The Future of Wireless in Healthcare
Powering the Applications for 21st Century Care

Featuring the results of the Healthcare IT News Wireless Technology in Healthcare Survey
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The Changing Landscape of Healthcare

The healthcare industry has taken a measured approach to the adoption of information technology (IT). Recent federal legislation and emerging trends, however, are changing the landscape and driving the need to accelerate the adoption of health IT. The focus for health systems and physician offices has been on the implementation and meaningful use of electronic medical records (EMRs) in order to qualify for federal incentives under the American Recovery and Reinvestment Act (ARRA) of 2009. Wireless networks and devices are being viewed as a critical component of IT strategy to help improve quality of care and clinical outcomes, increase patient safety and, as a result of efficiencies, decrease the cost of healthcare.

In less than two years, two pieces of federal legislation have dramatically altered the path to 21st century healthcare delivery. Under ARRA, the Federal Communications Commission (FCC) was tasked with creating a broadband plan that would create jobs and businesses and improve healthcare. The FCC released “The National Broadband Plan: Connecting America,” its roadmap that includes overhauling its Rural Health Care Program and providing funds to ensure access to affordable broadband. Under the plan, the FCC will analyze broadband-enabled health IT applications such as EMRs, health information exchange and remote monitoring and video conferencing. The FCC has also recommended that up to $29 million annually be earmarked for the Indian Health Service to upgrade its broadband services.

At the heart of the national health insurance reform legislation, the Patient Protection and Affordable Care Act (PPACA) of 2010 is the mandate to provide health insurance to all Americans. With an estimated 45 million uninsured Americans potentially entering the healthcare system amid the growing shortage of primary care physicians (PCPs) and nurses, it has become imperative for the industry to look for ways to automate and enhance provider workflow in order to accommodate the increase in patients.

In addition to the anticipated spike in patient volume, patient profiles are also changing. With medical advances helping to increase life expectancy, especially for the Baby Boomer generation, the number of patients with chronic conditions and co-morbidities is increasing exponentially, further burdening the resource-strapped healthcare system. “Aging in place,” a new concept in long-term care, emphasizes adapting homes to accommodate the needs of seniors and to enable them to live independently at home as long as possible, thus delaying having to go into more costly retirement communities, assisted living and skilled nursing facilities, which cannot accommodate the influx of Baby Boomers. Home and medical monitoring devices and systems, such as remote vital sign monitoring and videoconferencing, are some of the technologies identified as helping seniors safely stay in their homes, according to John Grencer, a leading expert in aging-in-place technologies and Administrative Manager of Assistive Technology for Allentown, Penn.-based Good Shepherd Rehabilitation Network.

In response to the unsustainable cost of healthcare and the alarming rise in chronic conditions, employer
groups, health systems, quality-focused organizations, healthcare collaboratives, communities and both commercial and public payers have been piloting new forms of care delivery and payment. At their core, accountable care organization (ACO) and patient-centered medical home (PCMH) models focus on care coordination and integration among healthcare providers and reimbursement-based on improved outcomes instead of volume. The goal of these models is to lower costs by improving care coordination, efficiency, quality and patient satisfaction, and relying on health IT to achieve those goals.

Under PPACA, the Centers for Medicare & Medicaid Services (CMS) must establish an ACO shared savings program by 2012. In the commercial market, multi-payer pilots have been launched in Colorado, New Hampshire, Pennsylvania and Vermont, as well as single-payer initiatives with health systems and physician groups across the country. The Congressional Budget Office has estimated the savings of an ACO pilot program at $2.3 billion.

Not since the Social Security Act of 1965, which established Medicare and Medicaid, has the healthcare industry undergone such a significant transformation as a result of federal legislation. With healthcare IT being deployed as the tool to enable the transition to 21st century healthcare, wireless technology is in a unique position to contribute to the mobile aspect of the new healthcare delivery system – if healthcare providers recognize its value to solve today’s issues and strategically plan for state-of-the-art patient care.

Wireless Technology in the Field Today
Healthcare IT News conducted a survey in June and July 2010 on behalf of Sprint, a telecommunications company offering wireless and wireline communications services and developer of innovative technologies, including the first wireless 4G service from a national carrier in the United States. The survey provides a snapshot of the current status of wireless data technology usage in healthcare and attitudes about future solutions and strategies. Healthcare IT News also completed six case studies of forward-thinking healthcare providers that document their use and vision of wireless technology within their organizations.

Of the 208 participants who responded to the survey, nearly 95 percent said their organization currently uses wireless devices and technology for business purposes. More than 62 percent of survey respondents who deploy wireless technology work for healthcare facilities that employ 500 people or more. Nearly 25 percent have fewer than 250 employees, and the rest work for organizations that employ between 250 and 499 employees.

Not surprisingly, more than 84 percent of the survey respondents reported that their organization uses wireless devices for e-mail, with more than 61 percent citing texting as a much-used functionality. The survey results for wireless device usage mirror the heavy use of e-mailing and texting on mobile devices in the consumer market.

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While it is also not surprising that only 57 percent said their organization deploys wireless monitoring devices, this survey data point calls attention to the fact that healthcare organizations are missing an important opportunity to leverage technologies they already have, especially given the financial restraints many healthcare organizations are under. Thirty-eight percent indicated physicians are downloading patient management applications for their smartphones, 19 percent said their organization uses wireless devices for teleradiology and only 16 percent of respondents reported that wireless devices are capturing bedside data in home healthcare. Healthcare organizations should take advantage of wireless devices' multiple functionalities, which can help expand the ability of their physicians to access and capture patient data virtually anywhere in a cost-efficient manner through the use of existing technologies.

Healthcare organizations are still in the early stages of leveraging the wide range of wireless device capabilities, but expect adoption of more functionalities to increase as a more technology-savvy healthcare workforce enters the market. While 64 percent of U.S. physicians use smartphones today, a physician report released in October 2009 by healthcare market research firm Manhattan Research projected an increase to 81 percent by 2012. The report, “Physicians in 2012: The Outlook for On Demand, Mobile, and Social Digital Media,” noted that the Internet will become the primary professional resource for physicians. Mobile capability will become more valuable as physicians increase the number of activities, such as patient monitoring and administrative duties, that they conduct on their devices, the report said. Mobile technology will help create a more mobile healthcare system that can bridge gaps in care as a result of the shrinking physician and nurse workforce and the growing patient population. As C. Peter Waegemann, CEO of Medical Records Institute said, “Smartphones and other mobile technologies will become major tools for physicians for improving quality of care and communicating better with patients and colleagues.”

The Growing Adoption of Wireless Devices

More than two-thirds of survey participants noted that among a list of wireless applications, EMRs on wireless devices is gaining the most momentum in their organizations. A 2010 Spyglass Consulting Group study, “Point of Care Communications for Physicians,” noted that physician adoption of smartphones is experiencing “exponential growth.” The Spyglass Consulting Group interviews conducted with more than 100 physicians working in acute-care and ambulatory facilities across the country revealed how the adoption of mobile
communications at the point of care is helping to improve communications and collaboration, increase patient care and safety, streamline workflow and enhance productivity.

In its 2006 report, Spyglass Consulting Group revealed that 59 percent of physicians were using smartphones. The 2010 report highlights a 60 percent increase as 94 percent of physicians are communicating, managing personal and business tasks, and accessing medical information via their smartphones. The University of Kansas Hospital, a general medical and surgical facility and teaching hospital based in Lawrence, Kan., and a Healthcare IT News case study participant, implemented Sprint Custom Network Solutions, an in-building wireless system, in the hospital and the University of Kansas Medical Center (KUMC), the academic medical center. KUMC issued Sprint smartphones to all its fourth-year medical students and residents. The network and mobile devices enabled clinicians and physicians in both organizations to remotely access applications in its EMR and other clinical IT systems.

Vanderbilt University Medical Center (VUMC) is also one of the Healthcare IT News case study participants. VUMC physicians can access patient data on their wireless devices, including medical images, according to Jim Jirjis, MD, VUMC’s Chief Medical Information Officer. While less than 7 percent of Healthcare IT News survey respondents reported that retrieving radiology images on wireless devices is gaining momentum at their healthcare organizations, VUMC has demonstrated the value of retrieving critical medical images, especially when tests reveal abnormal scans. When VUMC’s Jirjis received an abnormal CT scan of one of his patients on his smartphone, he was able to communicate with the patient and specialists, set up appointments and complete a care plan in real time – all the while as a passenger in a car during a national holiday. Connectivity allowed Jirjis to “deliver excellent care from virtually anywhere,” which he noted is moving the environment of care out of the physical realm.

Sixty-two percent of Healthcare IT News survey participants describe having access to medical images, such as EKGS, MRIs and CTs, on a wireless handheld device as “nice to have,” and only 19 percent of survey participants rated access to medical images a “critical functionality.” Another 19 percent said accessing medical images was too costly to implement. The ability to access critical patient data, however, allows physicians to “deliver safer, more effective, efficient care from any environment,” Jirjis noted. “And that’s only good for doctors and patients,” he said.

**The Rise of Telemedicine, Telehealth and mHealth**

Telemedicine, telehealth and mHealth all apply communications technology to the health sector, but each application is distinct. Telemedicine is defined as the application of clinical medicine in which medical information is transferred through interactive audio-visual media for the purpose of consultation or remote medical examination or procedure. Mobile health or mHealth specifically uses mobile communications networks for the provision of health services.

Telehealth encompasses both clinical and non-clinical transfer of information for patient and professional
health-related education, public health and health administration. Only 13 percent of the Healthcare IT News survey participants named telehealth and 7 percent identified video conferencing between healthcare providers as usages of wireless that are gaining the most momentum at their organization.

While telemedicine has been around for three decades, many barriers – including high cost of infrastructure, incompatibility of systems and limited bandwidth – have kept adoption low. Technological advances have enabled the growth of 3G networks, lower price points for and longer battery life of wireless devices, and expansion and integration of wireless devices with established systems, which will aid telemedicine and telehealth efforts. According to New York-based market research firm Datamonitor, the demand for telehealth hardware, software and related services is expected to triple over the next three years to $6.1 billion in North America.

Federal efforts, including broadband funding under ARRA and the recent promotion of the use of telehealth technologies by the Health Resources and Services Administration (HRSA), will also help both telemedicine and telehealth initiatives overcome the traditional barriers with more resources. The FCC announced in July 2010 a new $400 million-per-year program that would provide affordable broadband in medically underserved communities. The healthcare connectivity program is designed to give patients in rural areas access to state-of-the-art diagnostic tools traditionally found in larger, urban and more advanced medical centers.

Many states are creating multi-stakeholder programs. Maine boasts five telehealth programs and has organized a telemedicine workgroup to guide state and local efforts. In August 2010, California Gov. Arnold Schwarzenegger and U.S. Chief Technology Officer Aneesh Chopra announced the launch of the California Telehealth Network (CTN) at the University of California Davis Cancer Center in Sacramento. The CTN network, which will be the largest in the country, will provide traditional and advanced IT infrastructure to enable the growth of telemedicine. CTN is being funded by a $30 million joint effort that includes the FCC, the California Emerging Technology Fund, the California HealthCare Foundation, UnitedHealthcare, the National Coalition for Healthcare Integration, the University of California and other private and public entities.

Mature state networks have documented both dollar savings and improved clinical outcomes. The Missouri Telehealth Network (MTN) began in 1994 as the country’s first public-private partnership to enhance access to care in underserved areas of the state and provide educational opportunities for healthcare providers, among other goals. In FY2010, more than 60 medical professionals in 31 specialties conducted more than 6,900 encounters via video on the MTN.

A study conducted in FY2008 revealed significant savings in travel time and dollars as a result of the utilization of telehealth. The avoidance of nearly 3,000 round trips from rural areas of Missouri to specialist clinics in the towns of Columbia and Kirksville saved more than $300,000 in fuel costs, with the average savings per trip of $116, per the federal mileage reimbursement rate. More than 575,000 miles of travel were eliminated as a result of the availability of telehealth to these rural communities.

According to MTN, the numbers increased dramatically in FY2009, with more than 4,100 patient encounters at MTN’s 53 clinical sites resulting in more than one million miles roundtrip in patient travel. Whereas the FY2009 cost patient cost savings totaled more than $550,000, thus far in FY2010 more than 6,700 trips avoided more than 245,000 miles at a cost savings of more than $660,000. As the body of return-on-
investment (ROI) studies grows, receptivity of telehealth, telemedicine and mHealth should also increase, and the wireless technology market should be poised to enable those applications.

Meanwhile, as the leader of VUMC’s telemedicine efforts, Jirjis is trying to realize VUMC’s vision of a patient-centered medical home, which allows office and home visits, and connects patient, physician and other caregivers through multi-way video conferencing. One of the goals is to electronically transmit relevant vital signs and other health measures from monitors such as blood pressure cuffs kept in the home to the patient’s EMR, Jirjis said. Extending care into the home is a goal that cuts across telemedicine, telehealth, PCMHs and mHealth.

**Remote Monitoring Improves Quality of Care, Reduces Healthcare Spend and Empowers Patients**

Only 6 percent of the *Healthcare IT News* survey respondents, however, identified mHealth – receiving data from wireless monitoring devices worn or used by patients – as the use of wireless that is gaining the most momentum at their organizations. This data point contrasts with market research. According to a March 2010 report released by CSMG, the strategy division of consulting firm TMBG Global, mHealth is already a $1.5 billion market and expected to reach an estimated $4.6 billion by 2014 – or a 25 percent compound annual growth rate over the next five years. The report, "mHealth: Taking the Pulse," noted that healthcare payment reform could help accelerate adoption.

While 35 percent of survey respondents noted that remote monitoring was of “critical importance to managing outcomes and healthcare costs” at their facility, nearly 48 percent said that remote monitoring of patient vitals and other biometrics is “not yet underway in our organization.” Eighteen percent admitted that remote monitoring was not on their organizations’ radar. The body of work evaluating the use of this application with respect to outcomes and costs, however, suggests that healthcare organizations ought to rethink their strategies in this area.

In their May 2008 article, “Diabetes Self-Management Care via Cell Phone: A Systematic Review,” published in the Journal of Diabetes Science and Technology, authors Santosh Krishna, assistant professor at Saint Louis University’s School of Public Health, and Suzanne Austin Boren, assistant professor in the Dept. of Health Management and Informatics, School of Medicine, University of Missouri-Columbia, evaluated 18 studies covering cell phone use for health information for persons with diabetes or obesity. They concluded that “providing care and support with cell phones and text message interventions can improve clinically relevant diabetes-related health outcomes by increasing knowledge and self-efficacy to carry out self-management behaviors.”

Despite nearly two thirds of *Healthcare IT News* survey participants not utilizing remote monitoring, forward-thinking healthcare organizations are demonstrating the value of remote monitoring in the form of improved clinical outcomes and lowered healthcare costs. Visiting Nurse Service of New York (VNSNY), the largest
nonprofit healthcare agency in the United States and a Healthcare IT News case study participant, helped
develop a program to assist kids in the management of their Type 1 diabetes disease, which studies show can
be successfully controlled with a high degree of patient self-care. VNSNY, Manhattan’s Naomi Berrie Diabetes
Center at Columbia University Center and The Diabetes Center at Montefiore Medical Center in the Bronx
launched the pilot in February 2010.

The two-year educational and outreach program includes home visits by social workers with expertise in
diabetes and treatment. The innovative part of the program, however, is the deployment of smartphones,
which serve to connect clinicians and program participants for updates and continuous support, transmit
patients’ glucose levels and enable patient access to educational applications. With texting being a major
form of communication for today’s youth, the smartphone approach made it easy for kids to adhere to the
program’s requirements. The patient data also helped caregivers develop effective, individualized treatment
plans.

Diabetes is a disease that lends itself to remote wireless monitoring for self-management. More than 10
percent of Healthcare IT News survey participants indicated diabetes as the highest area of need for remote
wireless monitoring. Medical expenditures for people with diabetes are more than twice as high as those
without diabetes, according to recent research estimates and the Center for Healthcare Research and
Transformation (CHRT), a nonprofit partnership between the University of Michigan and
Blue Cross Blue Shield of Michigan. CHRT’s December 2009 brief on healthcare spending and
the cost burden of disease noted that the cost of diabetes and associated complications accounted
for approximately one in ten healthcare dollars spent in the United States in 2007.

The highest area of need for remote patient monitoring was cardiac, which garnered nearly
55 percent of the Healthcare IT News survey responses. According to CHRT’s December
2009 brief on healthcare spending, heart disease represented the highest total spending of any
condition at more than $143 billion nationally in 2007. The condition accounted for nearly 40
million discharges from U.S. hospitals. The ten

most common inpatient diagnoses in the country represented nearly one-third of all inpatient discharges, with
cardiovascular disease the most common reason for hospitalization in 2007 at 31.6 percent. Further, four of
the top ten diagnoses in the nation were related to cardiovascular disease, namely cardiac dysrhythmias,
chest pain, congestive heart failure and coronary atherosclerosis.

The importance of managing heart disease cannot be overemphasized. PCP and nurse shortages and
the increase in patient volumes and chronic diseases create a perfect storm for health IT. Remote patient
monitoring can help preserve continuity of care, empower and educate patients, aggregate vital data and

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create a more comprehensive electronic patient record, lower the cost of care through automation and most importantly alert physicians of any abnormal vital signs in order to deliver timely care. VUMC’s patient-centered medical home incorporates transmitting vital signs and other health measures from home-based monitors such as blood pressure cuffs. Given that untreated high blood pressure can damage blood vessels or vital organs, which can lead to strokes, kidney disease or heart disease, the clinical and financial benefits justify the upfront cost of setting up remote monitoring infrastructure.

Robert E. Litan, vice president of Research and Policy at the Kauffman Foundation, and a Senior Fellow in the Economic Studies Program at the Brookings Institution, conducted a study on the financial impact of remote monitoring technologies. His report, “Vital Signs Via Broadband: Remote Health Monitoring Transmits Savings, Enhances Lives,” published in October 2008, estimated that telehealth systems implementation would result in $197 billion in savings over 25 years. In order to achieve the full savings, however, federal policies needed to be adjusted to encourage adoption of remote monitoring technologies, including reimbursement for usage and encouragement in the investment of broadband infrastructure specific to telemedicine applications.

Healthcare organizations that adopt remote monitoring devices should be encouraged by the findings of Deloitte Center for Health Solutions’ 2010 U.S. Survey of Health Care Consumers. According to the report, almost half of the consumers who responded indicated their interest in using an in-home medical device that could empower them to improve their health or treat a health condition. Baby boomers are most interested in in-home monitoring devices (56 percent), with senior citizens (48 percent), Generation X (46 percent) and Generation Y (42 percent) following. Mobile device usage will continue to rise, largely in the hands of the younger generations. Generation X (22 percent) and Generation Y (23 percent) consumers indicated they are very interested in using a mobile device to maintain their personal health records, compared to 15 percent of baby boomers and 17 percent of senior citizens.

The Business Case for Investing in Broadband Infrastructure
Telemedicine, telehealth and mHealth have grown with the expansion of broadband networks. These applications, such as the remote monitoring of patient vitals and other biometrics, also rely on robust wireless devices, as well as software that ensure persistent connection. TERROS’ Mobile Crisis team can access the company’s EMR system while on a call in the community. The Phoenix, Ariz.-based behavioral health organization and Healthcare IT News case study participant deployed Sprint Mobile Broadband Cards and software from Sprint partner NetMotion to remain connected to its network and preserve data that team members entered into the system. The ability to remotely access information from TERROS’ EMR system helps Mobile Crisis teams deliver appropriate treatment and better coordinate care for clients who have received multiple crisis services. “The livelihood of the program is being able to stay connected,” said Peggy Chase, TERROS’ CFO.

From a business perspective, remote access to the IT systems lets the Mobile Crisis teams remain in the field and respond more rapidly to calls, instead of returning to the base to conduct documentation. Real-time documentation also translates into more timely claims processing and faster, more efficient coordination of care when the client is enrolled or eligible for multiple service programs.

Healthcare IT News case study participant Southwest Network, a nonprofit behavioral health services
provider, experienced similar benefits when it equipped its case managers with laptop computers and Sprint Mobile Broadband cards. In this internal pilot program, Sprint DataLinkSM allowed case managers to connect to a virtual private network (VPN) and remotely access a Web-based application that is used for developing service plans for their patients. Like TERROS, Southwest Network was able to keep case workers in the field and eliminate the downtime of having to duplicate work in the office. The efficient workflow enabled staff to visit more families and draw up treatment plans, which translates into higher quality care and more responsive service. With reimbursement based on the number of encounters between case manager and family member, Southwest Network realized ROI in the form of increased revenue. In addition, with case managers able to develop and complete services plans out in the field via the wireless VPN, the company eliminated dedicated office space. Some of its facilities set up “hotel-like” office space, which mobile employees use on an as-needed, temporary basis.

MEDLAB, one of the largest independent diagnostic testing laboratories in the country and a Healthcare IT News case study participant, also achieved business value. MEDLAB, which provides clinical diagnostic testing services to long-term care and assisted-living facilities, was tasked with efficiently deploying its approximately 500 phlebotomists across five states to draw blood at multiple client facilities and deliver the samples to its 12 labs. Through the use of Nextel mobile devices and GPS tracking software distributed to its phlebotomists, MEDLAB was able to efficiently coordinate the workflow of its employees in real time. By aggregating nearby assignments, phlebotomists were able to increase their daily workload. The combination of mobile device and software has also helped improve MEDLAB’s STAT service, which accommodates clients who need to have an expedited blood test at their facility. By rerouting phlebotomists who are closest to the client site, the company saves time and resources. The efficient workflow enables faster billing and payment, which is attractive, given that STAT services command a higher billing rate.

For TERROS, hospital rapid response teams benefited from mobile connectivity. TERROS’ team members use wireless devices to conduct intake of psychiatric patients. The ability to complete intake documentation achieved two things. First, the intake process created a bond between patient and the hospital rapid response team member. Second, this interaction put a face to the company name and positively impacted the show rate to TERROS’ clinics, which spiked to approximately 80 percent. The show rate is the rate at which high-acuity individuals enroll in the outpatient programs after their release from the hospital.

Leveraging Wireless Technology for New Models of Care

One of the major characteristics defining 21st century healthcare delivery system is consumerism or patientcentricity. The rise of retail health clinics in this country attests to the desires of consumers wanting access and convenience, among other things. Alternative care delivery models have already emerged outside of physicians’ offices and hospitals. In its top 10 healthcare issues for 2010, PricewaterhouseCoopers predicted an increase and scope of services offered by work-site and retail health clinics and home health services, as well as other technology-enabled delivery such as e-mail, telehealth and remote patient monitoring.

Alternative care delivery models, particularly electronic visits, however, have been slow to reach the physician office, largely due to the current lack of reimbursement for this service, although this practice is slowly changing in the payer community. In the Healthcare IT News survey, nearly 80 percent of survey respondents said that all their patients come to the office for a physician visit. More than 34 percent of their patients can perform some interaction with their physician online, and more than 11 percent can conduct virtual visits using

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videoconferencing technology. Only 16 percent of survey respondents see virtual doctor visits as a functionality of video technology. These types of services will become more prevalent with the younger generations’ ease with technology and general consumer demand for accessible, convenient healthcare services and the PCP shortage.

While more than 21 percent of Healthcare IT News survey respondents said that patient monitoring is a great value of video technology, the technology has other applications beyond patient monitoring and e-visits between patient and provider. Only 10 percent of survey respondents cited patient education and training as the greatest value of video technology in healthcare. The Missouri Telehealth Network deploys its telehealth equipment for continuing medical education activities and has documented the rise in the number of healthcare professionals participating in the activities, which has resulted in high provider satisfaction. On the other hand, nearly 42 percent of Healthcare IT News survey respondents said that video consultation between care providers in distant locations would be the greatest value of video technology in healthcare.

Only 7 percent of survey respondents cited videoconferencing as the greatest value of video technology in healthcare. Surgery broadcast for medical training and security/surveillance accounted for less than 5 percent; however, once the higher value capabilities are realized, healthcare organizations would do well to leverage their existing technologies in this resource-strapped environment to take full advantage of all its uses.

The Vision of Wireless Technology and the Promise of 4G

According to the HIMSS Analytics Database, approximately two-thirds of U.S. hospitals reported using wireless technology within their healthcare delivery organization. As health IT continues to be adopted, this number will likely rise. Sixty percent of Healthcare IT News survey respondents said that wireless is a core technology of their IT infrastructure across their enterprise, which is a robust percentage, given the HIMSS Analytics Database’s current snapshot. When wireless technology becomes more ubiquitous and fully utilized, these healthcare organizations will be the industry leaders, which will give them a critical advantage in an increasingly competitive marketplace. Health systems and hospitals have reported high patient satisfaction as a result of real-time access to physicians, which wireless technology can enable. Likewise, the ability to practice safe medicine virtually anywhere, afforded by wireless technology, has contributed to higher physician satisfaction, which has been documented in hospital surveys.

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More than 25 percent of survey participants, however, said that wireless is a complementary technology in a few departments. Less than 10 percent reported having no wireless data strategy over the next one to two years, and less than 6 percent have wireless in one to two departments but their healthcare organization does not consider wireless a focus. These healthcare organizations may find themselves losing ground to forward-thinking facilities that are deploying wireless technology across their enterprise, which may potentially impact the retention and attraction of both physicians entering the workforce and patients.

There are several barriers to wireless adoption among healthcare organizations. Cost is the biggest reason why more than 30 percent of survey participants report their healthcare organization is not using more mobile broadband. Another quarter of respondents said their healthcare organization is focused on their EMR implementation. Coverage problems accounted for more than 20 percent of survey respondents. Twelve percent cited information security concerns, more than 8 percent faced bandwidth limitations and less than 4 percent said it would be too difficult to change behavior to adopt wireless applications.

As stated earlier in this report, many of the barriers are being eliminated. Behavioral change and buy-in, and a comprehensive health IT strategy that doesn’t just focus on EMR implementation will be critical to a healthcare organization’s meaningful use of health IT beyond the Stage 3 incentive payments in 2015. Partly due to external drivers such as the federal incentives and healthcare reform legislation, healthcare organizations are looking to technological advances and innovation to help differentiate themselves in a very competitive market and provide the tools needed to deliver high-quality care and patient safety in an efficient way.

The migration from 3G to 4G mobile broadband promises the accommodation of higher-bandwidth applications such as two-way video and high-definition imagery. As 4G networks are rolled out across the U.S., forward-thinking healthcare organizations are anticipating the benefits of 4G. Twenty-six percent of Healthcare IT News survey participants expect improved response times from the deployment. Twenty-two percent are looking at greater efficiency in
their jobs, and 22 percent anticipate cost savings from reducing dependence on wireline and WiFi installations. Only 20 percent, however, said they don’t think their healthcare organization would benefit from using more mobile broadband. With early adopters and visionary healthcare organizations waiting to implement the next generation of wireless technology, eschewing more mobile broadband is a strategic oversight.

Current healthcare organizations that are heavy users of mobile technology believe that accessing 4G networks are business and clinical imperatives. TERROS, which is focused on increasing mobility to deliver counseling, intake and access without walls, is anticipating the deployment of 4G in the Phoenix, Ariz., market. They anticipate 4G will remove latency issues that prevent video conferencing in a mobile environment and provide a smooth connection between psychiatrists and other medical prescribers at TERROS’ facilities for psychiatric evaluations via telemedicine.

These state-of-the-art efforts will create market leaders. Healthcare organizations need to envision the next evolution of mobile technology if they are to stay abreast of the growing demand for services. So long as visionary healthcare organizations push the envelope of what mobile technology can achieve, the market must follow in order to deliver consistently better clinical outcomes, higher quality and safer patient care and more efficiency. This is demanded not only by ARRA requirements and quality improvement organizations, but more importantly, by patients.
Southwest Network: Staying Connected with Case Managers in the Field

Keeping Case Managers in the Field

As a provider of behavioral health case management services, Southwest Network’s case managers spend ample time in the field visiting children and families in their homes to develop individualized health plans.

With most of its clients being covered under state Medicaid, case managers develop service plans for each client’s care, but need to fill out other forms with their clients while in their homes.

Not so long ago, “once they had visited a family, our case managers would come back to the office and enter all the information in our system—they basically duplicated all the work they had done with the family,” said Bob Sanowski, Southwest Network’s CIO. “Then once it was entered they would need to go back out to the client and get their signature on the plans.”

Determined to find a solution, Sanowski developed an internal pilot program whereby he equipped case managers with a laptop computer and Sprint Mobile Broadband cards to use while they are in the field. Now, case managers can remotely access a web-based application the company uses for developing service plans using Sprint Data LinkSM. The VPN connection allows them to fill out patient plans while still in the home and without the need to duplicate work.

“This easily can save a couple of visits to the family,” Sanowski noted, “plus it saves the time spent when managers would come back to their office and duplicate the entry.”

Noting the productivity increases, it didn’t take long for the dozen case managers in the pilot to convince Sanowski to roll the program out to all 90 child case managers, but with the addition of signature pads – devices that electronically capture signatures needed from clients.

“They realized right away it was very beneficial,” he said. “And with the signature pads, they now get the signatures while they are still in the home. It’s apparent there are significant savings.”
Operational Savings

With less time in the office and more out visiting families to draw up treatment plans, Southwest Network’s case managers can now generate more child and family “encounters,” the measure by which the company is reimbursed, all while providing more prompt and better service. And with a network that is adding clients at a fast pace, that provides some real top-line cost savings in addition to increased reimbursements.

“This allows the case managers to get out and see more recipients,” Sanowski pointed out. “So you do save money, because you don’t have to add people and case managers to staff. The Sprint network, combined with better technology to manage the treatment plans, allows the case managers to handle more cases.”

In a bit of a twist, the technology will also potentially save Southwest Network on its facilities expenses too. That’s because with virtually all of the company’s treatment plans being transmitted via the wireless VPN from the field, its need for dedicated office space for case mangers to set up shop and enter the data is a thing of the past. Instead, some locations have set up “hoteling” office space that employees use on an as-needed, temporary basis.

“Now you can run 60 people out of an office instead of 30,” Sanowski said. “So by deploying this technology, we don’t have to add bricks and mortar.”

Looking Ahead

With the Mobile Broadband-equipped computers now fully deployed with case managers, Southwest Network may not be done with looking at how it can use wireless technology to further improve operational efficiency.

With case managers currently carrying both wireless phones and computers with Mobile Broadband cards, Sanowski said that he has begun to consider whether it may make sense to provide tablet devices for its workers in the field, as an all-in-one solution.

“Right now with a laptop, they need to go in, open a browser and navigate,” he said. “With a tablet, it is point and touch, so that could be the next thing we would do for this type of work.”

Sanowski noted that working with Sprint helps him plan for future technology upgrades based on improvement plans Sprint shares with him about their network.

“We’ve talked about their 3G and 4G services and some of the things they might allow us to do in the future,” he noted. “That might include going to VoIP or some other solution when we go to 4G.”

Southwest Network may also look to using wireless LANs as a replacement for its current point-to-point wirelines and has also had preliminary discussions about using a GPS application as a safety measure for its employees making home visits.

“Sprint has been great from a vendor perspective,” Sanowski said. “They tell us when there is new technology and when we need to get things done, it happens quickly. When we needed 40 Mobile Broadband cards, they showed up within a week.”
TERROS: Bringing Care to the Patient

Resolving Mobility Barriers with a True Partnership and Multiple Solutions

Since its founding in 1969, TERROS has had a history of being mobile, first with its van pick-up service and through the years with its optimization of telecommunications. The company evolved from one telephone to a central telephone system that connected to all its clinical sites for all services, and was one of the first in its industry to implement an electronic medical record (EMR) system. “We are using all of technology available to us,” CEO Dale Rinard said.

The company values its mobility and is focused on increasing mobility to deliver counseling, intake and access without walls, Rinard noted. Achieving that progressive vision requires leadership and staff to advance the use of technology through partnerships with vendors such as Sprint.

Much of what TERROS has accomplished has been evolutionary. “We wanted access to information from all clinicians out in the field and to be able to document while in a mobile situation,” CIO Saffron Wanger said. Previously, the Mobile Crisis team could access the company’s EMR system remotely via laptops and Mobile Broadband cards, but lost connectivity as much as 50 percent of the time. To overcome this obstacle, TERROS deployed Sprint Mobile Broadband cards and worked with Sprint partner, NetMotion, to implement its software. The combined solution kept laptops connected to the network and preserved all entered data.

“It’s advantageous to crisis providers in the field to be able to access information in our EMR,” Wanger said, especially for clients who have received multiple crisis services. “They (crisis providers) depend on the devices to be fully functional and operational all the time,” added CFO Peggy Chase. “The livelihood of the program is being able to stay connected.”

In the past, latency issues often prohibited the Mobile Crisis team from documenting while in motion, Chase said. Team members had to return to the base of dispatch and document in between calls, which was an inefficient use of time and resources. Working with Sprint and NetMotion, the team can now document remotely and stay in the field, which has decreased downtime and improved response time. With data entered in real time, claims are processed in a timely manner and care across multiple programs that a client may be enrolled in becomes easier to coordinate, Wanger said.

One of the responsibilities of TERROS’ Hospital Rapid Response teams is to conduct intake on their wireless devices for patients who have psychiatric conditions. But spotty connections often made intake difficult. Sprint Mobile Broadband cards and the NetMotion software were deployed to regain connections, Wanger said.

The benefits of connectivity for this service have been dramatic and immediate. The show rate, the rate at which high-acuity individuals enroll in the outpatient programs after their release from the hospital, was very low – from 50 percent downward, said Chase. Having a person complete intake documentation while still in an inpatient...
The company values its mobility and is focused on increasing mobility…Achieving that progressive vision requires leadership and staff to advance the use of technology through partnerships with vendors such as Sprint.

setting provided a face and name to the company, she said. When connectivity was established, the show rate to TERROS clinics jumped to more than 70 percent.

The company won a grant from the Madison, Wis.-based Network for the Improvement of Addiction Treatment (NIATx) under its Accelerating Reforms Initiative. NIATx is piloting cell phone use to help clients stay sober in a post-treatment environment. “We wanted to explore technology to improve our services and bring the idea of using cell-phone technology to support client outcomes,” said Penny Free, executive vice president and chief clinical officer.

TERROS wanted to help patients stay connected to its outpatient substance abuse and mental health programs via cell phones. The project is now in its second month with eight client-recommended patients equipped with Sprint cell phones. Patients who normally don’t have phones at all were able to connect to programs and resources, and coordinate transportation and other needs. “There’s a lot of enthusiasm for this effort in the program because of the great difficulty to access,” Free said.

**Working On Next-Generation Mobility**

“We’ve been very fortunate to have the leadership of our technology efforts be very engaged with the leadership of our clinical efforts,” Free said. “We’ve found repeatedly that it’s really the engagement of those two areas that is key to the places where we’ve had success.”

TERROS continues to evolve its mobility capabilities. The company is working on coordination of care with its Crisis Recovery Network. The goal is for the Mobile Crisis team to be able to notify - in real time, while at the scene - all treating healthcare providers and stakeholders, such as the emergency department, Child Protective Services Rapid Response team and inpatient intake team, that a patient they have seen in the past has had a crisis event.

TERROS and Sprint continue to work on latency issues that prevent psychiatrists and other medical prescribers at TERROS facilities from connecting to the hospital and conducting psychiatric evaluations via telemedicine.

Rinard wants to push mobility as far as it can go. TERROS’ vision is to be prepared for 4G availability to fully optimize the mobility opportunities for its direct clinical work for the people it serves.

For more information visit: 
The University of Kansas Hospital: Cellular Technology Promotes Patient-Centric Mission

Providing Accessibility and Connectivity for Patients and Physicians

One of KU Hospital’s missions is to deliver world-class patient care to the people it serves, and it deploys healthcare information technology, including wireless technology, to help achieve its mission. The University of Kansas Hospital Authority determined that an in-building antenna solution would better serve patients from a care perspective, according to Michael Nix, KU Hospital’s ITS director.

KU Hospital implemented Sprint Custom Network Solution in 2007, with rolling installations in the primary hospital, heart and cardiac care centers, and finally the cancer treatment center and entire University of Kansas Medical Center (KUMC) campus. Custom Network Solutions provide enhanced in-building coverage to enable wireless phones to have a strong signal inside the facility, which helps prevent the phones from continuously searching for a signal. While cell phone use is restricted, users can easily move to another nearby location without leaving the facility, which creates convenience as well as compliance with wireless policy, according to Nix.

Patient and staff satisfaction are important to KU Hospital. While it’s difficult to attribute the ratings from patient satisfaction surveys (which have continually gone up over the last 10 years) to specific services such as wireless phone access, these services are part of the hospital’s patient-centric care. “Putting in an antenna system is part of our patient-centered care and our desire to provide the greatest service to the patient,” Nix said.

Custom Network Solutions have also enabled clinicians and physicians to access data from the hospital’s electronic medical record (EMR) and other clinical IT systems on their wireless phones throughout the hospital. Mobile technology has allowed the next evolution of patient data access. Physicians can retrieve tests and other documentation on their mobile devices.

In the past, clinicians and physicians complained about multiple passwords, settings and devices for use in and out of the hospital. “Having an integrated network that allows them to seamlessly transition no matter where they are
within the hospital, frees the clinicians from worrying about how the devices are configured or what devices they’re carrying,” he said.

In addition, the ability for clinicians to use their cell phones as pagers has contributed to their workplace satisfaction. The in-building system pages the user, rather than the pager itself, so clinicians can carry just one or two devices. In conjunction with Sprint, KU Hospital installed a system that is integrated into its phone system to provide a “follow-me” number. Physicians are connected to incoming calls via one phone number independent of the answering device, be it a wireless phone, office landline or other device. Physicians can also seamlessly transfer calls from one device to another, which aligns with their mobile workflow.

KUMC School of Medicine issued wireless phones to all of its fourth-year medical students and residents. Not only does this program translate into clinician satisfaction – residents and students prefer using cell phones over pagers and can be reached directly and in real time – it also translates into patient satisfaction when patients are treated more quickly and efficiently. By implementing Custom Network Solutions, KU Hospital has helped increase the safety of its patients through the faster response time, which allows clinicians and physicians to deliver better care and hopefully better outcomes, according to Nix. “We can say it has improved our ability to have better outcomes for our patients and better satisfaction from the clinicians and patients,” he said.

The implementation has opened up other opportunities, including the establishment of a downtime strategy. A wireless antenna, or Wi-Fi, system is the primary connection point for the hospital’s computers on wheels, laptops on mobile carts that document patient data in patient rooms. The computers on wheels include a few Sprint Mobile Broadband cards for the laptops, so if the Wi-Fi network goes down, a number of laptops can connect to the Sprint 3G network until Wi-Fi service is restored.

KU Hospital has been using wireless technology to offer various programs such as flu shots for the elderly at its community clinics. By using the Sprint 3G network, the hospital has bypassed local telephone company negotiations to set up T1 lines. For its smaller community clinics that have landline systems, the wireless network over an encrypted tunnel serves as a seamless backup.

Replacing T1 lines with wireless has also reduced the amount of hardware and maintenance and their associated cost, as well as reduced monthly charges for connection. By using wireless data cards, clinicians at the clinics can enter data directly into the EMR, which eliminates transcription costs.

While KU Hospital has reaped cost savings and clinical benefits from the use of the Sprint 3G network, the hospital has been planning on using the Sprint 4G network since May 2010. KU Hospital is anticipating that the 4G network will enable it to go all wireless at some of its clinics, rather than use T1 lines, according to Nix. Overall, Sprint Custom Network Solutions have helped improve KU Hospital’s ability to deliver better outcomes for its patients and better satisfaction for clinicians and patients, which is fulfilling its promise of providing patient-centric care.
Vanderbilt University Medical Center: Wireless Communication Improves Patient Care

Clinical Challenge: Connecting Physicians to Patient Data
VUMC developed its own electronic medical record (EMR) system and informatics shop with a focus on data mining and decision support. In 2002, VUMC deployed StarPanel, its patient population management tool, which was part of VUMC’s transition to a paperless environment. With StarPanel being accessible via a smartphone, connectivity became critical. Physicians needed real-time access to pertinent medical information from patient charts to deliver safe, high-quality care, according to Jim Jirjis, MD, MBA, Chief Medical Information Officer.

Collaborating with Sprint, VUMC developed a version of its EMR to be accessible with a smartphone via a wireless network. This early effort was the beginning of VUMC physicians being able to access real-time data for clinical decision making. In March 2009, VUMC implemented Sprint Custom Network Solutions, which support multiple communication applications and devices, across its campus. Today, between 90 percent and 95 percent of clinicians’ patient work and e-mail is done on a tablet, according to Jirjis. VUMC has conducted user surveys and has seen “tremendous” satisfaction with messaging and connectivity, he said.

Making Physical Location Irrelevant in the Delivery of Care
Traditionally, the care environment is the office. Now the ability to access patient data via wireless technology has busted down those office walls. “Connectivity has made physical location irrelevant,” Jirjis said. Nurses can page or message physicians no matter where they are – on or off the campus. “I can – from virtually anywhere – deliver excellent care,” he said. “I couldn’t do that before. It (connectivity) gives you choices and it allows you to deliver safer, more effective, efficient care from any environment.”

For more information visit: www.healthcareitnews.com/wireless-in-healthcare
Among many examples of how wireless technology can improve patient care, Jirjis mentions how while traveling one Thanksgiving holiday, he received a message on his Sprint smartphone that a patient’s CT scan revealed a mass in the patient’s kidney. Through his wireless device, Jirjis accessed and reviewed his patient’s chart, called and messaged his patient via the patient portal and called the urologist, who was also on the road. “Together we developed a plan of care for the patient – all of us in remote locations,” he said. The patient entered the holiday with peace of mind, having a complete plan of care and an understanding of what was happening, he said. Jirjis messaged the nurse to schedule a follow-up visit and other tests. “It didn’t matter if I was in the office or not,” he said. “I could get stuff done right away, avoid delays, get the patient’s cancer therapy on track immediately.”

The Future of Wireless at VUMC

In a Healthcare IT News survey conducted in June/July 2010 on wireless technology in the healthcare industry, nearly 60 percent of respondents identified wireless as a core technology of their IT infrastructure. VUMC envisions its wireless environment to be “seamless and ubiquitous,” with connectivity being something that people take for granted and only notice when it’s not there, Jirjis said. Whether physicians are in different facilities, running through the hospital or in the parking lot – connectivity must be responsive, reliable, redundant and fast. “Speed is something they (physicians) want,” he said. “3G and 4G are really important. People are demanding more and more.”

Vanderbilt’s position is that wireless needs to cover the entire campus and not just certain areas. With physical location becoming less important, having an established, fast and highly reliable network outside of VUMC’s walls is also very important in order to meet its patient care commitments.

Nearly 42 percent of respondents to the Healthcare IT News survey said video consultation between care providers in distant locations will be the greatest value of video technology in healthcare. Nearly 22 percent cited patient monitoring and nearly 16 percent said virtual doctor visits would bring the greatest value to healthcare. “That’s the kind of place where we want to go, where we’re extending the care into the home,” Jirjis said. “The world of medicine is changing, and we’re going to be leveraging a lot more real-time, asynchronous video and information transfer.”

Given the aging population, there’s an urgency to extend care into the home. “What we’re finding with the geriatric population growing (is that) ‘aging in place’ is a key tenet of future healthcare,” Jirjis said. While telemedicine applications will enable geriatric patients to “age in place,” highly reliable, redundant high-speed Internet connectivity and mobile devices will enable clinicians to use all the advanced features telemedicine offers.

For more information visit: www.healthcareitnews.com/wireless-in-healthcare
Visiting Nurse Service of New York: Handheld Communication Improves Type 1 Diabetes Care

Equipping Underprivileged Kids to Improve Type 1 Diabetes Care

While Type 2 diabetes gets the bulk of the headlines in the United States, Type 1 diabetes (previously known as juvenile diabetes) is an inherited form of the disease that will eventually cause a person’s body to stop insulin production, usually before they reach the age of 20. Effectively managing the disease requires a high level of patient self-care that includes regularly monitoring blood sugar levels and carbohydrate intake, and daily insulin injections.

At VNSNY, the agency knows that kids with Type 1 diabetes in areas of the city where socio-economic conditions are poor often do a poor job of managing their disease. In order to develop new and more effective ways of helping teens manage their disease, VNSNY has partnered with Manhattan’s Naomi Berrie Diabetes Center at Columbia University Medical Center and The Diabetes Center at Montefiore Medical Center in the Bronx for a pilot program aimed at improving the health of teens in Upper Manhattan and the Bronx.

Launched in February, the intensive two-year educational and outreach program includes home visits by a Certified Diabetes Educator and a social worker with expertise in diabetes education and treatment. This program is further enhanced by the deployment of BlackBerry® smartphones from Sprint that allow the clinicians to stay in touch with the kids in the program via texting and a diabetes chat group. The phone also provides glucose level recordings and other diabetes data as entered by the kids into the DiabetesManager® application from Welldoc®, as well as educational applications loaded on the phone itself.

“What we have found is that kids who are really struggling with how to manage their diabetes on a day-to-day basis won’t manage their diabetes for a long period of time,” said Joann Ahrens, Manager of Special Projects.
with VNSNY. “What we are doing is trying to provide individualized education and use motivational interviewing as a way to get these kids to take interest in their care and take it upon themselves to make the changes they need in their life to better manage their diabetes.”

Using smartphones is integral in connecting to the teens. VNSNY’s program consists of a series of six visits to the teen’s home to get an idea of the living conditions and obstacles that may hinder consistent diabetes self-care. The clinicians often uncover complex psychosocial issues that the teens and families are dealing with, problems that need to be addressed or at least identified, before the family is ready to take on diabetes. According to Ahrens, the schedules of these teens are often very complex, due to very long travel times to school, or the work schedules of their parents or guardians.

Once the home visits begin, the clinicians on each case focus on both collecting the information needed to create an individualized care program, as well as getting the kids to open up and talk about their life and the disease.

“Our clinicians try to engage the teenager and gain their trust so they can talk openly with them,” noted Ahrens. “Once the kids start talking, we can ask them questions to really find out what is happening.”

And once that bond is formed, VNSNY has discovered many teenagers will stay in frequent contact with their clinician between home visits via text messaging to let them know about events in their life that may affect their self-treatment. “Kids these days really like to text,” said Ahrens, “They will text about things that are related to their diabetes and also things that are not.” In instances when they do not send a text related to their diabetes or something that may impact their self-care, VNSNY caregivers can provide information and support, in real time, to help teens stay on track with their treatment.

Collecting Data on the BlackBerry Smartphone
An important element to managing diabetes is regularly

The program is enhanced by the deployment of BlackBerry® smartphones from Sprint allowing clinicians to stay in touch with kids in the program via texting and a diabetes chat group.

“When we first started the program we hadn’t provided the phones to the kids yet and it was very hard just getting in touch with them to schedule our visits,” Ahrens said. “On a very practical level, once the kids got these phones, it was much easier to get in touch with them to schedule the visits.”

For more information visit:
www.healthcareitnews.com/wireless-in-healthcare
monitoring blood glucose levels so that the kids know how much insulin to take. In many cases, the kids are not taking their insulin regularly and/or are just guessing at how much to take. The most effective measurement is a diabetic’s A1c level, which is a clinical indicator of blood glucose level over time. This information, along with information about diet and the regularity of insulin injections is invaluable in helping caregivers develop an effective treatment plan.

To help with its collection of data from the teens, the agency turned to Welldoc, which has built a mobile application called the DiabetesManager “VNSNY Coach” System that it loaded onto the deployed BlackBerry smartphones. Originally developed for Type 2 diabetes, VNSNY worked with Welldoc to adapt the application to its specific needs for the program.

“We are trying to get them to use this as a learning tool, so they can understand their (A1c), how their actions impact their numbers – and how they feel physically,” said Ahrens. When the kids enter information, it is uploaded via the Welldoc application to each teen’s case file. Accessing this information via a Web portal, VNSNY clinicians can encourage the kids to continue using the Welldoc application. The kids can enter information about their diet or how they felt on a certain day. Using this information, VNSNY clinicians can help them learn how all the different factors work together to affect them in the short-term (how they feel now) and the long-term (to prevent complications over time). They can also use this data to explain why a particular teen’s A1c level improved, or even why it may not have improved.

Ahrens said getting the kids to enter the data has been a bit of a struggle, but that the agency is in the process of adding an incentive program to boost participation. For example, if a teen regularly enters information into the DiabetesManager System, they can qualify for things like a free song download.

While the program’s ultimate goal is to help the teens lower their A1c levels and avoid hospitalization and ER visits due to neglecting their own care, VNSNY knows that these are not the only measures of whether a teen has improved their management of the disease. To help get a more comprehensive picture of the kind of lifestyle changes needed for effective diabetes management, the agency also conducts regular psychosocial surveys of the teens to assess such things as self-care behavior, diabetes knowledge and the role of family in diabetes care.

“When we had paper surveys, the kids didn’t want to fill them out because they looked like a test,” Ahrens said. To overcome this hurdle, VNSNY developed surveys that could be pushed out to their smartphone, and that has resulted in a jump in the number of surveys the agency gets back from the kids. “Almost all of them have filled them out on the phone, even the girls who didn’t want to be in the program. I guess that it is an easier and more anonymous and fun way to do it,” she said.

The information from these surveys is a vital tool for the agency to judge how effectively the program is reaching kids and getting them to change their behaviors in ways that will positively affect their diabetes management.

“They A1c might not improve greatly right away, but we can also look for corresponding changes to maybe their attitudes to care and what they are doing each day,” Ahrens noted. “That is another way we can see if we are helping and how we are helping.”

While it will be some time before VNSNY can objectively assess what impact the program is having on the overall health of the teens in this pilot program, Ahrens said the information that is just now beginning to come in indicates it is a success. VNSNY is currently looking to provide even more teens with Sprint BlackBerry smartphones as an aid to better diabetes care.
MEDLAB: Leveraging GPS to Improve Sample Collection and Logistics

Coordinating 500 People Collecting and Delivering Samples in the Field

The business challenge for MEDLAB is how to best deploy its employees in the field, who now number roughly 500 phlebotomists spread across five states. As a part of their job, it is not unusual for phlebotomists to visit three or more healthcare facilities in a single day drawing blood, after which they then need to deliver the samples to any one of the company’s roughly dozen testing facilities. The result is a very large number of employees and vehicles moving between client sites and labs, making it vital to the business to have the most efficient logistics and employee dispatch for a more effective delivery of service.

To achieve improved logistics in its sample collection activities, MEDLAB deployed Nextel® wireless devices to all of its phlebotomists. Using GPS tracking software in conjunction with the mobile device and enabled by the Nextel National Network, the company is able to direct its employees, in real time, to the closest assignment, enabling them to see more clients in a single day.

“Right now the dispatchers have on their screen -- depending on the areas they are covering -- each of the phlebotomists through the GPS wireless tracking in their device,” said Robert Dowd, chief technology officer for MEDLAB. “That is telling them where everyone is in real time and they use this information, along with the phlebotomy supervisor, to send a message to each phlebotomist saying where their next stop is.”

The GPS tracking has also greatly improved the dispatch of phlebotomists for the company’s STAT service, which is when a client has a critical need for an expedited blood test at their facility.

“In the past, taking care of STATs was pretty intuitive for the dispatcher,” Dowd noted. “They would have an idea of who might be the closest person to take care of it, but they wouldn’t know for sure, and sometimes that would require us to send a courier to handle that, which isn’t very cost-effective.”

Now, using the GPS tool, the company can locate the phlebotomist nearest the client site and reroute them for the STAT test. Being able to perform this service as quickly as possible is important to the company in order to provide excellent patient care.
In addition to being able to track employee movements, the company is also keeping a record of which facilities have been visited on a particular day and how long the phlebotomist was on site. The phlebotomists are also able to log the number of blood draws they do in each facility to create a record of work, which aids in more effective billing.

“This information has also been used, occasionally, regarding service issues,” said Dowd. “Using the GPS tool, we can verify that the facility was visited on a timely basis.” If a client maintains they didn’t receive a visit, or any blood draws, on a particular day, MEDLAB can easily pull up the documentation on when and what the phlebotomist did via the data collected both by the handheld device and the GPS records at the handful of logistics centers operated by the company.

**Ramping Up to Increased Logistics Automation**

With so many people in the field and management of employees becoming increasingly more complex as the company grows, MEDLAB is currently developing proprietary software tools to further leverage the GPS tracking via the wireless devices. This will allow the company to deploy solutions similar to those used in the trucking logistics industry.

“We are basically going to build the phlebotomists’ routes ahead of time, overnight, and we will send them to their handhelds with the entire day’s schedule and routes,” said Dowd.

In order to do this, MEDLAB will not only create the shortest routes through mapping features incorporated into the software, but will also collect other data about average draw times for all its phlebotomists to maximize their visits to each healthcare facility.

“Using the handheld devices and GPS in conjunction with our software is going to be able to give us a better look into what we think the average route is going to be for that phlebotomist,” Dowd said. “With Sprint’s wireless network allowing us to track them, we can capture [information] when they arrive at each location. It is then going to give us actuals for average time at a facility. This way, if we know that Mary does a draw in five minutes, Fred averages seven minutes and we also have someone new who we should allow ten minutes for, that information allows us to build their schedules and routes accordingly.”

MEDLAB doesn’t stop there, as it will also monitor the progress of its phlebotomists during the day. Should anyone get behind schedule, MEDLAB will be able to locate the next nearest worker and reroute them in real time in order to ensure the work gets done. The company is also building in weather factors for its route creation, so, if it is snowing or raining, the day’s work schedule can be adjusted to allow for more travel time between client sites.

This capability is expected to launch in one geographic area before the end of the year, Dowd added, and if it performs as expected, the company will launch the enhanced capability to all of its regions in a two- to three-month rollout period.

Dowd is also quick to add that being able to build such a robust logistics management system would not be possible without Sprint and the confidence he has in the company’s ability to deliver the services MEDLAB needs.

“Sprint is innovative and has been very responsive to us,” he said. “For us it was important that they are very active in our industry and along with that very knowledgeable about software and applications for the healthcare space. Because our operations are spread across five different states, it was important for us to work with Sprint since they have very good coverage.”

Robert Dowd, chief technology officer for MEDLAB
About Sprint

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