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Beyond expectations: 40 years of EPI

The Expanded Programme on Immunization (EPI) was established by the World Health Assembly in 1974 at a time of great optimism for public health. The imminent certification for the eradication of smallpox was taken as proof of the power of vaccines, delivered in well-managed programmes, to permanently improve the world.¹

When EPI was established, only about 5% of the world's children were protected from six diseases (polio, diphtheria, tuberculosis, pertussis, measles, and tetanus) targeted by four vaccines. Today, that figure is 83%, with some low-income countries reaching 99% immunisation coverage.² The number of public health vaccines being used for universal protection has more than doubled since 1974. Almost all countries include vaccines against hepatitis B and *Haemophilus influenzae* type b in addition to the original six diseases, and quality-assured vaccines are used in 97% of all countries.³ Today, WHO estimates that immunisation programmes save the lives of 2.5 million people each year and protect many millions more from illness and disability.⁴ With the certification of WHO's South-East Asia Region as polio-free, 80% of the world's population now lives in a country where polio has been eradicated.⁵

What accounts for this success? Does EPI offer lessons of broader relevance as the world prepares for the post-2015 era? EPI had some advantages from the outset. The prevention of childhood deaths has great public and political appeal, and that helped create momentum within individual countries and the international community to support immunisation programmes. Vaccines are scheduled interventions that can be delivered even in the absence of well functioning health systems, and even in places where capacities are weak and skilled health workers are scarce. The costs of the initial six EPI antigens against polio, diphtheria, tuberculosis, pertussis, measles, and tetanus were low.

But EPI's success must be attributed to more than these advantages. During the past four decades, EPI has encouraged new models of international cooperation, found new sources of funding, and stimulated innovation in technology and the operational performance of national immunisation programmes.³ EPI has also pioneered improvements in surveillance and monitoring as a contribution to accountability for results.³ Fundamental public health capacities have also been strengthened; as just one example, there are nearly 700 laboratories, in 164 countries, accredited by WHO to undertake laboratory-based surveillance for measles and other vaccine-preventable epidemic-prone diseases.⁶

The establishment of the GAVI Alliance in 2000 helped launch the most innovative EPI decade to date.⁷ Since the start of this century, WHO, UNICEF, and the GAVI Alliance have worked to change the dynamics of the market for public health vaccines, making supplies more plentiful, predictable, and affordable.⁸



Collaboration with the pharmaceutical industry also intensified, leading not only to new vaccines against the world's biggest childhood diseases, but also to new product designs and formulations that simplified safe administration in resource-constrained settings.⁹

A commitment to fairness has always been a driving force for the expansion of immunisation coverage and the introduction of new products. GAVI, with support from WHO, UNICEF, and others, has increased equitable access through rapid introduction of the newer and more expensive vaccines into the routine immunisation programmes of low-income countries. In 1997, for example, only 29 countries, mostly wealthy, used *Haemophilus influenzae* type b (Hib) vaccines in their national programmes, but by 2014 that number had increased to about 190 countries, including nearly all low-income countries. Financial sustainability for national immunisation programmes, however, remains a concern in several countries.

For public health, the previous century was an era of treatment that relied on technology-driven medicine to combat infectious diseases. With chronic non-communicable diseases now responsible for most deaths worldwide,¹⁰ the 21st century must be an era of prevention. Immunisation programmes—a prime model for prevention—have dealt with the problems of poor procurement policies, weak supply chains, infrequent supportive supervision, insufficient planning, and inadequate engagement of community leaders.³ Any goals set for health in the post-2015 era will need to address similar problems.

In this the Decade of Vaccines, EPI and its community of partners are focused on the estimated 22 million children who are still not reached by immunisation programmes.¹¹ In doing so, they are guided by the Global Vaccine Action Plan, which aims to extend the full benefits of immunisation to all people.^{12,13} Beyond the eradication of polio and the elimination of measles, rubella, and tetanus, the framework calls for all countries to reach 90% national immunisation coverage and 80% coverage in every district, with provision of essential vaccines, including vaccines against pneumococcal disease and rotavirus diarrhoea. Doing so will avert an estimated 24–26 million deaths by 2020, improving the world beyond EPI's initial expectations.¹²

I see many signs that this desire to aim ever higher, with ambitious yet feasible goals, such as exceeding the

Millennium Development Goal for reducing childhood mortality, eliminating a number of the neglected tropical diseases, and reducing tuberculosis deaths by 75%, will characterise the post-2015 era for public health. The future of global health can benefit from the pioneering work done by EPI in many respects—for example, finding new ways to secure and increase funding, fostering cooperation between multiple partners to work together with shared yet flexible strategies, stimulating industry innovation, and promoting country ownership through the streamlining of programmatic demands. Above all, EPI carved out pathways and strategies to achieve universal access to immunisation services. This legacy provides guidance for reforms that move health systems towards universal coverage, another worthy ambition for the future.

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