

Meningitis Factsheet

What is Meningitis?

Meningitis is a potentially deadly inflammation of the brain and spinal cord that can be caused by a virus, bacteria or other microorganisms including fungi.

- Viral meningitis is the most common and least severe type. Almost all patients recover without any permanent damage, although full recovery might sometimes take many weeks.
- Bacterial meningitis is more aggressive and can lead to permanent damage or death. Those surviving meningitis can be left with devastating long-term effects such as hearing loss or deafness, brain damage, learning difficulties, behavioural problems, memory loss and when septicaemia is involved, loss of limbs.
 - The three major causes of bacterial meningitis are *Neisseria meningitidis* (causing meningococcal disease), *Streptococcus pneumoniae* (causing pneumococcal disease and *Haemophilus influenzae type b* (causing Hib disease).
- Other causes of meningitis, such as fungi or parasites, cause severe infections but occur much less frequently than viral or bacterial meningitis.

Meningitis can develop quickly, over a matter of hours. Until the cause of meningitis has been established, it should be regarded as a medical emergency requiring prompt diagnosis and urgent treatment.

Symptoms*

Meningitis is not easy to recognise in the early stages and the symptoms can be similar to those of the common flu. The main symptoms to look out for are fever, vomiting, headache, stiff neck, sensitivity to light, and drowsiness or altered consciousness. The signs and symptoms do not appear in a definite order and some may not appear at all.

** The signs and symptoms of meningitis provided do not include every possible sign and symptom. Please consult your local healthcare professional for further information.*

Who's at risk?

Meningitis can affect anyone at any age yet infants, children, adolescents and young adults are typically at an increased risk of infection. The peak infant age group at risk of bacterial meningitis is six to 18 months^{1,2}. Overall about 50 percent of bacterial meningitis cases occur in children under the age of five years, and there is a second disease peak in adolescents and young adults 15-24 years of age^{1,2}.

Viral meningitis occurs in all age groups, but is most common in children. People with diseases or conditions that affect the immune system are at increased risk of viral and fungal meningitis. With the decline of immune function in the elderly as the result of aging and the increase in diseases affecting the immune system, the incidence of meningitis is increased in this group.

¹ Edwards K, Clark A, Korczak VS, et al. Global and regional risk of sequelae from bacterial meningitis: a systematic review and meta-analysis. *Lancet Infect Dis* 2010;10:317-28.

² Brouwer MC, Tunkel AR, van de Beek D. Epidemiology, diagnosis and antimicrobial treatment of acute bacterial meningitis. *Clin Microbiol Reviews* 2010;23:467-92

Prevention

The best means of preventing bacterial meningitis is through vaccination. Vaccines are available to prevent most, but not all, bacteria causing meningitis in children, adolescents, and young adults. Additional vaccines are being developed to prevent against other common strains.

For viral, fungal and parasitic meningitis, there are no vaccines to prevent infection; however some childhood vaccines (MMR and chickenpox) can help to protect children against some diseases that can lead to viral meningitis. For fungal meningitis, it is best to avoid exposure to environments likely to contain fungal elements (e.g. bird droppings and dust).

Meningitis Statistics

- Every year more than 1.7 million people worldwide suffer meningitis^{3,4}.
- Bacterial meningitis, which is the most severe and common form, causes around 170,000 deaths globally every year⁴.
- Even with prompt diagnosis and treatment, approximately 10% of patients die and up to 20% or more sustain permanent damage and disability^{1,2}.
- Overall about 50% of bacterial meningitis cases occur in children under the age of five years. The second disease peak is in adolescents aged between 15-19 years of age^{1,2}.
- Bacterial meningitis is one of the top ten causes of death in children younger than 14 years in high-income countries⁵.
- Across the globe, an estimated 5.6 million disability adjusted life years are attributed to meningitis. 98% of these are accounted for by low to middle income countries⁵.
- Those surviving meningitis can have their lives devastated as a result of long-term effects, such as deafness, brain damage and when septicaemia is involved loss of limbs^{6,7}.

Access to vaccines will save lives

- Vaccines exist to protect against three major causes of bacterial meningitis, *Neisseria meningitidis* (Meningococcus), *Streptococcus pneumonia* (Pneumococcus) and *Haemophilus influenzae type b* (Hib).
- 92% of the world's countries have the Hib vaccine included in their National Immunisation Programme or for part of their country⁸. With wide use of the Hib vaccine, Hib meningitis is near elimination⁵.
- The pneumococcal vaccine has contributed to a 25% reduction in meningitis across all ages but only 42% of the world's countries have included the pneumococcal vaccine in their National Immunisation Programme, for part of their country or available to those in at risk groups^{5,8}.
- 24% of the world's countries use one or more of the meningococcal conjugate vaccines within their National Immunisation Programme or for at risk groups, yet in several high-income countries where the vaccine has been in use meningococcal C disease is close to elimination^{5,9}.
- Hib has proven that the value of vaccines in preventing meningitis and many more lives can be saved around the world by increasing access to other meningitis preventing vaccines including pneumococcal vaccine and meningococcal vaccines.

³ World Health Organisation 2012, Immunization, Vaccines and Biologicals. Viewed 13 March 2013 <http://www.who.int/immunization/topics/meningitis/en/index.html>

⁴ World Health Organisation 2012, Bacterial meningitis. Viewed 4 March 2013 <http://www.who.int/nuvi/meningitis/en/index.html>

⁵ McIntyre PB, O'Brien KL, Greenwood B, van de Beek D 2012, 'Effect of vaccines on bacterial meningitis worldwide', *The Lancet*, vol. 380, pp. 1703-11

⁶ World Health Organisation 2012, Meningococcal Meningitis Factsheet N°141. Viewed 4 March 2013, <http://www.who.int/mediacentre/factsheets/fs141/en/index.html>

⁷ Centers for Disease Control and Prevention, Epidemiology and Prevention of Vaccine-Preventable Diseases (The Pink Book: Course Textbook). 10th Edition, 2nd printing. February 2008 update. Available at: <http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/mening.pdf>

⁸ Source: WHO/IVB database, 194 WHO Member States. Data as of October 2012

⁹ Source: WHO/IVB database, 194 WHO Member States. Data as of July 2012