Healthcare Industry Perspective

Mobile Health Wallet as an Enabler for Patient Engagement

Hon S. Pak, MD, FAAD, CEO
Susan C. Hull, MSN, RN, Chief Health Information Officer
Setting the Stage

The rising cost of care largely from chronic disease is unsustainable
As health care providers and innovators, we are committed to addressing how to bend the health cost curve, in a system where cost growth is unsustainable. Health expenditures in the United States neared $2.6 trillion in 2010, over ten times the $256 billion spent in 1980. The rate of growth is expected to grow faster than national income over the foreseeable future. Longer life spans and greater prevalence of chronic illnesses has placed tremendous demands on the health care system. It is estimated that health care costs for chronic disease treatment account for over 75% of national health expenditures. In particular, there has been tremendous focus on the rise in rates of overweight and obesity and their contribution to chronic illnesses and health care spending, as well as mental health issues which impact coping and management of chronic disease.

We are early in our understanding on how best to engage patients
With patient engagement named as the “blockbuster drug of the century”, our understanding of how to effectively engage and empower consumers, for positive outcomes, is an emerging science, especially as we consider new enabling health technologies. The science of behavioral change and behavioral economics is promising, yet complex, as patients seek care across many settings over a lifetime, and outcomes data is held across many data silos.

Shared decision making and patient generated health data is the next MU wave
The HITECH Act (Health Information Technology for Economic & Clinical Health Act) and the Patient Protection and Affordable Care Act place new emphasis on the widespread and Meaningful Use (MU) of electronic health records (EHRs). This is an important advancement, yet most EHRs fail to capture vital patient reported data outside of the hospital and clinic settings. Patient-reported data reflecting preferences, life style, and social determinants of health are characteristics and variables, which change dynamically over time, and are both health outcomes, and major determinants of other health outcomes. This kind of personalized data is needed for effective shared decision making to enhance the patient-centeredness and efficiency of patient-health care team encounters. Pioneering work to harmonize standards for patient generated health data in the electronic health record offers interesting models for consideration in other personal and mobile health data solutions.

1Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group, National Health Care Expenditures Data, January 2012.

©2013 Diversinet Corp. The Diversinet logos, MobiSecure and all other Diversinet product or service names are trademarks of Diversinet Corp. Diversinet products are covered by patents and other patents pending.
Pervasiveness of mobile devices and their role as a tool for patient engagement

Mobile devices are changing how consumers manage their fitness, health and healthcare. The ubiquitous mobile phone and tablet are radically changing how consumers acquire information, track behaviors and choose to share that information with friends and care teams. The adoption of mobile for life and health management is changing how we integrate systems of care and understand how to leverage mobile to engage patients and consumers effectively to improve health outcomes and lower costs. In fact, there are 5.9 billion mobile subscribers (that’s 87% of the world population). The pervasiveness of mobile devices also allows providers to connect and engage patients in a personal and meaningful way outside the walls of clinics and hospitals to impact patient behaviors for improved health.

Mobile patient engagement lowers cost, yet strategies are in early evolution

Return on investment data for mobile patient engagement is starting to proliferate. Disease management programs online and engagement as demonstrated by a Blue Cross Blue Shield study demonstrate a $9.81 return for every dollar spent. Factoring all results from all of these studies, and it amounts to a $4.51 return for every dollar spent to build and implement patient engagement programs. Despite many positive outcomes and return on investment, we are still in an early learning curve, learning how to personalize, and then mass-customize approaches and health care interventions to our patients as unique consumers who respond differently to our attempts to partner and empower them for their health. Secure communications, interactions and care support through all forms of mobile devices from smartphones, features phones and tablets to dedicated Internet connected devices is essential to lower costs and improve health outcomes.

Most organizations today are in early stages of developing comprehensive mobile patient engagement strategies. The National eHealth Collaborative (NeHC) Consumer Engagement Survey of CMIOs indicates 59% of health care organizations report that their consumer engagement and HIT strategies are evolving; while 33% report that their strategy is not clear at all. The NeHC Consumer Engagement Roadmap offers a blueprint, assessment and guide to progress from Inform Me, to Engage Me, to Empower Me, to Partner with Me and to Support my e-Community.

Problems we are addressing

1. Personalization of care

While our focus is turning to patient centered care and patient engagement, as an industry, we have largely taken a generic approach to healthcare with little personalization. Healthcare providers, payers and public health entities have always been sensitive to patient preferences or determinants of health. Yet we haven’t had data architecture or infrastructure to understand how patients make decisions about

---


their health, so we can better personalize interventions over time. Social determinants of health, preferences, lifestyle and health behavior information is needed.

2. **Longitudinal and patient centric-care plans with measurable adherence**

Effectively engaging patients and families to impact their health daily, with secure and personalized health information, care plans, meaningful feedback loops, and simple strategies for monitoring outcomes in partnership with their care teams, is one of the “last miles” we need to achieve.

Adherence (medication, rehab, follow up, etc.) is a significant problem in healthcare, and we currently do not have solid processes to measure and track adherence (e.g. a/p of EHRs are for provider recall). Most care plans currently are for care transitions rather than for measuring adherence over time, through diverse health challenges. Most are not set to be objectively measured and most are not designed for patients to report adherence between visits.

The systematic collection of brief, practical, standardized patient-reported data elements on health preferences, behaviors, and social determinants of health is needed to both personalize and standardize care plans, and measure effectiveness of outcomes. Most care providers do not have a way to measure outcomes of care plans or patient adherence to recommended interventions, nor understand how patients make decisions about improving health.

3. **Blue Button automation usability and data silo concerns**

The launch of the Veteran’s Administration my Healthe Vet Blue Button\(^8\) has inspired both a movement and industry ripple of payers, HIT vendors, mobile health innovators to add the Blue Button automation to their solutions. US Health and Human Services (HHS) has taken the initiative industry wide. For example, Blue Button Plus\(^9\), advanced through HHS Office of the National Coordinator’s Standards & Implementation Framework community, released new implementation guidance which includes how to transmit data to patients in structured format, how to transmit data to patients using Direct secure messaging protocol, and a privacy and security piece.

Current adoption of Blue Button though, even with veterans, is still low. This is related to several reasons including lack of portability, ability to securely manage PHI, poor usability and lack of intelligent and adaptive engagement approaches that make the medical data graphic, visual and tailored for the unique preferences of individual patients. Patients struggle to make sense of episodic data and health action recommendations over the long term. With expectations that by the end of this year, well over 100 million Americans, including 20 million veterans, will have simpler access to their health records, questions are beginning to emerge from HIT vendors, providers, payers, health information exchanges about how they will support consumers to manage and reconcile the many sources of potential health information.

---

\(^8\) [http://www.va.gov/bluebutton/](http://www.va.gov/bluebutton/)
4. Proliferation of stand alone mobile apps

While we are seeing a rapid proliferation of innovations through mobile, telemedicine, consumer, and community-based solutions most are “stand alone” mobile applications that are contributing to care coordination fragmentation. Also, many of these apps are not being effectively integrated into the provider-patient workflow along with adherence and care plans.

Virtual Mobile Health Wallet

A novel approach for patient engagement

Using a mobile device as a virtual health wallet, patients can control and share their health records and also use it to track various adherence measures to monitor shared care plans. Providers and care teams can also track adherence and personalize interventions, education, communication and treatment based on characteristics in the patient’s profile. Patients help “mediate health exchange” reducing fragmentation and data silos, being able to share, as needed, relevant health records and personal health records.

1. A Secure Data Store for Patient controlled PHR, Profile, Medical Devices/Sensor Data
   - Our mobiHealth Wallet\textsuperscript{TM} creates a secure patient controlled mobile PHR with a web portal to allow patients to download, manage, and share their data. Our back end server allows a backup copy of the health wallet to ensure we can restore the data on the phone. Data sources may include Patient Portals, EHRs, HIEs, Clinical Content, and other desired data.
   - Our wallet allows patients to establish a patient profiles (with preferences or determinants of health) based on work on harmonized data elements\textsuperscript{10}
   - Our wallet also allows storage of data from the growing amount of medical devices/sensors
   - Our wallet has been intentionally designed to support Stage 2 and 3 of Meaningful Use of HIT, and can be easily customized by client organizations

2. Care Plan Module
   - Our Wallet also contains a care plan module that can create or import patient care goals with specific target measures.
   - The care plan activates appropriate applets that link to adherence (prescribing an app) such as:
     - Order Medication Adherence (For specific medication)
     - Order Mood Tracking (for Depression)

3. **Adherence Module**
   - The Wallet includes an Adherence Module, which measures compliance with specific care goals in the context of their preferences and characteristics to allow personalizing engagement/interventions.
   - Our built in survey and reminder tools can collect specific patient reported data (sleeping, mood, etc.)

4. **Interoperable Apps**
   - Clients can build an unlimited number of interoperable apps on a common mobile health wallet that allows care teams or providers to track/monitor a set of adherence measures, correlate adherence with characteristics and engage with patients in a personalized fashion.
   - Apps already in development can be integrated across an enterprise platform
   - Examples include being able to correlate a patient with clinical depression with adherence of a psychotropic medication and mood over time. Other apps could include:
     - Medication Adherence
     - Mood Tracker
     - Exercise/Wellness Reminders
     - Preventive Screening
     - PTSD
     - Suicide Prevention
     - Surveys

5. **Secure Messaging**
   - The wallet also has a secure messaging capability to allow patients to communicate with the care teams.

6. **Patient and Clinical Portal**
   - The wallet comes with a patient and clinical portal
   - The wallet also be integrated with existing portals such as patient portals, disease management systems, patient registries, PCMH/ACO care coordination and special population specific programs

**Summary**
Diversinet’s mobiHealth Wallet is an innovative solution to personalize and measure adherence using consumer mobile devices while providing a secure messaging and innovative mobile application platform.