Meningococcal vaccines

A summary of the WHO position paper of 18 Nov 2011

The WHO Position Paper on meningococcal vaccines that is published in the Weekly Epidemiological Record in Nov 2011 incorporates the most recent developments in the field of meningococcal vaccines and replaces the corresponding paper published in October 2002.

In most countries, *Neisseria meningitidis* is a leading cause of meningitis and fulminant septicaemia. Invasive meningococcal disease (IMD) is usually caused by serogroup A, B, C, X, W-135, or Y. Their relative prevalence varies with time and geographic location. In the African "meningitis belt" serogroup A dominates, but outbreaks caused by serogroups C, W135, and X, have also occurred.

Endemic disease occurs primarily in children and adolescents, with highest attack rates in infants 3-12 months, whereas in meningococcal epidemics, rates may rise in older children and young adults. Most untreated cases of IMD are fatal. Even with appropriate treatment, up to 10% of patients die and survivors of meningitis frequently suffer permanent sequelae.

Current meningococcal vaccines are designed to protect against meningococci of serogroups A, C, W-135, and Y. There is no vaccine against group X-disease. Serogroup B vaccines based on protein from selected outbreak strains are not widely available.

Although purified capsular polysaccharide antigens regularly elicit protective antibody responses in individuals aged ≥2 years, the protein-conjugated meningococcal vaccines are more immunogenic, particularly in the youngest age groups and in addition, induce immunological memory. In terms of serious adverse events, meningococcal vaccines are considered safe, including for use in pregnancy.

The licensed meningococcal conjugate vaccines are either monovalent (A or C) or quadrivalent (A,C,Y, W-135). A recently licensed MenA conjugate vaccine has been used successfully in large vaccination campaigns in the African meningitis belt. MenC conjugate vaccines are highly immunogenic, and large-scale use of these vaccines has drastically reduced the incidence of serogroup C disease in many countries. Two quadrivalent (A,C,W-135,Y) meningococcal conjugate vaccines are currently available, one conjugated to diphtheria toxin (A,C,W-135,Y- D) the other to CRM-197 (A,C,W-135,Y-CRM).

WHO recommends that countries with high (>10 cases/100 000 population/year) or intermediate endemic rates (2-10 cases/100 000 population/year) of IMD and countries with frequent epidemics, introduce appropriate large scale meningococcal vaccination programmes. In countries where the disease occurs less frequently (<2 cases per 100 000 population/year), meningococcal vaccination is recommended for groups at known risk of meningococcal exposure.

One single dose of meningococcal polysaccharide vaccines administered to individuals ≥2 years of age can be used to control outbreaks in countries where limited economic resources or insufficient supply restrict the use of meningococcal conjugate vaccines. However, due to the limited efficacy of polysaccharide vaccines in children <2 years of age, in confirmed group C-outbreaks MenC conjugate vaccines should be used for protection of those aged 2-24 months. Similarly, during group A-outbreaks, MenA conjugate vaccine is the preferred option for protection of children 12-24 months of age.

The ongoing efforts to control invasive group A disease should be completed in all countries in the African meningitis belt.

Countries considering the use of meningococcal vaccines should develop surveillance systems to characterize meningococcal disease epidemiology including standard clinical case definition, field investigation of cases and outbreaks, and laboratory capacity for confirmation and characterization of *N. meningitidis*.