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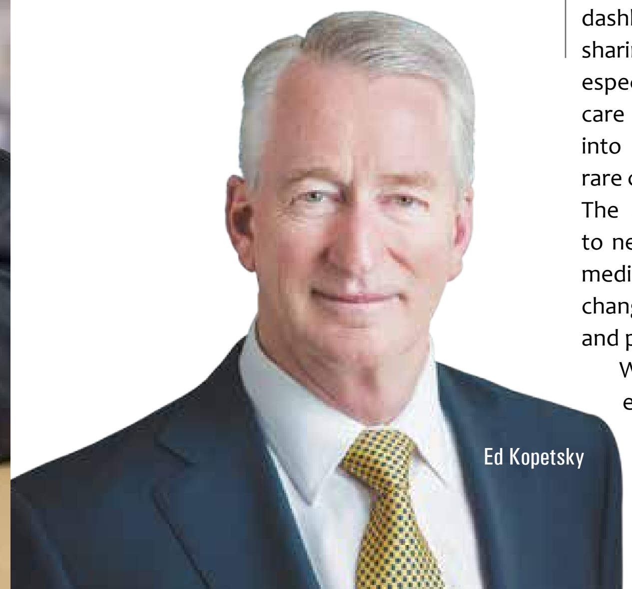
Health Information Technology's Increasing Value in Innovation

By Ed Kopetsky, CIO, Stanford Children's Health and Lucile Packard Children's Hospital

Health Information Technology's (HIT) role in supporting innovation is critical to improving healthcare and assuring the viability of healthcare delivery organizations. The current healthcare landscape is on the verge of massive change emanating from four key areas–widespread adoption and optimization of Electronic Medical Record (EMR) systems, advancements in analytics and the ability to leverage large-scale patient health data to improve outcomes, mobile technology innovations to promote virtual care, and major discoveries in genomics and cell therapy leading to precision medicine. Over the next 5 years, we will witness considerable advances and convergence in all these areas that will require thoughtful prioritization, restructuring, and new leadership in IT to help guide and lead rapid evolution and transformation in healthcare.

Today, it is estimated that over 75 percent of U.S. hospitals have adopted an EMR system, and many have extended it to related physician practices. While reducing dependency on paper, we are now able to integrate the full continuum of care for patients. Most EMRs were deployed requiring direct use by clinicians to reduce variances and improve safety, efficiency and care coordination. Computer-supported processes are allowing our clinicians to uncover, develop and deploy best practices based on data. Most importantly, EMRs are enabling patients to be assured of care continuity and to have more visibility of data to help them understand and manage health issues.



Ed Kopetsky

At the same time, development in analytics and big data are already helping optimize healthcare operations, as well as advancing discovery of new clinical knowledge. Many organizations are increasing their investments in analytics and business intelligence tools, leveraging data and IT systems with increased emphasis on predictive analytics, clinical and operational dashboards, and data discovery. Data sharing and collaboration is increasing, especially among academic and specialty care organizations, leading to insights into care innovation for patients with rare conditions and complex care needs. The advances in analytics are leading to new research and discoveries in our medical schools, which ultimately will change the landscape for new teaching and professional opportunities.

We have also in recent years experienced major advancements in medical science that creates new data not previously available. Notably, advancements in genomics and testing will likely lead to large-scale adoption and could become standard practice. The ultimate goal is precision medicine enabled by accurate diagnosis, root cause determination, and therapies engineered for effectiveness based on a patient's makeup. Being able to clearly identify the cause ofa disease and provide early intervention tailored to your DNA will soon be possible. Ultimately, when leveraged to predict and prevent disease, we should anticipate profound impacts on today's structure of healthcare delivery.

The ability to utilize patient health data from multiple sources is also an area of significant importance, especially for chronic disease management and continuous monitoring needs. We are now seeing significant advancements in biomedical technology, wearable and self-reporting technologies, and web-based devices that enable clinicians to continuously collect data and manage patients virtually. This will generate the potential for new care delivery models and direct patient services (e.g. numerous DNA testing services already exist) that are not restricted to traditional health delivery organizations and their economic overhead.

A recent innovation in Type 1 Diabetes management was started at Lucile Packard Children's Hospital and Stanford Children's Health by one of our clinical informatics physicians. The Type 1 Diabetes patients wear a continuous glucose monitoring device, eliminating multiple daily blood draws. Patient blood glucose levels are read every 5 minutes and transmitted via a mobile device app that in turn sends the information to the patient's chart within our EMR. Data is immediately available to our endocrinologists within our EMR. The provider is now able to closely track glucose level patterns and advise the patient/family proactively.

Another example of using HIT to innovate care is a mobile application provided by CHESS Mobile Health (CMH). The mobile application, Addiction Comprehensive Health Enhancement Support System (ACHESS), resides on a cell phone and supports patients in addiction recovery. The application delivers immediate resources to bolster coping competency for patients experiencing risk of relapse. Surveys and assessments determine risk of relapse, empowering clinicians to intervene before relapse occurs. The application networks patients with caregivers and peers to strengthen resiliency. Unique features include a hot button ("Beacon") for customized access to support, GPS tracking of travel near high risk areas, medication and appointment reminders, customized surveys and content and recovery plan management and tracking electronically with the patient's sponsors and designated support. In an outcome study two years ago, ACHESS was bundled with access to addiction medication, peer support and trauma/depression/anxiety monitoring resulting in a 69 percent reduction in readmissions after one year among high risk/high need veterans. These types of HIT advancements are breakthroughs in improving access, continuity of care, and clinical outcomes.

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Health IT organizations and their leadership face the continuous need to evolve in quality service delivery and personnel skills. Our role has changed from predominantly technology experts to innovating patient access and care delivery, so it is critical to assure knowledge of the business and have trusted relationships with end users and clinical partners. In the IS Department at Stanford Children's Health, we have implemented LEAN methods and utilize weekly Gemba (i.e. where the real value is produced) rounding by dedicated IS service leaders to partner with customers throughout the hospital and physician practices. We hear first-hand about technical and workflow challenges and target change for high impact to our patients, and the IS leadership team is briefed weekly in order to prioritize change. At the same time, IT leaders will need to assure high reliability services in the midst of massive technology change, develop new executive leadership skills, and be trusted by the Executive Team and Board to help lead change impacting all areas of the healthcare enterprise. HT