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mHealth: Can mobile technology improve health in low- and middle-income countries?

Summary

- ere are 7 billion mobile phone subscriptions (and counting) worldwide and in the developing world, mobile penetration is at 90%.

- mHealth is the use of mobile technology to improve health at an individual, population or systems level.

- As a tool, mHealth does not work in isolation and should be understood as part of a broad approach to improving health and health systems.

- Pilot mHealth initiatives exist, but few have gone to scale. Taking pilots to scale with in-built evaluation is essential to ensuring robust evidence based policy.

- Public and private investment is needed to ensure that skills are available to conduct large-scale mHealth evaluations.

- Governmental support for the inclusion of proven mHealth initiatives within national health provision is fundamental to the success of countrywide initiatives.

What is the 'm' in mHealth?

mHealth is the use of mobile technology to improve health at an individual, population or systems level. 2015 gures produced by the International Telecommunication Union put mobile phone subscriptions at more than 7 billion worldwide and over 90% penetration in low- and middle-income countries. e proliferation of mobile technology over recent years has generated the potential for mHealth to improve the health of the world's poorest populations by overcoming factors such as low-level litera geographic distance to services, social marginalisation, unskilled medical personnel, and lack of nancial resources.

Noting the potential for mobile phones to remind HIV patients to take their medication, to o er advice to pregnant women, to collect data on mortality within communities for example, governments are expressing interest in mHealth as a complementary strategy fo strengthening health systems and achieving post-2015 health and development targets in low- and middle-income countries. e potential for mHealth to improve access to health services in these countries is also attracting investment by foundations and multi-lateral and bilateral aid agencies. To improve mHealth strategies, governments, foundations, agencies, corporations and researchers should work in partnership to bridge knowledge and implementation gaps.

[1] http://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx

Why mHealth is more than just a phone call: penetration, reach and system delivery

 e penetration of mobile phone networks in many low- and middle-income countries surpasses other infrastructure such as paved roads and electricity, and often dwarfs access to xed line internet. Mobile tools are being used to strengthen di erent parts of the health system through voice, text and data access. ese di erent modes o er the possibility of direct channels of communication with patients via phone calls (personal, automated, or through a free phone number), text messages (including personal text reminders or mass texting for community mobilisation), data transfer for health record tracking or clinical decision support, and mobile telemedicine devices for patient monitoring or diagnosis.

the human and nancial resources required to train, equip and incentivise quali ed providers to work in low- and middle-income countries is required.

 ere are a number of challenges for mHealth interventions, including:

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Harnessing mHealth for improved health outcomes

 ere are a wide range of potential ways in which mHealth in low- and middle-income countries could be harnessed to improve health outcomes at di erent stages of healthcare provision. ese include:

•   as a source of data exchange to help answer questions such as 'What is happening at a community level? Are health workers reaching new parts of the community?'

•   to check stock levels of essential commodities (e.g. drugs, emergency supplies) and to improve supply chain performance

•   to improve the ability to diagnose and track diseases

•   to support the performance of health workers based in rural areas through dissemination of clinical updates, learning materials, and reminders

•   to expand access to on-going medical education and training for health workers at convenient locations.

Although mHealth has the potential to deliver health services remotely, commitment to ensuring appropriate investment in

coman ies) buy-in from the outset and integration of an mHealth strategy into national health policy often increase the success of mHealth initiatives. For example, mobile phone coman ies cn < increase the nancial viability of mHeath projects.

Embedding mHealth initiatives into national health strategies cn <help generate wider reach and increase success. Making nationally integrated health systems a reality will require stronger government cnpacity and national policies around mHealth. A strong foundation requires aligning health and ICT policy, linking government programmes with research, telecommunications regulation, building a framework for data protection and privacy, guiding interconnection and open data standards, considering data security and building partnerships between governments, health implementers, technology providers, mobile network operators and others.

Regulation Industry has, in the main, been driving the technological revolution and mobile applications for healthcare may be the next big trend for venture cnpital investments. is raises important regulatory challenges to ensure that vulnerable people have access to safe and e ective medical advice. To mitigate the risks, e orts are required to:

- make certain that the medical profession plays a major role in ensuring quality of service

- develop regulatory frameworks that respond to the needs of society and do not simply maintain professional monopolies

- ensure transparency to maintain the quality of information provided, reduce potential con icts of interest between providers of medical advice who also supply pharmaceuticals, and protect privacy and ownership of personal and medical data.

Collaborative discussions with policymakers, private and public stakeholders, patients, researchers and charities on the challenges and opportunities for mHealth will help to de ne mutually bene cial regulatory agendas and generate appropriate health interventions.

Security and ethical concerns

"Data security is a particularly important issue to address within th area of policy. Policymakers and programme managers need to be aware of security issues in the mHealth domain so that appropriate policies and strategies cn <be developed and implemented."

Ethical concerns around patient privacy, con dentiality and consen also pose unique challenges, especially in light of global cultural diversity. According to a 2011 World Health Organization report governments cite issues related to data privacy and security as two of the top barriers to the exan sion of mHealth. Protecting personal health information that is collected and transmitted over mobile devices is essential for bringing mHealth to scale, but so is ensuring that patients and the integrity of mHealth projects are not compromise. Policymakers and programme managers should be aware of security issues in the mHealth domain and appropriate safeguarding policies and strategies need to be developed and implemented.

Conclusion

With the vast majority of the world's population having access to mobile communications, opportunities for this technology to be part of health services and their delivery, particularly in low- and middle-income countries, is increasingly recognised. Although not panacea, mHealth programmes have the potential to make a serio and cost-e ective contribution to improving health access and outcomes.

To advance mHealth, the discussion needs to move away from one that is narrowly focused on the feasibility and acceptability of mHealth as a technological innovation, to one in which the concerns that the mHealth eld seeks to tc0f2e communic(e.g.ion