

Strengthening primary health care for equitable access to vaccines in Africa

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Key messages



The impact of the ongoing pandemic on public health has showed the need for countries to work together. It is vital to increase access to and distribution of vaccines. It is the only way to sustainably contain COVID-19 and its variants, as envisaged in the UN Secretary-General's "Our Common Agenda" report.



To ensure equitable access to vaccines, countries in Africa must strengthen their primary health care systems by focusing on financing, preventative healthcare, human resources, and establishing integrated information systems and health technology.



Many governments in Africa currently do not meet internationally recommended targets on national budget allocations to their health sectors, resulting in individuals bearing much of the financial burden of primary health care.



To promote the local manufacture of COVID-19 vaccines, countries within Africa must invest in developing requisite infrastructures such as reliable electricity for cold chain vaccine storage. These countries can also explore the manufacturing of other 'recommended vaccines' for economies of scale to ensure sustainability.



Strengthening the integration of national public health institutions with information systems and technology can aid the pandemic response in multiple ways, including facilitating the monitoring of vaccine doses to enhance efficiency and prevent waste.

Primary health care (PHC) is a whole of society approach to health that aims at ensuring the highest possible level of health and wellbeing by focusing on people's needs as early as possible along the continuum from health promotion and disease prevention to treatment, rehabilitation, and palliative care (World Health Organisation & United Nations International Children Emergency Fund, 2018). The COVID-19 pandemic revealed PHC as the weakest link in the national and community response globally despite its importance as a defence to "flatten the curve" and prevent hospital saturation (World Bank, 2021). PHC facilitates timely vaccination in a functional health system, and therefore, it is vital for coping with the effects of the pandemic. Lessons learned from the pandemic present an opportunity for policymakers to strengthen and reform health systems by establishing sustainable structures that can withstand future crises and persist during non-crisis periods.

Investing in PHC is necessary for a healthy population as it optimises the use of healthcare resources and provides for timely and appropriate care that is responsive to the needs of individuals and communities. However, health systems in most African countries do not emphasise PHC, with many countries in sub-Saharan Africa having inadequately funded PHC initiatives. Existing literature suggests that political, institutional, financial, and ideological barriers have hindered PHC progress in developing countries (World Health Organization [WHO], 2018).

In 2020, the 75th anniversary of the establishment of the UN, member states agreed that countries are increasingly facing challenges that are interconnected and transnational, which can be addressed through reinvigorated multilateralism, with the UN playing a central role. As a result, there are deliberate efforts to engage

member states and various multi-level actors to focus and work together on identifying how current and future sustainable development challenges can be addressed. In the UN Secretary-General's our common agenda (OCA) report, the estimated loss to the global economy due to the COVID-19 pandemic is over USD 9.2 trillion in 2021 alone, in part because developing countries have not had equitable access to COVID-19 vaccines (International Chamber of Commerce, 2021). The OCA report envisions the wide and equitable sharing of vaccines for sustainable recovery as part of a favourable breakthrough scenario and the prospect of a greener, safer, better future (United Nations, 2021). It envisages enhanced global capacity to produce vaccines for future pandemics within 100 days and start global distribution within one year from the emergence of a pandemic. Realising

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this goal requires an increased emphasis on PHC to build efficient health systems that can ensure service continuity during and after a pandemic. The lack of equitable access to vaccines increases the risk of the emergence of different variants of COVID-19, which will prolong the pandemic and delay economic recovery.

Countries in Africa may not achieve COVID-19 vaccination targets if strategic efforts are not made by governments to prioritise primary healthcare. Therefore, this policy brief will explore mechanisms through which PHC can be strengthened to enable the equitable delivery of vaccines and offer solutions to the challenges encountered in delivering vaccines through the PHC system.

■ Sustainable access to vaccines during pandemics

Vaccinations have been used for decades to protect populations around the world from diseases and are a key component of PHC. Historically, the African continent has had inadequacies in administering vaccines, as one in every five African children does not receive all the recommended basic vaccinations¹. More than 30 million children under the age of five still suffer from vaccine-preventable diseases every year in Africa. Of these, over half a million children die annually, representing approximately 58% of global vaccine-preventable disease-related deaths (WHO, 2018).

Inequities in access to vaccines among African countries have led to the creation of institutions and coordinated production structures in an effort to enhance vaccine access (African Union Commission & Africa Centres for Disease Control, 2021). Guarantee of access to vaccines, particularly for individual countries attempting to procure them, is not assured as producing countries must meet the demand of their populations prior to exporting vaccines. Currently, African countries rely on COVID-19 Vaccines Global Access (COVAX), a co-financing vaccine procurement mechanism—co-directed by the Coordination for Epidemic Preparedness Innovations (CEPI), Global Alliance Vaccines Initiative (GAVI), and World Health Organization (WHO)—which was established to ensure equitable access to COVID-19 vaccines.

Within Africa, the Africa Vaccine Acquisition Taskforce (AVAT) initiative was established as a pooled procurement mechanism for African Union (AU) members. It is managed on behalf of African Union members via an alliance of the Africa Centres for Disease Control and Prevention (Africa CDC), United Nations Economic Commission for Africa (ECA), and the

¹ The recommended basic vaccinations are diphtheria, pertussis, tetanus, measles, polio, haemophilus influenzae type b, hepatitis, and tuberculosis.

Africa Export-Import Bank, which provides the funding. The AVAT and COVAX rely on the same vaccine manufacturers for supply.

The population of Africa is projected to grow at a rate of 2.7% annually, more than twice as fast as regions such as Latin America or South Asia (The Economist, 2020). This imminent demographic shift will be a key element in expanding demand for vaccines in the African market. The region faces significant threats from specific pathogens, thereby presenting the need to intervene to protect the population. This would require the introduction of certain vaccinations in addition to the established routine ones based on the prevailing disease threat. Commitments by African countries to expand recommended vaccines to include rotavirus, pneumococcal, and human papillomavirus will enable economies of scale for manufacturing. Vaccines that are currently in development will need licensure and, eventually commercial marketing. To advance vaccine manufacturing across the continent, African countries must consider financing options, establish the level of expertise required for local manufacturing, and make commitments to improve demand certainty. Governance commitments are critical in assuring markets for vaccines manufactured in Africa to counter instances where changes in political leadership breach agreements made by preceding governments. These measures will assist African countries as they develop and are eventually able to transition from the GAVI support system.

It is notable that countries in which the executive branches and finance ministries worked collaboratively with the health sector to coordinate funding had higher vaccinations rates. National deployment, vaccination plan validation, and fast-tracking of supply chain management systems minimised bureaucracies in import procedures for timely delivery of vaccines.

To support domestic vaccine manufacturing, African countries should streamline technical activities for vaccine pre-market authorisation through the Africa Vaccine Regulatory Forum (AVAREF), develop a transcontinental medicine agency, and harmonise efforts for vaccine production. Consolidated regional demands would save costs for individual national regulatory authorities (NRAs) and avert duplication of effort. Strengthening regulatory frameworks that remove substandard products from the market is also required. Countries not in the GAVI can consider pooling their procurement to aggregate demand and avoid higher prices for vaccines.

Leadership on strategic financing and oversight for effective implementation of interventions and utility of resources is critical for sustainability. PHC systems need to be improved in these four main action areas in order to strengthen equitable delivery of vaccines:

i) securing financing, ii) human resources for health, iii) integrating health information systems and technology, and iv) promoting preventive health measures. Subsequently, this brief shall highlight the challenges involved in implementing these solutions and provide recommendations accordingly.

■ Financing

African countries spend USD 8 to 129 per capita on healthcare compared to high-income countries that spend over USD 4000 per capita (WHO, 2016). This can be attributed to African countries' low measures of gross domestic product (GDP) and low budgetary allocations towards the health sector due to changing priorities. Between 2001 and 2015, global spending on health as a proportion of overall spending declined in 21 African countries, and the situation is likely to deteriorate further with the COVID-19 pandemic (Ojalere & Gatome-Munyua, 2020).

In recent years, international organisations have made efforts to encourage countries to prioritise PHC spending in their healthcare budgets. In 2018, the WHO developed the international standard of classifying health spending, simplifying efforts to track healthcare spending; therefore, PHC spending. In 2019, the UN General Assembly (UNGA) held a high-level meeting on universal health coverage (UHC) during which countries committed to strengthening PHC. The WHO has also recommended that countries allocate or reallocate an additional 1% of their GDP from public sources to PHC (WHO, 2019). Global consultation involving experts, civil society, as well as detailed negotiations between WHO member states culminated in the Astana Declaration in October 2018. Governments were petitioned to prioritise PHC, including in non-health sectors, public and private sector organisations, development partners, and other stakeholders. It was launched in October 2018 during the commemoration of the 40th anniversary of the Alma-Ata Declaration. This reaffirmed the commitments expressed in the ambitious and visionary Alma-Ata Declaration and the 2030 Agenda for Sustainable Development in pursuit of health for all. In the declaration, the global community committed to ensuring adequate funding sources for PHC to limit people's exposure to financial hardship as a result of lack of access to PHC services (Lancet, 2018).

Despite these initiatives, government spending on PHC on average varies from 42% in upper-middle-income countries (UMICs) to 55% in low middle-income countries (LMICs) and 65% in low-income countries (LICs). Globally, only one-third of total PHC spending comes from governments. The composition of PHC spending also differs among countries at different income levels. Median spending on general outpatient services is more than 50% of PHC spending in high-income countries (HICs) but

around 40% in low-income countries and low middle-income countries. Immunisation has been prioritised in PHC spending in most low-income countries, albeit with heavy reliance on external funding (Xu et al., 2018).

The variations in low-income countries and low middle-income countries may be attributed to different policy choices as well as government-donor funding dynamics. The relatively low share of PHC spending in high-income countries (HICs) may be related to their greater capacity to pay for more expensive specialised in-patient care and advanced medicines and technology. Low middle-income countries suffer from a double burden as the proportion of their ageing populations grow. Globally, in 2019 there were 703 million persons aged 65 years and above, and this number is projected to more than double by 2050, reaching over 1.5 billion persons. The fastest projected growth of older persons is expected to occur in the least developed countries, rising from 37 million in 2019 to 120 million persons in 2050 (Department of Economic and Social Affairs, 2019). This increase in the ageing population will present a significant challenge to the health systems of many low-income countries (Daniels et al., 2014).

Low government spending has meant that households have shouldered the brunt of healthcare financing in many African countries. In countries such as Cameroon, Equatorial Guinea, Nigeria and Sudan, out-of-pocket health spending exceeded 70% of current health expenditure in 2017 (Asante, Wasike & Ataguba, 2020). Table 1 below further illustrates this trend, as individual expenditure surpasses government health spending in the sampled African countries over time. In order to protect individuals from high personal health expenditures, health financing reforms need to consider a pooling mechanism, especially through implementing social health insurance. Unless adequate health budgets are allocated by national governments, catastrophic healthcare spending by individuals is inevitable.

Building human capacity by increasing the numbers of PHC workers and building institutional capacity by strengthening national institutes for disease control requires dedicated funding in national health budgets (African Capacity Building Foundation & Islamic Development Bank, 2021). Several African countries are focusing efforts to secure the finances needed to improve PHC. Milestones have been achieved by Botswana, Lesotho, Kenya, Senegal, Morocco, and South Africa in increasing fiscal space for PHC by improving their tax collection capacities (WHO, 2016). Tanzania and Uganda have also improved resource flow to health facilities and optimised their use through tracking the flow of funds to facilities for efficiency in service delivery (WHO, 2016). In these efforts, it is important that governments safeguard healthcare allocations, as this will allow more funds to be utilised in securing access to vaccines.

■ **Table 1. Health spending as a proportion of total health expenditure of selected African countries**

Country	Government expenditure as a percentage of national health spending (%)				Individuals' expenditure as a percentage of national health spending (%)				
	Year	2000	2006	2012	2018	2000	2006	2012	2018
Kenya		28.6%	24.8%	32.4%	42.1%	47.1%	38.4%	31.6%	23.6%
Senegal		35.4%	46.7%	28.6%	23.8%	55.6%	37.4%	52.8%	55.9%
Tanzania		21.8%	31.3%	23.4%	42.9%	38.5%	25.8%	24.7%	24.2%
Ghana		25.8%	37.2%	47.4%	38.9%	55.9%	43.1%	40.6%	37.7%
Egypt		35.2%	35.2%	36%	28.7%	62.5%	60.4%	60.9%	62.3%
Ethiopia		41.2%	25.1%	23.5%	23.4%	36%	38.8%	42.2%	35.5%
Nigeria		18.3%	21.2%	16.2%	14.9%	60.2%	70.5%	72.8%	76.8%
Rwanda		18.1%	19.7%	25.3%	31.5%	26.6%	13.4%	10.2%	10.5%

Note. Extracted from Global Health Expenditure Database by World Health Organization (2020).

In Kenya, the national government strengthened PHC by implementing a strategic framework that provided cash transfers to primary healthcare facilities. This was supported by programme expenditure tracking surveys to primary health facilities for operation and maintenance. There have been commitments by governments to increase PHC expenditure in accordance with meeting global health goals that include universal health coverage through strengthened health systems. In Ethiopia, PHC was prioritised in the Ethiopian People's Revolutionary Democratic Front party's political strategy for strengthening rural governance. This led to the funding and development of PHC programmes and the mobilisation of resources to deliver these initiatives.

■ Human resources for health

Sustained efforts are required in building and retaining a qualified PHC workforce to carry out integrated services across all levels of care that are realistic, affordable, and sustainable (WHO, 2019). An important metric in improving human resources for health is the human capital index, which measures the human capital a child born today can expect to attain by their 18th birthday, given the risks of poor health and poor education. The index highlights the impacts of improvements in a country's current education health outcomes in shaping the productivity of the next generation of workers. Understanding this enhances policy design by identifying which interventions deliver the highest returns in investment and aid cost-effective interventions. PHC plays a crucial role in developing human capital as it ensures that the population is healthy

enough to contribute to the economy. For countries in Africa, human capital development is significant as per capita income is generally low. Reducing child mortality is a key factor in improving human capital in the continent. In some countries, targeted funding of PHC has improved health indicators in child mortality. Increased PHC spending saw child mortality in Senegal reduce from 121 to 56 deaths per 1000 live births in the last decade (Kristen et al., 2019).

Doctors and health workers in rural settings constantly cite limited career development opportunities as a demotivating factor in their work (Kotzee & Couper, 2006). Therefore, capacity development programmes that systematically address issues regarding skill development and provide incentives for retention are crucial. These programmes can include financial incentives (e.g. providing monetary rewards), standardising salaries across public and private sectors, and improving access to social amenities. Training curricula of PHC workers which are responsive to socio-cultural values also need to be considered in designing services suitable to the local contexts.

Developing best practices based on research and new evidence in human resources for health development is needed to inform planning, incentives, and productivity. To minimise the departure of skilled PHC workers who migrate to seek better remuneration and working conditions, it is critical for governments to implement policies aimed at the retention of the health workforce. Low investment in education, particularly in under-served areas, as well as imbalances between supply capacity and market-based demand, result in societal challenges to access health workers. Although some countries currently implement plans to train, distribute, and deploy health workers to promote better national health management, the evaluation of impacts of these initiatives is inadequate.

PHC-focused health services require community health worker programmes. However, these programmes have slowed due to limited state capacity for management, oversight, and supervision of the large workforce (Parry et al., 2018). Delayed vaccination, especially of frontline workers who offer essential services, may expose them to infection and jeopardise service delivery.

Integrated information systems and technology

Positioning PHC systems as an effective first response to public health emergencies requires that PHC professionals have access to up-to-date information and tools, including medicines, vaccines, and technologies. Equitable access to vaccines can avert twice as many deaths worldwide than if vaccine access is initially limited to high-income countries (African Union Commission & Africa Centres for Disease Control, 2021).

Containing the pandemic in all countries remains the only way to safeguard the world from a resurgence.

To achieve increased coverage, mainstreaming vaccination across all service delivery points as well as educating individuals and communities on the benefits of vaccination are critical. Leveraging integrated information systems in continued health education will also help counteract socio-cultural barriers of communities towards vaccination.

Africa holds around 10% of the global share in the public market sale of vaccines, while the continent's demand is about 25% of global vaccine volume (WHO, 2018). Regarding this disparity, governments need to regulate and provide opportunities for boosting industrial and technological capacity in producing vaccines and other vital medical supplies to realise the goal of equitable health for all. This will encourage the development and production of vaccines in Africa to deter the threat of global vaccine nationalism (African Capacity Building Foundation & Islamic Development Bank, 2021). Supporting production requires considerable investment in infrastructure. A multi-sector approach is needed to solve infrastructural problems such as ensuring access to electricity and cold chain storage to properly maintain vaccine potency.

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Strengthening integrated information systems and adopting digital healthcare solutions with increased virtual consultations minimises pressure on health systems. It will enable people to access needed care without having to physically travel from their locations to healthcare facilities. Individuals will be able to report on adverse reactions from covid vaccinations or medication and notify healthcare providers when chronically ill patients need medical attention.

Fast-paced technological innovation as witnessed in vaccine development and the manufacturing value chain illustrate that production costs are no longer as much of an impediment as in earlier decades. Small-scale disposable technologies such as high-density bioreactors as well as innovation in fill-finish manufacturing are boosting yields and have the potential to change the business costs for new entrants into the market.

Many countries in Africa currently do not have the infrastructure needed to deploy mass vaccination campaigns. In a WHO assessment of 46 African countries, only 50% were found to be equipped to deliver vaccines to their entire populations (African Union Commission & Africa Centres for Disease Control, 2021). In Ghana, accessing some remote

areas to deliver vaccines requires the use of drones supplied by a private-sector contributor. Inadequate integrated systems for data management in supporting vaccine distribution leads to increased losses along with the distribution system. The OCA report advocates for investment in the global vaccine drive to overcome the current risks and vulnerabilities involved in vaccine delivery (United Nations, 2021).

In ensuring efficiency in monitoring and evaluation of vaccine delivery, governments can utilise health information systems that generate reliable data for improved decision-making from the local to the global level (Kluge et al., 2018). Priority must be given to planning for alternative approaches for delivery of PHC services and investing in digital health models using home-based care or community-based models. In developed countries like Japan, the financing of health education is continuous and sustainably integrated into service delivery, which has contributed significantly to their success in managing communicable diseases.

Employing best practices in measuring PHC performance can help track the quality of service delivery, justify financing PHC, and strengthen the provision of equitable evidence-based care. As the Astana Declaration raised more global attention to PHC, the challenge of quality measurements of PHC systems have become acutely evident. Institutions such as the Primary Health Care Performance Initiative (PHCPI) are working to fill the performance measurement gap and catalyse improvement in the PHC systems of low- and middle-income countries to accelerate progress towards universal healthcare. Adequate financing also reinforces the ability of countries to provide integrated data on PHC, which can be accessed to give timely information to the public to make informed decisions regarding their health.

African manufacturers not already active in vaccine research and development face challenges in securing the necessary intellectual property and production licences for vaccine products. Patents and technology barriers negatively impact the development of vaccines, which also affects the price and supply of newer vaccines in resource-limited countries as well as future access to vaccines. Monopolies can also hinder the timely introduction of affordable vaccines by overpaying specific manufacturers for expensive vaccines. Other factors like institutional barriers, border delays, and inconsistent power supply also affect vaccine manufacturing.

Pan-African institutions such as the African Union and economic initiatives like the African Continental Free Trade Area (AfCFTA) are working to facilitate vaccine manufacture, while the African Medicines Agency (AMA) advocates for the harmonisation of African markets for

vaccines. African demand for vaccines is projected to double by 2030, and this demand will likely establish the foundation for the improvement of PHC on the continent.

■ Health promotion and prevention

PHC incorporates three interrelated components through which it works to meet the health needs of a population. First, it involves utilising public health functions as the central elements of integrated health services. Second, it involves systematically addressing broader determinants of health by evidence-based multi-sector actions. The third component involves advocating policies that promote and protect health and wellbeing. These three components also serve to reinforce universal health coverage by reducing household expenditures on health services, medicines, and vaccines, thereby facilitating equitable access to healthcare.

Funding a shift to health promotion and prevention is the new campaign of the World Health Organization (WHO, 2013). Preventative healthcare is an integral part of PHC but currently only accounts for 12% of total health spending in Africa. Governments account for less than half of spending on preventative care, and the rest is funded by development partners and organisations in the private sector. In this regard, further research is required to inform policy on these low government investments (Xu et al., 2018). The African Union is working to implement PHC prevention and promotion programmes as part of efforts to address deficits in human capital.

African countries are situated at different phases of the COVID-19 pandemic and experiencing different strains of the virus, with some countries—such as Algeria, Benin, Kenya, Tunisia, Egypt, Mauritius, and Somalia—currently experiencing a fourth wave (African Union Commission & Africa Centres for Disease Control, 2021). The full scope of the pandemic on the continent is uncertain due to the underreporting of cases and inconsistencies in the accuracy of data collection. Cultural resistance to vaccines should also be addressed through continuous sensitisation of communities on the benefits of preventative measures like vaccinations as effective interventions during pandemics. This can be done by providing continuous health education and allaying any fears members of the public might have regarding the safety and efficacy of vaccines.

Including PHC as a basic foundation of health systems will allow them to adapt and respond to a complex, rapidly changing world. By strengthening PHC, countries will move closer to actualising the Sustainable Development Goals (SDGs), as well as establishing universal health coverage. Many countries are focused on acute care rather than on

preventative or chronic care, that is requisite for many noncommunicable diseases (Checkley et al., 2014). There are systemic challenges in health systems that require interventions to be realigned to primary health care.

■ Conclusion and recommendations

The OCA report proposes multilateral actions that seek to protect and deliver global public goods, among them improved health systems (United Nations, 2021). OCA outlines recommendations for a global COVID-19 vaccination plan as well as for strengthening preparedness for future pandemics. Quality PHC is a crucial part of accomplishing these goals, as investing in strengthening the pillars of PHC will create more efficient and effective national health systems able to withstand pandemics. With increased investments in PHC, cumulative savings from the health system can be directed towards the local manufacturing of vaccines in African countries, increasing vaccine supply and access.

New PHC programmes require significant investment, but lower-income countries are significantly budget constrained. The emergence of new technologies and treatments have only placed further strain on resources (Glassman et al., 2018). To sustainably improve PHC delivery, it is critical

to have governance structures that embrace a multi-sector approach and integrate health in all policies with provisions for feedback mechanisms. Multi-sector approaches aligned to global strategic preparedness and response plans are necessary for coordinated and planned responses by national public health institutes or agencies offering similar integrated responses. Investing in PHC will enable sustainable changes to health systems that will withstand the current pandemic and any that will emerge in the future.

Strengthening PHC pillars of financing, health information and technology, human resources for health, and health prevention and promotion is crucial if equitable vaccine access is to be realised. The recommendations on policy perspectives to inform interventions for the equitable delivery of vaccines in the PHC system are:

- Governments should make commitments to allocate 2% of GDP in national budgets to PHC and explore investing savings from efficient health systems into vaccine manufacturing to promote their equitable access. This should be done to complement donor funding which is often insufficient in the event of a pandemic.
- Increased funding in national budgets is needed for medicines and medical supplies. This will ensure continued and sustainable

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routine service delivery, which will strengthen health systems to deliver appropriate responses when faced with pandemics and other health emergencies.

- Recruit, deploy, and retain an appropriately-trained PHC workforce with a range of skills for functional healthcare delivery. In addition, prioritise human capital development and building capacity for skills of a highly specialised workforce needed to support manufacturing of medical supplies.
- Strengthen integrated information systems for primary healthcare information sharing to generate evidence for decision-making on health interventions. Monitoring for vaccine formulations requiring a second dose at a specified time interval will be supported by an integrated information system to avoid wasted doses and the ability to track the number of vaccines administered. PHC interventions that are well-resourced will serve as an effective channel for the distribution of vaccines.
- Invest in prevention and promotion initiatives in the continuum of care to empower individuals, families, and communities to optimise their health, ensuring prompt surveillance and response to disease threats. Countries must make efforts to strengthen national public health institutes for a coordinated response to pandemics.

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