

Increasing access to lifesaving vaccines

PATH closes the immunization gap through innovation and collaboration

Vaccines are among the most effective, affordable, and beneficial tools in global health. They save an estimated 2 to 3 million young lives each year. Yet millions of children still go without basic immunization. Poorer countries often lack access to the latest vaccines, and vaccines are not yet available for many diseases.

PATH is working to close these gaps. We apply our entrepreneurial insight, scientific and public health expertise, and on-the-ground experience to develop new vaccines against major health threats, improve vaccine delivery methods and distribution systems, and accelerate access to existing vaccines against debilitating diseases. We drive innovative ideas to advance health equity so that all children can receive protection from preventable disease.

ACCELERATING DEVELOPMENT OF AFFORDABLE VACCINES

Vaccine development is expensive, and new vaccines are often made only for wealthy countries that can afford them. PATH collaborates with diverse partners throughout the world to forge new models for developing vaccines that meet the unique needs of low-income nations.

Malaria: The PATH Malaria Vaccine Initiative works with partners to accelerate malaria vaccine development. Now in a large-scale, phase 3 trial, the RTS,S vaccine candidate—under development with GlaxoSmithKline (GSK)—has shown that, over 18 months of follow-up, it cuts cases of malaria by about half in toddlers and by roughly one-quarter in infants. GSK has said it plans to submit RTS,S for regulatory review in 2014.

Meningitis: With the Serum Institute of India Ltd., PATH is initiating research on the development of a polyvalent meningococcal vaccine. This work builds on the partnerships that developed the successful MenAfriVac® vaccine against group A meningococcus in Africa (see story at right).

Japanese encephalitis (JE): PATH worked closely with the Chengdu Institute of Biological Products (CDIBP) in China to prepare for large-scale manufacturing of an affordable pediatric vaccine to protect against JE, the leading viral cause of disability among Asia's children. The vaccine received World Health Organization (WHO) prequalification—a first for China—in 2013.

Rotavirus: PATH is helping emerging-country manufacturers bring new products to market to ensure a sustainable supply of affordable vaccines against rotavirus, a primary cause of severe diarrheal disease. The most advanced candidate has demonstrated positive results in a phase 3 clinical trial and is being considered for licensure by the government of India.

SUCCESS STORIES

New meningitis vaccine for deadly epidemics in Africa

The Meningitis Vaccine Project, a collaboration between PATH and WHO, has successfully vaccinated close to 150 million people against the primary cause of epidemic meningitis in sub-Saharan Africa. Project partners developed the first vaccine designed specifically for Africa, MenAfriVac, which is already helping to eliminate meningococcal A epidemics among Africa's 26 meningitis belt countries.



PATH/Gabe Blenczycki

Developed at a cost of less than US\$0.50 per dose and manufactured by Serum Institute of India Ltd., MenAfriVac is a highly affordable solution to one of the region's biggest health problems. Widespread vaccination is expected to prevent more than 100,000 deaths over ten years.

Enteric disease: PATH is working with private- and public-sector partners on safe and effective vaccines against the leading bacterial causes of diarrheal disease: *Shigella* and enterotoxigenic *Escherichia coli*.

Pneumococcal disease: PATH is partnering with industry and researchers on the next generation of pneumococcal vaccines for use in developing countries.

Influenza: PATH is pursuing a multifaceted strategy to expand vaccine solutions for low-income countries to address seasonal influenza and possible pandemics.

Polio: PATH is providing technical support on the development of high-quality, low-cost polio vaccines needed to help achieve eradication and maintain protection post-eradication.

Respiratory syncytial virus: PATH is working to identify vaccine candidates in early development that could be effective in resource-constrained countries.

DESIGNING INNOVATIVE VACCINE TECHNOLOGY SOLUTIONS

PATH applies fresh thinking and new approaches to improve vaccine products and their delivery. Our solutions enhance immunization effectiveness, efficiency, and safety and help to expand immunization coverage.

Formulation and stabilization: We identify and evaluate adjuvants to enhance vaccine immune response, and we conduct landmark research on formulating vaccines to withstand temperature extremes. We also collaborate with developers and manufacturers to apply these technologies to their vaccines.

Delivery: We advance new methods for vaccine delivery, from needle-free technologies to novel packaging that reduces volumes for transport and disposal. We developed the first autodisable syringe, have advanced devices for intradermal vaccination, and are developing new product formats, such as fast-dissolving tablets to deliver oral vaccines.

Supply systems and equipment: We craft forward-thinking strategies and policies to improve vaccine distribution systems and supply chains, and we develop and advance technologies, such as improved vaccine carriers, to help countries maintain vaccines at appropriate temperatures.

EXPANDING RAPID UPTAKE OF EXISTING VACCINES

With our partners, PATH increases access to lifesaving vaccines. We supply country leaders with the information and tools they need to set priorities and allocate resources effectively. We train health workers and provide technical assistance to help countries adopt best practices, select vaccines, and improve health systems. And we provide training and assistance on health information systems, immunization safety, logistics, and communications.

JE: PATH helped 11 countries license the Chinese JE vaccine ahead of WHO prequalification to accelerate access and protect more than 200 million children (see story at right).

Human papillomavirus (HPV): We demonstrated and assessed approaches to introducing vaccines against HPV, the primary cause of cervical cancer, in India, Peru, Uganda, and Vietnam. We also provide technical assistance to help countries introduce the vaccine with support from the GAVI Alliance.

Rotavirus: PATH laid the groundwork for Nicaragua to introduce a new rotavirus vaccine in the same year that it reached developed countries, a first. PATH also has spearheaded clinical trials to demonstrate vaccine efficacy in low-resource settings in Africa and Asia, leading to a global recommendation from WHO.

Historic protection from JE

PATH worked with our partners in China for more than a decade to bring a long-used and much-needed vaccine against Japanese encephalitis (JE) to children across Asia. We supported the Chengdu Institute of Biological Products to achieve WHO regulatory approval in 2013—a milestone that makes the vaccine broadly accessible and marks China's entrance into the global vaccine marketplace.



To ensure the vaccine's success, we strengthened disease surveillance in countries at risk, collaborated on clinical trials, negotiated an affordable public-sector price, and supported vaccination campaigns in India and ten other countries ahead of WHO prequalification. As a result of PATH's efforts to date, more than 200 million people have received protection from JE.



PATH is an international health organization that drives transformative innovation to save the lives of women and children. We accelerate innovation across five platforms—vaccines, drugs, diagnostics, devices, and system and service innovations—that harness our entrepreneurial insight, scientific and public health expertise, and passion for health equity. By mobilizing partners around the world, we take innovation to scale, working alongside countries primarily in Africa and Asia to tackle their greatest health needs. Together, we deliver measurable results that disrupt the cycle of poor health.

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