

International Medicine Center

Meningitis/Meningococcal Vaccine General Information

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Cause:

Neisseria meningitidis (NM) is the bacterium that is responsible for meningococcal meningitis. It is grouped or characterized biologically according to polysaccharide antigens on the surface of the bacterium as follows: Group A, Group B, Group C, Group Y, Group W-135, and others. The relevancy of this information will become apparent in the discussion below.

NM is the leading cause of bacterial meningitis in children and young adults in the United States (US) with about 2,600 cases yearly. The case-fatality rate is between 11-13% for NM disease, including meningitis (inflammation of the linings of the nervous system) and blood poisoning (bacteremia), despite treatment with antibiotics to which the US strains remain sensitive.

Incidence of NM disease peaks in late winter and early spring. Serogroup B accounts for about 46% of all cases; serogroup C for about 45%; serogroup W-135 and Y account for most of the remaining cases in this country. (In 1995, serogroup Y accounted for about 21% of the cases). Serogroup A rarely causes disease in the US, but is the most common cause of epidemics in Africa and Asia. Please note that, within the US, a vaccine for serogroup B is not yet available.

Serogroup C outbreaks have been occurring more frequently in the US since the early 1990's, and the use of vaccine to control such outbreaks has increased. The current vaccine used in the US is Menomune-A/C/Y/W-135 meningococcal polysaccharide vaccine (MV). During 1981-1988, only about 7,500 doses of this vaccine were used. From January, 1992 through June, 1993, 180,000 doses were dispensed. This vaccine is not a live vaccine and therefore is of the least risky types of available vaccines.

Routinely, high-risk individuals should be vaccinated, regardless of the activity of NM in a community (in terms of causing disease). High-risk individuals are as follows,

1. Those with complement pathway deficiencies (immune system)
2. Asplenia (functional or anatomical loss of spleen function)
3. Immunosuppression (HIV, certain malignancies, steroid hormone therapy, etc.)
4. Individuals in social situations constituting a higher than normal risk of acquisition of NM: military recruits living in barracks, students living in college dormitories, etc.
5. Travelers to, and residents of, hyperendemic areas, such as sub-Saharan Africa, parts of the Middle East, and other areas with sporadic but unusually intense NM activity (to be checked with authoritative resources prior to international travel)
6. Individuals with laboratory/industrial exposure to NM aerosols

Otherwise, use of meningococcal vaccine (MV) is to be considered in the context of actual contact with an active disease case or increasing community prevalence of NM so as to constitute risk of an epidemic. In the former case, this would be using MV for household or institutional contacts of individuals with proven NM disease (meningitis, bacteremia, etc.).

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Otherwise, the indications for vaccination are when the incidence of NM rises above the normal incidence of 1 case of active disease per 100,000 population in a locality to 10/100,000. At such an increase in active disease occurrence, the NM carriage rate (nasal cavity/throat) in the human population may rise from the normal 5% to 20-30%. This constitutes a very heightened level of NM prevalence and significantly increased risk for exponential spread of the organism between individuals, and then emergence of active disease cases. Therefore, reliance is placed upon the public health officials' reporting of active cases in a particular geographic area to decide whether for that population the number of cases significantly exceeds the usual background activity and constitutes a clear indication to perform mass vaccinations of the entire population (rather than just those individuals with intimate contact with an active disease case).

Prevention/Vaccine Facts:

1. Protective antibody levels should be achieved within 7-10 days after vaccination (presuming normal immune system and reasonable health).
2. MV is not to be used for treatment of actual infection; antibiotics are required.
3. Menomune will not protect against other meningitis agents, including NM serogroup B, that cause meningitis; the protection is only for the NM bacterium and for the NM serogroups stated on the vaccine label.
4. MV is not indicated in infants and children younger than 2 years of age, except as short-term protection of infants 3 months and older against NM serogroup A.
5. As with any vaccine, vaccination with MV may not protect 100% of susceptible individuals; therefore, irrespective of having been vaccinated, anyone with symptoms/signs suggestive of NM disease must seek medical evaluation immediately.
6. MV administration should be deferred during the course of any acute illness (acute viral syndrome, etc.), unless otherwise determined by a qualified physician.
7. MV is contraindicated in any individuals sensitive to thimerosal or any other of the components of the vaccine.
8. MV is administered subcutaneously (0.5cc adult dose).
9. Simultaneous administration of MV with other vaccines (concurrent administration) at separate sites with separate syringes is not a problem with the exception of pertussis or whole-cell typhoid vaccines (because of combined endotoxin content of the vaccines).
10. Revaccination:
 - A. Children should be considered for revaccination after 2-3 years if they remain at high risk.
 - B. Antibody levels decline rapidly over 2-3 years and so, if indications still exist for immunization (high-risk exposure or potential for fulminant disease), revaccination should be considered approximately every 3-5 years.

Risk Management

During times of heightened community-wide meningococcus activity/disease, advise children to:

1. Avoid kissing
2. Refrain from sharing food or drinks where contact of the shared item will occur between people – especially on sports teams
3. Stay home from school with significant respiratory illness, especially when fever, sore throat, headache, rash, eye sensitivity to light are involved, until cleared by a physician to return.
4. Notify parents of contact and the nature of such contact with anyone with an unusual respiratory illness or who has been hospitalized.

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