Standards Activities Respond to Consumer Mobile Health IT Trends

By Harry Rhodes, MBA, RHIA, CHPS, CDIP, CPHIMS, FAHIMA

All of the current excitement about the potential of mobile technologies and patient engagement opportunities comes at a time when many providers are frustrated about their electronic health record (EHR) systems. Struggling against poor EHR system usability, a lack of interoperability, and inadequate health information exchange capabilities has led some organizations to consider replacing their EHR systems over increasing concerns relating to the amount of time spent capturing patient information.

Contributing to this level of complexity are the number and variety of ancillary systems that interface with EHRs, resistance to change, and the lack of a standard approach for transitioning legacy data to new systems. Providers believe that the complexity of current EHR systems cheat physicians out of valuable patient care time, while negatively impacting healthcare revenue.

Data Capture Responsibilities See Shift

In addition, consensus opinion is shifting in support of contemporary healthcare delivery models in which the entire care delivery team is committed to capturing the documentation of the care provided to the patient. This shifts the primary burden to capture complete and accurate data away from the physician, resulting in a new acceptance of information captured by various members of the healthcare team, devices, peripheral information systems, or recorded through increased use of patient engagement mechanisms and devices.

Current EHR-based data capture approaches are not sustainable. In the past 20 years the amount of time physicians spend on medical record documentation has doubled, reaching a point where the time spent documenting patient care consumes almost half of the physician's work day. Physicians feel that they are trapped in the constant cycle of feeding health information documentation into the EHR system, which by design has allowed the burden of data capture to be carried solely by the physician—the most expensive member of the care team.

Considerable evidence continues to build in support of having the patient more attuned and responsible for their health and healthcare. Patient engagement has emerged as part of an increasing focus of both federal and private initiatives to rein in costs and improve quality, focusing on relevant sections of the Affordable Care Act as well as the rise of consumerism in the healthcare marketplace. A consensus is emerging that meaningful engagement of patients with their own healthcare, through the promotion of more integrated, patient-friendly and information-connected systems of care, is crucial to reforming healthcare in the US. Consumers seeking direct access and control of their health information have embraced smart phone technology.

Consumer Focus Brings Privacy Concerns

Related to the growing mobile patient engagement trend in healthcare is the parallel movement toward adopting cloud-based hospital information systems, an emerging trend in computing and storage resource allocation. The cloud-based hospital information systems will allow physicians from several hospitals to access a patient's records.[1] For the healthcare provider obvious advantages of cloud-based EHRs include lower cost, information availability and access from multiple locations, and disaster recovery services. Even though organizations must contemplate some key legal issues when contracting to use EHRs maintained by another entity, in many ways cloud computing is not very different from an application service provider, service bureau, or outsourcing approaches that have been used in healthcare for years.

All of these new advances introduce new consumer concerns about privacy and security. Healthcare entities wishing to capitalize on patient engagement and cloud computing must also put in the time to develop patient trust. Instead of using privacy and security safeguards as a barrier to access, some providers enable patient access through secure and compliant patient access options, and use open doctors' notes to increase trust and transparency in the care process.[2]

Three Mobile Health Standards to Watch

Presently, mobile health is a crowded field, made up of many proprietary devices, applications, and systems. For mobile health solutions to mature to the next level, these disparate devices must achieve a level of interoperability that allows for open communication of features and data in an environment of uncomplicated access. As healthcare continues its transition to a mobile patient digital record focused on open access, capture, and dissemination of information, the use of mobile health will continue to rise.

Embracing this new direction in healthcare delivery, the 2015 Health Level Seven (HL7) Mobile Health (mHealth) Work Group has committed itself to focus on the following three enabling factors:

1. Patient Engagement (patient-generated data)
2. Cloud Computing (interoperability)
3. Secure/Trusted Messaging (building patient trust)

Three HL7 mobile health projects were started in 2015 by the HL7 mHealth Work Group.

They are:

1. Mobile Framework for Healthcare Adoption of Short-Message Technologies (mFHAST)[3]
2. Consumer Mobile Health Application Functional Framework–Mobile Health Functional Framework (Consumer MHaFF)[4]
3. Fast Healthcare Interoperability Resources for mobile devices API (FHIRframe) [5]

These projects are currently in the initial stages of the HL7 Project Scope Statement (PSS) development, review, and approval process. The following sections provide a brief description of these projects.

mFHAST

The short-message format encompasses the realm of technologies related to SMS, text messages, instant messages, Twitter, iMessage, and Unstructured Supplementary Service Data (USSD). These messages are composed of approximately 140-160 characters, and are designed to be low cost, low infrastructure, and have a low learning curve. Short-message technologies are one of the most widely used mobile applications with estimates of over three billion active users and encompassing upwards of 80 percent of mobile subscribers.

Healthcare projects have frequently adopted short-message technologies as an intermediary way in which to communicate healthcare, public health, and emergency response services in a limited fashion. Most products have adopted their own ad-hoc implementations for structured short-message communications. The mFHAST project will seek to develop a standard that supports the breadth of health outcomes and compliance monitoring options for short-message use cases in a consensus-based manner. Short-message formats have already demonstrated their usefulness in immunization reporting, well mother and child tracking, and disaster medical triage management.

Consumer MHaFF

Thousands of consumer health applications (apps) that run on smartphones are in use today. Consumer acceptance and use of these apps is not well thought out, and access to health information is the primary motivator. Health information security and safeguards are often simply an unconfirmed expectation. The assumption of security safeguards presents an unresolved risk for consumers and clinicians choosing to use health information apps to track health behaviors or monitor chronic conditions.

Consumer MHaFF is the first mobile health project to be approved by HL7 for comment-only ballot in January 2016. The goal of the Consumer MHaFF is to define security, privacy, and data standards for secure mobile health apps, and provide industry guidance and common methods to enable the development of mobile health smartphone apps targeted to healthcare consumers that use protected health information (PHI) and personally identifiable information.

The standard seeks to gain consensus regarding the content of such apps and the integration of data generated from apps into personal health records (PHRs) and EHRs systems as well as into other types of data repositories (i.e., personal data stores, population health systems). This project will reuse conformance criteria already available within the HL7 PHR and EHR systems' Functional Models, augmenting with new conformance criteria specific to mobile platforms (i.e., use of geolocation services, accelerometers, cameras, and microphones).[6]

FHIRframe

The goal of the FHIRframe project is to develop standardized application programming interface (API) specifications utilizing HL7 Fast Healthcare Interoperability Resources (FHIR) to support the creation of interoperable mobile health applications.[7] The healthcare industry is witnessing a proliferation of mobile and portable devices with increased computing capabilities. However, these applications are not designed with interoperability in mind. Through the development of APIs, the existing health information systems as well as personal health devices will be made easily accessible to relevant stakeholders via mHealth apps. These APIs will be interoperable service enablers across multiple domains offering device capabilities, access to content, and service customization.

FHIRframe's objective is to develop a set of standardized APIs that (a) leverages HL7 FHIR standards, easing the incorporation of FHIR resources into their corresponding application interfaces; (b) facilitates interaction with EHR systems; and (c) manages workflows and use cases set forth by Integrating the Healthcare Enterprise (IHE).

Future HL7 mHealth Activities

Future activities of the HL7 mHealth Work Group will include assessing the impact of emerging HL7 mobile health standards on existing HL7 standards as follows:

1. HL7 Messaging—Assess the impact of sending short structured SMS messages between mobile devices with rapid turnaround
2. HL7 Document Architecture—Investigate how clinical document architecture (CDA) and continuity of care documents (CCD) can be readily adapted for mobile health
3. HL7 Functional Model—Derive a mobile health functional profile from both EHR and PHR system-functional models
4. HL7 Services—New service possibilities, such as an "Info Button" service request, appointment service requests
5. HL7 Modeling—Investigate a new domain analysis model (DAM) and domain information model (DIM) for mobile health.

Notes

1. Low, Chinyao and Ya Hsueh Chen. "Criteria for the Evaluation of a Cloud-Based Hospital Information System Outsourcing Provider." *Journal of Medical Systems* 36 (February 26, 2012): 3543-3553. www.seu.ac.lk/fmc/research%20and%20thesis/journal%20article%2011%20%2825%29.pdf.
2. Birnbaum, Cassi. "Empowering Consumers to Take Charge of Their Healthcare." *Journal of AHIMA* 86, no. 9 (September 2015): 8. http://library.ahima.org/xpedio/groups/secure/documents/ahima/bok1_051003.hcsp?dDocName=bok1_051003.
3. Health Level Seven. "mFHAST: mobile Framework for Healthcare Adoption of Short-Message Technologies." February 17, 2015. http://wiki.hl7.org/index.php?title=MHWG_Projects_mFHAST.
4. Health Level Seven. "Consumer Mobile Health Application Functional Framework—Mobile Health Functional Framework (Consumer MHaFF) Standard." February 17, 2015. http://wiki.hl7.org/index.php?title=File:PSS_Consumer_Mobile_Health_App_Framework_20150217.pdf.
5. Health Level Seven. "FHIRframe: Mobile Health Application Development Framework." February 17, 2015. http://wiki.hl7.org/index.php?title=MHWG_Projects_FHIRframe.

6. Health Level Seven. “HL7 EHR-System Functional Model, Release 2.” April 2014. www.hl7.org/implement/standards/product_brief.cfm?product_id=269.
7. HL7 Fast Healthcare Interoperability Resources. “Draft Standards for Trial Use (DSTU) (vo.o.82).” 2011. www.hl7.org/implement/standards/fhir/.

Harry Rhodes (harry.rhodes@ahima.org) is director of national standards at AHIMA.

Article citation:
Rhodes, Harry B.. "Standards Activities Respond to Consumer Mobile Health IT Trends" *Journal of AHIMA* 87, no.1 (January 2016): 40-43.