Chapter 8
The Dream of a National Health Information Technology Infrastructure

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The ACA offers new, unprecedented opportunities to rethink the way health care is organized, delivered, and paid for. New payment models provided for within the Act, for example, are already helping to shift reimbursement approaches from fee for service, which incentivizes higher volume and intensity of care, to those that reward value.

Approaches such as accountable care organizations (ACOs), bundled payments, and medical homes seek to control the cost of health care by incentivizing more coordinated, efficient care that maintains patient health and avoids unnecessary expenditures.

However, modernizing the health sector requires the deployment of a more advanced information technology infrastructure. While other sectors of the economy have leveraged technology to drive dramatic improvements in productivity and consumer value for many years, health care has historically been slow to the party. Until recently, for example, most physicians relied on handwritten notes stored in file folders to maintain their patient records.

Importantly, the ACA was preceded by the Health Information Technology for Economic and Clinical Health or HITECH act. Designed to stimulate the adoption of health information technology (IT), HITECH included significant incentives for eligible hospitals and providers, along with a variety of programs to advance the field.

The activities of the Office of the National Coordinator for Health Information Technology (ONC), which was established within the US Department of Health and Human Services in 2004, ultimately seek to support the three-part aim of better health care, better health, and lower per capita costs. The ONC precedes the ACA, but the office and the legislation are natural partners with the same goals.

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It's the belief of ONC and the Centers for Medicare and Medicaid Services (CMS) that echnology (and HITECH) forms the foundation for the new payment and delivery models we need to achieve the three-part aim, and the ACA has many provisions that express the same belief.

So what are the why, what, and how of HITECH? This Act helps to offset the cost of adoption of electronic health records. It enables providers to securely and efficiently exchange patient health information to ensure that providers have the right information at the right time to offer their patients the right care. It gives consumers tools to access their health information so that they can better manage their own health. And it's foundational to building a truly twenty-first century healthcare system where we pay for the right care, not just more care.

The basic building block for all of this is the concept of "Meaningful Use" of health information technology. As the ONC defines it, Meaningful Use is using certified electronic health record (EHR) technology to:

- Improve quality, safety, and efficiency and reduce health disparities
- Engage patients and family
- Improve care coordination and population and public health
- Maintain privacy and security of patient health information

Meaningful Use is driving the IT industry in ways that haven't happened before. And it is simultaneously incenting providers to adopt systems that will help achieve the triple-aim goals.

To increase Meaningful Use, the ONC is promoting standards and interoperability. It's stimulating innovation. And, in partnership with CMS, it's helping providers adopt electronic health records. It really is a national conversation that includes leading IT experts, but also clinicians from across the country in both rural and urban settings.

Stage 1 of Meaningful Use was about utilizing technology to gather information and jumpstarting the transition from paper to digits. Stage 2 is focused on care coordination, information exchange and operability, and patient access to data.

Ultimately stage 3 will bring health IT together with the concept of accountable care and models for improving care coordination. The point of all this is not the technology but, using technology to gather information, improve access to information for both providers and patients, and fundamentally transform care for the better.

The promise of electronic health records has been around for quite some time. But there has been a market failure that precluded the rapid adoption of electronic health records where the benefits of technology accrue to patients and those who pay for care but not always to those hospitals and physician practices who were expected to purchase the technology.

In the past few years, the adoption of electronic health records has been speeding up, thanks in large part to pilot projects and programs funded by CMS and ONC.

The momentum is definitely accelerating. The ONC goal for calendar 2012 was to have 100,000 eligible providers engaged in Meaningful Use of health IT. In June 2012 the number passed 110,000. Likewise when the ONC was started 2004, fewer than 1 % of physicians were e-prescribing. In 2012 over 70 % of physicians were e-prescribing. And most of that growth has occurred since 2008.

HITECH included funding for the ONC's Beacon Community Program. This "innovation fund" has become one of the country's most important means for testing health IT initiatives and determining which ones should be scaled up across the country. The program represents about $260 million, and the 17 Beacon Communities, each of which is receiving $12 million to $16 million over three years, represent regions across the country that had previously made significant progress in the adoption of health IT.

The Beacon Community Program goals include building and strengthening a health information technology infrastructure; improving health outcomes, care quality, and cost efficiencies; and spearheading innovations to achieve better health and health care. These Beacon Communities are microcosms of the rest of America, and, as such, the lessons that are learned from them will play a key role in healthcare transformation.

They range from Maine to Hawaii and from healthcare markets dominated by big, integrated providers like Intermountain Health Care in Utah, the Mayo Clinic in the upper Midwest, and Geisinger in central Pennsylvania to disaggregated markets like eastern Washington State and northern Idaho. There are also Beacon Communities in large and midsized cities, including San Diego, Indianapolis, Detroit, Tulsa, and Cincinnati. It's really a diverse group with a diverse set of strategies.

Each Beacon Community has a portfolio of a dozen or so health IT projects, all trying to meet the triple aim of better health care, better health, and reduced cost.

The projects sort into three categories. First, build and strengthen health IT infrastructure and exchange capabilities. Second, improve cost, quality, and population health. Third, test innovative approaches to performance measurement, technology integration, and care delivery.

The Beacon Communities are healthcare markets that have already made important strides in health IT. The program is not about the federal government imposing a vision from outside, but about finding places where the addition of federal funds can be a difference maker both within those regional healthcare markets and across the country, as we help identify, develop, and spread best practices.

For example, one of the hotbeds for health IT going back over 30 years is Indianapolis, and specifically the Regenstrief Institute at Indiana University School of Medicine. Well known in Indiana, Sam Regenstrief (1909–1988) was one of America's least known but most successful entrepreneurs, the front-loading dishwasher king. He left the bulk of his fortune to medical research, and in the early 1980s the Regenstrief Institute was already envisioning the potential of electronic medical records. From this work, the community of Indianapolis helped lead the way in the electronic exchange of health information across the region through the Indiana Health Information Exchange.

The bottom line is that $12 million to $16 million over three years is a lot of money, but it's not a lot of money given the scope of the problems the Beacon Communities are trying to address. That is why we chose healthcare markets where there was already significant local investment and where competing health plans, hospitals, and physician groups were already coming together and establishing areas of collaboration in data sharing and analytics.

Here is a snapshot of the sorts of projects that Beacon Communities are doing in the first category I mentioned, building and strengthening health IT infrastructure and exchange capabilities.

One area in which several Beacon Communities are experimenting is remote patient monitoring. The concept makes perfect sense. But the literature is mixed. We don't know exactly why that is. And so Beacons are doing randomized trials on remote patient monitoring, for example.

Several of the Beacon Communities are deploying novel applications of the Direct Project, a simple, secure, scalable, standard-based way for participants to send authenticated, encrypted health information directly to known, trusted recipients over the Internet.

Sometimes the effort to build and strengthen means expanding something that is already working well. Indianapolis's Quality Health First program aggregates payer and clinical data and produces consistent performance measures that providers use to improve and health plans use to reward through Beacon that went from eight counties to statewide.

The second category of projects is improvement with regard to cost, quality, and population health. An important aspect of these and other Beacon Community projects is that they are required to produce performance measures, and they are accordingly making some very astute investments in structured measurement. This is producing great learning that ONC can share across the country.

For example, in Cincinnati, 30-day hospital readmission rates have turned in the right direction. And at the Keystone Beacon in central Pennsylvania, Geisinger is significantly lowering all-cause 30-day hospital readmission rates for patients with chronic heart or pulmonary problems.

That brings me to the third category of Beacon projects, innovation in performance measurement, technology integration, and care delivery.

Through a Beacon program in San Diego, EMTs are wirelessly transmitting 12-lead EKG data and other patient data from the field to hospital emergency rooms. Why is that important? You want the hospital cardiac team ready for when the EMTs roll you in with a heart attack. At the same time, hospitals don't want to prep resources and personnel for a heart attack that isn't really a heart attack. It costs about $10,000–$15,000 to get the cardiac catheterization lab and its team ready to treat a patient. In the first six months of this Beacon program, there's been a significant decrease in false positive activation of cardiac cath labs.

It also has improved right care when someone is having a heart attack, because the team at the hospital has advance information on the patient while EMS is rushing to them. So the team can start taking appropriate action as soon as the patient arrives. Recently a retired Navy admiral had a heart event as he was about to board an airplane in San Diego. Because the EMTs on the scene were able to send his data wirelessly to the hospital, he received exactly the treatment he needed as soon as he got to the hospital. He's now a huge spokesman for this particular project.

Cincinnati provides another good example of the power of health information exchange. Most private care doctors don't know when their patients show up in a hospital's emergency department. That's a problem. And so what do they do in

Cincinnati now? Irrespective of which hospital physicians are affiliated with, they receive a notification if any of their patients hit any emergency department in the region. And the physicians get this data in real time. So a medical assistant in a physician's office can look those up every day and contact the patients. It's a very simple intervention, but it has a profound effect on patients. They're saying, "Wow, I'm really impressed that you even knew I was in the hospital yesterday."

The Detroit and New Orleans Beacon Communities have co-designed a text messaging tool with Voxiva, a mobile health firm. This intervention reaches out to prediabetics and screens them for diabetes and then connects them to local resources. The tool knows your zip code and tells you, "Hey, there's a new diabetes clinic down the street that has resources for you," so it's very localized.

The Beacon Communities are proving to be great partners for ONC in increasing Meaningful Use of health IT and helping the country learn about what works. Ultimately we're all working together towards a technology infrastructure that supports accountable care. We're moving from independent kind of small mom-and-pop healthcare shops to integrated accountable systems. And maybe we're about halfway in between that path.

For example, the Beacon Community in Bangor, Maine, used the Beacon ONC funding to establish infrastructure for what is now the Bangor Beacon ACO, one of the CMS Innovation Center's 32 more advanced Pioneer ACOs. There are also Pioneer ACOs in the Beacon Communities in Detroit and Indianapolis that are highly leveraging the information exchange architecture regionally.

Three of the CMS Innovation Center's seven Comprehensive Primary Care Initiative sites are Beacon Communities. Working together with private sector health plans, CMS is testing new ways of financing primary care in the form of patient-centered medical homes.

It should be no surprise that these three regions were selected by CMS because the Beacon Communities have invested in technology, and they've invested in collaborative thinking about how to improve care in their market.

There are large challenges to progress in health IT. One of the most significant issues is that many private sector healthcare entities are not eager to participate in data sharing. They see their own data as a competitive asset, and their inclination is to hoard that data.

A related issue is that even when healthcare entities are willing to share data, their systems may not be interoperable. More generally, the more highly customized a data management system is, the less interoperability it has.

These two related issues of data hoarding and interoperability are especially problematic in terms of linking clinical data with payer data. We need to make these links so that patients' data can follow them seamlessly as they move from provider to provider within the same region or from one part of the country to another.

But the promise of health IT and the exchange of data are now being achieved in a remarkable way, in Beacon Communities and many other regions of the country.

Not too far down the road, we can envision a health IT infrastructure that transforms many areas of clinical and translational research. For example, large randomized trials of medical procedures and pharmaceuticals cost tens of millions of dollars

to conduct in the USA. With privacy-protected data on sufficient numbers of patients, researchers could conduct virtual randomized trials at the cost of doing a database spread sheet that correlates the delivery of different procedures or medications with patient outcomes.

In short, this is really a great time when health IT and payment reform are quite visibly coming together in a synergistic way. From a federal perspective healthcare reform is a two-act play, where the first act is to "wire" the system and the second is to rethink the way we pay for care. The ACA is giving added impetus to these efforts and to the partnership between ONC and CMS.

Investments to promote the development and implementation of health IT provide needed momentum to change the way providers, health systems, and communities use healthcare data. Health information technology provides the infrastructure for providers and health systems to better manage the health of the populations they serve with the promise of delivering higher quality care at lower costs. While the health and quality benefits of IT-enabled interventions may be intuitive, it is less clear how these efforts are sustainable within a fee-for-service context where reducing hospitalizations and other health services reduces revenues.

It is here that the intersection of technology and payment policy is essential to transform the healthcare system. Payment reform creates a new business context for health IT. Due in part to the two-step passage of HITECH and the ACA, the synergy of health HIT implementation and payment reform is currently on display in dynamic fashion.