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Home based Healthcare & Opportunities for Mobile Operators

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Internet Technology in the Health Care Eco-system: Rationale

The World Health Organizations global status report on non-communicable diseases 2010 outlined non-communicable diseases (NCDs) as the leading global cause of death, responsible for more deaths than all other root causes combined, and NCD's strike hardest at the world's low and middle-income populations. These diseases have reached epidemic proportions, yet they could be significantly reduced, with millions of lives saved and untold suffering avoided, through early detection, timely treatments and reduction of their risk factors.

Of the 57 million deaths that occurred globally in 2008, almost two thirds were due to NCDs, comprising mainly cardiovascular diseases, cancers, diabetes and chronic lung disease. The combined burden of these diseases is rising fastest among lower-income countries, populations and communities, where they impose large, avoidable costs in human, social and economic terms. About one fourth of global NCD-related deaths take place before the age of 60.

Given the fact that the numbers of Doctors being educated and entering the workforce is never going to catch up to the speed at which the disease burden is increasing globally, there is a need to make fundamental changes to the process of offering healthcare and these changes need to make it more agile, efficient and robust.

Whilst an opportunity exists for the introduction of wireless and portable technology solutions, it is important to acknowledge that healthcare has traditionally been a closely bound and guarded segment which was largely limited to human analysis and intervention, with technology applications primarily used in specialized diagnoses. The problem is aggravated by the fact that though scientific knowledge is present in the area of human anatomy, data is typically not available in real-time regarding the effects of continuously changing environmental factors on health conditions. This has made it quite difficult to predict illnesses for an individual. On the other hand, for chronic illnesses, there is now enough evidence on why and how health conditions deteriorate due to poor choice of lifestyle.

This paper addresses the opportunities emerging for mobile network operators and cloud solution providers to take advantage of the next evolution in health care, and describes a home based health care application use-case designed and deployed to illustrate such opportunities. Specifically, it addresses the potential synergetic models developed between health care providers and mobile operators.

Mobile Health as an opportunity to Mobile Operators

Mobile operators globally are in a phase where two options are put in front of them: either to optimize their networks to becoming a mobile broadband path, with no or little plans to share a piece of the revenues derived by the Over the Top (OTT) players, or to position their network, selectively, within the overall OTT value chain, to share a piece of the revenue streams. This is also the case in the context of mobile health, where some operators, have been, and are still, working on defining their own approach to this market, now that mobile devices penetration is high, smartphones/tablets offer screens large enough for advertising and revenue streams off mobile health care are seen as a good alternative to declining revenues in traditional voice services.

In the mobile operators' favor is the existing subscriber relationship, where location aware applications can couple with health-monitoring data that is streamed real time to the mobile

health professional or big data repository. A number of challenges still remain, as mobile health has never been in an Operators DNA historically and significant transformation is required to support small payload M2M styled traffic models internally. Another fact is that many OTT's have already entered this market aggressively with smart phone and tablet applications, making it difficult for newer entrants to clearly differentiate their value upon market entry.

Mobile in Home Enabled Health: Foreseen Evolution

There is general acceptance now that preventing or delaying the shift of patients to acute- or long-term-care settings, is of enormous value that can be seamlessly provided by technology enabled home care. This is because the direct costs associated with any other care facility outside of the patient's home are significantly higher.

While, any technology used in home care cannot address all the potential factors underlying such shifts—for example, an accident. Health professionals agree that the medical conditions that can be addressed successfully by technology-enabled home care are as follows:

- Chronic conditions – conditions that persist for years rather than for a short while.
- Conditions that can be prevented or addressed by protocols, i.e. repeatable and standardized set of instructions that can be executed by non-physicians as well.
- Conditions which do not require round-the-clock attention or intense human monitoring.

Key Success Factors

The key factors of success of this model are as follows:

1. Clear and significant impact: A home health care model and technologies must provide information that can be effectively used to affect the patient's overall course of disease progression and plan appropriate interventions. For example, monitoring the weight of a patient with congestive heart failure can provide early warning to the clinician to imminent worsening of patient's condition. Again, by analyzing various vitas data on a regular basis can provide a good understanding of a hypertensive person's health while they are on medication.
2. Timely and Actionable information: Simply observing parameters or creating a health alert based on the data collected using the home care technology is not meaningful enough. There has to be a way to take appropriate action, be it through a caregiver, nurse or emergency support service, when such an intervention is deemed necessary. For example, an emergency intervention may be required in case of a sudden weight gain in a congestive heart failure patient, instead of simply providing a weight gain chart on the screen.
3. Closed loop approach: A home based health care solution (which will be a combination of team, products and processes) must have a closed feedback loop so as to measure progress against the goals that have been set, and understand is actions and treatments have been effective or not. Processes and data collection process has to be seamless, so that the feedback does not get overlooked in any way. To complete a closed loop, the processes and health support team have to be fully involved to take timely action based on the measurements.

4. Easy to use and automated as far as possible: The home health care technology must be simple to use and appreciate by the users. The automated wireless blood pressure measurement device used at home without major technical understanding is way more easily usable than a fixed blood pressure kiosk at a pharmacy. Also, any technology has to be designed for a large population, and not for controlled trial population scenarios.

5. Recurring readings: The technology must be used to take regular and frequent readings. The daily measurement of body weight on an electronic scale by congestive-heart-failure patients is repeatable. Any product that is only required to be used intermittently is not valuable for home use.

6. Clear financial benefits: The return on investment (RoI) for the implementation of home care technology must be clear to patients. Typical Personal health record software for patients, for example, could never become popular because users need to enter a great deal of information manually in return for ambiguous benefits. However, if there is an organization which helps makes sense of the collected data and then provides distilled information to the Doctors and the patients as well as their caregivers, the value will be clear and direct.

7. A clear connect between payers and providers: Health care service providers such as private hospitals can feel left out in the process of home based healthcare, as they may consider this a loss of revenue. Smaller companies may start playing this role and fill this gap. On the other hand, at a Governmental level where the Government is both the payer for as well as the provider of the services, the overall cost burden on the health program will go down steadily with effective implementation of home based health care.

Mobile Operators: How to approach the mobile health opportunity

Multiple options are being considered in terms of how to approach the mobile health market. They are described below.

Option 1: Mobile networks directly acquiring mobile health players to build a direct presence in this space.

This is the case of the largest mobile networks, with an aggressive push towards mobile health where a dedicated and scalable ecosystem needs to be created. One approach is to do this through the acquisition of relevant players or acquiring a significant commercial position, which in turn provides the growth option of building a business upon these new technologies.

Option 2: Mobile networks partnering with mobile health players to build a direct presence in this space.

This is the alternative approach that some mobile operators have considered, as a strategy to approach the mobile health market. In these cases, the platforms are owned distributed and managed by the partners, but through a well-defined partnership model with the mobile operator.

Option 3: Mobile operators build their own mobile health platforms to compete directly with mobile health centric players.

This is the case where operators have gone into designing and implementing their own mobile health solutions and underlying ecosystem. This is still in early stages of development, but in some cases, operators have been working on sharing common co-developed M2M platforms to address the fragmentation problem and increasing the size of the customer base and having it approach the addressable size, as seen per an OTT. This is specifically the case of small mobile operators who would need to join efforts to get to a sizable customer base.

As a complement to such models, some operators are looking at having their own mobile health integration within their branded App Stores, as a way to counter initiatives of larger OTT players.

Option 4: Mobile operators focused on defining new business models leveraging mobile health without directly managing the mobile health eco-system.

In this case a number of mobile operators have done so in conjunction with one of the 3 options above. In most scenarios, this is built upon the existing operations process of mobile operators, such as performing content re-formatting based on screen size and/or formatting, augmenting billing models to accommodate mobile health information insertion models, augmenting their marketing campaigns with mobile health related information at retail point of sale, leveraging data warehouse information to be exposed to the mobile health eco-system running on top of the network, and to lastly integrate mobile health with content distribution networks in-house.

It is worth noting that within each of these various models, mobile operators aim at inserting themselves into the mobile health value chain from different angles, based on a strategy that is optimal to them. One should note that although various models are being considered, various challenges still exist for mobile operators at a regulatory level.

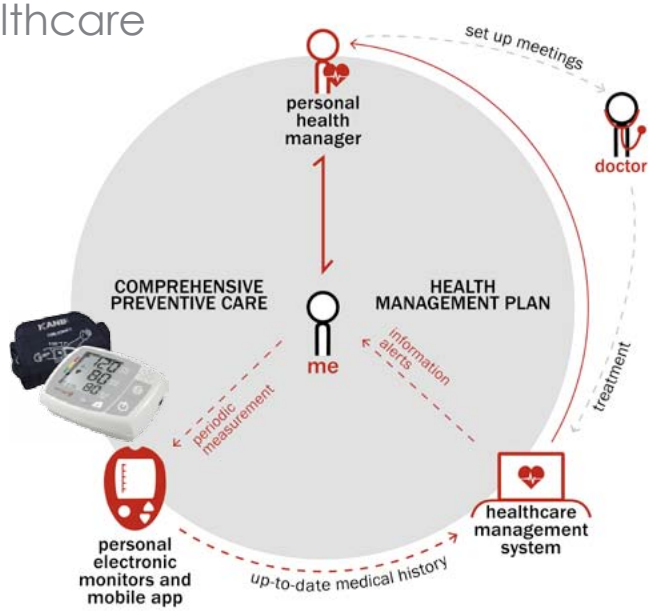
Mobile health is as yet not fully defined by the various governments in some parts of the world, where it will simply remain an enabler, whilst in more evolved markets, it will become a key mode of vital signs monitoring and underlying healthcare delivery .

Mobile operator management teams have little experience dealing with the various actors of the mobile health eco-system, and must address various privacy considerations in their locale, as well as the customer expectation management challenges that mobile health potentially introduce.

Case Study: Trackmybeat Healthcare

Trackmybeat Healthcare has created a solution that allows simple, easy to use and familiar medical diagnostic devices to collect key medical parameters from the patient-home and send the data real-time to a central data store through a mobile App (application running on a mobile phone) automatically.

Detailed analysis is then conducted on the collected data continuously and, based upon the resulting information a Doctor can plan a suitable treatment revision or direct clinical intervention.



Here are two potential models of how a Mobile Operator is planning to integrate this into their service portfolio.

Model 1 (following Option 3 as above):

A Mobile Operator is considering adopting the Trackmybeat solution as part of their expanding OTT App Store for Health and Wellness, and offer the remote health data collection service and analytics results to both individuals, as well as Health Service Providers such as hospitals, and state government health departments.

Model 2 (following Option 4 as above):

A Mobile Operator plans to offer Data Centre services to Health Service Providers, where they host the Hospital Information Services (HIS) solutions. With that, they are planning to partner with Trackmybeat, so that they can offer remote data collection services to the Health Service Providers, as well as analytics of the data to feed to the HIS database of the Health Service Providers, for better informed clinical decisions.

Conclusion

It is imperative for Mobile Operators to understand the changing healthcare service landscape and adopt suitable business models around it. As usual, one size will not fit all. This is due to the fact that in different markets, there may be different payers for healthcare services, as well as different regulatory environments. This will affect the ability of the mobile operator to offer specific services within the space.

Hence the mobile operators will choose from a variety of strategic options, which range from acquiring mobile health solution providers to offering infrastructure support that is tailored to mobile health service providers.

A real world case study has now been developed and commercially deployed by the Xona team, with high-level lessons learned outlined within this paper.

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