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# Meningococcal Meningitis

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Meningococcal meningitis and septicaemia are caused by various serogroups of *Neisseria meningitidis* (meningococcus) which is an aerobic Gram-negative encapsulated bacteria. At least 12 serotypes of meningococcus have been characterized by differences in the polysaccharide capsule, of which groups A, B and C account for about 90% of meningococcal disease. Recent outbreaks of group Y and W135 strains suggest that these serotypes are gaining in importance. *N. meningitidis* is one of the most common causes of bacterial meningitis in the world and the only bacterium capable of generating large epidemics of meningitis. Explosive epidemics with incidence rates of up to 1000 cases per 100,000 inhabitants have been reported, particularly in sub-Saharan Africa.

*Meningococcus* is transmitted by aerosol or direct contact with respiratory secretions of patients or healthy human carriers. As a rule, endemic disease occurs primarily in children and adolescents, with highest attack rates in infants aged 3-12 months, whereas in epidemics older children and young adults may be more involved. Nasopharyngeal carriage of meningococci is most common among adolescents and young adults, less so among young children and relatively rare in adult populations. Transient nasopharyngeal carriage rather than disease is the normal outcome of meningococcal colonization. However, the rapid progression of meningococcal disease frequently results in death within 1-2 days after onset. 5-15% of children and young adults carry meningococci in the nose and throat, so chemoprophylaxis is of little value for the control of most endemic and epidemic disease. Immunization is the only rational approach to the control of meningococcal disease.

## Meningococcal Vaccines

Meningococcal vaccines containing unconjugated purified capsular polysaccharides (A, C, Y and W) have been available since the 1970s and are still used to immunise travellers and at risk individuals. Conjugated vaccine containing polysaccharide chemically conjugated to a

protein carrier such as the non-toxic diphtheria toxin CRM 197 or tetanus toxoid are also now available. Vaccines can be formulated as bivalent (groups A and C) or tetravalent (groups A, C, Y, and W135). Meningitis B vaccines have been developed to combat strains endemic in certain areas, such as the disease outbreaks in New Zealand. Efforts involving joint collaborations between WHO, PATH, and other organizations are under way to develop group A conjugate vaccines to control epidemics of meningitis in sub-Saharan Africa. Protection is usually group-specific, and for groups A, C, Y and W135 protection appears largely to be due to anti-polysaccharide antibodies.

## Meningococcal Vaccine Standardization

### Written Standards

#### Meningococcal A vaccines

The recommendations include provisions for the production and quality control of meningococcal A conjugate vaccines were adopted in 2006.

[Recommendations to assure the quality, safety and efficacy of group A meningococcal conjugate vaccines, TRS 962, Annex 2](#)

#### Meningococcal C vaccines

The Recommendations for the production and control of Meningococcal group C conjugate vaccines were updated in 2001. An addendum was developed in 2003 which included for serological assays to evaluate the immune response to meningococcal conjugate vaccines. The clinical evaluation of group C meningococcal conjugate vaccines was further updated in 2007.

- [Recommendations for the production and control of Meningococcal group C conjugate vaccines, TRS 924, Annex 2](#)
- [Recommendations for the production and control of group C meningococcal conjugate vaccines, TRS 926, Annex 3](#)
- [Recommendations for clinical evaluation of meningococcal C vaccine, TRS 963, Annex 3](#)

#### Meningococcal polysaccharides vaccines (unconjugated)

WHO recommendations for meningococcal vaccines which were first adopted in 1975 described the production and quality control of A and C polysaccharide vaccine preparations. These were updated in 1980 to include provisions for the increased potency

attainable through reduction in the endotoxin content, the use of lactose as a thermal stabilizer, and to include the Y, 29E, and W135 strains. Another amendment in the 1999 reduced the number of guinea pigs required for the abnormal toxicity test.

- [Requirements for Meningococcal Polysaccharide vaccine \(Amendment 1999\) TRS 904, 2002, Annex 2](#)
- [Requirements for meningococcal polysaccharide vaccine, Addendum 1980, TRS 658, Annex 6](#)
- [Requirements for Meningococcal Polysaccharide vaccine: Adopted 1975, TRS 594, Annex 2](#)

## WHO reference materials for Meningococcal vaccines are available

[Vaccine standardization >](#)

## Related health topics

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Substances

### Biologicals

Communicable diseases

### Meningitis

## Prequalified meningococcal vaccines

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Meningococcal A, C and ACW 135 vaccines are prequalified for procurement by UN organizations:

From March 2016 there is a new system for display of WHO prequalified vaccines

### List of Prequalified Vaccines

Find out more about the new listing and how to search and display the list on the link below.

1 March 2016

### Web Listing of WHO Prequalified Vaccines

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## Further resources

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WHO position paper on Meningococcal vaccination

Meningococcal meningitis fact sheet

SAGE Working Group on meningococcal vaccines and vaccination

Menactra meningococcal vaccine and Guillain-Barré Syndrome

Global Advisory Committee on Vaccine Safety - Committee reports on Meningococcal A conjugate vaccine

International Coordinating Group (ICG) on Vaccine Provision for meningitis vaccination

Epidemic meningitis surveillance in the African meningitis belt

Meningitis outbreak response in sub-Saharan Africa

Immunological basis for immunization Series: Module 15: Meningococcal Disease

International travel and health

## Related partner links

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[Meningitis Vaccine Project](#)

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[PATH - MenAfriVac](#)

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## News

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5 October 2023

[\*\*A new vaccine will change the balance of the fight against meningitis\*\*](#)

14 October 2025\_ | News release

[\*\*11 million lives lost each year: urgent action needed on neurological care\*\*](#)