COMMENT

Mobile access to electronic health records is expected to vastly improve health care, but the transition could be bumpy.

M. DU CILLE/*THE WASHINGTON POST*/GETTY IMAGES

Health-care hit or miss?

Will the $27-billion investment in electronic records in the United States revolutionize care and research, or will it be a missed opportunity for patients and science?

WILLIAM HERSH

Time to catch up with the pack

Professor and chair of medical informatics & clinical epidemiology, Oregon Health & Science University, Portland

When most people think about health-care reform in the United States, they think about President Barack Obama's Patient Protection and Affordable Care Act. But earlier legislation may prove more transformative: the Health Information Technology for Economic and Clinical Health (HITECH) Act, which was part of the economic stimulus bill and is beginning to take effect.

The centrepiece of the act provides up to US$27 billion in incentives for professionals and hospitals to achieve 'meaningful use' of electronic health records. That doesn't just mean putting computers into physician's offices and into hospital wards, but also using them to help to achieve five goals of the US health-care system: improve quality, safety and efficiency; engage patients in their care; increase coordination of care; improve the health of the population; and ensure privacy and security. Eligible professionals will receive $44,000–$66,000 and hospitals $2 million–$9 million, between 2011 and 2018. As in other areas of technology and health care, the United States has been a laggard in the adoption of electronic health records. Less than 30% of US primary-care physicians use them, compared with near-universal adoption in developed countries, including the United Kingdom, Denmark and New Zealand. The HITECH Act is an opportunity for the United States to catch up.

The act also includes an additional $2 billion for organizational infrastructure; $677 million to establish 62 regional centres for technical support and general assistance; $60 million for four collaborative research centres to develop best practice for gathering and using electronic health information; about $250 million for 17 'beacon' projects that will demonstrate innovative technologies in communities; and $118 million for ▶

college- and university-level programmes to train the 50,000 or so biomedical informaticians and health-information managers needed to implement and support the systems. The likely result is a boost not just to general levels of health, but also in data available for research. It will help, for example, to compare the effectiveness of tests and treatments in real-world settings.

Such data should enable the health-care system to become more 'intelligent'. The act works in synergy with the Institute of Medicine's 'learning health care' initiative: a programme launched in 2007 that aims to take the growing volume of captured data to see which health-care strategies work and which don't. This programme has dovetailed with $1.4 billion in funding for 'comparative effectiveness research' for those head-to-head health-care comparisons.

Collectively, these efforts provide a vision of a health-care system that learns from its successes and mistakes. Some elements of the HITECH Act experiment might fail, but in the end, the health-care system should benefit from this unprecedented investment by becoming more data-driven and adaptable.

JULIE A. JACKO
Narrow the gap in health literacy

Professor of public health and director of the University Partnership for Health Informatics, University of Minnesota, Minneapolis

The HITECH Act is intended to promote the meaningful use of electronic health data by health professionals, not meaningful use by patients. This is a missed opportunity.

Research shows that when people are empowered to access and interpret their own health information and data, and engage in shared decision-making with their physician, they make more meaningful and informed choices. Such consumer empowerment does not yet exist in the United States, despite years of talk about its importance.

Today, getting access to one's own health data in a format that is easy to understand is nearly impossible, even for those who have some knowledge about health matters, are well-educated and do not have physical or cognitive limitations. Although good health information is increasingly available online, it is difficult to access for those who don't speak English as a first language, or who face other barriers such as disabilities. As long as doctors remain the major decision-makers and sole source of information about healthy living and treatment options for patients, there will be people who do not take responsibility for their own health. And as long as the technological tools needed to foster collaborative decision-making aren't available, the cost of transmitting information about healthy living will stay high, and doctors will continue to experience extreme pressures on their time.

The HITECH Act may actually widen the divide between those who manage their own health and those who cede all responsibility to doctors. There is an opportunity to do better. The act provides funding for research: some of this should be earmarked specifically for patient-accessible technology. More attention should be paid to the development of tools that are designed for use by patients, as opposed to electronic health records designed for practitioners. Above all, more research is needed on how people use health information, and how to deliver it for the best health outcomes.

ROBERT GREENES
Push for deeper innovation

Head of the Department of Biomedical Informatics, Arizona State University, Phoenix

The HITECH Act provides a once-in-a-generation opportunity. But there is a risk that it will lead to rapid, shallow change, missing the chance for deeper innovation.

The United States does not have a rational health information system. Rather, it has a collection of systems that have evolved since the first electronic medical records of the 1960s. Several reports have laid out aspects of what an ideal electronic health-care system would look like. In December 2010, the President's Council of Advisors on Science and Technology envisioned a system in which all data would be standardized and tagged with descriptors, to help protect privacy and to allow data reuse. The National Research Council in 2009 wrote of data visualization methods that would aid human decision-making, optimized workflows and better human–computer interaction. A good system for the future must take into account changing demographics, emphasize health maintenance and disease prevention, empower individuals to have control over their health, and harness data for research. It should make use of new technologies to capture data whenever possible, and utilize mobile devices, high-speed networks and large-scale computing to make it available anywhere.

The HITECH Act tries to make the best both of legacy systems and of new concepts. There is a danger, however, of just tinkering at the edges and preserving the status quo. The bulk of the act's funding is going towards helping practitioners and hospitals to adopt electronic health records and improve the ability to share and exchange data. With loose coordination, individual states are devising and implementing their own plans for this. Vendors of electronic health record systems are largely unconstrained, other than with regard to how they interconnect and exchange data according to a set of meaningful-use criteria that are designed to ramp up over the next five years. Without a single guiding hand, multiple, suboptimal solutions are likely to be developed in different regions. Existing electronic-medical-record systems tend to bundle many functions into monolithic proprietary packages, preventing real competition or the evolution of optimal components and services.

Two smaller initiatives within the act are aimed at a grander vision: four strategic research projects to pursue more innovative health-care systems, and 17 'beacon' communities to showcase better systems.

The frenzied activity of hospital, practices, states and regions struggling to comply with the electronic-health-record rules is bound to collide with the grander vision of these more modestly funded but more-exciting projects. A danger of this imbalance is that the marketplace will consolidate around established vendors and their bundled products. It would be better to have time to evolve a market in which many vendors sell modular components and services that can be mixed and matched by users.

Developing and articulating the grand vision and a road map to get there must not be considered a sideline: it needs to be the main event. The model and the marketplace can evolve if given a solid direction in which to move, incentives to do so and time to adapt.

JOSEPH TAN
Standardize to avoid waste

Professor at McMaster University in Hamilton, Canada, and editor-in-chief of the International Journal of Healthcare Information Systems & Informatics

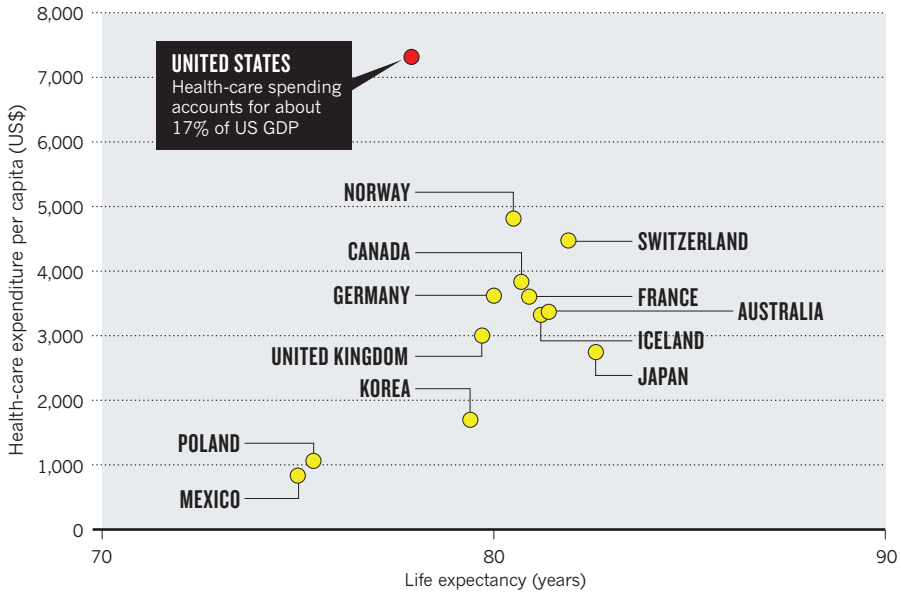
Although I applaud the Obama administration for ushering in a reform strategy for health information technology (IT), I anticipate mass confusion and frustration, and roadblocks in trying to implement it equitably.

The most important element for a successful transition to electronic records is leadership, which is sadly missing in this case. Providers must show that they can make meaningful

SOURCE: OECD HEATH DATA 2010

MONEY WELL SPENT?

The United States has not seen an increase in life expectancy to match its huge outlay on health care.



use of their electronic records, but this definition keeps changing, causing confusion among health-care providers. Hundreds of consultants have sprung up to help advise hospitals and clinicians, all of them with slightly different interpretations of the rules because of the variety of electronic-records products being implemented. Everyone is pursuing their own solutions. Too many cooks have spoiled the broth.

In the midst of this confusion, smaller practices may be unwilling or unable to make the necessary technology investment, especially given the uncertainty that they will be able to meet the HITECH Act's requirements and recoup their money. Those who do invest but find that they are not eligible for the act's funds after all will be forced to pass on their costs to their patients. This could make health care even less affordable for poor people.

There are lessons that the United States could learn from other countries. Singapore, where I was born and raised, has for three decades steadily raised its standards of living and quality of health-care services while holding health-care expenditure at just above 3% of gross domestic product (GDP). Meanwhile, health-care expenditure in the United States has risen from about 9% of GDP in the 1970s to an unbelievable 17.3% in 2009, or almost one-fifth of the entire US economy (see graph). The key to Singapore's success partly lies in promoting individual responsibility to save for health care and individual choice in how to spend those savings, along with government subsidies to ensure a high standard of care. The country's strong government leadership has resulted in a sensible IT system, with two or three standardized regions, each large enough to ensure a critical mass of patients and affordable and equitable uptake of the technology. Most, if not all, of the health-care facilities in Singapore are fully equipped with integrated IT systems, including the use of electronic tags to track the flow of patients, clinicians and even blood samples.

Singapore may be a small country, but even in Canada, where I now work, health care is standardized at the province level. Between 2002 and 2004, the government of British Columbia introduced health IT in the province through a programme that started small. This helped to overcome the natural resistance that physicians have to systems that might initially detract from the amount of time that they can spend with their patients. Doctors were first introduced to a web-based software kit for chronic-disease management, piloted for diabetic care, with financial incentives and reimbursements. This paved the way for early adopters and, five years later, 97% of physicians in British Columbia signed up to a broader programme that links them with patient information held by a central authority. This system enticed, rather than forced, practitioners into change.

Drawing lessons from both of these systems, the United States could, for example, subsidize the gradual adoption of new, standardized IT processes, perhaps at the state level.

In a true universally funded health-care system, such as those in the United Kingdom and Taiwan, it is easy to implement standardization and ensure affordability. The United States has a strong political devotion to the powers of a free-market economy. But in the case of electronic health records, this will create confusion, unequal opportunity and wasted funds.

DANIEL JANIES, PETER J. EMBI AND PHILIP R. O. PAYNE

Collect genetic data on pathogens

Ohio State University, Columbus

The HITECH Act's incentives for the meaningful use of electronic health records provide much-needed encouragement for the capture and exchange of data. But, by setting the bar too low, a great opportunity could be lost to science.

If a patient is diagnosed with an infectious disease such as influenza, the meaningful-use rules encourage physicians and hospitals to send data about the condition to a local public-health agency. This is a good first step, and this type of reporting is likely to be further encouraged by the HITECH Act in the coming years. But the current requirements focus on a perspective of disease surveillance that is quickly becoming outmoded: the counting of cases and symptoms. Comprehensive disease surveillance should focus on tracking the pathogens themselves, including their genetic evolution, zoonotic and geographic origins, and characteristics such as drug resistance.

Ideally, meaningful-use rules should give incentives to health-care providers to gather and transmit genetic data on pathogens. Electronic health records that include such details will improve personalized treatment, and enable the development of the science needed to understand, and one day predict, the spread of pathogens as they become epidemics. Such technologies are rapidly becoming more affordable: the cost of nucleotide sequencing has dropped more than 100,000-fold in the past decade.

National networks involving point-of-care testing for influenza already exist in Thailand, where they have been implemented at a relatively low cost and now help to inform rapid and appropriate use of antivirals. In the United States, point-of-care of testing for pathogens is done only sporadically under normal conditions, with just a fraction of the viral samples making their way to central facilities for genetic sequencing such as the Centers for Disease Control and Prevention or state health departments.

The meaningful-use rules are designed to change in stages over the coming years. This means there is still time to ensure that the country does not miss the great opportunity that the HITECH Act provides: advancing science as much as improving health care. ■