



**MINISTERIAL CONFERENCE
ON IMMUNIZATION
IN AFRICA**

**FULFILLING
A PROMISE:
ENSURING
IMMUNIZATION
FOR ALL IN
AFRICA**



**World Health
Organization**

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**CARTE DE VACCINATION
CONTRE LA MENINGITE A -MenAfrivac®**

Région Médicale de : KI
District : KI
Poste / Centre de Santé : Dya
Nom : Badiane
Prénom (s) : Fatou
Date de naissance : 2006
Age : 6 ans Sexe : F
Lieu de vaccination : Dya
Date de vaccination : 11/11/2012

SECTION 1

Immunization in Africa: A Time for Action

Immunization is among the most effective public health interventions available. In recent decades, vaccines have contributed to substantial reductions in childhood disease burden globally, saving millions of lives. Immunization was the fundamental strategy for the eradication of smallpox—one of the greatest achievements in the history of public health. Polio is now on the brink of eradication thanks again to the power of vaccines. More children than ever before now live healthy lives, free of vaccine-preventable diseases, because of immunization. Moreover, the impact of vaccines extends beyond public health to children’s educational performance, increases in household incomes and, ultimately, greater national economic growth.

This report highlights the achievements made in expanding access to vaccines in Africa and

discusses some of the remaining challenges to achieving universal access to vaccines. The timing of this report coincides with the halfway point of the implementation of the Decade of Vaccines, a 10-year vision of the global health community to expand access to vaccines and immunization services to all by 2020. In 2012, all 194 Member States of the World Health Assembly (WHA) endorsed The Global Vaccine Action Plan (GVAP), a framework to achieve this vision. This report also reflects established commitments, priorities and plans to achieve immunization targets for the continent, as expressed by the World Health Organization (WHO) Africa and Eastern Mediterranean Regional offices. While immunization efforts involve a myriad of local and global actors, this report focuses largely on the achievements, roles and responsibilities of African governments, societies and leaders.

The Global Vaccine Action Plan (GVAP)—endorsed by the 194 Member States of the World Health Assembly in May 2012—is a roadmap to prevent millions of deaths by 2020 through more equitable access to vaccines for all people regardless of where they are born, who they are or where they live.

The GVAP’s specific targets include:

GOAL	BY 2015	BY 2020
VACCINATION COVERAGE	90% national coverage and 80% in every district for DTP3 vaccine	90% national coverage and 80% in every district for all vaccines in national programme
NEW AND UNDER-UTILIZED VACCINES	Introduction of one or more new or underutilized vaccines in at least 90 low- and middle-income countries	Introduction of one or more new or underutilized vaccines in all low- and middle-income countries
POLIO	No new cases of polio after 2014 (“interruption of transmission”)	Certification of polio eradication
GLOBAL AND REGIONAL ELIMINATION TARGETS	Globally eliminate neonatal tetanus Eliminate measles in at least four WHO regions Eliminate rubella in at least two WHO regions	Measles and rubella eliminated in at least five WHO regions
MILLENNIUM DEVELOPMENT GOAL (MDG) 4	Reduce under-five mortality by two-thirds from 1990	Exceed the MDG 4 target for reducing child mortality



photo: Frederic Courbet / Bill & Melinda Gates Foundation

Immunization coverage has improved dramatically in almost all countries in Africa in recent decades. As a result, millions of children now have access to lifesaving vaccines. Cases of many vaccine-preventable diseases, such as measles and meningitis, have fallen in many African countries. Campaigns to raise awareness around the importance of immunization, including Africa Immunization Week, have contributed to these successes. However, in recent years, attempts to increase immunization coverage on the continent have slowed. Additional commitments are needed to increase coverage to levels high enough to interrupt transmission of diseases and introduce new vaccines into country immunization systems.

Africa has gone more than a year and a half without a case of wild polio, a monumental milestone that reflects the contributions of political leaders, health officials and communities across the continent. Yet challenges remain to ensure sustainability of this success in Africa, including improvements in coverage of the oral polio vaccine (OPV), sustained surveillance and outbreak response capacity, and introduction of the inactivated polio vaccine (IPV) into routine immunization systems.

Reaching all children, strengthening immunization systems and introducing new vaccines require strong political support and regular funding. Countries and development partners must continue to increase the amount of funding available to meet national immunization targets, especially in middle-income countries that are not eligible for international vaccine funding support. Civil society and community leaders must also do their part to strengthen demand for vaccines and hold governments to account. Ensuring that children are able to live healthy lives and maximize their full potential depends on governments and their partners—local, national and international—closing funding gaps, increasing country ownership and ensuring financial sustainability of immunization programs.

At this pivotal time, leaders from across Africa, including from government, civil society and communities, are convening to discuss the commitments and actions that will be necessary to ensure the future envisioned by the GVAP. Economies in Africa have been growing faster than elsewhere in the world, bringing with them new opportunities and advances across sectors, from technology to infrastructure^[1,2]. Taken together, these factors are contributing to a palpable optimism around a better future for Africa. Improved health systems, and immunization in particular, are essential to ensuring this future.

Gavi, The Vaccine Alliance: A Critical Partner in Delivering Vaccines Throughout Africa

Gavi, the Vaccine Alliance, is an international public-private partnership committed to the mission of saving lives and protecting health by expanding access to vaccines in the world's poorest countries. Gavi supports 73 countries around the world by providing funding for 11 new and underused vaccines, including the pentavalent vaccine, which has now been introduced in all Gavi countries, and the inactivated polio vaccine—a key component of the global polio eradication strategy. In addition, the alliance also provides financial support for immunization systems and health systems strengthening. The new Gavi 2016–2020 strategy has put achievement of equitable and sustainable coverage at the center of the Alliance's effort. Work has started with countries across the continent to better align and prioritise interventions to address those gaps.

As a critical partner in delivering vaccines in developing countries, Gavi is able to bring down vaccine prices by pooling country demand; working with donors and countries to secure predictable, long-term funding; and creating healthy vaccine markets. Since 2000, Gavi support has contributed to more than 500 million children receiving immunizations, saving an estimated 7 million lives.

SECTION 2

Routine Immunization Coverage

ISSUE AT A GLANCE

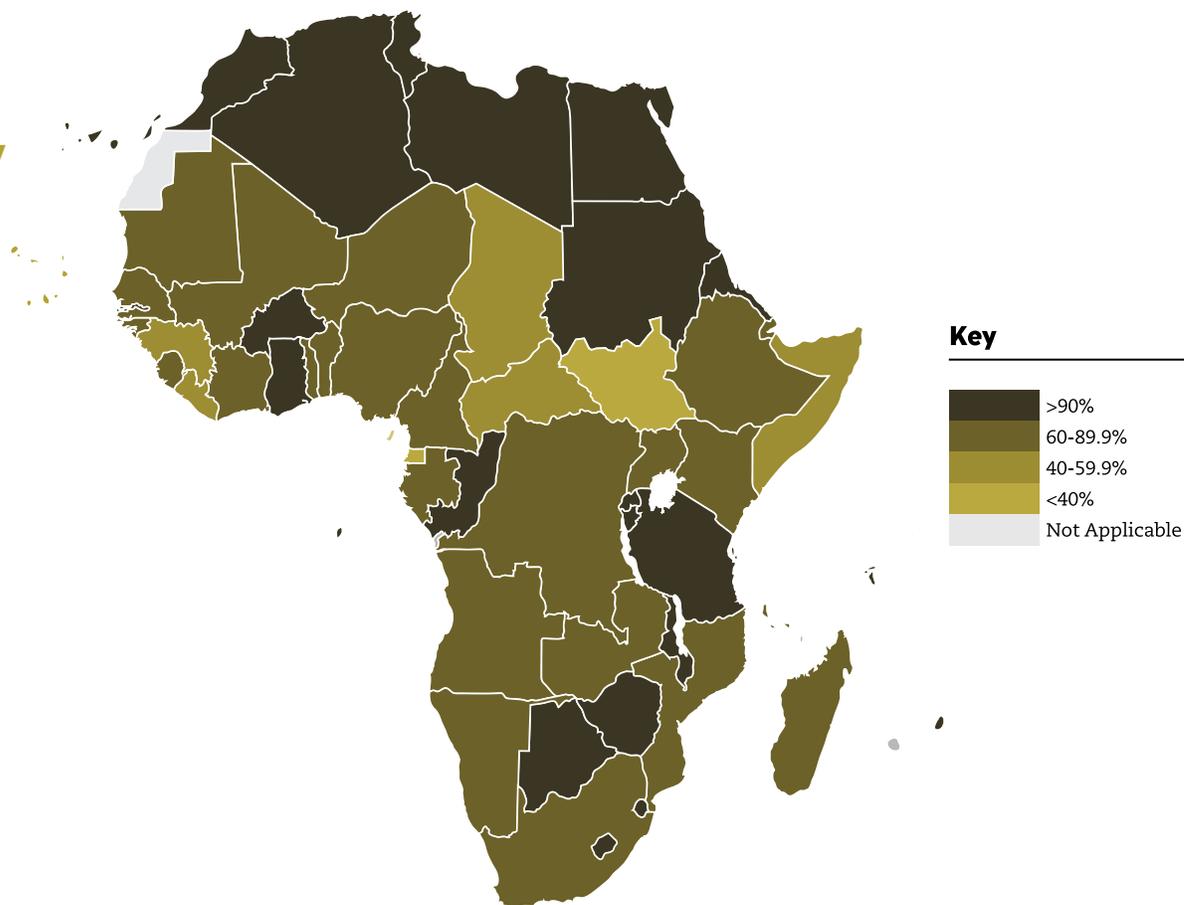
- Routine immunization coverage has increased considerably across Africa—average diphtheria-tetanus-pertussis (DTP3) coverage increased from 57% in 2000 to 80% in 2014. However, progress in recent years has slowed.
- Fewer than half of African countries have already met the GVAP target to increase DTP3 coverage nationally above 90% in 2014. Five African countries have an estimated coverage of less than 50%.
- Meeting coverage targets requires ensuring hard-to-reach children have equitable access to lifesaving vaccinations.

The WHO launched the Expanded Programme on Immunization (EPI), to bring immunization to children around the world, in 1974^[3]. Since then and through national, regional and global efforts to expand routine immunization, coverage in Africa has increased substantially. However, despite rapid improvements in the decades following the launch of the EPI, progress toward improving routine immunization coverage in Africa has stagnated in recent years^[4,5].

Coverage with the third dose of diphtheria-tetanus-pertussis (DTP3) is commonly used to measure the strength and reach of routine immunization programs. This requires reaching children with vaccines three times at appropriate intervals. The GVAP specifies two targets for DTP3 coverage for countries by 2015: (1) at least 90% coverage nationally, and (2) at least 80% coverage in every district^[6].

DTP3 Coverage by Country

2014



¹According to WHO-Unicef estimated coverage

²DTP is almost universally delivered as a combination vaccine that also includes vaccines for *Haemophilus influenzae* type b (Hib) and hepatitis B vaccines in a single vial.

In 1980, no African country among those with available data (12 countries) reported DTP3 coverage greater than 90%, and only one (Mauritius) reported coverage above 80%—the original global coverage target^[3]. By 2014, the proportion of countries in Africa that had already met the GVAP target for national DTP3 coverage was estimated to be 43% (23/54 of countries)^[7]. Coverage of measles-containing vaccine (MCV) is another indicator used by the WHO to assess the strength of immunization systems. In 2014, coverage of one dose of MCV in Africa was 74%^[7]. However, control of measles requires high coverage with two doses of MCV. Less than half of African countries (48%) have introduced a second dose of MCV and as a result, continent-wide coverage of the second dose of MCV is approximately 17%^[7].

Top-10 Best Performing Countries in Africa by Coverage Targets in 2014

Country	DTP1 COVERAGE	DTP3 COVERAGE	MCV2 COVERAGE
GAMBIA	98	96	73
GHANA	99	98	67
LESOTHO	97	97	85
MAURITIUS	99	99	95
MOROCCO	98	98	95
RWANDA	99	99	77
SEYCHELLES	99	99	98
SWAZILAND	99	98	89
TANZANIA	99	97	29
TUNISIA	98	98	95

The estimate of average DTP3 coverage in Africa increased only from 74% in 2010 to 80% in 2014^[7,8]. In addition, there are disturbing disparities among countries. Most countries in Northern Africa reported national coverage above 90%—the GVAP target—while most countries in sub-Saharan Africa have experienced more limited progress^[7]. Five African countries reported DTP3 coverage below 50%^[7].

In 2014, only 17% of countries in Africa (9/54) met the GVAP target of at least 80% DTP3 coverage in all districts in 2014, highlighting geographic disparities within the remaining countries^[7]. Disparities in immunization coverage within countries also exist between poor and wealthy populations. This is particularly troubling, as children in poor households are at much greater risk of dying from vaccine-preventable diseases than children in relatively wealthier households. Increased focus on equity is needed to ensure that immunizations reach children of varying geographic and socioeconomic communities in every district nationwide.

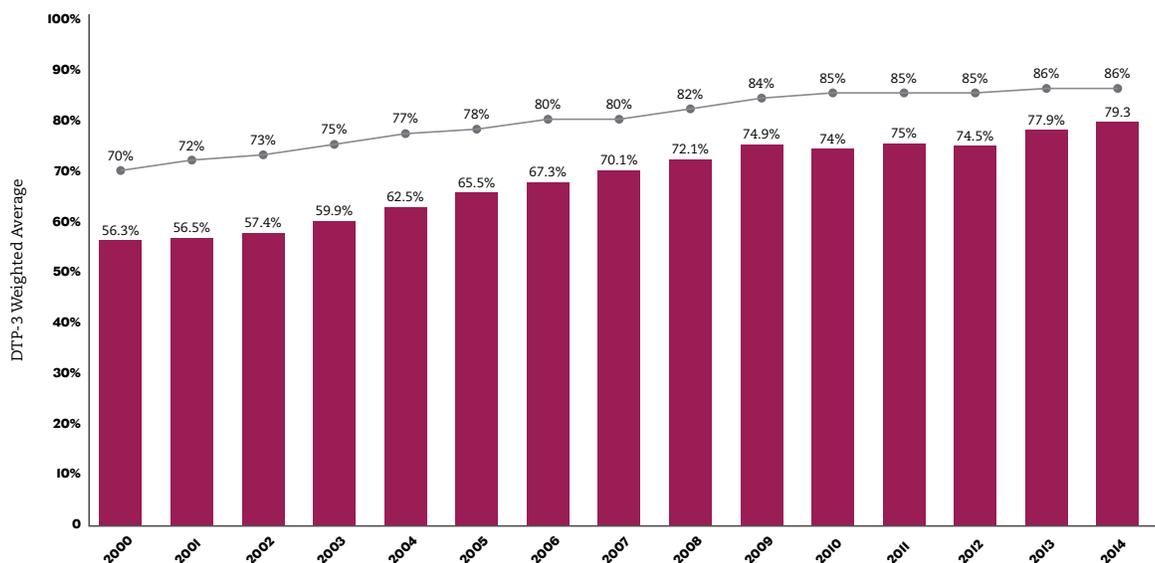
Understanding the Determinants of Vaccine Coverage

In addition to addressing health systems constraints (e.g., poor infrastructure, insufficient numbers of health workers), addressing individual, family and community factors associated with missed and untimely immunizations^[9-14] can improve immunization coverage. In many, though not all, African countries, caregiver education, family size, sex of child, migrant status and birth order of children have all been associated with whether a child is fully immunized or not. A systematic review of studies conducted in low- and middle-income countries found that gender inequality can be an underlying aspect of low demand for immunization^[14]. The researchers found that the low social status of women negatively affects access to vaccination for women because of their limited decision-making power over resources and lack of autonomy^[14]. For this reason, vaccine coverage could be improved in some settings by involving fathers and communities in vaccination activities. Understanding the social determinants of immunization coverage is an important exercise that allows policymakers and health program managers to improve and refine immunization program strategies.

Continent-wide DTP3 Coverage

Population-weighted average, 2000–2014

- African Countries
- Global



Another method for assessing the strength of a country’s immunization program is to measure dropouts, or the difference between the number of children who received an initial dose of DTP (DTP1) and the number who received all three doses (DTP3). A difference of less than 10% with high coverage suggests that children are likely to have received all three required doses of DTP, indicating a high level of immunization performance^[15]. In 2014, the difference in coverage between DTP1 and DTP3 was estimated to be approximately 9% across all of Africa^[7,8]. However, some countries in Africa reported a difference of more than 20%, indicating a large proportion of dropouts. The largest proportion of dropouts was found in countries where very few children receive even the first dose of DTP^[7].

Understanding national vaccine coverage is critically important for monitoring the performance of immunization programs, identifying areas within immunization systems that require improvements, and preparing for the introduction of new vaccines^[16]. The WHO/UNICEF Estimates of National Immunization Coverage (WUENIC) are based on administrative and survey data and country official estimates^[16]. The surveys used are limited by their data collection methods—namely, reviewing immunization cards in the home, asking the caretaker about immunization history, or both together. These challenges are compounded in resource-poor settings. Strengthening immunization data quality and coverage estimates, and using the data for improving immunization program performance, are critical steps toward improving coverage in Africa.

Country Leadership, the case of Rwanda: Improving Routine Immunization and New Vaccine Introductions

Rwanda has made substantial improvements in the health of mothers and children in recent years. Through strong national leadership, the country has prioritized equity in access to health services, and used strategies to decentralize health care and strengthen community health workers. In response, child mortality fell by 73% (152 to 42 deaths per 1,000 live births) from 1990 to 2015, surpassing the country’s Millennium Development 4 (MDG4) target^[17].

Rwanda has taken a multisector approach to improving health. Routine immunization—as a critical part of the primary health care system—has contributed to the impressive gains in child survival. In 2014, DTP3 reached 99% of eligible children, and more than 90% of children in 2011 were fully immunized with all routine vaccines^[7]. To attain this coverage, officials have integrated innovative approaches, such as incentivizing health workers to reach every child in their catchment area, offering immunization in schools, and focusing on health education and communication.

Rwanda has also led the way in the introduction of new vaccines. The country was among the first in Africa to introduce the Pneumococcal conjugate vaccine (PCV) in 2009^[18]. Two years later, Rwanda introduced the human papillomavirus (HPV) vaccine, providing girls protection from cervical cancer—the most common cancer among women in the country^[19]. Rwanda subsequently followed up with introductions of the rotavirus vaccine in 2012 and the combined measles-rubella vaccine in 2014.

Rwanda’s example highlights the power of high-level political engagement with immunization combined with a broad commitment to strengthening health systems.

² 99% is the highest possible coverage estimate for countries in the WHO/UNICEF annual vaccine coverage estimates.

Measles-Containing Vaccine (MCV2)

2 Doses of Measles Vaccine in National Immunization Schedule

Key

- MCV2 introduced
- MCV2 not introduced
- Not Applicable



Measles Elimination

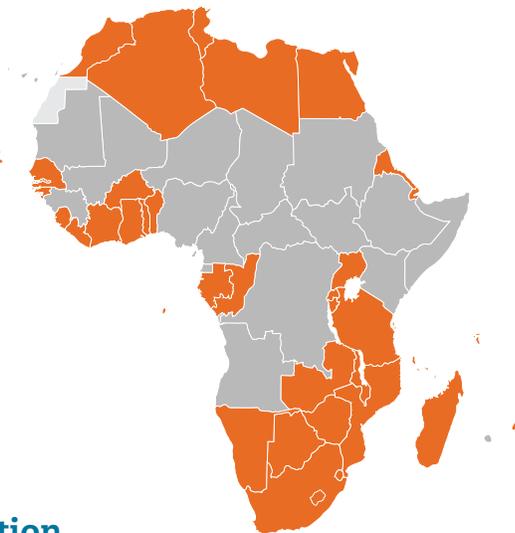
Measles Elimination: An estimated 48,000 measles deaths occurred in the African Region in 2014, representing 42% of global deaths due to the disease^[20]. Because measles is a highly infectious virus, its control requires more than 95% coverage with two doses of measles-containing vaccine (MCV) in all districts, administered through routine immunization or supplemental immunization activities (SIAs)^[21]. Despite the WHO's recommendation for a two-dose schedule, less than half (48%) of African countries have integrated MCV2 into their routine immunization programmes^[24]. In 2014 coverage of MCV1 and MCV2 in Africa were 75% and 19% respectively^[7].

Tetanus Elimination

Less than one case of neonatal tetanus per 1,000 live births in every district

Key

- Tetanus eliminated
- Tetanus not eliminated
- Not Applicable



Tetanus Elimination

Tetanus Elimination: The world has made substantial progress toward maternal and neonatal tetanus elimination, defined as less than one case per 1,000 live births in every district. However, about a fifth of African countries are yet to eliminate tetanus cases, representing 13 of the 23 countries not having reached this achievement worldwide. Although tetanus cannot be eradicated (tetanus spores exist in the environment), highly effective interventions and strategies, including maternal immunization and clean delivery and cord care practices, are essential and available to control the disease. In 2014, 77% of African children were protected from neonatal tetanus at birth through maternal immunization^[7].

Polio-Free Nigeria: A Historic Public Health Accomplishment

As recently as 2012, Nigeria—the only endemic country in Africa and long regarded as the epicenter of polio transmission—accounted for more than half of all polio cases worldwide. Since then government officials, health workers, traditional and religious leaders, civil society, and international partners came together to improve their immunization program with local innovations, reaching tens of millions of children, in even the most remote parts of the country. The result of this great effort is clear: Nigeria has not recorded a case of wild poliovirus since July 24, 2014.

With Nigeria's success, only two countries, Pakistan and Afghanistan, have ongoing wild-type poliovirus transmission globally. However, in addition to stopping global transmission of wild poliovirus, several other challenges remain.

A series of effective interventions and strategies have been put into place to stop polio transmission. Crucially, routine immunization systems must be strengthened to reach every child with the polio vaccine and ensure a high level of immunity in the community. Governments also need to maintain strong disease surveillance and outbreak control programs to prevent resurgence of the disease. Finally, with support from Gavi, countries will introduce and scale up coverage of the inactivated polio vaccine (IPV), which is key to preventing outbreaks of “circulating vaccine-derived poliovirus” (cVDPV).

Nigeria has brought the world closer to one of the greatest achievements in human history. It is critical that the global community seize this opportunity to end polio for good and ensure future generations of children are free from this devastating disease.

SECTION 4

New and Underutilized Vaccines

ISSUE AT A GLANCE

- The introduction of new vaccines in Africa has been a major success. The GVAP target of at least 90 low- and middle-income countries introducing one or more new or underutilized vaccines is on track to be met globally, in large part due to successes across Africa driven by African leaders in partnership with Gavi.
- Many countries in Africa have introduced multiple new vaccines, such as pneumococcal conjugate vaccine and rotavirus vaccine, at the same time. This highlights the high priority of vaccination among political leaders in Africa.
- The ultimate impact of new vaccines in Africa—as measured by lives saved and illnesses averted—is dependent on the number of children immunized. Countries will need to continue improving routine immunization coverage to achieve the full promise of these vaccines.

In the past two decades, the world has made tremendous advances toward developing and introducing new vaccines. Today, 25 diseases are preventable with vaccines. In the past, many low- and middle-income countries, including those with the highest child mortality rates, have been slow to adopt new vaccines, due to myriad factors including relatively high vaccine costs and competing health priorities. Fortunately, this has changed in recent years due to increased national and subnational political will, unprecedented support from the global community, and funding support from Gavi.

In 2013, all WHO member countries committed to ensuring that at least 90 developing countries introduced one or more new or underutilized vaccines before 2015^[6]. Countries in Africa have contributed substantially toward realizing this target and, as a result, it is on track to be met^[25]. As of 2014, 128 new vaccines have been introduced in developing countries around the world, including many African countries—some countries have introduced multiple new vaccines. Looking ahead, the GVAP specifies that all low- and middle-income countries should introduce one or more such vaccines by 2020.

There are several issues that countries must consider when assessing whether or not to introduce a new vaccine. Some of the issues include disease burden, the strength of the immunization program, the cost and effectiveness of available vaccines, and political will. To ensure country ownership and to guide vaccine decision-making, many countries have set up independent technical advisory groups, as recommended by the GVAP^[6].



New and/or underutilized vaccines relevant to Africa include the following:

Haemophilus influenzae type b vaccine

Haemophilus influenzae type b (Hib) is a bacterium that can cause severe diseases such as pneumonia and meningitis among children. In 2000, when only two countries in Africa were using Hib vaccine, it caused approximately 180,000 deaths in Africa^[26]. All countries in Africa are now immunizing children with Hib vaccine, primarily in combination with four other antigens (i.e., diphtheria, tetanus, pertussis, and hepatitis B). With sufficient coverage, Hib vaccine can virtually eliminate this serious infection from populations^[27–29].

Pneumococcal conjugate vaccine

Like Hib, pneumococcus can cause life-threatening pneumonia, sepsis and meningitis among children. It is one of the leading causes of vaccine-preventable deaths globally, having caused approximately 300,000 deaths in the Africa Region in 2008^[30]. At the time, no country in Africa was using pneumococcal conjugate vaccines (PCV)^[18]. Today, 41 countries in Africa are using PCV in their routine immunization programs^[18].

Inactivated polio vaccine

Polio, a highly contagious viral infection that can lead to paralysis or death, is now endemic in only two countries globally. Africa has not reported a case of wild-type polio since August 2014. The introduction of at least one dose of IPV, in conjunction with OPV, is a critical component of the Polio Eradication and Endgame Strategic Plan, as it will help reduce the risk of outbreaks associated with use of OPV. Adoption of IPV in Africa has increased significantly recently. Of the 17 countries in Africa that have introduced IPV, all but one introduced in either 2014 or 2015^[18].

Meningitis A vaccine

Group A meningococcus was one of the most common causes of meningitis in Africa, causing severe seasonal outbreaks of meningitis that killed thousands and disabled many more in an area of sub-Saharan Africa known as the “meningitis belt.” Through a unique global partnership, an affordable and effective group A meningococcal conjugate vaccine was developed specifically for use in Africa. The vaccine was licensed in 2010 and is now used in preventive campaigns in the meningitis belt. Group A disease has been virtually eliminated from

the region, constituting a tremendous public health success. However, studies indicate that it could make a resurgence if high coverage is not maintained through routine immunization programs^[31].

Rotavirus vaccine

Rotavirus is the leading cause of severe diarrhea among children around the world^[32]. Without vaccination, nearly every child will suffer a rotavirus infection by his or her third birthday. Unlike other causes of diarrhea, it cannot be prevented with improvements in water and sanitation alone and cannot be treated with antibiotics. Rotavirus vaccines are now considered one of the most cost-effective interventions for preventing diarrheal death and disease^[33]. As of 2015, 30 African countries, many with some of the highest child mortality rates on the continent, have introduced rotavirus vaccines^[18].

Human papillomavirus vaccine

Because of poor access to screening and treatment services, cervical cancer is a leading cause of cancer death among women in developing countries. Two vaccines that provide protection against the strains of human papillomavirus (HPV) that cause approximately 70% of cervical cancer cases are now available in most developed countries. However, high prices and delivery challenges (HPV vaccines are given to adolescents) have been barriers to widespread routine use of HPV vaccines in many countries in Africa. With Gavi support, eight countries are now using HPV vaccines routinely in Africa and an additional 21 countries on the continent are conducting demonstration projects with HPV prior to widespread routine use^[34].

While the introduction of new vaccines has been promising in recent years, efforts to increase routine immunization coverage, particularly among those most at risk of diseases, will be critical to ensuring that the new vaccines reach their full life-saving potential.



photo: Bill & Melinda Gates Foundation

Breaking the Cycle: Meningitis Vaccine Virtually Eliminates a Devastating Disease

In 1996, an epidemic of group A meningococcus swept through the 26 countries in sub-Saharan Africa known as the “meningitis belt.” The disease, which appears in this region every seven to 14 years, resulted in more than 250,000 cases and 25,000 deaths. After the epidemic, African leaders, including several ministers of health, called for the development of a vaccine to break this devastating cycle.

Less than 15 years later, a conjugate vaccine—MenAfriVac—was introduced through mass vaccination campaigns with support from Gavi, reaching over 220 million children and adults in 16 countries across the meningitis belt between 2010 and 2015. The vaccine was developed through a partnership between the WHO, PATH and the Serum Institute of India with support from the Bill & Melinda Gates Foundation. It was specifically designed for use in sub-Saharan Africa, including the ability to withstand higher temperatures and an affordable price of under US \$0.50 per dose.

Today, meningitis due to meningococcal type A has been virtually eliminated—in 2013 only four cases of the disease were reported in the meningitis belt among unvaccinated people. MenAfriVac has been heralded as a stunning success and example of how country leadership and global partners can come together to control a disease affecting millions of people.

However, challenges remain. Countries in the meningitis belt must maintain coverage of MenAfriVac—through routine immunization programs—to prevent a waning of immunity that could lead to resurgence of the disease^[21].

SECTION 5

Immunization and the Importance of Strong Health Systems

ISSUE AT A GLANCE

- Immunization systems and health systems are closely linked. A weak health system will result in poor immunization coverage.
- Health systems are affected by conflict and public health emergencies and without additional resources, immunization systems can suffer in such situations.
- Introducing new vaccines can sometimes help to improve immunization and health systems.

Routine immunization is an integral part of the overall health system. While some components of the immunization program operate independently, in general, they share several functions and resources with the overall health system. These include health workers, primary health infrastructure, and planning and management systems. Vaccines can and should be a core, integrated part of health services. This includes general maternal, child and adolescent health, as well as other common services, such as malaria prevention and treatment. The effective delivery of vaccines relies on the health systems building blocks identified by the WHO and serves to fulfill the goals and outcomes of a functioning health system. Strong immunization programs can provide health workers with opportunities to reach communities with other important health services, including antenatal care, postnatal checkups, and reproductive health counseling services.

Without strong health systems, the performance of routine immunization systems can be seriously undermined. Immunization programs achieve the highest coverage when positioned within strong health systems that provide a range of high-quality services. As part of its assistance to countries, Gavi supports strengthening health systems, with the goal of increasing immunization coverage and equity as part of overall health improvements.

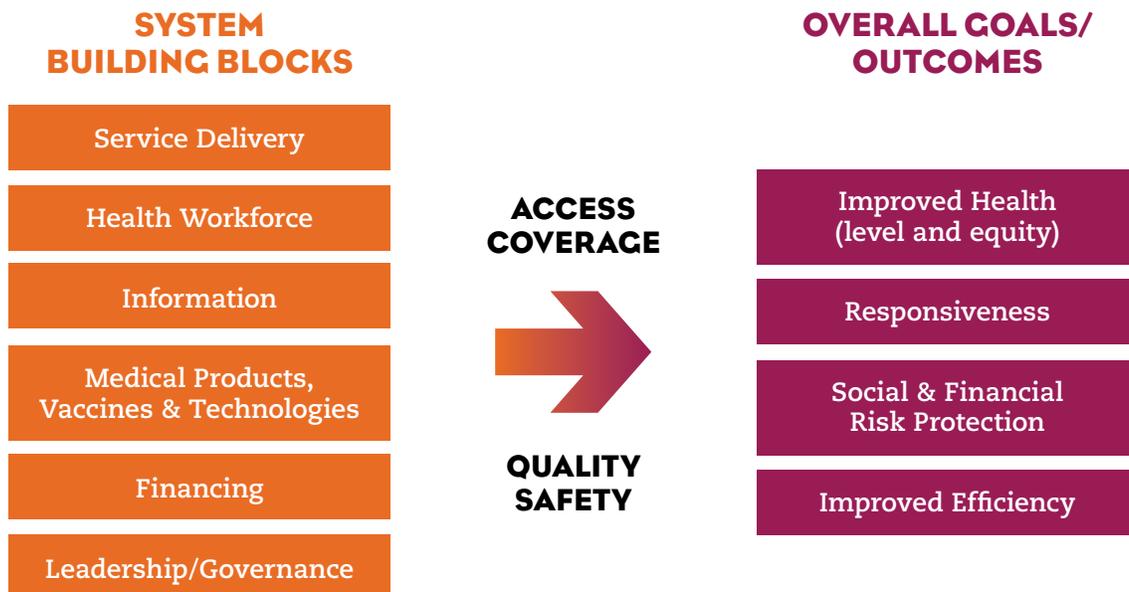




photo: UNICEF/Pflanz

The lack of health infrastructure and shortage of skilled health workers can also adversely affect immunization services especially in conflict-affected situations and during public health emergencies. Vaccine coverage can decline substantially in post-conflict settings; in some cases DTP3 coverage was found to be as low as 6% in such situations^[35]. More recently, the Ebola epidemic in West Africa had a tremendous impact on health services, including vaccination. In some affected areas, health programs reported increased cases of measles and pertussis—both vaccine-preventable diseases. Misinformation regarding the origin and transmission of Ebola exacerbated the situation in Guinea, Liberia and Sierra Leone, leaving some communities unsure about the safety of routine immunization. In response, the WHO issued series of guidelines for immunization programs in the context of the Ebola epidemic. While the Ebola epidemic in West Africa appears to have ended, the lessons learned could help prevent immunization systems from faltering during future public health emergencies.

The introduction of new vaccines can sometimes have positive effects on immunization programs and even the broader health system. For example, in some settings, the introduction of new vaccines can strengthen the immunization system through upgrades to the cold chain systems and capacity-building activities. New vaccines can also create new opportunities for additional contacts with target populations, leading to improved access for some communities and age groups^[37]. However, several factors contribute to the overall effect of new vaccines on health systems. These include local context and the existing strengths and weaknesses of the health system.

Mozambique: Closing the Immunization Gap with Next-Generation Supply Chain Design

Delivering vaccines to health center facilities remains a complex challenge in many countries because supply chains are out of sync with the growing demands placed on them by new and more expensive vaccines. With support from the international organization Village Reach, Mozambique has been a leader in implementing and expanding an innovative approach to vaccine distribution throughout the country.

The new approach streamlined the entire vaccine distribution system—optimizing transport, reassigning roles and responsibilities, increasing data visibility, and integrating supervision and cold chain maintenance into monthly distributions. This new immunization supply chain system started in one province and has now expanded to serve half of the country. The supply chain system design changes included incorporating dedicated logisticians responsible for direct delivery to health facilities, enhanced electronic data collection tools and reporting, and optimized transport loops.

One key factor in Mozambique's progress has been the engagement of national and provincial leaders at the Ministry of Health who have demonstrated openness to new and different approaches to supply chain models, based on evidence generated by modeling of the supply chain as well as global best practices. These “champions of change” provide powerful evidence to the global community regarding the importance of leadership in implementing next-generation immunization supply chains. Their willingness to adopt new models will ultimately ensure all Mozambican children are reached with life-saving vaccines.

SECTION 6

Financing Immunization in Africa

ISSUE AT A GLANCE

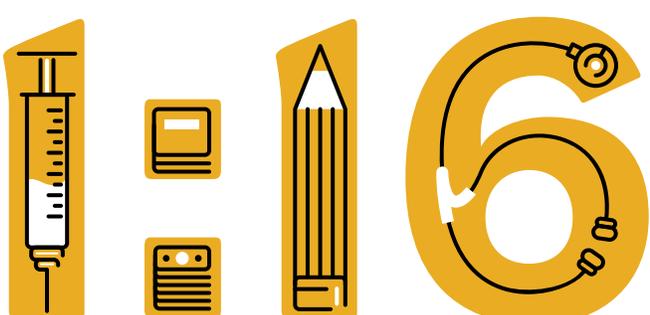
- Vaccines provide benefits to families, communities and countries in the form of both improved health outcomes and economic growth.
- Government funding for immunization in African countries has increased in recent years, complemented by Gavi and other donor funds.
- In many countries across Africa, additional funding, domestic and international, is required to ensure that vaccines are delivered to every child, and that new vaccines can continue to be introduced.

Vaccines provide benefits beyond health outcomes, including averted medical costs and reduced time spent by parents and health care workers caring for sick children. These savings accrue to families, communities and nations as improvements in education, economic growth and poverty reduction^[38]. One study reported that increased coverage of new and underutilized immunizations delivered in Gavi-eligible countries could deliver a rate of return on investment of 18% by 2020^[39].

Earlier, routine vaccines represented approximately 20% of overall immunization program costs in low- and middle-income countries^[15]. As countries began to introduce newer, more expensive vaccines at the start of the century, the cost for vaccine programs in many developing countries has doubled and sometimes tripled^[37]. New vaccines, in particular, provide an unprecedented opportunity to protect children, often with lifelong immunity, from diseases for which there were previously no preventative options. And despite increased costs—due in part to research and development costs and use of more complicated technologies—vaccines remain one of the most cost-effective interventions in public health. As countries look to maximize the health impact of immunization, additional funding will be needed to meet these costs and provide equitable access to vaccines for children across Africa.

Return on Investment

Investments in immunization from 2011 to 2020 will yield a 16-times greater return in averted illness costs, money that can be spent on other priorities.



Return on Investment

The GVAP calls on countries and development partners to increase the amount of funding available for immunization to meet national targets^[6]. The financial sustainability of immunization programs depends on governments, both national and subnational, providing adequate domestic resources with regular evaluation of needs. Efficient routine immunization programs and resource mobilization from partners can help meet funding gaps^[6]. The absolute amount of funding for immunization has increased substantially due to rising immunization program costs^[40]. However, the proportion of vaccine funding provided by countries has remained relatively constant between 2010 and 2014^[40]. Additionally, the proportion of domestic funding varies widely across African countries, ranging from 0% to 100%^[40]. Only 15 African countries fund more than 50% of their national immunization expenditure^[40].

Gavi has invested heavily in Africa, supporting 70% of countries on the continent (38/54 countries) as they increase access to new and underused vaccines. Cofinancing for vaccines through Gavi requires that countries gradually increase their contribution toward the goal of eventually covering the full cost of vaccines. Sixteen countries on the continent do not meet Gavi's GNI eligibility threshold, requiring them to fully self-finance their immunization programs. Moreover, in 2016, two African countries, Angola and Republic of Congo, are preparing to transition out of Gavi support and will face the challenge of increasing their domestic funding to maintain their immunization programs. As with all Gavi transitioning countries, these countries will still receive access to vaccines at Gavi prices for a five-year period post-transition. As additional countries transition and join those shouldering the full costs of their immunization programs, increasing country ownership and financial sustainability of these programs will be increasingly imperative.



photo: Mulugeta Ayene / Bill & Melinda Gates Foundation

Prioritizing Immunization in the Face of Conflict: Libya Allocates Resources for Vaccination

Conflict situations can negatively affect health systems and routine immunization programs. After the Libyan revolution in 2011, the additional demand for health services left the system unable to cope and in near collapse^[42]. With strong support from the WHO, the Libya Ministry of Health sought to rebuild and strengthen its public health program by focusing on the six fundamental building blocks of a strong health system^[42]. Despite numerous challenges in Libya, the country has maintained high routine immunization coverage, with DTP3 coverage not dropping below 94% since the start of the conflict^[7].

The government has made large strides toward introducing new vaccines since the start of the revolution. PCV and rotavirus vaccine were both introduced at the same time in October 2013, a difficult task under ideal situations^[20]. Libya also introduced IPV, as part of a combination vaccine, less than six months later and the HPV vaccine in 2015^[20, 35]. The country also introduced the varicella (chickenpox) vaccine and a combination meningococcal vaccine that provides protection against four strains of meningococcus, including group A.

As a middle-income country, Libya is not eligible for Gavi support and therefore must fully fund its vaccines and immunization system. The high cost of the new vaccines that Libya has introduced and the need to improve immunization delivery systems posed an additional challenge for Libya. During times of conflict and shifting financial priorities, maintaining high immunization coverage and introducing new vaccines require concerted political effort with strong support from global development partners.



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Future Visions for Immunization in Africa

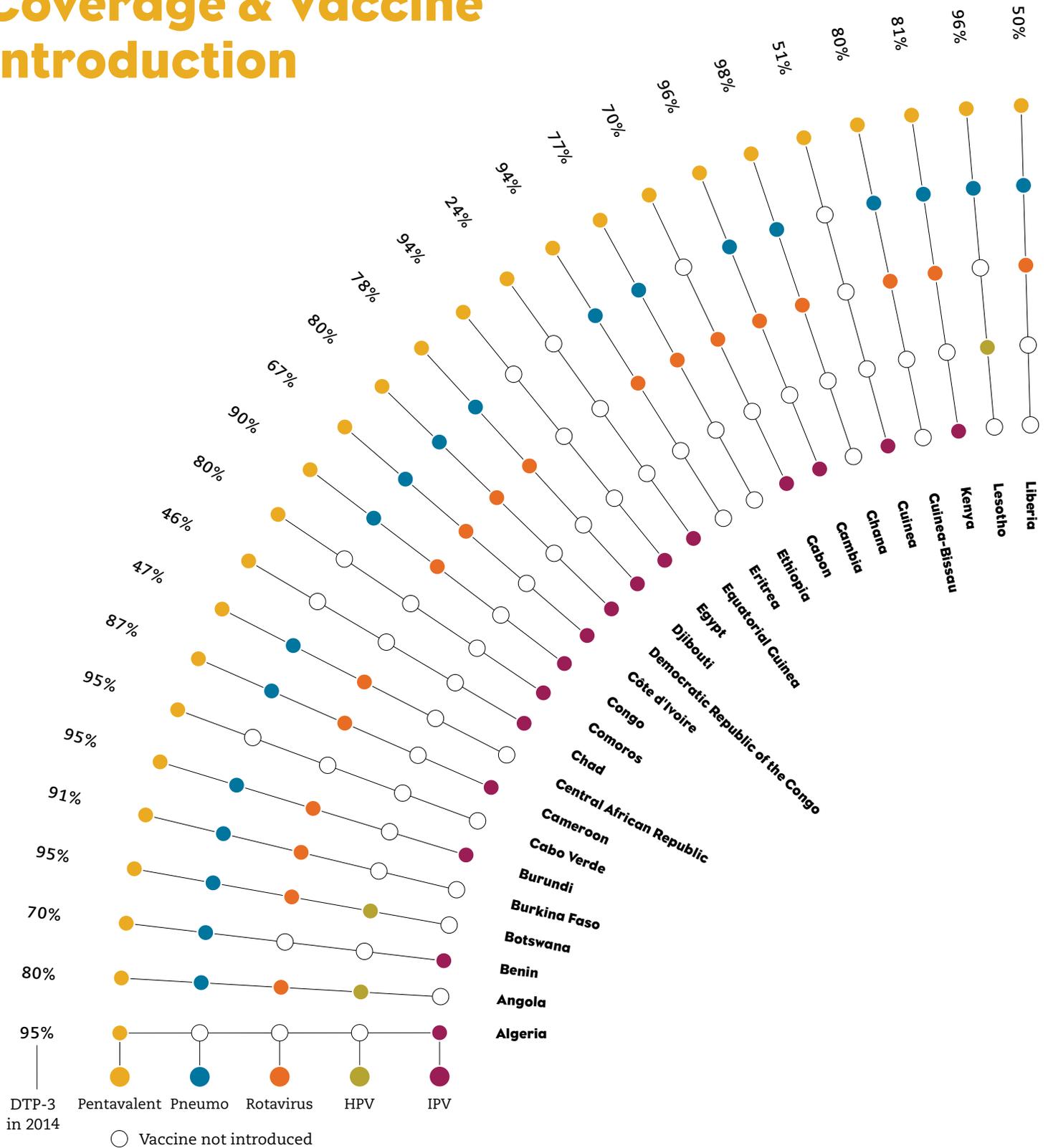
Immunization is undeniably one of the most successful and cost-effective public health interventions available. Tremendous progress has been made to improve immunization coverage and introduce new vaccines in Africa. While many challenges remain, including the emergence of new infections and sustaining progress in the fight against polio, there are reasons to be optimistic. Political will and government funding for immunization are growing. Communities and civil society are increasingly recognized for their critical role in shaping immunization systems and improving vaccine coverage by increasing demand and holding governments accountable.

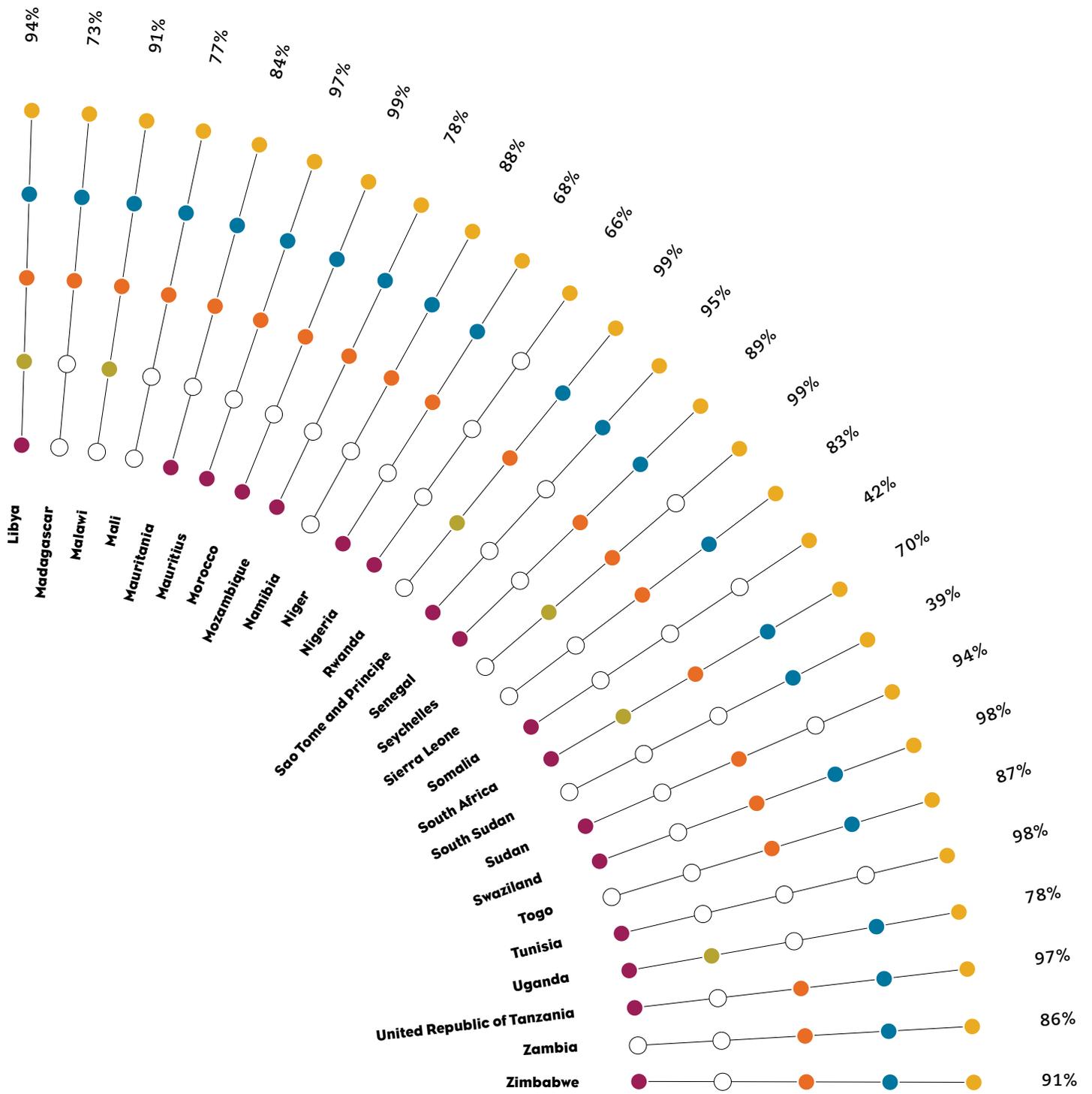
In addition, new vaccines are on the horizon, including vaccines for malaria and Ebola. While children are

typically the focus of routine immunization systems, vaccines have the potential to benefit individuals throughout life. Introducing vaccines intended for adolescents and adults could help reduce the burden of cancer and other major causes of deaths.

The GVAP provides a strong framework for overcoming challenges toward achieving immunization for all in Africa. Comprehensive strategic immunization plans are also now in place for the African and Eastern Mediterranean Regions that outline specific approaches for achieving immunization targets. Governments, communities and individuals must work collectively to put these plans into action. Together, we can help ensure a healthy future for African children and support economic development across the continent.

Country-Level Overview: DTP3 Coverage & Vaccine Introduction





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