunction with the NCIRS fact sheet Meningococcal vaccines – frequently asked questions to facilitate discussions with parents or other individuals considering receiving meningococcal vaccines.

Disease and epidemiology

- Invasive meningococcal disease (IMD) is a serious bacterial infection caused by *Neisseria meningitidis* (N. meningitidis). The most common causative serogroups are A, B, C, W and Y.
- Infection often causes septicaemia and/or meningitis and is most common in children aged <2 years and adolescents aged 15–19 years. Rates of nasopharyngeal carriage of the bacteria are highest in older adolescents and young adults.
- Currently, meningococcal serogroups B and W cause most meningococcal disease in Australia. Meningococcal serogroup B (MenB) disease remains the most common cause of IMD in children, adolescents and young adults. Meningococcal disease caused by serogroups W and Y occurs over a more diverse age range and may present with less typical clinical manifestations than disease due to other serogroups.

Vaccines

Three types of meningococcal vaccines are available in Australia, each of which protects against certain serogroups (refer also to Figure 1):

- quadrivalent (A, C, W, Y) meningococcal (MenACWY) conjugate vaccines: MenQuadfi, Menveo, Nimenrix
- recombinant meningococcal B (MenB) vaccines: Bexsero, Trumenba
- meningococcal C (MenC) conjugate vaccine: NeisVac-C (monovalent meningococcal C vaccine).

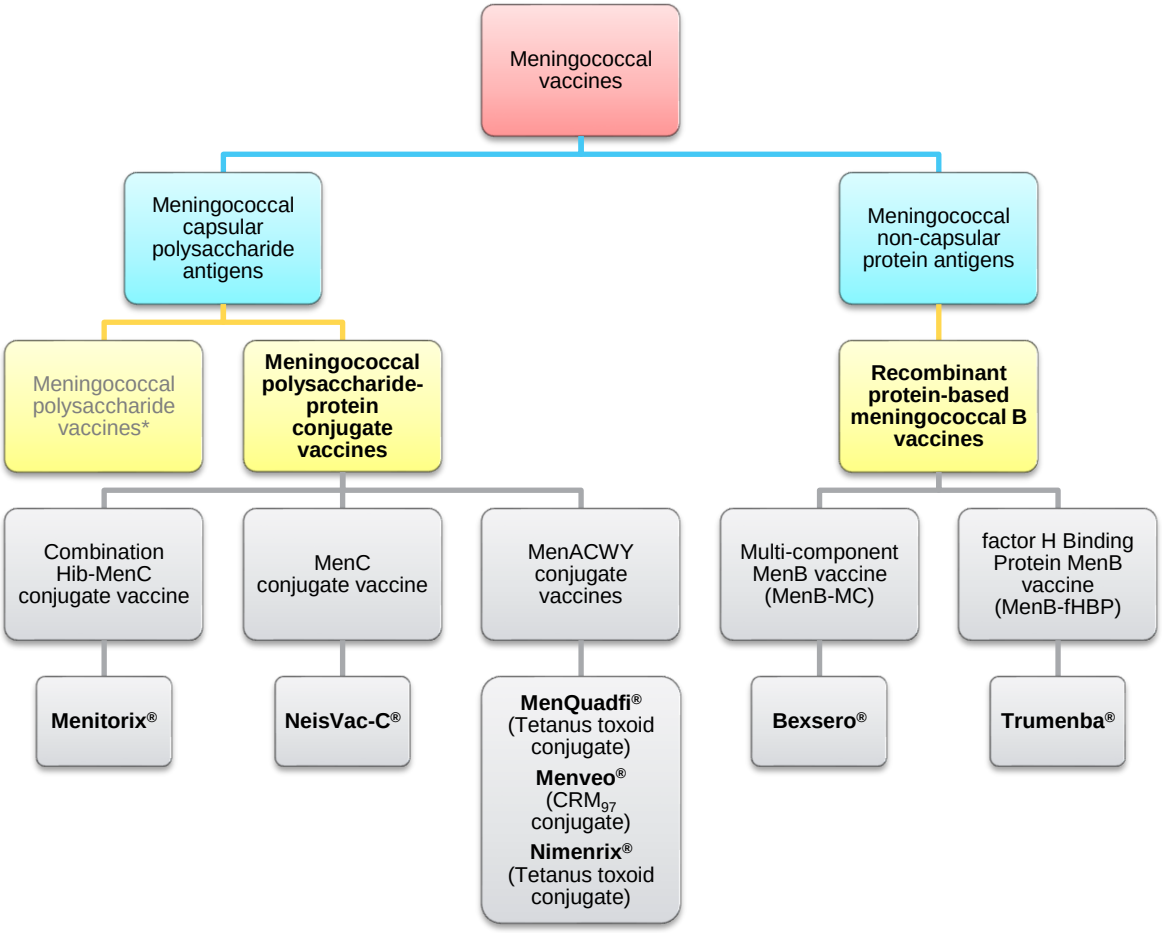
Table 1: Who should be vaccinated

Population Group	Recommendations for optimal protection	Vaccinations available for free under the National Immunisation Program (NIP) or state funding
Infants and young children aged <2 years (Aboriginal and Torres Strait Islander and Non-Indigenous)	MenACWY and MenB starting from 6 weeks of age	MenACWY single dose at age 12 months (NIP-funded). (Vaccination at an earlier age available by private prescription only.) MenB in South Australia from 6 weeks to 12 months (state-funded). MenB in other states: by private prescription only.
Adolescents aged 15–19 years	MenACWY MenB	MenACWY single dose at 14–16 years of age (NIP-funded). MenB in South Australia in Year 10 (state-funded). MenB in other states: by private prescription only.

Aboriginal and Torres Strait Islander children aged 2 months to19 years	MenACWY MenB	MenACWY: included in routine NIP program with dose at 12 months and for adolescents at age 15–19 years (NIP-funded). MenB: NIP-funded for infants aged from 6 weeks; catch-up available for children aged <2 years (up to 23 months) until June 2023.
People with medical conditions which increase their risk of IMD*	MenACWY MenB	For those with asplenia/hyposplenia, complement deficiency or eculizumab treatment: MenACWY and MenB vaccines funded by NIP. For other medical conditions: not funded
Young adults living in 'close quarters' (e.g. residential accommodation, military recruits) or who are smokers	MenACWY MenB	Not funded. Private prescription only.
Travellers	MenACWY if travelling to high-risk destinations	Not funded. Private prescription only.
People at occupational risk e.g. microbiology laboratory workers	MenACWY MenB	Not funded. Private prescription only.
Any person from 6 weeks of age wishing to reduce their risk of IMD	MenACWY MenB	Funded only if eligible in one of the above categories.

* Includes inherited defects or deficiency of properdin or complement components, current or future treatment with eculizumab, functional or anatomical asplenia, HIV infection and haematopoietic stem cell transplant.

Figure 1: Classification of meningococcal vaccines available in Australia



* Meningococcal polysaccharide vaccines are no longer supplied or recommended for use in Australia.

The disease

Meningococcal disease is a relatively rare but serious infection caused by the bacterium *Neisseria meningitidis*, commonly known as the meningococcus. There are 13 serogroups, distinguished by differences in the surface polysaccharides of the organism's outer membrane capsule. Globally, most cases of meningococcal disease are caused by serogroups A, B, C, W and Y.

Currently, even with antibiotic treatment, the mortality rate for meningococcal disease is around 7–13% globally,[1] and 5–11% in Australia.[2,3] About 10–30% of children and adolescents who survive the disease develop permanent complications such as limb deformity, skin scarring, deafness and neurological deficits.[4-6]

Clinical features

Invasive meningococcal disease (IMD; defined by isolation of meningococci from normally sterile body sites) most commonly manifests as septicaemia and/or meningitis. The disease has an incubation period of 1–10 days, most commonly 3–4 days. Typical symptoms are often non-specific and can include sudden onset of fever, a rash that can be petechial or purpuric (like red-purple spots or bruises) or maculopapular (a flat or raised non-specific rash), headache, neck stiffness, photophobia, altered consciousness, muscle aches, joint pain, nausea and vomiting.[4,7-9] Other less common manifestations of meningococcal disease include pneumonia, arthritis, epiglottitis, pericarditis and conjunctivitis.[7,8,10]

Not all symptoms or signs may be present at disease onset. The characteristic rash of meningococcal disease – a rash which does not disappear with gentle pressure on the skin – is not always present. Up to 20% of cases of meningococcal W disease, particularly in recent years have been associated with higher rates of atypical presentations.[3]

Transmission

Meningococci are carried and transmitted only by humans. People can carry meningococci in their throat and/or nose. The prevalence and duration of carriage varies over time and in different populations and age groups, with peak carriage rates occurring in adolescents (>20% of adolescents may be carrying the bacteria).[11] Smokers have increased carriage rates,[12-14] which may increase transmission and their risk of invasive disease.

Meningococcal bacteria are transmitted via respiratory droplets. The risk of acquiring infection is increased by regular, prolonged close contact, such as living in the same household or intimate kissing.

Risk factors for acquiring the disease

People who are immunocompromised due to certain conditions, including inherited defects or deficiency of properdin or complement components, current or future treatment with eculizumab, functional or anatomical asplenia, after haematopoietic stem cell transplantation or HIV infection, have an increased risk of acquiring IMD.

Other risk factors for meningococcal infection include occupational exposure to meningococci in microbiological laboratories, smoking or exposure to smokers, crowded living conditions, intimate kissing with multiple partners, and recent or current viral infection of the upper respiratory tract.[7,9]

Epidemiology

Meningococcal disease is both sporadic and epidemic throughout the world. Its incidence fluctuates naturally over time. In Australia, meningococcal disease follows a seasonal trend, with

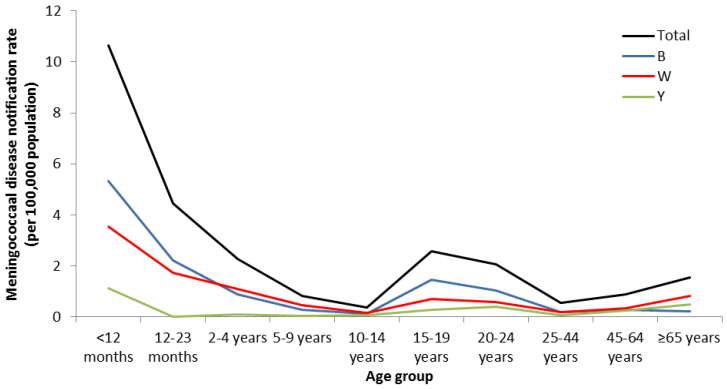
most cases occurring in winter or early spring.[15,16] Notification rates decreased from a peak of 3.5 cases per 100,000 in 2002 to 0.6 per 100,000 in 2013. Notification rates then increased, reaching 1.5 per 100,000 in 2017,[17] mostly driven by a new increase in MenW disease. Since the introduction of MenACWY vaccination programs, the incidence of MenW disease has reduced and the overall rate of IMD fell to 0.8 per 100,000 in 2019.[18] Currently MenB and MenW account for similar amounts of disease and cause the majority of IMD in Australia.

Most meningococcal disease occurs in young children aged <2 years and in older adolescents and young adults aged 15–24 years.[15] MenB still remains the major cause of IMD in children aged <2 years, particularly infants aged <1 year, adolescents and young adults (refer to Figure 2). Both MenW and MenB disease have peaks in the <2 years and 15–19 years age groups. However, a larger proportion of MenW cases occurs in adults aged ≥45 years (median age of MenW cases is 44 years) compared to MenB cases.[3] MenW disease appears to have a higher case fatality rate than MenB disease (about 9.3% for MenW versus about 5% for MenB).[19] This may indicate a tendency of MenW disease to cause more severe infection.[3]

The burden of IMD due to MenW and MenB is disproportionately higher in Aboriginal and Torres Strait Islander people, particularly in those aged <15 years.[20]

Meningococcal serogroup C (MenC) disease has decreased markedly after the implementation of the national MenC conjugate vaccination program in 2003, with the number of cases falling from 225 in 2002 to 14 (3.8% of cases with an identified serogroup) in 2017.[19,21] Serogroup A disease remains rare in Australia. Updated epidemiological data on meningococcal disease are available on the Australian Government Department of Health website through the National Notifiable Diseases Surveillance System.

Figure 2: Notifications of invasive meningococcal disease by age group and serogroup, Australia, 2016–2017



Source: Australian Technical Advisory Group on Immunisation. Public consultation on changes to the recommended use of meningococcal and *Haemophilus influenzae* type B vaccines. April 2018. Available at: https://consultations.health.gov.au/ohp-immunisation-branch/proposed-changes-to-meningococcal-and-hib/

Vaccines

There is no single vaccine that offers protection against all serogroups that cause meningococcal disease. There are three types of meningococcal vaccines registered in Australia, which cover different serogroups (refer to Figure 1):

- quadrivalent (A, C, W, Y) meningococcal (MenACWY) conjugate vaccines.
- recombinant meningococcal B (MenB) vaccines
- meningococcal C (MenC) conjugate vaccines

Quadrivalent meningococcal (MenACWY) conjugate vaccines

There are three brands of MenACWY vaccines, each of which uses a different carrier protein to conjugate the polysaccharide antigens of four serogroups (A, C, W and Y). Clinical trials have demonstrated the immunogenicity of MenACWY vaccine in children, adolescents and adults. All studies indicate that MenACWY vaccines are safe and immunogenic.[22-24] It is preferable to use the same brand of MenACWY vaccine to complete a primary vaccination course. Any brand of vaccine may be used as a booster dose.

MenACWY vaccines available for use in Australia are:

- **MenQuadfi** (Sanofi Pasteur) for ages ≥12 months
- **Menveo** (GlaxoSmithKline) for ages ≥6 weeks
- **Nimenrix** (Pfizer) for ages ≥6 weeks

Nimenrix is funded through the National Immunisation Program (NIP) at 12 months of age and in adolescents aged 14–19 years. The other two vaccines are not available through the NIP but are available through private prescription.

Dosage for MenACWY vaccines depends on the starting age of vaccination and presence of medical conditions which increase the risk of IMD (refer to Table 2). Infants aged <12 months can receive two of the three brands of MenACWY vaccine (Menveo and Nimenrix). People aged ≥12 months can receive any brand of MenACWY vaccine – MenQuadfi, Menveo or Nimenrix (refer to Table 2).

MenACWY vaccines (including Nimenrix in the NIP) can be coadministered with most routine childhood and adolescent vaccines scheduled in the NIP. For a few issues of note regarding concurrent or sequential administration of Nimenrix after a tetanus toxoid (TT)-containing vaccine in non-routine settings, refer to the NCIRS fact sheet Meningococcal vaccines – frequently asked questions. In all patients, particularly those at increased risk of IMD, ensure the appropriate total number of vaccine doses according to the age group and brand are administered (refer to Table 2).

Recombinant meningococcal B vaccines

There are two brands of MenB vaccines available in Australia. Note that the two vaccines are registered for different age groups and in different dosing schedules (refer to Table 3).

Bexsero (GlaxoSmithKline Australia) is a recombinant multicomponent vaccine (MenB-MC) that provides protection against multiple strains of MenB. It contains four major antigens that are highly conserved across multiple MenB strains. It currently is the only MenB vaccine used in the NIP.

The primary vaccination course of Bexsero consists of 2 to 4 doses, depending on the age at which the course commences and presence of medical conditions associated with increased risk of IMD (refer to Table 3). It can be given concurrently with other routine vaccines currently scheduled on the NIP. Data from the UK, where an infant MenB vaccination program using 3 doses was introduced in 2015, show the effectiveness of 3 doses to be 59.1%.[25]

Trumenba (Pfizer) is a recombinant bivalent human factor H binding protein (MenB-fHBP) vaccine consisting of two variants of a surface protein that is highly conserved across MenB strains. It is registered for use in people aged ≥10 years.

Clinical trials have shown that this vaccine is safe and immunogenic. Healthy individuals receive adequate protection from 2 doses.[26,27] People with medical conditions which increase the risk of IMD should receive a 3-dose schedule (refer to Table 3). Trumenba may be administered concomitantly with other vaccines commonly used in those aged ≥10 years.

Regarding clinical benefits, there is no preferential recommendation between Trumenba and Bexsero in people aged ≥10 years, provided that the course is completed according to the recommended dose numbers and schedule. However, the vaccines are not interchangeable and the same vaccine should be used to complete the vaccination course.

Meningococcal C conjugate vaccine

MenC conjugate vaccine (NeisVac-C) is now infrequently used, as it has been replaced by Nimenrix (MenACWY) which covers additional A, W and Y serogroups. It may be used for MenC catch-up vaccination for the cohort of children who were older than 12 months when Nimenrix was introduced on the NIP on 1 July 2018. Refer to the NIP catch-up fact sheet.

Who should be vaccinated?

Table 1 summarises meningococcal vaccination recommendations. Recommended brands and doses by age group for MenACWY vaccines can be found in Table 2 and for MenB vaccines in Table 3. Refer also to the NCIRS fact sheet Meningococcal vaccines – frequently asked questions.

Healthy infants and younger children (<2 years)

- A single dose of Nimenrix (MenACWY vaccine) is recommended and funded under the NIP for all children at 12 months of age.
- Vaccination using other brands or at an earlier age (from 6 weeks old) is available through private prescription, but there are differences in the number of MenACWY vaccine doses required between vaccine brands for children aged <2 years. Only the 12-month dose of Nimenrix is funded under the NIP. Menveo and Nimenrix at an earlier age (6 weeks – <12 months) are not funded under the NIP.
- MenB vaccine (Bexsero only) is also recommended for infants and young children aged <2 years, but is not funded under the NIP except for those with medical conditions that increase risk of IMD (asplenia, complement deficiency or eculizumab treatment) or Aboriginal and Torres Strait Islander children (see below).

Healthy adolescents (15–19 years)

- MenACWY vaccine is recommended for all adolescents. A single dose of Nimenrix is provided free on the NIP through a school-based program (14–16-year-olds); those aged 15–19 years who did not receive the vaccine at school can receive it from their GP.
- MenB vaccine is also recommended for all adolescents (funded only in South Australia, using Bexsero). Either MenB vaccine can be given, but the same vaccine should be used to complete the series.

Healthy people in other age groups

- MenACWY and MenB vaccines are available through private prescription to anyone aged ≥6 weeks who wants to reduce their likelihood of becoming ill with meningococcal disease.

Aboriginal and Torres Strait Islander people

- Aboriginal and Torres Strait Islander people are at increased risk of IMD, particularly from serogroups B and W. Both MenACWY and MenB vaccines are recommended for Aboriginal and Torres Strait Islander people aged 2 months to 19 years. From 1 July 2020, MenB vaccine (Bexsero) is NIP-funded for infants from 6 weeks of age, with catch-up available for those under 2 years of age until June 2023.

People with medical conditions that increase their risk of meningococcal disease

- MenACWY and MenB vaccines are recommended for people with medical conditions that increase their risk of meningococcal disease. These conditions include inherited defects or deficiency of properdin* or complement components,* current or future treatment with eculizumab,* functional or anatomical asplenia,* HIV infection and haematopoietic stem cell transplant. Conditions with an asterisk (*) are those for which people at any age are eligible for NIP funding for Nimenrix and Bexsero from 1 July 2020. Note that an additional dose of Nimenrix (all ages) and Bexsero (if commencing between ages 6 weeks and <6 months) is required for the primary course for these people. Booster doses of MenACWY and MenB vaccine are recommended for those with ongoing increased risk of IMD (refer to Table 2).

Adolescents and young adults (aged 15–24 years) living in close quarters

- Healthy adolescents and young adults living in close quarters, such as military recruits or those in residential accommodation, should receive a single dose of MenACWY vaccine and a 2-dose schedule of MenB vaccine.

Current smokers (adolescents and young adults aged 15–24 years)

- Smokers have increased carriage rates and are at increased risk of IMD. A single dose of MenACWY vaccine and 2 doses of MenB vaccine are recommended.

Laboratory personnel who frequently handle *Neisseria meningitidis*

- For people with occupational exposure risks, a single primary dose of MenACWY vaccine and a primary course of 2 doses of MenB vaccine are recommended. MenACWY vaccine boosters every 5 years are also recommended if there is ongoing occupational risk.

Travellers

- For travellers, MenACWY vaccine is recommended for people (aged ≥6 weeks) who intend to travel to parts of the world where epidemics of group A, C, W or Y disease are frequent. Vaccination is a requirement for pilgrims attending the annual Hajj in Mecca.

Table 2: Dose schedule recommendations for immunisation using MenACWY vaccines, by age and vaccine brand, the number of doses required and minimum intervals

Age at commencement of vaccine course	MenACWY vaccine brand	Healthy individuals, including Aboriginal and Torres Strait Islander people, travellers and laboratory personnel	Individuals with any medical conditions that increase their risk of meningococcal disease (see footnote Table 1)
6 weeks–5 months	Menveo*	3 doses (‘2+1’) (8 weeks between 1st and 2nd doses; 3rd dose at 12 months of age)	4 doses (‘3+1’) (8 weeks between doses; 4th dose at 12 months of age or 8 weeks after 3rd dose, whichever is later)
	Nimenrix		
6–11 months	Menveo*	2 doses	3 doses (‘2+1’)

	Nimenrix	(2nd dose at 12 months of age)	(8 weeks between 1st and 2nd doses; 3rd dose at 12 months or 8 weeks after 2nd dose, whichever is later)
12–23 months	MenQuadfi	1 dose	2 doses (8 weeks between doses)
	Menveo	2 doses (8 weeks between doses)	
	Nimenrix	1 dose	
≥2 years	MenQuadfi	1 dose	2 doses (8 weeks between doses)
	Menveo		
	Nimenrix		
Booster doses for all ages	Any brand of MenACWY vaccine	Required only for travellers and laboratory personnel facing ongoing risks, who completed the primary series at: • ≤6 years of age: give at 3 years after completion of primary immunisation schedule, then every 5 years thereafter • ≥7 years of age: give every 5 years after completion of the primary immunisation schedule	For those with ongoing increased risk for IMD who completed the primary series at: • ≤6 years of age: give at 3 years after completion of primary immunisation schedule, then every 5 years thereafter • ≥7 years of age: give every 5 years after completion of the primary immunisation schedule

* These recommendations are endorsed by the Australian Technical Advisory Group on Immunisation (ATAGI) and differ from the Menveo product information in regards to the number of recommended doses. See variations from product information in the Australian Immunisation Handbook.

Table 3: Recommended brands and doses of MenB vaccine by age group, in healthy individuals or those with any medical conditions that increase their risk of meningococcal disease (include inherited defects or deficiency of properdin or complement components, current or future treatment with eculizumab, functional or anatomical asplenia, HIV infection and haematopoietic stem cell transplant)

Age at commencement of vaccine course	Brands registered for use in Australia	Number of doses required	Recommended interval between doses	Notes
6 weeks–5 months	Bexsero	3 (‘2+1’) (healthy) 4 (‘3+1’) (increased risk)	8 weeks	8 weeks between doses; last dose at 12 months or 8 weeks after previous dose, whichever is later.* Refer to footnote in Table 1 for conditions with increased IMD risk

6–11 months	Bexsero	3 (‘2+1’)	8 weeks	8 weeks between 1st and 2nd doses; 3rd dose at 12 months or 8 weeks after 2nd dose, whichever is later
12 months–9 years	Bexsero	2	8 weeks	The recommended interval is 8 weeks. The minimum interval is 4 weeks.
≥10 years	Bexsero†	2	8 weeks	The recommended interval is 8 weeks. The minimum interval is 4 weeks.
	Trumenba†	2 (healthy) 3 (increased risk)	6 months (2 doses); see note for 3-dose schedule	For those with specified medical conditions (refer to footnote in Table 1), 3 doses are required (at least 4 weeks between 1st and 2nd doses; 3rd dose at least 4 months after 2nd dose and at least 6 months after 1st dose)
Booster doses for all ages	Bexsero	1 (increased risk)	NA	For those with ongoing increased risk for invasive meningococcal disease who completed the primary series at: • ≤6 years of age – single booster dose 3 years after completing the primary schedule • ≥7 years of age – single booster dose 5 years after completing the primary schedule
	Trumenba	1 (increased risk)	NA	For those with ongoing increased risk for IMD, a single booster dose 5 years after completing the primary schedule

* These recommendations differ from the Bexsero product information which recommends an interval of 6 months between the second and third dose. See variations from product information in the Australian Immunisation Handbook.

† Bexsero and Trumenba are not interchangeable. The same vaccine should be used to complete the vaccination course.

Vaccine safety

Meningococcal conjugate vaccines

Meningococcal conjugate vaccines are generally considered safe and well tolerated.

MenACWY vaccines

Reactions after vaccinations are frequent but generally mild. The most frequently reported adverse events following MenACWY vaccine include pain (up to 55%), headache (28–37%), dizziness and fever (1-8%) in adolescents[28,29] and redness at the injection site (up to 37%), irritability (up to 39%) and fever (up to 16%) in infants/toddlers.[30-32] Injection site reactions generally resolve within 48–72 hours.[7]

MenACWY vaccines can be safely coadministered with other routine vaccines given to young children through the NIP. In most studies, the frequency of reactions after vaccination was similar

regardless of whether the vaccines were given together or separately. Some studies showed slight increases in mild reactions when vaccines were given together.

Recombinant meningococcal B vaccines

A moderately high rate of fever was the most notable systemic reaction in infants and young children aged <2 years in clinical trials for Bexsero. Concurrent administration of Bexsero with other childhood vaccines may increase further the frequency of fever,[33,34] as shown in Table 4.

Table 4: Proportion (%) of infants reporting fever within 7 days after at least 1 of the 3 infant doses of Bexsero[34]

Axillary temperature	Routine vaccines alone	Bexsero alone	Routine vaccines + Bexsero
≥38°C	23–36%	26–41%	51–62%
≥39°C	3–4%	4–8%	10–15%

Prophylactic use of paracetamol for children aged <2 years receiving Bexsero

It is recommended that paracetamol be given to children aged <2 years with each dose of Bexsero, 30 minutes before vaccination followed by 2 post-vaccination doses at 6 hourly intervals, regardless of the presence of fever. Further doses of paracetamol may be given afterwards if required.

Other common adverse events following immunisation with Bexsero include tenderness, swelling, erythema or rarely a persistent nodule at the injection site, irritability, sleepiness, change in eating habits, unusual crying, rash, vomiting and diarrhoea. Most of these events are considered mild or moderate and are transient in nature. A recent review of 3 million Bexsero doses given in the UK infant and toddler immunisation program found no significant safety concerns, and specifically, no increase in febrile seizures following vaccination.[35]

Clinical trials of Trumenba administered alone or with other vaccines in adolescents aged ≥10 years showed that the most common adverse events in adolescents aged ≥10 years were injection site pain, redness and swelling at the injection site, headache, fatigue, chills, muscle pain and joint pain. Most of these events were considered mild or moderate and were transient in nature.[26,27] The safety profiles were similar for the 2- or 3-dose schedules.

It is recommended, safe and preferred to coadminister Bexsero with other routine vaccines, at separate injection sites (minimum 2.5 cm apart if in the same limb), to minimise the need for multiple visits and delay in vaccination. The upper limb is preferred for Bexsero from 12 months of age if there is adequate muscle mass. An alternative is that children <2 years of age can receive Bexsero separately from other routine infant vaccines with a minimum interval of 3 days.

Adverse events after a booster dose of Bexsero or Trumenba occurred at a similar rate to those following primary vaccination and were generally mild to moderate.[36-40]

Contraindications/precautions

For all meningococcal vaccines, the absolute contraindications are anaphylaxis following a previous dose of the respective vaccine, or anaphylaxis following any component of the vaccine. Previous meningococcal disease, regardless of the serogroup, is not a contraindication for vaccination.[41]

The product information for Menveo states that the tip cap of the syringe contains natural rubber. The risk of allergy is lower from natural rubber than from latex. However, consider using an alternative product in people with an allergy or sensitivity to latex.

Use of vaccines for close contacts of patients or in public health management of meningococcal disease outbreaks

IMD is notifiable in all states and territories, and prompt diagnosis and medical treatment is important. If meningococcal disease is suspected, the patient should be treated promptly with appropriate intravenous antibiotics and hospitalised for further management. The meningococcal vaccine that covers the relevant serogroup may be considered for individuals who have had close household or household-like contact with someone who has meningococcal disease, or for individuals at increased disease risk because of a local outbreak (such as an outbreak in a residential facility). The relevant state or territory public health authority should be contacted as soon as possible for guidance on determining the risk of disease, and the need for vaccination and clearance antibiotics.[42]

Additional resources for primary medical care/vaccination providers

- The Australian Immunisation Handbook: Meningococcal disease chapter
- NCIRS fact sheet Meningococcal vaccines – frequently asked questions
- Australian Government Department of Health: Meningococcal W disease
- Australian Government Department of Health – Immunisation website
- AusVaxSafety website
- National Immunisation Program Schedule
- ACT Health
- Health Victoria
- Northern Territory Department of Health
- NSW Health
- Queensland Health
- SA Health
- Tasmanian Department of Health and Human Services
- WA Health
- US Centers for Disease Control and Prevention: Meningococcal disease

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