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Health in Your hands!

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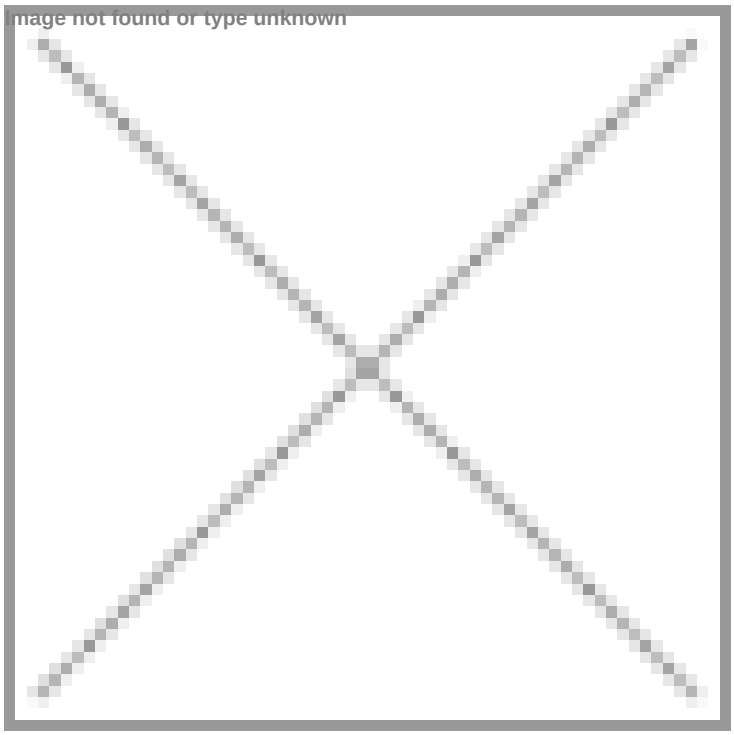

Singapore: Imagine being housebound for 2-3 days due to terrible snow or a bad storm! Your baby has severe fever and all roads are blocked. What a bad situation to be in! However with a smartphone in your hand it is not all that bad. With scores of healthcare apps at your disposal you can see a doctor immediately from the comforts of your home and in some cases even get a medicine prescribed. In the not-so-distant past, patients had only one source for healthcare expertise - their personal physicians. They relied on doctors to monitor their symptoms, track changes in their health, manage their diseases and personalize their care. But in recent years, mobile technology and the Internet of Things (IoT) has changed it all. Today, smartphones are affordable, are of a very high quality, and every other person has a smartphone. Entrepreneurs, companies, and organizations across Asia are cashing-in on this huge penetration of smart phones with novel healthcare apps that promise to resolve many healthcare issues and speed improvements to healthcare delivery.

Healthcare apps are dramatically making healthcare more convenient, less expensive, more preventative, and in many cases downright better. It is estimated that there are now approximately 165,000 health-related apps which run on one or other of the two main smart phone operating systems, Apple's iOS and Google's Android. PwC, a consulting firm, forecasts that by 2017 such apps will have been downloaded 1.7 billion times. Increased access to smartphones and the internet suggest that the mobile health market will enjoy a compound annual growth rate of more than 30 percent during the next four years. Allied Market Research values the global mobile health market at nearly $11 billion. With the number of mobile phone users in the Asia Pacific expected to grow from 2.5 billion to more than 3 billion in the coming years, mobile health technologies will

become even more accessible. By taking advantage of these trends, medical device companies can tap into a growing market that is demanding better, cheaper healthcare services.

" Dr Jacques Durand, founder of Doctor Gratis and Medical Director / International Health Consultant Medika Consulting explained, "Technological innovation is the key to many of healthcare's current and growing woes--including costs, an expanding elderly population and inefficiencies within the healthcare system. From the physician side, a better collaboration between family doctors and specialists, using digital technology to keep records and share information, and giving greater priority will increase productivity. All healthcare professionals will use digital tools for develop real time care team services for delivering better medical outcomes."

Doctor Gratis is an app for people in Indonesia to get free live consultation with a doctor. There are two teams who helped produce the app. The first is Warung Kreasi which develops the app. Second is Medika Consulting which takes care of the chat function and social media operations. Doctor Gratis is also a partner of Singapore-based medical social platform Blabla Doctor.

A huge increase in the usage of smartphones, particularly in India and China, has empowered the middle class to access such apps to solve some parts of the healthcare problem. As they use apps more often, startups are able to generate more data on patients, which in turn helps them design better products. Going forward, healthcare startups that generate and analyse big data will be attractive opportunities for investors. Data is changing healthcare, by improving clinical intelligence by combing through vast amounts of data. With users becoming more conscious of health, and earn higher salaries, both health and wellness app makers have a huge market to tap.

"Smartphones are one of the recent technology developments that will have the strongest impact in healthcare, because within this small device, the range of possible functions becomes almost limitless," highlighted Mr Eric Stephen, Technical Advisor, FHI360, "Remember that a smartphone is a fairly powerful, ultra-portable computer. So beyond collecting health data, photos, or GPS coordinates, it can also perform calculations, store and retrieve data from the internet, and display clear interfaces for users. Further, once you realize that additional small devices for medical measurements can be attached to a smartphone, it's hard to imagine limits to the possibilities in fighting HIV, TB, malaria, and any number of other epidemics."

FHI 360 is a nonprofit human development organization dedicated to improving lives in lasting ways by advancing integrated, locally driven solutions. For more than 30 years, FHI 360 has been dedicated to crafting unique technology based solutions that respond to the multifaceted nature of HIV and AIDS. In Asia right now, FHI 360 is proudly implementing the LINKAGES project which conducts a range of HIV prevention activities to reduce HIV transmission among key populations. LINKAGES Thailand is pioneering a new model for increasing uptake of HIV testing and counseling. In partnership with local community-based organizations the project has introduced an enhanced peer mobilizer model (EPM) to increase HIV testing and counseling, and improve enrollment and retention of those who test positive in care.

M health- The new healthcare revolution

In Asia there is serious shortage of medical professionals and hence millions of Asians today lack access to affordable, quality healthcare. The region's per capita spending on healthcare averages is lesser than recommendation and this deters much-needed investment in new hospitals, equipment, and the information technologies that power modern healthcare systems management. It also contributes to the region's shortage of skilled healthcare professionals. In many rural areas of the region even today many treatable infections claim thousands of lives.

"A number of advantages are crucial for rural medicine," added Mr Stephen. "First, the devices are extremely portable, which means that a health worker can take them on rounds to remote villages, just as easily as they can be used in larger health facilities. More fundamentally, the price of a smartphone is far below that of laptops or other equipment. Our projects tend to use smartphones running the Android operating system, which can be purchased for US$100-120, and sometimes below $100. That is not cheap in a low-resource country, but it leaves open more doors than approaches that required a laptop computer. Furthermore, smartphones allow easy-to-use interfaces that make it possible for applications to actually guide the steps to be taken by healthcare workers with lower levels of training."

Along with improving general wellness, these apps play a major role in allowing greater patient engagement which means most individuals are now focused on improving their health and are better aware of the complications of the disease. Many diseases also have support groups and forums where patients can discuss their symptoms, problems with other fellow patients. Mobile health apps and devices are really making a strong impact in the healthcare industry, as they may even be able to diagnose disease and prevent the likelihood of developing dangerous medical conditions like heart disease or

diabetes.

Research has also proven that the mobile health industry, along with remote monitoring and telehealth systems, has a wide impact on reducing hospitalizations and emergency room visits throughout the healthcare spectrum by improving communication and care coordination among specialists, doctors, nurses, and others. Nearly 92 percent of emergency room visits are dropped with the use of mobile health apps and greater communication.

Even drugmakers are jumping into the m-health bandwagon:

M-health also has a role to play in the billion dollar pharmaceutical industry. Smartphone apps can help pharmaceutical companies with clinical trials of a proposed new drug to measure disease progression more accurately, and thus demonstrate the efficacy of the treatment. After a drug is approved these mobile apps can be used to monitor their health conditions. mHealth technologies have the capability to collect powerful data that can reveal what is and what isn't working in a trial, providing insight needed to make changes early, saving time, money and resources. leading life sciences organizations in Asia are beginning to recognize the potential new mobile technologies have to help bring novel and important medicines to patients faster, safer, and more efficiently and are embarking on the early stages of exploring these devices in clinical development.

So far, big drugmakers have been slow to join the m-health revolution, though there are some exceptions. HemMobile by Pfizer, and Beat Bleeds by Baxter, help patients to manage haemophilia. Bayer, the maker of Clarityn, an antihistamine drug, has a popular pollen-forecasting app. GSK, a drug firm with various asthma treatments, offers sufferers the MyAsthma app, to help them manage their condition.
GSK, along with Propeller Health, is developing custom sensors for GSK's Ellipta asthma inhaler, so that the pharma company can gather information on how patients use it. GSK wants to know how well patients comply with instructions on when to take it, and to see how compliance relates to the safety, efficacy and economic benefits of the drug.

A number of academic organizations across Japan, including Saga, Tokyo, Jyuntendo and Mie University, have recently incorporated mHealth technologies into clinical trials, using data generated from these devices to assess such correlations as activity level and pain relief, and the effectiveness of self-care among Type 2 Diabetes patients. mHealth is even presenting the opportunity to help reduce the suicide epidemic in Japan (the nation's seventh highest cause of death) by providing real-time insight into sleeping patterns of young adults suffering from depression. Identifying outliers in this kind of objective data can allow for faster intervention and the ability to save lives.

Asian Countries leading in app development:

Despite being late to the m Health race, Asian countries are not only catching up but are also leading the world in m Health program implementations. Asia is also seeing a record increase in m Health applications and investments owing to its maturing demographics and widening access to mobile devices. Nations in Southern Asia and Eastern Asia and the Pacific, in particular, are implementing the highest percent of technology-enabled health programs, according to data from the Center for Health Market Innovations.

South Korea is one of the world's most technologically advanced and digitally connected societies. Almost 80 percent of South Koreans have a smartphone, and 97.7 percent of 18 to 24-year-olds do. South Korea is already leveraging innovative technology to drive scientific discovery and has the healthcare infrastructure needed to hit the ground running (for example, the Severance Hospital in Seoul has a dedicated facility for clinical trials, a large medical tourism practice and a robotic surgery center). With South Korea's high level of digital connectedness and its rapid growth in the life sciences space South Korea may soon be a driving force in the adoption of mHealth technology in drug development.

Singapore in particular has emerged as a hotbed for mobile health devices, with local doctors developing apps such as ScolioTrack, which tracks the progression of scoliosis. Connected Health, a system of Bluetooth connected devices that compiles information into one convenient location, has also emerged as a leading provider of mobile health technologies.

China too isn't lagging in this front. Many Chinese tech companies are launching mHealth-focused products that are revolutionizing the way patients engage in and receive healthcare services and information. For example, a company called Haodf.com launched an iPhone app in March 2011, which collects basic information from hospitals and doctors (therapeutic specialty, rankings, etc.) for users' reference and allows them to rate a doctor's performance. Additionally, the Spring Rain Doctor app claims to have 45,000 doctors online and can be connected to patients for phone inquiries. This app also provides advice and medical information in conjunction with Spring Rain's online information database.

Emerging economies such as Indonesia, Thailand and Malaysia are also encouraging the development of low-cost mobile

technologies that will give low-income individuals better access to the information and advice they need when they are suffering from disease or poor health. The World Health Organization (WHO) says these low- and middle-income governments are using information and communication technology (ICT) specifically to improve their health programs. They do so because of six major benefits: to extend geographic access to health services, facilitate patient communications, improve diagnosis and treatment, improve data management, streamline financial transactions, and mitigate fraud abuse.
Highlighting that India is a hub for m-health revolution, Mr Stephen said, "Though many Asian countries are leading the m-health revolution, India continues to be seen as a hub of highly skilled developers that rapidly jump onto creative technology approaches to the health problems around them. The largest number of firms that build health technology apps, finding clients and customers beyond their own country, is India. But many other countries in Asia, including Thailand, Vietnam, and others, have a healthy ecosystem of developer."

Money is In too!

The common thread running through all apps is that they are affordable and provide easy accessibility to experts and consumers. For Asian markets outside of Japan, these attributes will continue to draw funding, even though investors are being more cautious than they were in the last two years.

Asian governments are fast recognizing the improved efficiency and effectiveness of mHealth programs, and are funding more of them each year. This in part has convinced corporations and entrepreneurs to venture into the lucrative billion-dollar industry. In Asia China clearly leads the way in securing funding for healthcare apps. App service operators raised around 5 billion yuan in the first half of 2015 alone, according to the Beijing-based Internet analysis firm iResearch, which pegged the market's value that year at 4.3 billion yuan and predicted a near-tripling by 2017. Total fundraising in 2014, the firm said, was some 4.6 billion yuan. China's healthcare system also suffers various setbacks as it has too few doctors for its huge population. Users, particularly in smaller towns, are busy downloading apps that make it easier for them to find good doctors, and book appointments. Huangzhou-based Guahao Technology Co. makes two apps that do exactly that, and are very popular. The company raised $394 million, the biggest round for a healthcare startup in the region last year. Healthcare startups in China have raised the highest cumulative funding in Asia.

Institutional investors as well as Internet giants such as Alibaba Group, Tencent Holdings and Baidu Inc. have been pouring money into startups whose app services help smartphone owners remotely consult doctors, schedule appointments and pay hospital bills. Few apps that have raised funding rounds above $100 million include Lamabang, made by Shenzhen Wangzhi Technology Co., which is an app for mothers. Moms can share parenting tips, as well as talk about food and fashion in dedicated communities in the app.

Dr Durand said, "It's always challenging to get fund for a startup, but we don't need wait to have funds for start some development. In healthcare we have now around 300 000 medical apps available on the market. If we consider that 1 startup in general built one app, it show that funding an app is not a big issue. We are more in a situation that we have too many apps and concepts available in the market. Now it's a bit too late for launch an app. 97 percent of these apps are not popular enough but they still there and its generating confusions."

Dr Durand also highlighted that a huge gap exists among Asian countries when it comes to funding for new innovation. Stating two examples, Dr Durand explained, "In Indonesia, we don't have a telehealth initiative supported by the government. No money for this. But entrepreneurs can try to built something linked to the local government through the smart city initiative or use a classi "Open government partnerships". But I'm sorry to tell that it is a long process. However, In Singapore is very easy to get direct support or funding from the local government. They have several programs some supporting the initial investment (infrastructure), others the promotion and some specific clinical outcomes (Home care, chronic diseases etc..). One of the main program is through the SPRING initiative. Thus we can see the gaps exist between a strong support for innovation in one country like Singapore, while entrepreneurs in Indonesia suffer due to lack of much funding and support."

Regulation

As these apps directly deal with healthcare and well-being of the users it is important that these apps are regulated. Experts opine that regulation for medical apps can be split into two categories; those that are considered medical devices and require regulation by the regulatory authorities and those that are not. In general any app that plays a role in dose calculations, symptom tracking or provides clinical guidance which helps making a diagnosis or decision in healthcare are likely to fall within the scope of the medical devices directive. FDA cautions that a mobile app which has not been sufficiently validated can lead consumers to undergo medical procedures they might otherwise avoid, or avoid medical procedures they might otherwise undergo.

For example, a false positive in the melanoma app might result in a patient undergoing a needless biopsy. A false negative

result might cause a patient to put off going to the doctor to check the suspected cancerous cells, delaying treatment.
While mHealth holds the promise of new insights and research endpoints, its use in the highly regulated, scientific environment of clinical trials requires rigorous diligence and protections. Currently, there is no global standard for mHealth in clinical trials, and the use of wearable devices raise regulatory challenges as sponsors question whether regulatory agencies in Asia and globally will accept mHealth data.

Stating the importance of regulation Dr Durand mentioned, "Yes regulation in medicine is a must. In many countries the regulations are not at the same levels but things are changing fast. We need to promote quality and not quantity. When a bunch of teenagers, or a genius IT guy built a healthcare app it's a good initiative but we need to assist them. Regulations will help them to play safe with the data they will collect. Standards will drive interoperability and quality to ensure at the end physicians can recommend these apps to their patients."

Asia , in particular, faces seven key challenges around mHealth, said WHO in a regional workshop: lack of mHealth policy, strategy and legal framework to support the national health system; uncoordinated investment in ICT in health due to the absence of an overarching plan for eHealth; duplication of efforts due to a low degree of cooperation, collaboration and sharing across sectors; limited capacity within the public sector to implement eHealth programs; widely differing levels of eHealth maturity across and within countries; poor quality and disparities in data with health information systems existing in silos - segmented with little interoperability and communication; and poor communication infrastructure and lack of broadband connectivity and internet access.

Saying that regulation is critical for medical apps, Mr Stephen explained,"It is indeed necessary for governments to always require that the sensitive health data of individuals is kept secure from theft or vandalism, and kept private so that citizens don't have their health information disclosed publically. Any health project will salute and promote that necessity. That requirement does not need to be a "brake" on the progress towards adopting new technologies. Digital health data, professionally managed, can be guarded in terms of permissions, access, and security at the same time as it advances new health possibilities.

As we see new applications arise, government agencies will hopefully keep an open mind towards new models of storing health data in the cloud, while of course never compromising on the requirements of strong safeguards of security and privacy."

Despite challenges, opportunities abound!

Increasing population, rising awareness of people for chronic diseases, and continuous innovations in technologies are few the major driving factors for the Asia-Pacific mobile health market. The growth of mobile health services in this region is also stimulating the demand for connected devices. The overall adoption of mHealth applications can significantly increase availability of information and engagement for citizens in need of healthcare. With the increasing penetration of smartphone devices, Asia is all set to lead the world in this m-helath revolution.

Mr Stephen concluded, "I think it is inevitable that mobile healthcare will go "mainstream." It will not happen overnight, but in 10 or 20 years, it will be increasingly normal in poorer countries for data to be recorded onto mobile applications. And paper recording, and its inefficiencies, will gradually recede.
Fortunately, the infrastructure needs for mobile healthcare approaches are not heavy. It is true that mobile connectivity does not reach into truly rural areas. But modern health apps are still able to function while out of range of a mobile signal, and then simply sync the data up to the network the next time the phone has a signal. The more important issues are meeting the moderate costs of devices, apps, and training, and ensuring the planning of projects to have a full sense of ownership by local institutions rather than by temporary health projects."