AFRICAN COLLABORATIVE FOR HEALTH FINANCING SOLUTIONS

White paper: Innovations to Advance Universal Health Coverage in Africa

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Acknowledgements

Authors' Contribution

Zilper Audi, as the first author, contributed to multiple aspects of study design, data collection and analysis, drafting, and editing the paper. Juliana Hagembe and Emily McAndrew contributed to data collection and analysis, drafting and editing the paper, while Kate Crissman and Edward Owino contributed to drafting and editing the paper. Andrea Thoumi contributed to writing and reviewing the paper. Patricia Odero, as the senior author, provided strategic guidance, leading overall study design, writing, revising, and editing the paper.

List of Acronyms

3S	Spread, Scale-Up, Sustainability
ACS	African Collaborative for Health Financing Solutions
AHRQ	Agency for Health Research and Quality
ARA	Afya Research Africa
CBHI	Community-Based Health Insurance
CHMI	Center for Health Market Innovations
CHW	Community Health Worker
DHIS	District Health Information Software
GIE	Global Innovation Exchange
HIPS	Health Initiatives for the Private Sector
HIV	Human Immunodeficiency Virus
HPV	Human Papilloma Virus
IDIA	International Development Innovation Alliance
IiH	Innovations in Healthcare
JLN	Joint Learning Network
KEMSA	Kenya Medical Supplies Agency
LMIC	Low-and Middle-Income Country
MIA	Micro Insurance Agency
NCD	Non-Communicable Disease
NGO	Non-Governmental Organization
OECD	Organization for Economic Co-operation and Development
OFH	One Family Health
OFHR	One Family Health Rwanda
OOP	Out-Of-Pocket
PHC	Primary healthcare
PPP	Public-Private Partnerships
R&D	Research and Development
RAM	Rapid Assessment Of Malaria
SDG	Sustainable Development Goals
SSA	Sub- Saharan Africa
UHC	Universal Health Coverage
USAID	United States Agency for International Development
WHO	World Health Organization
ZSCP	Zimbabwe Sustainable Clubfoot Programme

Definition of Key Terms

Adaptation

In the context of scaling health innovations, adaptation is defined as the process through which an innovation meets the "demands or constraints of a different local context."[1] Adaptation involves strengthening local relationships and capacity and leveraging these local assets to identify the relevant aspects of health innovation that work in a specific context.[2]

Scaling

Scaling is the "process of replicating, adapting, and sustaining an innovation across large geographies and populations for transformational impact."[3] Scaling is an iterative process that allows for continuous learning in the context of complexity for which the innovation needs to account.[4] There are multiple pathways through which to scale an innovation.[5]

Sustainable scale

Sustainable scale is defined as "the wide-scale adoption or operation of an innovation at the desired level of scale or exponential growth, sustained by an ecosystem of actors."[6] Sustainability entails scaling of an innovation "to achieve sustainable systems change."[7] At this point of growth, an innovation can to attain its maximum impact and benefit for the population.[8]

Integration

Integration is the process through which a proven innovation assimilates into programs and delivery channels that allow innovation to scale.[9] Integration and sustainable scale are connected concepts as innovations achieve sustainable scale within the context of existing systems. Proven innovations refer to health innovations with evidence of impact that have moved beyond proof of concept to implementation within a specific country. To ensure sustainable scale, integration needs to "remove the internal and external barriers to using these solutions" while "supporting the acceleration of growth and impact of the proven innovations."[10]

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[1] Darzi, Parston, and McQueen, "Global Diffusion of Healthcare Innovation: Accelerating the Journey."
[2] Nolte, "How Do We Ensure That Innovation in Health Service Delivery and Organization Is Implemented, Sustained and Spread?"
[3] IDIA. "Insights on Scaling Innovation."
[4] McClure and Gray, "Scaling: Innovation's Missing Middle."
[5] Worsham, Clark, and Fehrman, "Navigating the Road to Scale."
[6] IDIA. "Insights on Scaling Innovation."
[7] Woltering et al., "Scaling –from 'Reaching Many' to Sustainable Systems Change at Scale."
[8] McClure and Gray, "Scaling: Innovation's Missing Middle."
[9] International Development Innovation Alliance (IDIA), "Development Innovation Principles in Practice: Insights and Examples to Bridge Theory and Action."
[10] International Development Innovation Alliance (IDIA). "Development Innovation Principles in Practice: Insights and Examples to Bridge Theory and Action."

Executive Summary

One of the most ambitious public health goals that sub-Saharan African (SSA) countries have is to achieve universal health coverage (UHC) by 2030. With less than a decade to go, countries require catalytic approaches to rapidly accelerate their progress toward UHC, such as integrating health innovations to provide equitable healthcare for all. While there is evidence that health innovations enable the prevention, detection, and treatment of many conditions, there is a lack of clarity on how promising point innovations such as vaccines, rapid diagnostic technologies, or chronic disease management programs can be integrated into health systems as they grow and transition toward scale to enable transformative change.

There is a growing body of evidence on the impact that health innovations have on different dimensions of UHC. Similarly, the need to maintain advancing UHC as a priority in the face of increasing demands to meet unexpected challenges, like the COVID-19 global pandemic, calls for the adoption of health innovations. These health innovations can support the resilience of national health systems. In this paper, we outline how growth-stage health innovations address existing gaps in the health system and have improved various dimensions of UHC. We synthesize insights on the scaling pathway that point innovations tend to follow as they move toward maturity and scale. We also highlight health innovations implemented through a range of different organizational models that have supported these innovations' growth. We then make the case that health innovations are a best buy for countries seeking to advance UHC, highlight some of the challenges that countries face as they seek to adapt, integrate and scale up proven health innovations into health systems, and propose a systematic approach to adapting and integrating health innovations at scale to advance UHC.

This paper highlights illustrative examples of innovations that health sector stakeholders across SSA can consider, drawing on lessons from other country contexts, to support health innovations developed in their own country, and to adapt and scale-up proven models or models that have entered the market. However, health innovations move along a maturity pathway as they develop, from point innovations to early growth-stage to adoption and integration in the health system at a sustainable scale. For more innovations to grow toward a sustainable scale, stakeholders need to facilitate deliberate discussions to increase the alignment of innovations with national health financing and UHC policy goals.

We find that innovations are interrelated and address multiple UHC dimensions, solidifying the value of innovations as a best buy for UHC. We also find that innovations' sustainability remains a key challenge, requiring innovations to align with existing health system structures to adapt and integrate health innovations to achieve UHC successfully. Therefore, all stakeholders must understand the context in which innovations are implemented and the role they play in the innovations' scaling journey while clearly articulating the importance of innovation to health systems. Finally, we propose practical actions that policymakers, implementers, funders, intermediaries, healthcare workers, and communities can take as they adopt, integrate, and scale-up proven health innovations to accelerate their country's progress toward UHC.

The paper proposes the following five key recommendations:
- o Policymakers need to use their convening role to address resourcing gaps, support inclusive processes, and facilitate knowledge exchange and partnerships toward adapting, scaling, and integrating health innovations for UHC.
- o Implementers should institutionalize processes for multi-stakeholder partnerships that fast track the identification, adaptation, scaling, and integration of proven health innovations.
- o Funders, including investors and donors, broaden existing funder networks and partnerships to focus on scaling proven innovations with evidence of impact on health outcomes, and fund initiatives that catalyze multi-sectoral support for health innovations.
- o Implementers systematically and actively build evidence on the value of neutral facilitation for adaptation and innovation integration at a sustainable scale. By taking on knowledge dissemination and translation, implementers will support health system leaders, policymakers, and funders to identify proven innovations that are likely to be scaled.
- o Healthcare workers and communities should be included in platforms that oversee the identification of innovations to be adapted in their local healthcare context.

1 Introduction

Universal health coverage (UHC) is globally recognized as an essential component to achieve sustainable development.[11] Despite broad political commitment and national strategies to advance UHC, countries in sub-Saharan Africa (SSA) are still lagging in their UHC targets[12] due to persistent health system challenges that impede progress.[13] These health system challenges include a critical shortage of skilled healthcare workers,[14] inadequate health facilities and infrastructure to meet changing health needs,[15] inaccessibility of quality essential medicines,[16] inadequate domestic funding for health interventions, and a decline of donor funding.[17] While these health system challenges are not unique to the region, they are acute and require solutions that deepen and broaden country toolkits to improve service delivery and health financing. It is against this background that the 2017 Lancet Commission report on the Future of Health in SSA recommended that new approaches, including the integration of health innovations, are needed to achieve UHC by 2030.[18]

Innovations in care delivery and health financing will enhance the translation of political commitments to UHC into equitable health services for all. Private and public-sector health innovations offer strategies that countries can adopt to strengthen health systems and accelerate UHC progress. Health innovations also provide an opportunity to develop a complementary and necessary strategy to fill gaps in population and service coverage, financial protection, quality, and equity, which are key pillars of UHC.[19] Innovative healthcare approaches are already transforming how SSA countries deliver care and allocate resources, with emerging indications of increased impact. However, there is limited evidence in the SSA region on the health impact of proven health innovations implemented at scale within specific health systems and how to provide country-level guidance to support adaptation, integration, and scale-up of proven health innovations into country health systems.

Implication of health innovation for UHC advancement in SSA

Systematically integrating proven health innovations into healthcare delivery systems can strengthen the health system, enabling more rapid and sustainable UHC progress.[20, 21] For example, by investing in innovative models of quality improvement, countries can improve health outcomes such as safe deliveries. Indeed, the current global momentum and unprecedented political commitment toward advancing UHC has led many countries to increase focus on such innovations.[22] Specifically, Rwanda and Ghana have integrated innovation into their national health insurance schemes[23] to advance UHC by reducing financial barriers and increasing access to quality care regardless of ability to pay.[24] In Kenya, the government launched the UHC pilot program, dubbed

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[11] World Health Organization, "Universal Health Coverage Passes Key Global Milestone."

[12] World Bank Group, "Universal Health Coverage (UHC) in Africa : A Framework for Action : Main Report (English)."

[13] Moeti, "Toward Universal Health Coverage in Africa."

[14] Miseda et al., "The Implication of the Shortage of Health Workforce Specialist on Universal Health Coverage in Kenya"; Asamani et al., "Nurses and Midwives Demographic Shift in Ghana—the Policy Implications of a Looming Crisis.

[15] Hussein, "A Review of Realizing the Universal Health Coverage (UHC) Goals by 2030: Part 2-What Is the Role of EHealth and Technology?"; Chiedozie, "Sustainable Health: The Bedrock for Sustainable African Development."

[16] Agyepong et al., "The Path to Longer and Healthier Lives for All Africans by 2030: The Lancet Commission on the Future of Health in Sub-Saharan Africa"; Quick et al., "Medicines Supply in Africa."

[17] Eastwood et al., "Loss of Health Professionals from Sub-Saharan Africa: The Pivotal Role of the UK"; Galaviz et al., "The Public Health Leadership and Implementation Academy (PH-LEADER) for Non-Communicable Diseases"; Asamani et al., "Toward a Regional Strategy for Resolving the Human Resources for Health Challenges in Africa."

[18] Agyepong et al., "The Path to Longer and Healthier Lives for All Africans by 2030: The Lancet Commission on the Future of Health in Sub-Saharan Africa."

[19] World Health Organization, "Health Financing for Universal Coverage."

[20] Makaka, Breen, and Binagwaho, "Universal Health Coverage in Rwanda: A Report of Innovations to Increase Enrolment in Community-Based Health Insurance."

[21] Ministry of Health Kenya, "President Uhuru Launches Universal Health Coverage Pilot Program."

[22] Gardner, Acharya, and Yach, "Technological and Social Innovation: A Unifying New Paradigm for Global Health"; Mehl and Labrique, "Prioritizing Integrated MHealth Strategies for Universal Health Coverage"; Bloom, Wilkinson, and Bhuiya, "Health System Innovations: Adapting to Rapid Change"; Paina et al., "Applying the Model of Diffusion of Innovations to Understand Facilitators for the Implementation of Maternal and Neonatal Health Programmes in Rural Uganda."

[23] Makaka, Breen, and Binagwaho, "Universal Health Coverage in Rwanda: A Report of Innovations to Increase Enrolment in Community-Based Health Insurance."

[24] Gardner, Acharya, and Yach, "Technological and Social Innovation: A Unifying New Paradigm for Global Health;" Mehl and Labrique, "Prioritizing Integrated MHealth Strategies for Universal Health Coverage;" Bloom, Wilkinson, and Bhuiya, "Health System Innovations: Adapting to Rapid Change;" Paina et al., "Applying the Model of Diffusion of Innovations to Understand Facilitators for the Implementation of Maternal and Neonatal Health Programmes in Rural Uganda."

the Afya Care program, to provide citizens with access to health services while limiting financially catastrophic payments.[25]

Scaling up proven health innovations such as vaccines, medical devices, and digital health tools fill health system gaps[26] in areas such as maternal and child health while supporting health system goals of increasing access to quality care.[27] Some proven innovations have been replicated and adapted across large geographies to reach wide-scale adoption.[28] One example of an evidence-based practice that is implemented at scale is Kangaroo mother care, which uses skin-to-skin contact between mothers and babies to help improve newborns' temperature regulation and promote exclusive breastfeeding. This low-tech intervention has been adopted worldwide, and has particular importance for limited-resource settings where newborn mortality rates are high.[29] Other examples of successful innovations that have solved specific systemic challenges and been scaled up in multiple countries include:
- o Rapid assessment of malaria (RAM), a low-cost, reusable malaria test, facilitates fast and effective diagnosis and treatment of malaria and is particularly useful in areas with limited access to microscopy.[30]
- o Self-administered injectable contraceptives for reproductive health, are increasingly available in low-and middle-income countries (LMIC), thereby reducing an unmet need for family planning.[31]
- o The Human Papilloma Virus (HPV) vaccination, which is being rolled out across countries, is protecting more women from cervical cancer, the most common cancer among women in the African region.[32]

While considering wide-scale adoption of innovation to advance UHC, policymakers, and health system leaders need to navigate and balance the inherent trade-offs that countries make as they chart their paths toward UHC. Although evidence shows the value of innovations in health, the dynamism of health systems creates additional complexity in implementing innovations at scale toward UHC advancement. Indeed, health systems fit the definition of complex adaptive systems—systems characterized by a "capacity for adaptation, self-organization, at times disproportionate to the changes that have initiated them."[33] This potential for small changes to create a systemic effect means that proven innovations can lead to large-scale improvements in health outcomes when appropriately integrated into a health system.[34] Proven innovations refer to health innovations with evidence of impact that have moved beyond proof of concept to implementation within a specific country.[35] Therefore, while identifying the right mix of innovations for a given health system is complex, integrating proven innovations into the existing health system can help leaders balance the trade-offs required to achieve UHC by providing new ways to increase the efficiency and effectiveness of health interventions. To maximize the potential of proven innovations, health system leaders need to develop specific strategies to integrate and scale-up these innovations in their national health systems. [36]

Filling the knowledge and awareness gap

At its inception in 2017, the African Collaborative for Health Financing Solutions (ACS),[37] a five-year (2017-2022) United States Agency for International Development (USAID)-funded project, sought to understand stakeholder knowledge on barriers and solutions for advancing UHC. We outline the results of this participatory research phase in the ACS landscape report.[38] The team interviewed more than 200 stakeholders in Burkina Faso, Nigeria, Senegal, Tanzania, and Uganda. A key finding was that health innovation is a poorly understood concept among many stakeholders, who expressed a need to understand the concept better and increase their

[25] Ministry of Health Kenya, "President Uhuru Launches Universal Health Coverage Pilot Program."
[26] Greenwood, "The Contribution of Vaccination to Global Health: Past, Present and Future."

[27] Greenwood, "The Contribution of vaccination to global health: past, present and future."
[28] "Insights on Scaling Innovation"
[29] Ballenot et al., "The IC2030 Report: Reimagining Global Health 30 High-Impact Innovations to Save Lives ."
[30] Gupta et al., ""RAPID ASSESMENT OF MALARIA (RAM) DEVICE PROJECT."
[31] DiGiorgio et al., "Costs of Administering Injectable Contraceptives through Health Workers and Self-Injection: Evidence from Burkina Faso, Uganda, and Senegal."
[32] World Health Organization, "Cervical Cancer Common amongst African Women."
[33] Hill, "Understanding Global Health Governance as a Complex Adaptive System."
[34] The Health Foundation, "Evidence Scan: Complex Adaptive Systems."
[35] Hill, "Understanding Global Health Governance as a Complex Adaptive System."
[36] The Health Foundation, "Evidence Scan: Complex Adaptive Systems."
[37] ACS, "African Collaborative for Health Financing Solutions."
[38] Thoumi et al., "Consultation Phase Findings– African Collaborative for Health Financing Solutions."

awareness of specific innovations that supported UHC progress. Additionally, we identified a knowledge gap about how proven health innovations can be sustainably integrated into national health systems to address complex challenges such as advancing UHC in SSA.

The knowledge gap about existing innovations and their impact at a national health system level is not unique to the stakeholders interviewed for ACS. The tendency to limit health innovation to global health products or technological advancements while ignoring the significant role that innovations in service delivery models and process improvements play in shaping how healthcare is delivered compounds the knowledge gap.[39]

To delineate how proven innovations can advance UHC, we seek the answers to these two research questions:

   i. *How do health innovations overcome health system challenges in SSA countries to advance UHC goals?*
   ii. *How can country stakeholders support the adaptation, integration, and scale-up of proven health innovations into health systems to advance UHC goals?*

We applied two existing frameworks to answer these research questions. We use the International Development Innovation Alliance (IDIA) framework to select and categorize health innovations based on the scaling stage. We also use the modified UHC cube[40] to identify the key dimensions of UHC that can be addressed by health innovations and as the basis to understand how various innovations are addressing those dimensions. This paper describes how innovations have supported health systems to address existing gaps related to advancing UHC. We also showcase how several countries have engaged social and technological healthcare innovations to meet the ever-increasing population demand to deliver high-quality and affordable care. We aim to show practical results of how proven health innovations advance progress toward UHC. Given the limited evidence on how proven innovations can be adapted into health systems and sustainably scaled, we then provide insights on adaptation and integration of innovations and propose that deliberate investment toward integrating health innovations into country systems is a viable strategy for countries seeking to accelerate the progress of UHC.

The first two sections introduce the research question that the paper will answer, the implication of innovations for advancing UHC in SSA, and the methodology for this research. In section III, we outline how growth-stage health innovations have improved various dimensions of UHC. In section IV, we make the case that health innovations are a best buy for countries seeking to advance UHC, highlight some of the challenges that countries face as they seek to adapt, integrate and scale innovations into health systems. In section V, we synthesize the emerging themes on innovations as drivers of UHC, identify key considerations when integrating innovations, and highlight imperatives for health systems seeking to support the scaling of health innovations. Finally, in section VI, we propose practical actions that policymakers, implementers, funders, and intermediaries can take as they adopt, integrate, and scale up promising health innovations to accelerate their country's progress towards UHC.

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[39] Kimble and Massoud, "What Do We Mean by Innovation in Healthcare?"
[40] Barker, Pierre. "Making Universal Health Coverage Whole: Adding Quality as the Fourth Dimension." www.ihi.org. Institute for Healthcare Improvement, 2016.

II. Definitions, Methods and Framework

PART I: Working definition of innovation

In early 2019, the research team collaboratively developed a working definition of 'health innovation for UHC' that ACS adopted internally. While the term innovation is widely used, many definitions exist, including, but not limited to, from leading health organizations like the World Health Organization (WHO), Health Innovation Group, and the Agency for Health Research and Quality (AHRQ). For this research, we adopted the following definition of health innovation: "**New or improved products, processes, delivery models, interventions and technologies that directly or indirectly improve access to quality and affordable healthcare.**" We validated this working definition through preliminary conversations with stakeholders, including ACS consortium partners.

PART II: Frameworks

We rely on two existing frameworks to identify, select, and analyze the innovations. The first framework we used to select innovations is the IDIA stages of innovation framework. The IDIA framework outlines the path health innovations take as they transition from early stages (ideation, research and development, and proof of concept) to later stages of growth (transition to scale, scaling, and sustainable scale).[41] The IDIA framework acknowledges the complexity of moving through the scaling stages by lending insight into the convergence of funders, innovators, implementers, and the broader environment as innovations move through scaling to sustainability.[42]

The six stages of the IDIA framework are:
1. *Ideation:* Defining and analyzing the development problem and generating potential solutions through horizon scanning of existing new ideas.
2. *Research and Development:* Further developing specific innovations that have the potential to address the problem.
3. *Proof of Concept*: When the intellectual concept behind an innovation is field-tested, to gain an early 'real-word' assessment of its potential.
4. *Transition to Scale:* When innovations that have demonstrated small-scale success develop their model and attract partners to help fill gaps in their capacity to scale.
5. *Scaling:* The process of replicating and adapting an innovation across large geographies and populations for transformational impact.
6. *Sustainable Scale*: The wide scale adoption or operation of an innovation at the desired level of scale/exponential growth, sustained by an ecosystem of actors.

We then applied the modified UHC cube (see Figure 1)[43] - a conceptual framework for identifying the challenges for achieving UHC, and UHC dimensions that can be addressed by health innovations. By using this framework, we highlight how each innovation addresses many dimensions of UHC. We examine innovations based on how they address the four dimensions of the modified UHC cube, namely: population coverage, service coverage, quality, and financial protection. One shortcoming of the modified UHC cube is that it does not address equity. We, therefore, included a fifth dimension – equity - as a critical health system goal, especially because policy changes and transitions in financing often disproportionately affect vulnerable groups.[44] By aligning illustrative examples to the UHC dimensions, we demonstrate how policymakers, health practitioners, funders, and other decision-makers can harness innovations and incorporate them into health systems in a complementary way to achieve UHC.

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[41] "Insights on Scaling Innovation."
[42] "Insights on Scaling Innovation."
[43] World Health Organization, "Health Financing for Universal Coverage."
[44] Hecht et al., "Donor Transitions from HIV Programs: What Is the Impact on Vulnerable Populations?"
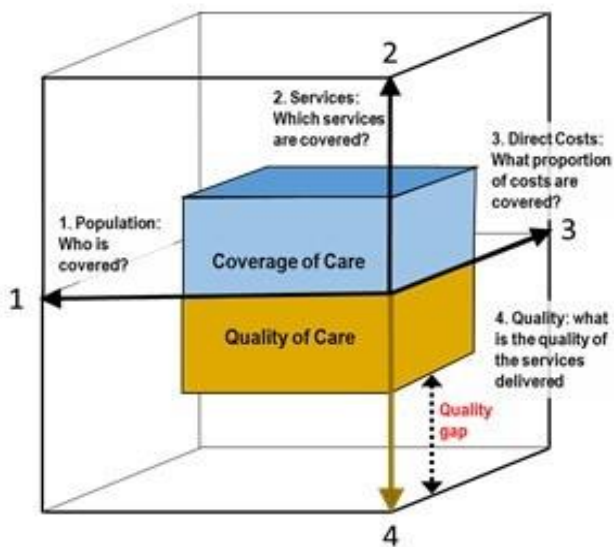
Figure 1: Modified UHC cube[45]

PART III: Method

Based on the working definition of health innovation, the team conducted an environmental scan including a desk review of the literature and scanning the following databases for illustrative innovations: Center for Health Market Innovations (CHMI), Innovations in Healthcare (IiH), the Global Innovation Exchange (GIE), Make-IT in Africa, and the Joint Learning Network (JLN) to identify proven healthcare innovations. We selected innovations based on the following criteria:

1. *Geography:* The innovation needs to be implemented in at least one African country.
2. *UHC dimension:* The innovation needs to primarily address UHC through at least one dimension of the UHC cube (i.e., enhancing population coverage, financial protection, service coverage, quality, and equity).
3. *Scaling stage:* The innovation needs to be in the *transition to scale* stage or beyond based on the IDIA framework (i.e., to demonstrate at least two appropriate measures of growth beyond proof of concept).

Based on these criteria, we reviewed over 54 innovations, of which we shortlisted 34 innovations (see Appendix), and selected a final illustrative sample of 13 innovations for analysis. Table 1 shows the scaling stage for the 13 innovations when mapped against the IDIA Stages of Scaling Innovation framework, while the Appendix has a summary table with additional details on each of the shortlisted innovations. Following the final selection of innovations, we used the UHC cube to analyze how different health innovations address the five UHC dimensions.

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[45] World Health Organization, "Health Financing for Universal Coverage."

Table 1: Illustrative Mapping of Selected Health Innovations Against IDIA Stages of Scaling Innovation

	Early (Ideation, R&D, Proof of Concept)	Transition to Scale	Scaling	Sustainable Scale
Ubuntu Afya Kiosks		X		
amHealth app		X		
MiracleFeet leg brace			X	
Health infrastructure co-financing		X		
Hospicash and Credit Health (micro-insurance) and Credit Health (micro-insurance)		X		
Standardized network of community health workers (CHW)			X	
Mutuelles de Santé				X
Blue Box clinics			X	
Network of affordable outpatient clinics		X		
Conversion franchise model			X	
Nurse health post network			X	
Solar Ear		X		
ZiDi Electronic Medical Record system		X*		
One Family Health Rwanda innovative financing scheme			X	

Although ZiDi had limited success and is no longer in implementation, the innovation had demonstrated two appropriate measures of growth as it moved toward transition to scale, hence was still relevant for our analysis.

III. Innovations Advancing UHC in Sub-Saharan Africa

In this section, we present findings based on a review of 13 innovations. We analyzed the innovations in terms of how they contribute to five UHC dimensions (population coverage, financial protection, service coverage, quality, and equity). We selected these innovations to illustrate how a proven health innovation at different stages of scale helps overcome specific health system challenges and contribute toward UHC. By describing each innovation's scaling journey, we highlight key milestones and the barriers faced during the growth and expansion phases of the innovations. We then summarized common themes on the innovations that address that specific aspect of UHC and included details on each innovation's current impact.

i. Population Coverage

Common Themes: Population Coverage Innovations

- These innovations address segments of the population that have been left out by the current design of healthcare delivery systems.
- Successful innovations that increase population coverage incorporate people-centric design and interventions that place the individual at the center of health services.
- Increasing access to primary care is a common theme as these innovations transition to scale even when the initial approaches have a narrow disease focus.
- Sustainability of population coverage innovations is a key issue given the relatively high capital outlay needed to set up facilities or develop interventions that bring healthcare closer to the people.
- Sustainable scale for these innovations involves partnerships with the public sector to integrate the aproaches into national health systems. Governments have the ultimate responsibility for ensuring that everyone has access to essential services. Public-private partnerships (PPP) with non-governmental organizations (NGOs), the community, and the public sector are necessary to improved access.

Structural, financial, and cultural barriers limit healthcare access, contributing to lower uptake of healthcare, especially preventive services. The WHO data show at least half the world's population still lacks access to essential health services.[46] Countries across Africa are striving to ensure that all people have access to the health services they need.[47] However, the inability to access quality health services for lifesaving interventions contributes to the sustained high burden of communicable and non-communicable disease (NCD) morbidity and mortality in SSA, relative to other regions of the world.[48]

Health innovations in Africa have been instrumental in increasing access to various health services, especially primary care.[49] Proven innovations help overcome gaps that limit population coverage, such as inadequate health infrastructure, limited community-oriented services, and a lack of focus on underserved and vulnerable groups that face more significant barriers to essential health services. Metrics of success for these innovations include reduced walking time for patients, reduced wait times, and an increased number of accessible health facilities. Health outcomes as a result of the innovations include an increased number of patient encounters.

Create infrastructure in areas that lack health facilities. Data show that health outcomes worsen the farther an individual lives from a health facility, while service utilization increases for individuals who live close to facilities.[50] As a result, geographic distance is a crucial component to accessing health services, especially in rural

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[46] World Health Organization and The World Bank, "Tracking Universal Health Coverage: 2017 Global Monitoring Report."
[47] World Health Organization, "Universal Health Coverage (UHC)."
[48] World Health Organization, "Monitoring Health for the SDGs."
[49] Santra, Mandal, and Das, "Leveraging Disruptive Technology Innovations for Healthcare Delivery in Sub-Saharan Africa."
[50] Tanou and Kamiya, "Assessing the Impact of Geographical Access to Health Facilities on Maternal Healthcare Utilization: Evidence from the Burkina Faso Demographic and Health Survey 2010;" Stock, "Distance and the Utilization of Health Facilities in Rural Nigeria."

areas where more than 60 percent of the SSA population lives.[51] To address this gap, health innovations seek to improve existing public infrastructure or build and equip new health facilities.

Case Example: Health infrastructure co-financing model by Health Builders

Innovation description: Health Builders addresses population coverage by improving physical access to health services by constructing comprehensive primary health centers where access is limited or non-existent. Health Builders was founded in 2007 to reduce the health facility deficit in Rwanda. The innovation uses its health infrastructure co-financing model, which works through agreements with local governments to jointly fund the building of new health facilities or repairs to update older clinics.[52] After the health facilities become operational, Health Builders transition them to the government for operations and maintenance. Health Builders also trains and works closely with local nurses and CHWs who understand the local contexts to deliver adequate quality of care at an affordable cost.

Population covered: This innovation focuses on areas where communities face challenges accessing health facilities due to either distance or other geographic constraints such as the mountainous terrain in parts of Rwanda.[53]

Public-private engagement: The government of Rwanda identifies health facilities to rehabilitate and local communities construct the facilities, thereby creating employment.[54] The fundamental components of each health center built through this approach include operational pharmacies, consistent power (ensured through solar power), and running water.

Funding model: Health Builders supported the construction and equipping of eight new health centers by providing $2.8 million that was matched by $250,000 funding from various districts in Rwanda.[55] To sustainably generate funding for health infrastructure improvement, Health Builders developed Rwanda's only oxygen plant at Ruhengeri Hospital outside Kigali – Rwanda's capital city. The oxygen is sold to health facilities to generate income that is re-invested into health system strengthening activities.[56]

Impact: Health Builders has enhanced access to primary care for more than 2 million Rwandans, including providing care to 174,000 individuals who had no access to health facilities.[57] The primary services provided at the new health centers include maternal and child health and general outpatient services with health outcomes, including 20,000 assisted deliveries. Other direct results of the infrastructure development innovation are the provision of clean drinking water at ten health facilities serving 280,000 people and augmenting the power supply through solar installations at eight health centers that serve 165,000 community members.[58]

Scaling: The Health Builder's infrastructure co-financing innovation is currently in three districts and at the transition to scale stage.[59] To sustainably integrate this innovation in the health system, Health Builders is looking to replicate the initiative across Rwanda and looking at partnerships to expand into new countries.[60]

Enhance community-based solutions responsive to local demand. There is growing recognition that people, not disease conditions, should be at the center of health systems to empower individuals to take charge of their well-being.[61] Person-centered health services respond to poor health service designs that have not taken into account the culture and context of the people using the services.[62] The sustainable development goals (SDGs) also recognize the importance of integrated person-centered healthcare in advancing UHC by aligning health

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[51] Achana et al., "Spatial and Socio-Demographic Determinants of Contraceptive Use in the Upper East Region of Ghana;" Gabrysch et al., "The Influence of Distance and Level of Care on Delivery Place in Rural Zambia: A Study of Linked National Data in a Geographic Information System;" Feikin et al., "The Impact of Distance of Residence from a Peripheral Health Facility on Pediatric Health Utilisation in Rural Western Kenya."

[52] Goodman, "Health Builders: Systems Strengthening Through Performance Management."

[53] Kerr, "Drones, Sun Power Help Rwanda Deliver Health to All."

[54] Health Builders, "Health Builders 2016 Factsheet."

[55] Health Builders, "Health Builders 2016 Factsheet."

[56] Goodman, "Health Builders: Systems Strengthening Through Performance Management."

[57] Health Builders, "Health Builders 2016 Factsheet."

[58] Health Builders.

[59] Health Builders. "About"

[60] Goodman, "Health Builders: Systems Strengthening Through Performance Management."

[61] World Health Organization, "WHO | What Are Integrated People-Centred Health Services?"

[62] Primary Health Care Performance Initiative (PHCPI), "Person-Centered Care."

delivery to meet individuals and communities' needs of individuals and communities.[63] Health innovations integrate the concept of person-centered health by engaging with communities and local officials on their health needs to inform contextualized solutions.

Case Example: Afya Research Africa (ARA)'s Ubuntu Afya clinics

Innovation description: To ensure population coverage, Afya Research Africa (ARA) creates Ubuntu Afya clinics and medical kiosks in underserved areas that lack health facilities, thus improving physical access to health services like maternal and child health as well as NCDs screening and treatment. Ubuntu Afya clinics in Kenya are an example of the community co-ownership model.[64] ARA, a non-profit organization, developed a co-ownership model in 2011.[65] Community co-ownership entails partnerships with communities with limited access to primary health services to fund and set up health stalls, known as or M-Afya Kiosks, that are operated by CHWs. To grow, ARA decided to extend its reach by collaborating with self-help groups and shifting its model to include formal health facilities—Ubuntu Afya Clinics—operated by a health worker (nurse or clinical officer).[66]

Population covered: Groups of CHWs, nurses, and clinical providers run kiosks and clinics stocked with essential medical supplies for communities in remote areas, which might otherwise be unable to access these medical goods.[67]

Public-private engagement: While each Ubuntu Afya clinic is designed to meet the health needs of a specific community, clinics are linked to a common technology platform. Each clinic is registered with the Kenyan Ministry of Health and reports data into the national health information system (DHIS 2), which helps to measure progress toward national population coverage goals.

Funding model: The CHWs fund 30 to 50 percent of the set-up costs and operate the kiosks with support from ARA.[68] Other additions to the core innovation include the development of health enterprises that subsidize the cost of health services as the clinics run on a for-profit basis. Groups choose health enterprises that offer services that can best benefit their community.[69]

Impact: With the pivot toward health facilities, it became clear that co-ownership works best in rural settings. The Ubuntu Afya clinic network has now grown to 27 health centers that have served more than 60,000 patients with primary care services such as maternal and child health as well as NCD management.[70]

Scaling: It takes each clinic a year to break even and begin the journey to financial sustainability. To enhance clinic performance, ARA has also experimented with giving the clinic team leader an ownership stake as a means of staff retention. With the organization currently operating in several Kenyan counties, the Ubuntu Afya Kiosks innovation is at the transition to scale stage, with ARA working on expanding the concept nationwide.[71]

Deploy healthcare workers to deliver doorstep healthcare services. CHWs are integral to extending care beyond health facilities into spaces where individuals live and work.[72] CHWs are critical to reducing access barriers and embedding preventive and promotive practices into the daily lives of communities. Investments in CHW programs have shown a ten-fold return on investment in terms of individuals' productivity and reduced costs for health systems.[73] These efficiencies and the benefits of increased access to health are essential for the advancement of UHC in resource-constrained settings.[74] Most of the innovations built around CHW programs have developed new ways of leveraging CHWs' accessibility to their communities while also working to solve the sustainability challenge that CHW programs have long faced.[75] Some innovations integrate training to upskill CHWs on certain disease management while providing financial incentives such as selling medicines and other

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[63] World Health Organization, "Tokyo Declaration on Universal Health Coverage: All Together to Accelerate Progress towards UHC."

[64] Afya Research Africa, "Our Work – ARA."

[65] The Center for Health Market Innovations, "M-Afya Kiosks | The Center for Health Market Innovations."

[66] Gwer, "Afya Research Africa."

[67] The Center for Health Market Innovations., "M-Afya Kiosks | The Center for Health Market Innovations."

[68] The Center for Health Market Innovations., "M-Afya Kiosks | The Center for Health Market Innovations."

[69] Afya Research Africa, "Our Work – ARA."

[70] Innovations in Healthcare, "Supporting Scale: How An Accelerator Model Helped Health Innovations Succeed | Innovations in Healthcare."

[71] Afya Research Africa, "Our Work – ARA."

[72] Tulenko et al., "Community Health Workers for Universal Health-Care Coverage: From Fragmentation to Synergy."

[73] Dahn et al. "Strengthening Primary Health Care through Community Health Workers: Investment Case and Financing Recommendations."

[74] The Fighting Alliance for Health, "Investment Case — Financing Alliance."

[75] Tulenko et al., "Community Health Workers for Universal Health-Care Coverage: From Fragmentation to Synergy."

products at a mark-up to make these models sustainable. Other approaches deploy trained CHWs equipped with rapid diagnostic devices to conduct door-to-door home screening as a pathway for early detection of chronic conditions.

Case Example: Last Mile Health's trained CHW network

Innovation description: Last Mile Health addresses population coverage by improving access using its network of paid and trained CHWs to expand the reach of essential health services in Liberia. Last Mile Health was founded in 2007 and works with a network of CHWs to deliver quality healthcare to people in remote areas in Liberia. It uses a comprehensive recruitment, training, and compensation model to support the development of a standardized network of CHWs based on evidence that training workers on 30 key interventions significantly reduce infant, child, and maternal mortality.[76]

Population covered: Last Mile Health deploys CHWs to deliver life-saving care to people living in remote areas in Liberia.

Public-private engagement: During the 2014 Ebola pandemic, Last Mile Health used their existing CHW model and expanded its network and to help treatment centers, by identifying patients at risk for Ebola.[77] A partnership between Last Mile Health and the Liberian Ministry of Health replicated the program across the country to expand primary care. This ongoing partnership seeks to develop a nationwide initiative called the National Community Health Assistant Program. Furthermore, the Community Health Academy, established in 2017, supports Ministries of Health to digitize national curricula for CHWs and conducts training for policymakers on integrating lessons learned from successful CHW programs. This program is funded through philanthropic donations and is free to the public, but Last Mile Health plans to develop it into a hybrid product with premiums paid to subsidize the free content delivered to the public sector.

Funding model: Last Mile Health is a non-profit organization supported by grants and philanthropy.

Impact: The Last Mile Health standardized CHW approach is implemented in two counties in Liberia, providing 2.3 million patient home visits and deploying over 3,600 health workers. In 2017, an impact evaluation of Last Mile Health interventions showed significant increases in the uptake of child and maternal health services from formal providers, thereby demonstrating that this innovative approach managed to strengthen the relationship between communities and health facilities.[78]

Scaling: With the innovation currently at the scaling stage, Last Mile Health is pursuing scale through two main strategies: training Ministries of Health staff to provide leadership for sustainable CHW programs and adapting the model for new country contexts. In Malawi, Last Mile Health is supporting the MOH to develop and implement their National Community Health Strategy and has recently helped with their COVID-19 response by training CHWs.[79,80] The organization plans to scale the digitally empowered CHW model to two additional countries in Africa by 2023 through government partnerships.[81]

Ensure underserved populations have access to essential services. A key tenet underlying the SDGs and the movement for UHC is "leave no one behind".[82] This implies that for UHC goals to be achieved, populations or groups that are currently underserved need to have improved access to healthcare services.[83] Many health innovations seek to provide a bridge to reach underserved and vulnerable population groups by creating service delivery models that address the specific needs of these population segments.

Case Example: North Star Alliance's Blue Box clinics

Innovation description: North Star Alliance's Blue Box clinic network addresses population coverage by providing healthcare to communities on transportation corridors in eastern and southern Africa, who may not have regular access to formal health facilities. The innovation converts used shipping containers into

[76] Chou et al., "Expanding the Population Coverage of Evidence-Based Interventions with Community Health Workers to Save the Lives of Mothers and Children: An Analysis of Potential Global Impact Using the Lives Saved Tool (LiST)."

[77] Starkey.

[78] Luckow et al., "Implementation Research on Community Health Workers' Provision of Maternal and Child Health Services in Rural Liberia."

[79] Last Mile Health, "Last Mile Health's COVID-19 Response"

[80] Last Mile Health, "Where We Work: Malawi"

[81] Last Mile Health, "About Us."

[82] World Health Organization, "Leave No One behind: Strengthening Health Systems for UHC and the SDGs in Africa."

[83] Rao et al., "Vulnerable Populations and Universal Health Coverage."

clinics (Blue Box Roadside Wellness Centers) and places these clinics in high-traffic, low-population locations along major transnational highways. The Blue Box clinics initiative began as a partnership by major players in the transportation industry to mitigate the effects of HIV/AIDS on their employees. The first clinic was established Mwanza, Malawi in 2005. Over time, services expanded to include primary healthcare and health promotion.[84] North Star Alliance developed an electronic medical records system that connects its clinics for continuity of care no matter where a patient seeks treatment to enhance the effectiveness of the core innovation. The organization also added a CHW program to provide outreach services to the communities hosting the Blue Box Roadside Wellness Centers.

Population covered: The clinics serve mobile workers, such as long-haul truck drivers, commercial sex workers, and members of the local communities.

Public-private engagement: The Blue Box clinic network has partnered with the public sector to refer patients to government-run facilities for specialized care. In some countries, the government incorporates the Blue Box clinics into its supply chain and provides free medication for priority health conditions.[85]

Impact: By 2018, the Blue Box clinic network had served more than 159,000 patients.[86]

Scaling: North Star Alliance is scaling the blue clinics innovation by increasing the number of clinics and countries in which it operates. Currently, the organization operates in 10 African countries with 38 Blue Box clinics. In addition, 60 clinics across Africa are supported by North Star Alliance's operational tools, including 12 clinics run by other service providers, predominantly in West Africa.[87] As countries move to mainstream HIV interventions for most at-risk and vulnerable populations, North Star Alliance has sought to increase its network's sustainability by adding auxiliary services, such as laboratories, as an income-generating initiative.[88] The organization has included an objective on broadening its funding base to ensure a sustainable scale within its current strategy.

ii. Quality

Common Themes: Innovations for Quality improvement

- Quality of care is a multi-dimensional issue, and multiple approaches are needed to help health systems provide quality care as part of their UHC programs.
- Most of the innovations have a strong demand-side perspective and are highlighting how to implement person-centered care.
- Quality in primary care involves balancing a focus on objective quality (through standardization of care via clinical protocols) and the ability to tackle subjective quality (through being responsive to contextual individual patient needs).
- Sustainability of innovations that support quality care is a key issue; evidence is growing as to how quality improvement programs affect impact healthcare costs and the extent to which they contribute to improved outcomes.

Poor quality health services increase healthcare costs and the global burden of disease.[89] The ultimate cost of low-quality healthcare is borne by people living in LMICs where poor quality of care attributes to 12 to 18 percent of deaths.[90] While there are many definitions of quality, the WHO describes quality services as effective, safe, and person-centered; noting to realize the benefits of quality healthcare, health services must be timely, equitable, integrated, and efficient.[91] A joint report by the World Bank, WHO, and the OECD define quality as "the degree to which health services for individuals and populations increase the likelihood of desired health

[84] North Star Alliance, "Initiatives."

[85] North Star Alliance.

[86] North Star Alliance.

[87] North Star Alliance, "North Star Strategy: 2017-2020."

[88] "North Star Alliance Opens Laboratory in Kenya."

[89] North Star Alliance, "North Star Strategy: 2017-2020."

[90] National Academies of Sciences and Medicine, *Crossing the Global Quality Chasm: Improving Health Care Worldwide*; World Health Organization and The World Bank, "Tracking Universal Health Coverage: 2017 Global Monitoring Report."

[91] World Health Organization, "What Is Quality of Care and Why Is It Important?"

outcomes and are consistent with current professional knowledge".[92] One critical factor affecting quality of care is the shortage of skilled healthcare workers. SSA has a quarter of the global disease burden but has only three percent of the world's health workforce.[93] Beyond these shortages, many African countries suffer low adherence to clinical protocols, with health workers often unaware of key guidelines.[94]

Bridge gaps in healthcare workforce skills and knowledge: Lack of adequate clinical skills among frontline health workers is a major driver of poor quality in many African countries.[95] A recent study in seven African countries showed that clinicians were only able to make accurate diagnoses 33 to 75 percent of the time, and that less than half of health workers follow clinical guidelines for management of common ailments.[96] These lapses in providing quality of care lead to increased costs for treatment and poor patient outcomes, which impedes progress toward UHC. Health innovations have shown promise in supporting upskilling of health workers and developing management and leadership competencies that support a culture of quality.

Case Example: LifeNet International's Conversion Franchise Model

Innovation description: LifeNet International developed a conversion franchise model to increase quality and promote sustainability of faith-based facilities. This approach integrates elements of franchising, where individual facilities agree to operate according to certain standards in exchange for support from an external partner. After the health facility meets a certain quality threshold, the health facility is converted to a network partner that can access certain benefits such as loans to purchase medical equipment. LifeNet International launched in Burundi in 2012, working with 10 faith-based facilities, and aims to double the quality of care at partner facilities within two years of partnership.[97] The facilities in Burundi - a post-conflict country - lacked basic equipment, had frequent drug stockouts, and struggled with keeping track of funds. Initially, LifeNet tested an approach that provided micro-loans and basic medicines to nurses to enable them to serve their patients better.[98] However, the team discovered that the clinical staff also lacked knowledge of critical life-saving skills such as infant resuscitation and pivoted to providing training as well. After observing that nurses spent a significant amount of time away from clinical care travelling to purchase out-of-stock medicines, LifeNet incorporated a program to procure and distribute essential medical supplies to its network of facilities. Improvements in quality are tracked through an internal tool, the Quality Score Card, which measures progress in pharmacy operations, clinical practice, and management.

Population covered: LifeNet International identifies health facilities operating at sub-par levels and works with them to integrate quality standards including treatment protocols. The conversion franchise approach works on the dual objectives of increasing clinical quality and improving management capacity at the partner facilities. The clinical quality component is achieved through monthly medical trainings offered by a team of nurse trainers. LifeNet has also developed modules for administrative staff at partner sites that address the key competencies required to manage a health center. Additionally, the organization has integrated modules focused on NCD management in Uganda.[99]

Public-private engagement: While LifeNet focuses on faith-based health facilities, the program interfaces with the public sector by aligning its curricula to national quality standards and incorporating essential drug lists within its pharmacy supplies program.

Funding model: LifeNet International is a non-profit supported by grant funding and partnerships with philanthropic organizations.

Impact: LifeNet International's program led to a significant improvement of health workers' skills, which translated into improved healthcare for patients. In 2019, LifeNet conducted almost 2.4 million patient visits, including 60,000 improved deliveries.[100]

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[92] Kieny et al., "Delivering Quality Health Services: A Global Imperative for Universal Health Coverage."
[93] Miseda et al., "The Implication of the Shortage of Health Workforce Specialist on Universal Health Coverage in Kenya."
[94] Ritchie et al., "Low- and Middle-Income Countries Face Many Common Barriers to Implementation of Maternal Health Evidence Products."
[95] LifeNet International, "LIFENET'S Q4 2018 KEY PERFORMANCE INDICATORS."
[96] Kieny et al., "Delivering Quality Health Services: A Global Imperative for Universal Health Coverage."
[97] The Center for Health Markets Innovations, "LifeNet International | The Center for Health Market Innovations."
[98] LifeNet International, "LIFENET | Improving Healthcare in Sub-Saharan Africa."
[99] LifeNet International, "LIFENET'S Q4 2018 KEY PERFORMANCE INDICATORS."
[100] LifeNet International. "LifeNet International 2019 Annual Report"

Scaling: LifeNet International is currently in the scaling phase and supports a network of 220 health centers in four African countries: Burundi, Uganda, Malawi and the Democratic Republic of Congo (DRC).[101] Over the next five years, LifeNet plans to expand into six additional countries and serve 1,000 facilities while broadening the range of clinical interventions available at its facilities.[102]

Align quality improvement with the patient journey: Historically, quality improvement measures focused on introducing protocols that addressed the supply side dimensions, to improve clinical care.[103] However, for health systems to achieve UHC goals, health systems need to shift toward addressing the patient needs and restructuring quality to align with the patient journey and experience.[104, 105] This shift entails an understanding of how to balance protocols that enhance clinical quality with initiatives that improve the experience of patients as they interact with the health system.[106, 107]

Case Example: Penda Health's outpatient clinic model

Innovation description: Penda Health's high-quality affordable outpatient clinic model seeks to integrate quality improvement and improve patient experience as a driver of increased utilization of promotive, preventive, and curative services.[108] This innovation brings together a high patient-to-provider ratio, a unique staffing model that allows providers to practice at their maximal capacity, and a patient-centric approach to service delivery.[109] The team provides standardized care in line with medical protocols for a focused set of primary health services at their walk-in clinics.[110] Penda Health initially focused on women's health offering family planning, antenatal care and cervical cancer screening, then expanded into a primary healthcare service provider.[111] One of the critical parts of the model is continuous patient feedback. Penda Health seeks client feedback through a variety of channels including focus groups[112] and follow-up calls with patients seen in their clinics.[113] Penda Health also focuses on the wellbeing of their clinic staff[114] as they are core to creating a good patient experience. Penda's first clinic engaged an external evaluator, SafeCare, to assess the quality of care provided to validate clinical quality.[115] Client demand drives Penda Health's core set of services, and as the network has expanded, new services such as eye care are initially tested in one location before being rolled out through the network.[116] Penda Health has also integrated technology through a clinic medical record system.[117] In 2020, Penda launched a tele-consultation service that offers virtual consultations and delivery of prescriptions.[118]

Population covered: Penda Health's clinic network seeks to serve the whole family and includes general outpatient, maternal, and child health services. The target market is low-income individuals living in urban and peri-urban areas across Nairobi.[119]

Public-private engagement: Each clinic is registered with the Ministry of Health, and Penda has established referral relationships with public facilities to enable patient access to services not offered at the medical centers.[120]

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[101] Larson et al., "When the Patient Is the Expert: Measuring Patient Experience and Satisfaction with Care."

[102] LifeNet International, "LifeNet International 2019 Annual Report."

[103] Hanefeld, Powell-Jackson, and Balabanova, "Understanding and Measuring Quality of Care: Dealing with Complexity."

[104] Musgrove, et al. *The World Health Report 2000: Health Systems: Improving Performance*.

[105] National Academies of Sciences et al., *The Path to a High-Quality Future: The Need for a Systems Approach and a Person-Centered System*.

[106] Smith et al., *Engaging Patients, Families, and Communities*.

[107] Larson et al., "When the Patient Is the Expert: Measuring Patient Experience and Satisfaction with Care."

[108] Korom, "Penda Health: Quality Healthcare for All Kenyans."

[109] Penda Health, "Services"; Global Innovations Exchange, "Penda Health."

[110] Esper, London, and Kanchwala, "Improved Health Care and Its Impact on Children: An Exploration of Penda Health."

[111] The Center for Health Market Innovations, "Primary Care Innovators Handbook."

[112] The Center for Health Market Innovations, "Primary Care Innovators Handbook."

[113] Neill, "Q&A with Penda Health's Therese Kagwe | The Center for Health Market Innovations."

[114] Neill.

[115] Korom, "Penda Health: Quality Healthcare for All Kenyans."

[116] The Center for Health Market Innovations, "Primary Care Innovators Handbook."

[117] Penda Health, "Penda Health."

[118] Lukhanyu, "Penda Health Launches 'Pigia Penda', a Home Delivery Solution for Patients."

[119] Global Innovation Exchange, "Penda Health."

[120] The Center for Health Market Innovations, "Primary Care Innovators Handbook."

Funding model: Penda Health is a venture-backed[121] private for-profit clinic network. The clinics are designed to be self-sustaining and to become profitable within 12 months.

Impact: Penda's network now serves 200,000 patients a year.[122] A market study found that Penda Health's services are 83 percent cheaper than comparable private clinics in Nairobi.[123] Evidence shows that the model improves child health outcomes and positively impacts the health of caregivers.[124]

Scaling: Currently Penda Health is transitioning to scale as it has grown from one clinic in 2011 to 14 medical centers in Kenya and plans to expand the network to 100 clinics across East Africa.[125]

Enhancing patient engagement*:* Person-centered care has received renewed attention because it has demonstrated increased utilization of key health services and improved health outcomes.[126] Patient engagement is a core element of person-centered care, which the WHO defines as "care focused and organized around the health needs and expectations of people and communities rather than on diseases."[127] Patient engagement can improve the patient experience, decrease costs, and promote behaviors that improve health outcomes, both of which are imperative for the advancement of UHC.[128]

Case Example: access.mobile's amHealth

Innovation description: amHealth is a patient engagement solution that supports two-way communication between patients and their health providers while providing optimized messaging to influence patient behavior. The platform was developed in 2011 for mobile-based data collection named access.mobile. access.mobile was established in 70 private health facilities in Uganda to support their regular reporting to the USAID-funded Uganda Health Initiatives for the Private Sector (HIPS) project.[129] The model was relaunched in 2014, and quickly expanded into Kenya in 2015. After a significant upgrade, the product was renamed amHealth and deployed in additional facilities in Kenya, Uganda, and Tanzania.[130] amHealth connects patients and doctors through mobile applications while automating communication with patients via text messages, email, and smartphone notifications.[131] Apart from supporting engagement with outpatients, amHealth has a module on queue management that allows facilities to manage patient flow of appointments and walk-in clients. The solution also supports optimization of internal processes such as data management and payment tracking. access.mobile International, the company that developed these solutions, also piloted Gozee, a related solution that allows users to geo-locate the closest healthcare facilities. After a client finds a suitable health facility, he or she can book an appointment through amHealth. Gozee was launched in Uganda in 2016,[132] but was subsequently discontinued when the company decided to focus on the patient engagement platform. In 2019, amHealth was introduced in South Africa to support engagement of HIV positive patients and support adherence to treatment.[133]

Population covered: Health facilities of varying sizes use amHealth to support engagement of outpatient clients.

Public-private engagement: While amHealth targets private-sector facilities, the team interfaces with the public sector to ensure that the technology is compliant with local regulations in terms of data security.

Funding model: access.mobile is a private for-profit company that has raised several rounds of venture funding. The company generates revenues from the implementation of the amHealth solution in various contexts.

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[121] CDC Group, "Penda Health Ltd."

[122] Global Innovations Exchange, "Penda Health."

[123] Finnfund, "Penda Health."

[124] Esper, London, and Kanchwala, "Improved Health Care and Its Impact on Children: An Exploration of Penda Health."

[125] Finnfund, "Penda Health."

[126] Larson et al., "When the Patient Is the Expert: Measuring Patient Experience and Satisfaction with Care."

[127] Musgrove, et al. *The World Health Report 2000: Health Systems: Improving Performance.*

[128] Musgrove, et al. *The World Health Report 2000: Health Systems: Improving Performance*; Hanefeld, Powell-Jackson, and Balabanova, "Understanding and Measuring Quality of Care: Dealing with Complexity;" Terheyden, "Patient Engagement in Africa (What U.S. Healthcare Can Learn);" Edgman-Levitan, "Partnering with Patients, Families, and Communities for Health: A Global Imperative;" Odugleh-Kolev and Parrish-Sprowl, "Universal Health Coverage and Community Engagement."

[129] USAID, "Uganda HIPS / Access.Mobile MHealth Pilot: 2011-2012."

[130] access.mobile, "Mobile Patient Engagement | Access.Mobile International | Colorado."

[131] Access.mobile. "About | Access.Mobile International."

[132] Andela, "Access.Mobile -Andela Case Study."

[133] Kendall, "Resources | Access.Mobile International."

Impact: amHealth has been implemented in 150 health facilities and reached more than 2 million patients by 2017.[134] Based on lessons learned from implementation in East Africa, the solution is now being rolled out in the United States of America to support engagement of high-risk patients in rural settings.[135]

Scaling: amHealth is currently transitioning to scale stage and is operating in five countries where it supports targeted health education as well as increasing compliance of patients based on clinical protocols.[136]

Embed evidence-based care in the health system. While African countries have a wide range of research capacity, there is inconsistent translation of evidence from research into policy and implementation.[137] All levels of the healthcare system across the continent face the challenge of low use of data for decision making.[138] Tracking of health outcomes and the use of data to prioritize health interventions are necessary components for improving quality of care and accelerating advancement of UHC. Countries face many challenges to integrate evidence-based decision making to improve healthcare, including poor data quality, fragmented information management systems, and limited capacity for analysis and use of data at district and facility levels.[139]

Case Example: MicroClinic Technology's ZiDi

Innovation description: MicroClinic Technologies developed ZiDi in 2012, to reduce the amount of time that clinicians spend entering data into multiple registers and on paper while also standardizing care through a decision-support algorithm. The solution also includes a supply chain module to facilitate stock management at the clinic level.[140] ZiDi won endorsements for its innovative approach, but after two years' implementation in the public sector, the team had still not won any government contracts, which threatened the sustainability of the product.[141] In 2014, MicroClinic Technologies decided to diversify and target the private sector,[142] and in 2015, introduced the Blue Angel network, a team of young people from different rural and peri-urban communities who were trained to enroll and provide technical support to clinics where ZiDi was deployed.[143] The change in payment model and the introduction of the technical support team sought to increase the number of facilities using the software solution. In 2016, MicroClinic Technologies implemented ZiDi across 28 facilities in Lamu County, Kenya. The project included cloud storage of health records and integrated tele-consultations plus training modules for health workers on clinical protocols to enhance quality of care.[144]

Population covered: ZiDi was designed to serve primary care clinics in rural and peri-urban setting, with an emphasis on improving the quality of maternal and child health.

Public-private engagement: ZiDi was initially implemented in six government-run primary care facilities (health centers and dispensaries) in Kiambu County, Kenya. The system was designed to support public-sector facilities by providing real-time stock data at Kenya Medical Supplies Agency (KEMSA), the government procurement agency.[145]

Funding model: The initial rollout was funded by grants from development agencies,[146] and partnerships with corporations such as Microsoft4Afrika.[147] Subsequently, ZiDi customers paid for the software based on the number of patient records processed through the system.

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[134] access.mobile, "Mobile Patient Engagement | Access.Mobile International | Colorado."

[135] access.mobile.

[136] access.mobile, "AmHealth Engagement Solution | Access.Mobile International."

[137] Cochrane, "Promoting Evidence-Based Health Care in Africa."

[138] World Health Organization, "From Data to Decision-Making for Health."

[139] World Health Organization.

[140] Goodman, "ZiDi™: Solutions for the Rural Supply Chain | The Center for Health Market Innovations."

[141] Lundberg, Siegrist, and Chahine, "The Trials of a Social Entrepreneur: ZiDi, MicroClinic Technologies and Kenyan Healthcare | Harvard Business Publishing Education."

[142] Lundberg, Siegrist, and Chahine.

[143] Koch, "Finalist Spotlight: MicroClinic Technologies."

[144] Tuvuti, "ZiDi™ a Health Mgt App That Will Help Kenya Achieve Quality, Affordable Health Care."

[145] Yadav, "Kenya Medical Supplies Authority (KEMSA): A Case Study of the Ongoing Transition from an Ungainly Bureaucracy to a Competitive and Customer Focused Medical Logistics Organization."

[146] Goodman, "ZiDi™: Solutions for the Rural Supply Chain | The Center for Health Market Innovations."

[147] Tuvuti, "ZiDi™ a Health Mgt App That Will Help Kenya Achieve Quality, Affordable Health Care."

Impact: ZiDi supported standardization of treatment of key ailments and improved commodity management.[148] In addition, the software platform helped increase the capacity of clinic staff to diagnose and manage NCDs.[149]

Scaling: While ZiDi had limited scale as a stand-alone platform as it is only its early stage of scaling, the learnings have been embedded in other innovative approaches for comprehensive management of maternal health and NCDs.[150]

iii. Financial Protection

> ### Common Themes: Innovations for Financial Protection
>
> - While catastrophic health expenditures is a significant impediment to UHC advancement, it was difficult to find many examples of innovations successfully addressing financial protection.
> - The role of public financing for coverage, especially for the poor and vulnerable groups remains critical.
> - Moreover, risk pooling to improve financial protection generally requires a relatively larger risk pool for effective cross-subsidizations and financial sustainability.
> - Sustainability of individual innovations focused on financial protection is therefore hard to achieve, especially for those targeting bottom of the pyramid populations or previously uninsured people, reinforcing the need for aligment and integration with national financing strategies for UHC.
> - Creative partnerships can facilitate scaling innovations seeking to increase financial protection.

Financial risk protection in health means that everyone can get the healthcare services they need without suffering financial hardship.[151, 152] According to the WHO, financial protection is achieved when payments made for health services do not expose individuals or households to financial hardship or threaten their living standards. To achieve financial risk protection, countries need to eliminate or reduce direct out-of-pocket (OOP) expenditures at the point of care. Evidence is ample that public funding is necessary to significantly advance UHC and ensure financial protection, and that pooling and purchasing arrangements are determinant to maximize performance.[153]

For the purposes of this paper, we analyzed innovations in terms of how they support health systems to increase the proportion of costs covered by insurance or other risk pooling mechanisms - whether publicly or privately funded - to mitigate risk of financial hardships from medical care costs. The strategies employed by the highlighted innovations include implementing health insurance models developed around peoples' ability and willingness to pay across different socio-economic segments, and increasing enrollment rates among the uninsured, while encouraging sustainability through partnership.

Cross-subsidized national community-based health insurance to cover the poorest: Two primary objectives of UHC are to ensure healthcare access for those in need and to reduce catastrophic OOP health expenditures, which could push households into poverty. Data from 2015 show that 930 million individuals incurred catastrophic health expenditures (i.e. OOP health spending greater than 10 percent of the household budget), and more than 200 million individuals incurred OOP health spending greater than 25 percent of the household budget.[154] In Africa, millions of families still fall into poverty due to catastrophic OOP health

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[148] Mendoza et al., "MHealth Compendium, Volume 3."

[149] Making More Health, "ISikCure Launch in Kenya."

[150] Microclinic, "Our Team | 2020 MicroClinic Initiative, Inc.;" Making More Health, "ISikCure Launch in Kenya."

[151] Wagstaff et al., "Progress on Catastrophic Health Spending in 133 Countries: A Retrospective Observational Study;"; World Health Organization, "Global Monitoring Report on Financial Protection in Health 2019."

[152] World Health Organization and International Bank for Reconstruction and Development/The World Bank, "Global Monitoring Report on Financial Protection in Health 2019."

[153] World Health Organization. "Raising revenues for health in support of UHC: strategic issues for policy makers."

[154] World Health Organization and International Bank for Reconstruction and Development/The World Bank, "Global Monitoring Report on Financial Protection in Health 2019."

expenditures, which pose a huge challenge to healthcare coverage and use, and ultimately hinder the advancement of UHC. Protecting underserved populations from financial hardship through insurance is therefore a valuable method for enhancing financial risk protection.

Case Example: Mutuelles de Santé

Innovation description: The mutual health insurance (Mutuelles de Santé) system in Rwanda is one of the most extensive community-based health insurance (CBHI) schemes in SSA, covering over 90 percent of the population at one point.[155] It ensures financial risk protection for individuals with diverse income by improving access to health services and advance equity in the health system by lowering catastrophic OOP health spending. Mutuelles de Santé was set up in 1999 and formally launched in 2005 by the Rwandan government as one of the key financing strategies toward reaching UHC. The scheme has three key attributes: the community manages it, membership is voluntary, and purchasing of healthcare is through pre-payment, thus separating utilization from direct payment of health services. [156,157] Premiums are paid via a sliding scale, with the neediest covered free of charge and the wealthiest members paying the highest premiums and making co-payments for treatment. To reduce adverse selection, enrollment in the CBHI is at the family level; all members of a family are part of each single subscription. However, such enrollment limits affordability, especially for the poor who may find it difficult to save enough money to pay for all family members at the same time.[158]

Population covered: The CBHI scheme was created to address the needs of Rwandans in the informal sector where access to and utilization of healthcare services was low.

Public-private engagement & Funding model: Approximately half of Mutuelles' financing is through yearly member premiums. The rest is through cross-subsidization with other insurance schemes, development partners, NGOs, and the Rwanda government.[159]

Impact: Several empirical studies have highlighted the success of Mutuelles de Santé in increasing access to healthcare, especially for individuals who previously had lower rates of healthcare utilization.[160] One study showed a 16 percent decrease in total health expenditure, representing a significant reduction in the OOP expenditure and catastrophic health spending burden, especially for the impoverished.[161]

Scaling: Uptake has increased rapidly since CBHI's inception and the innovation is currently at a sustainable scale in Rwanda. It is important to note that the success of CBHI in Rwanda has been partially attributed to Rwanda's unique demographic, political, and historical context.[162] Use was boosted by the adoption of a national policy on Mutuelles in 2004–2005 when enrollment was at seven percent and enactment of a law in 2007 that provided a legal framework to oversee the system. The law not only regulated the subsidization of the CBHI and other plans, but also obliged every Rwandan to have some form of health insurance, which led to an increase in enrollment to 75 percent.[163] By 2016, 81.6 percent of Rwandans were covered through Mutuelles de Santé.[164]

Implement affordable health insurance models to cover the previously uninsured: People living below the poverty line in SSA bear the highest burden of disease. Often, these individuals have no health insurance or financial protection and have to use their savings, borrow money, sell assets, forego essential goods and services

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[155] Binagwaho and Hartwig, "Mutual Health Insurance and the Contribution to Improvements in Child Health in Rwanda;" Nyandekwe, Nzayirambaho, and Kakoma, "Universal Health Coverage in Rwanda: Dream or Reality."

[156] Chemouni, "The Political Path to Universal Health Coverage: Power, Ideas and Community-Based Health Insurance in Rwanda."

[157] "Rwanda_Community_Based_Health_Insurance_Policy.Pdf."

[158] Uwimana, "Saving a Few Cents Every Day, Some Rwandans Manage to Pay Health Insurance Premiums."

[159] Nyandekwe, Nzayirambaho, and Kakoma, "Universal Health Coverage in Rwanda: Dream or Reality"; Lu et al., "Towards Universal Health Coverage: An Evaluation of Rwanda Mutuelles in Its First Eight Years."

[160] Lu et al., "Towards Universal Health Coverage: An Evaluation of Rwanda Mutuelles in Its First Eight Years;" Woldemichael, Gurara, and Shimeles, *The Impact of Community Based Health Insurance Schemes on Out-of-Pocket Healthcare Spending: Evidence from Rwanda*; Wang, Temsah, and Mallick, "The Impact of Health Insurance on Maternal Health Care Utilization: Evidence from Ghana, Indonesia and Rwanda."

[161] Binagwaho et al., "Mutual Health Insurance and Its Contribution to Improving Child Health in Rwanda."

[162] "Sharing the Burden of Sickness: Mutual Health Insurance in Rwanda;" Lu et al., "Towards Universal Health Coverage: An Evaluation of Rwanda Mutuelles in Its First Eight Years."

[163] "Country_profile_-_rwanda_-_us_letter.Pdf."

[164] Chemouni, "The Political Path to Universal Health Coverage: Power, Ideas and Community-Based Health Insurance in Rwanda."

to pay for healthcare, or forego seeking healthcare altogether.[165] Therefore, providing protection against the effects of catastrophic health payments to ensure that no one becomes impoverished because of ill-health is one of the key objectives for UHC. The importance of ensuring the poor have coverage as a fundamental element of UHC cannot be overemphasized with regard to ensuring protection from catastrophic and impoverishing health payments from OOP payments at the point of use. Pooling of funds through health insurance also allows advantaged clients to subsidize the care of disadvantaged clients while ensuring CBHI's viability.[166] Risk-sharing among people in all economic quintiles and the healthy and unwell is important in SSA where most governments dedicate insufficient resources to healthcare.

Case Example: MicroEnsure's Hospicash and Credit Health

Innovation description: MicroEnsure addresses financial risk protection by providing affordable micro-insurance solutions to low-income individuals via mobile phones, protecting borrowers from poverty-inducing events, such as health expenditures. MicroEnsure's Hospicash and Credit Health are microinsurance products that offer affordable health insurance to cover the previously uninsured, through an innovative "Freemium" model. Originally launched as a pilot program in Zambia, MicroEnsure leveraged the reach of telecommunications companies (telcos), like Tigo and Bima[167, 168] to provide health and life insurance as an embedded free feature to subscribers who spent a minimum monthly amount on the services of these telcos.[169] With its success in Zambia, MicroEnsure expanded to the Philippines, Uganda, Malawi, and Ghana, adding disability and property damage coverage, thus getting closer to a health insurance model not just a life insurance model.

Population covered: Through its health centric Hospicash and Credit Health, MicroEnsure increased insurance coverage while building trust and understanding of insurance among populations that were previously uninsured.[170]

Private-private engagement & Funding model: MicroEnsure realized that to be financially sustainable, the company would need partners that could accept large risk. Initially, MicroEnsure tried to partner with churches and other local organizations but these partnerships were not very successful.[171] Subsequently, they partnered with telcom companies, driven by the fact that the telecom market in LMICs is very competitive, and companies incentivize customer loyalty through additional services.[172] The PPP model with telecom companies become an integral aspect of the success of the innovation. [173] Now, MicroEnsure has partnerships with over 90 banking and microfinance partners, over 70 insurance partners, and 13 telecom partners.[174]

Impact: MicroEnsure has had relative success with a freemium model. In Ghana, free-to-paid conversions have been as high as 80 percent.[175] Through the combination of this model and partnerships that build trust with targeted customers, MicroEnsure is able to reach the uninsured and protect them against catastrophic health expenditures. According to the firm's data, 85 percent of their customers are first-time insurance purchasers.[176]

Scaling: MicroEnsure is at the scaling stage, having scaled across 20 countries globally, including Ghana, Kenya, and Tanzania.[177] It has registered more than 40 million customers across its total product portfolio and

[165] Carapinha et al., "Health Insurance Systems in Five Sub-Saharan African Countries: Medicine Benefits and Data for Decision Making;" Ogbuoji and Yamey, "How Many Child Deaths Can Be Averted in Nigeria? Assessing State-Level Prospects of Achieving 2030 Sustainable Development Goals for Neonatal and under-Five Mortality;" Fenny, Yates, and Thompson, "Social Health Insurance Schemes in Africa Leave out the Poor."

[166] Carapinha et al., "Health Insurance Systems in Five Sub-Saharan African Countries: Medicine Benefits and Data for Decision Making;" Fenny, Yates, and Thompson, "Social Health Insurance Schemes in Africa Leave out the Poor."

[167] International Finance Corporation, "MicroEnsure: Built for Change."

[168] CGAP, "Bima."

[169] Mobile Money, "Tigo, Bima, and MicroEnsure Bring a 'Freemium' Model to Mobile Insurance | Mobile for Development."

[170] Mobile Money.

[171] MicroEnsure, "Reaching the 80%: Interview with MicroEnsure CEO, Richard Leftley - MicroEnsure."

[172] International Finance Corporation, "MicroEnsure: Built for Change."

[173] International Finance Corporation, "MicroEnsure: Built for Change."

[174] MicroEnsure, "What We Do."

[175] MicroEnsure, "Reaching the 80%: Interview with MicroEnsure CEO, Richard Leftley - MicroEnsure."

[176] MicroEnsure, "About."

[177] MicroEnsure, "Locations."

paid $30 million in claims.[178, 179] In the future, MicroEnsure plans to offer more types of insurance to more low-income customers in different parts of the world.

iv. Service Coverage

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Common Themes: Innovations to Enhance Service Coverage

- The barriers around service coverage in SSA are similar to those for population coverage.
- Therefore, successful innovations that enhance service coverage do so by bringing comprehensive services closer to patients.
- Primary healthcare (PHC) expansion continues to be a powerful strategy to increase access to essential health services.
- The double burden of disease due to rising NCDs has led to unique innovations that meet unaddressed health needs, such as hearing loss or clubfoot, that have the potential to diminish quality of life and productivity of Africa's young population.
- To scale successfully, service coverage innovations rely on partnerships with national actors who know the context.

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Service coverage means that individuals are able to access and receive essential healthcare services needed at each stage of life. Strengthening primary healthcare (PHC) is one way to improve service coverage. While countries define their benefit packages, the WHO tracks four categories as measures of progress toward UHC: reproductive health, maternal and child health, infectious diseases, NCDs and service availability indices.[180] These illustrated innovations reduce service coverage gaps by extending comprehensive primary healthcare across populations, increasing access to specialized care, and tackling unaddressed health needs.

Provision of comprehensive primary care for CBHI members: PHC is recognized as a key path to UHC. However, the PHC system in many African countries is often poorly developed, with a shortage of well-equipped health facilities that provide basic healthcare services, thus making it hard for individuals to access primary care.[181]

Case Example: One Family Health Rwanda's financing scheme
Innovation description: One Family Health Rwanda (OFHR) combines a unique service delivery model with an innovative financing scheme to improve access to healthcare in rural Rwanda. To reduce geographical distance to health facilities, OFHR runs a hub-and-spoke franchise-based clinic model. This model combines proven franchise and micro-enterprise principles to recruit, train, and help qualified nurses (with an average of five to eight years of clinical experience) become entrepreneurs, running health posts in underserved areas.[182] The nurses are reimbursed for the healthcare services they provide by co-payments received from patients and the national CBHI (Mutuelles de Santé).[183] OFHR does not build clinics, but with local government partners, it provides nurses with access to community-owned, rent-free buildings within their villages. The nurses are given start-up financing in the form of low-interest loans for building renovations, drug purchases, and basic medical equipment. In addition, the nurses are provided with training on clinical and management skills via the OFH mobile platform. To ensure adherence to quality standards, the nurses are provided with ongoing monitoring and support, and smart phones for real-time analytics. The nurse franchisees provide essential services to their communities during hours most convenient for their patients. The nurses refer complicated cases to the district public hospital.[184]

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[178] International Finance Corporation, "MicroEnsure: Built for Change."
[179] "MicroEnsure."
[180] World Health Organization, "Universal Health Coverage (UHC)."
[181] Mash et al., "Reflections on Family Medicine and Primary Healthcare in Sub-Saharan Africa."
[182] Maurice, Taylor, and National Academies of Sciences and Medicine, "Several Models for Sustainable Partnerships and Private-Sector Engagement."
[183] Jones, "Rwanda Uses One Family Health"; Charles, Moe, and Bartlett, "One Family Health Rwanda: Achievements and Challenges 2012."
[184] "One Family Health."

Population covered: The organization serves about 10 percent of the population in Rwanda. The model specifically targets adults and children from low-income households who live in rural, remote areas located more than a three-hour walk from a hospital or clinic.[185]

Public-Private engagement: OFHR works with the Rwandan Ministry of Health via a PPP. OFHR is incorporated into the government's national plan to expand healthcare access, and it leverages the national CBHI program to finance its nurses.[186] OFHR has been able to leverage the national health system, although delays in reimbursement have been problematic. The community and/or Ministry of Health provide the infrastructure for health clinics to be established, and the clinics are then co-branded with the Ministry of Health.[187]

Funding Model: The One Family Health Foundation is financed through pharmaceutical product sales, franchise royalty fees, and marketing. The health posts are funded by fees charged for services. Additional funding partners include the Ministry of Health Rwanda, local government ministries, local authorities, and financiers including Ecobank Rwanda, Ecobank Foundation, Pfizer Foundation, and GlaxoSmithKline.[188]

Impact: OFHR has provided services to nearly 2 million Rwandans who previously had limited access to healthcare.[189] OFHR commissioned an independent assessment in 2015 that showed a 60-minute reduction in travel time to health posts.[190]

Scaling: OFHR has aggressively scaled since its inception in 2012. The organization now operates more than 125 primary health clinics in Rwanda across 14 of the country's 30 districts. It is in the process of seeking funding to support the opening of 500 clinics and achieve financial sustainability in Rwanda before a transnational expansion. OFHR's strategy of forming strong partnerships with the community, the government, and other key health system actors has been instrumental in ensuring the model's sustainable and significant impact. Similar partnerships will be the key to replicating the model in other countries.[191]

Focusing on non-communicable diseases: There is a rapid surge in NCDs on the continent, which if left unaddressed, is projected to overtake communicable, maternal, neonatal, and nutritional diseases combined as the most common cause of death in Africa by 2030.[192, 193] Several innovations are working to address NCDs.

Case Example: Solar Ear's hearing aid

Innovation description: Solar Ear provides a low-cost, solar powered and rechargeable hearing aid to increase access to hearing loss treatment services.[194] Solar Ear's product sells for less than $100 USD, compared to the average price of $1,800 USD for similar devices, and there is an additional savings in the cost of batteries.[195] The standard hearing aid battery lasts about a week, whereas the solar-powered battery lasts two to three years and costs the same.[196] In addition, Solar Ear batteries are compatible with 95 percent of the hearing aids on the market.[197] Solar Ear has not patented its hearing aid, hence the design can be adapted and improved by other companies.[198] Solar Ear was founded in 2002 with a $250,000 grant from the African Development Foundation.[199] The organization is based in Botswana,[200] and the

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[185] Fischer, "Creative Intelligence: Does Intelligence in Health Care Always Have to Mean High-Tech?"

[186] Charles, Moe, and Bartlett, "One Family Health Rwanda: Achievements and Challenges 2012."

[187] Faber, Starbird, and Kambobe, "One Family Health to Improve Access to Healthcare Products and Services at the Base of the Pyramid in Zambia;" Van Niekerk et al., "Social Innovation in Health: Case Studies and Lessons Learned from Low-and Middle-Income Countries."

[188] Halpaap, Peeling, and Bonnici, "The Role of Multilateral Organizations and Governments in Advancing Social Innovation in Health Care Delivery;" "One Family Health."

[189] "One Family Health"; Maurice, Taylor, and National Academies of Sciences and Medicine, "Several Models for Sustainable Partnerships and Private-Sector Engagement."

[190] BioSpace, "Executive Insight Partners with One Family Health to Secure Sustainable Funding in Rwanda."

[191] Halpaap, Peeling, and Bonnici, "The Role of Multilateral Organizations and Governments in Advancing Social Innovation in Health Care Delivery."

[192] Chiedozie, "Sustainable Health: The Bedrock for Sustainable African Development;" Noubiap et al., "Prevalence of Dyslipidaemia among Adults in Africa: A Systematic Review and Meta-Analysis."

[193] World Health Organization, "Noncommunicable diseases and mental health."

[194] "Solar Ear."

[195] Zero Project, "Affordable Hearing Aids through Solar Technology."

[196] Innovations in Healthcare, "SolarEar."

[197] Sustainia, "Solar-Powered Hearing Aids with Open Source Design | Global Opportunity Explorer."

[198] My Hearing Centers, "Solar Powered Hearing Aids & Developing Countries."

[199] Clason, "Solar Hearing Aids: Low-Cost Hearing Aids."

[200] Zero Project, "Affordable Hearing Aids through Solar Technology."

model is based on local partnerships. When entering a new market, the organization's selection criteria for local partners includes assurances that the partner works with individuals with disabilities, the understanding that Solar Ear is a social business not a charity, and an investment of at least 20 percent of required funds for the joint venture. [201] As part of its growth strategy, Solar Ear uses microentrepreneurs to screen potential clients for hearing loss, using a smartphone app that costs $1 per test. After the test, the smartphone can also be programmed to become a hearing aid.[202] Solar Ear is creating a product that will make its current product obsolete, but the organization sees this new product as one better able to meet the needs of the targeted population. Ultimately, Solar Ear hopes that the screening program product will increase the number of individuals who are able to afford the product.

Population covered: Solar Ear is replicating its innovation through the introduction of the DREET (Detection, Research, Equipment, Education, and Therapy) Program that aims to diagnose more patients with hearing problems at a younger age and get them access to the hearing aid they need.

Private-Private engagement: Solar Ear is able to reduce the cost of its hearing aids through buying partnerships with other NGOs that order in bulk.[203]

Funding Model: The venture is self-sustaining as it generates its income from sales.[204] Solar Ear also offers training and employment opportunities to the disabled community.[205]

Impact: As of 2017, Solar Ear has made more than $15 million USD in sales, exporting its products to more than 60 countries. [206] Through the reduction of cost, empowerment of the targeted community, and continued passion for innovating and improving its product, Solar Ear is increasing NCD coverage to an underserved community.[207]

Scaling: Solar Ear has been scaled from Botswana to Brazil, China, Russia, Canada, and Israel. Each of these operations is locally owned and operated with a partner as per the business model.[208]

Increasing access to specialized care for unaddressed health needs: Disability affects more than one billion people who, on average, experience worse socio-economic outcomes than those without disabilities. [209] Children with disabilities exhibit worse socio-economic outcomes due to o lower school enrollment, which directly correlates with lower levels of employment and earnings, higher poverty rates, and poorer health outcomes in the future.[210]

Case Example: MiracleFeet's leg brace

Innovation Description: MiracleFeet uses a low-cost patented leg brace as an alternative to the usually high-priced leg braces used to administer the Ponseti nonsurgical standard of care for children with clubfoot.[211] MiracleFeet created an early diagnosis and referral process to increase access to the Ponseti method, the global standard of care for clubfoot. MiracleFeet runs awareness campaigns and provides education to healthcare workers about the diagnosis and treatment of clubfoot. The organization also reduces travel time for patients and their families by conducting ongoing and additional training on the Ponseti treatment method in a large number of facilities in 29 countries throughout South America, Africa, and Asia. MiracleFeet's service delivery model spreads knowledge in LMICs on the Ponseti treatment protocol, which is effective in about 90 percent of clubfoot cases. [212] MiracleFeet has a variety of strategies to increase access to its low-cost alternative brace. Research has shown that SSA has a lack of trained mid-level personnel, despite East and Central Africa having the highest prevalence of clubfoot of 8 per 1,000 live births. Training is provided to novice clubfoot treatment providers, and this

[201] Belenky, "Solar Ear: Low-Cost Hearing Aids, Solar Battery Chargers | The Center for Health Market Innovations."

[202] Weinstein, "Solar Ear | Changemakers."

[203] Belenky, "Solar Ear: Low-Cost Hearing Aids, Solar Battery Chargers | The Center for Health Market Innovations."

[204] Zero Project, "Affordable Hearing Aids through Solar Technology."

[205] Clason, "Solar Hearing Aids: Low-Cost Hearing Aids."

[206] Zero Project, "Affordable Hearing Aids through Solar Technology."

[207] Humphreys, "Technology Transfer Aids Hearing."

[208] Clason, "Solar Hearing Aids: Low-Cost Hearing Aids."

[209] Wodon et al., "The Challenge of Inclusive Education in Sub-Saharan Africa."

[210] Wodon et al.

[211] MiracleFeet, "Impact Report 2019."

[212] Grimes et al., "Cost-Effectiveness of Club-Foot Treatment in Low-Income and Middle-Income Countries by the Ponseti Method."

strengthens and builds capacity for additional training programs in SSA and broadens the workforce skilled in diagnosing and treating clubfoot.[213] In 2019, MiracleFeet rolled out a mobile data collection app, CAST, to be able to gather real-time data on medical records to help evaluate and improve clinic management and inform scaling in regards to patient volume, supply needs, and clinic locations.[214] Geospatial analysis of population density and birth rates helps plan clinic locations so that they are accessible to most individuals relative to areas with estimated high need.

Population Covered: MiracleFeet targets children with clubfoot in LMICs, a disability affecting more than 2 million children under the age of 10.[215]

Public-Private Engagement: MiracleFeet integrates its model of care into local health systems by engaging the Ministry of Health, collaborating with government agencies and NGOs, establishing private partnerships, and embedding clubfoot management into the local public health infrastructure, which helps reduce the cost per child and minimize long-term dependence on MiracleFeet. In 2012, MiracleFeet partnered with the Zimbabwe Sustainable Clubfoot Programme (ZSCP) to add clinics to hospitals that provide treatment using the Ponseti Method.[216] ZSCP has a relationship with the Ministry of Health and Child Care that supports production of its own braces at an in-country facility, and has Ponseti providers to train additional staff.[217] In 2019, MiracleFeet partnered with the International Committee of the Red Cross in Somalia to provide program support, materials, and training at clubfoot clinics supported by the Somali Red Crescent Society, during the country's civil war.[218]

Funding Model: MiracleFeet operates as a non-profit with a donation funding the model to support its work. Funding is allocated to programs and services (80 percent), fundraising (12 percent), and administration (8 percent).[219] MiracleFeet raised $7.48M USD in 2019, an 89 percent increase over the prior fiscal year. A bulk of the funding, $5.3M came from individual donations, driven by crowdfunding events.[220]

Impact: Through comprehensive support of a non-surgical, low-cost treatment for clubfoot, MiracleFeet has been able to support more than 50,000 children across 28 countries.[221]

Scaling: MiracleFeet has seen significant growth in its 10 years, scaling to 28 countries, including 14 African countries,[222] and reaching 40,000 children. MiracleFeet has sustained its innovation model through diversified financial resources including support from individual donors, corporate sponsors, and foundations. The innovation is also low-cost, easy to learn by different levels of health workers, and thus ideal for low-resource environments. Activities identified for future scale-up include large-scale awareness, funding, coordination, and partnership.[223]

v. Equity

Equity is a multi-dimensional concept. Achieving equity is demonstrated in the processes through which health services are delivered and in the outcomes achieved by a health system in a given population.[224] While equity is inherent in the definition of UHC, equity gaps—both financial and non-financial—persist in many SSA countries.[225] Efforts aimed at advancing UHC must facilitate equitable access to quality healthcare services. In this regard, innovations have significant potential to reduce equity gaps across the dimensions of UHC: population coverage, service coverage, quality, and financial protection. All innovations in this report were analyzed in terms of how they support health systems to enhance equity.

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[213] Smythe et al., "The Development of a Training Course for Clubfoot Treatment in Africa: Learning Points for Course Development."

[214] MiracleFeet, "Impact Report 2019."

[215] MiracleFeet, "About MiracleFeet."

[216] MiracleFeet.

[217] MiracleFeet.

[218] MiracleFeet.

[219] MiracleFeet, "Impact Report 2019."

[220] MiracleFeet.

[221] MiracleFeet, "About MiracleFeet."

[222] MiracleFeet, "Impact Report 2019."

[223] MiracleFeet.

[224] Raine et al., "Evaluating Health-Care Equity."

[225] Yaya and Sanogo, "Universal Health Coverage and Facilitation of Equitable Access to Care in Africa: A Systematic Review."

Horizontal equity—equal treatment for those with equal needs—is way to ensure that underserved and socially vulnerable populations have adequate access to healthcare.[226] These populations are often excluded from UHC benefits as they are met with unequal access to resources, financial burden, and disparate attributes such as gender, employment, and location.[227] Effective solutions are often grounded in the local environment and rely on local communities to alleviate barriers and ensure sustainability.[228] Locating clinics closer to rural populations with limited transportation alleviates the horizontal equity gap of distance and enables equity of access to basic medical interventions that improve health. North Star Alliance seeks to reduce the access gap by providing continuous healthcare for mobile workers, sex workers, and remote communities living along highways. Mobile workers are at risk of inconsistent and interrupted healthcare, sex workers are often stigmatized for their work making it difficult for them to seek and obtain care, and remote communities are met with geographic and transportation barriers to access. North Star Alliance provides clinics and links them with an electronic health system to support consistent and continuous access to care, while also expanding services such as laboratories to improve comprehensive health services and generate revenue to sustain the clinics. One Family Health in Rwanda also works to increase access to health clinics to rural populations that have access difficulties due to limited transportation. Through a PPP model, OFHR supports nurses in running their own clinics in rural areas and Mutuelles de Santé reimburses them for their services.

Developing healthcare models based on ability to pay, known as vertical equity, is another approach and a key component of UHC to reduce catastrophic health expenditures.[229] Social health insurance often segments populations based on ability to pay for insurance, leaving out the bottom of the pyramid populations that are most in need of healthcare.[230] Populations at the bottom of the pyramid are at a higher risk of poor health outcomes and frequently have reduced access to consistent quality healthcare.[231] Using the principles of solidarity to pool risk and redistribution, social health insurance can help redistribute funds from the healthy to sick (horizontal equity) and from rich to poor (vertical equity).[232] Mutuelles de Santé's subsidization model for CBHI is designed to cover this segment of the population that would otherwise be unable to pay for health insurance. In addition, this model can be combined with other innovative approaches as shown by OFHR's collaboration with Mutuelles de Santé to ensure both financial and non-financial (e.g. clinics, trained health staff) access to healthcare. The financing scheme helps create vertical equity in health services by charging based on ability to pay, but it also enables sustainability of the health clinics and services being provided.[233]

Reducing disparities in healthcare services to provide equity in health outcomes is also a key component in addressing health inequities.[234] There are ongoing gaps in universal coverage for essential interventions, inequities in coverage for interventions, and weak health systems for reproductive and maternal, newborn, and child health leading to poor health outcomes.[235] Additional challenges such as geographical access to healthcare services are also prominent where rural and/or remote populations frequently have poorer health status and lower life expectancy associated with service, resource, and transportation inequities among other social barriers.[236] Several innovations aim to address geographic inaccessibility that creates unequal health outcomes. Health Builders and Ubuntu Afya clinics have innovative models that target these gaps.[237] Both models have established or supplemented primary health facilities that seek to specifically increase access to quality maternal and child health. By bridging the distance barriers and providing quality primary care services, these innovations

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[226] Raine et al., "Evaluating Health-Care Equity."

[227] Tangcharoensathien et al., "Addressing the Health of Vulnerable Populations: Social Inclusion and Universal Health Coverage."

[228] Tangcharoensathien et al.

[229] Sutton, "Vertical and Horizontal Aspects of Socio-Economic Inequity in General Practitioner Contacts in Scotland."

[230] Thornton, "Where Is the BOP Health Care Fortune?"; Prahalad, "Bottom of the Pyramid as a Source of Breakthrough Innovations."

[231] Prahalad, "Bottom of the Pyramid as a Source of Breakthrough Innovations."

[232] Doetinchem, Schramm, and Schmidt, "The Benefits and Challenges of Social Health Insurance for Developing and Transitional Countries."

[233] Doetinchem, Schramm, and Schmidt.

[234] Yaya and Sanogo, "Universal Health Coverage and Facilitation of Equitable Access to Care in Africa: A Systematic Review."

[235] Boerma et al., "Countdown to 2030: Tracking Progress towards Universal Coverage for Reproductive, Maternal, Newborn, and Child Health."

[236] Ouma et al., "Access to Emergency Hospital Care Provided by the Public Sector in Sub-Saharan Africa in 2015: A Geocoded Inventory and Spatial Analysis"; Herrick et al., "Modeling the Potential Impact of Emerging Innovations on Achievement of Sustainable Development Goals Related to Maternal, Newborn, and Child Health"; Strasser, Kam, and Regalado, "Rural Health Care Access and Policy in Developing Countries"; Amzat and Razum, "Rural Health in Africa."

[237] Gatakaa et al., "Expanding Access to Maternal, Newborn and Primary Healthcare Services through Private-Community-Government Partnership Clinic Models in Rural Kenya: The Ubuntu-Afya Kiosk Model"; Goodman, "Health Builders: Systems Strengthening Through Performance Management."

both facilitate greater access to maternal and child healthcare and better outcomes in their respective communities.

Although healthcare systems are important for achieving better health, there are also a number of other social determinants of health that contribute to health outcomes, such as economic stability, physical environment, education, food, and community and social contexts.[238] To achieve universal access to healthcare as defined under UHC, social determinants of health must be considered and addressed. Social determinants of health and principles of UHC are inherently linked, where social determinants such as income and poverty, infrastructure, gender, and social protection, have the potential to block universal access to health.[239] The Ubuntu-Afya community groups that support the kiosks also run at least one other enterprise, such as motorcycle taxis and mobile money transfer services that help subsidize cost of care and earn dividends for members.[240] These additional businesses contribute to more economic stability, a social determinant of health, bringing in income, and eliminating exorbitant medical bills. Health equity is essential to advancing sustainable and adequate health services to the entire population.

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[238] Artiga and Hinton, "Beyond Health Care: The Role of Social Determinants in Promoting Health and Health Equity."

[239] Valentine, Koller, and Hosseinpoor, "Monitoring Health Determinants with an Equity Focus: A Key Role in Addressing Social Determinants, Universal Health Coverage, and Advancing the 2030 Sustainable Development Agenda."

[240] Gatakaa et al., "Expanding Access to Maternal, Newborn and Primary Healthcare Services through Private-Community-Government Partnership Clinic Models in Rural Kenya: The Ubuntu-Afya Kiosk Model."

IV. Adaptation and Integration of Innovations Advancing UHC

Innovation as a 'best buy' for advancing UHC

The WHO coined the term "best buys" to describe selected evidence-based interventions to combat NCDs.[241] Recently, the WHO has advocated for the best buy approach in UHC by calling for countries to identify interventions that are "effective (high impact), low cost (affordable), cost-effective (deliver good value for money), and easy to implement (feasible)."[242] Based on growing evidence of their transformative potential, proven health innovations have been endorsed as catalysts to support rapid progress toward UHC.[243] Innovations can make it easier to implement certain dimensions of UHC, such as integrated primary care,[244] while providing a platform to expand UHC.[245] Evidence-based health innovations, when adapted to a country context and implemented at scale, fit the definition of a best buy for UHC.

Alongside the challenge of identifying effective interventions that advance universal coverage, countries continue to grapple with how to maximize scarce health sector resources.[246] The ambitious UHC targets have led many countries to devise new strategies on how best to expand health coverage by 2030. Health leaders are seeking to build efficient health systems that combine the right mix of health services to reach a majority of the population within the coming decade.[247] Some of these strategies toward efficiency include rapid expansion of primary health which provides lower-cost entry points to care and reorienting health systems toward prevention as a means of achieving greater value.[248] In addition, this imperative for efficiency is driven by limited financial resources currently dedicated toward UHC across most SSA countries.[249]

Health systems across Africa need to deliberately adapt and sustainably integrate proven innovations into their health system strengthening strategies to fully harness the benefits of health innovations in achieving UHC.[250] Many health innovations implemented on the continent are in the transition-to-scale phase. Therefore, fast-tracking their integration into national systems to advance UHC will require countries to identify the innovations that address their priority UHC gaps (adoption),[251] the adaptation of the selected innovations to specific contexts, and concerted collaboration to embed these innovations into national health systems at a sustainable scale. Therefore, the public sector has a crucial leadership role to play in supporting all three aspects by providing stewardship, harnessing resources, and creating an enabling environment for partnerships that will leverage innovations for UHC.[252]

Challenges in adaptation and integration of innovations in health systems

Developing and scaling a health innovation carries risk as not all innovations will succeed.[253] [254] The risk of failure is amplified when an innovation that has been successful in one context seeks to expand into a new country context because it is difficult to fully account for variables such as culture, health system context and leadership that are required to ensure successful adaptation and scaling.[255] Challenges are detailed below:

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[241] Alwan, *Global Status Report on Noncommunicable Diseases 2010*.

[242] World Health Organization, "Together on the Road to Universal Health Coverage: A Call to Action."

[243] Kirton and Kickbusch, "Health: A Political Choice - Delivering Universal Health Coverage 2030"; Balasubramaniam et al., "Innovations for Universal Health Coverage Collaboration."

[244] Clarke and Paviza, "The Private Sector, Universal Health Coverage and Primary Health Care."

[245] Kirton and Kickbusch, "Health: A Political Choice - Delivering Universal Health Coverage 2030."

[246] World Health Organization, "Together on the Road to Universal Health Coverage: A Call to Action."

[247] Kirton and Kickbusch, "Health: A Political Choice - Delivering Universal Health Coverage 2030."

[248] World Health Organization, "Together on the Road to Universal Health Coverage: A Call to Action."

[249] Sustainable Development and Solutions Network, "Africa SDG Index and Dashboards Report 2019."

[250] Baltussen et al., "Priority Setting for Universal Health Coverage: We Need Evidence-Informed Deliberative Processes, Not Just More Evidence on Cost-Effectiveness."

[251] Pacifico Silva et al., "Introducing Responsible Innovation in Health: A Policy-Oriented Framework."

[252] Kirton and Kickbusch, "Health: A Political Choice - Delivering Universal Health Coverage 2030"; Govindan, "Insights: Innovating the Way Forward to Achieve Universal Health Coverage | GBCHealth."

[253] Harvard Business Review, "Innovation Risk."

[254] McCutcheon, "Minimizing Risk in Health Technology Innovation."

[255] Townsend, "Innovation and the Value of Failure."

1. *Time and Experimentation.* The process of adaptation of a health innovation takes time and a degree of experimentation to understand what aspects of the core innovation fit into the new context and which elements will change.

2. *Trust Capital.* To receive buy-in from the partner institution (public sector, non-profit, or private sector), trust capital needs to be built.[256] Providing evidence of the impact of a health innovation is one way to build trust among stakeholders.[257] Furthermore, as part of trust-building, intermediaries can facilitate the systematic evaluation of the health innovation to help understand the differential impacts of innovations and 'what works for whom'. Absence of evidence of improved health outcomes of a given innovation can reflect that the innovation was not suitable to lead to health improvement in the first place. Likewise, presence of evidence of improved health outcomes may reduce resistance by stakeholders.[258]

3. *Adaptation to local context.* Adaption of proven health innovations to the local context requires integration with existing programs and policies for sustainability and to improve the chances of successful scale-up.

4. *Financial Risk.* There are financial risks due to the costs incurred when seeking to identify the core elements of an innovation that are best suited for the new context. One way that innovators have mitigated financial risk is through partnerships that enable them to access grant or philanthropic funding. These resources tend to focus on population-level impact and can provide opportunities for organizations introducing proven innovations into new contexts to try multiple approaches to find the most effective implementation strategy for a given context. Promoting collaboration among different types of stakeholders with different resources and competencies reduces the overall risk of adapting and integrating new innovations.[259]

Despite the evidence on the potential transformative impact of innovation, many sub-Saharan African countries face a challenge in supporting the adaptation, integration and scale-up of innovations. Table 2 describes these challenges.

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[256] Viardot, The Role of Trust and Standardization in the Adoption of Innovation.
[257] Begley, Amanda "De-Risking Innovation: It's not just about the evidence."
[258] Nolte et al., "Evaluating chronic disease management. Recommendations for funders and users."
[259] Imperial College Business School, "Executives Debate De-Risking Healthcare Innovation."

Table 2: Strategies to address challenges in adaptation and integration in health systems

Challenge	How innovations are addressing these challenges
Low public sector uptake—at the policy and political level, across various levels of health system leadership, and at the implementation level.	**Zidi** faced this issue as MicroClinics Technologies tried to unsuccessfully get public sector buy-in for two years before pivoting its approach to PPP.
Key stakeholders' resistance to innovative solutions hampers the scaling and integration of proven innovations.[260]	**Last Mile Health** introduced a new service offering, the Community Health Academy, that works with health system leaders to address the challenges of adapting, learning, and scaling national CHW programs. **Health Builders** and **NorthStar Alliance** both utilize a partnership model with the public sector, which gives governments a say in critical decisions such as selecting health facilities to be renovated (Health Builders) or selecting clinical staff to support facilities (NorthStar).
Lack of supportive public policy: A public-sector organizational culture that is risk averse,[261] and limited awareness among decision-makers about how to systematically manage the innovation adaptation and scaling process.[262]	**Mutuelles de Santé** illustrates how a supportive policy environment, which provided the legal framework and accompanying legislative reforms, obliged Rwandans to have some sort of insurance, leading to an increase in the percentage of the population Mutuelles covered. This environment ultimately led to the expansion and sustainable scale of the health innovation.
Lack of stakeholder awareness of specific environmental or cultural contexts, lack of training for healthcare workers[263] that will be using the innovation, and the inability of an innovation to integrate with processes already in place.[264]	**LifeNet International** works directly with health workers and facilities, while Ubuntu Afya clinics collaborate with communities and CHWs. The second approach is through partnerships with countries, like the **Miracle Feet** model, or implementing innovations through NGOs working with beneficiaries.
Limited resources had a negative impact on the successful adaptation and integration of proven innovations. A lack of funding to support scaling of innovations and limited human resources pose significant challenges.[265] [266]	Unsurprisingly therefore, more than half of the innovations reviewed have a non-profit model or receive some grant funding as they seek to scale their approaches.

Conversely, partnership and collaboration with frontline health workers and implementers is critical to achieving of health innovations in multiple contexts.[267] Indeed, in the SDG era, partnerships and collaborations within and outside the health sector are vital for the sustainable scaling of innovations.[268] The different levels and multiplicity of collaborations required for successful adaptation and sustainable scaling highlights the crucial role of the public sector and healthcare leaders as facilitators of the process of partnership building.[269] Complex challenges such as harnessing innovations to advance UHC demand that health sector decision-makers grapple with how to

[260] Bradley et al., "A Model for Scale up of Family Health Innovations in Low-Income and Middle-Income Settings: A Mixed Methods Study."

[261] Leonard, de Kock, and Bam, "Barriers and Facilitators to Implementing Evidence-Based Health Innovations in Low- and Middle-Income Countries: A Systematic Literature Review."

[262] Côté-Boileau et al., "The Unpredictable Journeys of Spreading, Sustaining and Scaling Healthcare Innovations: A Scoping Review."

[263] Pacifico Silva et al., "Introducing Responsible Innovation in Health: A Policy-Oriented Framework."

[264] Leonard, de Kock, and Bam, "Barriers and Facilitators to Implementing Evidence-Based Health Innovations in Low- and Middle-Income Countries: A Systematic Literature Review."

[265] Pacifico Silva et al., "Introducing Responsible Innovation in Health: A Policy-Oriented Framework."

[266] Leonard, de Kock, and Bam, "Barriers and Facilitators to Implementing Evidence-Based Health Innovations in Low- and Middle-Income Countries: A Systematic Literature Review."

[267] Seed, "The Global Diffusion of Healthcare Innovation | Imperial News | Imperial College London."

[268] Torfing, "Collaborative Innovation in the Public Sector: The Argument."

[269] Pacifico Silva et al., "Introducing Responsible Innovation in Health: A Policy-Oriented Framework"; Lehoux et al., "What Health System Challenges Should Responsible Innovation in Health Address? Insights From an International Scoping Review."

balance providing stewardship and the iterative process of scaling innovation while ensuring adequate governance of the integration process to ensure value when proven innovations are applied across the health system.[270]

A systematic approach to adaptation and integration of health innovations

Policymakers and healthcare implementers need to follow a systematic approach to adapt and integrate health innovations into their national health systems. Adapting and integrating innovations is important because current health sector organization and governance systems remain ill-equipped to effectively achieve the objectives of UHC in a mixed health system, while providing incentives to promote and sustain private-sector-led innovation.[271] Learning cycles can therefore provide an opportunity to refine and adjust processes and technical solutions for a comprehensive system that aids in decision-making and continuous quality improvement.[272] The adaptation of best practices however, does not have to be limited to data integration or quality improvement.[273] The exchange and sharing of examples as to how healthcare innovations have solved health system issues, coupled with targeted sourcing and scouting strategies based on country-specific demands, can be one solution.[274] There are several approaches to adaptation and integration of innovations. This paper outlines two options, namely: the three-phased approach and the 3s approach, discussed below.

Process of adaptation of health innovations

Based on prior work conducted at the Duke-Margolis Center for Health Policy and Duke Global Health Innovation Center, we suggest a three-phased approach for identifying, sourcing and designing innovations intended for implementation into health systems. In line with the ACS approach, these phases require co-development with stakeholders involved and affected by innovations.

- o *Phase 1 - Demand-driven problem identification:* The objective of this phase is to identify and scope relevant issues for health systems. The first step is to convene a group of key stakeholders and complete a literature review of the issues that emerge from the needs assessment. Based on this initial assessment, the team undertaking the assessment conducts interviews with policymakers, providers, payers, and other decision-makers to understand the specific challenges facing the health system. Focus group discussion with the community can inform this process. The team can develop patient journey maps to understand and illustrate the opportunities and barriers to care delivery for specific health needs.
- o *Phase 2 - Solution scouting:* The objective of this phase is to scout innovations or models that address issues emerging in the problem identification phase. The team agrees on an innovation selection criterion, which may include clear benefit, compatibility to organizational culture and values, simple to use in daily practice, adaptable, limited perceived risks to the workforce, and/or has been successful in similar health systems. In this phase, the team can review existing databases such as Innovations in Healthcare and Center for Health Market Innovations, or other leading health innovation databases. The result of this phase is a shortlist of innovations that inform the development of an "innovation set" that the health system can adapt to its current care pathway structure. Notably, this innovation set is not intended to replace an existing care pathway, but rather to strengthen and improve upon the current system.
- o *Phase 3 - Co-design:* The objective of this phase is to incorporate the innovation set in the health system's existing care delivery pathway. In this phase, it is important to identify organizational competencies that need to change to implement innovations successfully and to understand the potential impact of those changes. Often, these competencies include governance, financial management, workforce and data and analytics. During this phase, the team will work with the key stakeholders to develop an implementation plan that takes into account the current capabilities to implement and opportunities for capacity building.

[270] Pacifico Silva et al., "Introducing Responsible Innovation in Health: A Policy-Oriented Framework"; Lehoux et al., "What Health System Challenges Should Responsible Innovation in Health Address? Insights From an International Scoping Review."
[271] Clarke and Paviza, "The Private Sector, Universal Health Coverage and Primary Health Care."
[272] McClellan et al., "Accountable Care Around The World: A Framework To Guide Reform Strategies"; Foundation, "ComplexAdaptiveSystems.Pdf."
[273] McClellan et al., "Improving Care And Lowering Costs: Evidence And Lessons From A Global Analysis Of Accountable Care Reforms."
[274] Lehoux et al., "What Health System Challenges Should Responsible Innovation in Health Address? Insights From an International Scoping Review."

Principles for the facilitation of spread, scale-up and sustainability of innovation

The spread, scale-up, sustainability (3S) of innovation consists of interlinked, embedded processes rather than a linear time-bounded intervention. Health systems provide a complex, diverse, and dynamic context for the scaling of innovations.[275] There is a tension between embracing a structured approach to guide innovation processes and the idea that these processes and their effects are unpredictable within a complex health system. The dynamic, multi-stakeholder and social nature of health systems presents multiple entry points to consider when promoting and supporting the spread, scale-up and sustainability of innovations.

There are five overlapping focus areas that act as actionable guidance to facilitate and support innovation efforts to address how to facilitate the 3S processes of healthcare innovations.[276] The prioritization of these areas will depend on the receptivity of stakeholders in the environment which the innovations are being implemented.[277] We therefore propose these five focus areas as guiding principles for health system leaders and decision-makers looking to steward and support the integration of health innovations at sustainable scale. Table 3 shows how select innovations have worked through these focus areas.

Actionable guidance for 3S across five key focus areas:

- o *Why commit*. Innovation often comes with a change of work routines for practitioners. Implementers need to understand the underlying reasons or how the associated innovation improves their work.[278] Hence, all stakeholders can appreciate the added value to their own work and the advantages that innovations bring to the health system in the form of improved quality of care and services. A strategy is therefore necessary to share evidence on the relative advantage of the innovation, highlight promising experiences from other jurisdictions, and performance measurement systems to capture improvements.

- o *Perceived value and feasibility*. The value that actors intend to create catalyzes efforts on the 3S of innovation. Value can be defined as improvements in patient experience, population health, the wellbeing of healthcare teams, or increased efficiency. In a multi-stakeholder health system environment, the feasibility of the 3s efforts is critical to create and maintain common principles among innovation actors. Health system leaders can identify, equip and incentivize the various actors in the health system, and allow them to contribute to innovation spread, scale-up and sustainability, and to maintain motivation over time.[279]

- o *What people do, rather than what they should be doing*. When implementers have an opportunity to integrate innovations into their local settings and learn about them by experiencing them, innovations become routinized. Thus, it is important that innovations align to local needs and capacities.[280] Successful integration can also strike a balance between adjustment (adaptability) and the risk of diluting the strengths (fidelity) of innovation.[281] One strategy is to embed monitoring loops that share and integrate feedback on implementation of innovations in new contexts. Apart from guiding the scaling journey, feedback loops help create favorable conditions for adaptation by valuing the perspectives of implementers. Implementers increase ownership of innovations when they are actively contributing to its uptake and spread.

- o *Dialogue between implementers and policymakers.* It is critical to connect policymakers, implementers, and stakeholders at all levels (communities, healthcare organization, system) to develop shared goals.[282] Fostering interactions through problem-solving forums is one way to cultivate shared

[275] Hill, "Understanding Global Health Governance as a Complex Adaptive System."
[276] Côté-Boileau et al., "The Unpredictable Journeys of Spreading, Sustaining and Scaling Healthcare Innovations: A Scoping Review."

[277] Pettigrew, Ferlie, and McKee, "Shaping Strategic Change-The Case of the NHS in the 1980s."
[278] NHS Scotland Quality Improvement Hub. The Spread and Sustainability of Quality Improvement in Healthcare: A Practical Insight into Spreading and Sustaining Change in an Acute Clinical Setting."
[279] Ferlie et al., "The Nonspread of Innovations: The Mediating Role of Professionals"; Baxter, Weiss, and Le Grand, "The Dynamics of Commissioning across Organizational and Clinical Boundaries"; Edenius, Keller, and Lindblad, "Managing Knowledge across Boundaries in Healthcare When Innovation Is Desired"; Håland and Osmundsen, "Establishing and Sustaining Collaboration across Organizational Boundaries within Healthcare."
[280] Slaghuis et al., "A Framework and a Measurement Instrument for Sustainability of Work Practices in Long-Term Care."
[281] Egan et al., "Local Policies to Tackle a National Problem: Comparative Qualitative Case Studies of an English Local Authority Alcohol Availability Intervention."
[282] Fulop and Robert, *Context for Successful Quality Improvement*.

goals. Appropriate facilitation of problem-solving forums is key. As part of this dialogue process, intermediaries can play a catalytic role to bridge any differences of opinion and to encourage parties to think out of the box.

o *Inclusivity and capacity building.* There is a political economy within health systems that deserves profound attention, particularly when various stakeholders with different views, values, and interests converge. There is a need to engage those who are involved and those who are affected by the innovation. Anticipating potential tensions and developing strategies that allow for open discussions reassure participants about the pay-off of innovations. Strategies that health system leaders can use to raise awareness on the gap-filling role of innovations include; evidence sharing, benchmarking, monitoring, and measurement of performance gaps.

Table 3: Illustrative strategies to address 3s focus areas

Focus Area	How innovations are addressing each focus area
Why commit	In Burundi, **LifeNet International**, was able to work with resource constrained faith-based clinics on quality improvement and capacity building with the understanding that if the clinics provided better quality, they would attract more clients, break even and stay operational.
Perceived value and feasibility	**Last Mile Health** uses their Community Health Assistant program in conjunction with their training program for policymakers to demonstrate value to a variety of stakeholders and further incentivize the adoption of the innovation. **Mutuelles de Santé** incentivizes and creates value around the innovation by promoting ownership among community members. Additionally, educating communities on the scheme plays a key role in increasing perceived value as membership is voluntary.
What people do, rather than what they should be doing	**Penda Health** not only puts value of the feedback loops with patients but is also uses the feedback loop of staff to make key decisions in their work. **Solar Ear** uses feedback from implementers to make a better product that fits the needs of their community by integrating factors like affordability and acceptability. Solar Ear also employs workers with disabilities, particularly people with hearing loss. **MicroEnsure** uses design thinking as part of their process to create new products.
Dialogue between implementers and policymakers	**Last Mile Health**'s training of Ministry of Health staff to provide leadership for sustainable CHW programs and adapting the model for new country contexts facilitates appropriate conversations that allow for better sustainability. **Miracle Feet**'s focus on embedding the approach in policies following successful adoption in frontline clinics contributes to the sustainability of their club foot programs.
Inclusivity and capacity building	**Blue Box Clinics** meet at-risk populations where they are at, literally in locations without adequate facilities but also on a less literal level valuing patients that are often stigmatized by society, like sex workers. **Penda Health** uses benchmarking to identify gaps in the care pathway and consistently collects evidence of how their affordable quality care model is succeeding in filling them.

IV. Discussion

Following a review of illustrative innovations that contribute to different dimensions of UHC and an analysis of adaptation and scaling support for health innovations, this section summarizes the emerging insights from the research. While the examples in each dimension are illustrative for that dimension, but that doesn't mean that they don't address other dimensions. The insights draw on common themes from the analysis of health innovations addressing UHC and highlight critical health system changes required to support the adaptation and integration of health innovations.

This paper sought to answer how health innovations overcome health system challenges in SSA countries to advance UHC goals and how country stakeholders can support the adaptation, integration, and scale-up of proven health innovations into health systems to advance UHC goals. In light of these two research questions, we cluster key insights into three major areas:
- o Emerging themes on innovations as drivers of UHC
- o Considerations for adaptation and integration of innovations at a sustainable scale
- o Imperatives for health systems seeking to leverage innovations to advance UHC

Emerging themes on innovations as drivers of UHC
- o **Innovations encourage health systems to include underserved segments of the population and to meet unaddressed health needs.** There is a clear trend of new models focusing on groups that have largely been ignored by conventional health systems due to the high economic or social costs of providing services. Communities in geographically inaccessible areas are deemed as hard-to-reach, while the higher costs associated with extending healthcare to rural populations skew healthcare investments toward urban and densely populated regions. In addition, cultural norms have led to the exclusion of groups such as commercial sex workers and mobile populations or long-distance truck drivers. Models such as the Ubuntu Afya rural clinic network and Health Builders' rural facility expansion model show that innovations can significantly impact population and service coverage for underserved populations. Similarly, NorthStar Alliance's Blue Box clinics' continuity of care approach demonstrates that providing critical services such as HIV/AIDS prevention and treatment to mobile populations opens the door to comprehensive primary care, a strategy that is foundational for the expansion of UHC. Innovations that focus on unmet health needs, such as hearing loss or club foot, are transitioning to scale in partnership with health systems across multiple African countries, proving the important role innovative models play in ensuring that no one is left behind as countries advance UHC. These innovative approaches debunk arguments about the economic viability of extending comprehensive healthcare to underserved populations.

- o **Health innovations focus on the needs of people, thereby helping SSA implement person-centered care.** The WHO advocates for health systems to place the individual and community at the center of healthcare. Several SSA innovations are implementing community health and contextualized approaches that align with the patient journey, to ensure person-centered care. The National Community Health Assistant Program, developed by Last Mile Health, is an excellent example of how bringing healthcare to the patient greatly improves health outcomes. The role of patient engagement is evident, especially as health systems across Africa look to restructure service provision with a patient-focused lens. Penda Health's clinic network prioritizes person-centered care when designing health services to understand how people navigate the healthcare system. Patient engagement also plays a critical role in ensuring that practitioners and health system leaders account for the subjective aspects of quality that play a crucial role in demand for health services as shown by the amHealth patient engagement model.

- o **Changing the operation of health systems is a slow and costly exercise and requires the use of evidence.** Models that provide easy-to-use quality metrics, such as Zidi's health information platform, play an essential role in providing data required to support health policies that promote person-centered care. In tandem, there is a need to contextualize how quality of care is embedded in the health system as countries seek to increase the utilization of essential health services

and improve health outcomes. LifeNet International's franchise-conversion model is an example of how low-resource contexts can sustainably improve quality of care by leveraging health facility teams' capacities.

o **Alignment with existing health system structures is a common success factor for innovations that are scaling and showing promising outcomes.** Across the different UHC dimensions, a common thread is the PPP's catalytic role in scaling health innovations. The Community Health Academy pioneered by Last Mile Health shows the facilitative role of buy-in by health systems leaders. Through partnerships fostered with decision-makers, a model pioneered in Liberia is now scaling across other African countries. Even private, for-profit models aligned with health systems provide an opportunity for integration within national health systems and advance healthcare. These for-profit models' partner with the public sector to report data to national systems (Penda Health) or to build new health facilities in areas where public facilities are not present (Ubuntu Afya). Such public-private approaches are needed in more African countries with scarce resources for the health sector and need to rapidly advance UHC goals.

o **Many health innovations address multiple UHC dimensions, and this inter-relatedness affirms innovations as a best buy for UHC.** In the review of health innovations, it was difficult to assign a specific innovative model to one UHC dimension because often, innovations were contributing to multiple dimensions of UHC. For example, while Health Builders facility expansion model aims at increasing access to health facilities in rural Rwanda, equipping, and adequately staffing primary health facilities supports quality improvement. The Blue Box clinic network, on the other hand, seeks to increase access to health services for specific groups, and with its expansion, the model has integrated a comprehensive primary care approach, enhancing service coverage. The franchise conversion model implemented by LifeNet International increases the capacity of healthcare teams to provide quality services. Starting with a focus on maternal and child health, LifeNet's model expanded to include non-communicable diseases, contributing to enhanced service coverage. As countries strive to efficiently use the limited resources dedicated to UHC, adapting, and integrating innovative models could contribute to several UHC goals, confirming that health innovations are a best buy for UHC.

o **Sustainability is a key challenge that needs to be addressed to scale evidence-based innovations.** The two most important aspects of sustainability of health innovations are the financial sustainability of the innovation and country ownership for integration into the health system. Despite promising evidence on how health innovations contribute to the advancement of UHC across Africa, sustainability challenges remain, especially as innovations seek to scale and integrate into national health systems. African countries will need to implement policies that support the financial sustainability of proven health innovations to ensure sustainability. Similarly, partnerships with the private sector to integrate innovative funding approaches for health innovations as they are scaled within national health systems will be important, as shown by the PPP that supports One Family Health's nurse-run clinic network. The One Family Health clinics earn revenues by providing services to Mutuelles de Santé members, a funding model that supports the sustainable scaling of health innovations.

Considerations for adaptation and integration of innovations at sustainable scale

i. **Context:** For innovations to sustainably scale, all actors must understand the context (i.e., the environment in which a health innovation was already implemented and the local context where the model will be implemented). Contextual knowledge is necessary both during the problem identification and solution scouting phases. Understanding differentiated factors such as disease patterns, organizational culture, and the funding landscape enables decision-makers and implementers to select innovative approaches that solve issues affecting their specific health systems. Appreciating the country context also enables innovators and implementers to understand the gap between current practice and the ideals outlined in policies and technical guidelines. These insights are used in the co-design phase of

the adaptation process, where changes are made in the innovation to account for context and allow for the most effective scaling strategy. In addition, an objective assessment of the current context is needed to provide an enabling environment that facilitates the adoption of innovations. An objective assessment is best done by neutral brokers who can also provide information to stakeholders and facilitate adaptation. Legitimate facilitation also aids and nourishes the consensus-building process needed to identify and implement health system and policy changes necessary to benefit from a set of innovations maximally. Understanding the policy context facilitates an understanding of what policy changes and organizational culture shifts are needed to support sustainable scaling of innovations.

ii. **Facilitation role of intermediaries:** Adaptation and integration of health innovations is an iterative process that builds on learning from different phases of the scaling journey. Before integrating a health innovation at a sustainable scale, a consensus is required at multiple levels. Intermediaries, such as technical advisors or development partners, help facilitate this consensus building. Neutral facilitation allows the integration of new approaches such as health innovations in complex and dynamic health systems. Intermediaries can support health system leaders in framing the gaps to be filled through innovation by scouting evidence-based health innovations and co-designing strategies to integrate health innovations. Intermediaries can also support the convening of diverse stakeholders to advance sustainable integration of health innovations. Beyond facilitating consensus, intermediaries also have a role in evidence curation; and translation of insights on how health innovations advance UHC into formats accessible to policymakers and health system leaders. To ensure that the integrated health innovations are sustainable, intermediaries need to provide technical support within a broader health system strengthening approach during the adaptation and integration phases. From the research, this facilitation generally happens at the level of a specific innovation seeking to scale, when it may be adapted and integrated into the broader program offering of an NGO partner or the private sector. Facilitation capabilities are needed if African health systems are to comprehensively adopt innovation to advance UHC and improve health outcomes. The ACS project works to broker partnerships and strengthen country processes that advance UHC – see text box on '*Potential areas of ACS support toward the spread, sustainability, and scaling of innovations in Sub-Saharan Africa.*'

iii. **The value-add of innovation to health systems:** UHC goals are ambitious, yet low resources are allocated to the health sector. Therefore, promising health innovations face an uphill battle as they compete for the financial and human resources needed to support their adaptation and integration into health systems. It is imperative for champions of health innovation to demonstrate a clear value-add to stakeholders. The value-add of the healthcare innovation needs to account for the tendency of health system actors to maintain the status quo by demonstrating that the benefits of the innovation outweigh the costs of change. The defined value-add also needs to speak to the motivations of different actors within the health system while also accounting for the health system's complexity. One way of building a credible value proposition is demonstrating evidence of impact, showing how innovations are improving health outcomes and advancing health system goals such as UHC.

iv. **Perception of value:** Health innovations often transition from different teams as the core innovation is adapted, scaled, and integrated into a national health system. There is scant literature on scaling, acknowledging that for an innovation to move toward scale, multiple stakeholders have to perceive its value. However, stakeholders vary and could range from the health worker using a new diagnostic device, to the district management team supporting the rollout of a new quality improvement approach or a policymaker deciding on integrating an innovative health financing model into the national UHC strategy. Innovations carry the risk of failure, and not every proven model succeeds. As the perception of value is mainly subjective, it can influence of whether to adapt and resource the scaling of an innovation. Therefore, innovators and advocates of health innovation need to be aware of the change **management process required to ensure that key stakeholders across the health system perceive the** value of an innovation.

Imperatives for health systems seeking to leverage innovations to advance UHC

As health systems aim to advance UHC over the next decade, some imperatives emerge based on our review of how health innovations can support UHC and how country actors can support adaptation and integration of these innovations.

- o **Sustainably scaling evidence-based innovations requires alignment and articulation with national health financing systems.** For the scaled health innovations to produce sustainable improvements in health outcomes and advance UHC forward, they must be integrated into the country's health financing by providing reimbursement of services through insurance, tax funding, or other financing mechanisms. Strategic purchasing is one way health systems can incentivize the sustainable scaling of health innovations by rewarding innovations that promote efficient and effective utilization of scarce domestic health resources. Secondly, innovations - whether for profit or not-for-profit – need a sustainable funding model if they are to be implemented at scale. As health system leaders embrace innovation, there is a need to understand how these new approaches will be financed.

- o **Country ownership of health innovations is one way of ensuring that necessary support is provided for the adaptation and sustainable scale of novel approaches.** Health systems are complex and dynamic, thus promoting buy-in for proven innovations needs to happen at multiple levels to claim country ownership. Most of the innovations highlighted sought to build networks of trust at the health facility and district level in the country they were first implemented. Following evidence of success on a smaller scale, some innovators then seek to expand nationwide while others use the evidence of impact to approach new countries for partnerships. When innovators adapted their solutions to new contexts, they often did so through dialogue with policymakers and technical leaders at the national level (Last Mile Health) or partnerships with trusted private-sector partners, as in the case of LifeNet International's collaboration with church-run facilities in Uganda. Both approaches took time and illustrate that building country ownership for a proven innovation requires building evidence of impact and relationships of trust.

- o **The public sector will need to strengthen its stewardship role to provide oversight and governance over the adaptation and integration of health innovations.** As part of stewardship, decision-makers will need to facilitate the definition of roles for the various institutional actors needed to integrate innovations and act as a convenor of the partnerships needed at each stage of adaptation and integration. With this in mind, there is a need for the health sector to learn from other sectors that have integrated innovations to support developmental goals such as social protection and the information technology sector. Similarly, health system decision-makers will need to leverage multi-sectoral collaboration to convene stakeholders from the public, private, and the third sector to harness the potential of health innovations to advance UHC.

- o **Finally, health systems to increase their agility to adapt to balance UHC advancement with the demands placed by unexpected challenges.** Indeed, the COVID-19 global pandemic has highlighted the need for health systems to increase their agility, and health innovations can support national health systems' resilience as demonstrated by the Last Mile Health CHW model during the Ebola crisis in Liberia. Organizations supporting the scaling of health innovations can pivot and align the innovation with new use cases in a time of crisis. However, for countries to bolster their health system resilience, leadership is required to develop strategies that ensure that UHC goals are still advanced even when resources need to be re-distributed to account for global health emergencies and other unforeseen challenges.

Potential areas of ACS support toward the spread, sustainability, and scaling of innovations in SSA

ACS has identified four areas of impact to illustrate the role that intermediaries can play to promote and support the spread, scaling, and sustainability of innovations

1. **Context assessment** – ACS undertakes a systematic demand assessment that continuously assesses country demands and needs to advance progress toward country-specific UHC objectives. ACS's approach is to identify objectives by engaging with a broad range of stakeholders to inform the ACS support strategy in each country. The process of identifying country objectives includes performing country-specific studies as a mechanism to make data-driven decisions. Demand is then regularly re-assessed to ensure that support is meeting needs and is adapted for maximum impact. Even though we recognize the dynamic nature of innovations in practice, we believe the demand assessment function can support the identification, adaption, and scale-up of innovation for UHC, hence catalyzing the integration process.

2. **Actors' engagement –** This process brings stakeholders to the decision-making table where all parties have their issues, and priorities are taken into consideration to coherently, collectively advance UHC. ACS's approach to multi-stakeholder collaboration has a three-step value-added process. During the preparatory phase, the project facilitates building an environment that is conducive to collaboration among stakeholders. It is essential to build stakeholders' trust in a collaborative process that speaks directly to the country's objectives. Finally, as positive feedback loops take place and individuals see value in their actions, ACS ensures all parties, especially the most reluctant ones, appreciate the benefits of their collaborative efforts. By amplifying the approach's early successes/progress to all stakeholders, the value proposition of collaborative work is further recognized by all involved parties. ACS can infuse multi-sectoral collaboration to support strong engagement of innovation actors and help coordinate and align their efforts toward systemic improvements.

3. **Evidence curation –** A fundamental barrier in SSA to the integration of innovations in the UHC agenda is the absence of a strong evidence-based culture that supports UHC policy development and a lack of appreciation for the contributions of research and evidence to the UHC process. ACS supports stakeholders to continuously share knowledge within and across countries, through an iterative process where key learnings (relevant to the identified priority activities) are systematically and empirically identified and continuously shared, vetted, and adapted to the context/situation, put into practice, monitored and refined based on experience, and where applicable, shared for use in other countries. In practice, this process includes: data collection; analysis; information packaging and communication; action; and iteration. ACS can serve as knowledge broker who works at the interface between innovation research organizations and policy communities to promote the main findings of evidence in an attempt to enhance the spread, scale-up and sustainability of the innovation. ACS supports the documentation of different learnings on innovation pathways and helps develop the institutional memory of this process.

4. **3S processes facilitation –** This refers to assisting the exchange of ideas and developing unified insights to achieve a common goal. Facilitation supports a country-led process with broad stakeholder buy-in, develops the capacity of country partners, and leads to contextually appropriate and technically valid innovations to resolve health system challenges. Learnings that are generated through that process are used iteratively to inform forthcoming rounds. In ACS, process facilitators have technical but also, non-technical, soft skills required to navigate complex health systems. They are connected to networks of African coaches and mentors[283] who provide technical advice and strategic guidance based on their global and contextual knowledge. ACS can support innovation change by focusing on awareness of the process of change and by empowering stakeholders to engage in that process in a coordinated manner. Facilitators work with innovation working group members to create an environment that supports continuous improvement and introduce values such as respect, inclusion, and neutrality, and where people feel involved in the decision-making. They help demystify innovation improvement methods, evaluation, and research, and they support data-driven and evidence-based decision- making. By doing this, facilitators create opportunities for practitioners to learn from each other and help create communities of practice that allow peers to share best practices and lessons learned.

V. Recommendations: Supporting and Integrating Innovations to Advance UHC

Collaboration and coordination among many actors are required to adapt and support the integration of health innovations at a sustainable scale. We propose practical recommendations aimed at selected stakeholder groups whose involvement is essential to leverage the impact of evidence-based health innovations to advance UHC.

Policymakers

o Convene multi-sectoral stakeholders and build new partnerships as health leaders adapt and integrate health innovations to advance UHC.
   ○ Convene key stakeholders in the public and private sector to address a systematic approach for scouting and scaling health innovations to fill health system gaps.
   ○ Invest in deliberate efforts to incorporate diverse perspectives (from key stakeholders) and priorities to align with health innovations.
   ○ Explore new public-private approaches and partnerships to adapt and integrate health innovations to advance UHC.

o Facilitate knowledge exchange across all health system levels to increase scaling, adaptation, and integration of health innovations.
   o Build alliances with advocates for health innovation to incorporate materials, such as publications and guidelines on organizational context, and to spread innovation ideas into and across the entire health system.
   o Document the experiences of successful organizations to establish benchmarks and stimulate adaptation to local contexts.
   o Identify health system gaps and low-cost innovation opportunities to enhance measurement, quality improvement, and care coordination efforts to provide equitable care.
   o Promote sharing of learnings from other sectors that have integrated innovations to support developmental goals such as social protection and the information technology.

o Support inclusive policies and processes to facilitate growth, scale, and sustainability of contextual health innovations.
   o Strengthen stewardship role and provide oversight and governance over the process of adaptation and integration of health innovations.
   o Develop and implement policies that support the financial sustainability of proven health innovations.
   o Identify and support public sector health leaders to partner with clinical champions to enable contextual adaptation of proven innovations, especially those that extend comprehensive healthcare to underserved populations.

Public sector leaders

o Develop and oversee governance structures that champion sustainable scaling of proven innovations.
   o Identify existing structures that can play a role in providing inclusive leadership and stewardship over the country's health innovation agenda.
   o Use leadership position to spotlight the impact of health innovations that have been successfully adapted and scaled in their country or in similar contexts.
   o Develop clear processes for country stakeholders to evaluate health innovations being adapted and scaled to ensure that these are aligned with national priorities, including country UHC goals.

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[283] ACS, "Coaching and Mentoring"

- Address resourcing gaps that impede the sustainable scaling of health innovations.
  - Invest in innovations and allocate appropriate resources to support the scaling and adaptation of innovations so that the benefits of proven innovation are widely distributed and reach all potential recipients.
  - Delegate authority to support implementing teams, especially frontline health workers, and facilitate decision making when dealing with uncertainty or competing innovations.

Implementers

- Institutionalize processes that support identification, adaptation, and scaling of evidence-based innovations based on their contribution to health system goals.
  - Be aware of and implement the change management process required to ensure that key stakeholders across the health system perceive an innovation's value.
  - Secure protected time for staff at all levels to network, explore ideas, and test new ways of working, thus creating a culture promoting innovation.
  - Identify the evidence of impact on health outcomes and articulate the value proposition for any innovation before considering adapting and scaling the innovation.
  - Understand the context (i.e., the environment in which a health innovation will be implemented), for the most effective scaling strategy.
  - Understand the care pathway and identify how innovation fits into that care pathway.

- Develop and foster partnerships with a broad array of actors to fast track adaptation and integration of health innovations.
  - Proactively identify and support social networks and opinion leaders across health organizations in the interest of accelerating the spread of innovative practices.
  - Build country ownership for proven innovations by building evidence of impact and relationships of trust with the community, to ensure that necessary support is provided for the adaptation and sustainable scale of novel approaches.
  - Apply key lessons and best practices from other innovators.

Funders

- Resource interdisciplinary initiatives that catalyze multi-sectoral support for health innovations.
  - Develop funding instruments that support initiatives such as accelerators and similar advisory services focused on adaptation and scaling of proven health innovations, and health outcome and impact studies that generate evidence for the case for innovation.
  - Dedicate considerable attention to the social sciences for understanding organizational context and its effect on innovation and change efforts.

- Broaden existing funder networks and form partnerships that bring in new actors to reduce the transaction costs of scaling innovations.
  - Strengthen partnerships with academic and research institutions to systematize funding support to scaling of innovations.
  - Invest in building external alliances and collaboration in innovation adaptation, sustainability and scale-up.

Intermediaries

- Systematically and actively build evidence on the value of neutral facilitation for adaptation and integration of innovations at sustainable scale.
  - Facilitate dialogue among policymakers, implementers, and people using health services to build collective engagement in greater health outcomes for beneficiaries.

- o Document what works and lessons learned around neutral facilitation of change in the dynamic and complex context of health system transformation.

- o Promote knowledge dissemination and translation to enable health system leaders, policymakers, and implementers to identify proven innovations that are likely to be scaled successfully.
  - o Curate evidence on the types of innovations that are likely to work best in what context and under what conditions.

Health innovation beneficiaries

Through their expertise and proximity to the health issue, beneficiaries of health innovations (healthcare workers, patients, and the population at-large) have hands-on knowledge and a unique perspective to enrich the solutions being developed and scaled.

- o Advocate for inclusion in platforms that oversee the identification of innovations to be adapted in their context.
  - o Dedicate attention and effort to social networking through patients' associations, CHW networks, and professional associations to foster the spread of innovation.
  - o Participate in the screening and selection of the innovation that will address the perceived health problem, including advising on the most useful features and adaptations.
  - o Provide the user experience and perspective on the effectiveness of specific health innovations in addressing health system gaps and facility needs.
  - o Enhance social accountability by holding politicians, policymakers, and public officials accountable for the health innovations being scaled in their communities and facilities.

VI. Conclusion

Attaining the goals of UHC by 2030 is an ambitious agenda. This paper demonstrates that health innovations have a role in progressing different dimensions of UHC through the illustrative case studies. The challenges for national health systems across the African continent lie in how to facilitate the adaptation of proven innovations into new contexts and how to foster an enabling environment for the integration of innovations into the health system. Clear change management strategies are therefore required across different levels to promote broader partnerships, increased funding, and sustained leadership that champions the scaling of health innovation as a means to accelerate progress toward UHC.

Appendix

Innovation by UHC dimensions

Innovation	Countries	Population Coverage	Service Coverage	Quality	Financial Protection	Equity
access.mobile's amHealth	South Africa, Kenya			Deploys mobile & cloud-based technology that combines basic practice management with patient engagement to improve quality		
Afya Research Africa's Ubuntu Clinics (ARA)	Kenya	Creates infrastructure (Ubuntu clinics) in underserved areas that to improve access to health services.	The Ubuntu clinics offer services such as maternal and child health as well as NCDs screening and treatment	Local health workers are trained and monitored to ensure delivery of adequate quality of care		Addresses inequities by targeting underserved communities and improving access to health, both in terms of facilities and affordability
Health Builder's co financing models	Rwanda	Constructs comprehensive primary health centers where access is limited or non-existent		Mentors healthcare providers to build strong management systems and equips health centers with system-strengthening technology		Inequities are addressed by targeting underserved communities and improving access to health, both in terms of facilities and affordability
Last Mile Health 's CHW Network	Liberia	Deploys frontline health workers in remote areas to deliver life-saving care in patients' homes		Frontline health workers are trained and equipped to provide quality health services		Addresses equity gaps by targeting underserved communities to improve their access to health, both in terms of facilities and affordability
LifeNet International's conversion franchise model	Burundi, Uganda, Democratic Republic of Congo, Malawi		Increases access to specialized care through a franchise that trains health workers in	Health workers are trained & monitored to ensure quality standard across the network. Health workers with high scores are given access		

			faith-based organizations & gives them access to loans to acquire new equipment, including those for dental care and laboratory services	to loans to buy equipment and increase the range of services they offer		
MiracleFeet's leg brace	29 countries		Increases access to nonsurgical care for clubfoot through early diagnosis, referral process, and education		Offers an affordable option to expensive alternatives	
MicroClinic's Technology ZiDi	Kenya, Liberia			MicroClinic's ZiDi system improves quality through better management of workforce and commodity stock		
MicroEnsure's Hospicash and Credit Health	Operates in 15 countries including 10 in Africa				Provides affordable micro-insurance solutions to low-income individuals via mobile phones	Addresses socio-economic inequities by proposing an insurance system affordable for low-income populations
Mutuelles de Santé	Rwanda				Offers extensive health insurance that covers both in-patient and out-patient services for $2 USD per person per year, and the government fully subsidizes the very needy/indigent	Provides affordable health insurance by subsidizing the poor

North Star Alliance's Blue Box Clinics	Currently operating in 20 countries in Africa	Creates clinics along transport corridors to make healthcare accessible to vulnerable populations such as drivers and sex workers		Relies on trained health workers and on a health passport system that contains patient information. Accurate diagnoses based on patient history can then be provided in any North Start Alliance clinic		Addresses inequities by offering vulnerable populations, such as drivers or sex workers, access to healthcare
One Family Health Rwanda's financing scheme	Rwanda	Create health infrastructure in areas that often lack health facilities			Patients benefit from subsidized prices via the national health insurance program, keeping services affordable for rural residents	Inequities are addressed by targeting underserved communities and improving access to healthcare, in terms of facilities and affordability
Penda Health's outpatient clinic model	Kenya	Improves access to healthcare by building clinics and small health centers in urban slums that provide affordable primary health services	Provides specialized services such as screening and diagnosis of cancer, dental services, and ultrasound	Utilizes a high patient-to-provider ratio, unique staffing model, patient-centric approach to care delivery, and a focused set of services that addresses key outpatient needs to lower the price of high-quality services		Addresses inequities by giving access to healthcare services to populations that could not afford such services or would incur catastrophic expenditures to access such services
Solar Ear's hearing aid	60+ countries		Provides low-cost solar powered product to increase access to hearing loss treatment		Their hearing aid has a longer life than more expensive alternatives which cost savings for patients in the long run	Employs disabled community and provides further job training

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