Executive Summary

The Promise of Digital Health:
Addressing Non-communicable Diseases to
Accelerate Universal Health Coverage in LMICs

September 2018

BROADBAND COMMISSION
FOR SUSTAINABLE DEVELOPMENT

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(intel)

Report developed with the support of:

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EXECUTIVE SUMMARY

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Digital health solutions promise to change the way healthcare is provided, driving progress toward universal health coverage and transforming outcomes for patients with NCDs

Worldwide, non-communicable diseases (NCDs) are responsible for more deaths than any other disease

Non-communicable diseases account for approximately 70% of deaths worldwide, of which three-quarters occur in low- and middle-income countries (LMICs).[1] Funding for tackling NCDs is low compared to other diseases and preventive measures in particular would have a significant impact.[2]

To combat NCDs, we need to transform the way healthcare is provided and expand access to all. Without properly addressing NCDs, universal health coverage (UHC), a target of Sustainable Development Goal (SDG) 3, cannot be achieved

Health systems must move toward universal health coverage and shift…

- from facility-based care to community-based care with a focus on increasing health system capacity and efficiency
- from episodic, curative care to long-term, continuous care to institute a people-centered focus with improved access
- from reactive care to proactive, preventive care featuring forward-looking health management with improved transparency

Digital health can help make these shifts possible

Digital health encompasses the use of information and communications technologies (ICT) in all their forms for health. This includes electronic health records showing patients' health histories, mobile apps designed to raise awareness about diseases and internet-connected devices such as those that allow doctors to monitor patients' blood glucose levels remotely.

What these technologies have in common is that they can fundamentally change the cost-quality equation of healthcare and empower patients, health providers, governments, and other stakeholders with the information and tools they need to manage their own health, deliver better care and strengthen the underlying health system, thereby radically expanding access and improving outcomes.

Investing in digital health to strengthen entire health systems can accelerate efforts to combat NCDs, and by the same token, investing in digital health specifically to combat NCDs can have wider health system benefits. Ultimately, digital health is a catalyst in transforming how healthcare is delivered and experienced, as it allows LMICs to move from disease silos in healthcare to an integrated, resilient health system.

Digital technology is driving innovation in healthcare, especially in LMICs

Unmet health needs driven by a lack of health infrastructure and trained health workers, widespread mobile penetration and relatively open regulatory environments make LMICs fertile ground for innovation. And with fewer entrenched, legacy systems to overcome, countries have an opportunity to "leapfrog" and adopt newer solutions

faster. Digital health should be considered an essential part of the healthcare system, just as medical equipment or hospital beds are.

The results so far are encouraging

A few studies have evaluated the impacts of digital health, ranging from patient-level results like reduced blood glucose levels to system-level results such as improved access to services and cost savings. In Canada, for example, the cumulative benefits of investing in digital health were estimated at around CAD$16 billion over the course of nine years.[3] The results so far are encouraging and could be used to drive further investment and scaling of digital health solutions.

To maximize the impact of digital health on NCDs in order to accelerate the achievement of UHC, solutions have to be financially sustainable

Many digital health solutions are launched as pilots and are often not designed for scale and sustainability. This can lead to a fragmented, uncoordinated landscape of standalone initiatives. The simplest solutions – namely those designed with the needs of the end user in mind, that use existing technologies and are integrated in the existing health system, and which are widely available in the context – have the highest chances of being scalable and sustainable. This is demonstrated, for example, by the national scaling of telemedicine services in Ghana.

This report provides examples, insights and recommendations for greater sustainability in digital health.

Building Blocks for Sustainable Digital Health

There is much policymakers can do to create favorable environments for sustainable digital health, and they don't have to do it alone

Six building blocks can help countries realize the promise of digital health and transform access to appropriate, effective NCD care

1. Strategy, leadership and governance
2. Regulations and policies
3. Communication infrastructure and common platforms
4. Interoperability
5. Partnerships
6. Financing models

Six building blocks for sustainable digital health

Policymakers have a wealth of experience and knowledge to capitalize on

Many countries have already embarked on their digital health journeys. The following sections capture the key lessons for each building block specifically for NCDs, along with some examples and tools.

Digital Health Strategy, Leadership and Governance

As outlined in the 2017 report of the Broadband Commission Working Group on Digital Health,[4] strategy, leadership, and intersectoral collaboration between ICT and health are key to realizing the full potential of digital health so that it responds to national health priorities and drives progress toward universal health coverage

For policymakers, a vital first step is to set a digital health strategy that lays out a compelling vision and provides clear direction to all stakeholders in the health system

A digital health strategy also provides a supportive, predictable operating environment for solution providers. Some 120 countries already have digital health strategies in place, from Brazil to Turkey to India. Countries that don't have one or want to improve it can develop a vision and consider how their capabilities need to evolve in order to achieve it with digital health. Assessment frameworks and guidelines have been developed to support different aspects of a digital health strategy by organizations such as the International Telecommunications Union (ITU), the World Health Organization (WHO), and Intel.

Strong leadership, intersectoral collaboration and clear governance are then essential for effective implementation of a national digital health strategy

Through its in-depth country case studies, the 2017 report of the Broadband Commission Working Group on Digital Health demonstrated that countries that had been successful in realizing the potential of digital health fulfilled three pre-requisites:

- Sustained senior government leadership and committed financing
- Effective governance mechanisms

- National ICT framework that facilitates alignment between health and ICT sectors

Last but not least, a well-defined monitoring process to track implementation, impact and cost-effectiveness of a national digital health system clearly helps transform digitized health systems into "learning" systems that always improve according to the needs of the people it serves.

Regulations and Policies

Regulation is needed to protect patient safety and privacy, while allowing innovation to continue to unfold. This fosters trust in digital health solutions and facilitates their adoption

Specifically, three categories of regulation can be established:

First, data management regulation protects the privacy and security of patients' health data

Data security and privacy are particularly hot topics right now, as digital health solutions begin to allow large amounts of patient data to be collected and shared. Data-protection measures can build trust in the usage of personal health data among stakeholders.

The core regulatory challenge is to achieve high standards of data protection and quality without stifling innovation. For example, the use of cloud services has immense potential to fulfill all required data-protection measures and meet LMICs' needs for flexibility, scalability and cost-effectiveness.

Second, device regulation ensures that only safe, cost-effective, high-quality devices are approved for use

A general principle is that devices need to be regulated in proportion to the risk they pose to the patient. Established approval processes in high

income countries (HICs) can be re-used or adapted by LMICs to bridge existing regulatory gaps and provide innovators with the guidance they need to understand how regulators will classify their products.

Third, regulation of the delivery of care ensures that medical practices complemented by digital technology are safe and high-quality

Regulators can prioritize applications such as:

- Those improving prevention or early detection of NCDs
- Those supporting task shifting of care practices to less-skilled health workers
- Telehealth or telemedicine, allowing providers to centralize expertise and perform consultations and monitor NCD patients remotely
- Prescription of medicines, given that patients with chronic conditions regularly need refills

Digital health regulations and policies differ greatly among countries and are often not comprehensive. Lessons can be learned from HICs. At the same time, great examples from LMICs could be used in HICs, such as the use of e-prescriptions in India and telehealth in China.

Communication Infrastructure and Common Platforms

Communication infrastructure and common platforms connect people and solutions, and enable the sharing and use of information to manage NCDs more effectively and efficiently

Digital communication infrastructure provides the connectivity that makes the application of digital technology to healthcare possible. Policymakers should prioritize making that connectivity available and affordable to all

The cost of mobile broadband as well as internet connectivity continue to pose barriers to accessing information and digital health solutions. Access to the right quality or speed required to use digital health solutions is especially lacking in several LMICs. The cost of mobile broadband has been dropping significantly, however, it is still prohibitively high in some LMICs. Governments and mobile network operators still have a variety of ways to accelerate access, including:

- Public access points
- Stimulating competition and incentives for operators to enter less attractive markets, such as remote areas
- Promoting infrastructure sharing
- Managing radio frequencies efficiently

Governments can also assess the role that taxes on handsets and airtime play in limiting access to digital health solutions and consider making changes. Proactive measures like these can help ensure that digital health does not become a barrier to healthcare access, exacerbating existing inequalities based on income and other factors.

In addition, policymakers can also work with stakeholders to create cost-efficient digital health platforms as common assets with core functionalities that can be shared

Such platforms, or "infostructures," can include a health information exchange architecture, unique citizen (or patient) IDs, patient electronic health records or registries, Application Programming Interfaces (APIs), or health management information systems to integrate data across regions and diseases. Many of these components should be government-wide, to maximize return on investment and links across e-government programs, such as health and social services. Certainly, any investment in digital health to improve the management of NCDs will also help address other diseases and vice versa. While common digital health platforms can be challenging to design

and operate, they can ensure higher cost-efficiency (build once, use multiple times) with better integration and interoperability. Common digital health platforms in the Western Cape region in South Africa, Estonia and, as currently developed, in Gabon offer good models to learn from, and a variety of guidelines and tools provided by ITU, WHO and other stakeholders exist to help countries get started with their "infostructure".

Interoperability Framework

Interoperability allows different digital health solutions and data sources such as government programs, hospitals, community health workers and patients themselves to connect with each other. It is essential to manage NCDs in a coordinated way across all levels of care and all stages of the patient journey

Interoperability allows different ICT systems, software applications and devices to communicate and exchange data

Currently, many national healthcare systems face a lack of interoperability between their data sources and patient management systems. This is due to the use of proprietary elements or commercial software instead of open standards. Inconsistent use of existing standards can also be at fault. Remedying this is considered so crucial to the promise of digital health that it is now receiving UN-level attention.

Policymakers should consider interoperability as a cornerstone of their digital health strategy

Countries without legacy systems can be at an advantage when it comes to fostering interoperability. Diverse expertise is needed to make decisions, because interoperability entails both technical and organizational aspects. Establishing a board of national and international experts from the public and private sectors, like Chile and Mexico did, can be extremely beneficial. A fundamental role for the government is to create awareness around the importance of interoperability and the value of open standards. A variety of open standards are ready to adopt, as well as "profiles" that bring multiple standards together.

Countries that establish unique citizen IDs have the tremendous advantage that patient information can be linked and followed up over time. Examples of countries with unique ID systems are India, Thailand and Rwanda. Regional communities of practice such as the Asian eHealth Information Network (AeHIN) and organizations such as the Health Data Collaborative can also be leveraged to navigate the field of interoperability.

Partnerships

Partnering can increase the scale and impact of digital health solutions by combining expertise, ideas, assets and other resources of different stakeholders

The digital health stakeholder landscape is diverse. In general, it includes:

- Governments responsible for health-system planning and management, public health IT infrastructure and financing

- Financers, including donors and insurers, who bring financing for digital health solutions and in some cases the power to convene several partners

- Health providers, who bring medical expertise and delivery capacity

- Suppliers, such as:
  - Mobile network operators (MNOs) that bring digital communication infrastructure, go-to-market expertise and customer relationships
  - Technology companies that deliver ICT systems and digital health solutions, go-to-market expertise and sometimes regional or global reach
  - NGOs and civil society, which assure

trusted access to target populations, transmitting information about their needs and capacity-building abilities

Government and MNOs can be especially important partners for scale

Governments are key for integrating digital health solutions into national health reimbursement systems, shaping health policies, connecting with other stakeholders and defining regulations. This is especially crucial for solutions addressing NCDs, which require lifelong treatment and often lead to catastrophic health expenditures and impoverishment of entire families. For instance, the Carlos Slim Foundation's CASALUD model for diabetes care has become part of the National Strategy for the Prevention and Control of Overweight, Obesity, and Diabetes in Mexico.

And partnering with MNOs has enabled digital solutions to reach larger target populations. For example, 19 million patients have now used AxisMed's remote monitoring solution in Brazil, offered in partnership with Telefónica.

Partnering has to create value for all involved

Different organizations bring different assets and aspirations to the table, and meeting those aspirations is crucial to a sustainable partnership. Over time, there has been a mindset shift when it comes to partnering with the private sector. In early phases, private sector partners have donated digital health products or services. Now, they seek "win-win" or "shared value" models that generate benefits for the business as well as for patients, healthcare providers and other stakeholders. For example, AccuHealth entered into a public private partnership (PPP) with the Chilean government to provide patients with home monitoring devices enhanced with analytics services that get reimbursed in return.

Policymakers can create opportunities to bring stakeholders together

Governments can help bridge sector boundaries through, for example, health innovation events focused on specific needs, support to help small companies bid for contracts, roundtables, working groups, and other forums that allow stakeholders to meet and build working relationships.

Financing Models

Taking promising digital health solutions from proof-of-concept to scale requires committed and sustained financing

A variety of financing options exist:

Historically, 85% of digital health funding in developing countries has been spent on early-stage research and development or pilot programs. Now, financing models for all stages of the project lifecycle are beginning to emerge, including innovative models that generate revenues on an ongoing basis.

Common health platforms require long-term commitment

Government should take the lead in coordinating funding for digital health platforms. Donors and development banks are stepping up efforts to increase funding for core health IT systems when there is commitment from the government. Governments can also look for ongoing revenue streams to recoup initial investments, as Senegal with their Agence de la Couverture Maladie Universelle (ACMU) agency platform did. For example, this can be achieved through pay-as-you-use models that make common digital health platforms more accessible for governments, healthcare providers and other healthcare stakeholders.

Diverse financing options can be used to fund solutions that plug into the common digital health platform

A range of financing options can be used as part of a business model, with the objective of protecting patients from financial hardship. The ultimate goal is for digital health solutions to be covered by public or private health insurances. Other models can be used in combination with reimbursement schemes or as a financing bridge until a health insurance is established.

- **Donor grants** to jump-start digital health solutions until they have proven to work and can cover their own costs or be absorbed into the public health system, such as MomConnect in South Africa

- **Out-of-pocket payment** is the least preferred option but can cover specific needs with a quick adoption rate and become more affordable for low-income groups through cross-subsidization or a "freemium" approach, like that of Grameenphone in Bangladesh or the subscription-based model from MedicallHome in Mexico offering 24/7 telehealth support for a low fixed fee

- **Direct government financing**, where resources are available or provided through loans; in addition to common health platforms this is typically used for time-limited public health campaigns, such as the joint WHO-ITU Be He@lthy Be Mobile initiative

- **Public or private insurance reimbursement** is the ultimate goal. This includes micro-insurance for digital health services that can bring substantial health benefits, such as those provided by babyl in Rwanda

- **Pay-as-you-use or licensing**, which generates a constant revenue stream for providers while matching users' needs, as illustrated by the Leap mLearning platform from Amref

Obviously, if development and operating costs are low, less funding is needed.

Smart design, local integration and maintenance, as well as bulk purchasing can be used to bring down the costs of digital health.

Conclusion

Policymakers, donors, private companies and other digital health stakeholders can use the practical lessons, examples and tools described in this report to foster sustainable digital health solutions that address the specific needs of patients with NCDs and help countries accelerate the achievement of universal health coverage

Digital health solutions promise to change the way healthcare is provided, to both acute and chronic patients

They have the potential to fundamentally change the cost-quality equation and empower patients, health providers, health managers and policymakers with the information and tools they need to manage their own health, deliver better care and strengthen the health system. Digital health can expand access to quality healthcare and improve prevention and patient outcomes, including for patients with chronic conditions such as NCDs. Investing in digital health to accelerate efforts to combat NCDs will yield benefits for the entire health system and make it more efficient and resilient.

Realizing the promise of digital health involves establishing the following six building blocks:

- A national digital health strategy backed by strong political leadership and multi-stakeholder governance

- Regulations and policies that protect patient safety and privacy, while allowing innovation to continue apace

- Connectivity among people and systems by supporting digital

communication infrastructure and building common platforms

- Data shared and leveraged to manage care better by establishing interoperability frameworks

- Partnerships among the diverse health system stakeholders with roles to play

- Adequate financing models for a common health platform and digital health solutions to make it all possible and protect people from financial hardship

And policymakers do not have to deliver alone. They can learn from and with others on the same journey

Many countries have begun their digital health journeys and a wide variety of organizations are actively engaged, seeing digital health as an opportunity to address the growing NCD burden to accelerate the achievement of UHC. Generally, investments into digital technology that aim to strengthen health systems will benefit patients with NCDs and digital solutions for NCDs will similarly help make systems more resilient.

No matter how far they are in their journeys, policymakers have the opportunity to learn from the experience of other countries and can bring together stakeholders with the resources, expertise and assets needed to fulfill the potential. Countries embarking on the journey toward realizing the potential of digital health can start taking small steps, focusing on "must-have" elements to lay the foundations for future development.

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