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Moving Beyond the Limitations of Fragmented Solutions
Empowering Patients with Integrated, Mobile On-Demand Access to the
Health Information Continuum

A Frost & Sullivan
White Paper

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Abstract	3
Health IT in Transition and EHR Connectivity.....	3
Patient Information is Transformed	4
First, Mobile Solutions Must Be Defined.....	5
Structure for On-Demand PHR Health Information Data.....	6
Existing Barriers to On-Demand Mobile Access to Health Information	6
An Emerging Leader in Developing On-Demand Mobile Health Information Solutions	6
Conclusion	8
References.....	8

Abstract - For true integration of health information, data must be collected along an ever-extending care continuum (providers, hospitals, physician specialty groups, imaging centers, laboratories, payers, government entities who oversee healthcare entitlements and patients through personal health devices), all of which historically have operated independently, deploying unique IT infrastructures and fragmented patient record systems. But global demand for better quality care, cost containment and improved access is mounting as governments and increasingly technology-savvy healthcare consumers look for mobile connectivity (via smartphones, tablet applications, laptops and PCs) that provide real-time access and ownership for all personal health information (personal health record or PHR).

This white paper will articulate a vision for a true, mobile solution capable of accessing the disparate EMR systems, consolidating personal health records information to provide a concise display of organized individual patient healthcare information on a smartphone, tablet, or notebook. This capability will allow for secure storage and access of personal health information on individual mobile devices, delivering the value of an up-to-date personal health record anytime, anywhere, on and off line. Delivering on the reality of a patient-centric solution, individuals should be empowered to initiate access to his/her own information from different source locations through an EHR-neutral platform, via consumer devices, in any location.

HEALTH IT IN TRANSITION AND EHR CONNECTIVITY

Countries around the world have invested heavily in electronic health record deployment. In the United States, these investments have been driven by federal government funding incentives to encourage healthcare providers to adopt EMR capabilities as part of a national effort to improve the efficiency of the American healthcare delivery system. However, fragmentation in the U.S. healthcare market means EHR deployment has not met the goal of providing a universal platform for collection, storage and sharing of patient information. Fragmentation in EHR systems has made it harder to meet goals to improve patient safety and quality of care. Hundreds of unique EMR systems are in use today along an immense healthcare continuum of providers, hospitals, and health systems, and the lack of interoperability of these systems limits the ability of patients to have a functional PHR that can follow them over time.

Two realities have emerged from widespread EHR deployment. First, EHR systems cannot communicate with one another. They lack interoperability, and therefore fail to reach the goal of creating seamless, universal, and secure access to individual healthcare information. Second, the end user, or patient, does not own his or her health information. Individual patient data are stored within the IT protocols of the EHR system proprietary to providers, hospitals and health systems. Each individual may have multiple EHRs stored in systems that do not interact; the data are not integrated and patients are not empowered to control and deliver these data to other providers, and cannot access it themselves in the case of emergencies.

“Consumers have come to expect that they can manage the basic transactions of personal and business life through the Internet.”

Health Affairs

In the United States, the Obama administration introduced The American Recovery and Reinvestment Act (ARRA) in 2009 to stimulate EHR deployment, providing \$19 billion in incentives as part of the Health Information Technology for Economic and Clinical Health (HITECH) Act. This money was intended to incentivize the installation and Meaningful Use (MU) of certified EHR technology. Under HITECH, healthcare organizations are to execute a three-stage process for Meaningful Use with information collection, information sharing, and patient empowerment highlighted as key goals.

While significant investments have been made in the U.S. to adopt EHR systems—primarily in hospitals—the reality today is that EHR proprietary platforms cannot share information with other providers or hospitals. This is becoming increasingly problematic as community health planners and responsible government agencies need access to true nationwide databases. Moreover, the inability of mobile devices to access patient information is fueling growing frustration from healthcare consumers.

PATIENT INFORMATION IS TRANSFORMED

Historically, patient information has been gathered and stored in a physician’s office or hospital. This institutional “ownership” of health information was established with adoption of paper-driven health records. On the other hand, the national coordinator for health information technology defines a personal health record as “an individual’s electronic record of health-related information that conforms to nationally recognized interoperability standards and that can be drawn from multiple sources, while being managed, shared and controlled by the individual” (Kahn, 2009). “Shared and controlled by the individual” is a capability yet to be universally recognized, as many fragmented and disconnected EHR platforms lack the technology to retrieve images (MRI, CAT, and X-ray) in usable digital formats. Interoperability among these same EHR vendors is non-existent, as the industry still lacks common standards allowing EHRs to effectively exchange health information with one another.

As EHRs become more prevalent, there is demand by consumers for PHRs to share health information via mobile devices. The goal is to allow the sharing of individual healthcare data, primary diagnoses, known allergies, current immunizations, and detailed list of medications with providers, family members and caregivers. However, a recent study published in *The Journal of Medical Internet Research* found that, “Despite significant consumer interest and anticipated benefits, overall adoption of personal health records (PHRs) remains relatively low” (Nazi, 2013). A national survey administered by the Markle Foundation reported that “only 10 percent of American adults currently use a PHR” (Markle Foundation, 2012). The only exception to this appears to be PHR adoption by Kaiser-Permanente, which reports that of its 9 million members, some 4 million “had registered to use its patient portal (My Health Manager)” (Kaiser-Permanente, 2012).

It is important to note that Kaiser’s PHR is viewable on a mobile device. This research suggests that PHRs with mobile access may change the dynamic of PHR utilization. Still, Kaiser’s PHR will not follow an individual if they leave the Kaiser system, therefore falling short in fully empowering individuals who want to “own” their PHR. Additionally, information can only be

viewed when network coverage is available, rendering the information inaccessible in situations where such coverage is not available (while out of a coverage area, while traveling abroad or during natural disasters).

FIRST, MOBILE SOLUTIONS MUST BE DEFINED

For further progress, strong efforts must be made to enable patients to have access to their medical records quickly and securely, wherever their lifestyle and work environment take them. The creation of a truly mobile PHR is the ultimate goal and intention of meaningful-use, stage 3 (patient engagement and empowerment) and will require a symbiotic relationship between providers and individuals, each with the capability to upload and view all health information. This last step is one that is considered by Frost & Sullivan as a prima fascia requirement for achieving true patient-centered and collaborative care.

For patients to engage and use mobile technology for individual healthcare applications, the digital organization and structure of “smart” healthcare information must be made more available via a mobile device, either a smartphone or tablet computer. As patients transition from hospital (inpatient) status, are discharged, and ultimately return home, patient access to their PHR is necessary to ensure they can carry follow-up information, including medical images, to share with family members, other clinicians they may see, and have this information available in case of emergency. Additional engagement—setting follow-up appointments, sending reminders—needs to be supported with the original care provider. This fluid exchange of data and dialogue between patient, family members, and providers can serve to prevent expensive readmissions.

Another key piece of medical information requested by clinicians is updated information regarding allergies. As these are discovered, patients can enter them into the PHR, making the care management team aware of these conditions, preventing discomfort and danger in subsequent care delivery and treatment. Often these discoveries are made by home health professionals noticing skin rashes as a result of certain dressings or topical ointments and medical linen. With mobile access to patient PHRs, the home healthcare team can document each encounter while in the patient’s home, updating providers with valuable patient information without having to see the patient in a traditional doctor’s visit.

As this body of clinically relevant data is accumulated and viewed on mobile devices, it can be securely shared with family members and friends who have been given permission by the patient to have access to this health information. This will be a welcome capability for caregivers who do not reside with patients, enabling them to remain an informed and valued stakeholder in fully implementing personal health plans.

This vision for true mobile access is attainable with the understanding that patients are first consumers who require technical concessions to solve interoperability challenges. Crucial medical information must be presented and viewed in real time by private individuals and their providers, via a variety of common consumer mobile devices. Key medical information must be available at the push of a button in emergencies where individuals are unable to speak.

“The mobile phone may serve as an important entry point for consumers to access their PHRs.”

Health Affairs

At the same time, this exchange of clinical and relevant health information must be encrypted for secure interface, mobile query, and viewing.

STRUCTURE FOR ON-DEMAND PHR HEALTH INFORMATION DATA

For a PHR to offer value to both patients and physicians, it must portray data and related tools that facilitate an individual's understanding of health-related information and enhances communication between the primary care provider, supporting caregivers, and family members. Fundamental principles for these data include interoperability, security of all data (HIPAA-compliant and beyond), end-user oversight and control, and universal access (Kahn, 2009). Truly integrated PHRs must have the capability to bring together information from multiple systems throughout the health information ecosystem. To provide this level of interoperability, PHRs must support the same communication platforms, content encoding, messaging, and encrypting for images as all other health information systems. Web-based, on-demand, mobile PHR solutions have the potential to positively impact individual health as well as increasing comfort levels with the mobile device as a healthcare tool. This will also stimulate consumer acceptance of telehealth and mHealth solutions.

EXISTING BARRIERS TO ON-DEMAND MOBILE ACCESS TO HEALTH INFORMATION

Barriers currently exist at the environmental and individual healthcare professional and patient levels. Health information does not have one designated repository where physicians and individuals can store and retrieve all related health information. There are multiple sites and formats requiring a true mobile solution to reach across organizational boundaries and interface with numerous EHR systems.

Individual and physician barriers focus on human behavior. Individuals must better understand their role in being the facilitator and actionable component in consolidating all health information as it relates to their healthcare. As noted by the *Journal of the American Medical Informatics Association*, "An individual's PHR can only be useful if the person understands the importance of maintaining and coordinating health-related documentation and activities with healthcare providers."

Providers must learn to willfully share clinical findings, patient notes, and diagnoses with patients and be open to discussing each piece of information in detail. Doctors need to learn different approaches to how patient information is shared with individuals, and the ensuing dialogue that occurs must be documented for further references.

AN EMERGING LEADER IN DEVELOPING ON-DEMAND MOBILE HEALTH INFORMATION SOLUTIONS

With the increased focus on patient engagement, demand for mobile PHR solutions is increasing. One innovator who has done laudable work in this emerging space for more than 13 years is CORAnet™ Solutions, Inc. (www.coranetsolutions.com). An affiliate of Aliron

International, Inc., based in Washington, D.C., CORAnet™ has become a highly respected resource developer and IT process pioneer in the medical field. Recognizing a health industry void in service, CORAnet™ was created to provide individual patients, physicians, and the full spectrum of ancillary providers with immediate, real-time mobile access to a patient's PHR. But CORAnet™ developers and engineers have taken this viable commodity one step further by offering an *Emergency Medicine* product for patients who may be unconscious or unable to communicate in a true medical emergency.

CORAnet™ is not an EHR application or a mobile extension tethered to a single EHR platform. What CORAnet™ provides is the first true mobile system that enables PHR access to the entirety of an individual patient record, regardless of the number of sources or EHR systems in which the patient data resides. This mobile solution is made possible through fully interoperable CORAnet™ integration servers that can access any EHR system (with available APIs) and portray the integrated data in a viewable, secure and encrypted format on a mobile device. Specific features of the CORAnet™ technology include:

- On-demand mobile access to complete patient medical records for attending physicians and staff
- Ability to create a true aggregate individual personal health record from all health system sources
- Technology to access and electronically transfer medical images (CAT, MRI, and radiographs) for viewing on mobile devices (smartphone or tablet)
- Ability for the patient to update information to include new information on medications, allergies, dietary supplements being taken, etc. Also in the works is the ability for the patient to record updated biometrics such as weight, blood sugar, blood pressure, diet, pain intensity, etc.
- Data are constantly updated and available on the device even when no network connection is available, for example when traveling abroad or outside of cellular service coverage areas
- On-demand mobile access to limited, life-saving individual patient information (known allergies, medications, chronic diseases, etc.) in emergency situations

CORAnet™ mobile solutions deliver immediate added value to healthcare providers seeking to qualify for Meaningful Use incentives and for Accountable Care Organizations (ACOs) who are engaged in risk contracts with the federal government to hold down per capita healthcare costs and improve outcomes. This challenge is made all that more achievable by having mobile, on-demand access to the patient's personal health record, across different providers using different EHR systems. With this leap of capability it becomes possible for caregivers to truly coordinate care, manage costs to match reimbursement, and effectively enable patients to be much more participative in their personal treatment plan. With the patient at the center, information sharing across the full range of healthcare stakeholders—not just physicians, but also home healthcare teams, family members and caregivers—is enabled through a user-friendly interface in a secure, HIPAA-compliant environment.

CONCLUSION

Healthcare consumers want seamless and secure access to all of their health information that is readily available and updated automatically, keeping all communication with attending physicians relevant and accurate. This will require solutions that integrate with all uniquely designed EHR systems using state-of-the-art encrypted and secure data transfer. Then and only then will a true on-demand mobile PHR provide sufficient value and confidence for all users such that it will become adopted by healthcare providers, payers, and, ultimately, patients. When this shift in behavior takes place, life-saving health information can also be made available on individual mobile devices. Allowing paramedics and emergency physicians real-time access to patient medical alert data at the point of trauma will undoubtedly save lives, reduce costs, and improve emergency response outcomes.

This white paper has examined the forces in play that have created fragmented offerings for complex issues when it comes to ownership and on-demand access to medical records. We have presented the barriers to full adoption of mobile medical records and discussed the frailty of EHR implementation to date. Yet, a true innovative technology leader has emerged that solves the problem of limited or no access to personal health records with a system comprised of two demonstrative elements: the ability to integrate information from multiple EHR systems and the ability to deliver an integrated PHR to consumer mobile devices. Combine that with patient engagement capabilities that include appointment setting and reminders, and the ability to view and share imaging files, CORAnet Solutions is one of the few organizations that empower patients to deliver on the promise of care coordination.

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