Transforming Healthcare Delivery through Mobility Solutions

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HTC Global Services
HTC Towers, No. 41, GST Road, Guindy, Chennai - 600 032, India.
Ph: +91 44 4345 3500
Fax: +91 44 4353 4407
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Executive Summary

All organizations the world over are keen on finding innovative and cost effective ways to connect with their customers, employees, and clients by using new devices, applications, and technologies. This quest helps enterprise mobility get the required impetus and emerge as the major driving force.

Mobility solutions help enterprises transcend the barriers of the traditional ways of working and cost effectively achieve the power of reach, responsiveness, effective transformation of business processes, and increase flexibility and productivity. The healthcare industry, one of the early adopters of enterprise mobility, is no exception to this.

Some of the major challenges that confront the healthcare industry are related to:

- Rising cost of healthcare
- Affordability
- Inadequate health care access / coverage
- Quality of healthcare delivered
- Disparities based on income and geography
- Balancing affordability with quality healthcare by providing effective healthcare within the extent of the available resources
- Regulatory compliance (government mandates stipulating - mandatory conversion to ICD-10, electronic health records, HIPAA compliance, etc.)
- Technology costs
- Reducing profitability for hospitals, clinics, diagnostic service providers, etc.

Mobility solutions offer an effective way to address the above challenges by streamlining business process in a more efficient and cost effective manner thereby benefitting the various members involved in the healthcare eco-system. ‘mHealth’, the term for delivery of medical / health services through mobile devices (smart phones and tablets) aims to improve affordable public healthcare by playing a crucial role in solving some of the above challenges and the pain points of patients, physicians, and community by providing caregivers seamless access to patient information, hospital services, and each other, across locations.

Mobile health applications, sensors, medical devices, remote patient monitoring, etc., provide the avenues to significantly and cost effectively improve healthcare delivery by connecting people with their health care providers and facilitate effective healthcare delivery. Mobility also permits patients and providers easy access to health reference materials, lab tests, and medical records.

This white paper provides an insight on how the mHealth solution helps to overcome the major challenges to effective healthcare delivery. It helps healthcare providers identify the various factors to be considered while choosing the right mHealth solution.
Major Challenges to Effective Healthcare Delivery

Increasing Healthcare Cost

The combination of increased prevalence of chronic diseases and an ageing population acts as an increasing burden on healthcare delivery and costs. The cost of healthcare services is steadily increasing while the patients’ ability to pay for their healthcare services has not grown at the same pace. This has resulted in an increase in number of patients without adequate care. This calls for more patient-centric focus so that the patients are empowered to manage their own health. mHealth can help or influence in changing the patient’s behavior to improve their lifestyle, enable remote treatment for chronic conditions and permit the healthcare provider make better clinical decisions. This helps patients to get adequate care and results in their well-being, thereby reducing the cost of availing healthcare benefits. Mobile healthcare allows consumers to live independently and spend more time at home, while reducing the costs of elderly medical care by having fewer face to-face consultations.

Quality of Healthcare Delivery

Urban areas have better overall availability of healthcare services when compared to rural areas and have chronic shortage of hospitals, clinics, and healthcare professionals, with focus on primary care necessitating patients to visit urban areas for specialized care. mHealth offers the best quality healthcare services to the rural healthcare by connecting people in remote and rural areas with experienced healthcare professionals in urban areas. Solutions such as remote patient monitoring enable healthcare providers and doctors to connect and serve patients in different geographical locations by using smart mobile devices that monitors and reports real-time on the patients’ health status. Mobile technologies facilitate healthcare providers and consumers by defining and directing patient-centric healthcare delivery models. It has the capability to have seamless integration with the electronic health records systems, Picture Archiving and Communication System (PACS), laboratory information systems, medical devices etc. Mobile technologies offer the ability to connect patients with their doctors, care-givers and enable timely health monitoring providing improved patient engagement and better health outcomes.

- mHealth supports doctors and health workers offer high-level healthcare and coordination services. Mobile solutions enable all authorized members to access up-to-date information as and when required. This transformation helps to improve worker productivity, enhance quality by bringing data into the healthcare system more rapidly, and provide better experience for patients and consumers

- mHealth solutions enhance clinical decision-making and optimizes the use of physical and human healthcare resources by providing the system and staff with more information and tools for better analysis resulting in better patient health outcomes
mHealth - a New Era in Healthcare using Mobile Technology

According to an eMarketer report, about 4.55 billion people worldwide are expected to use mobile phones before the end of 2014. Of this about 1.75 billion people are expected to use smart phones.

Although the healthcare industry is one of the early adopters of enterprise mobility, it is still lagging behind in using mobile technology when compared to other industries, such as banking, retail, etc.

Application of mHealth in the healthcare industry can be categorized as follows:

- mHealth for patients / consumers: mHealth has the power to turn patients as partners in their care by enabling them to engage in the mobile experience. It is the beginning in the empowerment of patients and changes the traditional relationship between patients and healthcare providers. Consumers benefit by managing their personal health and wellness for their betterment.

- mHealth for healthcare units: providing healthcare in the best possible way to the consumers is a worldwide challenge for the developed and developing nations. mHealth offers an opportunity for achieving healthcare quality at reduced cost.

- mHealth for doctors: enables doctors use their mobile devices to connect with their patients, access the patient’s secure health records, and permits video conferencing with patients reducing the cost and time associated with face to face consultation and diagnostics.

mHealth is a fundamental shift in the delivery of healthcare by engaging consumers to manage their own health - the biggest technology breakthrough of our time. It is poised to transform global healthcare with help from other technology areas, such as social networking, cloud computing, and big data analytics.

Smartphones and tablet PCs coupled with high-speed Internet, Bluetooth, and wireless networks provide communication devices and infrastructure platforms the power of speed,
flexibility, and ability to reach remote areas. In addition, the availability of numerous mHealth apps on the market offers various applications to consumers and healthcare providers which can be used in their daily activities.

Mobility helps to connect people within ecosystems and can significantly transform healthcare delivery for the better. mHealth leverages the advantage of the power of reach and responsiveness of mobile devices to provide better healthcare services on the move and realize overall business benefits by:

- Reducing costs
- Improving operational efficiency
- Reducing physical infrastructure costs
- Improving patient health outcomes
- Increase patient satisfaction

mHealth helps to achieve the above business benefits by enabling the collection of community health data, clinical health data. It also helps in delivering health information to healthcare providers, researchers and patients enabling real-time monitoring of patient’s vital signs, and direct provision of care by using mobile devices. This ensures that healthcare consumers and providers get the right information at the right place and at the right time for enhancing the overall efficiency of healthcare delivery.

Factors Favoring Implementation of mHealth

- **Extensive and rapidly growing usage of mobile phones** – about 4.55 billion people use mobile phones across the world. This implies that about 70% of the people own mobile phones and over 90% of the world’s population are covered by mobile networks. As mobile phones are always carried by users, it serves as the best medium of providing healthcare
- **Increased data speeds** – almost all nations have rolled out 3G networks and some are rolling out HSPA and 4G networks. High speed networks facilitate telemedicine and remote diagnosis
- **Affordable cost for voice and data** - lower tariffs for using voice and data is encouraging healthcare providers and patients to effectively use mobile services. As networks upgrade from 3G to HSPA to 4G, the bandwidth costs are likely to come down significantly in the near future leading to affordable costs for the stakeholders in the delivery of healthcare
- **Extensive availability of smart phones / tablet PCs** - this offers the scope for offering remote diagnostics, better access to patient portal, and remote patient monitoring through video conferencing. Although smart phones are currently not widely prevalent, medical centers in remote areas can have several smart phones to take care of their patients’ healthcare needs
Picking the Right mHealth Solution

Picking the right mHealth solution requires the following factors to be taken into consideration while implementing mHealth for a healthcare organization:

- The right mobile solution should help connect patients, doctors, and healthcare providers remotely
- The solution should have the capability to support:
  - Safe and secure transactions
  - Offline Data Storage and Data Caching in the device whereby data from the central server is stored in a local phone database
  - Secured data connection with enterprise server for seamless robust synchronization
  - Device Data and Over-the-Air Data Security when using in Wi-Fi or wireless communication networks
- Rich User Experience – the user interface will stick to Human Machine Interaction (HMI) standards to give enhanced and simplified user experience
- The application can have access to device components such as camera, GPS, and other sensors
  - Internal sensors – gyroscope, proximity, accelerometer, etc.
  - External sensors – blood sugar monitors, NFC/RFID, beacon, etc.
- Quick access to patient records - access on the move
- Security – protecting patient data is one of the key factors in implementing mHealth solutions. Patient data security can be addressed by implementing the following security features:
  - Multi-factor verification for authentication of device and validation of users
  - Secure data transfer and utilization of advance encryption methods enabled safe and secure data handling
  - Data protection (remote wipe) in case of device lost and stolen device conditions
HTC’s Mobile Solutions

HTC has been providing outstanding and cost effective mobile / tablet application development services to its global clients across domains. This enables our clients to become highly productive and transforms them as the best service providers in their domain.

The diagrammatic representation of HTC’s mobile offerings is given below.

**HTC Solution Differentiators**

HTC’s Mobile Application Development team assures the best application services in the challenging mobile application development space with its

- Rich technology and domain experience
- Experience in application roll-out and support
- Best practices / Standard Operating Practice (SOP) in enterprise mobility
- Partnership approach with every client for guaranteed success
- Frameworks for quick development and secured / robust synchronization
- Automated functionality testing tool
- Mobile security testing
- End-to-end cost effective mobility solutions
- Market reach within 6 to 8 weeks
- Committed performance to SLAs
**HTC’s Mobile Applications for Healthcare Providers**

HTC’s mobile applications make life more comfortable and easier for:

- Patients
- Healthcare providers

The following is the list of HTC’s mobile applications for healthcare providers:

- Mobile Electronic Medical Record (EMR)
- Order Entry
- Appointment Management
- Payments and Claims
- Billing
- Patient Data Sharing and Medical Record Search
- Patient ID Card
- Locate Health Service Providers (Location Based Service)
- Medication reminder
- Remote Patient Monitoring

All our mobile applications incorporate:

- Mobile BI and Dashboards
- Patient Profiling
- Networking (Social, Enterprise and Forums) and Integration
- Content and Multimedia Sharing

**HTC’s Mobile Electronic Medical Record (EMR)**

HTC’s Mobile EMR enables healthcare providers to have faster workflow, make quicker and well informed clinical and practice management decisions, real-time patient data access, and remote e-prescribing for improving patient satisfaction. Healthcare providers can receive mobile alerts on their patient’s test results. Automatic notification of any abnormality or deviation in test results will allow healthcare providers to quickly reassess medication or care program for critically ill patients. This improves the quality of patient care.

HTC’s EMR includes features for providers such as:

- Manage appointments
- Patient Health Information (related to: vitals, allergens, medications etc.,)
- Encounter information
- Procedures
- Clinical reports
- Lab / radiology orders
- Surgery
- Prescription
- Drug-drug interaction alerts
- Drug-allergy interaction alerts
- Patient monitoring via video conference
- Reports
- Analytics

Access to electronic medical records will help healthcare organizations to enhance their patient / customer outreach. Healthcare providers can reach their customers for patient diagnosis remotely by using mobile EMR. Having patient access to EMR and knowledge on
basic health information will empower the patient to involve actively in their healthcare experience for better health outcomes and incur lower cost. Disease specific education through the mobile medium engages patients actively in their healthcare management. The features available for patients include:

- Viewing appointment schedules
- Patient education
- Patient health information
- Encounter information
- Remote call

Mobile EMR adds the following values to healthcare provider organizations:

- Improve quality and convenience of patient care
- Access patient information remotely
- Alerts on potential medical errors
- Facilitates direct communication with patients
- Better clinical decisions and coordinated care
- Increase patient participation / engagement in their care
- Improve accuracy of diagnoses and health outcomes
- Increase practice efficiencies and cost savings
- Enhanced overall patient care

References

1. Telecom Circle, Opportunities in Mobile Healthcare (mHealth):  

2. How Mobilization Can Truly Transform Healthcare:  

3. mHealth: [http://www.mckinsey.com/client_service/initiatives/mhealth](http://www.mckinsey.com/client_service/initiatives/mhealth)

4. 5 Ways Mobile Apps Will Transform Healthcare:  

5. mHealth in an mWorld - How mobile technology is transforming healthcare:  

About HTC

HTC Global Services, Inc. (HTC) is a leading global provider of IT Solutions and Business Process Outsourcing services. HTC has a strong client base of Global 2000 customers. HTC specializes in innovative and cost effective solutions to shorten the time to market, reduce costs and improve business processes. As a midsized IT company with qualified and experienced professionals, HTC is well positioned to provide its customers fast, focused, and emerging IT solutions that maximize return on their IT investments.

HTC is a US based company with corporate headquarters in Troy, Michigan; providing services and solutions at customer locations and at HTC delivery centers located around the world. HTC’s process maturity is recognized by its quality certifications: SEI-CMM Level 5, ISO 9001 and ISO 27001.