

The decade of vaccines global vaccine action plan: shaping immunization programmes in the current decade

Expert Rev. Vaccines 13(5), 573–575 (2014)



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Since the establishment of the Expanded Programme on Immunization in 1974, there has been considerable progress with scaling up access to immunization globally. Currently an estimated 2 to 3 million deaths and an even greater burden of morbidity and disability are averted annually through immunization. However, an even greater impact can be achieved if the potential of vaccines is fully exploited. The Global Vaccine Action Plan (GVAP) provides a framework to make life-saving vaccines available to all individuals, regardless of who they are or where they live. The first annual progress report of the GVAP noted that while there has been progress in several areas, the world is not on track to achieve several of the key goals and milestones in the plan. Achieving the vision for the decade will require the concerted action of all stakeholders, including national governments and communities.

The year 2014 marks the 40th anniversary of the establishment of the Expanded Programme on Immunization, a program that was built on the success of the smallpox eradication program and aimed to scale up worldwide access to six key antigens [1]. In the past four decades, much progress has been made, with over 80% of children globally receiving their basic vaccines. It is estimated that 2–3 million deaths are averted annually through immunization [2]. The burden of morbidity and disability averted is even larger. However, the full potential of immunization is yet to be realized, with one in five children, usually belonging to the most vulnerable populations, still to receive vaccination. With a robust vaccine pipeline, the number of diseases that can be prevented through vaccination, not just in childhood, but across the life course, has substantially increased.

In order to fully exploit the potential of immunization, in 2010, there was a call to establish a decade of vaccines and create a global vaccine action plan that builds on the successes of current work to achieve key milestones in discovery, development

and delivery of life-saving vaccines to the most vulnerable populations in the poorest countries over the next decade [3]. The Global Vaccine Action Plan, which was endorsed by the World Health Assembly in 2012, provides a framework to guide the actions to achieve the vision and mission for the decade [4]. In what is considered by many as a game changer, the plan is accompanied by a Monitoring and Accountability Framework and a mechanism for independent review of progress through the WHO strategic advisory group of experts for immunization.

The first independent review of progress was conducted in 2013. While there has been progress against the goals for the decade, there are also a number of challenges that need to be addressed if these goals are to be fully realized [5].

The year 2012 saw a record low of 223 cases of paralytic poliomyelitis, with only three endemic countries [6]. India continued to remain polio-free. Despite some setbacks in 2013, mostly related to insecurity and civil strife, the eradication initiative is moving forward toward implementing the end-game strategy,

KEYWORDS: communicable disease control • community health systems • expanded program on immunization • immunization • national health programs • vaccines • WHO

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which will culminate with the coordinated global cessation of oral poliovirus vaccine use, starting with type 2.

In the period between 2000 and 2012, significant progress has been made in measles control, with a 77% reduction in the reported incidence of measles and 78% reduction in estimated measles deaths globally [7]. An estimated 13.7 million deaths from measles alone were averted during the period 2000–2012 as a result of vaccination, as compared with a scenario of no vaccination [7]. However, recent large outbreaks threaten the progress in measles control [7]. Outbreaks of measles were reported in 2012 in the Democratic Republic of Congo, India, Indonesia, Ukraine, Somalia, Sudan, Pakistan and China. In 2013, the number of reported measles cases increased by 43%, largely due to increase in cases reported from the African and Western Pacific regions [8]. In 2013, outbreaks were reported in several European countries, including Turkey, Georgia, the UK and Germany, while the outbreak in China persisted into 2013, threatening the progress toward regional measles elimination targets. Measles genotype distribution data suggest that the European region is the main source of imported cases into the region of the Americas, which has eliminated indigenous transmission of measles [9]. At the current rate, the interim goal set by the World Health Assembly to reduce global measles mortality by 95% by 2015, compared with the year 2000, is unlikely to be met. Without additional investments and the sustained efforts of all stakeholder, it is also unlikely that the measles elimination goals for the decade are likely to be met.

In 2012, globally, an estimated 83% of eligible infants had received at least three doses of diphtheria-pertussis-tetanus (DTP)-containing vaccines (DTP3) [10]. However, coverage varied considerably between and within countries. While 131 (68%) of the 194 member states had achieved coverage $\geq 90\%$, 29 had coverage below 80%, of which 6 had coverage below 50%. These 29 countries included India, Indonesia, Nigeria, and Ethiopia, which have large birth cohorts. Inequities in coverage were also noted within countries. Of the 131 countries with DTP3 coverage $\geq 90\%$ nationally, only 59 had coverage $\geq 80\%$ in each district. Among 24 countries from whom survey data were available since 2007, the difference in coverage between children in the richest and poorest wealth quintiles was $\geq 10\%$ in 13 countries. Since disease and death from vaccine preventable diseases are highest among the poorest, the full potential of immunization cannot be realized until this divide is bridged. Several low- and middle-income countries such as Malawi, Rwanda, Bolivia and Albania have shown this inequity can be bridged if adequate investments and efforts in improving service delivery are made.

The last few years have seen a rapid acceleration in the addition of new vaccines into national immunization programs. By 2012, 180 of the 194 Member States had added Hib-containing vaccine to their national programs. Between January 2010 and July 2013, 73 low- and middle-income countries had added at least one new vaccine to their national program. These included 43 countries eligible for GAVI Alliance support, 7 low middle-income countries ineligible for GAVI Alliance support and 22 upper middle-income countries. The

vaccines added included Hib vaccine (22 countries), pneumococcal conjugate vaccine (34 countries), rotavirus vaccine (19 countries) and HPV vaccine (11 countries); several countries had added more than one vaccine to their national program during this period. The historical time lag between when new vaccines became available in high-income countries and in low-income countries is slowly being bridged. The other notable success in the past few years has been the development and introduction of a meningococcal A conjugate vaccine in the African meningitis belt countries [11]. Between 2010 and 2012, over 100 million individuals living in the African meningitis belt have been immunized with this vaccine in mass campaigns. Available evidence is showing that these new vaccines are having a rapid and large impact on the Hib meningitis [12], severe rotavirus diarrhea hospitalization and diarrhea mortality [13,14] and invasive pneumococcal disease [15]. The mass campaigns with the meningococcal A conjugate vaccine has resulted in the virtual disappearance of meningitis due to this organism [16,17].

While the acceleration in the introduction of new vaccines and the resultant impact is encouraging, it has also exposed weaknesses in the health systems in some countries and raised concerns about the sustainability of these vaccines in low-income countries, if and when external support ends.

The opportunities provided at the time of introduction of new vaccines to further enhance the impact of these vaccines through the implementation of coordinated strategies, such as outlined in the global action plan for pneumonia and diarrhea [18], are still to be fully exploited in most countries. The integrated delivery of primary healthcare services and better coordination between the different programs within the health system remains a challenge that needs to be overcome.

In its review of progress, strategic advisory group of experts expressed concerns about the availability and quality of data to monitor progress, the lack of progress with measles elimination in most regions, stagnation of immunization coverage and persistent inequity in several countries, especially in Africa and Asia and the highlighted need for greater country ownership and investments in national immunization programs [19]. A number of recommendations for corrective actions have been made and it will take the concerted efforts of national governments and all stakeholders to implement these measures to realize the vision for the decade of vaccines.

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Financial & competing interests disclosure

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No writing assistance was utilized in the production of this manuscript.

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