Expert Paper

Practical Evidence and Benefits of Responsible Research and Innovation in the African Healthcare Sector. Reverse innovation – learning from health SMES in Africa.

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The views expressed by the author do not necessarily represent the views of PharmAccess.

RESPONSIBLE INNOVATION COMPASS

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1. Introduction

When 'post-truth' became the 2016 International Word of the Year, we had yet to fathom the extent of the new world order that we were about to face. Post-truth was defined as a word 'relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief.'[1] In a departure from its usual meaning, the prefix 'post' here does not mean 'after.' Instead, it is meant to convey the idea that the notion of truth is simply irrelevant.

The mainstream adoption of 'post-truth' into the vernacular should be a wake-up call, alerting us to the importance of facts and a shared definition of truth. Especially at the crossroads of science and innovation, where fundamental issues like climate change or access to healthcare can only be addressed from the premise of an objective, unequivocal – though perhaps evolving – understanding of reality.

Thus, establishing an agreed upon roadmap for Responsible Research and Innovation (RRI) could not be more timely. RRI is the on-going collaborative, bottom-up process of aligning research and innovation to the values, needs and expectations of society. On-the-ground relevance is key. This was also underlined in the 2014 Rome Declaration on Responsible Research and Innovation in Europe, which states that when it comes to research, 'excellence today is about more than ground-breaking discoveries – it includes openness, responsibility and the co-production of knowledge.'[2]

An effective RRI roadmap can help ensure that RRI delivers on the promise of inclusive and sustainable solutions that harness new perspectives, engage innovators and build trust between citizens, public and private institutions. When it comes to science and innovation, digital technology can be a major facilitator of excellent RRI. The growing presence of digital technology in our daily lives heralds the start of the fourth industrial revolution[3]. This digital revolution, happening across the globe, is opening up new avenues for serving unmet needs and disrupting virtually every industry.

In many sub-Saharan countries, the mobile phone has penetrated almost every layer of society, from the densely populated urban slums to some of the remotest villages. Digital technology is on the verge of disrupting healthcare and can provide many opportunities to organize bottom-up delivery and financing models.

Interestingly enough, digital technology in Africa can amplify the openness, responsibility and collaboration referenced in the Rome Declaration as well. The transparency of information and potential for increased access to finance and healthcare services are key elements of its potential to democratize healthcare. It is up to us, however, to make sure digital technology is used to its full potential.

In theory, it has never been easier for those in positions of power to reach and consult citizens and businesses on matters that concern them most. Not just for political reasons, but also to deliver (public) services and improve access to finance and healthcare. Now, it's a matter of

[1] https://www.oxforddictionaries.com/press/news/2016/12/11/WOTY-16
[2] https://ec.europa.eu/research/swafs/pdf/rome_declaration_RRI_final_21_November.pdf
[3] Schwab, Klaus (2015), *The Fourth Industrial Revolution: What It Means and How to Respond*, Foreign Affairs, https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution

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building effective mechanisms for this kind of inclusion and ensuring that research and innovation contributes to finding meaningful solutions to challenges facing the world today.

There is no one-stop shop or silver bullet to make this happen. Whether it's multidisciplinary partnerships to build sustainable health insurance schemes, improving access to finance for small- and medium-sized healthcare providers (health SMEs) or innovative new digital technology currently underway in Africa, there are many ways to add value in the healthcare sector.

Structure of this paper

In line with the editorial guidance from the COMPASS consortium, this paper provides input for the discussion of Responsible Research and Innovation (RRI) translated into practice in health SMEs in sub-Saharan Africa. It addresses the following topics:

- Public-private partnerships (PPPs) to build inclusive health insurance schemes in growth markets;
- Access to debt capital for private healthcare SMEs in growth markets;
- Mobile and digital technology as an accelerator for improving access to care in growth markets.

First, it will set the scene, describing challenges and market failures in the healthcare sector in sub-Saharan Africa. It will then provide current research and interventions helping health SMEs to overcome these challenges. Building on current and emerging research and innovation topics in healthcare, it will finally share ideas and examples of how mobile and digital technology are revolutionizing the African healthcare sector.

Many governments in Africa struggle to meet the growing healthcare demands of their populations. However, the lack of functioning institutions, currently hampering development, also provides opportunities for leapfrogging and creating new roadmaps for inclusive healthcare. In that sense, there are lessons to be learned from innovative approaches currently being implemented in Africa.

2. Setting the scene: the vicious cycle of healthcare in Africa

Africa has about 15% of the world's population, yet bears approximately 25% of the total global disease burden and 47% of the global communicable disease burden. Why does it still account for less than 2% of global health expenditure?

Many health markets in sub-Saharan Africa find themselves in a vicious cycle of low quality supply and demand. To put it simply: where the quality and availability of healthcare services leave much to be desired, demand for healthcare through pre-paid mechanisms like health insurance will never fly.

As a (semi-) public good, health requires significant government intervention. However, limited state capabilities and poor institutions often make this a challenge. Faced with a malfunctioning public sector, many people turn to the private sector, which becomes a healthcare market by default. In the absence of health insurance coverage, the majority have

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no choice but to pay for healthcare out-of-pocket. Such often catastrophic health expenses send millions into deeper poverty every year.

The private healthcare sector delivers about half of healthcare services in sub-Saharan Africa. Despite its important role, it is often weakly regulated and highly fragmented. The resulting high investment risk leads to limited or no access to the capital required for quality improvement and expansion of its services. Low quality of healthcare services means low trust among patients.

This lack of trust and the ensuing high proportion of out-of-pocket spending leads to low and unpredictable income for health SMEs. This, combined with the lack of access to debt capital, limits their options for investing in the quality, scope and scale of their services even further.

Healthcare markets, especially at the base of the pyramid, are trapped in this vicious cycle of low and unpredictable demand, low and uncertain quality of supply and insufficient investments, both public and private.

3. Working towards inclusive health markets

The above analysis, laid out in a prize-winning Financial Times / International Finance Corporation essay[4], forms the starting point of the PharmAccess Group approach. The PharmAccess Group is a dynamic international organization with a digital agenda dedicated to connecting more people to better healthcare in sub-Saharan Africa. PharmAccess focuses on innovations to serve patients and doctors through a combination of mobile technology, loans for healthcare providers, business and clinical standards for quality improvement, health insurance and other health financing options, and impact research for evidence-based innovation. It stimulates both the demand and the supply side of the healthcare market and leverages donor contributions to increase trust throughout the health system, reduce risks, and pave the way for investments. Digital technology is providing unprecedented opportunities to catalyse this approach and becoming an increasingly central cogwheel in PharmAccess' activities.

3.1. The role of institutions

The thinking behind this new paradigm for increased access to healthcare in Africa builds on extensive work done by Nobel Laureate Douglass North[5] and the school of New Institutional Economics. North states that institutions, or rather a lack of them, are the root cause of underdevelopment. Institutions, which he defined as 'the rules of the game in society,' consist of formal constraints (rules, laws and constitutions), informal constraints (behavioural norms, social conventions or codes of conduct) and how these constraints are enforced.

As long as enforcement is absent or unreliable, individuals, banks, investors and SMEs will have little faith in the system and will be hesitant to save for or invest in an uncertain future.

[4] Schellekens, Onno P., Lindner, Marianne E., Lange, Joep M.A., Van der Gaag, Jacques (2007), *A New Paradigm for Increased Access to Healthcare in Africa*. Issues Brief, International Finance Corporation (IFC), Washington, DC.

[5] North, D. C. (1990) *Institutions, Institutional Change, and Economic Performance*. Cambridge: Cambridge University Press.

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As a result, transaction costs will be high and economic exchange will remain limited[6]. North classifies such societies as limited access orders. People in limited access orders tend to have a top-down view of institutions, seeing them as laws laid down by political leaders in opaque processes that are completely outside of their control. They don't feel they have access to the tools or powers necessary to play an active role in society. This exclusion puts a hold on economic development, mostly because it dampens people's willingness to invest and hence limits economic exchange.

By contrast, open access orders, which dominate the Western world, are characterized by faith in the system, transparency and competition. People take a bottom-up view of institutions, seeing them as emerging from social norms, traditions and values of individuals within a society, formalized by written law. This sentiment of shared responsibility makes stakeholders (from researchers to citizens, policy makers, SMEs, etc.) more willing to work together to better align both the process and its outcomes with societal values, needs and expectations. Countries with such 'inclusive institutions'[7] tend to widen the scope of economic and political participation and ensure broad access to public services.

Nobel Laureate William Easterly argues that 'attempting to introduce formal institutions into poor societies where bottom-up factors are lacking will not replicate the institutional successes of rich countries.'[8] As the outcomes of research and innovation are almost by definition unpredictable, it would seem that limited access orders are not the ideal environment for RRI. After all, actors in limited access orders are less likely to take a chance on something with so little transparency on the likelihood of a return on investment.

One could go on to argue, however, that a society where malfunctioning top-down institutions are blocking progress is precisely the environment that would benefit from more institutions. Institutions can take many forms, and a shared roadmap for RRI could be one of them.

This paper presents a selection of documented examples of RRI in the African context.

3.2. Standards for benchmarking and quality improvement

When institutions are lacking, one way to start is to build a common understanding, to agree on certain measurable elements as a basis for a shared view. In the Western world, we have built many systems that help us benchmark quality. Many of these systems provide insights for both consumers and SMEs – this can range from agreed upon ethical codes of conduct to a ranking system for the quality of hospitals.

For the overwhelming majority of healthcare providers in sub-Saharan Africa, international accreditation is far from attainable. Many factors play a role in this, but an important one is a lack of resources. Most providers fall short of the quality levels we have grown to expect in the Western world, and many clinics catering to the base of the pyramid in rural areas especially

[6] Simon, J., Schellekens, O. and Groot de, A. (2013), *Public Private Partnership and Development from the Bottom Up – from Failing to Scaling*. Global Policy: doi: 10.1111/1758-5899,12102.
[7] Acemoglu, D. and Robinson, J. A. (2012) *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York: Crown Business.
[8] Easterly, W. (2008) *Design and Reform of Institutions in LDCs and Transition Economies Institutions: Top Down or Bottom Up?* American Economic Review, 98 (2), pp. 95–99. (https://pdfs.semanticscholar.org/a52f/e27783ae6caaae87aa7030849917c650927d.pdf)

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lack qualified staff, access to medications and even basic provisions like running water or a reliable source of electricity. Despite these shortcomings, they play an essential role in their communities and are often the only healthcare provider in the area.

Quality levels are opaque – not just for patients, but for the healthcare providers themselves as well. Without an objective rating system, healthcare providers have no way of knowing where they stand in comparison to other clinics or what they could focus on to improve the quality of their services. Also, existing licensing instruments tend to fall short and accreditation systems are almost never customized to the African context.

In 2011, US-based Joint Commission International (JCI), the South-Africa based Council for Health Services Accreditation for Southern Africa (COHSASA) and PharmAccess joined forces to create the first and only ISQua-accredited[9] international clinical standards tailor-made for small- and medium-sized healthcare facilities in resource-restricted settings: SafeCare. The SafeCare standards measure organization management, clinical quality and safety, making it possible to benchmark and certify performance. They provide an international standard that is realistic for the healthcare landscape in sub-Saharan Africa, leaving room for application of local solutions to specific challenges. In short, they create a common language, a set of new institutions.

Rather than applying a pass-or-fail system, SafeCare measures and recognizes incremental improvement. Healthcare providers are supported in this journey by technical assistance from PharmAccess through local partners. As providers demonstrate continued improvement, their progress is rewarded with SafeCare Certificates (Level 1-5) to recognize improved clinical and business performance.

The SafeCare standards identify 13 areas of operation that play a role in healthcare delivery, ranging from medical care to management as well as support services such as laundry service. Each area contains a list of descriptive and unambiguous measurable elements such as ‘There is a document to guide staff in the processing of contaminated materials and infectious waste’ or ‘Dedicated handwashing facilities including water are available in the laboratory.’

The SafeCare standards form the foundation of the PharmAccess stepwise quality improvement program. After an assessment, the healthcare provider receives a detailed report containing their score on all elements, as well as a quality improvement plan guiding the facility on topics for quality improvement and the order in which they should be addressed. This way, providers can make more impactful use of their often limited financial resources. When quality of service in the health sector becomes transparent, patients can make informed choices and are empowered to choose a provider that fits their needs. Healthcare providers that are actively improving their services will likely attract more patients and generate more income.

3.3. Public and private sector

SafeCare also creates much-needed data insights. The fact that governments can now evaluate quality and risk of healthcare providers means they are in a better position to deliver

[9] ISQua is The International Society for Quality in Health Care. It aims to inspire and drive improvement in the quality and safety of healthcare worldwide through education and knowledge sharing, external evaluation, supporting health systems and connecting people through global networks. Among others, it is involved in the accreditation of national and regional healthcare facilities worldwide. In this capacity, ISQua is responsible for assessing the standards of organizations who set the benchmarks in healthcare safety and quality. http://www.isqua.org

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effective regulation and enforcement through licensing, certification, and accreditation. SafeCare has become part of the legislative framework in several African countries, including Tanzania where the government has adopted the SafeCare standards and methodology as the national system for stepwise certification towards accreditation. In Nigeria, several states are working with SafeCare to develop institutionalized quality assurance.

By creating a common language, the SafeCare standards also build capacity for self-regulation of the private sector. The ability to benchmark healthcare providers enables mechanisms such as pay-for-performance, thereby further stimulating quality improvement. Finally, when it comes stimulating investment into the healthcare sector, relevant and comparable data is key. The SafeCare standards have become an important framework for transparency of information and benchmarking, building trust in the market and helping investors to make informed decisions and long-term financial projections.

4. Setting up PPPs to build health insurance schemes in growth markets

One of the symptoms of an underdeveloped market is high out-of-pocket expenditure. People are either unable or unwilling to pre-pay for health, suggesting a lack of trust in the healthcare system. Only a small minority of Africans have health insurance. Even though most people earn a living in the informal sector as a farmer or small market trader, public health insurance schemes tend to only cover people in the formal sector. Thus, many families are perpetually one serious illness away from financial catastrophe. Data suggest that this happens to more than 150 million people every year, and that 100 million freefall into poverty due to out-of-pocket health expenditures[10].

In many countries in sub-Saharan Africa, the state is falling short of fulfilling the role and the responsibilities that are generally expected of government. The elites who are in charge often have little reason to change the status quo. Yet, most international donor money continues to be channelled through the public sector. Instead of increasing the total amount of resources for health, this money often fails to benefit the people it aims to help and ends up crowding out private funds.

Where trust in the public sector is low, people have more faith in their own community and local leaders. Successful institutions depend on their evolving from the bottom up. In Europe, 'health insurance started […] as a voluntary, bottom-up, risk-sharing arrangement, rooted in communities and groups. It was not a state-orchestrated activity.'[11] Why then, does the dichotomized debate between public or private approaches persist when it comes to healthcare in Africa?

PharmAccess has been piloting and implementing innovative pre-payment mechanisms and risk-pooling structures since 2007 from the premise that social infrastructure always starts private and then grows public. This paper highlights two public-private health insurance schemes that are currently increasing access to affordable and improved care for low-income

[10] WHO Global Health Expenditure Atlas, September 2014.
[11] Maarse, H. et al. (2013) 'Bismarck's Unfinished Business in Western Europe', in A. Preker et al. *Scaling Up Affordable Health Insurance, Staying the Course*, World Bank, Washington DC, pp313-339.

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people in Nigeria and Tanzania: the Kwara State Health Insurance program and iCHF respectively.

4.1. Kwara State Health Insurance program

Although Nigeria was recently classified as a middle-income country by the World Bank, its health indicators would suggest otherwise. It has 2% of the world population, but 14% of global maternal deaths. More than 12% of Nigerian children never celebrate their fifth birthday, and 54% of Nigerians live in poverty.

While the need for healthcare in Kwara State is high, the ability to pay is very limited. Most people earn a living as farmers – their income is not just low, but also erratic. As a result, there were not many clinics to provide quality healthcare services in the State. In rural Kwara State, where over 90% of the population falls in LSM1, access to care was even more limited. This situation prompted the Kwara State Government and the private Nigerian insurance company Hygeia to join forces and enlist the support of PharmAccess in increasing access to care for its people. In 2007, the Kwara State Government, Hygeia Community Health Care, the Health Insurance Fund and PharmAccess formed the Kwara State Health Insurance program with the support of the Dutch government.

This public-private partnership (PPP), described as ground-breaking and innovative by former United Nations Secretary-General Ban Ki-moon[12], is driven by committed support from Hygeia, local politicians, religious leaders and communities. In 2014, the PPP was named a finalist in the OECD DAC Prize for Taking Development Innovation to Scale[13]. Two years later, the program won the FT/IFC Transformational Business Award for Achievement in Sustainable Development in the category maternal and infant health[14]. It is also characterized by a novel approach to healthcare financing at the base of the pyramid, both on the demand and the supply side.

As health insurance was still a fairly unfamiliar concept when the program started, the first few years were spent sensitizing the population on this form of pre-payment. Pooling funding from external and local sources including state and federal governments and communities, the barrier for people to enrol was lowered further by partly subsidizing the insurance premium. Enrollees pay 12% of the premium themselves. The Kwara State Government now covers 60% of the insurance premium subsidies for its citizens, but is currently in a transition phase, on its way to taking over funding of the program completely.

In tandem to the demand-side interventions, the program aimed to improve the supply side of the healthcare market in Kwara. After all, if the quality of care on offer is not up to par, if the clinic is too far away, if there are no doctors or if the pharmacy does not have the right medicines in stock, why would people pre-pay for such sub-standard services? The program thus focused on improving the quantity and especially the quality of healthcare services on offer. Over 40 contracted healthcare facilities in the state, both public and private, were renovated and upgraded. The effect on communities has been considerable, as both those

[12] https://www.un.org/sg/en/content/sg/speeches/2011-05-24/remarks-breakfast-meeting-governors-forum-prepared-delivery
[13] OECD DAC Prize for Taking Development Innovation to Scale. http://www.oecd.org/dac/latestdocuments/DAC%20prize%20booklet%20web.pdf
[14] The FT/IFC Transformational Business Award celebrates innovative initiatives that contribute to significant progress in sustainable development: http://www.ifc.org/wps/wcm/connect/news_ext_content/ifc_external_corporate_site/news+and+events/news/ifc+transformational+business+awards+and+conference+2016

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insured and those not participating in the program benefited from the improved services. The upgraded facilities have also benefited, receiving more than a million patient visits since the start of the program.

Hygeia Nigeria Limited (Hygeia) is the leading West African provider of integrated healthcare. Hygeia HMO is a health maintenance organization providing managed care to over 250,000 individuals through a network of more than 1,200 providers across Nigeria. More than 350,000 people were ever enrolled in the Hygeia Community Health Plan. In Kwara, the solvency of the insurance funds served as collateral, lowering the investment risk and making investments in the healthcare supply chain feasible. Resources were used, among others, to upgrade Hygeia's medical and administrative capacity. In 2007, the private equity fund Investment Fund for Health in Africa (IFHA) also invested in Hygeia, followed by FMO, IFC and Satya Capital. This investment was expanded in 2016.[15]

4.2. Impact research

In order to ensure that impact would be measurable, rigorous scientific and operational research has been an integral part of the approach from the start. Health Insurance Fund and PharmAccess contracted the Amsterdam Institute for Global Health and Development (AIGHD) to conduct bio-medical research and the Amsterdam Institute for International Development (AIID) to evaluate the impact of the program on a socio-economic level. These institutes worked closely together with the Lagos University Teaching Hospital and the University of Ilorin in Nigeria on these lengthy studies. The program has also received recognition for the local research capacity built through the activities carried out with partner organizations in Nigeria. The impact evaluations have helped train a critical mass of young researchers. This new generation, the universities say, has developed into excellent academic professionals who have learned to hone their researching skills, source local grants and distinguish themselves from colleagues at other institutions.

The recurrent learning process that is a result of continuous interaction between program implementation, evidence-based analyses and subsequent program improvements has set a new standard for impact research. This approach has also helped to keep the ultimate goal clearly in sight: providing affordable access to better healthcare for low-income households.

The impact evaluations have indeed uncovered impressive results. For one, access to health insurance has brought average out-of-pocket spending down by 52%, meaning people now have a financial safety net should they fall ill. There has been a 200% increase in healthcare utilization under those insured, and a 90% increase overall. Women account for over 69% of patient visits. 70% of pregnant women were insured. These and other results from PharmAccess insurance programs can be found in the compendium report published by the four research partners[16]. Data analysis done by the World Bank office in Nigeria suggests that Kwara has become the second-best performing state in Nigeria with respect to maternal and child care.

[15] IFC, IFHA II, Swiss Re and CIEL Healthcare Invest in Hygeia Nigeria to Expand Access to Quality Healthcare: http://ifcextapps.ifc.org/ifcext/Pressroom/IFCPressRoom.nsf/0/C1481BDFE4A7586185257F33003E3183

[16] The Impact of Access to Quality Healthcare in Africa: Research findings on Health Insurance Fund supported programs, February 2015. http://aiid.org/website/wp-content/uploads/2015/12/The-Impact-of-Access-to-Quality-Healthcare-in-Africa-Research-findings-on-Health-Insurance-Fund-supported-programs.pdf

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In the field of global health especially, RRI is crucial. One example from the African healthcare sector is the annual INTEREST Workshop on HIV Treatment, Pathogenesis, and Prevention Research in Resource-limited Settings[17]. It was launched in 2007 as a platform to support and cultivate young African researchers especially, and has taken place in eight African countries so far. Young researchers and established international HIV experts share original research on a wide range of HIV and related topics. The workshop offers lectures, abstract-driven oral and poster presentations, debates, and meet-the-expert sessions. Early morning mentoring sessions see mid-career and senior investigators providing research career guidance to young researchers. Grants sponsorship sessions focus on how to best position research grant proposals for success. Clinical case studies, poster discussions, and a good participatory practice/community advisory board session complete the early morning schedule. As such, the conference helps support a next generation of African research. Since 2014 it has been dedicated to the memory of Joep Lange and Jacqueline van Tongeren, who died in the MH17 disaster en route to the AIDS conference in Melbourne and were instrumental in establishing the INTEREST Workshop as a leading African and international forum for the dissemination of HIV science and practice.

4.3. Embedding into local frameworks

Now, the international recognitions, the concrete on the ground results, developments in the Nigerian political landscape as well as in the international development arena have ushered the program into a new, transitional phase. The World Bank and the Nigerian Federal Ministry of Health are implementing a USD 500m performance-based initiative for Nigerian states to support mother and child care for a period of five years. For the first year, Kwara State has received USD 1.5m, half of which is earmarked for health insurance. Kwara State was already committed to raising its share in the premium subsidy to the point of assuming full financial responsibility for the program, but the fact that a dedicated budget line has been set up for health insurance is an important milestone in terms of sustainability.

With the support of the World Bank Group's Health in Africa Initiative, the partners are also working towards a state-wide health insurance scheme to build a financially sustainable future. The Kwara State House of Assembly is set to pass the Kwara State Health Insurance Bill, making health insurance mandatory. Mandatory insurance will ensure cross-subsidization of the poor by the middle class, thereby helping to reduce some financial burden on the state. Part of the plan is to set up and capitalize a state health insurance fund.

In conclusion, in PPPs like the Kwara State Health Insurance program, donor money can be leveraged to reduce investment risks and mobilize private capital, while the alliance helps to build trust. Such faith in the market translates to the lower interest rates that spur an economic multiplier, boosting investments and demand.

4.4. iCHF

Another innovative health insurance focused PPP is a newer venture, born in Tanzania. Launched in 2014, it builds on the approach described above, and incorporates lessons learned from the Kwara program. iCHF[18], or the 'improved Community Health Fund', is a PPP

[17] http://interestworkshop.org/

[18] iCHF: How a public-private partnership can help make healthcare work in Tanzania. https://www.pharmaccess.org/wp-content/uploads/2016/12/iCHF-How-a-public-private-partnership-can-help-make-healthcare-work-in-Northern-Tanzania.pdf

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that evolved from extensive experience with a preceding private health insurance scheme in Northern Tanzania.

In 2011, Africa's oldest co-operative, the Kilimanjaro Native Cooperation Union, approached PharmAccess for support in setting up an insurance scheme for their members. PharmAccess partnered with private insurance company MicroEnsure to administer the scheme, which ran in faith-based private facilities in the region. The benefit package of the scheme consisted of outpatient services, including chronic conditions, and (inpatient) maternity care. Like in Kwara, families paid a percentage of the annual insurance premium, in this case 40% of the Tsh 50,000 (USD 25). The rest was subsidized by the Dutch government.

This demand-side incentive was complemented by supply-side activities, starting with improving the quality of the facilities in the program. They all received a tailor-made renovation plan, as well as the necessary basic equipment wherever that was lacking. Healthcare staff was trained and the facilities entered a quality improvement plan based on the internationally accredited SafeCare standards, the only healthcare standards in the world designed especially for resource-restricted settings. Under this program facilities received regular visits to stimulate, support and monitor progress.

The KNCU insurance premium was significantly higher than that of the Community Health Fund (CHF), a voluntary, district-run insurance scheme for the informal sector that was only open to public clinics. Yet enrolment into KNCU outran CHF by far. District leaders in Northern Tanzania noticed that people in their target group in Kilimanjaro were choosing to enrol in KNCU instead of CHF and expressed interest in making this scheme available for the whole population instead of only for the coffee farmers. The National Health Insurance Fund (NHIF), which oversees CHF, finally approached PharmAccess to help rethink this Tanzanian national insurance scheme.

This start, born from a demand in the market and a strong partnership between NHIF, the district councils, public and private healthcare facilities, and PharmAccess, helped iCHF build a solid foundation. iCHF, is a voluntary, district-owned health insurance scheme that aims to increase access to quality healthcare for people in rural and low-income groups.

The iCHF introduced a number of important elements: transparency, a defined package with clear reimbursements, government commitment to co-funding and inclusion of private and faith-based healthcare providers – the latter being one of the most important improvement levers with respect to the CHF. Since its introduction in late 2014, the program has rapidly been adopted by districts across the Kilimanjaro and Manyara regions. By December 2016, more than 170,000 people had enrolled. Significantly, it is seen by the Government of Tanzania as a building block for creating a mandatory insurance scheme for the entire country.

Like in Kwara, the premium is partly subsidized. However, under iCHF enrolees pay a higher percentage themselves (50%), and the other half is paid by the Tanzanian government through the National Health Insurance Fund (NHIF). The premium is therefore 100% locally funded – a significant development in development aid. The co-premium for the former CHF varied per district, but averaged Tsh 10,000 (USD 5) per year. It was 'calculated' based on social acceptability. The co-premium for iCHF is three times that amount to ensure effective financing of the scheme. It is based on actuarial analysis using the unique utilization data from extensive experience in other health insurance schemes like the KNCU health plan and the Kwara Health Insurance program. The fact that enrolees pay half of the premium also promotes consumer empowerment, as they have more incentives to choose the provider with the best services and/or demand better services from the provider of their choice.

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On the supply side, iCHF follows the approach laid out in Kwara, investing in quality improvement as a first step to increasing demand for the insurance scheme specifically and for healthcare services in general. It facilitates training of healthcare staff and also provides a limited budget for equipment provision and infrastructure upgrading. All participating facilities work on their quality using the SafeCare standards, and key staff at both clinic, district and regional level are trained on the SafeCare principles.

In many ways, iCHF has disrupted the healthcare system. For one, it is built on the capitation model rather than the fee-for-service model. Before, healthcare providers did not get reimbursed for their services – district medical officers managed the finances and decided which facility was most in need of support. As a result, facilities that were performing well in the sense that many people were enrolling for CHF there were skipped over in favour of other facilities who were unable to generate enough income. It was essentially a 'pay for non-performance' model. Under iCHF, providers have predictable income. Financial flows are based on objectively measurable enrolment data, meaning providers receive monthly reimbursements based on the number of people enrolled at their facility. In that way, capitation drives positive incentives for both public and private healthcare providers to improve their services in order to attract more patients.

Uniquely, iCHF allows enrolees to opt for both public and private care, and the capitation model means that private facilities also receive reimbursements from the government. The fact that there is a waiting period involved allows for a healthier risk pool – under CHF, people could enroll and receive care on the spot. There is no incentive to enrol while still healthy, resulting in an unbalanced risk pool and limited sustainability of the scheme. iCHF has introduced a two-week waiting period.

From traditional local leaders to religious leaders in the church, and from politicians on a national level as well as a municipal level, iCHF has a broad base of local support. Their faith in iCHF has built trust and played an important role in the high enrolment rates and the establishment of a healthy risk pool.

5. Access to debt capital for private healthcare SMEs in growth markets

Contrary to popular belief, the private healthcare sector in sub-Saharan Africa delivers over 50% of healthcare services. It has a crucial role in complementing the public system. Many parties continue to view the private healthcare sector with a level of discomfort, as healthcare is generally deemed a public good. It is important to note, however, that private does not necessarily mean for profit. Many clinics are actually run by religious groups and other charitable organizations. Considering its significant role in delivering life-saving services in Africa, developing the private health sector is a precondition to achieve sustainable socio-economic development.

Any policy that overlooks the private sector will inevitably fall short in effectively contributing to improvement or change of the healthcare sector in developing countries. Healthcare is often approached from a medical and ethical point of view. However, the long-term viability of any healthcare system will also depend on economic fundamentals. The growing burden of healthcare costs in developing countries is an issue high on the political agenda. More and

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more, governments are also exploring what role the private sector can play in ensuring the most efficient use of the resources for healthcare.

The vast majority of private healthcare providers in Africa are SMEs, ranging from smaller hospitals, diagnostic and health centres to dispensaries, maternity homes and nurse-driven clinics. Many of these SMEs are owned by medical professionals with little to no experience in business management. Their facilities often lack a credit history, adequate bookkeeping and accounting systems, financial performance records or sufficient assets. As a result, many are unable to secure bank loans and struggle to purchase modern equipment or even pay for basic repairs.

5.1. Lowering risk for investors

As discussed earlier in this paper, sub-Saharan Africa suffers from a lack of independent and transparent benchmarks or a quality assurance system. As a result, banks have no access to data with which to compare, assess and rate healthcare quality. The healthcare sector poses an extra reputational risk, as enforcement of loan contracts, such as retrieving equipment from a facility in a poor community, is a situation most banks would try to avoid. Also, revenue streams are unpredictable due to the high percentage of out-of-pocket payments from uninsured patients. To cover all these unknown risks, banks tend to levy high surcharges and mark-ups, making formal bank loans unaffordable for most healthcare providers, especially at the base of the pyramid.

While SafeCare was set up to address the lack of measurable standards, the Medical Credit Fund was established to bridge the financing gap described above. The Medical Credit Fund is the first and only dedicated fund providing loans to health SMEs in Africa. Its hybrid investment fund has a unique 'layered capital' structure that blends debt financing for the loan program with grants for technical advisory services and first loss. Ultimately, it aims to mobilize the financial sector (locally and internationally) to invest in healthcare. In 2012, it raised USD 28.2m in debt funding[19] and grants[20]. In 2016, the fund raised an additional USD 17m, allowing it to expand its mandate to include larger players in the private healthcare sector like manufacturers and wholesalers, and allowing it to increase its ceiling to facilitate loans up to USD 2.5m.

Medical Credit Fund mitigates risks for African banks in order to bridge the gap for first-time borrowers in particular, by assuming a considerable share of the banks' financial exposure on these loans. Over the years, banks have started to recognize the business potential of the healthcare sector. Their health SME portfolios are among the best performing portfolios at these banks. This has prompted them to introduce loan products of their own, and they are assuming an increasingly large portion of the risk. In 2016, this percentage had risen to 46%.

5.2. Loans for healthcare providers

The loans are offered by African banks, in local currency. For first-time borrowers especially, the Medical Credit Fund employs a policy of incremental lending: by starting less experienced clinics off with smaller loans, it protects them from over-stretching their repayment capacity

[19] Debt providers include OPIC, Bill & Melinda Gates Foundation, Calvert Foundation, Deutsche Bank Americas Foundation and Soros Economic Development Fund.
[20] Grant contributions were made by a variety of public and private partners, including the Dutch Ministry of Foreign Affairs/FMO and IFC/G20.

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and helps them to establish a positive repayment track record. Most loans are used to improve infrastructure and to purchase drugs or equipment.

Uniquely, the loan comes in tandem with technical assistance through PharmAccess' quality improvement program, using the SafeCare standards. In this way, the Medical Credit Fund ensures that the access to capital will lead to more financially stable healthcare facilities as well as measurable quality improvement of healthcare services for people in Africa.

By the end of January 2017, the Medical Credit Fund had built 12 partnerships with banks in Africa and has disbursed more than USD 22m over more than 1000 loans. More than 72% of clinics that have accessed debt capital through Medical Credit Fund have shown significant improvement of their business and clinical performance through the SafeCare standards. The Medical Credit Fund has a historical repayment percentage of 97% - a result that is providing proof of principle that health SMEs are bankable, even at the base of the pyramid. In that sense, Medical Credit Fund is contributing to a healthier investment climate for health in Africa.

5.3. Innovative loan products

Other innovative loan products include a receivable financing product in Ghana, an invoice-financing scheme for the pharmaceutical supply chain and a mobile cash advance product in Kenya. In Ghana, many healthcare providers struggle with liquidity issues due to late payout of insurance claims by the National Health Insurance Scheme. Medical Credit Fund partnered with the National Health Insurance Agency to develop a receivable financing product that allows healthcare providers to discount the debts that the NHIS owes them to the bank. In Kenya, Medical Credit Fund set up a partnership with the World Bank and Capital Tool Company to implement an invoice-financing scheme for the pharmaceutical supply chain. Non-bank partnerships are also in development. In Tanzania, Medical Credit Fund is building a partnership with EFTA, which provides loans for equipment with no collateral requirements except for the equipment itself. Medical Credit Fund also works with Philips so that healthcare providers can apply for a loan to purchase Philips equipment at favourable interest rates.

6. Digital technology as an accelerator for improving access to care in growth markets

Digital technology has not only taken a front seat in daily life in Europe, the fourth industrial revolution[21] is changing societies and economies all over the world. Traditionally, institutional change is a gradual, evolutionary process. Digital technology can speed this up. In fact, it seems to be on the brink of revolutionizing the healthcare sector. The unprecedented rise of mobile technology transforming sub-Saharan African economies, offers the potential to revolutionize healthcare in Africa and reach people who until now have remained structurally excluded.

A country on the front lines of this development is Kenya, where the revolutionary mobile money payment system M-Pesa has changed the way people do business forever. It has opened avenues to finance for millions of people who did not have access to formal bank accounts. Today, more than 40% of GDP flows through this system.

[21] Schwab, Klaus (2015), *The Fourth Industrial Revolution: What It Means and How to Respond*, Foreign Affairs, https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution

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It is on this fertile ground that PharmAccess partnered with M-Pesa pioneer Safaricom, Africa's largest telecoms company and CarePay, a health payment platform, to set up M-TIBA. M-TIBA is a digital platform for inclusive healthcare that directly connects patients, providers and payers such as family members, health insurers or donor agencies. It enables people to save, send, receive and pay money for medical treatment through a mobile health wallet on their phone. It's a unique closed loop with conditional funds that can only be spent on healthcare at selected providers.

Digital technology can improve efficiency, effectiveness, and transparency to better match demand and supply of healthcare transactions. In that sense it can only serve to accelerate the overall approach described in this paper. Testing and developing new healthcare delivery concepts in direct collaboration with their immediate beneficiaries (patients, providers, payers, producers or policymakers) is generating valuable insights into financial and health decision-making behaviour of patients and providers. As a trusted digital platform, M-TIBA will further improve the efficiency and effectiveness of healthcare transactions.

On the demand side, M-TIBA improves access to healthcare by reaching people directly on their phones with tailored offerings such as savings schemes, benefits and health insurance at very low administrative costs.

M-TIBA also benefits players on the supply side of the system. Healthcare providers serve more patients who are actually able to pay for the services, and receive payment on the spot. M-TIBA also serves as an administration system – it generates data on medical treatments as well as financial transactions, so that healthcare providers have all the information they need at their fingertips. This can help improve both the clinical and the business side of their day-to-day work. Where they used to deal with leakages and fraud regularly, digital payments ensure that the money remains in sight and is transacted efficiently. M-TIBA also provides many opportunities ti improve cost-effectiveness, for example through mechanisms like joint procurement systems, access to finance for quality improvement or capacity building through e-learning.

On the investment side, the increased transparency and reduced risk and transaction costs mean that M-TIBA is making it more attractive to invest in health. The insight generated into clinics' business operations also lowers the threshold for clinics to qualify for bank loans. In addition, it allows donors, governments, insurance companies and even individuals can now directly reach vulnerable groups or family members. The digital infrastructure provides near real-time data and allows for precise targeting of certain groups such as pregnant women living in the slums. As a result, payers can offer tailored products like digital insurance for the treatment of chronic diseases or vouchers to vaccinate children. Payers can also encourage people to save for health by offering top-ups if people deposit a certain amount into their M-TIBA account. All in all, the end-to-end transparency of M-TIBA is building new forms of institutions.

7. Building evidence through research

Especially in global health where the stakes are so high, scientific and operational research is key to driving impact. It is important to investigate areas like quality of care, financial healthcare transactions, disease incidence, health outcomes, poverty maps, connected diagnostics and stakeholder experiences in order to test and validate different models of healthcare financing and delivery.

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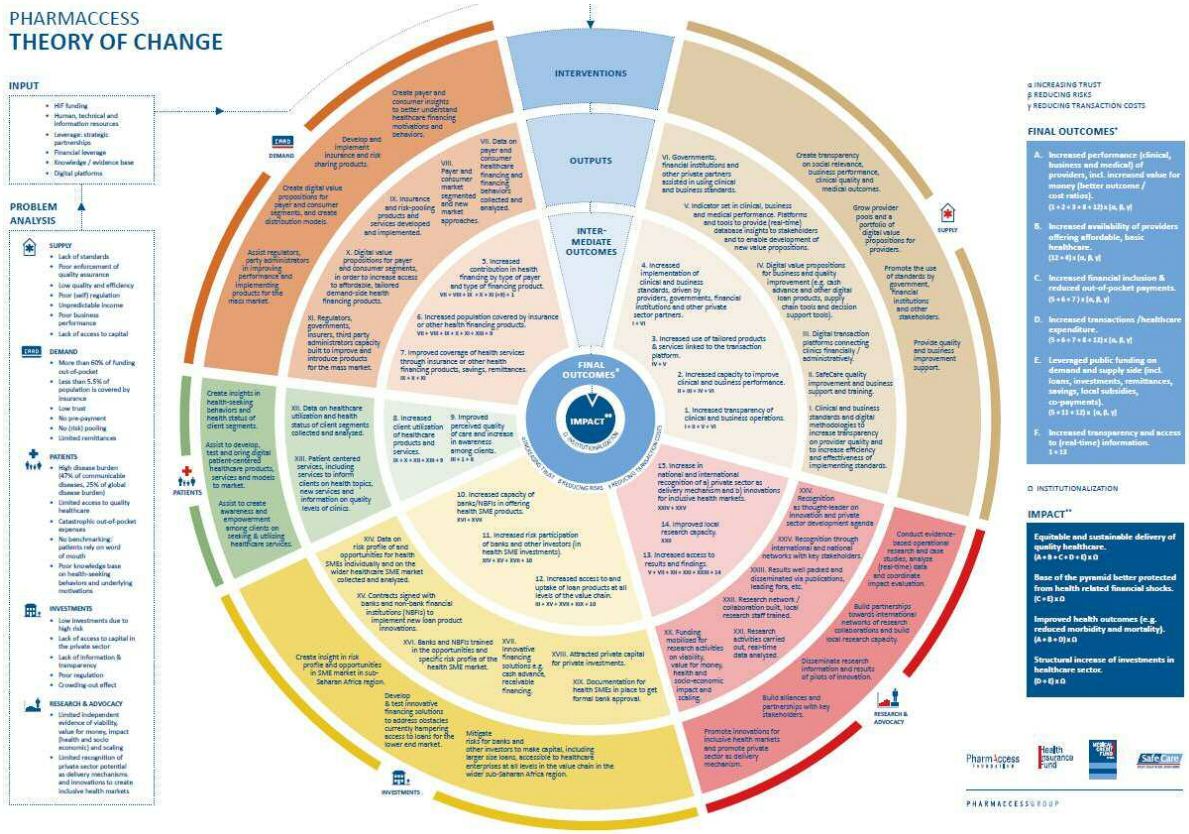
The guiding principles and theoretical framework behind the PharmAccess approach have been formulated in a Theory of Change.[22]



This model ensures that every intervention and research project remains focused on the final outcomes and impact.

In today's digital landscape, data is the new currency for healthcare exchanges. Expansive and systematic data collection, management and analysis generates an unprecedented amount of information on the operations and impact on both the demand and the supply side of the health system. New skills and analytical methods are required to process big data and extract meaningful information.

We live in a transformational age where digital technology is not only building new institutions, but also opening up new scientific avenues and forcing us to reinvent the way we work and do research. An effective RRI roadmap can help ensure that RRI delivers on the promise of inclusive and sustainable solutions that harness new perspectives, engage innovators and build trust.

[22] PharmAccess Theory of Change: https://www.pharmaccess.org/wp-content/uploads/2017/03/20170315_PharmAccess-Theory-of-Change.pdf

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