Sandoz Healthcare Access Challenge

Improving access to healthcare through locally targeted digital innovation
If we look at the core components of healthy living, the situation is even worse. More than 2.5 billion people worldwide lack access to basic sanitation, 870 million are malnourished and 768 million are without clean drinking water.

The global population is aging and increasingly subject to multiple chronic conditions that require long-term care and medication. As a result, the strain on healthcare systems worldwide is growing exponentially.

Healthcare costs continue to increase in developed markets while less developed countries struggle with the lingering effects of communicable diseases and a growing burden of non-communicable diseases (NCDs), driven by changing demographics, diets and lifestyles. However, regardless of geography, the most vulnerable communities still tend to be affected most by these pressures.

Many stakeholders, including national governments, global charities and non-governmental organizations (NGOs), are working hard to improve access to healthcare. Commercial industry, including pharmaceutical companies, is also contributing to this goal through new business models, such as Novartis Access\(^d\) or Access Accelerated\(^d\).

Nonetheless, significant gaps remain, particularly in underserved communities. Digital health initiatives with the potential to enhance healthcare access at low cost are already attracting significant levels of investment, from both pharmaceutical companies and technology specialists from other business sectors.

With their ability to circumvent legacy issues in healthcare and tap into a rapidly evolving virtual infrastructure, digital solutions can often be scaled up rapidly to address significant unmet needs both at a local level and in other markets facing comparable access issues.

Sandoz is committed to addressing global health challenges. In addition to our existing programs to help address the access needs of specific communities worldwide, we believe that Sandoz HACK can play a unique role in identifying and supporting people with new ideas and solutions that can make a big difference in their local communities and beyond.

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\(^d\)Access Accelerated is a multi-stakeholder collaboration that targets a variety of access barriers to medicines for NCDs in lower-income countries. Access Accelerated, Moving NCD Care Forward. Available at https://accessaccelerated.org/.
Wherever these ideas come from, we believe we can help innovators bring them to life, so that more people around the world can have access to the healthcare they urgently need. This white paper outlines our ongoing rationale for Sandoz HACK ahead of the launch of the upcoming Challenge, which will build on what we learned in the inaugural HACK.

Specifically, we recognize the need to offer finalists more direct support during the Challenge process, helping them develop their ideas into viable, differentiated solutions, with strong support from a globally networked community.

Looking forward to this year’s HACK, we welcome the ideas and support of all stakeholders in the field of access to healthcare. Above all, we want to mobilize the creative thinking of passionate entrepreneurs with locally oriented solutions that can really change the face of healthcare access in their own countries and beyond.

Richard Francis
CEO, Sandoz

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Introduction

The challenges of ensuring access to healthcare at all levels of society are universal. They span the least and the most developed countries, crossing economic, demographic and cultural boundaries in all ages, races and genders.

Many of these challenges involve healthcare capacity, whether that is a lack of facilities, equipment, healthcare professionals or services. Equally important, though, is good access to medicines and to medical information: how to diagnose, treat and prevent diseases, and when and where to seek medical help.

A number of stakeholders, such as national governments, global NGOs and commercial industry, including pharmaceutical companies, are already actively engaged in addressing these issues, through a wide variety of policies, initiatives and programs.

However, we believe there is still room to do more in one particular area: tackling local healthcare access issues. While these local problems are marginal in the larger scheme of unmet needs, collectively they leave significant gaps in healthcare access for those most affected.

Meaningful improvements require funding, political will, infrastructure and cultural change. However, a lot can also be achieved by leveraging the disruptive power of the digital technologies that are continually transforming the way we engage with the world.

These technologies have enormous potential to solve healthcare access challenges worldwide, particularly in local communities where practical barriers can significantly limit access to healthcare capacity, medicines and information.

However, stimulation of digital health technologies (from the healthcare industry for example) has to happen in a coordinated manner between the industry and all other stakeholders. More efficient and coordinated investment in digital health technology is required in general to increase healthcare access worldwide.

Countries need to be supported by their national and private health systems, commercial organizations/technology investors and local charities/patient organizations in order to develop a digital strategy that can align, coordinate digital health solutions that have potential for scale, and sort out the less scalable ones. Otherwise we are not using the limited funding available in the most efficient way.

Notwithstanding this, the very nature of digital solutions, with their emphasis on networking and cross-border communications, means not only that patients are empowered to understand and manage their own health, but that effective solutions are more easily scaled from one country to another.
That is the rationale behind the Sandoz Healthcare Access Challenge (HACk), and our keen interest to identify and support innovators with novel ideas for deploying digital technologies in order to expand and improve access to healthcare in their local community.

This white paper outlines the continued potential for Sandoz HACk to leverage the power of digital innovation at the local level to improve access to healthcare. It invites people who share this vision to help us grow and develop the program as we prepare to launch the upcoming Challenge.

It also sets out what we learned from the inaugural Challenge: notably, the need to provide more direct support earlier in the HACk process, so that ideas can be transformed into viable digital solutions; and to build a pathway for innovators to take their ideas to the next stage of development, with collaborative input from experts worldwide.

This paper is underpinned by extensive research into current access to healthcare needs and initiatives, supported by direct input from finalists who participated in the inaugural HACk and an external panel of independent healthcare technology experts, whose commentary we have included throughout (see ‘Research approach and contributors’ at the back of the white paper).

The inaugural Sandoz HACk

Originally launched in 2016, Sandoz HACk was a competition that invited young people worldwide to re-imagine access to healthcare. We asked them to tell us about a healthcare access challenge in their local community and how they would solve this using digital technology.

Small, locally developed ideas can sometimes fall below the radar of governments, NGOs or large corporations tackling broader unmet needs in access to healthcare. Other organizations may be more focused on major health issues and lower-risk, wide-ranging or commercially viable solutions.

Yet the same ideas can have a big impact both within the communities they target at a local level and – potentially – on a global scale, when shared with other communities facing similar challenges, wherever they may be in the world.

In the inaugural competition, Sandoz HACk generated nearly 150 entries from more than 30 countries worldwide. The ideas were assessed and six shortlisted finalists were identified.

The finalists presented their concepts to a judging panel at WIRED Health, a digital-technology conference, in London in March 2017. Three winners were selected from Ghana, the Maldives and the Philippines.

Winners received €20,000 seed funding to develop their ideas further as well as mentorship from Sandoz.

This white paper also provides more information on the three winning entries, the progress they have made in bringing their ideas to life, and the key lessons learned about steering finalists from great ideas to viable business propositions and providing continued support and multi-stakeholder input for those entries that emerge as the front-runners.

5WIRED Health 2017. Available at: http://www.wired.co.uk/event/wired-health-2017

5SANDOZ HACk      INTRODUCTION
The inaugural Sandoz HACk: The finalists

The three teams that received seed funding and mentorship from Sandoz to help accelerate their ideas to execution were:

Elvin Blankson, Priscilla Adu-Darko and Lebene Soga, Ghana: ‘GoPharma’

In Ghana, the pharmacy is usually the first point of call for dealing with illness, yet commonly these facilities do not employ a qualified pharmacist.6 GoPharma is a smartphone app that helps technicians in rural areas to get advice from trained pharmacists in the city, allowing patients to receive expert advice locally. Without needing to travel long distances, the app enables patients to carry on with their everyday lives with little disruption. Rural staff can get immediate expert advice from pharmacists on prescriptions, symptoms and other healthcare issues, enhancing both services for patients and the technicians’ own knowledge and awareness.

Mohamed Shuraih, the Maldives: ‘Blood Drive’

The stimulus for Blood Drive was the particular challenge of maintaining blood supplies in the Maldives, where one out of 120 newborns have thalassemia and require regular blood transfusions to survive.7 Blood Drive is a social platform to encourage blood donations for thalassemia patients. The mobile health app helps donors to maintain a blood-donation history and easily view their donation schedule with redeemable points, badges and rewards such as retail gift cards designed to act as incentives.

Joel Alejandro and Andrea Relucio, the Philippines: ‘Sali app’

Cardiac arrest is a leading cause of death in the Philippines. However, the healthcare resources and infrastructure to deal promptly with cardiac arrests are limited, and the general population lacks education on emergency cardiac care. Sali (Save-a-life) is an interactive mobile app that guides non-professionals in administering cardiopulmonary resuscitation (CPR) effectively, with the help of auditory and visual prompts as well as auxiliary support from a network of fellow lifesavers.

The three runners-up were:

**Benedikt Schmidl and Tanja Schwarzmeier, Germany: ‘SALMON’**

In Germany there is still insufficient healthcare provision for refugees with post-traumatic stress disorder (PTSD) and other psychiatric problems. SALMON (See All Lives – Mental Health Organizing Networks) is a smartphone app that helps to identify and prioritize treatment for migrants dealing with these issues. The app screens for psychiatric disorders like PTSD and depression using questionnaires formulated for the refugees. Where there is a symptom match, the app user will be connected with local healthcare providers. Therefore, SALMON is bridging the gap between the people lacking access and the available resources.

**Saif Ali, Pakistan: ‘MedMee’**

Medication errors and non-adherence are a common cause of death and disability worldwide. Pakistan is no exception. MedMee (Medicate-Me-electronically) is developing a crowdsourced network of pharmacies using blockchain technology to create an ePharmacy platform, which will help curb primary non-adherence and reduce prescription wastage. Accompanied by Casey, a cognitive agent (virtual nurse) that uses machine-learning technology, MedMee is fighting against medication errors, which kill millions of patients around the world every year. This aims to improve medication adherence exponentially through personalized reminders and more. Casey comes both packaged with the ePharmacy app and as a standalone offering.

**Johannes Mangane, South Africa: ‘PillDrop’**

In South Africa, many patients have to travel long distances, at considerable cost, to under-resourced healthcare facilities when they need to collect medicines for chronic conditions. PillDrop is a mobile platform to connect patients with motorists who can pick up medication on the patient’s behalf from clinics or remote automatic dispensing units. The platform always locates a provider from the patient’s area who is close to the relevant facility when the medication needs collecting. It also enables patients to check the availability of their medicines remotely before initiating a pick-up.
Sandoz Hack finalists all welcomed the experience gained from the competition and broader program. This ranged from in-depth, personalized support and constructive feedback from a team of expert mentors representing a variety of backgrounds, to funding for the winners and the chance to network and learn about health access issues and solutions generated by finalists from other countries.

To review the progress made to date by the competition winners, see ‘The inaugural Sandoz Hack: the winners and where they are now’ later in this white paper.

In 2018, Sandoz Hack will again be inviting entries from healthcare access pioneers and will expand the Challenge based on input from former entrants and the network of external experts who provided their support.

Our continued commitment to Sandoz Hack is driven, in part, by the success of the inaugural Challenge, as is evident from the progress of the winners.

However, it is also a reflection of the continued unmet needs in access to healthcare, as uncovered by our research and summarized in the next section.

We believe these needs can be addressed by supporting local innovation, specifically around digital technologies.

What the finalists thought about the inaugural Sandoz Hack

“Thanks to Sandoz Hack, we have grown from an idea into a reality that is already helping people in rural Ghana gain access to modern medical advice.”

Elvin Blankson, GoPharma, Ghana

“I haven’t found a program that was so receptive, so interactive... the Sandoz team were always on call and helped us reshape our idea and focus on problems that really mattered.”

Saif Ali, MedMee, Pakistan

“Sandoz Hack provided us with a lot more help from mentors... with most pitching competitions, they just tell you whether your idea is going to work or not.”

Joel Alejandro, Sali app, Philippines

“Internationally, it gave us some exposure – we have been able to network with people who had heard about our idea and got in touch.”

Lebene Soga, GoPharma, Ghana

“Digital may offer no major innovation in terms of what the healthcare provider dispenses, but in the format in which it is provided and the platform it is on. In the UK, you can either wait several days to see a doctor or pay £20 and connect with them straight away”

Vishal Gulati, healthtech venture capitalist, Draper Esprit
Understanding and addressing unmet needs in access to healthcare

Healthcare systems around the world are under increasing pressure from issues such as population expansion and aging, urbanization, and the accompanying build-up of chronic and non-communicable diseases (NCDs) linked to poor diets, sedentary lifestyles, longer lifespans and the stresses of 24-hour business and leisure cycles.

This toxic combination of a rapidly growing disease burden and the exponential increases in expenditure needed to manage it (Figure 1) creates healthcare access challenges at every level of society, and in every country around the world.

As things stand, at least 400 million people worldwide lack access to essential health services while two billion cannot get the medicines they need.

Impact on access to healthcare

Geopolitical, economic and cultural factors have a significant impact on access to healthcare. These may be exacerbated by political instability that disrupts supply channels and access to health facilities, or threatens the sustainability of healthcare policies.

Healthcare spending continues to rise and funding shortages are further aggravated by disparities and inequities in the way those funds are distributed within countries and between disease categories or channels of care.

Defects in infrastructure that limit healthcare access are not confined to facilities, provisions or personnel. They include the broader aspects of national infrastructure, such as transport links, distribution channels and communications. The result for many patients is long waiting times for medical appointments, particularly in countries where the physician-to-population ratio is disproportionate.

Martín Kelly, co-founder and CEO, HealthXL

“We are all living longer, there’s a huge shortage of medical professionals and it’s only going to get worse”
Figure 1

Growing and aging world population
Reported and projected world population (in billions), and percentage of population over 60

- Total population
- Percentage of population age 60 and over

Global health expenditure
1995–2014 (in USD trillion) and projected outlays

Global healthcare outlays could rise to
USD 13 trillion
by 2025


Population density is another important consideration. While access to healthcare tends to be more evolved in urban areas, expanding urban populations are putting more strain on limited healthcare resources. Rural health facilities, on the other hand, are often constrained by their size, remote locations, limited workforces and limited financial resources.

Lack of patient education, both in general and specifically around healthcare, can undermine access through low awareness of the need to seek treatment.

Some patients, for religious or cultural reasons, may mistrust doctors, refrain from medical intervention or favor traditional healers and therapies.

**Market-access barriers**

Access to healthcare is further influenced by market access factors that inhibit uptake of medicines, diagnostics or medical devices.

These are not just about limited healthcare funds and capacity issues such as physician-to-population ratios.

They also relate to conditions for the review and approval of healthcare interventions, or to political environments in which more attention is paid to cost-containment than to cost-benefit and outcomes.

Patients with unmet needs may face not only restricted access to effective and affordable essential medicines, but delayed access to innovative drugs that undergo stringent budget-impact or cost-benefit assessments.

Limited healthcare coverage and access are particularly marked in comparatively neglected areas such as mental illness or multiple chronic conditions. This also applies to the most vulnerable segments of the population, such as rural and indigenous communities, children or the elderly.

Sometimes access to trusted information may be just as crucial as access to needed medicines or the right healthcare capabilities and expertise.

Older people with the most pressing need for clear, comprehensible and practical information on access to healthcare are often those least able to obtain it.

**How governments, NGOs, industry and other stakeholders tackle healthcare access**

At both local and global levels, governments, international NGOs and commercial stakeholders across many sectors, including pharmaceutical companies, have already taken important steps to address gaps in access to healthcare.

Indeed, a Working Group on Digital Health at the Broadband Commission for Sustainable Development, co-chaired by the Novartis Foundation and Nokia with partners representing digital and health experts and policy-makers, was tasked with exploring how digital health could best be used to its full potential as an enabler to improve health and well-being and universal healthcare access. They produced an extensive collaborative report which aims to break silos between the technology and healthcare sectors.
Some government initiatives involve new technologies such as telemedicine to enable virtual medical consultations. Of course, we also recognize that significant efforts are taking place to improve access to healthcare beyond digital solutions. Various countries, for example India, have prioritized health screening for chronic conditions such as diabetes or cancer.11

Other governments are forming regional alliances to improve regulatory alignment and accelerate access to medicines, such as the African Zazibona initiative.12

South Africa, Kenya, the Joint United Nations Programme on HIV/AIDS and several other government agencies/NGOs have joined forces to make a generic, single-tablet HIV treatment regimen available to public-sector purchasers in over 90 lower income countries for around USD 75 per person per year.13

NGO activities to widen healthcare access tend to focus on developing countries, addressing issues such as availability of medicines, vaccines and diagnostics for high-impact communicable and non-communicable diseases, as well as deficiencies in healthcare infrastructure, funding and personnel.

For example, the Clinton Health Access Initiative is dedicated to scaling up antiretroviral treatment for people living with HIV/AIDS in the developing world.14

It does this by reducing treatment costs, accelerating the rollout of new vaccines for HIV/AIDS, and through other programs such as ensuring patient access to rapid, accurate and cost-efficient diagnostics.

As demographics and lifestyles change in developing markets, NGOs are paying increasing attention to the spread of NCDs more readily associated with economically advanced countries, such as cancer or depression.

For example, in emerging nations with limited healthcare reimbursement systems, Novartis works in partnership with NGOs and local governments to improve access to cancer medicines.15

Some NGOs take a broader view, exploring the optimal design and management of healthcare finance and delivery systems.

Along with companies from other industries, pharmaceutical companies have launched a range of initiatives designed not only to expand access to medicines, but also to address fundamental issues such as sanitation, facilities, personnel, training or health awareness.

“Some of these problems are not problems in developed countries, where there are already systems and processes in place, so people come up with innovative ideas, like having drones supply the medicine from one location to another”

Mohamed Shuraih, Blood Drive, the Maldives

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14 Website: clintonhealthaccess.org.
These include multi-stakeholder collaborations, such as Access Accelerated, to improve management of NCDs in lower income countries, as well as programs at the individual company level.

Companies are also involved in: building and renovating health facilities; mobile-health initiatives; drug donations in response to natural disasters or funding shortages; training and support for healthcare professionals; vaccination campaigns; supplying affordable generic drugs; and dialogue with governments on prioritizing healthcare issues.

With so many stakeholders involved, it is not surprising that there are a range of different views on “how best” to increase access and on “what” constitutes access to healthcare. One generally accepted definition that addresses these questions comes from the WHO, which describes six main elements: effective pre-qualification, appropriate product selection (e.g. pricing policies), improved coverage for NCDs, appropriate use of medicines, tackling antimicrobial resistance, and addressing underserved clinical areas, however some stakeholders have differing views on the relative importance of these areas.

At Sandoz, we also believe that pricing is only one of many interdependent aspects we need to look at. While this topic is subject to often heated debate, it is outside the scope of the discussion of this white paper.

The gap for locally focused solutions with global potential

The range of healthcare access strategies pursued by governments, NGOs and industry cover a good deal of ground, both digital and non-digital, making vital improvements in access to healthcare for millions of people worldwide. Efforts from the various stakeholders in healthcare access are both commendable and capable of achieving real change.

At the same time, these strategies may not capture every nuance of more local access challenges.

They still leave room, therefore, for initiatives and technologies that may appear relatively modest in a global context, but can have significant impact for the specific populations affected. This is what we are trying to address through Sandoz HACk.

In addition, some of the locally focused digital solutions we have explored may have potential impact or use beyond their target markets. Where these solutions do not rely exclusively on existing healthcare infrastructure, they can easily be scaled up both within their country of origin and in other markets facing comparable challenges.

This is an opportunity to respond to healthcare access gaps across national borders, at low cost and with significant impact on populations and communities in need. Digital technologies can also be leveraged to address local issues that reflect the specific circumstances of healthcare access challenges in any one market.

Another significant component is the potential of digital technologies to improve access to healthcare among vulnerable communities such as children and the elderly, and in often-neglected areas such as mental health, multiple chronic conditions or polypharmacy.

For this reason, digital innovation is a core focus of Sandoz HACk, with the potential to address a range of healthcare access issues – as we will see in the next section.

*Access Accelerated: Moving NCD Care Forward Available at https://accessaccelerated.org/
How digital technologies can address healthcare access gaps

In an age when digital tools and media are opening up new channels of communication the world over, our research found that digital technologies were seen as a key element in improving access to healthcare (Figure 2).

They are also uniquely suited to environments in which physical infrastructure, human resources and funding for healthcare may be lacking, though there are fewer legacy issues and vested interests to negotiate.

For example, the rapid evolution of low-cost mobile-phone usage, as well as a pragmatic digital infrastructure in many developing countries, provide opportunities to leapfrog conventional adoption curves for new technologies and accelerate scale-up.

“The most important thing is to have good data for decision-making – currently we really struggle with that”

Johannes Mangane, PillDrop, South Africa

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<th>Technology’s role in addressing key healthcare access trends</th>
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<td>Lack of resource (financial, personnel)</td>
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<td>Changes in demographics</td>
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Source: Sandoz secondary research (see ‘Research approach and contributors’)
Digital applications

The potential impact or use for digital technology in improving access to healthcare, while also putting the patient front and center in health systems worldwide, is enormous. Current and emerging uses include anything from using mobile phones or wearables to track vital signs and adherence to therapy, through to:

- Virtual medical diagnoses or consultations, particularly in underserved areas such as women’s health or mental health, where remote interaction through telemedicine or other mobile channels may be just as effective as face-to-face dialogue.
- Using virtual reality and artificial intelligence in categories where mainstream interventions may be sub-optimal or problematic, such as pain management without recourse to opioid analgesics.
- Delivering medicines to areas in which the physical infrastructure for healthcare access is limited.
- Generating and analyzing real-world and historical data from a range of sources, including the ‘Internet of Things’, so that care pathways can be redesigned to optimize efficiency and access while lowering costs.
- Providing validated health information to patients and caregivers, so they can manage chronic conditions more effectively and independently.

Consumer-driven healthcare

One key way in which digital technology aligns with current trends in healthcare access, such as unrelenting pressure on health system resources and a parallel shift towards patient empowerment and autonomy, is that digital is essentially a consumer-driven phenomenon.

“Pharma has an opportunity to extend further into the health or disease-management cycle, upstream towards early diagnosis or prevention, or downstream into things like therapy adherence and complementary services, which all deliver better outcomes”

Marc Sluijs, DIGITALHEALTH.NETWORK

Technology emphasizes speed, convenience, choice and user experience. These qualities may be lacking where healthcare provision and delivery are over-centralized, geared to economies of scale, or organized and measured in line with provider rather than patient priorities.

Consumer- or patient-driven healthcare requires a different mindset throughout the system: one that really starts to treat patients as equal partners. If digital solutions run against the grain of traditional structures and relationships in healthcare, they can also empower patients locally, driving both access and long-term system sustainability.

Digital technologies driving virtual networks

Another feature of digital technologies is their capacity to create new virtual networks, between patients and healthcare providers and among patients themselves.

This form of digital exchange, with its dissemination of knowledge or awareness, and its support for patient self-actualization, helps to make the most of limited healthcare resources and to re-orient them towards real patient needs. Similarly, small, locally focused digital solutions to healthcare access gaps can have an impact far beyond their initial remit, both by helping to change the healthcare culture in their home market, and by creating opportunities to address the same challenges in other countries with similar economic or demographic characteristics.
Holistic healthcare

Digital technologies are also part of a growing trend towards more holistic, patient-driven healthcare, geared to better outcomes and reduced burden of illness.

‘Wraparound services’ provided in addition to physical products, such as education, information, counseling, data capture and analysis, real-time disease monitoring or medication reminders, may be just as important in this fast-evolving environment as other components of the treatment or prevention package.

For example, a medicine may be safe, effective and cost-efficient in itself, but of limited value if patients cannot get access to it or are not equipped to take it properly.

In some circumstances digital technology, and the data it generates, may even offer more significant value components than the medicine itself, particularly with respect to the low-cost generic drugs typically used to address healthcare access issues in developing countries, or in other contexts where funds and resources are limited.

The significance of digital technology is essentially as a distribution or communication platform that can be bolted onto existing healthcare products and services, although it may not need access to the same infrastructure.

Digital technology may not fundamentally change what those products and services offer. However, it can reformulate the whole experience of care so that access to the same products and services is seamless, convenient, equitable or cost-effective.

In the context of access to healthcare, we see the potential for digital technology to address three key areas specifically:

Access to medical information and data
Providing people with accurate information on how to manage and treat specific conditions or recognize early signs of illness.

Access to healthcare capacity
Helping to connect patients and their caregivers with healthcare professionals and facilities that can provide the medical services they need.

Access to medicine
Ensuring patients can navigate the challenges around supply of medicines to receive the pharmacological interventions they need.

One observation from the inaugural HACk was that local digital solutions addressing these areas are highly prevalent. However, the obstacles faced by the people behind these innovations are also widespread.

To develop and scale up a concept to a level where it can make a significant difference to local – and potentially global – communities requires funding, technical expertise and support from the right external experts and mentors to navigate the hurdles of implementing novel digital technology solutions.

This is where we believe Sandoz HACk can have an impact in improving access to healthcare: working with healthcare access pioneers to accelerate their ideas more rapidly within their local markets and beyond.

“We are seeing some very interesting effects also driven by the increasing quality and decreasing cost of consumer technologies such as smartphones or even drones, and how these, in combination with machine learning, can address some access issues”

Roberto Ascione, CEO, Healthware International
Tackling healthcare access gaps through Sandoz HACk

Sandoz HACk helps to address both the gaps in existing efforts to improve healthcare access around the world, and the transformative role digital solutions can play in making healthcare more accessible by fostering new networks and relationships across a broad range of contexts.

At the same time, it is a learning process and a forward-looking initiative. We have gathered feedback and insights from our inaugural Challenge and, as we explain later, have incorporated these learnings into plans for a more wide-ranging HACk in 2018 and beyond.

Future HACks will expand the scope of qualifying technologies for the Challenge. They will also seek both to help develop shortlisted entries into viable business plans earlier in the HACk process, and to ensure that the right multidisciplinary support is available to maintain the momentum of winning entries once our local healthcare access pioneers put them into practice in their home markets and further afield.

Sandoz HACk wants to identify local innovators with ideas for digital technologies that can ease healthcare-access problems in their home countries. Sandoz orchestrates the expert advice, mentoring, visibility and – for the competition winners – seed funding to help local healthcare access pioneers accelerate their concepts into viable solutions.

These grassroots solutions can be scaled up readily and rapidly by tapping into existing information-technology infrastructures (e.g. mobile phone networks), without the need for investment in people, buildings or materials.

They can also be leveraged to address comparable issues in countries at a similar stage of health-system maturity, with comparable economic, demographic or epidemiological characteristics, and with certain common symptoms of limited healthcare access.

The symptoms include inadequate infrastructure and funding, sharp disparities between public and private healthcare provision, ad hoc cost containment or, alternatively, sophisticated tools for cost/benefit evaluation within an advanced healthcare infrastructure (Figures 3 and 4).

Figure 3

Geo-political factors affecting access to healthcare

Source: Sandoz secondary research (see Research approach and contributors)
Global applications

Sandoz HACK supports concepts that may seem too locally focused or risky for governments, NGOs or pharmaceutical companies acting alone, as we understand that certain countries share key features from the collection of healthcare access challenges. This ensures the concepts will be able to apply elsewhere, not just locally.

The inaugural Sandoz HACK has already shown how it can accelerate digital solutions addressing underserved local healthcare access issues. However, it also has the potential to raise the odds of local success and maximize the impact of viable technologies by widening their application into other geographies, complementing existing global initiatives.

The inaugural Sandoz HACK provided ample evidence that leveraging digital solutions beyond the strictly local context is both feasible and practicable.

One winning entry that could easily translate to other national and local contexts was the GoPharma concept. Here, the issue was the difficulty of accessing pharmacy services in remote rural areas of Ghana, the lack of trained staff to manage those facilities effectively, and the risk that patients would instead turn to unreliable sources of healthcare advice and provision.

In Ghana, the pharmacy is the first point of call for almost everyone who falls ill. However, commonly these facilities do not employ a qualified pharmacist.2

12 million people [in Ghana] have very little or no access to pharmaceutical healthcare and that number becomes even bigger if you go to central, southern or eastern African countries. We hope we could become the Uber of pharmaceutical healthcare in Africa

Lebene Soga, GoPharma, Ghana

The geographical and educational context in which GoPharma evolved will be familiar to other African countries, where low health awareness in the general population, together with shortages of trained healthcare professionals, may exacerbate the challenges of having to travel long distances to access quality care.

These problems may not be so amenable to traditional ‘top-down’ approaches, which require both sensitivity to the particular local circumstances in which challenges arise – rural populations being particularly neglected in the overall healthcare strategies of many developing and even developed countries – and commitment to investment in facilities and training.

The Sali app, developed in the Philippines, was another winning entry targeting a local issue that could easily occur wherever healthcare resources and infrastructure are limited, and the general population lacks education on emergency cardiac care.

Out-of-hospital cardiac arrests are among the leading causes of death and disability worldwide, responsible for as much as 10% of total mortality in developing countries.¹⁸

The Sali app is designed to empower communities at the local level in addressing a healthcare access challenge aggravated by educational deficits in providing basic life support, and the difficulty of applying top-down remedies to an archipelago with many hard-to-reach areas.

Once again, these are circumstances that would otherwise call for concerted investment in education and training within a national environment marked by inadequate budgets, privatization, neglected healthcare facilities and shortages of trained personnel.¹⁹,²⁰


The inaugural Sandoz HACk: the winners and where they are now

The three winning entries from the inaugural HACk, and the progress made to date in bringing their ideas to life, exemplify the potential for 'small' locally focused digital solutions to make a big impact in easing neglected healthcare-access challenges (see also ‘Global applications’ in the ‘How digital technologies can address healthcare access gaps’ section).

Ghana: ‘GoPharma’

GoPharma is a smartphone-based telepharmacy solution that bridges the skills gap by linking medical counter assistants in rural facilities or clinics with trained urban pharmacists who can supervise operations in real time at a number of different locations.

The solution enables urban pharmacists to conduct face-to-face consultations or prescription reviews, consult with rural personnel, and advise on clinical interventions, medication orders and contraindications.

Recently a group of senior Sandoz leaders and associates met Elvin Blankson from GoPharma during a field visit to Ghana. The GoPharma concept is now active and live at 16 dispensing points across Ghana. These include thirteen retail pharmacies, two licensed chemists and one herbal shop.

Functionality is being piloted via WhatsApp while the app development is scoped out. Each facility engaged in the pilot has set up a WhatsApp group, including one full-time pharmacist, a supporting pharmacist, the owner of the rural facility and the technicians working in it.

To date, the main types of request supported through information sharing within the WhatsApp group have been patient complaints, verifying prescriptions, patient counseling, and helping patients to locate hard-to-find medicines.

Many of the pharmacy technicians involved in the pilot also see GoPharma as a tool for continuous professional development. As a result, the app is offering case-study exercises twice a week to test technicians’ knowledge and provide feedback.

The Maldives: ‘Blood Drive’

Blood Drive is a social platform to encourage blood donations for thalassemia patients. The mobile health app helps donors build a blood-donation history and easily view their donation schedule.

It includes push notifications and SMS alerts for donor opportunities or emergencies, locations of nearby donation centers, and incentives such as unlockable badges or redeemable points. Users can set goals and share updates with friends on social media.

Sponsored rewards from strategic partners, such as corporate social responsibility programs, could be used to drive further participation. Rewards might include a month’s free Netflix subscription, retail gift cards, phone credits or airline miles.

The app would maintain a secure, up-to-date central registry of blood donors and their blood types, enabling donors to connect with potential recipients. The database could be made accessible to medical institutions and local blood banks, with open interfaces to integrate with existing healthcare software systems.

GoPharma: Elvin Blankson (not pictured), Priscilla Adu-Darko and Lebene Soga
Since winning the Challenge, Mohamed Shuraih has been working on a minimum viable product and developing the core functionality. He is in discussions with the Thalassemia Center in the Maldives about partnering on the Blood Drive solution. On the technical side, Shuraih is focusing on the project framework.

The first phase of the framework is providing local thalassemia centers with software to maintain their donor lists. At the moment, the centers log donors manually on paper. Once that is integrated, the next phase will be developing the user features for Blood Drive.

Shuraih has also drafted a methodology for the incentive/points system to ensure a good balance with technical development. He has scheduled several meetings with government officials to determine whether policy-level changes can be made to ensure proper dissemination of information about Blood Drive and protection of user privacy.

**The Philippines: ‘Sali app’**

Sali is an interactive mobile app that teaches, motivates and guides non-professionals to administer CPR effectively, using auditory and visual prompts.

It also provides auxiliary support by linking users to a network of fellow life-savers and notifying emergency services in acute circumstances. Additional features include access to medical information and locations of automated external defibrillator machines, a surveillance system, and social-media integration.

The Sali app aims to empower communities at the local level in the Philippines to take swift, informed action against cardiac arrest, one of the nation’s top killers.

Most recently, Joel Alejandro and Andrea Relucio carried out market research on the Sali app and developed a prototype. They are introducing the technology to partner schools and communities, mainly to test the app’s acceptability and usability. Joel and Andrea are also developing a social-media marketing plan to start a Sali (Lifesaver) community online.

This community will address a broader constituency than the primary target audience of students in the Philippines. The community will be the core of the Sali movement, with the app functioning as a tool to bring together a national team of volunteers.

So far, the project has focused principally on using the Sali app as an educational platform. The longer-term objective is for Sali to provide an emergency dispatch system as well.

It is exciting to see the progress made by each of these winning entries from the inaugural Sandoz HACK. In following up with the finalists, though, some clear areas emerged as to how we can further improve the program, including:

- The need to support finalists earlier in the Challenge process, so that they have a minimally viable, clearly differentiated solution to refine into a compelling business plan at our finalists’ workshop.
- The importance of following through with finalization and implementation of the winning entries, potentially in collaboration with external partners such as investors, business angels, technology incubators, NGOs or local governments.
Both of these adjustments will help to ensure that the ultimate goal of Sandoz HACK – converting early-stage ideas into minimally viable products that can improve access to healthcare – is achieved more rapidly.

The upcoming Sandoz HACK

We envisage Sandoz HACK in 2018 – and beyond – being a far more ambitious challenge, with an increasing focus on collaborative input.

The inaugural Sandoz HACK focused on mobile digital solutions. While these may feature prominently in 2018, the Challenge is expected to expand to include other types of digital technology: for example, wearables, embedded technology or even artificial intelligence.

Moreover, the concepts involved may not always be specifically ‘healthcare’ solutions, but could include the application of technology that has a beneficial impact on access when applied in a healthcare context.

We also want to incorporate the key learnings from the inaugural Sandoz HACK. In particular, we recognize the need for Challenge finalists to access more direct support from experts and mentors during the HACK process.

By providing greater engagement with the finalists, including a finalists workshop ahead of selecting the winners, we can help local healthcare access pioneers to think about key issues such as: their unique selling proposition; what exactly they hope to achieve with their solution; whether they have conducted all the necessary research to validate their proposition; and whether they are technically equipped to deliver the intended outcomes.

Our experience with the inaugural HACK also underlined the importance of providing a more structured pathway for continued development and implementation of the winning entries once the competition is over.

We are building Sandoz HACK to be a sustainable program, not just a series of one-off events. We want to see our winners’ ideas taken up by healthcare systems and really making a difference at the local level.

That calls for more support at the point of execution, so that competition winners are ready to address crucial issues such as timing, funding needs, marketing and promotion, or the right target audience for their solution.

However, we also need to continue to measure the progress of the winners with appropriate follow-up activities so that we can ensure that the final goal granted through the funding and mentoring is pursued and achieved. The investment throughout in funding and mentoring should impact healthcare access as the fundamental purpose.

As part of this process, we hope to make Sandoz HACK even more of a collaborative program by inviting input and partnership from other interested stakeholders, e.g., investors, business angels, technology incubators, NGOs or local governments (see ‘Research approach and contributors’).

We want to play a part in building, mentoring and supporting a global community of healthcare access pioneers with small, local ideas that, with our help, can have a big impact on access to healthcare worldwide.

Ahead of the official launch of the upcoming Sandoz HACK, we invite those who can support this mission to contact us (see ‘Supporting Sandoz HACK and contact details’).
Conclusion

Access to effective and affordable healthcare remains a critical issue worldwide.

It will take on even more urgency as population’s age and a growing burden of chronic non-communicable diseases stretches health systems to the limit. That demands not only funding and political will but also innovative thinking.

There is already considerable investment in addressing these challenges, from a range of stakeholders, including national governments, global NGOs and commercial companies. While these efforts undoubtedly help to shift the needle on access to healthcare, significant gaps remain in tackling local issues that may look ‘small’ but collectively can have a major impact on access locally, nationally and worldwide.

Solutions to these problems may often lie in small, locally targeted ideas and technologies. In particular, digital technologies have rich potential to leapfrog legacy issues in healthcare, tapping into a fast-evolving alternative infrastructure to deliver truly patient-oriented services that go to the heart of unmet health needs. With the right support, these solutions may in some cases also have the potential to deliver benefits on a broader geographical scale.

We believe Sandoz HACk can play a key role in helping this innovation ecosystem to flourish, empowering digital technology entrepreneurs locally, reducing the risks associated with local ideas, and speeding their passage to implementation.

We are building learnings from the inaugural Sandoz HACk into the upcoming Challenge. We would like finalists to have access to more direct support during the competition, to help develop their ideas into viable business plans. We want Challenge winners to have more support at the point of executing their projects, with input and partnership from other interested stakeholders. In addition, we want to maintain the momentum of Sandoz HACk by developing a truly global networked community.

Sandoz HACk is a program that will evolve with the healthcare access needs identified during the Challenge, the rapid pace of innovation in digital technology, and the contributions of other stakeholders committed to leveraging new ideas in the service of better access to healthcare, both locally and across national boundaries. We want to bring all of these stakeholders together and encourage collaborations that will help the HACk ecosystem to flourish in the interests of patients, providers and health systems worldwide.

We do not have all the answers ourselves. However, we can help to catalyze solutions developed by technology-savvy innovators with a passion for redesigning healthcare in the interests of patients. Please join us on our mission to HACk healthcare, improve access and save lives.

“Government and private industry also need to make sure that their investment in spurring innovation also takes into account the need to communicate these efforts far and wide to attract the largest pool of new talent, that may otherwise not be aware of what is at their disposal in their area”

Roberto Ascione, CEO, Healthware International
Research approach and contributors

The research that shaped this white paper, together with a broader review of the best direction for Sandoz HACk in 2018 and beyond, included an online survey of previous HACk entrants as well as interviews with last year’s finalists.

The finalists interviewed included:

- Elvin Blankson, GoPharma, Ghana
- Priscilla Adu-Darko, GoPharma, Ghana
- Lebene Soga, GoPharma, Ghana
- Mohamed Shuraih, Blood Drive, the Maldives
- Joel Alejandro, Sali app, the Philippines
- Andrea Relucio, Sali app, the Philippines
- Benedikt Schmidl, SALMON, Germany
- Saif Ali, MediMee, Pakistan
- Johannes Mangane, PillDrop, South Africa

Supplementing these insights was extensive desk research to map healthcare access needs as well as existing initiatives by governments, NGOs or pharmaceutical companies to address those needs. We also conducted digital listening to identify general trends in challenges to healthcare access. A live poll was also undertaken at the 2017 Frontiers Health conference on digital health to understand the areas of access to healthcare best targeted by Sandoz HACk.

Representative markets were identified in which common economic, demographic or structural characteristics raised comparable healthcare access issues, underlining the potential for locally focused digital solutions to be leveraged outside their target countries.

Interviews with technology experts active in the healthcare sector provided further input on the particular nature of access challenges in today’s health systems, and how digital solutions are opening up new possibilities to address those challenges, both locally and globally, outside the traditional networks of health-system infrastructures and relationships.

These experts included:

- Martin Kelly, co-founder and CEO, HealthXL
- Nikita Blanarik, innovation consultant, Conertalk
- Vishal Gulati, healthtech venture capitalist, Draper Esprit
- Marc Sluijs, DIGITALHEALTH.NETWORK, advisor to Merck Global Health Innovation Fund, Nestlé, Kaia Health, Digital Therapeutics Alliance
- Roberto Ascione, CEO, Healthcare International

Sandoz wishes to gratefully acknowledge the input received from all the above contributors, whose advice and support has been instrumental in our thinking on how to further develop Sandoz HACk.
How to support Sandoz HACk

As already noted, we would like to expand the collaborative scope of Sandoz HACk through input and partnership from other interested stakeholders.

These relationships might range from helping to raise awareness of the program to providing technical, strategic, practical or financial support to our healthcare access pioneers, particularly in the latter stages of bringing their projects to fruition.

The following groups are of specific interest and we would welcome discussion with interested parties ahead of the official launch of the next Sandoz HACk Challenge:

• Networking groups, technology incubators, universities with entrepreneurship programs and individual healthtech experts/mentors who can provide the right environments and advice to help accelerate the most promising local solutions identified
• Local governments, NGOs or commercial organizations who can help raise awareness of the next Challenge, identify local healthcare access pioneers and provide local support to them

In addition, we are also open to discussion with the following potential partners:

• Media organizations (global or regional), with an interest in covering the progress of Sandoz HACk, to whom we can provide access to key personnel and materials
• Investors and business angels with an interesting in potentially funding the downstream development of interesting solutions identified through the HACk

If you have an interest in supporting Sandoz HACk in any of the above ways, then please contact us using the following details:

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