

INSIDE EDGE

The Intelligent Medical Home @ HIMSS14

Geek-whiz-technology exhibits rightfully should demand a healthy skepticism, but they can also jolt the imagination and provide a vision of a more rational and caring world. That was true of the Intelligent Medical Home (IMH) exhibit at HIMSS14 in Orlando last month. Those of us old enough to remember touring the EDS healthcare exhibit in Dallas in 1990 or even the HIMSS Hospital of the Future 20 years ago can only chuckle at their ‘daringly’ modern pneumatic tube systems for delivery of everything from bills to medications. But the World-Wide Web, let alone the iPhone, iPad and HDTV hadn’t yet occurred. Heck, desktop computers were still brand new.

The IMH showed how all that disruptive consumer technology and more can be smartly blended today to enable coordinated care under value-based accountable care. New this year as an extension of HIMSS’ traditional Intelligent Hospital Exhibit, the IMH drew a continual stream of tours—including seven international delegations and a group of top executives from SI Sponsor Microsoft—to the 1,800-square-foot fully furnished demo home. Visitors watched actors play an elderly woman with dementia and prone to falls, her middle-aged son recovering from a heart attack and a caregiver whose presence signified that the acute-care setting had just made a house call.



Alan Snell, MD,
chair of the IMH
Advisor Council



“This is all about what happens when the patient goes home,” says Alan Snell, MD, chair of the IMH Advisor Council and former CMIO at SI Member St. Vincent’s Health (Ascension Health) in Indianapolis.

“The emphasis is on reducing hospital readmissions. How can we take the higher acuity patient and make it work at home? This wouldn’t work well in a fee-for-service environment. It works well in a capitated environment,” says Snell, whose experience helping lead the Central Indiana Beacon Community demonstrated the power of similar if not as extensive use of consumer technology for patient care at home.

Bringing the hospital home

The IMH featured about 30 technology “use cases,” a few of which we highlight:

LIVING ROOM

- CareNavigator, an at-home, web-based (computer, tablet, smartphone, television) and IVR (telephone) application supporting pre-admission and post-discharge patient engagement. This tool delivers patient/procedure/condition-specific health education, sends appointment and medication reminders, alerts patients to tasks—weight, blood pressure, blood glucose—complete functional outcome and pain surveys, and keeps the patient connected to the care team. Utilizing the TV, patients and their families can get real-time information directly to their living rooms while the TV is in operation.

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- Smart Wrist Watch helps the patient function in daily activities and reports results back to caregiver (see Kitchen) but can also ID potential safety issues such as when a patient has not moved for an hour. It also uses a risk-prediction algorithm to continually calculate the risk of falls using data from the home, detecting when walking become erratic or less linear.

KITCHEN

- Smart Behavior Monitoring programs detect if a patient unintentionally puts herself at risk and



will disable dangerous home appliances when she approaches. The Smart Wrist Watch automatically feeds data about patient identity and location to an intelligent

tracking system that electronically enables devices only if an authorized user tries to use them.

- Medication Management programs prompt the patient via the Smart Wrist Watch to take a medication and then measures compliance through location change such as when the patient is near the medication dispenser. The patient then views video of assigned task and checks off the task when completed.

ACUTE BEDROOM

- Medication Management system that verifies a patient removed the proper medications from a dispenser at the proper time, picked up a

water bottle and then exhibited the proper hand-to-mouth movement via Microsoft Kinect-based tracking. If the patient failed to take the prescriptions on time the system prompts her via text message or audiovisual message on an Android tablet. The patient does not need to wear anything special to do this.

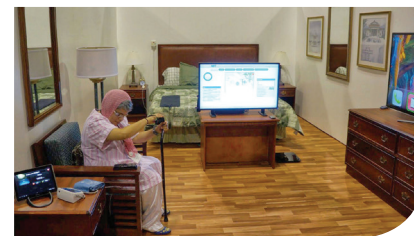
- Non-contact Sensor monitors a patient's heart and respiration rates, motion and presence while in a bed or chair. Caregivers and family members can access this information remotely through a cloud server to a simple web or mobile device so the patient's condition can be monitored real-time from anywhere. Can provide bed-exit and extended out-of-bed alarms.

BATHROOM

- Fall Detection System uses Kinect to detect sudden movement and falls and can alert EMS if there is no response from patient.

MASTER BEDROOM

- Smart Body Analyzer enables a weight scale to take a comprehensive health snapshot by measuring weight, BMI, body fat, heart rate and air quality of the room. Data can be sent remotely or viewed directly on the TV.



WELLNESS/EXERCISE ROOM

- Orthopedic Rehab Solution can observe a patient exercising while she is watching a video and matching movements using Microsoft Kinect.

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Displays range of motion, number of repetitions and achievement of therapy goals.

Beacons of innovation

The beauty of the IMH was that it brought together many different consumer and mobile devices in an integrated, holistic approach that supported the high-acuity patient at home. Elements of this approach have been demonstrated in programs like the Beacon Communities.

One of 17 such demonstration programs across the country funded by the ONC, the Central Indiana Beacon Community’s original aim was to expand the Indiana HIE to more community providers to improve cholesterol and blood-sugar control for diabetics and reduce preventable re-admissions via telemonitoring of high-risk chronic-disease patients after hospital discharge. Under the program, patients at home received virtual consults with highly-trained nurses via video-conferencing seven times a month, enabling clinicians to communicate with the patient, observe their movement and provide them with educational material.

Central Indiana Beacon focused on similar high-acuity patients with multiple chronic conditions and at-risk for readmissions as the IMH (Snell wrote the script for the IMH) Snell estimates the cost of such monitoring was \$400 to \$500 a month. “We didn’t do 24x7 monitoring which would cost more. In most home monitoring it’s not necessary. It can be integrated with an emergency call center the patient can contact any time of the day or night.”

Pieces of the intelligent medical home concept are already being deployed by health systems as they address preventable hospital readmissions and shift to greater risk sharing under accountable care.

High risk for readmission

In an example that is becoming more and more common, SI Member Texas Health Resources (THR), an Arlington, Texas-based, 26-hospital integrated health system, uses predictive analytics to identify the patients they discharge who are high risk for readmissions within 30 days.

“I’ll send those patients home with a bunch of technology like a blood-glucose monitor, weight scale and a pulse oximeter,” says Ed Marx, VP and CIO at THR. “The key is to do it remotely.”



Ed Marx, VP and CIO, THR



Healing Hands. Caring Hearts.™

Extending the eICU model to the community, THR employs a nurse to electronically monitor six patients in their homes daily using technology that converges a half-dozen vital signs into a single monitor. The result has been dramatic: a 30-percent reduction in readmissions which translates into savings of \$40,000 to \$50,000 each.

“More importantly, no one wants to be in a hospital,” he says, adding that the next step is to broaden coverage to a larger population.

Convergence

Russ Branzell, president and CEO of the College of Healthcare Information Management Executives (CHIME), says a technology convergence is occurring between consumer and commercial sectors that is extending into healthcare.



Russ Branzell, president and CEO, CHIME



“The shift has been occurring in the home for years. I can be in rural China and get my emails. What’s happening now is the never-ending loop between consumer and commercial, the home and healthcare.”

Branzell’s daughter recently became ill at school and was sent home with, well, technology. “Her life wasn’t disrupted. She stayed at home talking with her friends, communicating with her school and teacher. “The patient experience becomes integral to the consumer portion of her life. You can monitor blood pressure and medications at home.

“The explosion of consumer-based devices such as smartphones, tablets and even the PC has blurred the lines between consumer and commercial.”

Every healthcare CIO and health system needs to have a mobile health and consumer integration strategy even if you’re in a rural area.”





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