The Power of Vaccines and How Gavi Has Helped Make the World Healthier
2019 Lasker-Bloomberg Public Service Award

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The 2019 Lasker-Bloomberg Public Service Award has been presented to Gavi, the Vaccine Alliance, for providing sustained access to childhood vaccines around the globe, saving millions of lives, and highlighting the power of immunization to prevent disease.

Vaccines are one of the most successful developments in modern medicine, averting up to an estimated 3 million deaths every year. Vaccines have made possible the eradication of smallpox, and it is close to doing the same for polio. Annual measles deaths have been reduced from 2.6 million in the 1980s to an estimated 110,000 in 2017.1 Child mortality has declined by more than 50% since 1990, largely related to the reduction in disability and death from vaccine-preventable diseases.2 Yet at the beginning of the 21st century, further progress was a challenge. New vaccines developed against diseases such as pneumonia, diarrhea, and meningitis, which were responsible for the deaths of millions of children, were not reaching the poorest and most vulnerable children. Coverage of existing vaccines in poor countries was plateauing. Nearly 30 million children in low-income countries were not fully immunized because most vaccines were not available at a price that countries could afford.

At the World Economic Forum in Davos, Switzerland, in 2000, a radical new approach was offered. The idea was to bring together key constituencies in global immunization efforts—UN agencies, the Bill & Melinda Gates Foundation, country governments, donors, research organizations, other foundations, and the private sector—to increase access to new and underused vaccines. By leveraging financial resources and expertise across these different partners, vaccines could become more affordable and more accessible to those who needed them the most. The result was the Global Alliance for Vaccine and Immunisation, today called Gavi, the Vaccine Alliance. Core Alliance partners are WHO, UNICEF, the World Bank, and the Bill & Melinda Gates Foundation working with others.

Nearly 2 decades later, the Alliance has helped vaccinate more than 760 million children in the world’s poorest countries and prevent an estimated 13 million deaths. Gavi has expanded from providing vaccines against 6 diseases to 18 diseases. Basic vaccine coverage in Gavi-supported countries (as measured by a third dose of a diphtheria, pertussis, and tetanus-containing vaccine) has increased from 59% to 81%.3 While only 3% of low-income countries had introduced a vaccine against Haemophilus influenzae type b as well as 4 other infections: diphtheria, pertussis, tetanus, and hepatitis B.

Gavi’s work has also contributed to the social and economic well-being of communities. For every US $1 invested in vaccines in Gavi-supported countries, an estimated US $21 is saved considering the cost of illness averted, which includes lost productivity due to disability and death, medical care, caregiver time, and transportation costs. This return on investment increases to an estimated US $54 when accounting for the broader societal benefits of living longer, healthier lives.4 Gavi has been able to achieve these benefits through an innovative business model, in which all countries supported by Gavi must contribute a proportion of the costs of the vaccines they introduce. This proportion gradually increases as their gross national income increases, until the countries are fully funding their own vaccine programs. The ultimate goal (and part of what makes the Gavi model groundbreaking) is to help countries build sustainable immunization systems that governments can eventually maintain and build on themselves.

To date, 15 countries have successfully transitioned out of Gavi support. One of the earliest countries to do so, Sri Lanka, has maintained basic vaccine coverage of 99% and is now expanding its vaccination schedule. Other countries that have also transitioned from Gavi support include Angola, Armenia, Azerbaijan, Bhutan, Bolivia, Cuba, Timor-Leste, Georgia, Guyana, Honduras, Indonesia, Kiribati, Moldova, and Mongolia.

Gavi works by leveraging economies of scale; by purchasing vaccines for countries with 60% of the children born worldwide every year, it is able to secure lower vaccine prices for the world’s poorest countries. It has helped build healthier vaccine markets to the benefit of countries where uncertain funding and demand for vaccines had previously provided little incentive for manufacturers to make novel vaccines available at prices that were affordable. Pooling demand and securing long-term funding from donors helps provide visibility of demand and reduce risk, encouraging manufacturers to invest in making vaccines available at prices that are affordable for Gavi-eligible countries.

The approach works: the costs of vaccines to immunize a child with a full course of WHO-recommended vaccines has been reduced to just US $27 in Gavi-supported countries. Not only has this helped make underused vaccines more accessible, but also accelerated the uptake of novel vaccines. Traditionally, it has taken between 10 and 15 years after a new vaccine is introduced in high-income countries before it reaches the poorest countries.

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One of the ways in which Gavi helped change this is with its Advance Market Commitment, a pioneering funding model launched in 2007 to increase access to new vaccines against pneumococcal pneumonia. Donors committed early funds to guarantee the price of vaccines once developed, and in exchange, manufacturers signed a legally binding commitment to provide the vaccine at a price affordable for low-income countries. The effect was almost immediate. Low-income countries were able to introduce new formulations of the pneumococcal conjugate vaccine within a year of them becoming available. The vaccine has now been introduced in 57 countries and coverage with the vaccine is now at 48% in Gavi-supported countries, exceeding the global average.

More recently, Gavi has used this market influence to accelerate development of a new and much-needed vaccine to prevent epidemics of Ebola virus. In response to the Ebola epidemic that claimed more than 11,000 lives across West Africa, Gavi committed to procure doses of an Ebola vaccine as soon as one was licensed and prequalified by the World Health Organization. The idea was to incentivize pharmaceutical companies to invest in the rapid development of this vaccine, despite the unpredictability of demand and the low purchasing power of the countries likely to be affected. The resulting Advance Purchase Commitment, signed by Gavi and Merck in 2016, was the first of its kind. Gavi signaled its long-term support by providing Merck a prepayment of US $5 million to buy doses of the Ebola vaccine as soon as it completes the licensing process, while Merck agreed to make an emergency stockpile of 300,000 investigational doses available in the meantime, in case of another outbreak. It is these doses that have been used to vaccinate the more than 204,000 people in the Democratic Republic of Congo throughout the 2018-2019 outbreak. Without this vaccine, the current outbreak would likely have been orders of magnitude larger.

Gavi also makes vaccines more accessible by investing in health systems used to deliver them. Of the 19.4 million children who are still not receiving basic vaccines, many are living in urban slums, remote rural areas, or conflict and fragile settings. Reaching these children with vaccines presents unique logistical challenges, such as identifying those who have not been immunized, keeping the vaccines at the right temperature during transportation, and ensuring there are trained health care workers to administer them. Gavi works with civil society and the private sector to address these bottle-necks, often harnessing innovative and new technology.

Every year, Gavi seeks out innovative technological solutions to address specific challenges through its Innovation for Uptake, Scale, and Equity in Immunisation, or INFUSE, platform. For example, this year’s focus was innovations to facilitate the delivery of vaccines to children in urban areas. Gavi helps scale up these new technologies by making connections between entrepreneurs and low-income countries as well as assisting with capital and expertise.

Earlier this year, Gavi partnered with Ghana’s Ministry of Health, Zipline, and the UPS Foundation (the community investment arm of the United Parcel Service) to launch the world’s largest autonomous drone delivery network. Once complete, the service will operate 24 hours a day, 7 days a week, to deliver vaccines and other high-priority health products to more than 2,000 health facilities across the country, potentially reaching 12 million people.

By improving the systems and institutions necessary to ensure vaccines reach children wherever they may live, Gavi is also helping to move the world closer to universal health coverage, the commitment made by UN member states to ensure everyone has access to essential health services by 2030. Vaccines reach more households worldwide than any other health intervention and provide a contact point between families and primary health services at least 5 times during the first year of a child’s life. This creates a platform that could be used to deliver other essential health services, from malaria prevention and nutritional supplements to maternal and neonatal health care. From novel ways to incentivize investment in vaccines to using drones to strengthen immunization systems, Gavi is constantly innovating. This ability to adapt has been fundamental to the organization’s success so far and will continue to be in the future as it works against a constantly shifting global health landscape. Cities are expanding rapidly, with the global urban population expected to increase by 2.5 billion by 2050; there are more people displaced worldwide than ever before; and climate change and globalization are increasing the risk of major disease outbreaks.

The Alliance has consistently demonstrated the central role vaccination has to play in addressing such threats to global health security and others such as antimicrobial resistance, as well as in helping the global health community to achieve the Sustainable Development Goals. Now, as Gavi approaches its next strategic period, it will enhance its focus on equity and attempt to help countries focus on the last mile first—looking for children who have not received any vaccines and bringing them into the primary health care system through immunization. It is Gavi’s ability to adapt to new challenges that will enable it to reach the growing number of people worldwide who are increasingly vulnerable to the threat of infectious disease and to help protect and empower the next generation.

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