In Brief

The advance of the Patient Protection and Affordable Care Act (ACA) and impending shortages of health care providers to serve the ever-increasing diabetes population have led to an increased need to do more with less in the field of health care. New and emerging technologies are making telehealth more accessible, more desirable, and thus more acceptable as a way to interact with patients in their homes or rural communities. Although some issues are yet to be resolved, technological innovations, evidence of the positive effect of diabetes telehealth on clinical and quality-of-life outcomes, and the strong emphasis on telehealth in the ACA make such services worthy of consideration.

Telehealth: Aiding Navigation Through the Perfect Storm of Diabetes Care in the Era of Health Care Reform

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Telehealth, defined as "the use of digital technologies to deliver medical care, health education, and public health services, by connecting multiple users in separate locations,"[1] is expected to grow sixfold by 2017.[2] Video chats between health care professionals and patients, e-mail exchanges, and other electronic interactions are not new, nor are home monitoring devices and software programs. We use technology in a wide variety of ways every day. So why all the buzz about telehealth, and why the expected explosion in its use? We could begin with the Patient Protection and Affordable Care Act (ACA). But the story begins before that.

HITECH Act

In 2001, the Institute of Medicine report Crossing the Quality Chasm[3] highlighted health information technology as a means of supporting care management and improving quality of care. This provided the basis for the enactment of the HITECH (Health Information Technology for Economic and Clinical Health) Act, which was intended to promote the adoption and meaningful use of health information technology. HITECH was part of the American Recovery and Reinvestment Act of 2009,[4] otherwise known as the stimulus package.

Under HITECH, the U.S. Department of Health and Human Services is spending $25.9 billion to promote and expand the adoption of health information technology.[5] The goal of HITECH is to enable improvements in health care quality, increase affordability, and improve health care outcomes for all Americans. At the time of its passage, it was considered to be perhaps the most important piece of health care legislation to be enacted in the past 20–30 years and the foundation for health care reform. When the ACA was signed into law, HITECH was included and endorsed as a key component to achieving the "triple aim":[6] to provide the best quality of care at the best price with the best patient experience.

Many think of electronic health records (EHRs) when they think of HITECH. In 2001, ~ 18% of physician practices were using EHRs. In 2011, that percentage had increased to ~ 57% up from an estimated 51% in 2010. Thus, HITECH appears to have had an impact on the uptake of EHRs.[7]

But HITECH is not just about the incorporation of EHRs; it is also about using EHRs in a meaningful way through better and more standardized methods of storing, analyzing, and sharing health information. This is referred to as "meaningful use" and is being rolled out in three phases as outlined in Table 1.[8,9]

Meaningful use is both encouraging (primarily through financial incentives) and, to some degree, requiring greater use of technology to better engage patients in self-care, much of which is happening via "patient portals." Most established portals to date have provided patients only limited data in the form of lab-

Table 1. Three Phases of EHR Meaningful Use Measures[8,9]

Phase	Intent	Roll-Out Date
1	• To provide for standardized data capturing and sharing • To use data to track key clinical conditions • To communicate data and information for care coordination • To report clinical quality measures and public health information • To provide patients with an electronic copy of their health information • To use information to engage patients and their families in their care	2011–2012
2	• To provide advanced clinical processes such as the capability for patients to view their heath information online and offer more patient-controlled data • To allow for downloading and transmitting information about hospital admissions/discharges to patients' primary care providers • To use secure electronic messaging to communicate with patients on relevant health information • To address increased requirements for e-prescribing and incorporation of laboratory results • To enable the electronic transmission of patient care summaries across multiple settings	Slated for 2014
3	• To use available data and technology to improve quality, safety, and efficiency, leading to improved health outcomes • To provide patient access to self-management tools • To provide access to comprehensive patient data through a patient-centered health information exchange • To improve population health	Slated for 2016

oratory and test results, medication lists, and clinic visit or hospitalization summaries. However, patients' access to other information, such as provider notes, is also increasing, albeit at a much slower pace.[8–10]

Patient-Centered Medical Homes

Another emerging innovation is the patient-centered medical home (PCMH). The PCMH is a model of primary care that emphasizes care coordination, communication, and collaboration with patients to create an individualized care team and care plan, ensure continuity of care, and maintain focus on patients' needs.

As care coordination efforts increase through the establishment of PCMHs, care teams are required to ask patients their preferences for communication (e.g., phone, text, or e-mail). This has also contributed to an increase in the use of technology. In a survey of providers conducted in 2010,[11] 67% reported using e-mail and secure messaging to communicate with their patients, and 53% used a patient portal or website. The percentages were significantly lower for other types of communication, including instant messaging (20%), social media (22%), and video conferencing (25%).

Hospital Readmissions Reduction Program

The use of technology has also expanded as part of the ACA's effort to reduce the total cost of care through the Readmissions Reduction Program.[12] This initiative requires the Centers for Medicare and Medicaid Services (CMS) to reduce payments to hospitals that have excess readmissions within 30 days of a previous admission that are related to the previous admission.

This requirement became effective for discharges starting 1 October 2012 and has resulted in greater efforts to follow-up with patients after they are discharged from the hospital to prevent or address relapses, infections, or other related conditions that could result in a readmission within 30 days. Technologies employed for follow-up range from telephone calls to home monitoring devices that provide web-based feedback to patients' care team to supplement any in-person interactions.

Diabetes Epidemic and Provider Shortages

Unless prevention efforts become more successful, an estimated one in three Americans will have diabetes by 2050.[13] In addition, according to the Congressional Budget Office, it is estimated that 30 million additional consumers will enter the health care system in 2014[14] as a result of ACA implementation.

At the same time, the Association of American Medical Colleges has predicted that the United States will face a shortage of > 90,000 doctors in 10 years and that there will be a shortfall of 45,000 primary care physicians by 2020.[15] Likewise, the American Association of Colleges of Nursing has projected a shortage of 260,000 registered nurses in the United States by 2025.[16]

Even within the field of diabetes, there are too few endocrinologists.[17] The National Certification Board of Diabetes Educators reports that there were 17,877 certified diabetes educators (CDEs) as of January 2013.[18] This modest increase over 2010, when there were 16,604 CDEs, is not nearly enough to serve the nearly 100 million people with diabetes or prediabetes in the United States.

The ACA does include several provisions directly addressing gaps in diabetes prevention, screening, care, and treatment. The Catalyst to Better Diabetes Care Act of 2009,[19] which is included in the ACA, directs the U.S. Department of Health and Human Services and the Centers for Disease Control and Prevention to enhance diabetes surveillance and quality standards across the country. In addition, diabetes is specifically targeted in provisions regarding private health insurance wellness and prevention programs (Section 2717), Medicaid health homes for enrollees with chronic conditions (Section

2703), the Medicaid Incentives to Prevent Chronic Disease Program (Section 4108), and the Medicare Independence at Home demonstration program (Section 3024).

Despite these provisions, however, the bottom line is that the health care industry as a whole, and the diabetes care sector specifically, are struggling to do more with less while facing new regulations imposed by the ACA. We are in the midst of a "perfect storm," in which epidemic diabetes rates, provider shortages, and regulatory requirements are converging. Fortunately, expansion in the use of telehealth technologies could greatly improve our ability to navigate in these troubled waters.

Telehealth Explained

So what exactly is telehealth and how can it help diabetes care? The American Telemedicine Association (ATA) has stated that "telemedicine" and "telehealth" historically have been considered interchangeable terms encompassing numerous forms of remote health care. ATA's website[20] further states that, "Patient consultations via video conferencing, transmission of still images, e-health including patient portals, remote monitoring of vital signs, continuing medical education, consumer-focused wireless applications and nursing call centers, among other applications, are all considered part of telemedicine and telehealth."

Likewise, "telehealth" is the term used in the CMS ruling, and, according to its website,[21] "Telehealth (or telemonitoring) is the use of telecommunications and information technology to provide access to health assessment, diagnosis, intervention, consultation, supervision and information across distances."

Diabetes and Telehealth

The efficacy of telehealth in managing and preventing diabetes has been demonstrated previously.[22–27] Furthermore, the National Standards for Diabetes Self-Management Education and Support[28] acknowledge the value of technology such as web-based programs, text messaging, or automated phone calls as ways to augment diabetes self-management education (DSME) programs, provide ongoing support, and increase access to patients in remote, underserved areas. Offering a variety of modes of delivery, ongoing communication, and support allows DSME programs to better individualize their services to patients' needs and preferences and thus increase patients' engagement and satisfaction.

Reimbursement for Telehealth Services

Telehealth is central to the intent of the ACA, and innovation is both encouraged and funded through many federal and state programs. However, reimbursement and requirements vary from state to state for both Medicaid and the private sector. As of this writing, 19 states (Arizona, California, Colorado, Georgia, Hawaii, Kentucky, Louisiana, Maine, Maryland, Michigan, Mississippi, Montana, New Hampshire, New Mexico, Oklahoma, Oregon, Texas, Vermont, and Virginia) have some laws in place to support the adoption of telehealth programs. Many of these apply only to Medicaid patients or patients in rural areas. An additional 10 states (Connecticut, Florida, Illinois, Massachusetts, Missouri, New York, Pennsylvania, South Carolina, Tennessee, and Washington) and the District of Columbia have proposed or pending legislation. Providers are encouraged to research the availability of telehealth coverage by Medicaid and private payers in their own states.

For Medicare patients, CMS[29] divides telehealth services into three categories, only the first of which is considered reimbursable. The three categories are:

1. Remote, face-to-face services via live video conferencing
2. Non–face-to-face services conducted through live video conferencing or via "store and forward" telecommunication services, through which information is recorded and sent to other sites for use
3. Home telehealth services

Remote, face-to-face services via live video conferencing

Reimbursement for these services has been legislated in Congress and is limited by the type of service delivered, the geographical location of the facility where the patient is at the time services are delivered, the type of provider, and the type of institution from which the provider is delivering the service.

The service must be provided to eligible Medicare beneficiaries in eligible facilities (also referred to as "originating sites") located in federally designated rural Health Professional Shortage Areas outside of Metropolitan Statistical Areas.[30] Qualifying originating sites include offices of physicians or other eligible practitioners, hospitals, rural health clinics, federally qualified health centers, skilled nursing facilities, hospital-based dialysis centers, and community health centers. Originating sites can bill CMS for facility fees. There is no limitation on the physical location of the health professionals delivering the services (also called the "referring sites").

There is a long list of eligible services, including consultations, office visits, and individual psychotherapy sessions delivered via a telecommunications system. The list includes DSME and medical nutrition therapy (MNT), as well as other services relevant to people with diabetes.

Billing codes for these services are the same as those used for similar in-person services, although the telehealth modifier "GT" must be added (e.g., G0108 GT would be the code for individual diabetes outpatient self-management training services delivered via a telecommunications system). Reimbursement amounts are the same as for in-person visits.[31] Patients must be present at the time the two-way audio and video service is delivered to allow for real-time interaction between providers and patients. CMS does require that 1 hour of DSME be delivered in person to provide an opportunity to review patient skills such as insulin injection technique.[31]

Telehealth services must be delivered by eligible providers, including physicians, nurse practitioners, physician assistants, nurse midwives, clinical nurse specialists, clinical psychologists, clinical social workers, and registered dietitians. Registered nurses and pharmacists currently are not considered eligible providers for DSME delivered via telehealth. However, because there is no limitation on the location of the facility from which providers deliver services, telehealth does offer an opportunity to increase access to diabetes services for those otherwise underserved.

Non–face-to-face services conducted through live video conferencing or "store and forward" telecommunication services

CMS does not currently reimburse for these services. However, such services do provide opportunities to increase efficiency, improve clinical outcomes, and improve patient satisfaction, all of which are part of the ACA triple aim. These services involve using technology to record data and information and transferring it from one site to another for use.

Most people think of radiology when they think of "store-and-forward" data, but this type of system could also be used for self-monitoring of blood glucose (SMBG) data, continuous glucose monitoring data, and even pre-recorded diabetes education sessions that, although not providing the interactive component required for reimbursement, do allow patients to receive information at their convenience, thus improving their access and increasing their satisfaction.

Most health care facilities have a website that offers patient education. However, greater emphasis is now being placed on patients' ability to access their EHRs via a patient portal, some of which allow patients to upload information such as SMBG data and to communicate with their health care providers. Although some facilities have been using patient portals for years, the ACA and HITECH's emphasis on meaningful use are driving expansion in the adoption of such systems. Experience with such systems has shown that patients not only access their records, but also want the ability to share their information with other members of their care team. Despite providers' fears that the use of patient portals would add time to each visit (perhaps, one could speculate, because it could increase time spent answering patients' questions), few doctors actually reported longer visits.[8,32]

Similar to patient portals, other technologies such as smartphone applications (or, "apps") and web-based programs, which are not reimbursed by CMS, do have value in terms of patient engagement. Such programs and apps allow patients to use technology to track their blood glucose, food intake, and physical activity and to connect with other people with diabetes.

Today's patients are truly mobile. According to a 2012 report by the Pew Research Center's Internet and American Life Project,[33] one in three smartphone users have used their phone to seek health information, and that number has doubled since 2010. According to the Ruder Finn 2012 report on mobile health computing (mHealth),[34] one in five smartphone users have a health-related app on their phone. As of October 2012, there were > 40,000 mobile health apps available for smartphones and tablets,[34] and analysts expect the mHealth market to grow 10-fold by 2018.[35]

Understandably, there is a difference in mHealth usage among different age-groups; 65% of people between the ages of 15 and 24 years are likely to use mHealth apps, compared to 31% of those > 55 years of age. Fifty-three percent of people with a chronic condition are likely to use mHealth applications regardless of their age, and 59% of people with children are likely to use such apps.[34]

Clearly, understanding the population they serve can help clinicians determine the best telehealth approaches to meet their patients' needs. Asking patients their preferred method of communicating will help to ensure that appropriate approaches are employed.

Home telehealth services

The third category of telehealth services defined by CMS includes home health services provided via telecommunications. Although CMS does not reimburse for these services, it does recognize that many home health agencies will use telehealth systems to improve efficiencies or quality of care.[36]

The spread of high-speed, wireless Internet connectivity has transformed the home monitoring market. Blood glucose data, blood pressure data, and daily weight measurements are among the many types of data that can be transmitted via this technology. Some systems offer a feature allowing for alerts to be delivered to patients, caregivers, and providers.

Whereas in the past such data were transmitted in a store-and-forward manner, they can now be sent in real time, allowing patients' care providers to analyze their data and determine whether there is a need for intervention. Such timely determinations, all of which can be made remotely, can improve efficiencies in the allocation of limited resources and ultimately prevent unnecessary emergency department visits and hospitalizations.

Summary

Telehealth is a key component of the ACA, and its use has been expanding rapidly. The advantages of telehealth are many, and its applications are seemingly endless.

Today's mobile patients are used to self-service. They bank, shop, and get their news online, and they communicate online through e-mail, text messaging, and social networks. They expect to be able to access health information online, and they want to reach their health care providers via e-mail or even text instead of phone or mail. Although some worry that telehealth will add time and complexity to already overburdened practices, these tools actually have been shown to increase provider productivity and improve patient satisfaction.

Insurance reimbursement for DSME, MNT, and other diabetes-related services delivered via telehealth can help to improve access for rural and underserved patients. But even telehealth services not yet covered by CMS or private insurance have been shown to improve clinical outcomes such as A1C and blood pressure, increase efficiencies through timely alerts, reduce readmissions, reduce unnecessary emergency department visits, and reduce preventable hospitalizations.[22–27]

Your patients are mobile. Are you?

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