

Meningococcal disease

Erin Passmore^A, Robert Booy^B
and Mark Ferson^C

^ANSW Public Health Officer Training Program,
NSW Ministry of Health

^BNational Centre for Immunisation Research and Surveillance

^CSouth East Sydney Illawarra Public Health Unit

What is meningococcal disease?

Meningococcal disease is caused by the bacterium *Neisseria meningitidis*. The bacteria are transmitted from person to person through nasopharyngeal secretions. Close and prolonged contact is usually required for transmission. Most people carry the bacteria asymptotically in the nose and throat. Disease occurs very rarely when bacteria invade the bloodstream. Meningococcal disease usually presents as meningitis, septicaemia, or a combination of the two, and is fatal in approximately 3% of cases.¹ *N. meningitidis* can be classified into serogroups. Most meningococcal disease in Australia is caused by serogroup B; less common serogroups are C, A, W135 and Y.

Is there a vaccine for meningococcal?

There are two types of vaccine available for meningococcal disease. The meningococcal C conjugate vaccine protects against serogroup C disease, and since 2003 has been included in free routine vaccination of all children at 12 months of age. The meningococcal polysaccharide vaccine protects against serogroups A, C, W135 and Y. This vaccine is recommended for people travelling to parts of the world where epidemics of group A, W135 or Y disease are frequent (e.g. sub-Saharan Africa); and for the control of outbreaks caused by serogroup A, W135 or Y. There is no licensed vaccine for serogroup B, although one is currently under licensing review in the European Union.²

Epidemiology of meningococcal disease in NSW

In New South Wales (NSW) in 2010 there were 74 notifications of meningococcal disease and five deaths. Eighty percent of these notifications were for serogroup B disease.³ Notifications of meningococcal disease in Australia have decreased steadily since 2002.¹ This reduction in notifications over the past 8 years occurred for both serogroup B and C, but much more in serogroup C, the decline of which coincided closely with the introduction of the meningococcal C vaccination program. The reason for the decline in serogroup B disease is probably due to natural variations in the epidemiology of meningococcal disease over time, as the community develops natural immunity to prevalent strains in the absence of new virulent strains that are yet to emerge.⁴

Public health response

Under the *NSW Public Health Act 1991*, hospitals and laboratories are required to notify cases of meningococcal disease to public health units. The public health response to a case of meningococcal disease aims to prevent secondary cases of disease. Public health actions include providing information about meningococcal disease, and providing antibiotics to people who have had close contact with a case. Known as clearance antibiotics, these drugs are used to eliminate the bacteria from the throat and prevent its transmission to others. Vaccination is also offered if the disease was caused by a vaccine-preventable serogroup. National guidelines recommend that the public health response to a case of meningococcal disease begins as soon as possible. In recent years, technological advances have made it possible to respond more rapidly. For example, polymerase chain reaction (PCR) testing allows rapid laboratory confirmation of the diagnosis, and SMS technology (text messaging) has been used to send information to contacts about meningococcal disease and antibiotic clinics.

Long-term health outcomes

Survivors of meningococcal disease can experience severe long-term health problems. For example, a study in the UK of adolescent survivors of meningococcal disease found that 57% had ongoing physical problems including skin scarring, mobility difficulties, and speech and hearing problems.⁵ These problems were more severe with serogroup C than serogroup B disease. Survivors also reported more psychosocial problems, including more fatigue and depression, lower quality of life, and less social support compared to controls. These findings indicate that people with meningococcal disease need long-term follow-up that encompasses both physical and psychosocial aspects of health.

References

1. Chiu C, Dey A, Wang H, Menzies R, Deeks S, Mahajan D et al. Meningococcal Disease. In: Vaccine Preventable Diseases in Australia, 2005 to 2007. *Commun Dis Intell* 2010; 34(Supp): S1–167.
2. Novartis. Novartis submits Bexsero®, a multi-component meningococcal B vaccine, for regulatory review in Europe. Available at: <http://www.novartis.com/newsroom/media-releases/en/2010/1475256.shtml> (Cited 15 December 2011).
3. NSW Health Department Notifiable Conditions Information Management System (NCIMS). Communicable Diseases Branch and Centre for Epidemiology and Research, NSW Ministry of Health.
4. Patel MS. Australia's century of meningococcal disease: development and the changing ecology of an accidental pathogen. *Med J Aust* 2007; 186(3): 136–41.
5. Borg J, Christie D, Coen PG, Booy R, Viner R. Outcomes of meningococcal disease in adolescence: prospective, matched-cohort study. *Pediatrics* 2009; 123(3): e502–9. doi:10.1542/peds.2008-0581