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Opinon and Perspective

The Advent of Mhealth in India

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Building on the ubiquity of mobile phone accessibility and affordability around the world, the mHealth provides new opportunities for improving health care services, even in remote and hard to reach areas. The mHealth has come to stand for use of mobile technology, most commonly mobile phones, to support medical and public health practices (1). The key mHealth applications "Apps" in developing countries include:

- Delivering health education to patients
- Collecting health data
- Monitoring patient data
- Providing ongoing medical education and training of health care workers
- Tracking diseases and epidemic outbreaks
- Providing diagnostic and treatment support to remote health care workers

The mHealth strives to address one of the most pressing global challenges that of making healthcare initiatives far more accessible and speedy, in an improved and cost effective manner. As more and more healthcare, IT and patient monitoring tools are integrated, every hospital facility will have to acquire a full enterprise wireless solution (2). The mHealth programs can be broadly categorized into two:

Client centred programs designed to provide health information and support directly to clients or members of the general public. For example **m4RH is** a text message, opt-in, automated system that provides users with evidence based information on nine family planning methods, and a clinic locator database and **CycleTel** which is a text message system that facilitates use of the standard days method of family planning.

Health system strengthening programs which provide training and counselling/job aids for health workers and support for health systems data, and program management. For example **CommCare platform** a mobile phone-based platform that allows users to collect and send health system data, compete and submit forms and surveys, perform case management, and utilize other multimedia options wirelessly and **ILS Gateway which is** an integrated logistics system on mobile phones that provides alerts, supply chain management tools, and reporting functions for stock and ordering of medicines/ health products (3).

Doctors are favouring mobile technology buyouts as it can help meet most of their needs, including monitoring patient compliance, assessing patient records, and communicating with their global counterparts. It is important for physicians to highlight the features and benefits of mHealth services and applications so that end users are aware of the potential of mHealth solutions in reducing health risks and improving healthcare efficiency (4).

Consumer demand for health "Apps" and sensors has far outpaced the science needed to understand their benefits, risks and impact — positive, neutral or negative — on health outcomes. Many consumers are already using standalone mHealth applications to track their wellness, exercise, diet, fitness and some are utilizing apps created for people with chronic conditions such as diabetes and hypertension (5). Moreover, in the small amount of mHealth research conducted till date, issues of privacy, confidentiality, regulatory control, human participant protection, and logistics (e.g., interoperability among carriers) have been known to hamper researchers' efforts. While addressing these challenges, researchers will need to develop and assess the full spectrum of mobile health technologies, as they create safe, scalable and effective programs (6).

India reflects the stark difference between developed and emerging markets in mHealth. The healthcare landscapes of each country create different motives for using mHealth. Indians cover about three quarter of their medical expense out of their own pocket and adequate care is beyond the financial reach of many. India has only 0.6 doctors per 1000 people, the vast majority of whom are concentrated in urban areas and rural residents usually receive care from accredited social health activists rather than trained medical personnel. Given the degree to which medical specialist concentrate in metropolitan

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and semi urban towns, telemedicine and mHealth methods will have to be adopted.

A model that India can imbibe for guidance in mHealth is the one currently in place in Tanzania. Some of the maternal child health and community health worker programs in the African country depend on the use of smart phones, Government Health IT reported (7). Remote health monitoring of chronic diseases generated €7.6 billion ($ 10.01 billion USD) globally in 2012. MarketResearch.com projects the market for telehealth monitoring equipment to reach $3.1 billion by 2017 (8). It remains to be seen whether the regulations and data security requirements around healthcare information, this industry is standardized or fragmented. In the absence of standardization, the advances in medical devices remain adhoc. On the other hand, by using a centralized approach, these devices are prone to lack appeal and less likely to be adopted. Either way, with the amalgamation of technology from device giants such as Medtronic, cloud service companies such as Telus and brands such as Apple, the future of mobile healthcare looks bright and rosy (9).

Basic SMS functions and real time voice communication serve as the backbone and the current most common use of mobile phone technology. Increased availability and efficiency in both voice and data transfer systems in addition to rapid deployment of wireless infrastructure will accelerate the deployment of mobile-enabled health systems and services throughout the world (10). For example in diabetes management program recently launched by Apollo group of hospitals called SUGAR, patients suffering from diabetes may upload their blood count to the clinician through SMS and mobile “apps”, with an SMS delivered back to the patient explaining the readings and advising if any further action is required. Further support comes from contact centres staffed by medical professionals; customers also have access to customized personal health records.

The tracking of health outcomes and deviations may improve the healthcare system's ability to assess population health. Similarly, mobile applications could be used to track health trends as an early indicator of emerging health issues. The Department of Human & Health Services began a mobile app challenge in late March 2012 encouraging web developers to create a web based application that uses Twitter to track health trends in real time (11). With mobile applications tracking health trends and outcomes, federal agencies and healthcare organizations could cross reference data to build a baseline of trends and statistics to advise research and improve medical practice. India has been witness to the might of social networking usage in nonviolent fight by the nongovernmental organisation viz. India against Corruption in gathering national support to become a national movement in 2012.

There is a good reason to be excited over mHealth. Mobile technology can enable much needed, thorough change in health care system worldwide and in turn bring significant socio-economic benefits. The scope of the task ahead though, should temper the current excitement. The adoption of mHealth, if it is to be meaningful, must be a part of a wider disruption of healthcare. Already mHealth is being adopted where the need is greatest and the barrier lowest, among those who pay a large proportion of income for healthcare, among patients who are not getting effective care from existing structure and, most of all, in emerging markets (12). The tech savvy advisors to the Central Government in India were responsible for the popularisation of mobile services through private operators in the country, which relegated the landline master, monopolistic State owned Telecom Department to the bottom with millions of landline cancellations. It was the far sight of few which set the movement for mHealth in motion.

To thrive in complex health care environments, agencies active in mHealth should find applications and services that bring concrete value to identifiable stakeholders; think in global terms, focus on solution and not technology; and identify possible partners to create a greater impact and find new value. The success of mHealth in networking is testament of evidence of its utility. It is vastly used for communication for cooperation between groups and individuals, sharing a commitment to a common goal, ideal or objective, sharing resources and/or ideas. The mHealth networking will be effective when there is mutual trust, solidarity, active participation of mobile users, flexibility for rapid response, expertise and experience and resource for key activities (13).

The mHealth care in India is fast pacing towards a precision based model and personalized medicine. The mHealth networking will be a major factor in providing personalized toolkits alike K4Health (1). The distant education extended through pen drives will offer the requisite knowledge base for the users. It will offer knowledge to help manage predicted vulnerabilities, chronic illness and episodic acute condition. Enabled by technology, connectivity and data, mass customization is visible on the horizon allowing mHealth to blossom and flourish.

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