

## Perspective

### Humanly Possibly

Vaccines are one of the most impactful and cost-effective investments in public health. In the last 50 years alone, vaccines against 14 diseases have saved over 150 million lives<sup>1</sup>, as many as one every 10 sec. Thanks to immunization, a child born today is 40 per cent more likely to see their first birthday than a child born 50 years ago<sup>1</sup>.

In addition to saving lives, vaccines also serve as powerful tools to prevent the transmission of deadly diseases. From protecting children against polio and measles to offering women defense against cervical cancer, immunization has transformed countless lives, enabling individuals to live healthier, more prosperous futures. For many, immunization is a vital entry point into the broader health system. As the only intervention that brings the majority of households into contact with the health system five or more times during the first year of a child's life, immunization serves as a foundational platform through which primary healthcare and other services can be delivered and a pathway towards Universal Health Coverage. Vaccines have also helped prevent and respond to countless outbreaks and enhanced response to health emergencies, especially protecting countless numbers of people in humanitarian settings.

This year, 2024, marks a significant milestone: the 50<sup>th</sup> anniversary of the Expanded Programme on Immunization (EPI)<sup>2</sup> – now commonly referred to by many as the Essential Programme of Immunization. When the EPI was founded in 1974 through a resolution at the 27<sup>th</sup> World Health Assembly, it comprised a portfolio of six vaccines to protect against six childhood vaccine-preventable diseases and smallpox vaccine<sup>3</sup>. The progress of the smallpox eradication programme provided the impetus for envisioning a core immunization programme in all countries. In 1974, ~ five per cent of infants globally were vaccinated with the portfolio of routine immunizations<sup>4</sup>. Today, about 84 per cent of the world's children have received three doses of the vaccine against diphtheria, tetanus and pertussis – which is used as a marker of global

vaccine coverage<sup>5</sup>. This year not only celebrates the accomplishments of EPI, but also acknowledges the remarkable progress and countless lives saved through immunization. It is an important opportunity to call for renewed political commitment to sustain and strengthen immunization programmes worldwide.

The World Health Assembly in 2020 endorsed the Immunization Agenda 2030 (IA2030), which sets out a global immunization strategy for the current decade through 2030. IA2030 sets a vision of a world where everyone, everywhere, at every age, fully benefits from vaccines to improve health and well-being<sup>6</sup>. In 2024, vaccines are available to protect against more than 30 diseases, including malaria, the first parasitic disease to become vaccine-preventable.

Measles vaccine alone accounts for 60 per cent of lives saved due to vaccines over the past 50 years<sup>1</sup>, and more lives are now being saved, among people of all ages, with vaccines against malaria, cholera, dengue, meningitis, respiratory syncytial virus, ebola, and Mpox, reflecting an era of massive scientific advancement in vaccine development. COVID-19 vaccine, the most rapidly developed and deployed vaccine ever<sup>7</sup>, played a central role in ending the world's most impactful public health emergency in a century.

The success of immunization efforts is intertwined with broader health system-strengthening initiatives. Crucial components such as robust supply chains, effective data monitoring systems, and well-trained health workers are indispensable for the programme's success and its ability to reach unreached zero-dose (unvaccinated) populations. Conversely, investments in primary health care services, adequate funding, and a supportive policy environment are essential for ensuring the sustainability of immunization initiatives. Through collaborative efforts among partners, we can further strengthen vaccination impact in alignment with the Immunization Agenda 2030 goals and targets, ensuring that essential immunization remains a global priority, reaches those left behind, and continues to save lives across generations.

The world remains insufficiently prepared to prevent and respond to disease outbreaks, epidemics, and a future pandemic. Past experience has shown that vaccination is usually a key medical countermeasure, often at the foundation of the response. Seven of the eight Public Health Emergencies of International Concern declared by the World Health Organization (WHO) have had vaccination as a core part of the multi-intervention response.

While outbreak response vaccination is critical for limiting the acute health impact, a highly functioning immunization programme is the only way to break the cycle of costly, repeated outbreaks and their requisite response. In India, strong political commitment and the roadmap to eliminate measles and rubella linked outbreak response to immunization system strengthening efforts. Subnational data enables rapid measles outbreak response and paves the way for targeted interventions to catch up with unvaccinated and under-vaccinated children. As a result, a significant decline in the number of outbreaks has been reported and to sustain the gains, strong accountability mechanisms have been set up at all levels.

The last 50 years have also seen a massive increase in the number of vaccines available, driven by basic science research, enhancements in understanding the immune response, innovations in vaccine platforms, and improved approaches to manufacturing. While much of the research of the past that led to these improvements took place in high-income countries with a focus on the diseases prevalent in those settings, the last two decades have seen major strides in vaccine research and development from countries in all regions, and in particular from India which manufactured locally developed COVID-vaccines during the pandemic, and has a long pipeline of candidate vaccines under development. Despite this progress, too many people are still dying from infectious diseases that are potentially vaccine-preventable, including TB and HIV. As antimicrobial resistance spreads, we expect to see additional infectious diseases causing significant morbidity and mortality. Continued and intensified research will be required to address these issues.

India is a leading force in vaccine manufacturing. In 2023, Indian vaccine manufacturers accounted for more than 40 per cent of global vaccine volumes, across all suppliers and products<sup>8</sup>. As other regions continue to develop manufacturing capacity, Indian manufacturers can share their expertise and capacity.

Innovations for increasing the immunization programme's reach and impact need to be rapidly made available to all countries and communities. Looking forward, we are determined to reach the children missing out on vaccines and better protect people of all ages from vaccine-preventable diseases. New promising vaccines, combination vaccines, novel delivery technologies, such as micro-array patches, diagnostic tests and AI-supported advancements in immunization will further optimize the full public health impact of immunization.

Working with a broad set of stakeholders, WHO is strengthening mechanisms to identify vaccine-related research and innovation priorities according to community needs, particularly for underserved populations, and ensure that the priorities inform innovations in immunization products, services, and practices.

Ensuring these innovations are rapidly made available to all countries and communities is a top priority for the global immunization community. Investing in implementation and operational research and through evidence-informed decisions on policy and implementation - based on sound evidence of needs, benefits and risks - will help us accelerate the timeline from product development to first use.

As the world faces evolving challenges like climate change, pandemics and increasingly strained health systems, immunization efforts remain pivotal in shaping health outcomes for the next half-century.

**Declaration:** Humanly Possible is a joint campaign of WHO, UNICEF, Gavi, the Vaccine Alliance, the Bill & Melinda Gates Foundation and many other partners and advocates.

**Financial support & sponsorship:** None.

**Conflicts of Interest:** None.

**Use of Artificial Intelligence (AI)-Assisted Technology for manuscript preparation:** The authors confirm that there was no use of AI-assisted technology for assisting in the writing of the manuscript and no images were manipulated using AI.

**Katherine L. O'Brien**

Department of Immunization, Vaccines and  
Biologicals, World Health Organization,  
Geneva, 1211, Switzerland

e-mail: obrienk@who.int

Received October 11, 2024; Accepted October 16; Ahead of print November 15, 2024; Published \*\*\*\*\* \*\*, 2024

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