Robin Robinson

TELEHEALTH AND PATIENT OUTCOMES: The Wave OF THE FUTURE

Innovative life-sciences leaders have been piloting telehealth tools for more than a decade, but today's emerging patient outcomes reimbursement model will require bigger steps in order to thrive.

Now more than ever, the industry faces the challenge of demonstrating that its products improve health outcomes and, therefore, companies need to take greater efforts to supply and support tools that help track patient outcomes and improve care. Experts participating in this forum about pharma's role in telehealth represent several sectors of the industry: pharmaceutical, government, research, and telehealth service providers.

According to a report by E&Y, success in the life-sciences industry will no longer be measured by the number of prescriptions written, but by how many of those prescriptions or devices improve the health of the patient. For life-sciences companies, emerging outcomes-based incentive systems are completely disrupting existing business models and creating a chain reaction that will impact every portion of the healthcare system.

There are three elements driving this trend: payers' move to new reimbursement models; continued development and implementation of health tools; and residual push of regulations passed within the HI-TECH Act and the Patient Protection and Affordable Care Act.

"The shift to health outcomes gives more power to patients, and in parallel, a range of technologies is helping to change the way healthcare is delivered," says Patrick Flochel, global pharmaceutical leader, E&Y.

Payer reimbursement models and technology advancements are the one-two punch for the momentum that is building in the industry, our experts say, but the catalyst behind the movement started with the healthcare reform laws.

> **"Technology can effectively enhance patient outcomes, which is ultimately how providers will be reimbursed."**
>
> **CHRISTINA COONS** / Tunstall AMAC

Although telehealth isn't just about technology innovation — according to E&Y, behavioral economists have achieved dramatic improvements in getting patients to be compliant through behavioral-incentives pilots — new, patient-empowering, information-leveraging technologies are blurring the lines between devices/diagnostics and health IT.

These technologies have the potential to make healthcare delivery vastly more efficient and disrupt much of the medtech industry in the process.

"Across the healthcare landscape, multiple technology megatrends are both enabling and driving change," Mr. Flochel says. "Telehealth is an invaluable opportunity for pharma to capture the types of data that will allow companies to identify the interventions and practices that deliver the biggest improvements in health outcomes. The pharma industry understands this to some degree, but it needs to do more. Companies need to work with patients, payers, and providers, and form new partner-

FAST FACT

TELEMEDICINE-DEDICATED DEVICE AND SOFTWARE MARKETS ARE PROJECTED TO REACH $2.5 BILLION BY 2018. TWO MAJOR CATEGORIES ARE DIAGNOSTIC SUPPORT TOOLS AND TREATMENT SUPPORT TOOLS.

Source: Wintergreen Research

ships and radical collaborations — often with nontraditional players in healthcare."

"We view healthcare transformation as a two-act play; the first act is wireless systems, and the second act is to rethink the way we pay for those systems," says Craig Brammer, director of the Beacon Community Program at the Office of the National Coordinator (ONC) for Health Information Technology.

The HI-TECH Act, enacted as part of ARRA in 2009, accelerated the adoption and meaningful use of technology in healthcare, and initiated the start of payment reform. CMS continues to deploy and test various new models of payment, but the model that is front and center today is the accountable care organization (ACO) program.

ACOs are integrated care programs that aim to provide coordinated care to patients and, through the Medicare Shared Savings Programs of the Affordable Care Act, allow providers to share in savings that are achieved. (See related article: ACOs a New Health Model for a New World.)

"The ACO program has a tremendous amount of momentum behind it, not only for Medicare patients, but also in the private sector and ultimately, it creates payment reform that makes the continued case for advanced technology," Mr. Brammer says.

"These programs can potentially enhance patient outcomes, which is ultimately how providers will be reimbursed," adds Christina Coons, product manager, telehealth, Tunstall AMAC. "In the very near future, providers won't be focused on whether a treatment is included on a health plan's formulary, rather they will shift their focus to treatments that improve patient outcomes or decrease hospital readmissions."

Health systems that are accepting accountability for defined populations have become highly motivated to build increasingly sophisticated technology systems, which has led to a rise in patient-facing technologies, Mr. Brammer says.

"There hasn't been a huge business case for novel consumer-facing technologies in the past, but now there is tremendous energy and motivation by health systems, providers, and health plans, and anyone in the health sector, to use new technology," he says. "Mobile health apps, mobile patient monitoring, and personal health record tools are just beginning to explode."

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>
> **CRAIG BRAMMER**
> Beacon Communities Program, ONC

Social media is also driving patient empowerment through patient networks and real-time information. According to Mr. Flochel, this trend is similar to those seen in the online shopping and banking sectors.

"Social media has quickly taken a key role in the transformation, empowering individu-

Telehealth vs. Telemedicine

Telehealth is the use of electronic information and telecommunications technologies to support long-distance clinical healthcare, patient and professional health-related education, public health, and health administration. Technologies include videoconferencing, the Internet, store-and-forward imaging, streaming media, and terrestrial and wireless communications.

Telemedicine is the use of medical information exchanged from one site to another via electronic communications to improve patients' health status. Closely associated with telemedicine is the term telehealth, which is often used to encompass a broader definition of remote healthcare that does not always involve clinical services. Videoconferencing, transmission of still images, e-health including patient portals, remote monitoring of vital signs, continuing medical education, and nursing call centers are all considered part of telemedicine and telehealth.

Source: Health Resources and Services Administration

> "In our clinical trials we are moving to an outcomes-based model, which includes defining endpoints that are meaningful for patients."
>
> **DR. TIMOTHY WRIGHT** / Novartis

> "The outcomes-based model of care is dependent on telehealth technology to help reduce costs and connect care."
>
> **ANDREA MCGONIGLE** / Microsoft

als with transparent information and greater control, while at the same time, incentives are driving patients to take more responsibility for their health decisions," he says. "Social media is also helping create the explosion of data that has recently emerged, and enabling a trend we call value mining — the use of data mining to make determinations about the relative value of different interventions."

Information Accessibility and Exchange

The engaged patient is the future of telehealth, and technology is crucial to establishing more engaged patients, our experts say. Patients are taking control of their health through a variety of different technologies, one of which is social media platforms that are allowing them to learn from each other and their providers in real time.

Smartphone apps are giving patients access to more tools to receive better health information, decision support, disease management, monitoring, data analysis, communication with providers/caregivers, and more.

Outside of social media, new generations of medical devices and diagnostics are becoming more connected and patient-friendly, allowing individuals to monitor their health over time.

"And the revolution is moving beyond medical devices to all sorts of everyday objects — from scales to running shoes to cars — that are becoming sensor-embedded and giving patients better information to manage their health," Mr. Flochel says.

According to E&Y, these patient-facing technologies can't just be cool gadgets; they need to meet two criteria to be effective. They need to be patient empowering and information leveraging.

"We are already seeing early adopters — the quantified-self patients — experimenting with these technologies," Mr. Flochel says. "As more and more products become sensor-equipped and remotely connected, and as payers continue to change incentives to encourage patients to take more responsibility for their health, we can only expect the trend to gain traction."

Mr. Brammer from ONC says he has witnessed several signs in the healthcare space indicating that telehealth is a trend that is just gaining its legs. For example, in surveys of health systems all over the country, the highest priority that continually rises to the top of all concerns is how to better engage patients.

"Everyone now knows that an engaged patient is what is needed for improved health outcomes," he says.

Health systems also have to figure out how to become more sticky and one solution includes using technology to better engage patients.

"One indicator of continued growth is how fast and focused health systems are in this space, and a second is that Silicon Valley is really ramping up its work and investments in this area," Mr. Brammer says. "And a third indicator is that this is really what consumers want and consumers ultimately drive the ship."

Our experts say, the first step in the process is to make information more accessible to patients, caregivers, and healthcare professionals.

"I anticipate that patient information will be made more widely accessible and shared among various healthcare providers and settings, such as health plans, healthcare providers' offices, hospitals, urgent care facilities, home healthcare agencies, and rehabilitation centers through the evolution of current state regional health information organizations and continued development of electronic medical record integration tools," Ms. Coons says. "This includes applications that will transmit data from smartphones and other devices."

This may be done by EMR companies or

Industry-related Benefits of Telehealth Technologies

- Increasing patient compliance and adherence to treatment protocols.
- Keeping patients engaged and involved with a clinical trial.
- Opportunities to lessen the demands of in-office measurement and collection of clinical trial parameters and data (ie, blood pressure measurements, pain management scales, weight measurements, etc.).
- Increasing accuracy and reliability of collected data as it is objectively collected rather than patient-reported.

Source: Tunstall AMAC

by innovative companies that develop solutions to provider needs, thus emphasizing the continued importance, and even reliance, on partnerships within the industry.

Health information exchange among healthcare systems is not a luxury but a must, says Andrea McGonigle, managing director, life sciences, Microsoft.

"It's an important step to reduce medical redundancies and the associated costs, as patients may visit multiple hospitals," she says. "In five years, there should be some level of adoption of telehealth opportunities to support health information exchanges, which enable hospitals to send information to each other."

Moving Toward a New Model

To be successful in its move to an outcomes-based model, the industry will have to look beyond its own walls and think more collaboratively to include health plans, providers, and government agencies. The industry also will need to take a holistic view of patient care. Ms. McGonigle calls this a "new shared accountability model" that requires all stakeholders to consider how they can collectively drive costs out of the healthcare system.

"The outcomes-based model of care is dependent on telehealth technology to help reduce costs and connect care," she says. "Healthcare organizations are moving toward new payment models that make them accountable for the quality, cost, coordination, and outcome of care. Leaders in the life-sciences space need to think the same way."

Information integration makes many companies nervous, because they view it as a threat to their intellectual property. However, cooperation is what it is going to take to move toward the goal of using telehealth technology to support improved outcomes.

"Solutions are needed that either minimize this threat or incentivize companies to cooperate and engage," Ms. Coons says. "We need to increase the cooperation among technology companies and industry advocates pursuing advanced development in software integration and platforms."

Companies need to be willing to disrupt their own business model when the benefits to the bottom line aren't always clear, and this may be the toughest challenge of all, Mr. Flochel says.

"The revenue from many of the pilot programs that companies are experimenting with in the area of telehealth are tiny compared with what is generated from blockbuster drugs, but as Apple proved in its foray into the music business, small experiments into

TRENDING NOW TECHNOLOGIES & TOOLS THAT ARE CHANGING THE LANDSCAPE

PATRICK FLOCHEL
GLOBAL PHARMACEUTICAL LEADER
Ernst & Young

Along with big-ticket developments, there has been a wave of new, individual telehealth innovations that are helping to empower patients. Data generated by sleep apnea monitors, for example, have traditionally been owned by providers. But now there are sensor-embedded consumer devices, such as the Zeo Sleep Manager, which allow patients to self-monitor their sleep every day. This gives apnea patients not only ownership over their data, but also more useful data, information that is generated in real-world conditions from which to extract true insights into the behaviors and factors behind medical conditions.

More recently, in July 2012 the FDA approved an ingestible sensor that when incorporated into a pill, allows users to track data on drug adherence and other key health indicators over time. Fittingly, this technology was approved under new FDA provisions for low-risk devices that have no predicate on the market, and is the culmination of a four-year collaboration between regulators and the California company behind the new technology, Proteus Digital Health.

Falls are a big problem for older people, and often result in hospitalization or worse. Researchers at Texas Tech University are developing a product that can predict when a person might fall — sometimes days in advance. The wearable device is packed with sensors that track movement patterns over time and look for significant changes in a person's gait and posture, it could be a breakthrough for preventing adverse medical events in elderly patients with Parkinson's disease, epilepsy, or dementia.

ANDREA MCGONIGLE
MANAGING DIRECTOR, LIFE SCIENCES
Microsoft

The mobile phone is a prominent telehealth tool in developing countries. It's important to note that telehealth can be as simple as sending text messages to communicate with a patient outside the care vicinity.

For example, physicians can send a text message to patients to remind them to take their medicine or patients can send their personal blood pressure readings in real time.

With Microsoft's speech recognition platform, Tellme, patients can do a voice-response and receive a phone call that promotes personal care by asking questions such as, "Have you taken your medicine today?" Patients can also call the platform with a health concern, and Tellme will walk them through a chain of questions and answers and then connect them with a doctor. These services don't require the use of a smartphone. Microsoft's Lync also allows providers and clinicians to connect with each other via messaging, voice, and video conferencing.

Cloud services, such as Office 365 and Windows Azure, are also allowing physicians, nurses, and others within the healthcare arena to view and edit documents at the same time and from multiple locations. In addition, real-time analytics and streamlined business processes enable informed decisions and operational efficiencies. Studies have also leveraged technologies such as Kinect for Xbox 360, using the system for physical therapy in the field of cognitive and functional rehabilitation.

DR. TIMOTHY WRIGHT
GLOBAL HEAD OF DEVELOPMENT
Novartis Pharmaceuticals

Tools, such as electronic medical records and e-prescriptions, can improve coordination and quality of care for patients. New tools and technologies are emerging in all stages of clinical development, from raising awareness of clinical trials via smartphone apps to remote data capture using novel sensor technologies. We are deploying tablet-based technologies to streamline clinical trial monitoring and for direct electronic data entry, which can accelerate access to clinical trial data from three to six weeks to just 2.5 hours. At Novartis we also have recently developed the eBreezhaler, a medication inhaler with an electronic chip that sends digital information to doctors to ensure patients are administering medication correctly and effectively.

> **"Telehealth is an invaluable opportunity for pharma companies to capture data that allow them to identify practices that deliver the biggest improvements in health outcomes."**
>
> **PATRICK FLOCHEL** / E&Y

nontraditional business areas can turn a shrinking pie into a growing one."

Another hurdle to overcome is the lack of universal standards of interoperability. To ensure consumer-facing technologies can be integrated within the delivery system of data among the various stakeholders, the ONC is playing a significant role in bringing stakeholders together to develop national standards. There is no point to supporting telehealth technologies that cannot communicate with other systems.

"The industry needs to ensure that new technologies are driving toward interoperability and are able to communicate with physician and hospital technology platforms," Mr. Brammer says. "Or else the industry will end up with isolated information that cannot be integrated into the healthcare system."

Case in point: there are many different technologies and devices for gathering patient information; however, the technologies often are not integrated, making it difficult to leverage the data to enhance clinical decision-making in a timely manner, Ms. Coons adds.

The ONC is also doing a lot of work around improving the accessibility of patient information by patients themselves.

"A key priority for the government is to make sure consumers to have easy access to their own personal data to do with as they see fit," Mr. Brammer says.

According to Meaningful Use, the certified electronic health record has to be able to demonstrate the capacity for view, download, and transmission of a patient's personal health information.

"This is essentially a game changer, as patients become more engaged in using their health data and downloading it into a whole host of applications and creating new ways to communicate with their physicians," Mr. Brammer says.

There are two other key challenges to advancing toward an outcomes-based business model, and those are financially supporting the technologies and trusting the data they collect, Ms. Coons says. Changes that will move the industry toward the goal of using telehealth technology to support improved outcomes include funding solutions to support the purchase of various technologies and meeting requirements to enable the integration of data from various sources, she says.

"There are many stakeholders that will benefit from expanding their technology use and integrating patient data, including providers and hospitals/health systems through increased reimbursement, as well as government and private insurers through decreased healthcare expenses."

Ms. Coons adds there is a significant learning curve for patients and healthcare providers in using telehealth technologies and acting on the collected data.

"With experience and time, healthcare providers and payers will become confident and trust the patient info gathered from telehealth devices," she says. "Best practices and solutions are needed that demonstrate patient training programs can be customized to specific disease-states/conditions and educational levels."

In the very near future providers won't be focused on whether a treatment is included on a health plan's formulary. Rather, they will shift to focus on treatments that improve patient outcomes or decrease hospital re-admissions. Life-sciences companies need to aggressively start integrating telehealth technologies into clinical and disease management programs by using telehealth devices to measure objective data and smartphone apps to collect subjective information. Smartphones can even be used to video conference with healthcare providers through FaceTime and Skype.

Ms. Coons' advice: Begin with a step-wise approach, and remember, the goal is to provide healthcare providers with more relevant and timely information that can enhance their clinical-decision making. PV

World's Largest Telehealth Randomized Trial

In 2008, the UK Department of Health (DH) initiated the UK Whole System Demonstrator (WSD) Program, the largest randomized control trial of telehealth and telecare in the world. The WSD program has been one of the most complex and comprehensive studies the UK DH has ever conducted, involving 6,191 patients and 238 GP practices across three sites in the United Kingdom. Almost half of the trial participants were living with at least one of three conditions: diabetes, heart failure, or COPD.

The program is expected to provide a clear evidence base to support important investment decisions and show how technology supports people to live independently, take control, and be responsible for their own health and care. At least 3 million people with long-term conditions and/or social care needs could benefit from using telehealth and telecare.

The DH defines telehealth (remote care) as electronic sensors or equipment that monitors vital health signs remotely, e.g. in one's own home or while on the move. These readings are automatically transmitted to an appropriately trained person who can monitor the health vital signs and make decisions about potential interventions in real time, without the patient needing to attend a clinic.

In addition, 24-hour monitoring ensures that should an event occur the information is acted upon immediately and the most appropriate response put in action.

Findings from the trial show that if used correctly, telehealth can deliver:

- 14% reduction in elective admissions
- 14% reduction in bed days and an 8% reduction in tariff costs
- 15% reduction in emergency department visits
- 20% reduction in emergency admissions
- 45% reduction in mortality rates

Viterion TeleHealthcare, a business of Bayer HealthCare, provided telehealth monitors and software products for the WSD. According to Viterion, its telehealth products have been in use in the UK since 2005.

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Telehealth Tools, Leaders, AND PROGRAMS

The industry needs to look to other industries for role models.

When we asked our subject matter experts to name the innovative leaders and tools that are blazing the trail to telehealth, the majority of responses included people and programs developed outside of the traditional life-sciences industry. According to a report by InMedica, the medical electronics division of IMS Research, pharma has been noticeably absent from the telehealth ecosystem, and the report says this may be because the industry has thus far focused on monitoring devices, data collection, and transmission of data and not the larger picture of healthcare delivery. The report says providers and payers are ready to move past data collection and use telehealth to deliver care and the industry should follow suit.

According to Patrick Flochel, global pharmaceutical leader at E&Y, many of the leading telehealth initiatives come from nontraditional players in healthcare. Retailers such as Walmart, for example, are offering shoppers opportunities to interact with doctors via videoconferencing technology. Communications companies such as Vodafone have long recognized the market opportunities associated with provision of telephony services to healthcare in developing markets as well as in established ones. And with 44 million downloads of health-related smartphone apps occurring in 2011, companies such as Apple are now trying to categorize apps that are specifically applicable to healthcare professionals, including video telehealth apps.

Another industry to use as a reference model is the gaming industry, Mr. Flochel says.

"The gaming industry can teach the industry a lot about adherence and behavior," he says. "Video games and gamification are being used to great effect in helping people take more responsibility for their own health." (Editor's Note: See the PharmaVOICE February article on gamification.)

Another leader in the telehealth space is The Veterans Administration.

"The VA has a model program that many in the industry look toward," says Christina Coons, product manager, telehealth, Tunstall AMAC. "Over the years, the administration has adapted its systems and protocols to meet the medical needs of individual veterans. The VA shares patient information across its integrated system and has developed clinical programs and guidelines to address common diseases and disorders that veterans face, such as diabetes, chronic heart failure, and post-traumatic stress disorder."

The VA offers a telehealth system that provides options based on the patient's educational level and aptitude with technology devices. The system spans the continuum from interactive voice response technology to video-based systems to more complicated disease management systems that use telehealth devices to capture and report patient vital sign measurements and deteriorating symptoms based on specific clinical dialogue.

Ms. Coons says there are two primary best practices to take away from the VA system: keep technology simple and easy-to-use for the greatest effectiveness among aging populations and acknowledge health literacy levels when developing telehealth systems and devices for patients.

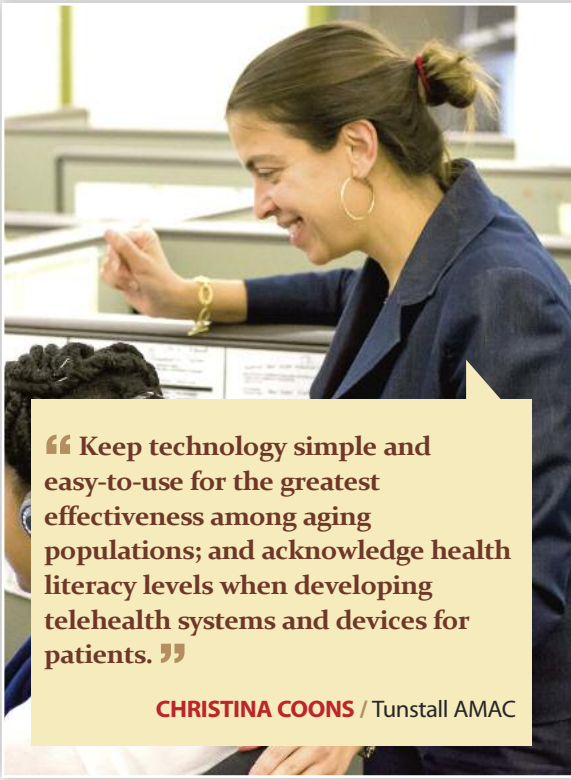
Telehealth in the Clinical Setting

Microsoft has been working with a number of academic medical centers such as the Cleveland Clinic and Kaiser, among others that are conducting virtual trials using connected medical devices, says Andrea McGonigle, managing director, life sciences, Microsoft.

"On the pharma side, we see companies such as Pfizer, Novartis, and Roche engaged in virtual clinical trials," she says. "Most of the largest pharmaceutical companies are all thinking about virtual clinical trials and developing telehealth programs."

An important aspect of the newer technologies is their ability to track and analyze data all along the patient care continuum, as opposed to the traditional single point of data collection during a doctor's visit. Use of these technologies will have large implications for disease management and treatments for chronic diseases, as the industry's data collection can now encompass all aspects of the patient throughout his or her journey, starting in the clinic.

These new technologies are transforming the healthcare industry and hold great promise for patients, says Timothy Wright, M.D., global head of development, Novartis Pharmaceuticals.



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>
> **CHRISTINA COONS** / Tunstall AMAC

"At Novartis, we're actively exploring telehealth technologies in clinical trials that allow for remote monitoring of key health indicators, such as efficacy and safety, and encourage greater patient compliance," he says. "Such technologies have the potential to lower drug development costs and to ultimately improve patient outcomes, for example allowing healthcare professionals to assess treatments and identify problems remotely and in real time. Also, in our clinical trials we are moving to an outcomes-based model, which includes defining the proper endpoints that are meaningful for patients, moving to real world settings, and enhancing compliance. Patients are the center of our focus, and in the end, it is the clinical outcome that makes the difference for the patient."

According to Ms. McGonigle, while Novartis is one life-sciences company that has pursued telehealth tools in clinical trials, as a

rule, a very small percentage of organizations today support virtual clinical trials, however this is projected to change.

"In five years, the goal is for 80% of subjects to be involved in trials by way of virtual environments," she says. "This will allow for trials to garner more widespread participation, translating to more accurate and diverse trials that better reflect the population."

The rate of adoption and implementation of telehealth tools depends largely on geographic location, Ms. McGonigle says, describing the industry as being "a mixed bag" with regard to the adoption of telehealth opportunities.

"In pockets or major medical centers such as Boston, New York, and Chicago, the industry is mature, while telehealth opportunities and outcomes-based medicine in non-connected environments in rural areas are in their infancy," she adds.

Programs That Are Facilitating Telehealth

Craig Brammer, director of the Beacon Community Program at the Office of the National Coordinator for Health Information Technology, briefly outlines a couple of ONC's current telehealth projects — txt4Health and a virtual nurse program — and their progress.

"What I like about these projects, especially the txt4Health programs in New Orleans, Cincinnati, and Detroit, is that we are not just throwing technology at patients, but using technology to facilitate care and facilitate human-to-human interactions," Mr. Brammer says. "One of the unique perks about the software is that it leverages the involvement of the local communities, so not only is Mrs. Smith getting information about her health status, she is also getting local information about services and resources in her neighborhood and community that are very local and specific."

Txt4Health

The Crescent City Beacon Community (CCBC), the Greater Cincinnati Beacon Community (GCBC), and the SE Michigan Beacon Community (SEMBC) are deploying txt4Health (a text message-based service) to help individuals better understand their risk of diabetes and become more informed about lifestyle changes that can lead to a healthier life. Participants text the word "health" to 300400, complete a diabetes risk assessment, and receive a customized series of text messages with educational information, exercise and weight loss tracking, and links to local health and lifestyle resources.

The txt4Health Community Advisory Group includes, but is not limited to: the Louisiana Department of Health & Hospitals, New Orleans Department of Health, American Diabetes Association, Centers for Disease Control & Prevention, BCBSLA, Walmart, Novo Nordisk, and the New Orleans Hornets. According to Mr. Brammer, 84% of almost 1,000 participants have reported height and weight to calculate their body-mass index using the service and 67% of participants set a personal weight goal over the 14-week txt4health program.

GCBC has partnered with a variety of regional stakeholders to drive enrollment in the program. Several large employers are enrolling employees and promoting company-specific events behind txt4health, while regional healthcare systems are encouraging providers to incorporate txt4health into their protocols for diabetes care.

Greater Cincinnati has had almost 4,000 participants enroll in the txt4health initiative and more than 7,500 direct secure emails have been sent between providers for various users.

Txt4health is also part of SEMBC's "Fighting D in the D" campaign, a public-facing campaign that encompasses the efforts from a broad range of stakeholders and partners in southeast Michigan. More than 1,400 patients were enrolled in txt4Health as of August 2012, and the txt4Health initiative has received broad acceptance across the southeast Michigan community from stakeholders including public health entities, nonprofit groups, and payers, as well as providers in hospitals, FQHCs, private practices, and other settings.

Central Indiana Beacon Community Virtual Nurse Program

Through a partnership with St. Vincent Hospital in Indianapolis, the Central Indiana Beacon Community has established a technology-based virtual RN call center with the aim of reducing hospital readmissions for high-risk heart failure and chronic obstructive pulmonary disease patients. Patients discharged from the hospital use devices in the home to communicate with call center-based nurses. These nurses conduct an initial medication reconciliation, ensure patients have a follow-up appointment with their physician, and conduct at least six additional videoconferences with the patient over a 30-day period. The device captures biometric readings and answers to other questions about health status on a daily basis. A randomized trial now under way has found only 3% of patients who receive the service have experienced a readmission, well below the patients in the study's control group, which is tracking closer to national averages.

The trial is still in progress, but St. Vincent's has already recognized the potential for this intervention to help realize cost savings from reducing avoidable readmissions, and is offering the remote monitoring service to a wider group of its post-discharge patients.

Additional plans are in place to extend services to patients in multiple hospitals across the region using a variety of technology platforms.

Utah mHealth

For Utah mHealth, IC3 deployed a randomized pilot evaluating the effects of a bidirectional text messaging application, Care4life, which enables diabetes patients to track their health and receive educational reminders. Roughly 310 patients are enrolled in the Care4life text messaging study across 14 provider sites. Early reports suggest patients are receptive to the application, and in some cases have demonstrated improved outcomes, including several patients presenting blood glucose readings in normal ranges after years of chronic diabetes complications.

Microsoft Telehealth Partnerships

Ms. McGonigle discusses two telehealth partnership programs.

St. Luke's Health System, a non-profit healthcare provider in Boise, Idaho, collaborated with Microsoft to deliver remote care and health services throughout its seven hospitals and five cancer treatment clinics spread across the state. St. Luke's developed a low-cost, mobile solution, dubbed the Telehealth Cart, which is easily wheeled into treatment rooms, allows remote clinicians to connect with patients, share information, and provide consultative care via real-time video, which was only possible before through in-person visits. St. Luke's put the system in action at its Fruitland facility, and for genetic counseling alone, the telehealth program has reduced appointment wait times by almost seven days, and early feedback has been extremely positive. Patients are pleased with the improved convenience, access, and cost savings provided by the telehealth system while receiving high-quality care.

In another Microsoft partnership, the City of Los Angeles Department of Aging, Partners in Care Foundation, and St. Barnabas Senior Services have a successful program called the Exergamers Wellness Club, which combines technology with exercise, overall health monitoring, and evidence-based health education from Partners in Care. Seniors in the program use Kinect for Xbox 360 to make exercise fun and they use Microsoft HealthVault to manage and store their personal health information. Participants report improved fitness and well-being, which has motivated Microsoft and its partners to expand the program to all senior centers in the Department of Aging service area. PV