The Contribution of Immunization: Saving Millions of Lives, and More

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The Expanded Programme on Immunization was established in 1974 as the world moved ever closer to smallpox eradication.[1] Confidence was high that, with international commitment and cooperation, other vaccine-preventable diseases (VPDs) could be conquered. The 1979 certification of smallpox eradication—humanity's greatest triumph—was taken as proof of the power of vaccines to permanently improve the world.[2] At that time, no one could have foreseen that the 1980s would bring an oil crisis, a worldwide economic recession, and a dramatic shrinking of funds for international health development. At the end of what became known as the "lost decade for development," the World Health Organization (WHO) singled out childhood immunization as the one true success story where momentum continued to build, with outstanding results.[3]

Today, as then, immunization has compelling political and public appeal as a cost-effective intervention with an immediate and measurable impact on childhood morbidity and mortality. A single statistic summarizes its remarkable success. In 1974, fewer than 5% of the world's children were protected by vaccines against six killer diseases. Today, that figure is 83%, with some developing countries reaching 99% immunization coverage.[4]

Immunization programs have another advantage: their great moral authority. The establishment in 2000 of the Global Alliance for Vaccines and Immunization, or GAVI Alliance, operationalized the principle that every child, regardless of place of birth or income status of the parents, deserves the very best that medicine and science can offer, including access to newer and more expensive vaccines.[5] Immunization, which makes universal coverage imperative, is also a potent social equalizer. Even in very wealthy countries such as the United States, it offers equal protection to rich and poor, privileged and marginalized, promoting equally good health outcomes for all.

In a sense, the purpose of expanded immunization is straightforward: to deliver multiple vaccines to more children through a simple schedule of child health visits. Yet, as experience has shown, beneath this apparent simplicity lie multiple layers of complex problems—scientific as well as operational—that need to be solved in the interest of further progress. The success of smallpox eradication illustrated the critical importance of constant research and innovation, and of flexible operational approaches that can respond quickly to advances

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in knowledge and technology. Since its inception four decades ago, expanded immunization has been a story of progressive building on success in a never-ending quest to do more things better. As new problems arose, the determination to solve them brought out the best in human ingenuity and creativity.

Global immunization efforts have been vastly enriched by the commitment of the U.S. government, including substantial financial support and the leadership of the U.S. Department of Health and Human Services (HHS). Thanks to the work of agencies such as the U.S. Centers for Disease Control and Prevention (CDC), the U.S. Food and Drug Administration, and the National Institutes of Health, the pages of this report are a catalogue of wide-ranging innovations, game-changing solutions, and progressive successes. They are also a tribute to the decisive impact of U.S. engagement.[6]

The legacy of the global drive to expand immunization is vast. Immunization programs were the proving ground for what are now core principles of public health: the importance of country ownership, community engagement, appropriate technology, and sustainable results. Immunization also demonstrated the value of setting ambitious but realistic goals and making fair access to services an explicit policy objective. Successes have been seen at the cutting edge of science and among the harsh realities of vaccine delivery in very poor places, in the creation of novel survey designs for tracking and measuring progress, and in constant simplifications and improvements in the cold chain.

As a spearheading partner in the Global Polio Eradication Initiative,[7] CDC has done much to push the world toward the finish line. The same is true for plans, now approved in all six WHO regions, to eliminate measles and rubella. In my visits to countries, I see the results: the increasingly rare sight of a child crippled by polio, the emptied measles wards in hospitals.

Another characteristic of immunization success is its spillover benefits for overall health system capacities. CDC's renowned laboratory expertise has supported networks of WHO-certified laboratories for polio, measles, and other diseases. This work has given developing countries the infrastructural asset of high-quality national laboratories to build surveillance capacity for multiple infectious diseases, including yellow fever and epidemic meningitis. Other innovations have simplified and streamlined essential work. For example, CDC introduced new laboratory procedures that reduced the time to detect and confirm polio infections by 50%.[8] As yet another contribution to operational support, CDC has trained thousands of health-care workers, field epidemiologists, laboratory staff, and program managers.

As this report is issued,[6] global immunization efforts continue to expand, this time guided by a Global Vaccine Action Plan that supports the Decade of Vaccines.[9] Immunization is making a value-added contribution to child survival, as vaccines are distributed together with insecticide-treated bednets, deworming tablets, vitamin A supplements, and tools for growth monitoring. Most recently, scientific evaluations supported by CDC, WHO, and UNICEF have shown how well-functioning immunization services can provide the foundation for integrated delivery of multiple health services.[10,11] In other words, efforts to reach every child with a growing number of vaccines have doubled as a capacity-building strategy that benefits the entire health system—and the people it serves.

Perhaps the best news, as noted in this report, is the widespread conviction that the potential of immunization to save lives and build capacity has not yet been fully realized. The stunning results to date can be surpassed. The U.S. government should be lauded for its commitment, HHS for its ingenious and innovative contributions, and the American people for their generosity. Expanded immunization has served as a platform by which the U.S. has shared its world-class capabilities with less fortunate countries for the benefit of all.

REFERENCES

1. World Health Organization. The third ten years of the World Health Organization: 1968–1977. Geneva: WHO; 2008.
2. World Health Organization Global Commission for the Certification of Smallpox Eradication. The global eradication of smallpox: final report of the Global Commission for the Certification of Smallpox Eradication. Geneva: WHO; 1980.
3. World Health Organization. The work of WHO, 1990–1991: biennial report of the Director-General to the World Health Assembly and to the United Nations. Geneva: WHO; 1992.
4. World Health Organization. WHO/UNICEF immunization coverage estimates, 1980–2012. Geneva: WHO; 2013.
5. GAVI Alliance. GAVI's impact [cited 2014 May 12]. Available from: URL: http://www.gavialliance.org/about/mission/impact
6. Department of Health and Human Services (US), National Vaccine Advisory Committee. Enhancing the work of the Department of Health and Human Services National Vaccine Program in global immunization: recommendations of the National Vaccine Advisory Committee. Public Health Rep 2014;129(Suppl 3):12-85.
7. World Health Organization. Global Polio Eradication Initiative [cited 2014 May 12]. Available from: URL: http://www.polioeradication.org
8. Tracking progress toward global polio eradication—worldwide, 2009–2010. MMWR Morb Mortal Wkly Rep 2011;60(14):441-5.
9. World Health Organization. Global Vaccine Action Plan: monitoring, evaluation and accountability—Secretariat annual report 2013. Geneva: WHO; 2013. Also available from: URL: http://www.who.int/immunization/global_vaccine_action_plan/GVAP_secretariat_report_2013.pdf [cited 2014 Mar 24].
10. Schuchat A, De Cock KM. The value of science in integration of services. J Infect Dis 2012;205(Suppl 1):S1-3.
11. Wallace AS, Ryman TK, Dietz V. Experiences integrating delivery of maternal and child health services with childhood immunization programs: systematic review update. J Infect Dis 2012;205(Suppl 1):S6-19.