

# Putting an end to epidemic meningitis in Africa



New vaccines providing broad protection against epidemic-causing strains offer hope in Africa's meningitis belt

Meningococcal meningitis is one of the most feared diseases in Africa. It has paralyzed communities under the weight of sprawling illness, overburdened health systems, and economic hardship. For a long time, no reliable vaccine existed to meet Africa's needs.

No more. Since 2001, PATH and its partners have been working to advance vaccines that may put a stop to meningococcal meningitis for good.

## Meningococcal meningitis

Meningitis—a serious infection of the thin lining surrounding the brain and spinal cord—has many causes, usually viruses or bacteria. Viral cases typically resolve on their own; bacterial cases can be devastating.

Meningococcal meningitis is a bacterial form of meningitis that has the most potential to cause large epidemics. It sets in rapidly and can kill within hours. Even with timely antibiotic treatment, one in ten infected people die within two days of the onset of symptoms; without antibiotics, 50 percent<sup>1</sup> of infected individuals may die. Those who do survive the infection often suffer brain damage, hearing loss, or limb amputation due to sepsis.

## The African meningitis belt

Meningococcal meningitis can occur anywhere but is most prevalent in Africa's sub-Saharan meningitis belt—an area that stretches across 26 countries from Senegal to Ethiopia and has a population of about 430 million.

Meningococcal meningitis epidemics are an annual threat in this area, occurring during the dry season. An epidemic wave can last two to three years, dying out during the intervening rainy seasons. Such epidemics can be enormous and place a massive burden on country health systems—inflicting damage long after the disease fades.

Previously, reactive mass vaccination campaigns were the only recourse for African countries during meningococcal meningitis epidemics. But reactive campaigns offer limited protection because by the time vaccine supplies are in place and distribution



A woman holds cotton to her arm after receiving her MenAfriVac® vaccination at the 2010 vaccine launch in Burkina Faso. Photo: PATH/Gabe Bienczycki.

mechanisms are set up, epidemics have already wreaked considerable damage. Moreover, such campaigns historically relied on older polysaccharide vaccines that do not protect the youngest children or promote herd immunity, and only provide short-term protection.

Following the devastating meningitis A epidemic of 1996-1997 (which sickened more than 250,000 people and killed more than 25,000), African leaders called for a vaccine that would permanently end meningococcal meningitis epidemics in Africa. PATH was listening.

## The MenAfriVac® story

In partnership with the World Health Organization (WHO) and Serum Institute of India Pvt. Ltd. (SIPL), PATH launched the Meningitis Vaccine Project to develop a low-cost vaccine that would end meningitis A—then the most prevalent form of the disease—epidemics in Africa. Despite the size of past epidemics, no multinational vaccine manufacturers were willing to make a vaccine at a price African governments could afford; SIPL, however, agreed to produce the vaccine at the price set by African health ministers.

Together, we created MenAfriVac®, a new meningitis A vaccine—and the first vaccine to be developed specifically for Africa—in record time and at one-tenth of the half a billion dollars usually needed to develop and

bring a new vaccine to market.

MenAfriVac is a conjugate vaccine, meaning it is comprised of the same polysaccharide in the older vaccines but now linked to a protein carrier. This design makes it effective in children younger than two years of age and able to provide longer-term protection. Perhaps most importantly, MenAfriVac promotes herd immunity by reducing the bacteria carried in the nose and throat and thus reducing person-to-person transmission—preventing epidemics before they start.

MenAfriVac was introduced in 2010 via mass vaccination campaigns that had an immediate impact in breaking the meningitis A epidemic cycle. Now, more than 360 million people have been immunized across the meningitis belt and meningitis A has virtually disappeared.

As of October 2023, 24 of the 26 meningitis belt countries have introduced MenAfriVac in mass vaccination campaigns and 15 of those have also included it in their routine childhood immunization schedules.

### Preserving immunity

PATH conducted clinical studies in Ghana and Mali to determine how well protection is maintained over time in those vaccinated with MenAfriVac. Study results helped global policy makers confirm the appropriateness of current dosing and schedule recommendations, and informed ongoing discussions about the need for and potential frequency of booster vaccinations.

### Eliminating all epidemic meningitis

Africa's meningitis elimination story does not end with meningitis A. Other kinds of meningococcal meningitis cause disease and outbreaks in the meningitis belt, particularly groups C, W, and X. And while multivalent meningococcal conjugate vaccines (MMCVs) against groups A, C, W, and Y have existed for years, they are typically too expensive for African nations.

With funding from the UK government's Foreign, Commonwealth & Development Office, PATH again partnered with SIPL, this time to develop MenFive®, a conjugate vaccine targeting meningitis A, C, W, Y, and X.

Like MenAfriVac, MenFive can protect young children, promote herd immunity, and provide long-lasting protection—all at an affordable price. Crucially, it is the only vaccine in the world that protects against meningitis X, which is increasingly implicated in African outbreaks.

In July 2023, WHO granted MenFive prequalification; in September 2023, the Strategic Advisory Group of Experts on Immunization recommended African countries at high risk conduct preventive mass campaigns and incorporate it into routine immunization.<sup>2</sup> A final WHO recommendation is expected in 2024.

### Accelerating access

In addition to facilitating MenFive's clinical development and regulatory approvals, PATH accelerated the use of MMCVs like MenFive by supporting partners and stakeholders to prioritize and advance key policy processes. Collaborating closely with WHO and Gavi, the Vaccine Alliance, we compiled, packaged, and disseminated data for stakeholders and reviewed relevant policies and recommendations. These efforts removed bottlenecks, reducing the time between vaccine availability and country introduction.

### Global connections

These activities align with the WHO-led Defeating Meningitis by 2030 initiative. This global road map—which PATH helped develop through its role on the WHO technical taskforce—calls for a reduction in cases of vaccine-preventable bacterial meningitis and development of new, affordable vaccines.<sup>3</sup> PATH's more than two decades of work in this space signals our commitment to a healthier world with more equitable access to lifesaving tools.

### References

1. Meningitis (fact sheet). Available at <https://www.who.int/news-room/fact-sheets/detail/meningitis>.
2. Highlights from the meeting of the Strategic Advisory Group of Experts (SAGE) on Immunization 25-29 September 2023. Available at <https://www.who.int/news-room/fact-sheets/detail/meningitis>.
3. Defeating meningitis by 2030. Available at <https://www.who.int/initiatives/defeating-meningitis-by-2030>.



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