



Improving access to healthcare in Africa:
Innovations and lessons for driving success

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Setting the scene

Africa's healthcare challenges in a global context

"COVID-19 has disproportionately affected vulnerable populations, including those who are economically disadvantaged ..."

This disturbing statement was one of the key messages of the World Health Organisation's (WHO) *World Health Statistics 2022* report.¹ Unequal access to healthcare has been a serious concern for many years; however, the COVID-19 pandemic turned a harsh spotlight on these inequalities.

Africa ranks poorly for many healthcare indicators, reflecting major access challenges that are especially pronounced in rural and remote areas. These access challenges can be grouped into two broad categories: physical access challenges and affordability challenges.

Physical access challenges stem from the absence of adequate healthcare facilities and the lack of supplies or healthcare professionals in certain, often rural, remote, or socio-economically disadvantaged areas.

Affordability challenges are related to the cost of healthcare and people's inability to afford care. These costs could be direct out-of-pocket payments to see a healthcare worker, or indirect costs such as transport and opportunity costs (e.g., lost income due to spending time travelling long distances to clinics and then waiting to be assisted).

Given widespread poverty on the continent, most people seek healthcare services at state-funded or donor-funded facilities

where out-of-pocket expenses are lower than in private facilities. However, due to high patient volumes and limited resources, these facilities are often overcrowded and face regular stockouts of medications, leading to poor healthcare outcomes.²

Improving access to healthcare plays a fundamental role in uplifting communities and has long-term economic benefits for societies. Without equitable access for all their people, African countries jeopardise their social and economic future.

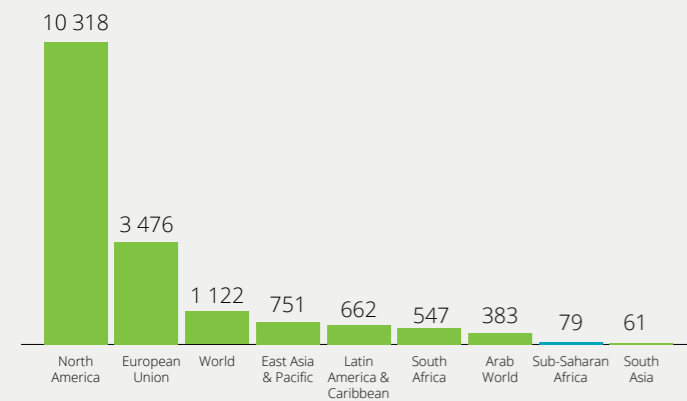
Indeed, a vast body of literature points to the positive relationship between improving healthcare (including narrowing the access gap) and economic prosperity.³ Given this relationship, it is not only a moral obligation to improve access, but it also makes economic sense to address inequality in the sector.

Recognising both the moral obligation and the economic benefits and opportunities, an increasing number of solutions to access challenges along the healthcare value chain have recently been developed. Using digital technology, forming novel partnerships, and creating innovative ownership models, these solutions help to reduce direct and indirect costs and ultimately provide better access to quality care on the continent.

Affordable alternatives to overcrowded public facilities would allow many working Africans to move out of the state-funded sector and into the private sector. This would free up much-needed capacity in public healthcare facilities, leading to better access and possibly better health outcomes for destitute patients.

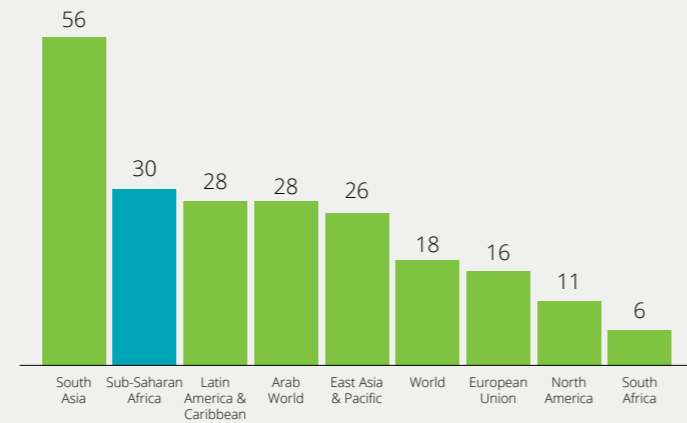
Health expenditure in Sub-Saharan Africa (SSA) is a fraction of the global average.

Health expenditure per capita (current US\$,) 2019



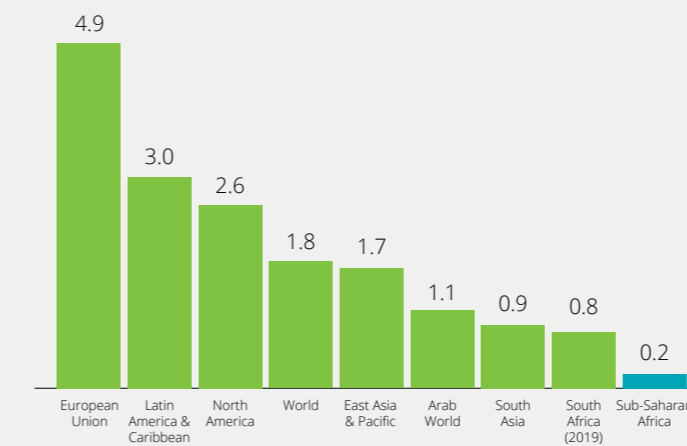
Due to the lack of affordable health insurance and insufficient state-funded facilities, many Africans pay much of their healthcare needs out of their own pockets.

Out-of-pocket expenditure (% of health expenditure), 2019

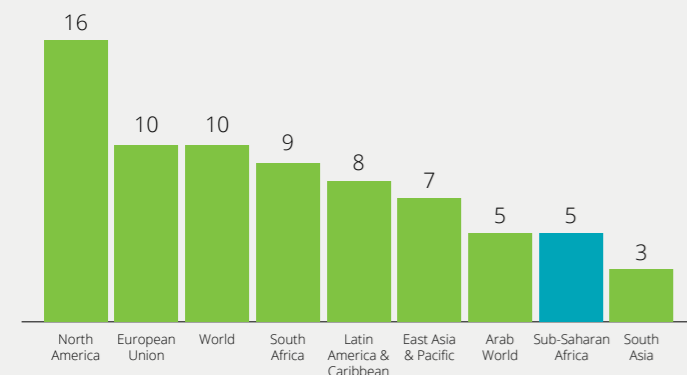


The very low density of healthcare professionals is a critical contributor to the access challenge in Africa.

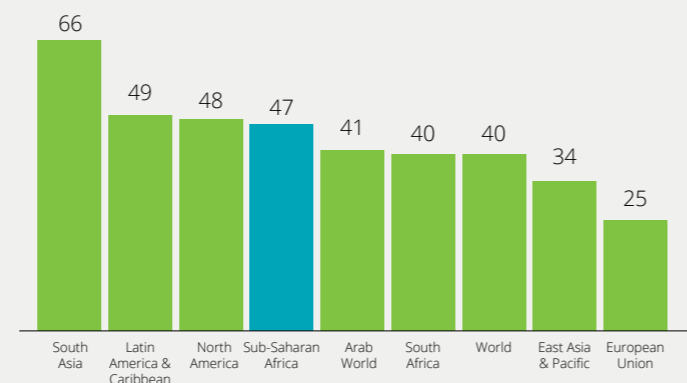
Physicians (per 1,000 people), 2017



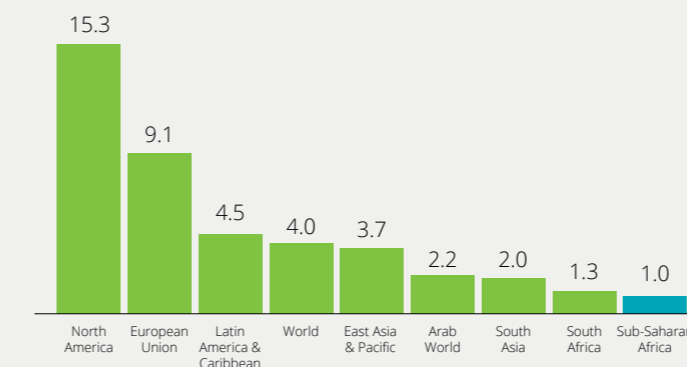
Health expenditure (% of GDP), 2019



Domestic private health expenditure (% of current health expenditure), 2019



Nurses and midwives (per 1,000 people), 2017



Source: World Bank

Source: World Bank

Source: World Bank



Case studies: Tackling access challenges through innovation

Given the slow progress in overcoming access challenges through approaches applied in the past, it is time to embrace new ways of thinking, innovative business models, and novel partnerships. The following case studies highlight how various companies and organisations have developed innovative ways to enhance access to healthcare in Africa.

Johnson & Johnson (J&J): Strengthening supply chains to ensure more equitable and widespread access to quality healthcare

Maintaining smooth and efficient supply chains in many parts of Africa creates unique challenges, especially in emerging markets with limited health and transportation infrastructure. Complex local conditions and limited infrastructure can stall the delivery of medicines and health technologies (like vaccines), resulting in delays, or oversupply, which can lead to the wastage of scarce resources. Both outcomes negatively impact access to and affordability of healthcare.

Through a series of exercises focused on resource-limited settings in select African markets, the Johnson & Johnson Global Public Health Supply Chain team identified three primary – and often interlinked – supply chain challenges and limitations:

- Limited cold chain infrastructure
- Fragmented planning processes and limited data management
- Limited training for public sector supply chain stakeholders and frontline staff.

Limited cold chain infrastructure

Certain medicines and vaccines require proper storage and stable temperatures. As noted, maintaining suitable storage conditions, or a reliable and steady cold chain, is challenging in many parts of Africa, especially in rural areas.

Strengthening cold chains through training and alliances

J&J carried out a range of assessments in various African countries to map cold chain capacity gaps and identify potential solutions to strengthen cold chains across the region. Based on their analysis, J&J helped establish new training programmes as well as cross-collaboration and cross-industry alliances.

First, J&J conducted a thorough mapping of training materials and practices in the public and private healthcare sectors in a sample of African countries. The mapping revealed potential gaps in cold chain training and how J&J could leverage its assets to support mitigating these. J&J is now developing specific training curricula, sharing best practices with governments, and using technology to enhance and integrate cold chain processes.

Second, J&J identified that another crucial part of strengthening local cold chains is the formation of collaborative alliances to ensure consistency and shared expertise among key stakeholders. J&J is exploring opportunities to create industry-wide partnerships bringing together the expertise of other pharmaceutical companies, funders, non-profit organisations, non-governmental organisations (NGOs), equipment manufacturers, and logistics providers.

Fragmented planning processes and limited data management

While many supply chains are complex and time-sensitive, healthcare supply chains often require greater stability to manage additional complexities. The failure of stable supply chains in the healthcare sector compromises access to quality, life-saving medicines and directly impacts patient well-being.

Centralising planning and leveraging data

Centralised planning is critical to creating a more stable, efficient, and effective supply chain to help ensure medicines reach patients when needed. This includes adequate demand forecasting and planning. J&J deploys data science and utilises complex algorithms to monitor typical order patterns and flag significant deviations to reduce the risk of unnecessary stockpiling or stockouts.

J&J has collaborated with relevant stakeholders and technology providers to demonstrate a cloud-based central planning tool that provides better product forecasts. This enhances J&J's planning capabilities and increases the stability and reliability of the supply chain.

In addition, J&J has collaborated with several organisations to create a toolkit

that provides manageable guidance on how to enhance service delivery and strengthen supply chains. Public healthcare supply chain leaders can use the insights and tools from the toolkit to improve service delivery by identifying other parties that can fulfil non-core, and often capital-intensive, activities such as equipment maintenance or transport and delivery, enabling governments to focus on providing core healthcare services.

Limited training for public sector supply chain stakeholders and frontline staff

Delivering modern and equitable healthcare requires a diverse set of skills. While supply chain leadership training is expected in the private sector, such opportunities are often very limited in the public sector. Furthermore, there are limited to no opportunities for public and private sector healthcare leaders to share best practices with one another.

Additionally, while frontline healthcare workers in resource-limited settings are critical for providing supply chain data inputs, including insights into demand, they lack training in supply chain concepts, such as demand planning.

Supporting healthcare workers with training

J&J is involved in several training programmes aimed at skills transfer and leadership development, including for public sector healthcare workers at the helm of the Ministries of Health and frontline healthcare workers. These initiatives include talent management and professional and leadership development. In addition, specially designed training provides frontline workers in the public sector with specific supply chain management concepts. Focused training equips them with the tools and knowledge required to fulfil the additional supply chain expectations being placed on them.

Including these programmes in the training curricula of frontline healthcare workers, including nurses at primary level health facilities, could help to reduce the risk of stockouts or inefficient and wasteful

overstocking at all levels of the healthcare system.

How to scale for the future?

Rapidly scaling these solutions is essential to creating more stable, efficient supply chains that enable more equitable access to healthcare in Africa. Introducing these best practices in as many countries and regions as possible will help ensure that life-saving medicines and treatments reach underserved communities. However, host governments and other stakeholders must be willing to accept and support new approaches, including implementing pilot initiatives.

Successful pilot initiatives by pharmaceutical companies like J&J prove that proof-of-concepts work and enhance government acceptance and support. Governments and other key stakeholders can then be in a position to adopt those initiatives and scale up to create more stable, efficient supply chains. In addition, creating such conducive environments will require harmonising legislation, regulation, and registration processes.

Critical success factors

- Collaboration with local stakeholders and implementation parties (e.g., government, public health, NGOs)
- Upskilling of supply chain leaders and implementers
- Successful open-source knowledge transfer programmes to ensure continuous training of healthcare workers at all levels of the healthcare system.

Last mile delivery to the Kalangala islands on Lake Victoria

Many underserved communities live beyond the reach of traditional healthcare systems. This applies, for instance, to the communities of Uganda’s Kalangala District, scattered across more than 80 islands. Providing these communities with access to life-saving drugs such as anti-retroviral (ARV) therapies or malaria medication is challenging, costly, and dangerous.

To overcome these supply chain challenges, J&J funded a multi-year pilot study project with the Infectious Diseases Institute (IDI) in Kampala, Uganda. The project tested the feasibility of delivering life-saving HIV treatments quickly, efficiently, and reliably to people in the Kalangala District using customised crewless aerial vehicles (drones).

While drone delivery is not new, the Kalangala District Medical Drones Pilot Project was designed to be sustainable with support from the community, local partners, and the Ministry of Health. The project recruited and trained local personnel to provide technical support and maintenance for the drones.

Furthermore, the project reduced the need for healthcare workers to travel across the islands to deliver and redistribute medications, freeing up valuable time for healthcare workers to focus on their core task of providing healthcare.

The pilot project serves five landing sites across the region, already reaching approximately 100 people living with HIV and potentially reaching more than 1,000, if scaled up. The pilot project also offers researchers an opportunity to quantify the effectiveness of medical drones’ HIV drug delivery through a Randomized Control Trial that will help inform future efforts to scale drone technology to solve other last mile delivery challenges in Uganda and elsewhere.



Unjani Clinics: Freeing up public sector capacity through affordable private primary healthcare

Private medical insurance remains out of reach for most people in Africa. Therefore, visiting state-funded facilities or paying out-of-pocket for private care are often the only options, which is true for more than 80% of South Africans. As in many African countries, South African public healthcare facilities are overcrowded and strained by the numbers accessing them and the limited resources available.

Expanding affordable, high-quality private primary healthcare would effectively reduce the pressure on state-funded facilities and, ultimately, improve overall access to healthcare.

The Unjani Clinics model,⁴ which focuses on developing and expanding a network of nurse-owned and operated clinics, shows the critical role the private sector can play in delivering cost-effective and efficient primary healthcare that helps to free up scarce capacity in the public sector.

Among the features that contribute to the model's success are:

- Owner-operator model
- Integrated care model
- Blended finance model
- Custom-designed software.

Owner-operator model

The network's clinics, which are founded on an owner-operator model, serve the base of the pyramid, the missing middle, and currently underserved communities. The model puts professional nurses at the centre of community healthcare, shifting primary healthcare tasks to them with a referral pathway to doctors and/or hospitals. This frees up scarce skills so doctors can focus on specialised medical treatment.

Unjani Clinics is a non-profit company (NPC) that provides the necessary tools, training, business model, and support to highly skilled nurses. The model leverages geo-based information from surveys and market data that tracks communities'

demographic factors, income levels, and employment status to assist the nurses with site selection and clinic placement.

The NPC provides these nurses an opportunity to own the clinics. This ownership model has proven to result in quality service, which attracts patients to the clinics.

Integrated care model

Unjani Clinics follow a patient-centric approach that focuses on holistic, integrated care. Instead of focusing on a single issue (e.g., HIV or TB), the clinics offer a range of services, including primary healthcare ailment diagnosis and treatment, family planning, antenatal care, chronic illness treatment, HIV counselling and testing, and wellness screening.

By applying an integrated care model, the risk of developing silos is reduced, and potentially wasteful expenditure on programmatic care is avoided.

Blended finance model

Unjani Clinics' finance model has evolved over time and was initially based on donor finance. The first 90 clinics in South Africa were fully grant-funded, and the nurses were not expected to repay the infrastructure and investments made in them.

In a second phase, which started in 2021, more than 20 clinics participated in a proof-of-concept blended finance model that consists of a grant and a loan component. In this model, nurses are required to repay the loan component over the five-year enterprise development period. Clinic ownership only passes on to them once the loan has been fully repaid.

Given that the clinics across the network charge standardised prices for their healthcare services and that these prices should remain affordable to the intended patient base, the financial sustainability of the clinics is crucial.

Therefore, Unjani Clinics has built a finance model with a blended capital structure, including impact equity, mezzanine debt, and loan finance, to try and capture as much funding as possible to achieve its goals. This process needs funding partners that value social impact more than return and are willing to wait for their return to yield (longer repayment terms and lower interest rates). At the same time, the model needs to ensure that nurses still see the value in the model without full grant support and ultimately achieve ownership.

Custom-designed software

In the past, Unjani Clinics tried a range of off-the-shelf software systems. However, as the results of these systems were unsatisfactory, Unjani Clinics invested in developing its custom-designed platform. The first generation of the system was designed by nurses for nurses in 2020 and was called *UCare*.

Due to the need for more processing power, a better and more robust omni-channel platform, and additional functionalities, the system was enhanced and upgraded to the current *WeCare* platform. The platform is currently being rolled out into all clinics in the network.

Full functionality, including the electronic clinic/patient management system, human resources and finance modules, stock and formulary management module, patient application and education content, quality assessment application, self-assessment tool, and virtual consult (doctor) application, should be achieved by the end of 2022.

While the system alone does not necessarily increase access, it enhances the ability of nurses to manage their clinic and patient outcomes more effectively and, as a result, provide a higher level of care. It will also increase efficiency and streamline processes in the clinic, freeing up valuable time for the nurses to provide primary healthcare. Therefore, the *WeCare* platform is a key enabler that drives efficiencies and enhances the quality of care.

How to scale for the future

Unjani Clinics plans to have scaled its model to 650 clinics in South Africa by 2030, providing 30 million consultations to currently underserved communities. This can potentially create 3,000 permanent jobs, generate about R6 billion in healthcare services revenue, and provide highly skilled nurses with incentives to continue working in their chosen profession.

Critical success factors

- Owner-operator model that creates incentives for nurses
- Integrated care model that limits funding wastage
- Blended finance model that creates sustainability
- Custom-designed software that drives efficiencies and quality of care.



HealthDart: Increasing affordability and ease of access by streamlining the healthcare journey

The cost of healthcare can be prohibitive. Falling ill and needing medical attention can be costly in Africa, where health insurance is unattainable for most people. Underfunded but overcrowded public healthcare facilities, long waiting times, travel costs, wrong levels of care, unreliable stock levels of medicines, and the indirect loss of income present key barriers to accessing healthcare.

Due to these barriers, close to 40% of Africans opt to delay getting care, while others do not seek care at all or choose to self-medicate.⁵ These choices often lead to poor health outcomes for patients.

Among the features that enhance efficiencies and hence contribute to the service's success are:

- Ensuring the right level of care
- Reducing the need to travel to a facility.

Creating efficiencies by ensuring the right level of care

Direct and indirect costs can be reduced substantially by ensuring that patients seek care at the right level. According to HealthDart, 80% of patients that seek medical attention from a doctor do not need this specialised level of healthcare. Instead, they could get the right level of care from a registered nurse or pharmacy. In the same way, some patients that first consult a pharmacist or a nurse are only later referred to doctors due to the level of care they require.

This misalignment of care levels leads to inefficiencies in the patient journey and unnecessary expenses related to consultation fees and travel costs. Furthermore, it creates avoidable pressure at various points in the healthcare system. Ensuring that patients seek medical attention at the appropriate level the first time could save up to 70% of costs, making healthcare more affordable and accessible.

Reducing the need to travel to a facility

Instead of travelling to a healthcare facility or a pharmacy, patients use a mobile app or HealthDart's website to access the right level of care and order medicines for home delivery.

The patient engages with a chatbot that asks a set of questions and captures the patient's symptoms. The system's artificial intelligence (AI) uses the answers to match the patient with the right level and mode of care. This matching enhances the efficiencies of care significantly.

Subsequently, a nurse will review the case and suggest the next best action. Necessary consultations can be done either remotely via phone or video, or in person. Alternatively, patients can purchase a series of pre-defined health packages via the app for standard services such as wellness checks, pap smears, and PSA antigen tests.

Following the consultation, the healthcare practitioner can create a medicine basket for the patient, or the patient can opt to purchase the medicine on the HealthDart e-commerce platform themselves. The order will be instantly submitted to a participating pharmacy in the area, which prepares the order for same-day collection and delivery through one of HealthDart's delivery partners.

While users pay a small fee for the service, the app allows them to avoid indirect costs (e.g., transport costs) and saves them valuable time. Further, it also prevents multiple trips in cases of stockouts at pharmacies. Combining cost savings and convenience, the solution is well positioned to enhance access to healthcare.

In addition, the system provides a much faster turnaround of key diagnostics (e.g., pap smears) due to using small independent labs. It can provide test results up to 50 times faster than some of the traditional healthcare channels. This

allows patients to start treatment at a much earlier stage, which can increase the effectiveness and success of the treatment.

How to scale for the future

HealthDart is a digital-first solution: hence, technology-related aspects are key barriers to scaling the solution.

Technology adoption among many providers and some patient groups remains low. In this regard, education of providers and customers will be necessary to register more providers on the system and to broaden the service's reach.

Given the strong focus on affordability and reducing the cost of access to quality healthcare, payment innovation will also play an important role in scaling the service. This innovation in the payment space will be linked to the rollout of more affordable insurance products specifically targeted at the income segment that does not consider medical aid plans.

Critical success factors

- Networking of all health professionals required to access primary healthcare
- Fast, AI-driven navigation based on symptoms
- Digital-first technology.



Right ePharmacy: Optimising last mile dispensing and collection of medicines

Last mile dispensing and collection of medicines are critical steps in the patient journey. However, when poorly designed or managed, dispensing and collection systems can result in long waiting times, high indirect costs, and poor healthcare outcomes. Even in cases where medicine is free of charge or subsidised, indirect costs such as transport costs and lost income can limit access to medicines.

To improve access to medicines, Right ePharmacy has developed innovative products and services designed to strengthen the public healthcare system. These products and services aim at getting medicines to more patients on their terms and at a time or location more convenient to them. In so doing, these solutions reduce the administrative burden on

pharmacists and nurses, freeing up time for healthcare workers to focus on their core tasks of consulting with and caring for patients.

The solutions to medication dispensing and collection developed by Right ePharmacy are:

- Central Dispensing Unit (CDU)
- Collect&Go Smart Lockers
- Pharmacy Dispensing Unit (PDU), aka ATM Pharmacy.

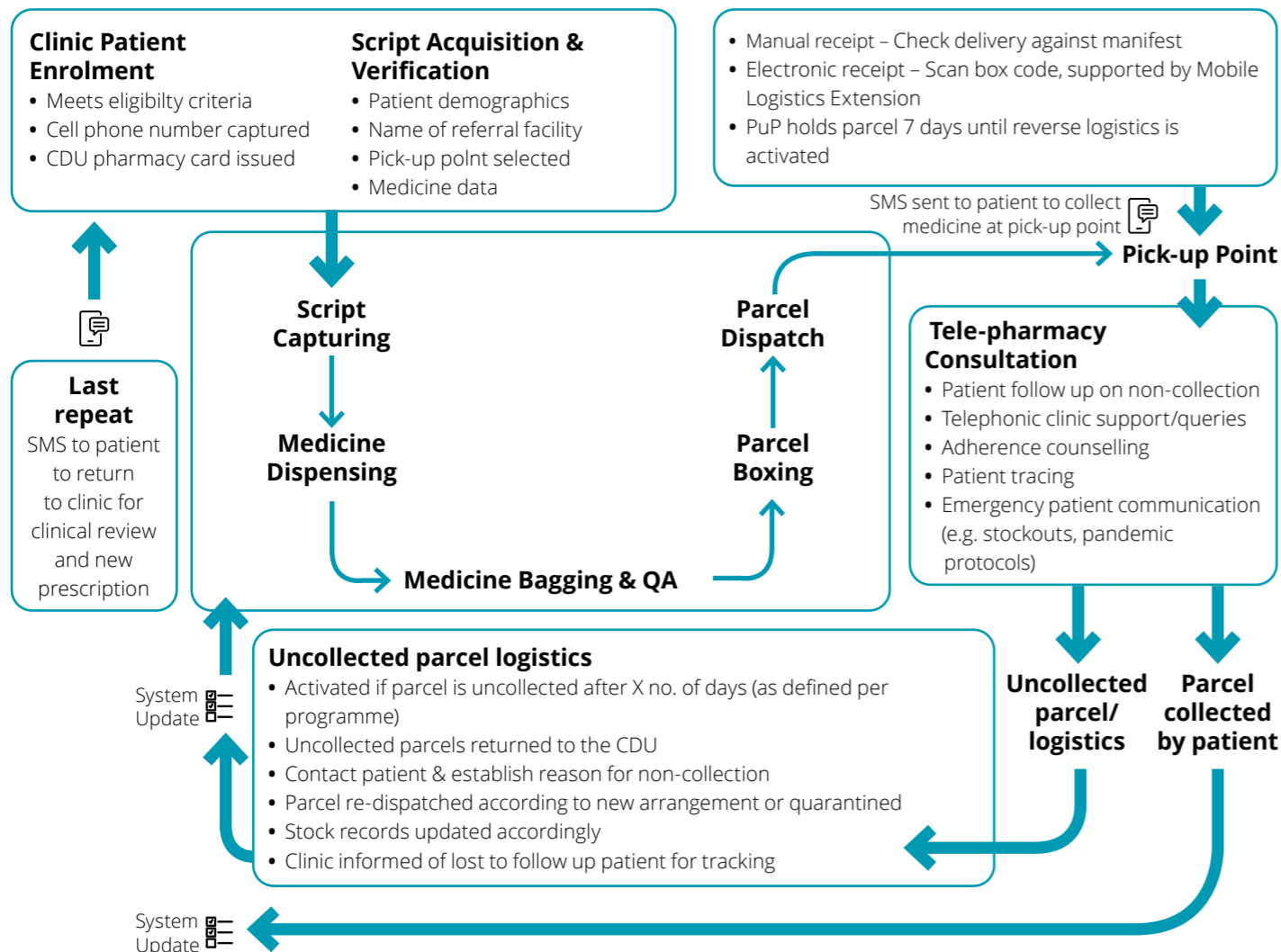
Central Dispensing Unit (CDU)

A CDU is a cost-effective and efficient pharmacy dispensing solution implemented by Right ePharmacy in South Africa, Lesotho, and Zambia. The dispatchment centre can dispense high

volumes of prescriptions and package the dispensed medicines as patient-ready parcels. It can then distribute them to a pick-up point, such as a Collect&Go locker, a pharmacy, or an informal location that has been pre-selected by the patient.

A CDU forms the backbone of any decentralised drug distribution programme. It addresses the challenges of on-site repackaging of medicines into individual parcels. It also facilitates the collection and monitoring of data from sites and pick-up points, which can support stock planning and procurement programmes. Finally, it enables site-level staff (e.g., pharmacists or nurses) to focus on patient care instead of being delivery and packing agents at the pick-up points.

CDU PROCESS FLOW



The system can be set up as a stand-alone solution or integrated into existing healthcare systems.

One of the particular advantages of the Right ePharmacy's CDU is its ability to provide full visibility and trackability of the dispensing process down to the patient level. This is useful for donor supply chains and other pooled procurement environments that typically lose sight of the last mile, that is, once the large parcels with single codes are broken down into the smaller parcels delivered to the patients. Keeping full visibility and trackability has its own advantages; for instance, donor agencies can achieve economies of scale in the procurement process through bulk purchases.

Furthermore, having full visibility also enables organisations to monitor real-time consumption of medicines. This improves planning, tracking of, and adherence to healthcare programmes.

Collect&Go Smart Lockers

By reducing the need to travel to a pharmacy or clinic to collect medicine, access to medicines and adherence to a medicine regime or a treatment plan can be improved. Patients that have a repeat script or are on chronic medication shouldn't have to go to a pharmacy or clinic to collect their medication. Right ePharmacy's Collect&Go solution solves this issue through smart lockers that allow patients to choose the most convenient location for picking up their medication.

These lockers provide access to medicines without the need to interact with a

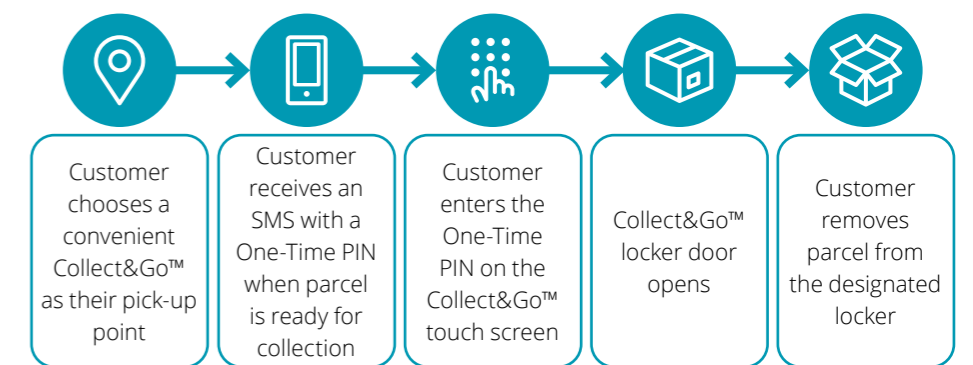
pharmacist, doctor, or nurse in-person. Furthermore, the lockers reduce the risk of cross-infections among patients as they reduce the time and need for patients to queue at, for instance, a clinic or pharmacy.

The lockers also remove the need to visit a pharmacy and engage with pharmacists, avoiding stigmatisation (especially for HIV) and leading to better adherence to treatment plans and hence to better healthcare outcomes.

The smart lockers are supported by a cloud-based platform, which enables remote temperature control, remote monitoring, logistics tracking, and disconnected connectivity. These capabilities make the solution very attractive for remote areas that often experience severe access challenges. The attractiveness is reflected in the rapid uptake of these lockers in rural areas in South Africa.

The Collect&Go lockers are versatile and can, for instance, be used in healthcare programmes in rural or township areas.

COLLECT&GO PROCESS FLOW



They can help to streamline last mile dispensing at healthcare facilities or can be deployed at private sector companies with a large workforce, such as manufacturing or mining companies.

Pharmacy Dispensing Unit (PDU), aka ATM Pharmacy

Collecting medicines from overburdened facilities is often time-consuming for patients, adding to the indirect costs of healthcare. In addition to high indirect costs, stockouts, expired medicines, human dispensing errors, and outdated patient information records are potential risks that can lead to poor treatment adherence and healthcare outcomes.

By automating the dispensing of medicines on a pharmacy level, Right ePharmacy's PDU drastically reduces waiting times and hence the indirect costs to patients. One such fully-automated dispensing unit is able to serve up to 180 patients per day. PDUs label and dispense medication to patients within three minutes using integrated robotic technology and cloud-based technology. A live video link allows patients to engage with a pharmacist from a remote location.

The key benefits of PDUs include the following:

- Reducing the burden on healthcare facilities by offering patients an alternative and more convenient method of medicine collection
- Improving pharmaceutical service delivery by increasing dispensing capacity and operational efficiencies
- Better management of electronic patient records
- Reduction in dispensing errors
- Improved inventory management
- More efficient floor space usage
- Economic benefits to pharmacies and patients.

How to scale for the future

Scaling these innovative solutions is vital to making them more sustainable and significantly increasing access to medication in underserved areas. Given certain limitations regarding technology adoption readiness, the focus on specific solutions such as Collect&Go smart lockers in the short term may have the greatest impact due to their ease of use and scalability.

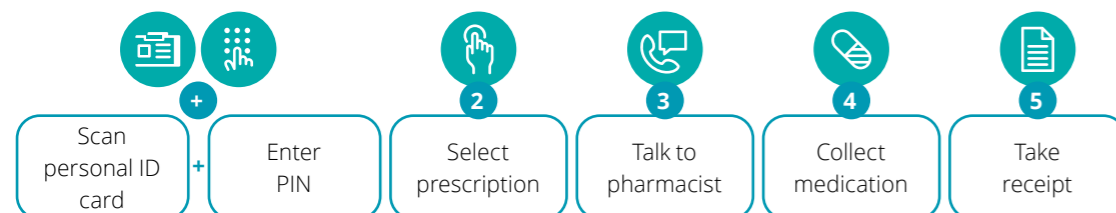
To drive the large-scale rollout of its solutions, including effective change management and demand creation, Right ePharmacy depends on corporate investments through, for instance, corporate social investment (CSI) initiatives or donor programmes. Right ePharmacy also focuses on collaboration with local partners to ensure integration with local healthcare programmes and to offer the best patient experience.

Without the buy-in from local and international stakeholders, including public sector players, donors, and corporates, it will be difficult to achieve the scale that is required for sustainability and have the best possible impact.

Critical success factors

- Partnerships and collaborations
- Simplicity of technology (e.g., offline technology)
- System interoperability
- Effective marketing.

PDU PROCESS FLOW



Innovation and collaboration key to addressing access challenges in Africa

Access to healthcare is a fundamental human right; lack of access can potentially undermine many African countries' economic future. Solving the access puzzle is as important as it is complex and will require innovative ways of thinking, new alliances, and partnerships, as well as the adoption of digital technologies.

The slow progress in providing access to healthcare throughout African communities remains a pressing challenge. It also suggests that governments and donors alone will not be able to broaden access to healthcare.

A more holistic systems of systems approach that embraces and combines innovative business, ownership, and finance models that create innovative solutions will be required to unlock the capabilities of various complementary and possibly competing stakeholders.

The true transformative power of these innovative solutions will be released once governments, NGOs, international donor agencies, and the private sector collaborate and coordinate to tackle access challenges in the healthcare sector.

Methodology

The information in the case studies is based on interviews conducted with representatives of the respective organisations covered in the case studies. The interviews were conducted telephonically and via email between June and October 2022. The information has been supplemented by desktop research conducted by the authors.

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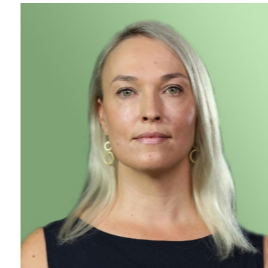
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