

# MENINGOCOCCAL MENINGITIS



Médecins Sans Frontières (MSF) has been working to curb meningitis epidemics in Angola, Burkina Faso, Cameroon, Central African Republic, Niger, Nigeria, Chad, Rwanda, Burundi and Ethiopia during the past ten years. One of the major users of meningitis vaccines in Africa, MSF vaccinates 3 to 5 million people against meningitis every year. The global response to outbreaks has been hampered by a shortage of an appropriate vaccine.

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Meningococcal meningitis is a contagious and potentially fatal infection of the brain membrane. It is caused by various strains, or serogroups, of the *Neisseria meningitidis* bacterium. Strains A, B, C, Y and W<sub>135</sub> are the most common. Infected people often carry the disease without showing symptoms, and spread the bacteria to others when they cough or sneeze.

## Symptoms

Meningitis causes sudden and intense headache, fever, nausea, vomiting, photophobia and stiffness of the neck. Death can follow within hours of the onset of symptoms.

## Affected

Meningitis occurs sporadically throughout the world, but the vast majority of cases and deaths happen in Africa. Epidemics regularly hit countries in the area referred

to as the African meningitis belt, which stretches across the continent from Senegal to Ethiopia. The total population at risk in these countries is around 300 million.

## Prognosis

Without treatment, bacterial meningitis kills up to 50% of the infected people. Even if the disease is diagnosed early and treated with appropriate drugs, such as oily chloramphenicol or ceftriaxone, the case fatality rate remains 5-10%. As many as one out of five survivors will suffer from neurological after-effects such as deafness or mental retardation.

## Vaccination

Timely mass vaccinations remain the most effective means of limiting the spread of epidemics. The World Health Organization (WHO) has estimated that response mass immunizations have managed to prevent

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up to 70% of expected cases in individual outbreaks in Africa.

### Double standards in protecting the population

In wealthy countries, the threshold for action is low. Large numbers of people considered at risk are speedily vaccinated when a few individual cases are detected (e.g. France in 2002). Expensive measures like this are readily taken by authorities in western countries, although the benefits of large-scale responses in these circumstances have not been proven. As a comparison, African meningitis epidemics have been known to reach enormous proportions. In an outbreak in Burkina Faso in 2002, over 2,000 cases were detected during one week.

### Access problem

Until recently, African meningitis outbreaks were mostly caused by the A strain. But in 2002, the W135 strain of *Neisseria meningitidis* infected 13,000 people and killed over 1,500 in Burkina Faso. Alarmed by this new development, WHO, the affected African countries and non-governmental organisations such as MSF mounted an international response. Traditional vaccines used in Africa thus far had only included the A and C strains, and new strategies were urgently needed. At US\$ 4.50 or more per dose depending on where it is sold, the existing quadrivalent vaccine (A, C, Y and W135) was clearly not going to be affordable for African countries. Conjugate vaccines offering longer-term protection are being developed by public and private funding but they will not reach the market until 2008 at the earliest.

### New vaccine developed

After months of WHO-led negotiations, GSK agreed to develop and license a new, trivalent (ACW135) vaccine for use in the 2003 epidemic season through the International Coordinating Group (ICG) on meningitis vaccine provision. Delivered in only a few months, the first round of production was largely funded by the Bill and Melinda Gates Foundation. Two million doses of the new vaccine were subsequently used in Burkina Faso for epidemic control in 2003.

But the need for such a vaccine is by no means over: until a conjugate vaccine is developed, meningitis outbreaks in Africa must be managed by reactive but timely mass vaccinations during epidemics using polysaccharide vaccines. In further negotiations with WHO in mid-2003, GSK agreed to make available 6 million doses of the trivalent vaccine at 1 euro per dose, a price considered affordable for African governments. It is estimated that this stock is sufficient to cover need in the short term – in other words, at least the 2004 epidemic season – unless a particularly aggressive outbreak occurs.

Funding the vaccine stock proved a difficult task. MSF itself secured 2 million doses with the help of a generous 1 million US\$ contribution from a private donor. Only after considerable advocacy efforts by MSF, WHO and other ICG partners did donors and international organizations cover the rest of the gap.

### Action points needed:

- Public health needs and emergency preparedness measures remain a government responsibility. **Developed countries** and **endemic countries** must devise a funding mechanism that ensures adequate meningitis vaccine supplies for African countries in a sustainable fashion. International organizations need to participate in the funding effort.
- **Pharmaceutical companies** need to ensure the production of appropriate vaccines for developing countries at affordable prices.
- **Conjugate vaccines** offering longer-term protection against meningococcal meningitis need to be developed and made available at an affordable price for African countries.



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