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Digitally empowering community healthcare workers in Africa

Lessons and Insights from the Living Goods (Smart Health app) and upSCALE experiences

BRIEF TWO

Introduction

This is the second in a series of briefs that aim to provide a deeper understanding of innovative primary healthcare (PHC) models in Sub-Saharan Africa. We examine the tools that have been developed with a deep awareness of local needs and health system context. We also offer recommendations for the further roll-out and implementation of these technology-enabled solutions. Many of the models presented some form of response to the challenges Covid-19 posed to the health system. While the briefs don't focus on these, they highlight – where relevant – how the models were adjusted to deal with the pandemic.

Brief 1 provides a categorisation and high-level overview of tech-enabled PHC tools. The Smart Health app (used in Uganda and Kenya) and upScale (Mozambique), examined in this brief, are examples of remote patient-monitoring models (identified in Brief 1) that empower community health workers (CHWs) in Sub-Saharan Africa by providing them with remote guidance.

Health systems worldwide face challenges such as shortages and the poor geographic distribution of healthcare workers. Inequitable access to healthcare workers in low- and middle-income countries (LMICs), and Sub-Saharan Africa in particular, is exacerbated by poor infrastructure, a lack of financial resources, administrative issues and overburdened healthcare systems. Equitable access to healthcare workers has been highlighted as one of the three key objectives to achieve Universal Health Coverage (UHC) by 2030. This objective includes addressing the need to strengthen health systems and ensuring that available healthcare workers are integrated into the system as effectively as possible.[1]

ABOUT THIS SERIES

This series of five briefs describes the current use of tech-enabled PHC tools in Sub-Saharan Africa. We highlight the key lessons and insights from some of the leaders in innovation, and put forward the enablers and constraints that exist in this resource-constrained setting.

In response to the need for greater access to healthcare workers, CHWs – a more accessible and affordable tier of healthcare workers – were introduced. They've since become integral to the delivery of PHC services in many countries,[1] particularly to provide health services to previously underserved and isolated communities with little to no access to healthcare services.[2] Evidence has shown that CHWs can contribute significantly towards improving access to PHC in LMICs, thereby improving health outcomes such as enhanced maternal and child health, a reduction in malnutrition rates and the increased utilisation of family planning programmes.[3]

The use of CHWs in PHC delivery also proved to be cost-effective, given that CHWs provide essential health services for less than other cadres of healthcare workers.[4] The average 25-year costs to both train and compensate CHWs represent a small fraction of the overall health system expenses in nine African countries – namely Ethiopia, Kenya,

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Malawi, Mozambique, Rwanda, Tanzania, Uganda, Zambia and Zimbabwe.[5] These cost-effective healthcare workers can be better utilised to improve access to care, while keeping costs down.

Despite various successes in employing CHWs in health service delivery, numerous challenges hinder their efficacy, such as the lack of adequate funding for CHW programmes and poor remuneration,[6] and this has a negative impact on their productivity and job satisfaction. Added to that, they often work in complex environments without adequate supervision, training or supplies.[3]

To optimise the effective delivery of PHC by CHWs, various digital solutions leveraging mobile phone technology have been developed.[3,7] Such tech-enabled innovations contribute to the creation of an effective and comprehensive community-oriented primary care (COPC) system by providing CHWs with the tools they need to deliver quality health services, and linking them and their work to the broader healthcare system.

This brief explores two such innovations – the Smart Health app (Living Goods) and upSCALE (Malaria Consortium) – and is predominantly informed by desktop research and stakeholder interviews.

Sections 2 and 3 provide a more thorough overview of each innovation. The nature and experiences of these CHW tech-enabled tools were reviewed based on the criteria in Box 1. In Section 4 we compare the two innovations and conclude with cross-cutting lessons in Section 5.

Box 1: Descriptive dimensions

Relevance describes whether an innovation is meeting a need of the population and the health system.

Coherence speaks to whether the innovation is embedded within the existing structures and processes of the health system, and whether its aims align with current policy and guidelines.

Efficiency includes information on costs and cost-effectiveness – where available.

Impact draws out any evidence of the innovation's effect on health outcomes.

Sustainability focuses on how scalable and viable an innovation is beyond its pilot phase.

SECTION 1

Living Goods and the Smart Health app – insights from Kenya and Uganda

Living Goods is a non-profit organisation (NPO) that works with various governments and other implementation partners in Africa towards digitally empowering CHWs and providing them with the necessary tools to expand the reach of their care.[8] Established in Uganda in 2008, the platform started as a model that included training for CHWs as well as a medication sales scheme. The sales scheme enabled CHWs to sell high-quality medication at affordable prices to communities, making a small profit. As the innovation started growing more rapidly, Living Goods recognised the value in moving to a digitalised system within which data could inform decision-making. This led to a partnership with Medic Mobile and the development of the Smart Health mobile application.

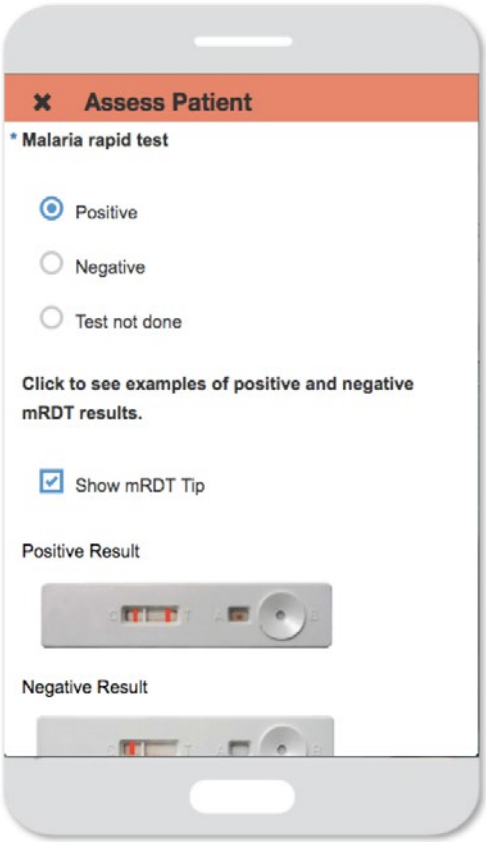
By providing guidance to CHWs (Figure 1), the Smart Health app serves as a clinical decision support tool. It also offers digital workflow and diagnostic recommendations based on digitally-prompted data inputs completed by CHWs.[8] The app focuses on supporting the provision of maternal and child health services, family planning services and immunisation tracking in children. It also allows CHWs to deliver high-quality medication to the communities they serve. This has however shifted from the original medication sales model to predominantly distributing free medication.[8]

Uploading data in real-time on the app requires a smartphone and internet connection, and Living Goods provides all CHWs in the programme with a smartphone. Recent developments to the app enabled an off-line functionality, which allows users to store data on the device until an internet connection is available.

The Smart Health app is also used for data storage and the patient data CHWs collect with the app is compatible with District Health Information Software 2 (DHIS2) – free open-source software used for health data analysis, visualisation and sharing data across various health programmes in several African countries.[8]

The app is already used in Uganda (7 districts) and Kenya (6 counties) by respectively 8,000 and 3,000 CHWs. Plans to implement the app in other countries across Africa was halted due to the Covid-19 pandemic.

Figure 1: Screenshot of the Smart Health app[9]



1.1 Relevance: is the intervention doing the right things?

The struggle to provide equitable access to healthcare in the majority of LMICs, including Uganda and Kenya, means that a tech innovation that can mobilise and expand the reach of CHWs' community-based services is highly relevant.

It's been widely demonstrated that CHWs play an important role in improving access to healthcare and strengthening PHC, and the WHO[10] encourages integrating them into PHC strategies – particularly in resource-constrained settings. There are barriers to greater use of CHWs. A lack of support and supervision has hindered the potential impact of CHW programmes,[10] while an insufficient integration of CHWs into the health system[10] poses another major challenge to harnessing their full potential.

The Smart Health app's relevance is centered around its ability to provide clinical support to CHWs delivering health services (potentially enhancing the quality of care provided), and to collect data on the performance of CHWs (which is helpful to identify where CHW supervision would be best focused).

Furthermore, the integration of the patient-level data collected by CHWs using the app with the rest of the PHC system through the DHIS2 enables continuity of care. It allows CHWs to work within the system, as opposed to working in silos.

1.2 Coherence: how well does the intervention fit?

Since its inception, Living Goods has led the way with a partnership mindset and worked alongside relevant governments and departments of health. This collaborative approach has been a driving force in ensuring the coherence of the app. Living Goods has a CHW training and certification process in place, which is recognised and supported by both the Kenyan and Ugandan governments.[8] Adapting to local contexts by addressing the healthcare areas of focus, the app allows for patient-level information to flow smoothly between CHWs and the departments of health through the DHIS2. Data inputs made by CHWs are also used to inform other operations, such as providing essential medicine stock reports, monitoring disease outbreaks and ensuring that the referral process is followed through.[8]

There are however more opportunities to deepen coherence. For example, as was pointed out in interviews with Living Goods, the integration of data collected from the Smart Health app and national health data systems still needs considerable work to reach the full potential of the benefits derived from sharing and expanding the data collected by CHWs.

"The Smart Health app's relevance is centered around its ability to provide clinical support to CHWs delivering health services (potentially enhancing the quality of care provided), and to collect data on the performance of CHWs (which is helpful to identify where CHW supervision would be best focused)."

1.3 Efficiency: how well are the resources being used?

The Living Goods model is based on a data-driven approach,[8] while the Smart Health app ensures that CHWs' time is used efficiently by creating daily task lists. These lists are informed by the data that are collected, and they identify patients who are the highest risk/require the most urgent attention, so that the CHWs can prioritise their time.[8] Furthermore, when the intervention started, Living Goods recruited existing CHWs into their network, thereby optimising service delivery through existing resources.

The app allows for real-time monitoring and supervision of CHWs by providing user-friendly dashboards that identify their performance levels based on their interactions with the app. This not only improves the accountability of CHWs, but also makes it easy to identify inefficiencies.[8]

The estimated cost per capita of the provision of health services by Living Goods is $2.879 – potentially a highly cost-effective solution relative to the overall health expenditure per capita in 2017, which was $38 in Uganda and $77 in Kenya.[11]

> "The cost-effective nature of this innovation, combined with a high uptake, places Living Goods and the Smart Health app in a promising position in terms of sustainability and scalability."

1.4 Impact: what difference does the intervention make?

Living Goods and the Smart Health app have successfully improved access to PHC in communities, particularly among pregnant women, infants and children. Living Goods conducted a 3-year randomised control trial (RCT) on the impact of the CHW-driven innovation in Uganda. The results of the RCT respectively showed a 27%, 33% and 27% reduction in under-5, infant and neonatal (under 1) mortality.[8] Other significant results of the RCT included improved access to healthcare and health knowledge among those who had access to the community health programme.[8]

The model focuses on decentralising care, while simultaneously improving the quality of care, efficiency and reach of health services at a community level. It helps to reduce health system costs because of the reduction in in-facility care and less strain on higher levels of care. **The cost-effective nature of this innovation, combined with a high uptake, places Living Goods and the Smart Health app in a promising position in terms of sustainability and scalability**.

1.5 Sustainability and scalability: will the benefits last?

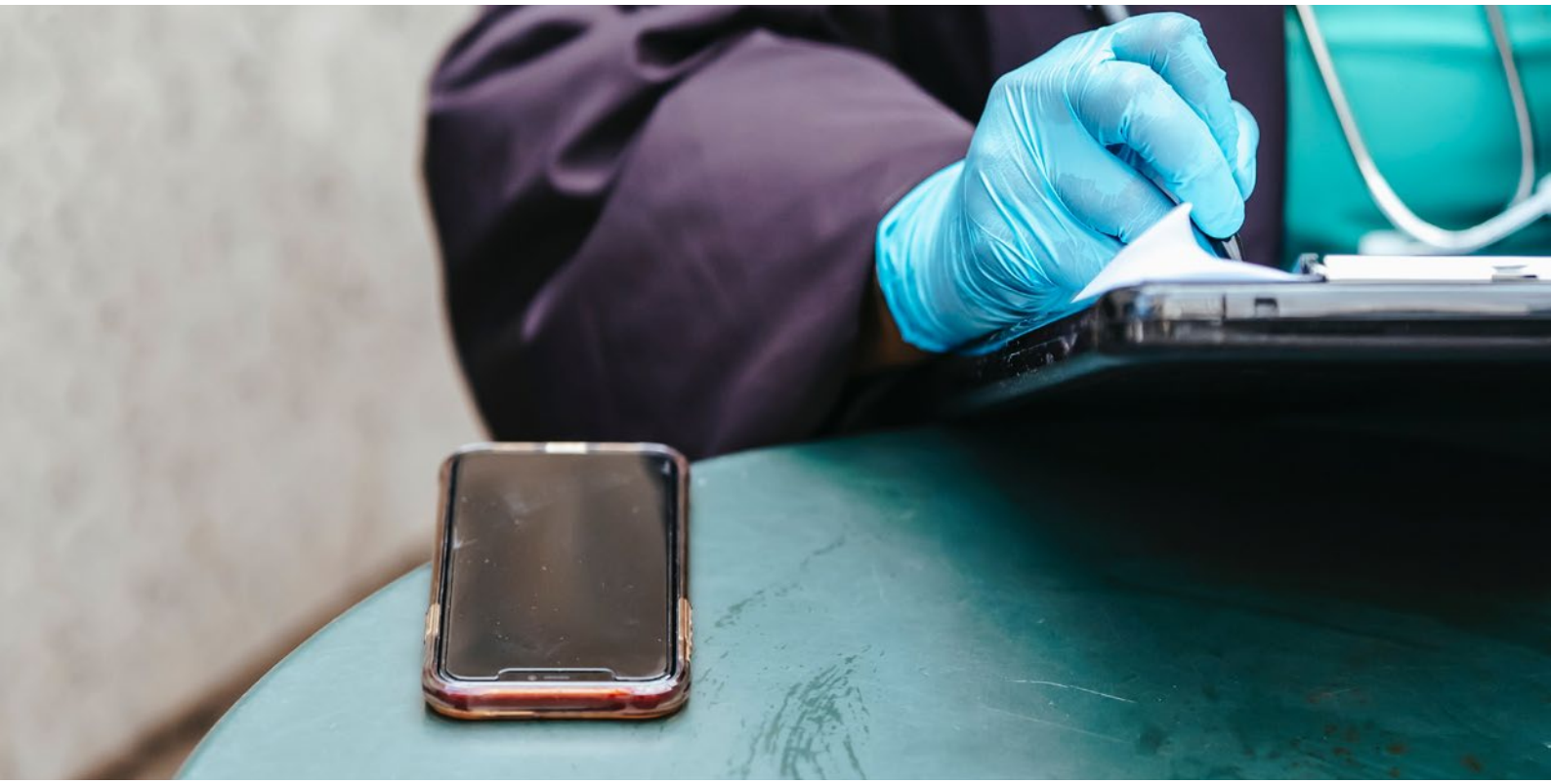
When Living Goods was launched in 2008, they started by training 200 CHWs who reached about 160,000 people. Records show that by 2019, Living Goods had 10,628 active CHWs who had provided health services to more than 7.8 million people.[8] This increase in trained CHWs, and the population reached by the innovation, demonstrates its potential scalability and sustainability. Figure 2 below shows how many people were reached by the Living Goods CHW programme in 2019.

Figure 2: Living Goods 2019 service reach[9]

A key factor for scalability in mobile applications is to ensure that the app is user-friendly and supports all literacy levels.[12] This is particularly important for CHWs, who often need to make patient-related decisions quickly based on the information they receive from the app – without any space or time to consult other sources. The training component of the Living Goods model for CHWs includes teaching them how to use the Smart Health app to make sure that it will be of sustainable, long-term use.

During interviews with Living Goods, it became clear that although various forms of technology provide support mechanisms, technological challenges still remain. Smartphones used by CHWs are often lost, stolen or low on battery power when they're needed, and given that their services depend almost entirely on the use of the app, phone-related issues are the largest barriers when it comes to CHWs using it.

The platform currently operates via a combination of financial support from various donors such as USAID, PEPFAR, The Children's Investment Fund Foundation, governments and the private sector.[13,14] To become truly sustainable, Living Goods needs to transition to government funding solely, thereby preventing the risk of downscaling in the face of donor funding losses.



1.6 Key lessons learned

Adaptability ensures relevance. The Smart Health app wasn't part of the initial conceptualisation of Living Goods, but in time, the need for real-time data to ensure evidence-based decision-making paved the way for the digitalisation of the programme. Their CHW medication sales model has been adapted to support distribution, budgeting and quality management of free medication, as Uganda has started to move towards a UHC model that prioritises free medication.

Good relationships ensure sustainability. There's a significant link between the evolution of Living Goods and the Smart Health app and the NPO's relationships with governments. Over time, these relationships have strengthened, and Living Goods aligned and integrated their innovations more closely with the health systems they operate within. They also supported the shift to increase the digitalisation of community health services in response to the Covid-19 pandemic.

Implementation is affected by both attitudes towards technology and health system structures. While stakeholders in Kenya are amenable to using tech-based innovations, the decentralised structure of health services and budgeting at a county level translates to differences in implementation agreements and plans across counties. In contrast, the Ugandan health system is centralised, which amounted to a more central and accommodating approach to implementation and changes to the programme. However, the implementation process in Uganda experienced more financing- and tech-related challenges given that the country is less tech-equipped.

Tech-related issues are the major barriers to uptake. Phone-related problems prove to be the biggest obstacle when it comes to using the innovation. Although all CHWs are provided with smartphones and trained to use the app, unstable data coverage, data costs and undependable battery power means that they can't always reliably use it to provide health services. To reduce such incidents, tech support teams have been established to replace and fix phones, and technical issues are reported during bi-weekly meetings with supervisors. The challenge has been further addressed by setting up free data connections to the app, as well as employing Bluetooth handoffs to upload data when CHWs meet with their supervisors.

SECTION 2

upSCALE: insights from Mozambique

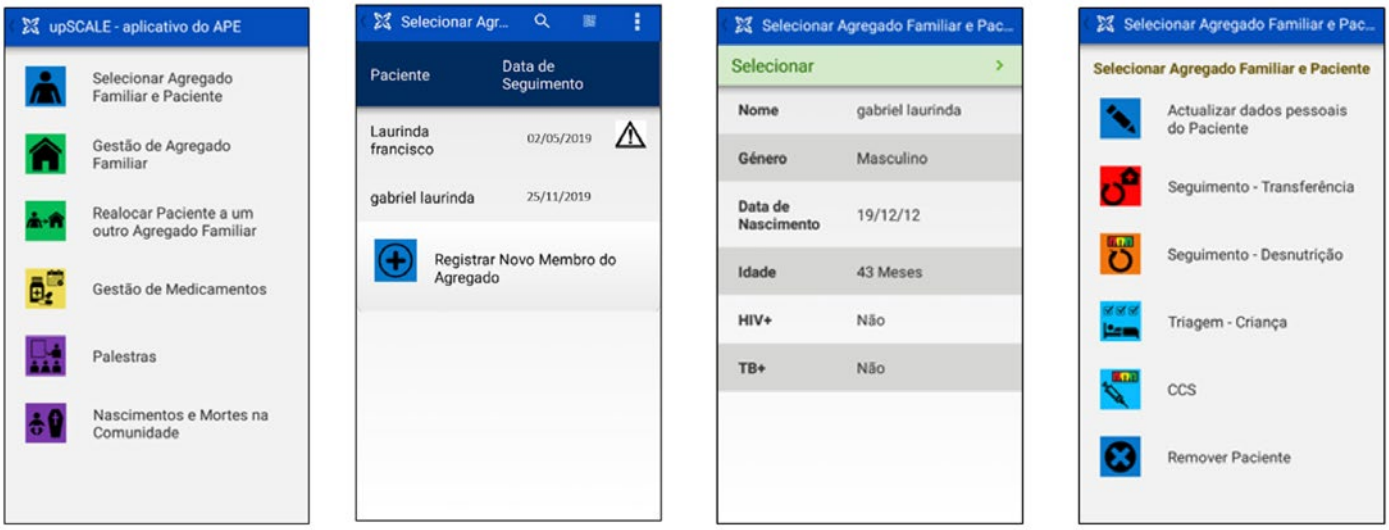
The upSCALE app is a remote patient-monitoring telehealth innovation. This interactive mobile application is designed to assist CHWs with patient registration. It also provides guidelines for diagnosis and referral.[15]

The Malaria Consortium first developed the app (then called inSCALE) to improve the quality of care provided by CHWs in Mozambique. It was piloted in Inhambane province between 2009 and 2016.[15] The pilot's success led to its renaming to upSCALE, as well as a broader implementation across two further provinces, working with the Mozambique Ministry of Health (MoH) and UNICEF.[15]

All of the data captured on the upSCALE app are also compatible and integrated with DHIS2, which allows for analysis, visualisation and sharing of the data with health system stakeholders at a district, provincial and national level via user-friendly dashboards. The data component of the app allows for the monitoring and supervision of CHWs and stock levels.[15]

The app is downloadable on smartphones and requires an internet connection to upload data in real-time. An off-line functionality is also possible and entails data being stored on the device until an internet connection is available.

Figure 3: Screenshots of the upSCALE app[15]



2.1 Relevance: is the intervention doing the right things?

As a low-income country, Mozambique is poorly resourced. The health sector is no exception, both in terms of equipment and human resources. This has grave implications for health service delivery and access to healthcare. Only half of the population has access to healthcare, and those who do have access to public PHC often face other barriers to care such as costs, and long travel and wait times at facilities.[16] Low-cost solutions and the decentralisation of care have been identified as valuable ways to increase access to healthcare.[17]

> "It makes sense to harness CHWs to improve access to health services because the geographic distance between facilities and communities[16] is a major barrier in Mozambique."

It makes sense to harness CHWs to improve access to health services because the geographic distance between facilities and communities[16] is a major barrier in Mozambique. CHWs serving local communities can extend the reach of healthcare facilities. upSCALE adds value by enabling CHWs to provide better health services through mobile-based guidance and support.

The need for CHW supervision and support is also addressed by the supervisory end of the solution, which is used by 300 facility-level supervisors.[15] The supervisors are provided with data on the performance of the CHWs in their respective catchment areas. The CHWs and their supervisors have monthly supervision visits, with data to guide those visits.

2.2 Coherence: how well does the intervention fit?

Given that the MoH is directly involved in upSCALE (and responsible for the content design, training, roll-out and platform hosting of the app),[15] the innovation is reasonably well integrated into the health system and it's been set up from within the system from the start.

upSCALE equips CHWs with clinical and other support tools and guidance to best meet the health needs of the community being served.[15] The protocols have been approved by the MoH and assist the CHWs with diseases that are relevant to Mozambique's disease burden. They include diarrhoea, pneumonia and malaria, and protocols for childhood nutrition, antenatal care and immunisation.

The platform has been integrated into the health system at a provincial level and staff at provincial health departments and facilities can access a web-based dashboard (via DHIS2) that presents monthly aggregated CHW reports. The reports can be filtered by geography, user type and time period.[15] Furthermore, upSCALE has dedicated modules within the app that assist with updates on stock needs in facilities. The app also focuses on providing patient-centric care, enabling effective case management and promoting continuity of care by prompting follow-ups and providing referral guidance through consistent and MoH-approved protocols.[18]

A high share of CHWs who were unaccustomed to smartphones was a key concern during the implementation process, but the Malaria Consortium – in partnership with Dimagi, the company who developed the CommCare platform upSCALE runs on – held extra introductory sessions to improve the CHWs' technical literacy.[15]

2.3 Efficiency: how well are the resources being used?

With real-time data available on both patients and CHWs, upSCALE allows for data-driven decision-making and resource allocation. The app optimises CHWs' workflow through this data-driven approach.

Supervisors have access to user-friendly dashboards that identify performance levels of CHWs based on their interactions with the app,[15] and the data that feeds into these dashboards is real-time. This allows for the identification of inefficiencies in workflows and also improves CHW accountability. It's been found that a lack of support and guidance hindered the efficacy of using CHWs to provide PHC.[19] Given that the app enables both of these mechanisms at a relatively low cost, upSCALE enables the efficient use of CHWs as a health resource.

Additionally, the platform's stock-management function allows supervisors to check the status of all medical supplies provided to the CHWs under their direction. It enables them to monitor stock levels and replenish them timeously, and to also identify any misuse of medication distribution.[20]

2.4 Impact: what difference does the intervention make?

upSCALE has effectively managed to strengthen the health system response to the population's needs in a way that is engaging as well as convenient. **They've managed to decentralise care by giving CHWs an expanded toolkit that allows for improvements in the health services they provide.** The app also enabled better adherence to protocols, ensuring improved quality of care.[21]

Furthermore, the innovation focused on making sure that CHWs are not overwhelmed while providing health services.[20] This was done by integrating the supervisory component into the platform. It enables CHW support through supervisory meetings and more, and also assists CHWs with the management of caseloads.

Given that limited data exists to evaluate the impact of upSCALE, the Malaria Consortium team, together with a research team from the Eduardo Mondlane University, is conducting a full impact evaluation. The results from the formal evaluation haven't been released yet, but the case study report indicates that some CHWs saw positive changes in their own performance, as well as in the general health of the communities.[21]

"They've managed to decentralise care by giving CHWs an expanded toolkit that allows for improvements in the health services they provide."

"This high level of integration between upSCALE and the health system, and PHC in particular, makes upSCALE an attractive and sustainable option for other countries where a relationship similar to the one with the MoH can be formed. "

2.5 Sustainability and scalability: will the benefits last?

In 2009, when the innovation was still called inSCALE, the project trained 132 CHWs and 47 supervisors. The expansion to upSCALE in two further provinces led to the training of an additional 1,200 CHWs and 300 supervisors.[21] The innovation's success in these three provinces motivated the MoH to roll out the programme nationally by 2020. To ensure upSCALE's long-term sustainability on a national level, the Malaria Consortium will provide technical support to the country's CHW programme – Programa Nacional de Agentes Polivalentes Elementares (PNAPE). This support aims to assist with the implementation and management of upSCALE at all levels of the health system.

When the programme was first implemented, it was a major challenge to align the work of upSCALE CHWs and other CHWs,[19] as the incentives to motivate CHWs working through inSCALE initially caused tension and frustration among CHWs.

Since this could've been detrimental to scalability and sustainability, integrating upSCALE CHWs and existing CHW programmes was highlighted as a key objective.[15]

Technological issues presented a further challenge. CHWs often operate in areas with poor internet connectivity and sporadic access to electricity. This translates to an inability to use the app effectively, given that a smartphone's battery life is limited and real-time data sharing requires internet connectivity.[18]

To ensure the long-term sustainability of the programme, the Mozambique MoH will drive the content design, training and roll-out of upSCALE, as well as the hosting and use of the online dashboard.[15] **This high level of integration between upSCALE and the health system, and PHC in particular, makes upSCALE an attractive and sustainable option for other countries where a relationship similar to the one with the MoH can be formed.**

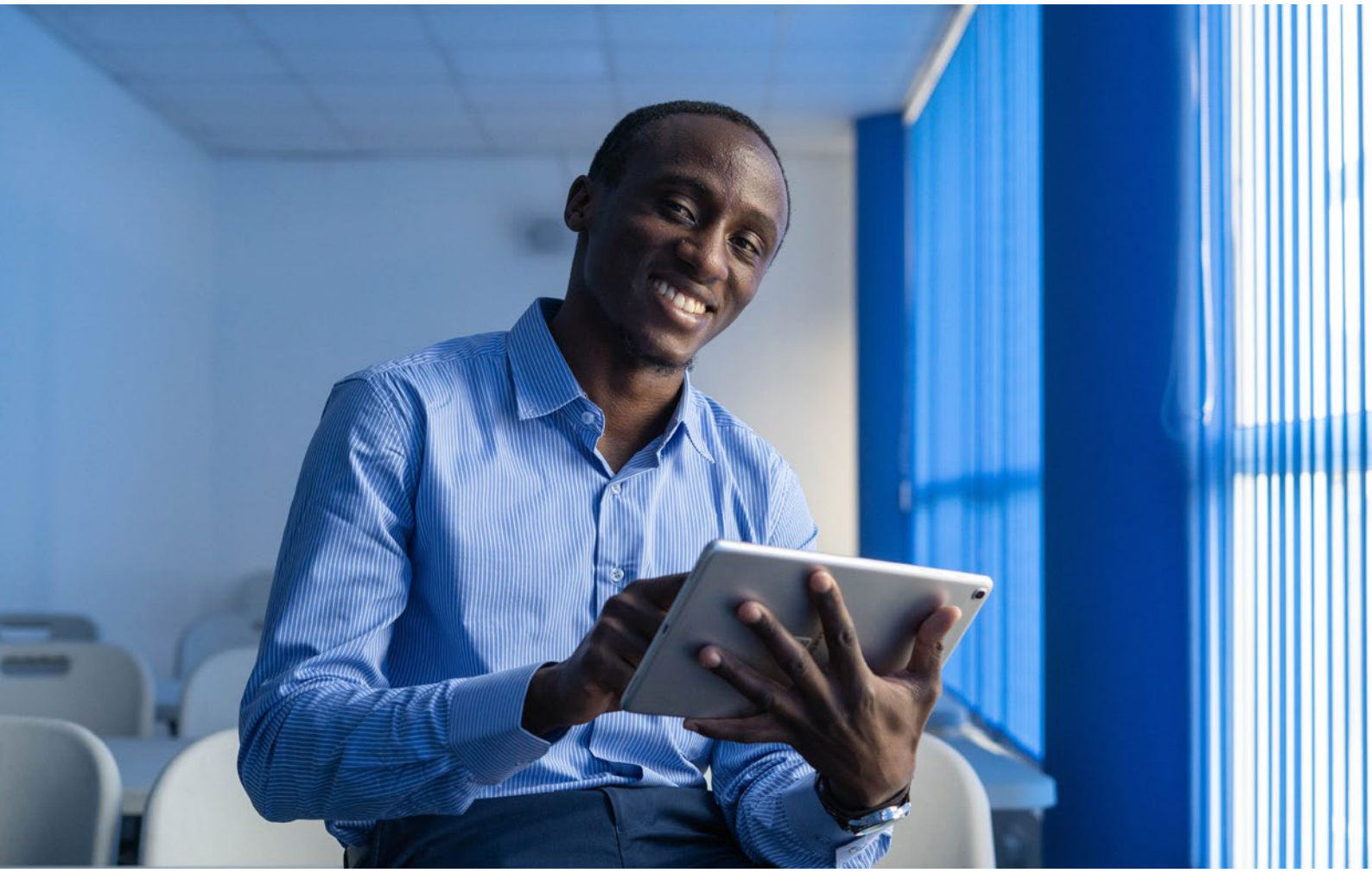
2.6 Key lessons learned

Collaboration between CHW programmes is necessary for sustainability. Tensions arose between upSCALE and other CHWs during the initial implementation – which highlighted the need for integration between upSCALE and other CHW programmes to avoid detrimental effects on the delivery of other PHC services.

Working with governments facilitates an integration into the health system. Given that upSCALE has worked within the health system from the start, the innovation has been embedded in the system and in its PHC strategy. This ensured minimal implementation challenges.[18]

Remoteness poses implementation challenges. This is largely due to poor access to such areas, as well as technological challenges such as limited access to electricity and data connections. To address these issues, upSCALE is looking into ways to provide CHWs in more remote areas with smartphones with larger memories (to store data offline until it can be uploaded) and power banks (to reduce the frustration of low batteries).[18]

Stock-management functionality enables better quality care. The app has enabled improved stock management by providing supervisors with real-time reports on stock levels. It allows them to replenish stock in time so that CHWs have the necessary materials to deliver relevant services. This has been particularly valuable given that CHWs often reported an inability to provide necessary health services due to stock shortages.[18]



SECTION 3

Comparing Smart Health (Living Goods) and upSCALE

Both Smart Health (Living Goods) and upSCALE are mobile applications that have successfully improved access to PHC services, as well as the quality of care delivered by supporting CHWs. The innovations have a data-driven approach in how they improve PHC services and CHW support and supervision, and they're well integrated in the health system.

The most prominent difference between the two is that Living Goods includes a medication sales programme, while upSCALE includes a stock-management functionality.

Table 1: Comparison between Living Goods Smart Health app and upSCALE

QUESTION	LIVING GOODS SMART HEALTH APP	UPSCALE
Uptake	The Smart Health app is actively used by all Living Goods CHWs (more than 10,000 users). A RCT study in Uganda has shown significant decreases in neonatal, infant and under-5 mortality, which can be attributed to the innovation.	Around 1,200 CHWs and 300 supervisors use the upSCALE app. While results from the current formal evaluation have not been released, the case study report states that CHWs have seen improvements in their own performance and in community health.
Cost-effectiveness	Evidence supports the cost-effectiveness of the use of CHWs in PHC delivery. This is further supported by the fact that the CHW clinical support is tech-based, as opposed to requiring human resources for this support. The medication distribution aspect of the innovation also reduces costs by avoiding the need to distribute medication at a later stage via another distribution channel.	Evidence supports the cost-effectiveness of the use of CHWs in community-based delivery of PHC. This is further supported by the fact that the CHW clinical support is tech-based, as opposed to requiring human resources.
Scalability across multiple settings	Living Goods has already expanded their CHW programme and Smart Health app across Uganda and Kenya. Further expansion to other African countries is planned for the near future.	The high level of integration between upSCALE and the health system makes upSCALE an attractive, sustainable option for other countries.
Integration with PHC systems	The Living Goods CHW training programme is government approved and the guidance provided by the app is based on health protocols defined by National Health Departments. The data collected is used to optimise CHW workflows and referrals, integrating with existing PHC systems and higher levels of care.	The content design, training and roll-out of upSCALE is done by the MoH, ensuring integration with existing PHC systems and strategies. However, tensions between upSCALE CHWs and other CHWs have been identified.
Data collection and integration	The Living Goods CHW programme is data-driven, which enables effective patient triage and the optimisation of CHW time. It also improves CHW accountability. The data that's captured is compatible and integrated with existing data systems, but it's recognised that there's more scope for integration.	The data collected by upSCALE is compatible and integrated with existing data systems on a national and facility level.

SECTION

4 Cross-cutting lessons

Government buy-in and collaboration is key for the integration of the innovation into the health system and to enable sustainability and scalability. Without government collaboration, the innovations would likely have resulted in the further fragmentation of care, leaving little space for expanding the programmes beyond their pilot phase. It's important for innovations like these to be fully embedded in the existing health system.

Digital solutions can be highly advantageous to the health system if they're well integrated with existing data systems. They increase the capacity for data collection, reporting, surveillance and monitoring.

Data can be leveraged to improve the value of care delivered. Both case studies make use of data to enable continuity of care, resource optimisation and the performance management of CHWs. The optimisation of CHW time and support/supervision efforts using real-time data has enabled improvements in the quality of care provided to communities in both settings.

Technology-related hardware issues remain a key challenge. This challenge is particularly pertinent in Africa, where poor data connection and lack of access to electricity are common, especially in remote areas that are likely most in need of community-driven health services. Both Living Goods and upSCALE have recognised the need for tech support – and they've adopted innovative solutions to address the tech issues CHWs experienced in the field.

The ability of PHC innovations to adapt to changing local circumstances is key. Given that both the Smart Health app and upSCALE provide clinical guidelines and decision support, the care pathways that are supported must be relevant to local circumstances to optimise health service provision.

> "The Smart Health app and upSCALE are prime examples of how innovation can empower CHWs in Sub-Saharan Africa through the integration of technology and government support that considers the local context."

The success of CHW health service delivery programmes is highly dependent on adequate training, supervision and support. As the two examples reviewed in this brief highlight, telehealth innovations can enable CHWs with support and supervision through workflow optimisation, and by providing them with access to clinical decision support and guidelines, data storage and direct links to supervision. The innovations therefore assist in facilitating improvements in the quality of care they provide. This allows for the most cost-effective and accessible resources in a health system to be leveraged for more effective COPC.

The Smart Health app and upSCALE are prime examples of how innovation can empower CHWs in Sub-Saharan Africa through the integration of technology and government support that considers the local context.

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