Routine immunization in the WHO African Region: Progress, challenges and way forward

Richard Mihigo, Blanche Anya, Joseph Okeibunor, Alain Poy, Shingai Machingaidze, Charles S Wiysonge, Gregory D Hussey, Deo Nshimirimana
Corresponding author: Joseph Okeibunor, e-mail: okeibunorj@who.int

Immunization is considered one of the most cost effective public health interventions for reducing child morbidity, mortality and disability. Globally, an estimated 2.5 million child deaths and 600 000 adult deaths are prevented annually through immunization. The global effort to use vaccination as a public health intervention began when the World Health Organization launched the Expanded Programme on Immunization (EPI) in 1974.

Over the past four decades, extraordinary progress has been made in improving vaccination coverage in Africa in an equitable and cost effective fashion. This has been mainly due to several international efforts to increase EPI coverage, including the Universal Childhood Immunization initiative, the Global Alliance for Vaccines and Immunization (GAVI), the Millennium Development Goals (MDGs) declaration, the Global Immunization Vision and Strategy (GIVS), and, most recently, the Global Vaccine Action Plan (GVAP).

These initiatives, coupled with specific regional efforts such as the WHO African Region’s EPI strategic plans of action for the periods 2001–2005 and 2006–2009, the Reach Every District (RED) approach, as well as the efforts of national immunization programmes, have seen the African coverage of three doses of the diphtheria-tetanus-pertussis (DTP) vaccine by 12 months of age (DTP3) rise from 5% in 1980 to 75% in 2013.

Progress

In the last four decades, great advances have been made in expanding the reach of immunization programmes and in developing and introducing new vaccines. More people than ever before are being vaccinated and access to and use of vaccines by age groups other than infants is expanding. As a result of immunization combined with other primary health care and development interventions – including improved access to clean water and sanitation, better hygiene and education – the annual number of deaths among children under five years of age fell from an estimated 9.6 million in 2000 to 7.6 million in 2010 globally, despite an increase in the number of children born each year.

According to 2013 coverage estimates from WHO and UNICEF, more than 111 million infants globally received vaccines to protect them from deadly diseases. These infants account for about 84% of the world’s children, but an estimated 21.8 million infants remained unvaccinated, among which 4.3 million (22%) are located in four countries (Democratic Republic of the Congo, Ethiopia, Nigeria and South Africa) in the WHO African Region. Out of a target population of 32.2 million surviving infants in the Region in 2013, an estimated 8.2 million infants did not receive their third dose of DTP vaccine compared with 10.0 million in 2012. Almost 78% of those children are located in 10 countries (Chad, Democratic Republic of the Congo, Ethiopia, Kenya, Mozambique, Niger, Nigeria, South Africa, South Sudan and Uganda).

SUMMARY—Tremendous progress has been made in expanding immunization in the African Region over the last four decades. And immunization, together with other primary health care and development interventions, has impacted significantly on the annual number of deaths among children under five. However, an estimated 22% (4.3 million) of the infants globally remaining unimmunized are located in four countries of the African Region (Democratic Republic of the Congo, Ethiopia, Nigeria and South Africa). Challenges remain in reaching an estimated 20–30% of children across the Region. In addition to the traditional vaccines (DTP, measles, polio and tuberculosis) newer ones, such as for PCV and rotavirus, are being rolled out in the Region but uptake and coverage is slow and patchy both within and between countries. The new regional strategic plan for immunization 2014–2020 is intended to provide policy and programmatic guidance to Member States, in line with the 2011–2020 GVAP, in order to optimize immunization services and assist countries to further strengthen their immunization programmes.

Voir page 64 pour le résumé en version française.
Ver a página 64 para o sumário em versão portuguesa.

1 WHO Regional Office for Africa, Brazzaville, Congo
2 Vaccines for Africa Initiative (VACFA), Institute of Infectious Disease and Molecular Medicine, University of Cape Town, Cape Town, South Africa
In addition to the traditional six antigens (BCG – bacille Calmette-Guérin for tuberculosis, OPV – oral polio vaccine, DTP – diphtheria, pertussis and tetanus, and measles) included in the EPI since its inception, other vaccines are being introduced into national immunization schedules. All countries but one had introduced hepatitis B vaccine and Haemophilus influenzae type b vaccine as of December 2013. However, there has been a slow pace of introduction of other new vaccines: pneumococcal conjugate vaccines (PCV) and rotavirus vaccines were introduced by 29 and 15 countries respectively while human papilloma virus (HPV) vaccine has been introduced in Lesotho, Rwanda, Seychelles and South Africa only. More than 150 million people in 12 countries have been vaccinated with MenAfriVac (the new conjugate meningococcal meningitis vaccine) in campaigns since 2010, and no confirmed case of meningitis A has been identified among the vaccinated populations. Of the 31 countries at risk of yellow fever, 23 introduced the vaccine with four countries attaining 90% coverage in 2013.

In 2013, a total of 87.8 million children received measles vaccination through supplementary immunization activities (SIAs) in 16 countries. Four of these 16 countries conducted their follow-up SIAs using the measles-rubella vaccine targeting children from 9 months to 14 years of age, thus pioneering the introduction of the rubella vaccine in the Region. Through these efforts, the African Region achieved 88% reduction in estimated measles deaths between 2000 and 2012. The elimination of maternal and neonatal tetanus was also validated in 30 countries as of December 2013.

Challenges in reaching the remaining 20–30% children in the African Region

Cold chain management in resource-poor settings, where electricity is non-existent or erratic, coupled with a lack of adequate trained staff to administer vaccines present major challenges in most African countries. Furthermore, of those children who do receive the vaccines, some receive them late or at
in appropriate times and likely receive suboptimal disease protection.

Improvements in immunization spending in most African countries have predominantly been due to donor funds. However, of the countries that established line items in their national budgets for routine vaccines, over a third did not fund them, and those that had drawn up financial plans did not utilize them to the degree expected.

Another challenge is the quality of immunization data in many countries in the Region. Various external evaluations have identified many inconsistencies in reported data suggesting that immunization data monitoring remains weak in most African countries.

The key challenges fall under different categories:

**Programme management, monitoring and accountability**
- Fragmentation of planning and lack of clear leadership;
- Gaps in micro-planning and denominator figures (target population issues);
- Gaps in health information and monitoring systems;
- Constraints in data quality management, archiving, analysis; and
- Ineffective use and interpretation of data to redirect the programme.

**Service delivery**
- Shortcomings in service delivery strategies (insufficient supply and access to quality services, limited service delivery points and outreach sites);
- Inadequate use of the GAVI health system strengthening funds to strengthen routine immunization activities; and
- Security constraints in some countries.

**Logistics, vaccine supply and quality**
- Insufficient storage capacity at central and intermediate levels (high proportion of equipment failure or inappropriate resources);
- Inadequate supply and logistics systems resulting in recurrent shortages or overstock of vaccines and essential commodities; and
- Lack of funding for vaccine distribution at the most peripheral levels.

**Advocacy and communication**
- Weak communication strategies at all levels;
- Insufficient demand creation, weak links with communities and their leaders; and
- Low community awareness and participation.

**Capacity building**
- Insufficient human resource capacity at all levels, rapid turnover of trained staff;
- Poorly trained and supervised managers and frontline health workers; and
- Gaps in supportive supervision, often directive or punitive.

**Sustainable financing**
- Reduced EPI budget resulting in funding shortfall for vaccination activities; and
- Weak advocacy and high-level support for EPI due to competing priorities.

The way forward
With the 2015 deadline for the Millennium Development Goals approaching, it is necessary for the African Region to take stock, critically assess its position, take ownership of the regional and country-specific problems, and develop precise strategies to overcome the challenges identified. There is need for increased immunization systems strengthening, as many are plagued by weak infrastructure and shortage of skilled human resources. More affordable and adapted vaccines need to be made available. Other key actions include, strengthening the integration with other child survival and high impact interventions and extending the benefits of immunization to adolescents and adults.

The new regional strategic plan for immunization 2014–2020, which is intended to provide policy and programmatic guidance to Member States, in line with the 2011–2020 GVAP, in order to optimize immunization services, will be used by countries to further strengthen their immunization programmes. Key approaches in the regional strategic plan include integrating immunization into national health policy and planning and during emergencies, strengthening immunization financing, enhancing partnerships, building national capacity, improving monitoring and data quality, improving vaccine management, safety and regulation, and promoting implementation, research and innovations.

**Conclusion**
Countries in the African Region must be commended for giant steps made in EPI performance over the past four decades. However, there exist wide inter- and intracountry differences, with a significant number of children remaining unvaccinated, under-vaccinated, and still dying from vaccine-preventable diseases. Immunization systems’ strengthening is essential, as most are understaffed with inadequate resources to function efficiently. Issues of vaccine supply, financing and sustainability require urgent attention.

Increased political and financial commitment from governments as well as coordinated national evidence-informed efforts by all immunization stakeholders are needed to both maintain current achievements and make additional progress for EPI in the Region. African leaders must be held accountable for meeting agreed country targets and honouring international commitments made.

---

**General references**


