Regional Strategic Plan for Immunization

2014 - 2020

World Health Organization
REGIONAL OFFICE FOR Africa

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TABLE OF CONTENTS

ACRONYMS

AEFI	Adverse events following immunization
AFP	Acute flaccid paralysis
CCS	Country Cooperation Strategy
cMYPs	comprehensive multiyear plans
cVDPV	circulating vaccine-derived poliovirus
DTP	Diphtheria-tetanus-pertussis vaccine
EPI	Expanded Programme on Immunization
FBO	Faiths-based organizations
GVAP	Global Vaccine Action Plan
GIVS	Global Immunization, Vision and Strategy
HIV	Human immunodeficiency virus
HMIS	Health management information system
HPV	Human papillomavirus Vaccin
HSS	Health systems strengthening
ICC	interagency coordinating committee
IDSR	integrated disease surveillance and response
IHR	International Health Regulations (2005)
IPV	inactivated polio vaccine
JRF	joint reporting form
MCV	measles-containing vaccine
Men A	meningitis type A
MenAfriVac©	meningococcal meningitis A conjugate vaccine
NGO	nongovernmental organization
NITAG	national immunization technical advisory group
NRA	national regulatory authority
OPV	oral polio vaccine
PCV	pneumococcal conjugate vaccine
PEI	Polio Eradication Initiative
REC	Reaching every child
RED	Reaching every district
SIA	supplementary immunization activity
TB	tuberculosis bacilli
TT	tetanus toxoid vaccine
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VDPV	Vaccine-derived polioviruses
WHA	World Health Assembly
WHO	World Health Organization
WPV	wild poliovirus

EXECUTIVE SUMMARY

Immunization has been the mainstay of national and regional public health strategies in the African Region for the past four decades. By overcoming many structural, financial, geographical and managerial obstacles to providing universal access to immunization, the Region has achieved coverage levels of about 70% for three doses of the diphtheria-tetanus-pertussis (DTP3) vaccine and the first dose of the measles vaccine. Measles mortality has declined by 88% since 2000, and only one country in the Region remains endemic for wild poliovirus. The development of a new vaccine against meningococcal meningitis type A and its introduction among millions of children and young adults has protected populations living in the so-called meningitis belt of sub-Saharan Africa from an eruption of that disease.

These are just some of the achievements that have led to the dramatic reduction in infant and under-five mortality in Africa in the last few decades. Yet, regional vaccination coverage seems to have stalled over the past three years. Gaps in organization, coordination and management of immunization activities; inadequate vaccine supplies and cold storage capacity; limited service delivery points; heavy dependency on international funding; and inappropriate communication strategies that have resulted in low community awareness and participation are obstacles to achieving equity in access to safe and effective immunization for all targeted populations in the Region.

To respond to these and other challenges and in the spirit of global solidarity, the World Health Organization (WHO) endorsed a Global Vaccine Action Plan (GVAP) in 2012. That plan was formulated through a broad-based consultative process in which African countries and many partners and relevant institutions played an active role.

This strategic document addresses the challenges countries in the WHO African Region and their partners need to overcome to provide universal access to immunization for all eligible populations by 2020. It builds on lessons learned during 2009–2013 when the Global Immunization Vision and Strategy (GIVS) served as the framework for global and regional responses to address immunization gaps. It is a call for an unprecedented coalition of minds and means to ensure that every child born in the African Region has the chance to be protected against deadly diseases for which safe and effective vaccines exist or will be brought to the market between 2014 and 2020, bearing in mind that sustainable access to immunization requires strong and durable linkages to primary health care. The strategy also covers other population groups that require immunization.

The aim of this strategic plan is to ensure achievement of universal immunization coverage within the WHO African Region. To accomplish that aim, the following objectives have been defined:

- to improve immunization coverage beyond the current levels
- to complete interruption of poliovirus transmission and ensure virus containment
- to attain elimination of measles and make progress in elimination of rubella and congenital rubella syndrome
- to attain and maintain elimination/control of other vaccine-preventable diseases

The transition from GIVS – which inspired the formulation of the 2009–2013 African Region Strategic Plan – to GVAP in the current decade will require strategic adjustments, notably:

- Moving from supply-driven to demand-driven community immunization approaches with Member States mobilizing local communities;
- Moving from globally driven immunization agendas to nationally owned immunization programmes with increased national budget allocations;
- Going from single-stream programme structures to integrated health systems' approaches with routine immunization seen as the bedrock of all immunization activities situated within a robust primary health care system; and
- Giving stronger emphasis to the life-cycle approach to immunization.

This strategic plan is intended to help shape national strategic plans so as to improve (i) harmonization in eliminating inequities in access to immunization services both within countries and across the Region, (ii) equity in access to human and financial resources needed to achieve this goal, and (iii) mutual accountability between governments and their domestic and international partners. The monitoring and evaluation framework appended to this strategic plan provides national, regional and global standards for accountability goals.


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1.

Introduction

The African Regional Immunization Strategic Plan 2009–2013 provided significant impetus for immunization in the Region. Reports from countries, through the 2013 joint reporting form (JRF), showed DTP3 coverage at 90% in 25 countries, above 80% in 35 countries, above 50% in 45 countries, and below 50% in only two countries. However, estimates based on WHO/UNICEF immunization coverage data were significantly lower than JRF data, in some cases by as much as 10 points. Significant progress has been reported in polio eradication, notwithstanding the re-emergence of this disease in the Horn of Africa and Central Africa. There has been a steady introduction of new vaccines, with the high coverage of the MenA vaccine in the African meningitis belt being noteworthy. Coverage of DTP3 vaccine and the first dose of the measles containing vaccine (MCV1), though, have stagnated since 2009, and results have been mixed in the efforts to eliminate maternal and neonatal tetanus. Challenges still exist such as planning and leadership gaps, scarcity of service and outreach points, inadequacy in stocks of vaccines and cold chain capacity, insufficient funding, human resource deficiencies, and poor data management and communication strategies.

This African Regional Immunization Strategic Plan 2014–2020 affords the opportunity for Member States and their partners, together with the WHO African Regional Office, to redefine their vision for the Region in the context of the 2011–2020 Decade of Vaccines. The Region has been instrumental in contributing to global progress in immunization through a series of resolutions by the WHO Regional Committee for Africa and the World Health Assembly. Also, since 2012 the Region has been engaged in the development of the Global Vaccine Action Plan (GVAP) for the Decade, consulting with and getting inputs from its Member States and their partners. In 2012, the World Health Assembly endorsed GVAP with its five goals of eradicating polio; meeting global and regional elimination targets; meeting vaccine coverage targets in every region, country and community; developing, introducing and improving vaccines and technologies; and exceeding the Millennium Development Goal (MDG) 4 target for child mortality reduction.

Selected resolutions by the WHO Regional Committee for Africa and the World Health Assembly specific to immunization

- ***Resolution AFR/RC63/14,*** Immunization in the African Region: progress report on the African Regional Immunization Strategic Plan 2009–2013; global vaccine action plan and polio endgame.
- ***Resolution AFR/RC61/R1,*** Measles elimination by 2020: a strategy for the African Region
- ***Resolution AFR/RC61/R4,*** Poliomyelitis eradication in the African Region.
- ***Resolution AFR/RC60/R4,*** Current status of routine immunization and polio eradication in the African Region: challenges and recommendations.
- ***Resolution WHA65.17,*** Global Vaccine Action Plan.
- ***Resolution WHA65.5,*** Poliomyelitis: intensification of the global eradication initiative.

The transition from the Global Immunization Vision and Strategy (GIVS), which inspired the formulation of the African Regional Strategic Plan 2009–2013, to the GVAP process in the current decade will require strategic adjustments, notably:

- Moving from supply-driven to demand-driven community immunization with Member States mobilizing local communities;[1, 2]
- Moving from globally driven immunization agendas to national ownership of immunization programmes with increased national budget allocations for immunization;[3]
- Going from single-stream programme structures to integrated health systems' approaches with routine immunization[4] as the bedrock of all immunization activities situated within robust primary health care systems; and
- Stronger emphasis on the life-cycle approach to immunization.

This regional immunization strategic plan is being developed at a time when Africa's economies have been experiencing annual growth rates well above 5% for over a decade, there is widespread optimism about the Region's prospects for continued steady growth, and growing international attention is focused on Africa as an investment destination. Entrepreneurship across the Region is strong in spite of difficulties in access to credit, and mobile technology is penetrating the Region rapidly, even in distant villages.[5] These factors indicate that Africa is at a crossroads in terms of the decisions it will need to

[1] WHO Regional Committee for Africa. Immunization in the African Region: Progress report on the African Regional Immunization Strategic Plan, 2009–2013. Global Vaccine Action Plan and Polio Endgame, AFR/RC63/14, 23 September 2013.

[2] Public health programmes designed to improve coverage of childhood immunization should address people and the communities and societies in which they live (Wiysonge CS, Individual and contextual factors associated with low childhood immunization coverage in sub-Saharan Africa: A multilevel analysis, *PloS ONE*, May 2012, vol. 7, Issue 5, e37905).

[3] Statistical analysis has shown that donor assistance to governments has had a negative and significant effect on domestic government spending for 12 countries in the Region between 2000 and 2010 experiencing a negative growth rate in expenditure on health as a percentage of GDP (Lu C et al. Public financing of health in developing countries: a cross-national systematic analysis. *The Lancet*, vol. 375, April 17, 2010; WHO Regional Office for Africa, Atlas of African Health Statistics 2012).

[4] If African countries are to make full use of immunization services and restore them to the central stage, national programmes must ensure the elements of routine immunization (management, capacity building, finance, vaccine supply and quality, cold chain, logistics, service delivery, supervision, community partnership, advocacy and communication, as well as monitoring and evaluation) are in place and functioning properly (Nshimirimana D, Mihigo R and Clements CJ. Routine immunization services in Africa: back to basics. *J. Vaccines Immun* 2013;1(1): 6–12).

[5] Currently, there are a reported 53 mobile phones per 100 people in Africa.

make and actions it will need to take to determine its long-term development path, and suggest that this is a critical time for seeking and ensuring national commitment to addressing the gaps in provision of primary health care in general and immunization in particular as one of the leading services to the population.

There are clear opportunities for innovation. Social research can examine the interplay of political, social, economic and technological forces that influence the demand for immunization[6] and, more specifically, identify the determinants of or barriers to vaccination coverage, such as birth order, home location and mother's education, which are important factors in the failure to be immunized.[7] In addition, there is need to better understand the roles that mothers and traditional leaders, as well as other opinion leaders, play in decision-making on vaccination of children. Information and communication technologies, including mobile phones, are promoting rapid access to, and use of, information and data. Social media are becoming principal channels for communication, as well as for creating new sets of local and global influencers with positive and negative influences on immunization, for example lobbyists against vaccination. Such connectivity provides for dynamic peer learning networks such as the newly created International Association of Immunization Managers run by the Sabin Vaccine Institute, where programme managers can share ideas, experiences and best practices.

This document is intended as a framework that Member States of the WHO African Region can use as they develop their national strategic plans for immunization for 2014–2020. Given that the environment in which immunization services are implemented is changing rapidly and technology and innovation are evolving fast, this framework will benefit from periodic enrichment with input from all stakeholders in immunization.

[6] Rwashana AS, Williams DWA and Neema S. System dynamics approach to immunization healthcare issues in developing countries: a case study of Uganda, *Health Informatics Journal*, 2009; 15(2): 95–107.

[7] Munthali AC. Determinants of vaccine coverage in Malawi: evidence from the demographic and health surveys. *Malawi Medical Journal*, 2007; 19-20; 79–82, June 2007.

2.

Situation analysis and justification

Immunization in Africa has come a very long way over the last few decades from the days when routine infant immunization practically did not exist to the point where every country in the Region has an ongoing national immunization programme with basic immunization covering seven out of every 10 infants born annually.

The Regional Immunization Strategic Plan 2009–2013 was modelled after GIVS, which was launched by WHO in 2005. It was supplemented by country comprehensive multiyear plans (cMYPs). The Regional Strategic Plan for Immunization 2014–2020 builds on the experience gained from implementation of its predecessor and aligns with GVAP, which was launched in 2012 after endorsement by the countries and regional and global level stakeholders. Specific important points to take into account for smooth and effective transition from GIVS to GVAP are presented in Annex 1.

The evaluation of the 2009–2013 strategic plan[8] in July 2013 concluded that efforts deployed in the African Region had been rewarded with tremendous progress in some programme areas and countries, but only modest progress had been made in others. There were also several setbacks and programmatic gaps during 2009–2013 that will require special attention, effort and resources during the next strategic phase. The achievements have been mixed:

[8] Report on the External Evaluation of the Regional Immunization and Vaccine Development Strategic Plan, 2006–3013, WHO Regional Office for Africa, Brazzaville, 4 July 2013

- Immunization coverage with three doses of DTP vaccine[9] and the first dose of the measles vaccine (MCV1)9 in the Region stalled at around 70% during the last three years of the plan. Inequities in the use of immunization are seen in the countries where the reach every district (RED) strategy, which can be credited with bringing into strong focus districts in greatest immunization need, was not sufficient to give every child the chance to access immunization.
- Twenty-three[10] of the 31 countries at risk for yellow fever introduced the yellow fever vaccine, and four countries[11] attained 90% coverage with that vaccine in 2012.
- Polio eradication has assumed a prominent position in the regional and national political agendas. There was a significant decline in wild poliovirus occurrence in the Region, with only 274 cases reported in 2013 compared with 691 in 2009. The polio eradication goal is nearing achievement, but the resurgence of epidemic polio in the Horn of Africa and the Central African sub-region in 2013 with 194 cases and the high frequency and persistence of circulating vaccine-derived poliovirus (cVDPV) in several other countries are jeopardizing the goal of interruption of polio transmission by 2014. In addition, the persisting low routine polio immunization coverage, combined with the below-standard quality supplementary immunization activities (SIAs) for polio in several countries, increases their vulnerability to the reintroduction of wild poliovirus from countries where it currently exists and/or the emergence and spread of polio vaccine-derived pathogenic viruses.
- The introduction of MenA vaccine in the African meningitis belt through SIAs had a considerable impact on annual meningitis epidemics. More than 150 million people in 12 countries[12] have received the MenAfriVac© in campaigns since 2010 and no meningitis A case has been confirmed in the vaccinated populations.[13]
- All but one country had introduced hepatitis B (Hep B) and Haemophilus influenzae type b (Hib b) vaccines by December 2013. Pneumococcal conjugate vaccines (PCV) were introduced by 27 countries[14] and rotavirus vaccines by 11 countries,[15] while the human papillomavirus (HPV) vaccine was introduced in only Lesotho, Rwanda and South Africa. Introduction of new vaccines has been constrained by vaccine unavailability, poor timing of funding, procurement inefficiencies and cost.
- In 2013, a total of 87.8 million children in 16 countries were vaccinated against measles through SIAs.[16] Four[17] of these countries conducted the follow-up SIAs using the measles-rubella vaccine and targeting children from 9 months to 14 years of age. Between 2001 and the end of 2013, a total of 682.5 million children were reached through measles SIAs, and routine immunization coverage with the measles vaccine had risen from 53% to 73%, according to WHO and UNICEF estimates. The cumulative effect of these interventions saw the African Region achieve an estimated 88% reduction in measles deaths between 2000 and 2012.[18] But the resurgence of measles outbreaks is a signal that the coverage of measles-containing vaccines is not being sustained at a sufficiently high level.

[9] WHO-UNICEF national immunization coverage estimates

[10] Angola, Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Mali, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo.

[11] Côte d'Ivoire, Gambia, Ghana, Sao Tome and Principe.

[12] Benin, Burkina Faso, Cameroon, Chad, Ethiopia, Gambia, Ghana, Mali, Niger, Nigeria, Senegal, Sudan.

[13] Data from the enhanced meningitis surveillance system.

[14] PCV: Angola, Benin, Botswana, Burundi, Burkina Faso, Cameroon, Congo, Central African Republic, Democratic Republic of the Congo, Ethiopia, Gambia, Ghana, Kenya, Madagascar, Malawi, Mali, Mauritania, Mozambique, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, South Africa, Tanzania, Uganda, Zambia, Zimbabwe.

[15] Rota vaccines: Botswana, Burkina Faso, Burundi, Ethiopia, Gambia, Ghana, Malawi, Rwanda, South Africa, Tanzania, Zambia.

[16] Botswana, Cape Verde, Comoros, Congo, Democratic Republic of the Congo, Ethiopia, Ghana, Lesotho, Madagascar, Malawi, Nigeria, Rwanda, Senegal, South Africa, Swaziland, Togo.

[17] Cape Verde, Ghana, Rwanda, Senegal.

[18] Global control and regional elimination of measles, 2000-2012, *Weekly Epid. Rec.* 2014;89(6):45-52.

- Elimination of maternal and neonatal tetanus had been validated in 30 countries[19] as of December 2013. Seventeen countries are yet to achieve that status.
- Integrated surveillance and support from the regional laboratory are becoming stronger and better coordinated. Surveillance networks targeting vaccine-preventable diseases (VPDs) have been established in 47 countries in line with the requirements for integrated disease surveillance and response and the International Health Regulations (2005).
- The number, quality and deployment of national staff have grown considerably across the Region, and human resources management, performance monitoring and accountability have improved. The absence of coherent plans for education, training and deployment of human resources or attractive career development opportunities has meant that turnover and attrition of skilled human resources are significant.
- The flow of financial resources has become smoother and the frequency of vaccine stockouts has declined. As of December 2012, 41 countries[20] had reported including specific budget allocations for immunization in their national health sector budgets. Government funding for routine immunization increased from 43% in 2006 to 52% in 2010.
- Humanitarian emergencies that erupt periodically in the Region[21] regardless of the type or cause have been associated with epidemics of measles, meningitis, cholera or other diseases that can be prevented though early vaccination and/or effective case management. Responses to most of these emergencies by public health programmes have included targeted vaccination.
- Data production, quality and timeliness have improved, but many problems remain regarding data reliability and practical use at both the local and national levels.
- The Region is strengthening capacity in biomedical, operational and social/behavioural research and development.

Overall, the picture of immunization in the African Region is a mosaic of fragmented and uneven achievements threatened by insufficient national capability for self-reliance and weak sustainability. Certain gaps deserve focused attention in the 2014–2020 strategic plan:

- Polio eradication calls for sustained efforts to expand immunization coverage, enhance surveillance and sustain resource investment in the campaign, and political will, adopting a cautious approach to the transition to the post-polio eradication era.
- In practice, national ownership of routine immunization programmes remains weak in spite of stated commitments.
- Because they are poor and ill conceived, the communication strategies used have not succeeded in triggering wide acceptance of immunization let alone community demand for it, and the planning and delivery of immunization services often are not based on community inputs or needs related to convenience, reliability and quality of services.
- Integration of immunization with other primary health care components remains haphazard and piecemeal. And when new antigens are introduced, PCV and rotavirus in particular, the integrated management of childhood illnesses has not been sufficiently strengthened to manage pneumonia and diarrhoeal diseases that are not prevented by these vaccines, jeopardizing the community's trust in immunization services.
- Procurement and supply chain management remain inadequate, and demand forecasting is unreliable.

[19] Algeria, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Comoros, Congo, Eritrea, Ethiopia, Gambia, Ghana, Guinea-Bissau, Lesotho, Liberia, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Senegal, Seychelles, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe.

[20] www.who.int/immunization/programmes_systems/financing/analyses/jrf_analysis/en/ (accessed 13 March 2014).

[21] Central African Republic, Mali, South Sudan.

- Yellow fever vaccination coverage is strikingly suboptimal, creating epidemic risks in both previously and newly infected countries.
- The maternal and neonatal tetanus elimination agenda suffers from neglect and underfinancing.

The overall recommendation from the 2013 regional evaluation is that utmost priority be accorded to strengthening of routine immunization, ensuring that it is:

- integrated into a revitalized and universal primary health care service;
- tailored to meet community demand to address their health needs;
- founded on committed national and subnational ownership; and
- implemented through multiyear national plans that all stakeholders adhere to and support.

3.

Formulation of the strategy

3.1 PRIORITY SETTING

Reaching unserved or underserved children presents the greatest challenge for the Region and may be the most expensive target to achieve. Some of these children may be living in remote, hard-to-reach areas, have parents who are unaware of or are opposed to immunization, or are living in communities whose entitlement to health services is neglected or denied by health staff on the grounds that they are transient populations, noncitizens or undocumented migrants. Others may be in populations living close to health centres but are overlooked by the local health staff when microplans for community coverage are drawn up.

The RED strategy is no longer sufficient. It is essential to be able to identify and reach every child, going beyond reaching every community (Table 1). This will require considerable effort to implement and will include developing and implementing specific strategies for specially targeted populations such as nomadic, transient, border and neglected urban groups. Governments will need to commit the additional funding required for health facilities to offer quality and reliable services to reach the unreached.

Table 1: Extending the RED approach to Reaching Every Child approach (REC)

RED approach[22]	REC approach
▪ Effective planning and management of resources: ensuring effective management of human, financial and material resources at every governing level. ▪ Reaching all target populations: reaching out to underserved, unreached communities in giving support and access to services. ▪ Supportive supervision: providing local staff with on-site training by supervisors. ▪ Monitoring for action: promoting the use of data for action through utilization of data quality self-assessment tools at all governing levels. ▪ Linking services with communities: linking communities with health services through regular meetings between communities and health staff.	REC strengthens and builds on RED approaches by: ▪ Adding emphasis on micro planning of immunization services under the oversight of local health, civil, political, traditional and religious authorities and leaders. ▪ Ensuring that immunization, along with other primary health care services, is available, accessible, acceptable and of optimal quality. ▪ Providing local staff with orientation training on the process to shift from supply-driven to demand-driven services through greater advocacy, community awareness and trust building, and service provider responsiveness. ▪ Within each district, enumerating, mapping and targeting families and communities with insufficiently immunized children. ▪ Devoting maximum attention and resources to unimmunized children while reaching and sustaining the highest attainable immunization coverage in the whole children's population.

The very concept of "routine immunization" is changing and broadening in perspective. It no longer is limited to the delivery of just six antigens as was the case in the 1980s. The national schedule now contains many more vaccines, and still others are in the pipeline. There is an urgent need, therefore, to increase the scope of immunization in the Region by:

- Reaching those who have not been reached using new approaches and technologies where appropriate;
- Ensuring that those who were under immunized get full immunization;
- Reaching older groups who are targeted for new vaccines or extra doses of current vaccines;
- Delivering more antigens considering affordability and epidemiological appropriateness for each country,[23] including administering certain vaccines within 24 hours of birth;
- Appropriately adapting and fine-tuning the national immunization schedule to meet these demands.

Routine immunization should go beyond offering vaccination at heath facilities to include regular planned and announced outreach sessions in the communities, schools, workplaces and other sites where children, adolescents and adults congregate and which are conducive to conducting immunization sessions.

[22] WHO Regional Office for Africa. Immunization and vaccination development: reach every district (RED) approach (http://www.who.int/immunization/funding/03_WHO_AFRO_IVD_RED.pdf)

[23] Decision-making on the introduction of new vaccines has to consider the impact on the immunization programme and the overall health system (WHO, Department of Immunization, Vaccines and Biologicals. Principles and considerations for adding a vaccine to the national immunization programme: from decision to implementation and monitoring, Geneva, April 2014).

Immunization should be seen as the cornerstone of primary health care in which systems will need to be reorganized so as to bring immunization closer to other elements of the health care service and for contacts between health care providers and families to become more frequent and inclusive. Health staff need to be retrained to provide the population they care for with a bundle of prevention and care services that are appealing to them and planned with them, taking account of the local context. Most importantly, health staff have to act as agents of change, stimulating members of the communities to seek primary health care services, in particular immunization, as an entitlement – in fact, as a human right and not as a favour. Health staff's attitudes and behaviour are especially important factors in addressing individual or community fatigue or resistance to immunization, or actions by antivaccine lobbies.

Immunization is a national priority that is directed and collaboratively formulated and implemented by governments working in partnership with public and private stakeholders and civil society. One of the potential challenges to greater national ownership of immunization programmes is the standardization requirements built into the comprehensive multiyear plans (cMYPs) that provide a useful framework for domestic budgeting and funding and whose use is required for funding support from the GAVI Alliance and certain other entities. The cMYPs include exhaustive situation analyses but little clarity on country idiosyncrasies relating to constraints and assets or drivers at the level of delivery of immunization services, or precision on the corrective measures needed. More concise national strategic plans should be developed aligned with country requirements for collaborating with each stakeholder, including the community, to secure increased national investment in immunization that comes with greater national ownership and commitment. This should also provide sufficient rationale for resource mobilization from external sources. A move to country internalization of immunization would allow much more emphasis to be placed on developing and continuously improving monitoring tools for effective and real-time data generation, which will permit decision-makers to take immediate corrective action, including on allocation of resources.

3.2 AIM

The aim of this strategic plan is to ensure that the goal to provide universal immunization coverage within the WHO African Region is achieved.

3.3 OBJECTIVES

The objectives are formulated to reflect the outcomes and impacts of immunization on both disease-specific and general mortality, morbidity and disability. Each of these objectives can be achieved through various actions a set of which has been recommended and included with this document to serve as a guide for Member States as they formulate their next national strategic plan. The specific objectives are:

- to improve immunization coverage beyond the current levels
- to complete interruption of poliovirus transmission and ensure virus containment[24]
- to attain the elimination of measles and make progress in the elimination of rubella and congenital rubella syndrome[25]
- to attain and maintain elimination/control of other vaccine-preventable diseases.

[24] WHO, CDC and UNICEF. *Polio Eradication and Endgame Strategic Plan 2013–2018.*

[25] WHO. *Global Measles and Rubella Strategic Plan, 2012-2020.*

3.4 TARGETS

The targets specific to each of the four objectives of the strategy are as follows:

Objective 1: To improve immunization coverage beyond the current levels

- DTP vaccine coverage to reach 90% region-wide by the end of 2020
- All countries to introduce PCV by the end of 2020
- At least 37 countries to introduce the rotavirus vaccine by 2020
- At least 35 countries to introduce HPV by the end of 2020
- At least 25 countries to introduce a birth dose of Hep B by the end of 2020
- All countries to regularly report adverse events following immunization by the end of 2020

Objective 2: To complete interruption of poliovirus transmission and ensure virus containment

- All countries to interrupt transmission of wild poliovirus by 2014
- All OPV-using countries to introduce at least one dose of inactivated polio vaccine by 2015
- All polioviruses to be laboratory contained and the Region certified polio free by the end of 2018.
- A regional polio legacy plan to be finalized by the end of 2015.

Objective 3: To attain the elimination of measles and make progress in the elimination of rubella and congenital rubella syndrome

- All countries to achieve an incidence of confirmed measles of less than 1 case per million population by 2020
- MCV1 coverage to be at least 95% at the national and district levels and SIA coverage to be 95% in all districts
- At least 25 countries to introduce rubella-containing vaccine by 2020

Objective 4: To attain and maintain elimination/control of other vaccine-preventable diseases

- All countries to attain and validate elimination of maternal and neonatal tetanus by 2020
- All high-risk countries to attain yellow fever immunization coverage of 90% or higher by 2020
- All countries within the meningitis belt to introduce MenAfriVac© through campaigns, and 15 of them to have the vaccine in routine immunization by 2020
- Seroprevalence of HbsAg among children younger than 5 years to be less than 2% by 2020

3.5 GUIDING PRINCIPLES

The guiding principles[26] that will direct action in expanding immunization services in the Region to achieve the objectives and meet the targets are country ownership and leadership; shared responsibility, partnership, and mutual accountability; equitable health outcomes; integration; sustainability; and innovation.

3.5.1 Country ownership and leadership

Consolidating immunization into the health system will require strong leadership and governance to persuade the many immunization advocates and workers to depart from what is often called a silo approach to recognize the importance of complementarity of actions to tackle the disease burden. Support for this from the highest levels of government will be necessary. External stakeholders also will need to support this consolidation and national ownership of immunization, which is the bedrock of GVAP.

Governments will have to bring other local stakeholders on board if they are not already involved, including legislators, non-health ministries and local government authorities. Academic and private research organizations will be important partners for evidence gathering to enhance decision-making.

Good stewardship of human, financial and material resources is central in building trust of the public in the predictability and reliability of immunization services and also to help to maximize financial backing from national authorities and external stakeholders.

3.5.2 Sharing responsibility, partnership, and mutual accountability

A central tenet of this strategic plan is that it is essential to move to demand-driven immunization, where demand creation and communication ensure everyone recognizes the right and responsibility to be immunized and understands the risks and benefits of vaccines and immunization. This puts a great emphasis on the need to broaden communication efforts across all available channels. Social communication and marketing approaches based on in-depth understanding of research on the barriers to and drivers of immunization need to be used. For child immunization, effective communication and service also are important during vaccination so that mothers or caregivers understand the schedule to follow and remain motivated to complete the set of vaccinations.

Civil society organizations have an important role not only as the voice of the public in holding the government to its obligations, but also as mobilizers of the communities for immunization services. Their participation in national committees would benefit the immunization programmes.

Accountability for immunization rests with individuals, communities, health workers, institutions, the government and partners. National strategic plans will define the commitment and responsibility of each stakeholder for immunization. Country ownership puts the responsibility for holding all stakeholders accountable for their declared commitment to immunization squarely on the shoulders of the government. The government may require additional capacity to fulfil this role.

[26] These guiding principles are fully consistent with those of the GVAP. The drivers that link the transition from GIVS to GVAP (Annex 1), namely, leadership and governance, demand creation and communication, vaccines, cold chain and logistics, costing and financing, immunization services, human resources management and surveillance and reporting, are clearly identified in the guiding principles.

3.5.3 Equitable health outcomes

A clear picture of the excluded populations will be necessary to formulate, as will be an understanding of the barriers to their inclusion. This calls for strong focus on the improvement of data quality and use to identify excluded populations and for surveillance and reporting.

Of paramount importance in the Region is the integration of immunization workers into comprehensive disease-control interventions including immunization, capitalizing on their experience to address inequities in immunization delivery.

Evaluations have shown the importance of community health workers in outreach and in mobilizing communities behind vaccination and complementary actions, especially in hard-to-reach areas. Performance-based monitoring also has had a positive effect on outcomes, but does require accurate and timely data collection and processing.

3.5.4 Integration

The success of immunization services is closely linked to the perceived quality of health services by the public. Health workers engaged in vaccination need to be skilled in all aspects of vaccine administration, cold chain and logistics. Regular training and supervision should emphasize these. High quality case management and reliable availability of medicines are necessary for actions that complement immunization, such as the control of pneumonia and diarrhoea. Other illness-preventive elements such as improved sources of water also have to be in place.

To expand immunization services, private sector and nongovernmental providers have to be brought fully on board. These can be important allies for example in neglected urban areas where migrant or unregistered populations live and who are missed out in routine vaccination sessions and outreach owing to their unavailability during the day. Outsourcing services to the private sector may be one option to deal with vaccination logistics.

3.5.5 Sustainability

The cost of vaccination has been rising rapidly with the introduction of new vaccines and will grow even further with the strategies introduced to address inequities. To secure additional funding, greater attention to costing and financing will be required not for only national budgets but also decentralized budgets that cover recurrent operational costs vital to the success of immunization. The value and cost-effectiveness of vaccines and vaccination need to be established and regularly updated, for example when a new vaccine is being considered for introduction, in order to ensure long-term resource availability for both the vaccines and the associated operational costs.

Governments will have to carefully weigh future costs of immunization services, which, ultimately, will be financed nationally. Some of these costs are directly attributable, for example vaccine costs, but others are embedded in the health system's costs and in the various health interventions that complement immunization at all levels in the country. The long-term sustainability of external stakeholder support will also have to be assessed.

Capacity enhancement needs are evident for all the recommended actions. This requires attention to human resources management for both the numbers and quality of staff engaged in immunization services in the public, private and nongovernmental sectors. The challenge is to achieve technical self-sufficiency, a prerequisite for long-term sustainability and growth of immunization services.

3.5.6 Innovation

Innovative financing approaches are required to increase the funding available for immunization. There is need for the countries to benefit from the lessons learnt elsewhere in immunization financing if they are assessed as applicable to the country situation in question. This will lead to greater self-reliance in delivering immunization services.

Mobile technology[27] and the Internet have facilitated data management, and their use potential in the future appears to be strong given the penetration of mobile phones in the Region. The use of these technologies should be adopted where they are assessed as advantageous, with health workers trained accordingly.

In terms of evidence generation more broadly, a concerted effort is warranted for research relevant to the national and local situation, especially to help decision-makers with policy and operational issues. In addition, evaluations can allow for lessons learnt to be widely disseminated within and among the countries.

[27] mHealth projects demonstrate that positive health-related outcomes and their success are based on the accessibility, acceptability and low cost of the technology and its adaptability to different situations (Aranda-Jan CB, Mohutsiwa-Dibe N, Loukanova S. Systematic review on what works, what does not work and why of implementation of mobile (mHealth) projects in Africa, *BMC Public Health*, 2014;14:188.

A number of critical assumptions underlie these guiding principles:

- Government stability and absence of human-made emergencies are factors that will facilitate good governance and leadership, strengthening national commitment to sustaining of immunization services.
- A proactive approach to political issues, including the involvement of regional or subregional political, economic or health bodies when necessary and relevant will anticipate and resolve challenges likely to hinder good governance and the delivery of immunization services.[28]
- Demand-driven immunization can be geared towards breaking down social and cultural barriers and used to improve the convenience, quality and reliability of services, aided by the use of all available communication channels.
- Introduction of new vaccines will be founded on country-based evidence on the burden of disease and cost-effectiveness and will take into account the country's agreements on global programmes.
- Major vaccine supply breakdowns will be mitigated by engaging multiple vaccine manufacturers with ability to deliver vaccines in a timely fashion.
- Lower middle-income countries, which are falling behind low-income countries in access to new vaccines due principally to a dearth of financial resources and lack of external support, can benefit from pooled procurement mechanisms linking countries to increase purchasing power and supporting countries transitioning from low-income to lower middle-income status. Such mechanisms will need to be managed by expert subregional, regional or global bodies.
- The private sector is qualified to provide immunization services or related logistics or research expertise at levels and of quality acceptable to consumers or governments.

The hallmarks of the immunization strategy for Africa may be summed up as follows.

- equity in access to and use of life-saving immunization
- responsiveness of a quality and timely immunization service delivery system to informed public demand
- national commitment informed by evidence and demonstrated by growing capacity and resources
- immunization serving as the backbone of a strengthened primary health care service
- high data quality and use, with increasing use of information and communication technology for data exchange and health worker information provision and training

[28] Methodologies are available to identify potential long-term risks (Ref: Humanitarian Futures Programme, Beyond 2020: crisis drivers in West Africa's future. Report to ECOWAS, King's College, London, UK, 2008).

3.6 STRATEGIC DIRECTIONS

The strategic directions described in this section are intended to frame the processes required for the attainment of the set objectives. The strategic directions are informed by assessments of the immunization service performance in selected countries in the Region that have identified the factors that contribute to the achievement of good immunization performance. Besides broad national commitment, these factors include community health workers who are locally recruited and supported, active community participation in immunization and health, partnership between health staff and local government authorities, focus on accountability and performance monitoring, and the existence of essential immunization infrastructure at all levels.[29]

Each strategic direction is supported by a list of recommended actions that will guide Member States as they formulate their national strategic plan.

[29] Justice J et al. Study of the drivers of routine immunization system performance in Ethiopia, JSI Research and Training Institute Inc., ARISE Project for the Bill and Melinda Gates Foundation, 2012.

3.6.1 Strategic direction 1: All countries commit to immunization as a priority

State obligations grounded in national and international law to protect children's health, growth and development and, in particular, to allow their access to immunization, should be reflected in national policies, legislation, plans and budgets and other instruments and be based on evidence. These instruments should commit all sectors of the government, the private sector, academia, civil society, social networks and community leaders to become effective partners in immunization advocacy, development implementation, monitoring and support.

Immunization needs to be aligned with national health strategic plans, which requires access to and reliance on a clearly identified national regulatory platform and processes. National advisory groups such as national immunization technical advisory groups (NITAGs), interagency coordinating committees (ICCs) and technical advisory groups, need to be streamlined and made accountable for their output in support of the national immunization programme.

National strategic plans will have to be developed and continuously updated or reformulated based on the best evidence on the burden of disease and resource availability from both domestic and external sources, and in line with GVAP as endorsed by governments at the World Health Assembly and the Regional Committee.

New national partners – such as at the private sector; civil society organizations; faith-based organizations; traditional health practitioners; African philanthropists; government bodies such as the ministries of health, education, finance, interior, communication and women's affairs; and political bodies, as well as the ministry of agriculture's extension workers – should be brought on board by the government to secure collaboration, commitment and support.

Capacity implications

The overall thrust to secure national commitment and ownership of immunization must rest on the abilities and competence of the national staff, who need to strive for self-reliance in technical and managerial skills and excellence in communication. Both domestic and external stakeholders should take the goal of self-reliance of immunization staff as a common feature to support in immunization services, mobilizing resources as needed to achieve this goal.

Good stewardship of resources requires sound management practices and financial regulations and rules, together with oversight by an independent agency. Engagement with audit bodies can be helpful in advancing their understanding of immunization objectives and the strategies that drive funds disbursement decisions.

Sharing of experiences on research, legislation, stewardship, stakeholder relations and operational issues should be enhanced through peer learning networks to enable the countries to benefit from best practices and avoid pitfalls in these areas. Mobilizing leaders to be a voice for immunization requires continuous updating of their knowledge through highly condensed, relevant briefings with talking points. Some briefing materials can be developed at the regional level such as those on the specifications, expected impact and costs of new vaccines.

Recommended actions

- Determine the value of immunization for individuals, households, communities and the nation in terms of health, equity and economic returns, updating and disseminating this information periodically through the Internet and all societal channels.
- Advocate systematically and continuously with government, elected, civic, FBO and private sector leaders on the benefits of immunization and solicit their support as advocates and policy-makers.

- Develop and update policies, legislation and regulations that are consistent with available evidence, allocate responsibility for developing national immunization plans integrated into the national health plan, give provision for a national budget line dedicated to immunization, and include a framework for monitoring and reporting on progress by all state and non-state actors.
- Institute mechanisms to ensure good stewardship of national, local and donor-provided resources with clear checks and balances in disbursement and procurement operations.
- Organize regular working sessions among the ministries of health, education, finance and local government plus any other indicated government body or nongovernmental partner to identify what works and why, and bottlenecks and practical solutions to them.
- Maximize the use of independent bodies such as the national immunization technical advisory groups in providing advice on scientific and technical issues in the national context in order to best inform national decision-makers and secure commitment at the highest levels of leadership.
- Provide a national forum for capturing and disseminating information on progress and challenges to serve as a medium for continuous dialogue with interested stakeholders, including professional associations, regulatory authorities, civil society organizations and academics, sharing lessons learnt with other countries facing similar situations.
- Proactively use social media and other communication means to inform the public of the rationale for and benefits of vaccines and immunization.

3.6.2 Strategic direction 2: Individuals and communities understand the value of vaccines and demand immunization as both their right and responsibility

With the significant widening of the scope of vaccination associated with availability of new vaccines, the right messages and incentives are needed for individuals and communities to understand their responsibility for immunization and to have easy access to vaccination. Health workers should have the right tools and incentives to secure the population's trust in the health system to facilitate delivery of vaccination. Awareness raising through communication – which increasingly is reaching higher numbers of the population owing to the proliferation of different types mass media tools such as radio, television, Internet and mobile telephony[30] in addition to the more traditional means – needs to underscore the human rights basis for vaccination, as well as the positive economic returns for families and the society. Civil society organizations can play a critical role in reinforcing messages through awareness creation. Appropriate social research should help to understand the needs of communities and to match those needs with the capacity of the programmes to deliver them. This research may show that communities want additional health interventions, basic infrastructure or services such as sanitation and schooling.

The potential role of monetary or other incentives to stimulate demand for vaccination should be assessed, recognizing the current lack of evidence on their effectiveness, the challenges of their sustainability and the ability to measure their impact.

[30] Given the rise of social media, especially among the youth, this population group should be specifically targeted as advocates for immunization.

Capacity implications

To understand consumer perception, use or non-use of immunization services requires well-designed qualitative research with interviewers who are able to access households and converse in the local language. Academia or the private sector would be the likely sources of expertise for this work. Similarly, the private sector should be mobilized to provide expertise in social marketing, as well as in managing social media and mobile telephone communication. Community health workers and community leaders, as well as the new leaders emerging from the social media, need to be mobilized as advocates of immunization.

The school system, which has seen increasing enrolment rates across Africa, provides a setting with a captive audience of the next generation members and is a key element in ensuring a sustainable demand for vaccination. The ministry of education with its network of teachers needs to be nurtured to become a close partner in immunization, to educate students on immunization and to allow the school facilities to serve as sites for administration of vaccines such as HPV and booster shots.[31]

The capacity and opportunity costs of households for using immunization services have to be assessed. In some cases, incentives for households may have to be considered, as long as they are affordable and sustainable.

Recommended actions

- Conduct social research to identify persistent barriers to and positive drivers of immunization, and determine with community groups the best community-based advocates for immunization;
- Leverage the position and reach of civil society organizations to communicate the value of vaccination and the responsibility of every individual, and especially parents of young children, to ensure that everyone is protected through vaccination;
- Customize messages on immunization to address its barriers and drivers and for the distinct audiences targeted, using social marketing methods as appropriate;
- Use the most appropriate communication tools for immunization messages, such as radio, television, social media, cell phone texting, community dialogue, etc.
- Work with the school system to train teachers and educate students about immunization through specific lessons as part of the curriculum and also during special events, for example activities that would accompany HPV vaccination or boosters such as Td;
- Where appropriate provide incentives for households to seek immunization services, ensuring affordability, sustainability and availability of the incentives.

3.6.3 Strategic direction 3: The benefits of immunization are equitably extended to all people

The scope of immunization has broadened to cover all age groups from children to the elderly. The move of the focus from the district to the community and the individual means that it is of paramount importance for the health system to intimately know the population it covers and who is reached from each health facility and by each vaccinator. Microplanning down to the community and household levels heightens inclusion and minimizes missed opportunities for vaccination whether at the facility level or during outreach in the communities and other sites.

Regular monitoring of coverage and performance in access to and utilization of vaccination should be in place for formerly unreached populations, together with assessment of technical, systemic, societal, cultural, financial and other barriers to accessing quality services. A strong push for birth registration would facilitate reaching and monitoring all population groups.

[31] Schools can be successfully used as venues for HPV vaccination, and adding HPV vaccination to an existing school health programme can reduce the incremental costs of including the HPV vaccine in the national immunization schedule (PATH, HPV Vaccination in Africa: Lessons Learnt from a Pilot Programme in Uganda, January 2011).

The immunization system must be able to prepare for and respond to natural, human-made and complex emergencies, given the likelihood of disease outbreaks accompanying natural or human-made disasters. Preparedness plans for epidemics should be put in place with ready access to vaccine stockpiles.

Capacity implications

Reaching every population group involves a significant step-up in resource requirements. Microplanning and outreach capacities have to be increased. Contracting this work to nongovernmental and private organizations will require their close monitoring and management.

Less than half of the children in the Region are registered at birth. This is one area where health workers, together with community leaders and local governments, can play a proactive role by registering births in the community and providing new-borns with unique medical identification to aid data collection and reporting.[32, 33] This first right of a child, which is enshrined in both the UN Convention on the Rights of the Child and the African Charter on the Rights and Welfare of the Child, remains unfulfilled for the majority of Africa's children.[34]

Minimum stocks of vaccines and injection materials for emergency use should be maintained as a normal practice in supply management at the central level, where stock rotation is most frequent.

[32] Only 40% of newborns in the Region are registered at birth. The level for the richest quintile is 2.4 times greater than for the poorest quintile (UNICEF, *State of the world's children*, 2013).

[33] Incorporation of birth registration into community health care, health campaigns and mobile registration activities can reduce the indirect costs of birth registration, especially in the poorer communities, and yield substantial increases in birth registration rates (Fagernäs S, Odame J. Birth registration and access to health care: an assessment of Ghana's campaign success. *Bull. World Health Organ.*, 2013;91:459-464).

[34] Civil registration of children is integral part of the child protection strategy promoted by UNICEF. http://www.unicef.org/esaro/5480_birth_ registration.html

Monitoring and evaluation systems need to be enhanced to track progress in reaching the unreached and new population groups. Mobile technology, including rapid SMS, can facilitate data exchange, but health workers will need cell phones, training and incentives to do the work involved.

Recommended actions

- Employ microplanning universally to reach every community and population group, including those in urban and peri-urban areas, following a life-course approach for accurate forecasting of immunization service requirements and related comprehensive disease- control needs.
- Increase the regular planned and announced outreach services to provide immunization services to unreached populations.
- Enlist or contract nongovernmental and private organizations that reach or have the potential to reach unreached populations such as out-of-school children, adolescents and communities in peri-urban settlements.
- Enhance birth registration mechanisms and medical identification methods including using electronic records.
- Coordinate activities with national emergency preparedness response mechanisms to ensure that vaccine-preventable diseases are included in monitoring and surveillance of complex emergencies and immunization is treated as a priority intervention.
- Maintain the necessary minimum stock levels of vaccines and injection supplies for emergency preparedness, rotating the stock continuously to ensure the stocks are valid.
- Respond to vaccine-derived poliovirus disease outbreaks, humanitarian crises and conflicts when they occur, re-establishing immunization services as part of the rehabilitation of the health services.
- Document lessons learnt during activities to reach unreached people and other unique groups such as adolescents, adults and the elderly so that strategies can be adjusted accordingly.

3.6.4 Strategic direction 4: Strong immunization systems are an integral part of a well-functioning health system

Member States in the WHO African Region have adopted a primary health care strategy that recognizes the diverse but interrelated parts of the health system[35] and in which immunization is considered a leading part of the health system. Vaccines are only one component of the disease-control package, which makes coordinated and complementary actions across the health sector critical for success. At the same time, immunization outreach has the capability to provide other services to the population such as deworming, vitamin supplementation, treatment of common illnesses and health promotion.

Complementary preventive, curative and promotional interventions should be implemented together using all the appropriate contacts involved in health, nutrition, water sanitation and hygiene health, education and social service to promote, provide and monitor immunization, as well as involving private and nongovernmental providers. Evidence-based decision-making processes should be set up for new vaccine introduction and related disease-control interventions.

The numbers and quality[36] of human resources have to be carefully monitored, paying close attention to immunization needs, capacity building opportunities, and worker availability, deployment, incentives, supervision, turnover etc. Frontline workers are a key component for immunization success, meaning that there is a requirement for trained and motivated on-the-ground staff who understand the community, speak the local language and are socially acceptable to deliver

[35] Barry SP et al. The Ouagadougou Declaration on Primary Health Care and Health Systems in Africa: Achieving better health for africa in the new millennium, WHO Regional Office for Africa, 2008.

[36] With mobile phone access as high as 80% among community health workers in some countries, mobile technology could do much more for training and informal learning (Patel KD. www.mhealthed.org).

immunization and interact with mothers, families, communities and local leaders. Community health workers can be powerful in aiding immunization outreach, mobilizing the population and providing feedback to the health system on community expectations.

The imperative of the immunization system is to reach all target populations, ensuring coverage while guaranteeing the security and safety of the vaccinators. Human resources, supplies, logistics and data management are the critical areas of convergence of immunization services and the health system.

Capacity implications

To move from the silo approach to immunization to an integrated, comprehensive, disease-control approach will mean a change in the culture of operation of those dedicated to immunization. It will require considerable attention from health leaders and continuous advocacy and follow-up. However, this has to dovetail with the polio eradication and measles elimination initiatives. Careful development and dissemination of messages will be essential, and the messages will need to be common across the Region.

Coordination mechanisms will need to be in place within the ministries of health and at all levels of the health system to ensure joint planning for and implementation of programmes, including those for training of health staff. Sharing of resources between programmes can be problematic from accounting and impact assessment perspectives, but suitable mechanisms will need to be found. Stakeholders providing resources may have to modify their accounting and reporting requirements.

Attention to human resources is critical for successful immunization services. Human resources numbers and knowledge and skill capacity building require a significant level of investment, including for the transfer to the health system of qualified staff currently dedicated to polio eradication efforts. For eradication and elimination goals, introduction of new vaccines, and the greater emphasis on complementarity between immunization and other disease-control activities, it will be inevitable to increase human resources and ensure sustainability of their levels. Hard choices will have to be made as to what is achievable in each given context, based on the projected long-term sustainability of resources.

The widespread use of mobile technology to aid health workers in data exchange and reporting should be given priority, especially given the extensive use of cell phones in the Region and the increasing presence of smart phones that can access the Internet. Attention also has to be given to health worker mobility, given that their work involves outreach and conducting of special events.

Broadening the reach of health systems has clear resource implications whether this will involve recruitment of community health workers – who will need to be trained and supervised – regular outreach, or contracting private sector providers such as NGOs.

With the disease-control approach, monitoring and evaluation of joint interventions will be necessary to provide evidence on the wins in efficiency, cost-effectiveness and impact.

Recommended actions

- Shift the focus of immunization policies, planning and communication to tackling the burden of disease using a systems perspective, where immunization is a leading disease- preventive action within a comprehensive approach to disease control.
- Determine on an ongoing basis and in partnership with communities the shared interests among the various interventions under maternal, neonatal, child, adolescent and adult health and immunization services, focusing on the complementary actions needed to tackle the burden of disease and establishing coordination mechanisms at all levels of the health system.
- For joint interventions in any given geographical or sociocultural context, determine on an ongoing basis the best choice among the delivery means from among fixed, outreach, mobile communication tools and special events such as child health days or weeks.
- Identify ways to broaden the reach of the health system to deliver immunization and complementary actions, ensuring that adequate human resources are in place to deliver expected services of acceptable quality, including recruiting and using community health workers situated close to target populations and with dedicated and supportive coaching and supervision from the nearest health facility.
- Develop an accountability structure for all staff engaged in immunization services, with job aids providing details on processes and responsibilities. Ensure that the structure is updated periodically.
- Introduce performance-based evaluation and incentives for health workers engaged in immunization, giving special emphasis to workers in hard-to-reach or insecure areas.[37]
- Consolidate orientation and training of frontline health workers across all health initiatives to ensure that the immunization status of relevant individuals is verified during their every contact with the health system.
- Maintain detailed and supportive supervision plans that include periodic sessions for peer exchange of ideas focusing on problem solving.

[37] Centre for Global Development. *Performance incentives for global health: potential and pitfalls, Rwanda case study*. Brookings Institution Press, p 189–214, 2009.

- Enhance the collection and use of administrative, surveillance and vaccine safety data to improve performance of immunization services and complementary actions in tackling the disease burden, using mobile and Internet technologies to the fullest extent.
- Monitor and evaluate improvements in efficiency and cost-effectiveness of joint interventions in terms of their impact on health to determine the need for further consolidation.
- Motivate private sector providers such as NGOs and monitor their capacity to deliver quality immunization services.
- Cultivate close working relations between the health system and local authorities to secure their support in coordinating the health system's activities with those of other sectors that affect health such as education, water supply and agriculture.

3.6.5 Strategic direction 5: Immunization programmes have sustainable access to long-term funding and quality supplies

Governments, with the ministry of health leadership, should vigorously work to provide adequate, secure and timely national funding for immunization programmes for the comprehensive disease- control efforts success and for introduction of new vaccines, using cost-sharing mechanisms where they are available.[38] Greater transparency and information sharing amongst national governments and partners would benefit the allocation and efficient use of resources and enhance mutual accountability.

The success of immunization is intimately tied to the quality of the supply function and efficiency of logistics in ensuring vaccines and vaccination materials such as syringes, safety disposal boxes etc. are positioned in a timely fashion, stored according to requirements, used in the proper way and disposed of safely. Stockouts can disrupt immunization activities significantly and adversely affect community trust. The capacity for vaccine storage, delivery and logistics will have to keep pace with projected increases in volumes of traditional and newly introduced vaccines and be coordinated with other HSS efforts related to medicines and equipment supply.[39]

Capacity implications

Significant attention has to be given to funding for both the long-term needs of immunization services and complementary disease-control interventions, relying on sound costing methodologies and on planning and allocation strategies that allow for shifts when circumstances and requirements change. The overall direction should be towards national self-sufficiency in funding, with external support principally focused on global disease eradication and elimination efforts given that the benefits from such efforts are global. Dedicated expert staff should be available to track funding, budgeting and allocation of resources.

Developing innovative funding mechanisms will require the involvement of a broad body of experts, including representatives from the ministry of finance and the private banking sector. Some early positive evidence of performance-based funding has been seen in the Region, for example in measles vaccination coverage.[40] However, much depends on the accuracy and veracity of data on indicators linked to performance pay.

Supplies and logistics, including forecasting and procurement, are often left to a small number of specific staff. While specialization in certain areas of supply and logistics is logical, it is important that all health workers understand the principles and methods involved in ensuring timely supplies delivery and proper storage, management of the cold chain, transport management and the role new technologies. Training can be time consuming but is beneficial for accurate determination of the right mix of vial dose sizes, ensuring vaccine safety and that proper methods are used for waste disposal and ultimately for evaluating the impact of the immunization services.

Lower middle-income countries outside of the GAVI Alliance support criteria have significant difficulties in raising funding for new vaccines and are being left behind in the introduction of these vaccines. Pooled mechanisms would be useful for these countries, which individually do not have much purchasing power, and this should be explored across the Region or by subregion.[41]

[38] Consideration may be given to providing cell phones and transportation means such bicycles or motorbikes on loan for eventual transfer upon satisfactory performance for a determined period.

[39] The GAVI Alliance has been instrumental in developing cost-sharing approaches that enhance the long-term sustainability of immunization services.

[40] Because immunization generates waste and by-products, every country should develop indicators for monitoring and evaluation of national plans for health care waste management (WHO, Advocating for national plans for safe management of waste from health care facilities: implementation of the Libreville Declaration on health and environment in Africa – Framework for health care waste management)

[41] UNICEF has been developing a pooled procurement mechanism for lower middle-income countries, but this is voluntary and only a handful of countries have expressed interest so far. Alternatively, subregional economic groupings might consider acting on this.

Recommended actions

- Develop long-term financial plans for immunization that commit adequate and sustained national budget allocations and local contributions to immunization and the health system.
- Secure long-term external financing commitments to complement national and local resources.
- Explore the possibility of using innovative funding mechanisms such as trust funds and tax earmarks to increase the availability of sustainable funding, with the aim of national self-sufficiency.
- Continuously improve financial planning approaches for immunization services and within the health system as a whole to maximize efficiencies in order to reach disease control targets.
- Carry out regular assessments of the availability of financial resources for immunization and disease control interventions nationally and of the external support received.
- Track allocations to ensure funding is directed to priority needs.
- Assess the potential for introducing performance-based financing linked to the achievement of specific targets.
- Periodically disseminate expenditure data for greater transparency and to enhance public trust in how public funds are used.
- Implement mechanisms for the accurate forecasting and controlling of the inventory of existing and new vaccines, injection materials, safety boxes and other inputs at all levels, taking into account whether the vaccine presentation is appropriate and the packaging fits the needs of the country.
- Consolidate supply and logistics management, including cold chain management, across the health system to ensure the timely supply of vaccines and injection materials, as well as medicines and other vital materials.
- Explore the potential for outsourcing supply and logistics management where private sector capacity for that exists.[42]
- Track vaccine and material procurement and delivery actions to ensure immunization needs are met and stockouts are avoided.
- Expand laboratory capacity, taking advantage of polio and measles laboratory networks and other regional and local networks.
- Periodically train health workers at all levels in supply management, including in the proper receipt and storage of vaccines, effective cold chain management, waste disposal, and transport management, incorporating new technologies.
- Explore the use of pooled procurement mechanisms that support lower middle-income countries to get access to new vaccines at prices affordable to them.

3.6.6 Strategic direction 6: Country and regional communication, research and development innovations maximize the benefits of immunization

Member States have committed themselves to strengthen to their national health research and information and knowledge management systems.[43] The capacity of national decision-makers and other stakeholders should be enhanced through providing them better access to quality and timely data facilitated by new technologies. National and regional research bodies should be involved to validate assumptions on immunization approaches and to document the lessons learnt. Research in the Region

[42] Western Cape Province in South Africa outsourced its vaccine supply chain and logistics system leading to improved vaccine management during storage and transportation (PATH, WHO – Optimize Evidence Brief Series, Outsourcing vaccine supply chain and logistics to the private sector, September 2012).

[43] WHO Regional Office for Africa. The Algiers Declaration - Ministerial Conference on Research and Health in the African Region: Narrowing the knowledge gap to improve Africa's health, 23–26 June, 2008.

should investigate first and foremost how to best alleviate obstacles to universal implementation of immunization, considering the evolving immunization context, demand, needs and capacity in Africa.

Vaccine development and production capacity in the Region is extremely low, so governments should consider engaging with the private sector to increase this capacity, preferably working in partnership with well-established manufacturers in both developed and developing countries, recognizing the very high cost of entry into vaccine development and the need for a well-functioning national regulatory agency.[44]

Capacity implications

The main need in the Region is to strengthen the countries' capacity to undertake research relevant to their situation across a range of operational research and clinical trials. This will require sustainable funding and collaboration among health ministries, academic institutions and private research organizations. The countries should take advantage of regional research networks that support capacity building and improvement of the quality of research.

Decisions should be informed by research, so immunization policy-makers will need to have the time and space to analyse research findings and translate them into policy and practice.

Recommended actions

- Engage with consumers and communities on vaccine and immunization priorities taking into account the burden of disease and perceived demand.
- Engage with public health experts, health authorities and stakeholders to define a research agenda that is relevant to the country's burden of disease and health and immunization services capacity.
- Generate evidence to demonstrate the specific need for investment in new vaccines and technologies.
- Generate representative clinical data on vaccine effectiveness and the impact of vaccination on child survival.
- Develop practical implementation research relevant to the country and the Region.

[44] A first logical step could be the local packaging of bulk vaccines imported from established manufacturers.

3.7 KEY APPROACHES

Given the wide disparities across countries in the Region in population size and location; social, cultural and economic characteristics; performance of health systems and specifically immunization services; and available financing, national strategic plans will differ significantly in their approach and actions to be undertaken. Approaches to expanding immunization are likely to vary further across countries according to their capacity, commitment and structural diversity; within countries themselves depending on social and physical access to and use of services; and over time as mutual trust and accountability between communities and service providers increase.

There are a number of approaches, which are principally managerial in nature, that will likely be relevant for all countries. One approach is for all stakeholders to engage proactively in a consultative process aimed at the development of national plans. This process will create an opportunity for joint planning and programming, convening national and international actors and thereby stimulating formation of new coalitions, alliances and partnerships. Given the strong need to integrate plans and actions across different interventions both inside and outside the health sector, the plans from the collaborative interaction should conform to national guidelines to foster national ownership and the willingness to increase national funding for immunization services.

For better determination of the technical and financial support for developing and implementing country strategic plans, it will be important to have a country typology protocol that establishes through a number of indicators the specific gaps and needs of the particular country for enhancing its immunization services within the broader health system. This would best be accomplished at the regional level and would benefit from linkages created between the so-called like countries to share lessons.

The second approach involves responding to community concerns and acting at the local level through systematic community mapping, needs and capacity assessment, and immunization microplanning within the scope of primary health care delivery. Defining the population location down to the individual subject of vaccination will facilitate planning across the whole spectrum of immunization delivery activities including vaccine and associated supply needs determination, mobilization of health workers, communication strategy development and financial planning. Community representatives must participate in this mapping and assessment work to ensure its credibility.

The third approach requires a thorough and ongoing appraisal of human resource capacities in terms of numbers of workers and their skills across the entire system implementing immunization services, in order to enhance their capacities and inform training and supervisory activities. Part of the appraisal will determine the appropriateness and sustainability of monetary or other performance-based incentives. Attention should also be given to pre-service training to emphasize the importance of positive interaction with mothers and caregivers to promote adherence to vaccination schedules.

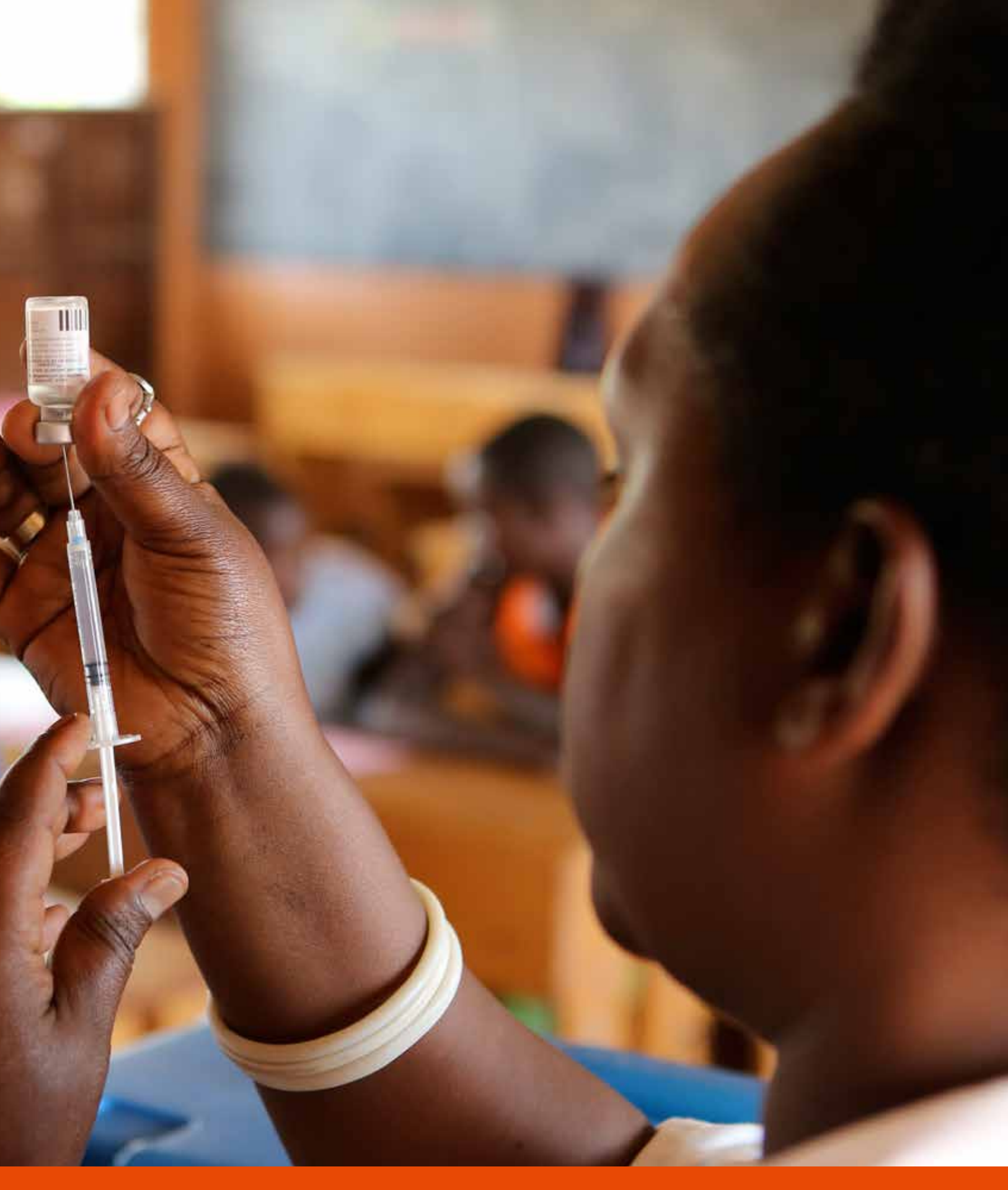
The fourth approach calls for effective appraisals of vaccine management to provide feedback on the logistics of the whole vaccine supply chain for informed decision-making. The rising number and cost of vaccines and the related requirements for storage and transportation and the need to keep wastage at a minimum are making logistics increasingly more complex, including to accurately forecast needs and to maintain the cold chain. Logisticians engaged in vaccine supply chain management need to be provided with adequate skills and to be fully engaged in the planning processes.

The fifth approach focuses on strengthening the quality of data and their use to support local action, inform national monitoring and for feeding into global information sharing mechanisms. This will enable the tracking of activities against planned actions and of the effectiveness of resource use. Mobile technology is enhancing the ability of real-time data exchange for timely decision-making. At the same time, it is critical to ensure the universal availability of immunization data in the home on vaccination cards or electronic records, where appropriate, so that monitoring and evaluation exercises do not depend simply on a mother or caregiver's memory, which can be unreliable especially with the expanding vaccination schedules.

Taken together, robust, realistic and action-oriented national plans; microplans responding to community demands and with mechanisms for regular revision and follow-up on plans; motivated health personnel; effective vaccine management and production; and dissemination and use of quality data will go a long way in facilitating the attainment of strategic objectives and targets of immunization.

4.

Implementation of the strategy



The backdrop of the implementation of this strategy and the accountability of stakeholders to that process was defined first in the Paris Declaration on Aid Effectiveness of 2005[45] and then by the Accra Agenda for Action of 2008 that strengthened and deepened the countries' obligations outlined in the Paris Declaration by expounding on the following factors:

- Ownership: Countries have more say over their development processes through wider participation in development policy formulation, stronger leadership on aid coordination and more use of country systems for aid delivery.
- Inclusive partnerships: All partners – including donors in the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee and developing countries, as well as other donors, foundations and civil society – participate fully.
- Delivering results: Aid is focused on real and measurable impact on development.
- Capacity development: To build the capacity of countries to manage their own future.

The centrality of country ownership depicted in the Accra Agenda emphasizes the role and responsibility of the state as the primary implementer of the programmes, from development of national plans and budgets to their implementation, providing for continuous monitoring and periodic evaluation. All stakeholders support the central role assigned to the countries. Stakeholder responsibilities are outlined in GVAP and can be adapted to the regional or country context.

[45] The Paris Declaration roadmap to improve aid effectiveness focused on ownership, alignment, harmonization, results and mutual accountability.

4.1 KEY APPROACHES FOR IMPLEMENTATION

Implementation of the RED approach and other locally tailored approaches will be promoted to maximize accessibility and utilization of immunization services. This will ensure greater involvement of individuals and communities in the effort to move from supply-driven to demand-driven immunization services.

- **To extend the benefits of new vaccines to all,** countries will be supported to introduce new vaccines and to intensify advocacy for reduction of their prices, particularly for middle-income countries. Efforts should be made to improve vaccine procurement and supply and management systems while at the same time ensuring vaccine accessibility and affordability by the population in order to achieve universal immunization coverage. Advocacy for developing local capacity for vaccine manufacturing within the African Region should continue.
- **Sustainable immunization financing mechanisms** will be pursued and domestic resources provided. Efforts to establish national budget lines and allocate and disburse funds for immunization will be supported. The need for additional resources to reach the so-called last fifth child and to increase immunization coverage to at least 90% should be highlighted.
- **Immunization will be integrated into the national health policy and plan**, with immunization interventions quantified, costed and incorporated into the various components of the national health systems strengthening plan. Integration of other child-survival interventions with immunization should be pursued to leverage the opportunity for prevention of pneumonia and diarrhoea. Immunization will also be included as a priority intervention during the management of humanitarian emergencies to save lives and reduce the morbidity, disability and mortality associated with vaccine-preventable diseases.
- **Enhancing partnership for immunization.** Partnerships for immunization will be expanded at the country level relying on existing regional initiatives such as Harmonization for Health in Africa (HHA). Continued use will be made of the platform of the Interagency Coordination Committees and other national and subnational coordinating mechanisms to strengthen local partnerships and forge new ones.
- **Improving monitoring and data quality**. The quality of immunization and surveillance data will be regularly monitored and their use at the country level promoted. Information generated from monitoring systems and surveys will be used for advocacy and for programme and service improvement. Sensitive and high-quality surveillance tools linked to the Integrated Disease Surveillance and Response platform, including laboratory confirmation of pathogens, should be used to monitor the epidemiological trend of vaccine-preventable diseases and guide the implementation of immunization strategies.
- **Improving human and institutional capacities.** Individual and institutional capacity to adequately plan, implement and monitor immunization programmes should be strengthened through training. The capacity to plan and manage immunization services at district and operational levels should be prioritized for strengthening with a view to improving and sustaining vaccination coverage rates.
- **Improving vaccine safety and regulation**. Vaccine safety monitoring systems should be enhanced by strengthening the capacity of national regulatory authorities through implementation of institutional development plans. Promotion of safe injection policies and practices and improved surveillance of adverse events following immunization should be ensured. Member States' capacity to authorize and monitor vaccine clinical trials as well as to compile evidence for better decision-making on new vaccine introductions should be enhanced.

- **Promoting implementation research and innovation**. Guidance and capacity for implementation research should be strengthened. Social and anthropological studies should be emphasized for better understanding of the reasons that some populations are not immunized and of the low performance of immunization programmes. Member States should be supported to implement the actions called for in the Algiers Declaration and the Bamako Call to Action on research for health in the African Region in order to refine their strategies for improved immunization service delivery.

4.2 ROLES AND RESPONSIBILITIES OF STAKEHOLDERS

4.2.1 The government

Building capacity in the country, using a human-rights approach to policy development, followed by translation of the policy into legislation highlighting the state's obligations is central to creating the conditions for people to access and use quality vaccines in a timely manner.[46] Policies, programmes and other immunization elements should ensure that the realization of human rights moves beyond laws and institutions to improve the lives and well-being of individuals, communities and populations.[47] In this regard and given the sustained improvement in economic development in the Region, governments should:

- Increase support for national immunization programmes by funding a larger proportion of domestic immunization programmes, with disaggregation of funds committed for vaccine and supplies procurement and for operational costs;
- Develop and introduce laws, regulations and policies that support immunization programmes;
- Develop Region- and country-specific plans with stakeholders;
- Respond with timely information to public concerns;
- Ensure immunization services are adequately staffed;
- Introduce educational courses on vaccines at universities and other institutions training health workers;
- Hold private sector providers accountable for the immunization services they provide;
- Increase awareness of the importance of immunization, engaging in dialogue with communities and the media;
- Encourage and support research on vaccine and vaccination issues; and
- Participate in open dialogue with vaccine manufacturers.

[46] If social inclusion and human rights do not underpin policy formulation, it is unlikely they will be inculcated in service delivery (MacLachlan M et al. Inclusion and human rights in health policies: comparative and benchmarking analysis of 51 policies from Malawi, Sudan, South Africa and Namibia, *PloS ONE*, May 2012, vol. 7, issue 5, e35864).

[47] Bustreo F et al. Women's and children's health: evidence of impact of human rights. WHO, 2013

4.2.2 Heath professionals

Health professionals should provide high quality immunization services, identify areas where immunization services could be improved, serve as a credible voice for the value of vaccination, use existing and emerging technologies to improve capturing, delivery and sharing of data, and engage in dialogue with communities. National immunization managers should be involved in:

- Mobilizing new national stakeholders inside and outside the government for support;
- Increasing linkages with civil society organizations to enhance demand, for example including these organizations in work of the Interagency Coordinating Committee;
- Revitalizing human resource capacities to achieve technical self-sufficiency;
- Bringing in private and nongovernmental vaccination providers to help reduce inequities;
- Ensuring good stewardship of resources across immunization services;
- Overseeing supply and logistics operations for their sound functioning;
- Closely coordinating activities with other parts of the health system relevant to immunization and disease control efforts;
- Emphasizing the need for real-time data management; and
- Instituting a culture of learning and evidence-based decision-making in immunization services.

4.2.3 Communities

Individuals and communities should understand the risks and benefits of vaccines and immunization, demand safe and effective vaccine programmes and participate in decision-making and immunization delivery process. Community leaders should conduct birth registration, promote immunization in their communities and collaborate closely with local health staff in planned outreach activities in the communities.

4.2.4 Civil society

- Get involved in planning, promotion and implementation of immunization programmes;
- Participate in the development and testing of innovative approaches to deliver immunization;
- Follow national guidelines and regulations in the design and delivery of immunization programmes;
- Educate, empower and engage vulnerable groups and communities;
- Build grassroots initiatives to track progress and hold governments and stakeholders accountable;
- Contribute to improvement of monitoring and evaluation systems;
- Engage in advocacy at the country, regional and global levels and collaborate with others within the country and across countries to build the momentum for improved health, vaccines and immunization.

4.2.5 UN and other global agencies

Global agencies such as WHO and UNICEF should be involved in:

- Advocating for and leading the provision of technical support to promote country ownership of immunization;
- Strengthening national capacity and regional infrastructure;

- Funding vaccine provision and immunization-related activities;
- Working with all stakeholders to improve technical assistance, based on an inventory of each stakeholder's comparative advantage;
- Supporting evidence-based decision-making;
- Engaging partners to generate popular demand for immunization;
- Promoting sustainable national funding options;
- Developing mechanisms for mutual accountability; and
- Promoting the use of innovative financing and procurement mechanisms.

4.2.6 GAVI Alliance

The GAVI Alliance, which has representation of all immunization stakeholders, can facilitate alignment of technical and financial support among partners, taking into account the national priorities of the countries eligible for GAVI Alliance support. It can contribute to both strategic thinking and enabling of access to new technologies and financial resources for eligible countries; investing in facilitation of access to new technologies and in health systems strengthening; and incentivizing achievement of targets through its processes.

4.2.7 Development partners

Other development partners such as bilateral agencies, foundations and philanthropists should support countries and regional entities to achieve immunization goals, and promote country ownership of immunization and development and implementation of comprehensive, integrated packages of essential interventions and services. They should be involved in providing technical assistance and predictable and transparent long-term funding aligned with national plans, building civil society capacity and participating in international advocacy efforts.

4.2.8 Academia

Academia should promote innovation, pursue a multidisciplinary research agenda and develop vaccines and technologies that optimize and maximize vaccine delivery. They should embrace new ways of working, including involvement in dialogue with other researchers, regulators and manufacturers to speed up scientific progress. Other actions they should undertake include providing data, methods and arguments that help prioritization of immunization and evidence and outlines of best practices in immunization. They should advocate for allocation of a budget for vaccine and immunization research.

4.2.9 Vaccine manufacturers

Manufacturers should continue to develop, produce and supply innovative, programmatically suitable and high quality vaccines. They should support the research and education agenda for immunization, media outreach to increase awareness, and rapid scaling up and adoption of new and improved vaccines. They should participate in open dialogue on vaccine access and develop partnerships that support the growth of manufacturing capability.

4.2.10 Media

The media should endeavour to understand the benefits of and concerns about immunization and accurately report on and promote immunization programmes. They should engage in country, regional and global advocacy going beyond the immunization community, and use effective communication techniques to convey messages about vaccines and immunization.

4.2.11 Private sector vaccination providers

For-profit and non-profit private sector health players should provide immunization services to specific population segments as agreed upon with the government, following national policies, maintaining high standards of service, reporting regularly, and charging nominal fees per government stipulation.

4.2.12 Corporate philanthropic partners

The private sector corporate and philanthropic institutions should support the diversification of funding sources for immunization programmes and engage in country, regional and global advocacy for funding for immunization. This group also has potential roles in social marketing and logistics and other technical support.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5.

Resource implications

The actions recommended in this plan will have considerable implications on human, financial, supply and information resources. There is a significant shift to increase national funding for immunization to lead to greater self-reliance and to engage many new national and local stakeholders in the planning, development and implementation of immunization services. Reaching every child or individual requiring vaccination will require increasing outreach and mobile services, raising the overall cost of immunization. But integration of immunization with primary health care implies a bundling of resources across several related interventions in a broader and more comprehensive approach to the reduction of the disease burden, within which vaccination is just one component. Co-mingling of resources will necessarily complicate attribution of unit costs and cost-effectiveness. New modes and methods of cost calculation will inevitably be needed, and developing these is a challenge stakeholders will need to confront.

This section presents the results of cost and financing estimates for the African Region for 2014–2020. The resource requirements for this strategic plan were estimated to determine the level of funding needed for the programmes to meet their targets by 2020. The estimation drew from the estimates of the Decade of Vaccine Economics (DOVE) Costing and the Financing and Funding (CFF) model of GVAP. The DOVE–CFF estimates extend to 2020. The assumptions used in generating the estimates are described in Annex 3. The projected resource requirements are for the 38 low- and lower middle-income countries rather than the Region's 47 countries, since the eight upper middle-income countries were not included in the analysis.

The analysis of resource requirements assumes that all the countries in the Region have already introduced DTP-HepB-Hib, measles first dose, oral polio and BCG vaccines. It also assumes that some countries have already introduced or will introduce the following vaccines during 2014–2020: pneumococcal conjugate (PCV), rotavirus, HPV, meningococcal conjugate A, yellow fever, measles second dose, measles-rubella, measles-mumps-rubella and an infant dose of hepatitis B (see Annex 3 for the years new vaccines will be introduced).

Table 2 shows the total projected costs for 2014–2020 by subregion, disaggregated for routine immunization and SIAs. The total costs over the seven-year period are projected to be US$ 17.7 billion. The costs are highest for the eastern and southern African subregion, followed by the West African subregion and lowest for the Central African subregion. Projected routine immunization costs are about six times those of SIAs.

Table 2: Total projected costs of routine immunization and SIAs by subregion, 2014–2020

Subregion	Routine immunization (US$ '000)	SIAs (US$ '000)	Total (US$ '000)
Central Africa	2 251 894	411 957	2 663 851
Eastern and southern Africa	6 873 448	771 543	7 644 991
West Africa	6 123 676	1 310 429	7 434 106
Total	**15 249 019**	**2 493 929**	**17 742 947**

Table 3 shows the annual costs of routine immunization for 2014–2020 by cost component. Routine immunization costs are projected to increase by 179% over the seven years, from about US$ 1.6 billion in 2014 to about US$ 2.8 billion in 2020. The increase will be associated with the cost of vaccines as new ones are added to the programme. The largest share of costs will be for vaccines (44%) followed by shared personnel (31.5%). Service delivery will comprise 19% of the costs, supply chain 4.7% and shared transportation 0.9%.

Table 3: African Region's estimated annual cost of routine immunization by component, 2014–2020

Year	Vaccines (US$ '000)	Supply chain (US$ '000)	Service delivery (US$ '000)	Shared personnel (US$ '000)	Transport (US$ '000)	Total (US$ '000)
2014	626 047	87 823	308 447	522 489	16 209	1 561 015
2015	771 457	93 918	349 563	592 743	17 190	1 824 871
2016	836 417	99 070	376 560	638 018	18 068	1 968 128
2017	939 078	103 533	412 003	681 352	18 819	2 154 786
2018	1 034 870	108 294	453 975	746 309	19 529	2 362 977
2019	1 168 177	113 022	487 881	793 786	19 893	2 582 760
2020	1 314 078	116 490	512 822	830 563	20 527	2 794 481
Total	**6 690 126 (44%)**	**722 151 (4.7%)**	**2 901 252 (19%)**	**4 805 259 (31.5%)**	**130 231 (0.9%)**	**15 249 019 (100%)**

In Table 4, the annual costs for SIAs for 2014–2020 are disaggregated by vaccine and operational costs. SIAs costs vary over the seven years since these activities are not conducted in every country in every year. Vaccines take up approximately 45% of the total costs, and operational costs 55%.

Table 4: African Region's estimated annual cost of SIAs by component, 2014–2020

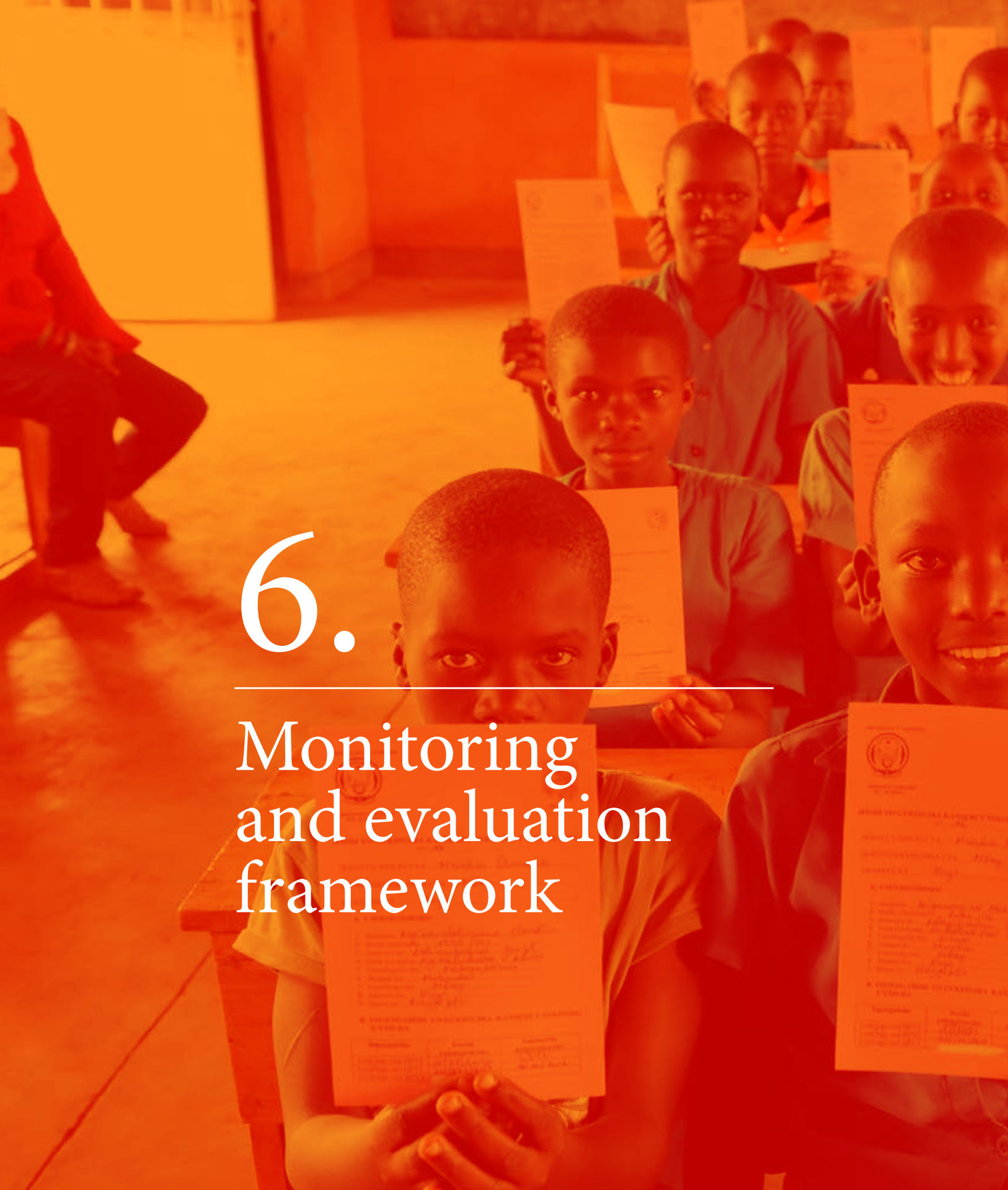
Year	Vaccines (US$ '000)	Operational costs (US$ '000)	Total (US$ '000)
2014	144 770	278 237	423 007
2015	148 058	278 131	426 189
2016	135 453	230 123	365 576
2017	169 690	231 119	400 809
2018	156 833	171 881	328 714
2019	184 994	117 432	302 426
2020	184 950	62 259	247 208
Total	**1 124 747**	**1 369 181**	**2 493 929**

Table 5 shows the projected levels of financing for routine immunization and SIAs for the different funding sources during 2014–2020. The largest source of financing is the GAVI Alliance, and its share is projected to grow from 45% in 2014 to 50% in 2020. This is associated with the expected introduction of new and more costly vaccines such as PCV and HPV during the period covered by this strategy.

Table 5: Estimated total financing of immunization programmes by source of financing, 2014–2020

Year	Government (%)	GAVI Alliance (%)	Other development partners (%)
2014	41	45	14
2015	39	50	11
2016	40	50	10
2017	40	51	9
2018	44	48	8
2019	44	53	3
2020	46	50	4
Total	**42**	**50**	**8**

The projections expect governments to raise their share of financing of immunization programmes levels from 41% in 2014 to 46% in 2020. Part of the reason for this is that the share of other development partners is expected to decline, from 14% in 2014 to 8% in 2020.



6.

Monitoring and evaluation framework

Accountability requirements of national and international stakeholders for programme performance and optimal use of resources call for milestones on key deliverables incorporated in a monitoring and evaluation framework. To this end, indicators are proposed to assess progress towards the four objectives of the regional strategic plan with the understanding that almost all these indicators are applicable to the national level (see Annex 4). Consolidation of these indicators will provide information on progress documented in a selected panel of countries or in the whole Region. Some of the indicators are relevant even at the global level as indicated in the Global Vaccine Action Plan (see Annex 6 of GVAP). These are underlined in Annex 4 for ease of identification.

There are a number of implications relating to the application of the proposed indicators:

- Not all the indicators included in Annex 4 will be of practical use to every country in the Region the same period. Selection of appropriate indicators will be needed on the basis of local information needs and monitoring capacity, avoiding data overload.
- Countries may have to be encouraged to apply some of the indicators to national-level programmes as a contribution to global and regional epidemiological and programme performance tracking.
- Penta3 (replacing DTP3) and MCV1 are considered as proxy indicators of immunization coverage;

- Surveillance actions, including laboratory activities, will need to keep pace with the demands of the measles elimination goals.
- Monitoring activities will have to be adapted to track the introduction of new vaccines, enhancement of accurate and timely surveillance activities and introduction of indicators for monitoring the functioning of the national regulatory agency in registering and licensing new vaccines.
- Indicators to monitor self-reliance in immunization, including tracking of operational budgets, should be developed and introduced.
- Regular interaction will be needed between the district head and the health facilities at the district level to assess programme performance and report results.
- Systems already in place need to be strengthened to improve data quality and sharing of information with stakeholders, enhancing the quality of JRF data at the national level by undertaking annual peer review of the JRF for its effective use in data submission.[48]
- Implementation research will need to be used to translate what is known, test interventions to improve coverage, identify best practices, systematically document successful and unsuccessful integration activities at the country level, and disseminate results, building the countries' capacity to undertake research.
- Simple social science research tools that national and district staff can readily learn to use and easily use such as focus group discussions and positive deviance (e.g. assets-based appreciative enquiry) methods need to be developed to measure changes in immunization demand.
- Data managers need to be recognized, to be provided opportunities to acquire the required operational skills besides computer or technology skills and to be given a greater role in the health information system as a critical point for good quality data and analysis within the country.
- National AEFI committees that rapidly respond to AEFI reports and crises and disseminate evidence-based information to counteract mis-information about vaccines and immunization need to be strengthened.

[48] Combining administrative data with survey data substantially improves estimates of vaccine coverage, providing insights into performance and more accurately predicting the results of future activities (Lessler J.et al. Measuring the performance of vaccination programmes using cross-sectional surveys: a likelihood framework and retrospective analysis. *PloS Medicine*, October 2011, vol. 8, Issue 10, e1001110).

7.

Conclusions

The way forward will necessarily be specific to each country and will be defined by the context of the challenges and opportunities in each country. The specific features of immunization services across the Region, however, exhibit some practical commonalities the countries will have to consider, as will regional support mechanisms:

- **Equity in access to and use of life-saving immunization** is concerned not only about un-immunized children but also about the new population groups such as adolescents and adults who need to be reached with vaccination. New stakeholders inside and outside the country will have to be mobilized, and new strategies need to be developed, including recognizing the important role of schools in immunization, treating schools and the workplace as vaccination points, and fostering greater participation of private and nongovernmental vaccination providers in activities such as outreach among currently unreached populations. Community health worker networks will have to be expanded, national and district health budgets will need to ensure adequate operational funds are available for all planned activities, vaccine supply and management will have to be executed proficiently, and human resources will have to be trained and motivated.

- **Responsiveness to informed public demand.** People have the right to be immunized against vaccine-preventable diseases and also the responsibility to be vaccinated to protect others. Communication strategies will need to be re-examined and redirected as necessary and more closely geared to the barriers to and drivers of immunization derived from social research interventions. Modern social marketing techniques will have to be more widely used, recognizing that the public is increasingly well connected to information from disparate sources, including antivaccination lobbies. Spokespeople, representative of the populations to be reached, will have to be mobilized for the influences they can exert. Through its organizations, civil society should become a strong partner in immunization. Most important, though, communication has to be backed by a health system that understands people and the community in which they reside and that can provide services that they demand.
- **National commitment informed by evidence and demonstrated by increasing immunization capacity.** It is recognized that national ownership of immunization is vital for long-term viability of immunization services. The current century is already being termed as the century of vaccines – a big difference from the reference to the Decade of Vaccines – with many diseases being targeted for control through vaccination. No government will want to deprive its population of those benefits relevant to its situation. Decisions on what vaccines to introduce and when have to be based on the evidence on the burden of disease, cost-effectiveness and affordability, and these decisions can only be taken nationally by each country based on evidence and informed by experience elsewhere. Building strong capacity for evidence generation and analysis will be essential for developing policies and identifying priorities that provide the best return in reducing disease burden and improving the quality of life.
- **Immunization serving as the backbone of strengthened primary health care service** in a context where local health workers are responsible for a number of health interventions of which vaccination is one. Concerted efforts have to be made to dismantle the silo approach to immunization, where staff receive better benefits than for other interventions, such as training and travel opportunities. Every contact patients make with the health service has to be an opportunity for reviewing their immunization status and providing them vaccination as appropriate. At the same time, every outreach session has to be an opportunity for dealing with other preventive and curative measures including medicine supply, as applicable. Planning and budgeting become more complex with the merging of interventions but the return will invariably be much greater trust of the community in the health system, as long as all the actions are carried out as planned.
- **Extensive use of information and communication technology** including mobile technology for demand creation, sending out vaccination reminders, data exchange and health worker information and training is essential. This is driven by the recognition that technology is driving rapid change across the Region, being both the force behind the communication revolution and an aid to entrepreneurship and business efficiency and effectiveness. The health system has every opportunity to be part of this change, and this is already happening in many countries through the use of rapid SMS-type of applications. The cost of such applications is low but the return is significant in terms of real-time data transfer for better decision-making and access to the public for information to enhance immunization demand and to deliver notifications to increase patient compliance. Mobile networks are producing a new genre of leaders, the so-called super users, who can be brought on board to be a voice for immunization. Service providers are becoming increasingly more open to providing assistance for message delivery in the spirit of social responsibility.

- The main implication for resource mobilization for this strategic plan's implementation is related to the **enhancement of national ownership** and the move to much greater country self-reliance in financing of immunization services. The bulk of the cost of immunization services is already covered by governments as infrastructure or personnel in the health system. Sharing of costs of new vaccines is already common in many countries, but the government's proportion is expected to grow with decreasing external inputs. This has been seen in the context of polio, where the general opinion is that future administration of the polio human resources and infrastructure should be the responsibility of national governments.[49]
- **The cost of immunization is rising,** mostly from the introduction of new vaccines and their cold chain and logistics requirements, as well as the added operational costs of outreach and mobile sessions for reaching every child or other individual meant to be vaccinated. This implies that an increasingly more careful approach to planning and financing of immunization services within the broader health system is needed, with decision-making based on evidence related to availability of human and financial resources and supplies, and the cost-effectiveness of projected health outcomes.
- The ability to **increase and retain human resources** is central to the success of immunization programmes, and adequate financial and other incentives need to be provided to health workers. Regular outreach or mobile services are key in reducing inequities in immunization. For the success of the programmes, the participation of private providers and community health workers needs to be effectively negotiated and budgeted for on a routine basis.

[49] WHO, Poliomyelitis: intensification of the global eradication initiative. Report by the Secretariat, EB134/35, 13 December 2013.

8.

Annexes

ANNEX 1: TRANSITIONING FROM GIVS TO GVAP

Improve vaccine, immunization and injection safety	Vaccines, cold chain and logistics	Strengthen infrastructure and logistics
Improve and strengthen vaccine management systems		
Ensure effective and sustainable introduction of new vaccines and technologies		Accelerate development, financing and uptake of vaccines
Promote research and development of vaccines against diseases of public health importance		Enable the development of new vaccines
Ensure reliable global supply of affordable vaccines of assured quality		Secure quality supply
Strengthen laboratory capacity through the creation of laboratory networks		
Use a combination of approaches to reach everybody targeted for immunization	Immunization services	Develop and implement new strategies to tackle inequities
Ensure that unreached people are reached in every district at least four times a year		
Expand vaccination beyond the traditional target group		Improve programme efficiencies and increase coverage and impact
Evaluate and strengthen national immunization programmes		
Strengthen immunization programmes within the context of health services development		
Provide access to immunization programmes in complex humanitarian emergencies		
Strengthening monitoring of coverage and case-based surveillance	Surveillance and reporting	Strengthen monitoring and surveillance systems
Strengthen the management, analysis, interpretation, use and exchange of data at all levels		Build knowledge base and capacity for enabling equitable delivery
Improve communication and dissemination of information		

ANNEX 2: IMMUNIZATION AS A COMPONENT OF THE HUMAN RIGHT OF HEALTH

Human rights bring into focus the relationship between the state – the first-line provider and protector of human rights – and individuals, who hold their human rights simply for being human. Human rights conveniently and effectively frame the obligations of states towards people in relation to health in general and immunization in particular. The concept of equity, rooted in social justice is integral to the human rights framework. A series of treaties and conventions extend the aspirational but not legally binding nature of the Universal Declaration on Human Rights (UDHR) into instruments that are binding under international human rights law. Among these treaties are the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR), which came into force in 1976 and to which all Member States of the African Region are party.

The preamble of the WHO Constitution specifies health as a fundamental right that depends on the cooperation of States. The ICESCR also lays out the right to health explicitly.[50] Its Article 12 – and the corresponding General Comment 14[51] – makes it clear that governments are responsible for enabling their populations to have good health through respecting, protecting and fulfilling their rights, by not violating rights, preventing rights violations and creating policies, structures and resources that promote and enforce rights.[52] This responsibility extends beyond providing essential health services to tackling the underlying determinants of health such as access to adequate education, housing and food and favourable working conditions. These items are both human rights themselves and necessary for health.

General Comment 14 of ICESCR. Art. 12 on the right to the highest attainable standard of physical and mental health – often referred to as the right to health – considers it as an obligation of states to "… provide immunization against the major infectious diseases in the community". It also stipulates that "States must ensure provision of health care, including immunization programmes against the major infectious diseases" (Para 36). This right and the state obligation are also entrenched in Art. 16 of the 1986 African Charter on Human and People's Rights: "Every individual shall have the right to enjoy the best attainable state of physical and mental health,"[53] to which the Pretoria Declaration on Economic, Social and Cultural Rights in Africa (African Commission on Human Rights and People's Rights, 2004) added: "The right to health in article 16 of the Charter entails among other things the following […] (e) Immunization against major infectious diseases".

Other international charters and conventions embody the right to health. Among these, the 1989 Convention on the Rights of the Child (Art 24), which has been ratified by almost all countries in the WHO African Region,[54] figures prominently. That Convention sets as an obligation of states to

> … take appropriate measures: To diminish infant and child mortality; To ensure the provision of necessary medical assistance and health care to all children with emphasis on the development of primary health care; To combat disease and malnutrition, including within the framework of primary health

[50] UN General Assembly, International Covenant on Economic, Social and Cultural Rights, 16 December 1966, United Nations, Treaty Series, vol. 993, p. 3, available at: http://www.unhcr.org/refworld/docid/3ae6b36c0.html

[51] Each of the human rights treaty bodies overseeing the implementation of treaties publishes its interpretation of the provisions of its respective human rights treaty in the form of "general comments" or "general recommendations". http://www.ohchr.org/EN/HRBodies/Pages/TBGeneralComments.aspx

[52] See General Comment 14. UN Committee on Economic, Social and Cultural Rights (CESCR), General Comment No. 14: The Right to the Highest Attainable Standard of Health (Art. 12 of the Covenant), 11 August 2000, E/C.12/2000/4, available at: http://www.unhcr.org/refworld/docid/4538838d0.html

[53] http://www1.umn.edu/humanrts/instree/z1afchar.htm

[54] http://www1.umn.edu/humanrts/africa/afchild.htm

care, through, *inter alia*, the application of readily available technology[55] and through the provision of adequate nutritious foods and clean drinking water, taking into consideration the dangers and risks of environmental pollution; To ensure appropriate prenatal and postnatal health care for mothers; To ensure that all segments of society, in particular parents and children, are informed, have access to education and are supported in the use of basic knowledge of child health and nutrition, the advantages of breastfeeding, hygiene and environmental sanitation and the prevention of accidents; To develop preventive health care, guidance for parents and family planning education and services.

A similar provision can be found in the 1990 African Charter on the Rights and Welfare of the Child (Art 14).[56]

The obligation of State parties to provide immunization to the eligible population imparts responsibilities on parents and custodians of young children to ensure that children are vaccinated in accordance with national laws and regulations in the interest of public health and for the best interests of the child. A duty is vested also on health workers to ensure that vaccines and immunization paraphernalia are available, accessible, acceptable and of good quality. Both parents and care providers, as well as children when they are deemed capable of comprehending and acting on such messages, have to be alerted to their dual role in immunization: that by protecting the child or being vaccinated against certain diseases is advancement of the child's or personal right to health, and by responding to governmental requirements they advance the human rights agenda.

To achieve the aim and objectives of the regional immunization strategy will require all parties to recognize their role in simultaneously advancing people's health and human rights and that through advocacy, education, training and practice, people recognize not only the benefits derived from immunization but also the fact that access to immunization is one of the human rights that they can and should openly claim.

[55] GC15 (2013) on the right of the child to the enjoyment of the highest attainable standard of health of the Convention of the Rights of the Child, Art. 24 states that such technology is understood to include, inter alia: "immunization against the common childhood diseases; [and] vaccination against human papillomavirus for girls".

[56] http://www.unicef.org/esaro/African_Charter_articles_in_full.pdf

ANNEX 3: COSTING AND FINANCING ESTIMATES

Thirty-eight low- and lower middle-income countries in the African Region were included in the analysis, and their list is shown in Table A3.1. The eight upper middle-income and high-income countries not included in the analyses were Algeria, Botswana, Equatorial Guinea, Gabon, Mauritius, Namibia, Seychelles and South Africa.

The resource requirement estimates use DOVE–CFF[57] modelling and assumptions. These estimates are based on slightly different assumptions than those used in this Regional Strategic Plan for Immunization 2014-2020. The main differences are in the timing and number of introduction of PCV, birth dose of hepatitis B, IPV, rubella and meningococcal conjugate A vaccines (see Table A3.1). Compared with DOVE assumptions, the Regional Strategic Plan for Immunization 2014-2020 assumes that 10 more countries will introduce PCV, 21 more countries will introduce hepatitis B vaccine birth doses, 12 more countries will introduce IPV, but 13 fewer countries will introduce rubella-containing vaccines and 10 fewer countries will introduce meningococcal A vaccines.

[57] Decade of Vaccine Economics (DOVE) Costing, Financing, and Funding Model

Table A3.1: Number of countries introducing new vaccines by 2020

Vaccine	Number of countries to introduce the vaccine by 2020*	
	African Region Strategic Plan (total of 47 countries)	DOVE (total of 38 countries)
PCV	47	36
Hepatitis B birth dose	25	4
HPV	35	34
Rotavirus	37	35
IPV (1 dose) by 2015	46	37
Rubella-containing(MR/MMR)	25	38
Meningococcal conjugate A	15	25

*Unless noted otherwise.

Vaccines included

The vaccines included in the DOVE–CFF analysis are shown in Table A3.2. Assumptions these vaccines were taken from GAVI Alliance's adjusted demand forecast. SIAs will take place for polio, measles/rubella, JE, typhoid and yellow fever vaccines.

Table A3.2: Vaccines included in DOVE–CFF analysis

Vaccine	GAVI Alliance-supported vaccines*	Delivery strategy	
		Routine	SIAs
Diphtheria-tetanus-pertussis-hepatitis B-Haemophilus influenzae type b (DTP-HepB-Hib or Pentavalent)	✓	✓	
Human papillomavirus (HPV)	✓	✓	
Japanese Encephalitis (JE)	✓	✓	✓
Measles second dose+	✓	✓	
Measles SIA+	✓		✓
Measles-Rubella (MR)	✓	✓	✓
Meningococcal conjugate A (MenA)	✓	✓	✓
Pneumococcal conjugate (PCV)	✓	✓	
Inactivated polio (IPV)	✓	✓	
Rotavirus	✓	✓	
Typhoid	✓	✓	✓
Yellow fever (YF)	✓	✓	✓
Cholera	✓	stockpiles only	
Bacillus Calmette- Guérin (BCG)		✓	
Diphtheria-tetanus-pertussis (DTP)		✓	
Hepatitis B birth dose		✓	
Measles first dose+		✓	
Measles-mumps-rubella (MMR)		✓	✓
Oral polio (OPV)		✓	✓

*GAVI Alliance support is dependent on country-specific forecasts of vaccine introduction and annual anticipated GAVI Alliance status
+Measles first dose, second dose and SIAs are separated here to accurately depict GAVI Alliance support and delivery strategies.

Source: Decade of Vaccine Economics (DOVE) costing, financing, and funding model: background and methods documentation for iVIR AC

Cost and financing components included

The analysis disaggregates routine immunization costs into several components: vaccines, supply chain, service, shared personnel and shared transport, as shown in Table A3.3. SIAs costs are presented as vaccine and operational costs.

Table A3.3: Cost components for routine immunization and SIAs

Cost component	Inputs for cost components
Routine Immunization	
Vaccines	▪ Vaccines, freight, insurance and customs duty and taxes
	▪ Injection and safety equipment
Supply chain	▪ Immunization-specific transport
	▪ Storage
	▪ Labour
Service delivery	▪ Immunization-specific personnel time
	▪ Training
	▪ Surveillance
	▪ Programme management
	▪ Social mobilization
Shared personnel	▪ Time of personnel shared with other health services
Shared transport	▪ Transport shared with other health services
SIAs	
Vaccines	▪ Vaccines, freight, insurance and customs duty and taxes
	▪ Injection and safety equipment
Operational	▪ Personnel time
	▪ Training
	▪ Transport
	▪ Social mobilization

Vaccine costs

For the projected vaccine costs, the model used 2011–2012 per dose vaccine price projections from the GAVI Alliance Secretariat, using the Adjusted Demand Forecast version 8 for GAVI Alliance-supported vaccines and UNICEF price projections for traditional vaccines for GAVI Alliance countries and for countries not supported by the GAVI Alliance or PAHO. For the malaria vaccine, since price was not available, a price was estimated based on discussions with key stakeholders.

GAVI Alliance's Adjusted Demand Forecast tool was used to model vaccine coverage and introduction years. For non-GAVI Alliance countries, demand forecasts

were made using GAVI Alliance's strategic demand forecasting approach.

For injection and safety equipment, prices were obtained from the GAVI Alliance Secretariat. To estimate vaccine supply chain costs, HERMES (the Highly Extensible Resource for Modeling Supply Chains) simulation models were used.

Delivery costs

Baseline routine service delivery costs were taken from cMYPs for countries eligible for GAVI Alliance support. Total costs were divided by the number of routine doses to obtain the average cost per dose and then adjusted to 2010 US dollars. These costs were then projected for other years. For Swaziland and Cape Verde, the two countries without cMYPs, the costs were imputed based on a regression analysis of cMYP data.

The operational cost estimates for SIAs were based on a population-weighted (where a small population had under 10 million people and a large population over 10 million people) operational cost per dose calculated (in constant 2010 US dollars) specifically for measles, oral polio vaccine (OPV), and yellow fever vaccines.

Supply chain costs

The costs for the supply chain were estimated using HERMES simulation models. These were based on a sample set of reference countries or parts of countries comprising Benin, Niger, Mozambique's Gaza Province and India's Bihar State. The costs of transport, storage and labour were estimated for different vaccine regimens. The findings were then adjusted for country-specific characteristics such as area and the number of personnel.

Financing projections

The DOVE–CFF estimates divided financing among three sources: government, GAVI Alliance, and other development partners (ODP).

Government financing is differentiated based on whether a country is eligible or not for GAVI Alliance support. For the projections, governments eligible for GAVI Alliance support are expected to pay a proportion of the vaccine costs. They will co-fund the vaccines supported by GAVI Alliance, and they will cover a portion of the vaccines' supply chain and service delivery costs, a share of the IPV vaccine costs and shared personnel costs. For countries not eligible for GAVI Alliance support, the data on government financing for vaccines were taken from the WHO/UNICEF Joint Reporting Form. For countries with cMYPs, the figures for government financing of the supply chain and service delivery were from the baseline years. For countries without cMYPs, the population-weighted government financing ratios for supply chain and service delivery costs were estimated from baseline year data. The projections on government financing were based on the projected growth of the government health expenditure. Shared personnel are assumed to be totally financed by the government.

The GAVI Alliance provides financing for three immunization components for countries eligible for its support: vaccines, routine supply chain and service delivery for health systems strengthening, and SIA operations. The projections for vaccine and SIA operational support financing are based on ADF version 8 and assume that countries will meet their cofinancing obligations for routine vaccines, and that the GAVI Alliance will finance all SIA vaccine doses for vaccines it supports. GAVI Alliance's HSS support for routine supply chain and service delivery is incorporated into the model and assumes that GAVI ceilings for HSS support in each country will be reached. The DOVE–CFF model also assumes that 21% of HSS spending will be for supply chain costs and 79% for service delivery. The GAVI

Alliance's operational support estimate for SIAs was based on ADF version 8 and it was derived from multiplying the GAVI operational subsidy by the target population of each campaign.

The proportion of financing covered by other development partners was based on cMYP data. The share of ODP financing was based on cMYP data for countries with those data and from other countries for countries without cMYP data. Table A3.4 shows the characteristics of the countries included in the costing and financing projections.

Table A3.4: Characteristics of countries in the DOVE TFF analysis

Country	World Bank income group	GAVI Phase II eligibility	GAVI cofinancing status
Angola	UMIC	Eligible	Graduating
Benin	LIC	Eligible	LIC
Burkina Faso	LIC	Eligible	LIC
Burundi	LIC	Eligible	LIC
Cameroon	LMIC	Eligible	Intermediate
Cape Verde**	LMIC	Not eligible	Not eligible
Central African Republic	LIC	Eligible	LIC
Chad	LIC	Eligible	LIC
Comoros	LIC	Eligible	LIC
Congo	LMIC	Eligible	Graduating
Côte d'Ivoire	LMIC	Eligible	Intermediate
Democratic Republic of the Congo	LIC	Eligible	LIC
Eritrea	LIC	Eligible	LIC
Ethiopia	LIC	Eligible	LIC
Gambia	LIC	Eligible	LIC
Ghana**	LMIC	Eligible	Intermediate
Guinea	LIC	Eligible	LIC
Guinea-Bissau	LIC	Eligible	LIC
Kenya	LIC	Eligible	LIC
Lesotho	LMIC	Eligible	Intermediate
Liberia	LIC	Eligible	LIC
Madagascar	LIC	Eligible	LIC
Malawi	LIC	Eligible	LIC

Country	World Bank income group	GAVI Phase II eligibility	GAVI cofinancing status
Mali	LIC	Eligible	LIC
Mauritania	LMIC	Eligible	Intermediate
Mozambique	LIC	Eligible	LIC
Niger	LIC	Eligible	LIC
Nigeria	LMIC	Eligible	Intermediate
Rwanda	LIC	Eligible	LIC
Sao Tome and Principe	LMIC	Eligible	Intermediate
Senegal	LMIC	Eligible	Intermediate
Sierra Leone	LIC	Eligible	LIC
Sudan	LIC	Eligible	LIC
Swaziland	LMIC	Not eligible	Not eligible
Togo	LIC	Eligible	LIC
Uganda	LIC	Eligible	LIC
United Republic of Tanzania	LIC	Eligible	LIC
Zambia	LMIC	Eligible	Intermediate
Zimbabwe	LIC	Eligible	LIC

Table A3.5 shows the years planned for new vaccine introductions for GAVI Alliance countries. The PCV vaccine is either already introduced or is expected to be introduced within the next few years. The rotavirus vaccine is forecasted to be introduced gradually throughout the seven years. The HPV vaccine is forecasted to be introduced gradually with several countries not introducing it until 2019 or 2020. IPV is expected to be introduced in most countries in 2014 and 2015.

Table A3.5: New vaccine introduction in the countries in the DOVE TFF analysis

Country	GAVI co-financing Status	PCV	Rotavirus	HPV	IPV	Measles rubella
Angola	Graduating	2013	2014	2018	2015	2018
Benin	LIC	2011	NA	2016	2015	2018
Burkina Faso	LIC	2013	2013	2016	2015	2015
Burundi	LIC	2011	2013	2016	2015	2016
Cameroon	Intermediate	2011	2014	2017	2015	2016
Cape Verde	Not eligible	2016	NA	2014	2015	2011
Central African Republic	LIC	2011	2014	NA	2015	2017
Chad	LIC	NA	2019	NA	2014	2019
Comoros	LIC	2016	2016	2017	2015	2017
Congo	Graduating	2011	2014	2020	2015	2017
Côte d'Ivoire	Intermediate	2014	2016	2017	2015	2018
Democratic Republic of the Congo	LIC	2012	2018	2020	2015	2017
Eritrea	LIC	2015	2014	2020	2014	2016
Ethiopia	LIC	2011	2013	2019	2015	2017
Gambia	LIC	2010	2013	2016	2015	2016
Ghana	Intermediate	2012	2012	2015	2014	2014
Guinea	LIC	NA	NA	NA	2015	2020
Guinea-Bissau	LIC	2014	2015	2019	2015	2020
Kenya	LIC	2011	2014	2015	2014	2016
Lesotho	Intermediate	2014	2014	2011	2015	2017
Liberia	LIC	2014	2016	2017	2015	2018
Madagascar	LIC	2013	2014	2015	2014	2017
Malawi	LIC	2012	2012	2015	2015	2017
Mali	LIC	2011	2013	2017	2015	2018
Mauritania	Intermediate	2013	2016	2018	2015	2018

Country	GAVI co-financing Status	PCV	Rotavirus	HPV	IPV	Measles rubella
Mozambique	LIC	2013	2016	2017	2015	2018
Niger	LIC	2013	2014	2016	2014	2019
Nigeria	Intermediate	2015	2016	2019	2014	2020
Rwanda	LIC	2010	2012	2014	2015	2014
Sao Tome and Principe	LMIC	2013	NA	2016	2015	2016
Senegal	Intermediate	2013	2016	2016	2015	2014
Sierra Leone	LIC	2011	2014	2015	2015	2019
Sudan	LIC	NA	2016	NA	2015	2017
Swaziland	Not eligible	2013	2015	NA	NA	2020
Togo	LIC	2014	2014	2017	2015	2017
Uganda	LIC	2013	2016	2015	2015	2019
United Republic of Tanzania	LIC	2013	2013	2016	2015	2015
Zambia	Intermediate	2013	2013	2015	2015	2016
Zimbabwe	LIC	2012	2014	2016	2015	2019

ANNEX 4: MILESTONES AND THE MONITORING AND EVALUATION FRAMEWORK

Strategic objectives	2014–2015	2016–2017	2018–2020
Objective 1: To improve immunization coverage beyond the current levels	By 2015 coverage of Pentavalent 3 and MCV1 vaccines will have reached 90% nationally in at least 20 countries	By 2017 coverage of Pentavalent 3 and MCV1 vaccines will have reached 90% nationally in at least 25 countries.	By 2020 coverage of all vaccines included in the national schedule will be at 90% region-wide and in every country, and 80% or more in every district or equivalent administrative unit
	By 2015, 36 countries will have introduced the pneumococcal conjugate vaccine	By 2017, 40 countries will have introduced the pneumococcal conjugate vaccine	By 2020 all countries will have introduced the pneumococcal conjugate vaccine
	By 2015, 24 countries will have introduced the rotavirus vaccine	By 2017, 30 countries will have introduced the rotavirus vaccine	By 2020 at least 37 countries will have introduced the rotavirus vaccine
	By 2015, 10 countries will have introduced the HPV vaccine	By 2017, 25 countries will have introduced the HPV vaccine	By 2020 at least 35 countries will have introduced the HPV vaccine
	By 2015, 15 countries will regularly report adverse events following immunization (AEFI)	By 2017, 25 countries will regularly report AEFI, and at least 50% of these events will be investigated and reported to national authorities within 2 weeks of occurrence	By 2020 at least 37 countries will regularly report AEFI, and at least 80% of these events will be investigated and reported to national authorities within 2 weeks of occurrence
	By 2015 fewer than 20 countries will be reporting one or more stockouts of vaccines and supplies lasting more than 1 week	By 2017 fewer than 10 countries will be reporting one or more stockouts of vaccines or supplies lasting more than 1 week	By 2020 no country will be reporting any stockout of vaccines or supplies lasting more than 1 week
	By 2015, 20 countries will have a NITAG	By 2017, 40 countries will have a NITAG	By 2017 all countries will have a NITAG
	By 2015, 15 countries will have a national regulatory authority (NRA)	By 2017, at least 25 countries will have a functioning NRA	By 2017 at least 35 countries will have a functioning NRA

Strategic objectives	2014–2015	2016–2017	2018–2020
Objective 2: To complete the interruption of wild poliovirus transmission and ensure virus containment	By the end of 2014 all wild poliovirus transmission will have been stopped and all new cVDPV outbreaks will be stopped within 120 days	By 2015 all countries will have implemented measures for containment of wild polioviruses and cVDPVs	By 2018 polio eradication and containment of all polioviruses will have been certified
Objective 2: To complete the interruption of wild poliovirus transmission and ensure virus containment	By 2015 all countries using OPV will have introduced at least one dose of IPV	By 2015 all countries using OPV will have introduced at least one dose of IPV OPV type 2 will have been withdrawn by the end 2016 At least a 10% annual increase in DPT3 coverage will be achieved in 80% of the high risk districts of all the 6 focus countries from 2014 to 2018	By 2020 all countries will have substituted IPV for OPV
	By 2015 a regional polio legacy plan will have been developed	By 2017 all countries will be implementing an adequately funded polio legacy plan	By 2020 all countries will have successfully built on their polio legacy plan to support immunization in a comprehensive and sustainable manner
Objective 3: To attain the elimination of measles and make progress in the elimination of rubella/congenital rubella syndrome	By 2015 measles-containing vaccine coverage will have reached at least 90% nationally in at least 20 countries, and SIAs will have achieved at least 90% coverage in every district	By 2017 the measles-containing vaccine coverage will have reached at least 95% nationally in at least 25 countries and SIAs coverage will be at least 95% in every district	By 2020 all countries will have brought down the incidence of measles to one case per a million population and the measles-containing vaccine national-level coverage will be sustained at at least 95%
	By 2015 at least 10 countries will have introduced the rubella-containing vaccine in routine EPI	By 2017 at least 15 countries will have introduced the rubella-containing vaccine in routine EPI	By 2020 at least 25 countries will have introduced the rubella-containing vaccine in routine EPI
	By 2015 at least 22 countries will have introduced the MCV2 vaccine in routine EPI	By 2017 at least 28 countries will have introduced the MCV2 vaccine in routine EPI	By 2020 at least 36 countries will have introduced the MCV2 vaccine in routine EPI

Strategic objectives	2014–2015	2016–2017	2018–2020
Objective 4: To attain and maintain elimination/control of other vaccine-preventable diseases	By 2015, 36 countries will have achieved and validated the elimination of maternal and neonatal tetanus	By 2017, 42 countries will have achieved and validated the elimination of maternal and neonatal tetanus	By 2020 all countries will have achieved and validated the elimination of maternal and neonatal tetanus
	By 2015, 23 countries at risk for yellow fever will have introduced the yellow fever vaccine, and 4 countries will have achieved more than 90% coverage with the vaccine	By 2017, 31 countries at risk for yellow fever will have introduced the yellow fever vaccine, and 10 countries will have achieved more than 90% coverage with the vaccine	By 2020 all 31 yellow fever prone countries will have achieved at least 90% coverage with the yellow fever vaccine in their routine schedule
	By 2015 all countries within the meningitis belt will have introduced MenAfriVac© through campaigns	By 2017, all countries within the meningitis belt will have introduced MenAfriVac© through campaigns and 5 of them will have introduced it in routine immunization	By 2020 all countries within the meningitis belt will have introduced MenAfriVac© through campaigns and 15 of them will have introduced it in routine immunization
	By 2015 sero-prevalence of HbsAg among children under five will not be higher than 2% in at least 10 countries	By 2017 sero-prevalence of HbsAg among children under five will not be higher than 2% in at least 20 countries	By 2020 sero-prevalence of HbsAg among children under five will not be higher than 2% in any country in the Region

Strategic directions	2014–2015	2016–2017	2018–2020
Strategic direction 1: All countries commit to immunization as a priority	By 2015 all countries will have started to take action to strengthen and shape public opinion on the value of immunization, using evidence-based approaches	By 2017 population-based surveys will indicate the public perception of the value of immunization as positive for 70% of those surveyed	By 2020 population-based surveys will indicate that immunization is perceived by the public as an entitlement
	By 2015 government ministers will have stated their commitment to universal access to immunization as will have prominent religious and cultural leaders	By 2017, 25 countries will have completed a review of their policies, laws and regulations to support of immunization	By 2020 all countries will have completed a review of their policies, laws and regulations to support immunization, and will have integrated their immunization plans in their overall national health plan, indicating clearly the resources deployed and including an accountability framework
	By 2015 coordinating mechanisms (ICCs) will have been established in at least 35 countries and will be operating with periodic meetings at which minutes will be recorded and implementation of recommendations verified	By 2017 at least 35 countries will have constituted a national stakeholders consultation forum on immunization with the involvement of major professional and civil society organizations, academicians, regulatory authorities, opinion leaders, etc.	By 2020 in all countries, professional and civil society organizations will be engaged strongly and regularly in national immunization dialogue, policy setting, demand creation, resource mobilization, implementation of immunization plans and monitoring of commitments
	By 2015 all countries will have revised or updated their multiyear plans taking advantage of lessons from their past annual planning experience and guidelines produced by WHO and UNICEF	By 2017 all countries will have conducted a mid-term review of their accomplishments, shortcomings and evolving needs and capacity, and adjusted their multiyear plans accordingly	By 2020 all countries will have conducted at least one formal evaluation of their immunization programmes' performance, financial effectiveness, outcomes and impacts

Strategic directions	2014–2015	2016–2017	2018–2020
Strategic direction 2: Individuals and communities understand the value of vaccines and demand immunization as both their right and responsibility	By 2015 research projects will have been conducted in at least 5 countries to identify barriers to and drivers of immunization demand, and to identify community-based advocates of immunization	By 2017 a strategy for stimulating community demand for immunization will have been developed, implemented and tested in 10 countries	By 2020 all countries will have incorporated in their national immunization action plan strategies for the enhancement of individual and community demand for immunization, providing for their regular updating
	By 2015 regional communication strategies to bolster demand for immunization will have received input and support from partners, professional health groups and civil society	By 2017 trends in community demand for immunization will have been evaluated in at least 10 countries where focused projects will have been implemented	By 2020 all national immunization plans will have evaluated the trends, obstacles and progress in stimulating community demand for immunization
Strategic direction 3: The benefits of immunization are equitably extended to all people	By 2015, 15 countries will have developed and implemented a microplanning approach to reach every community and every individual eligible for immunization according to the national schedule, following a life-course approach for accurate forecasting of immunization needs and outreach	By 2017, 35 countries will have developed and implemented a microplanning approach to reach every community and every individual eligible for immunization	By 2020 all countries will have developed and implemented a microplanning approach to reach every community and every individual eligible for immunization
	By 2015 immunization strategies in 15 countries will have incorporated specific approaches to reach new eligible populations such as older children, adolescents, young adults and the elderly	By 2017 immunization strategies in 35 countries will have incorporated specific approaches to reach new eligible populations such as older children, adolescents, young adults and the elderly	By 2020 immunization strategies in all countries will have incorporated specific approaches to reach new eligible populations such as older children, adolescents, young adults and the elderly

Strategic directions	2014–2015	2016–2017	2018–2020
Strategic direction 4: Strong immunization systems are an integral part of a well-functioning health system	By 2015, 10 countries will have formulated plans to curb the burden of disease through comprehensive approaches such as the integrated management of childhood illnesses and the Global Action Plan for the Prevention and Control of Pneumonia and Diarrhoea, Malaria, TB etc. in which immunization will play or will be expected to soon play a pivotal role	By 2017, 20 countries will have formulated plans to curb the burden of disease through comprehensive approaches in which immunization will or will be expected to soon play a pivotal role	By 2020 all countries will have formulated plans to curb the burden of disease through comprehensive approaches in which immunization will play or will be expected to soon play a pivotal role
	By 2015, 10 countries will have developed and adopted microplanning for integrated services supporting primary health care, including outreach options and the deployment of appropriate human, financial and logistic resources	By 2017 and on the basis of experience and lessons learned, 20 countries will have developed and adopted microplanning for integrated services supporting primary health care, including outreach options and the deployment of appropriate human, financial and logistic resources	By 2020 and on the basis of experience and lessons learned, all countries will have developed and adopted microplanning for integrated services supporting primary health care, including outreach options and the deployment of appropriate human, financial and logistic resources
Strategic direction 4: Strong immunization systems are an integral part of a well-functioning health system	By 2015 all countries will have developed strategic plans for integrated VPD surveillance within the IDSR context that are complementary to their multiyear immunization strategic plans and cover the period 2015–2020	By 2017 all countries will have conducted a mid-term assessment of their surveillance systems, including the ease of access to and performance of laboratory services, and taken corrective action as appropriate	By 2020 the capacity of surveillance systems and the scope of work of laboratory services will have expanded to meet evolving needs of the immunization programme, including needs resulting from the introduction of new vaccines or new technologies, or the launching of new initiatives
	By 2015, 20 countries will have established an effective case-based surveillance system for vaccine-preventable diseases covering at a minimum polio, measles and maternal and neonatal tetanus that is amenable to evaluation using standard performance-monitoring indicators	By 2017, 30 countries will have established an effective case-based surveillance system for vaccine-preventable diseases	By 2018 all countries will have established an effective case-based surveillance system for vaccine-preventable diseases covering at a minimum polio, measles, maternal and neonatal tetanus and other diseases targeted for pre-elimination or elimination, such as rubella

Strategic directions	2014–2015	2016–2017	2018–2020
Strategic direction 5: Immunization programmes have sustainable access to long-term funding and quality supplies	By 2015 all countries will have incorporated in their national immunization plan a costing and financing plan covering both domestic and external resources	By 2017 all countries will have re-examined their expenditures, projected financial needs and funding prospects and adjusted their plans accordingly	By 2020 all countries will have re-examined their expenditures, projected financial needs and funding prospects and adjusted their plans accordingly for a subsequent planning period
	By 2015, 25 countries will have conducted a supply management assessment, including for procurement of vaccines and other supplies; the capacity and performance of the cold chain; the needs, availability, deployment and maintenance of transportation equipment; and communication means.	By 2017, 35 countries will have conducted a supply management assessment for the procurement of vaccines and other supplies; the capacity and performance of the cold chain; the needs, availability, deployment and maintenance of transportation equipment; and communication means	By 2020, all countries will be maintaining an accurate inventory of their cold chain, transportation and communication equipment and will have taken appropriate measures to ensure their availability and that they are in good working condition to meet the needs of the subsequent planning period
Strategic direction 6: Country and regional communication, research and development innovations maximize the benefits of immunization	By 2015 at least 15 countries will have incorporated in their cMYPs an agenda for implementation research on immunization drawn up in consultation with national scientific and technical professionals, health practitioners, academics, partner organizations and members of civil society	By 2017 at least 35 countries will have incorporated in their cMYPs an agenda for implementation research on immunization drawn up in consultation with national scientific and technical professionals, health practitioners, academics, partner organizations and members of civil society	By 2020 all countries where collaborative implementation research was conducted will have published the outcomes of their research projects and applied their results to improve the coverage, completeness and quality of immunization
	By 2015 at least 10 countries will have assessed and conducted implementation research on the methods to improve the quality and timely use of administrative and epidemiological data and the expanded use of communication, monitoring and evaluation methods and technology	By 2017 outcomes in 10 countries from assessment and implementation research on methods to improve the quality and timely use of administrative and epidemiological data, and the expanded use of communication, monitoring and evaluation methods and technology will have resulted in a plan for improving data quality in those countries and regionally	By 2020 all countries will be benefiting from innovative methods and tools to ensure the highest attainable quality and use of administrative and epidemiological data and the appropriate use of new technologies

The **World Health Organization (WHO) African Region** is one of the six regions of WHO. The Organization's presence in the region consists of the WHO Regional Committee for Africa, a Secretariat for the African region, three Inter-country Support Teams and WHO Country and Liaison Offices located in 47 Member States.The mission of WHO in the African Region is the attainment of the highest level of health by all people in the region.

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