

**INVESTING IN HEALTH IT: A STIMULUS FOR
A HEALTHIER AMERICA**

HEARING
OF THE
**COMMITTEE ON HEALTH, EDUCATION,
LABOR, AND PENSIONS**
UNITED STATES SENATE
ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

ON

EXAMINING THE INVESTING IN HEALTH INFORMATION TECHNOLOGY
(IT), FOCUSING ON STIMULUS FOR A HEALTHIER AMERICA

JANUARY 15, 2009

Printed for the use of the Committee on Health, Education, Labor, and Pensions



Available via the World Wide Web: <http://www.gpoaccess.gov/congress/senate>

U.S. GOVERNMENT PRINTING OFFICE

46-710 PDF

WASHINGTON : 2009

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512-1800; DC area (202) 512-1800
Fax: (202) 512-2250 Mail: Stop SSOP, Washington, DC 20402-0001

COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS

EDWARD M. KENNEDY, Massachusetts, *Chairman*

CHRISTOPHER J. DODD, Connecticut

TOM HARKIN, Iowa

BARBARA A. MIKULSKI, Maryland

JEFF BINGAMAN, New Mexico

PATTY MURRAY, Washington

JACK REED, Rhode Island

BERNARD SANDERS (I), Vermont

SHERROD BROWN, Ohio

ROBERT P. CASEY, JR., Pennsylvania

KAY R. HAGAN, North Carolina

JEFF MERKLEY, Oregon

MICHAEL B. ENZI, Wyoming

JUDD GREGG, New Hampshire

LAMAR ALEXANDER, Tennessee

RICHARD BURR, North Carolina

JOHNNY ISAKSON, Georgia

JOHN McCAIN, Arizona

ORRIN G. HATCH, Utah

LISA MURKOWSKI, Alaska

TOM COBURN, M.D., Oklahoma

PAT ROBERTS, Kansas

J. MICHAEL MYERS, *Staff Director and Chief Counsel*

FRANK MACCHIAROLA, *Republican Staff Director and Chief Counsel*

(II)

C O N T E N T S

STATEMENTS

THURSDAY, JANUARY 15, 2009

	Page
Mikulski, Hon. Barbara A., a U.S. Senator from the State of Maryland, opening statement	1
Cochran, Jack, M.D., FACS, Executive Director, The Permanente Federation, Oakland, CA	4
Prepared statement	6
Corrigan, Janet, Ph.D., President, The National Quality Forum, Washington, DC	11
Prepared statement	13
Neupert, Peter, Vice President, Microsoft Health Solutions, Redmond, WA	17
Prepared statement	18
Grealy, Mary, President, Healthcare Leadership Council, Washington, DC	24
Prepared statement	25
Melvin, Valerie, Director, Information Technology, The Government Account- ability Office (GAO), Washington, DC	33
Prepared statement	34

ADDITIONAL MATERIAL

Statements, articles, publications, letters, etc.:	
Kennedy, Hon. Edward M., a U.S. Senator from the State of Massachu- setts	54
Enzi, Hon. Michael B., a U.S. Senator from the State of Wyoming	55
Murray, Hon. Patty, a U.S. Senator from the State of Washington	55
Article—Reinventing Healthcare Through Health Information Tech- nology	23

(III)

INVESTING IN HEALTH IT: A STIMULUS FOR A HEALTHIER AMERICA

THURSDAY, JANUARY 15, 2009

U.S. SENATE,
COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS,
Washington, DC.

The committee met, pursuant to notice, at 10:00 a.m. in Room SD-430, Dirksen Senate Office Building, Hon. Barbara A. Mikulski, presiding.

Present: Senators Mikulski and Merkley.

OPENING STATEMENT OF SENATOR MIKULSKI

Senator MIKULSKI. Good morning, everybody. The Working Group on Quality Healthcare will come to order. This is the very first hearing that this working group is going to have. We are going to begin quite promptly.

We want to acknowledge that Senator Enzi cannot be here because of scheduling conflicts, and also Senator Alexander.

But today is a wonderful and exciting day in the Senate. We will be welcoming a new Senator from Illinois, and we are going to be saying good-bye to two very special Senators, Biden and Clinton, and they will be getting their farewell speeches.

So we would like to move expeditiously, but robustly in this hearing so that we can, more of us, be done by 11:00 a.m. so that we could at least be there for part of the farewells.

So I am going to move this along, but I think we need to move healthcare along. So this is the spirit of the committee.

First of all, this is a working group established by Senator Kennedy on quality. The theme of this working group will be called "Quality Healthcare: The Means for Saving Lives and Saving Money."

Health reform is absolutely on the national agenda. The content will be extremely difficult, but the process is something that we can do.

In the spirit of both our President-elect, Mr. Obama, and also the Democratic Party, we want to reach out to our Republican colleagues to assure them that the working groups on this committee will continue the spirit of bipartisanship that has been established by both Senator Kennedy and Senator Enzi.

They have set the tone. They have set the process, and they have actually set the methodology. And we intend to do that.

It is not the Democratic intent to have a healthcare reform bill that will squeak by by a vote or two. We want it to pass, if not

unanimously, to pass in a robust way. And we think the way you do good legislation is to have good manners, and good manners starts with a good process.

We had an excellent model here in the way we worked on higher education and some of the others in the last committee. Senator Enzi said it well yesterday when he said because of the way they worked together, the once most cantankerous committee in the Senate is now one of the most productive. That is the way we are going to be here.

Senator Kennedy has established three working groups—one on coverage that Senator Bingaman chairs, one on prevention that Senator Harkin chairs, and the one on quality that I chair. So today is my kickoff in a series of hearings on quality. And to use a well-known phrase, “I am fired up and ready to go.”

When it comes to healthcare, we want to also, in that spirit of bipartisanship, let others know that we have reached out by making sure we had bipartisan witnesses. We invited really the experience and insights of former House Speaker Mr. Gingrich and our very beloved colleague Dr. Bill Frist and also Senator Snowe because of her quite broad experience in dealing with particularly the health IT and the Finance Committee. They couldn’t come, but we welcome their ongoing advice and input on this.

Our witnesses today, I think, represent a great deal of experience and knowledge, and, wow, do we need you. And at the same time, we think it represents broad views—Jack Cochran from Permanente Federation; Peter Neupert from Microsoft; Janet Corrigan from the National Quality Reform; Val Melvin, a sister University of Maryland graduate, from GAO; and Mary Greal of the Healthcare Leadership Council.

The purpose today is to talk about health IT, and everybody sees it as a silver bullet. Well, we believe it is one of the major tools and that we cannot do healthcare reform without it. It is also being discussed in the stimulus. So we want to get the best views and the best thinking.

We know that under the Wired Act of the previous Congress, a lot of thinking is already going on, and we are going to add to that. What we want is, No. 1, health information technology to be patient centered and patient secure. We want it to be interoperable. Because if it is not interoperable, it is not going to function.

We don’t want another techno boondoggle. As someone who appropriates for the Commerce, Justice, and Science Committee, I am really familiar with a lot of things that we did on interoperability. The CJS bill had the terrible problem with the FBI when we wanted interoperable case files and field offices, and we ended up spending over \$1 billion, and it wasn’t worth a warm spit.

Well, you get where I am heading here. So we don’t want techno boondoggles. We want techno opportunity. And most of all, it has got to be user-friendly so that it will be adopted particularly in clinical practice, where there is wonderful onesie, twosie doctors out there, particularly often in our rural communities. So we have got a lot to listen to.

Over the years, every major group from IOM to others have talked about why we need health IT. Every industrial Nation has it. Germany, UK, Australia lead the way. Our survey showed that

only 4 percent of physicians have electronic health records. Very few have access to it, and what we do have is certainly not even beginning interoperable.

And it might very well be that even within an acute care facility, surgery might have one, but maybe that is orthopedic surgery. But they are not linked to cardiology or with the diabetes. And for many of our patients, they come in with more than one thing going on in their lives.

So we have got a lot to listen to. We think there is tremendous potential in this—quality improvements, efficiencies in medical utilization, economic savings. Just think of the idea of preventing costly medical errors by 50 to 90 percent and also particularly avoidable medication errors.

Helping doctors with clinical decision support systems, reminding them when they are going to schedule a test, and hoping to see if there is patient compliance in following up. To that diabetic, gosh, let us make sure and ask did they really go to the ophthalmologist? Gee whiz, the record shows you didn't, and we talked about it 3 months ago.

Efficiencies could mean cutting the cost of delivering care, duplicated or inappropriate diagnostic tests, reducing paperwork, promoting the appropriate use of prescription drugs, actually even being able to read prescriptions. Wow.

However, the potential of health information technology is easier predicted than achieved. Our challenge is to develop it, fund it, and promote its use and always keep it fresh and contemporary.

We have got a lot to talk about today. So instead of listening to myself talk, I want to listen to you. So I am going to just bring to the committee's attention this outstanding panel, and I really want to welcome you with enthusiasm for being here.

I am going to do all of the introductions now. And then we are just going to start with Mr. Cochran and go all the way down, and Ms. Grealy, you are going to be the wrap-up hitter, OK?

We are going to welcome Dr. Jack Cochran, who is the executive director of Permanente Federation. I have been reading your ads, and I have been reading about you. We really understand that you have extensive experience in health IT, and your executive experience and actually this hands-on practical, how does it go in clinical practices. All of the pluses, and we want to hear the minuses.

Janet Corrigan, you are the CEO of the National Quality Forum and a board member of IOM. We know that you have written a number of IOM reports, and you have shaped the thinking of Congress to improve healthcare quality. We want to know how we can use this to improve the delivery of healthcare. And really, you have seen a lot of it now.

Mr. Neupert, you bring the private sector experience from Microsoft. We know that we can't develop this system in-house. This is not a system that is going to be developed inside of HHS. We know that inside HHS and working with other appropriate Government agencies like NIST, we are going to establish the national standards.

But we are going to count on the private sector to help us achieve this. So we need to hear your ideas on not only the tech-

nology, but how the technology can continue to be modernized as we go along.

This isn't like building an airfield, where much is made about the super information highway. You know, when you build I-95, you don't have to build a new I-95 every 6 weeks or every 6 months or every 6 years. We have got to do potholes and speed bumps. But one of our questions is after they build it and we have got them to come, how do we keep them coming and make it worthwhile? And who is going to pay for it?

Ms. Grealy, you come from the Health Leadership Council, which represents a wide range of business healthcare interests. We want you at the table. We know that you have tremendous insight in what needs to be developed, but I think you bring both the concept of operationality, functionality, but also cost, cost, cost.

Not only who is going to pay for it, but who is going to keep on paying for it? Because sustainability and continuing to modernize is going to be one of the issues.

Then, of course, we are going to turn to Valerie Melvin, the director of IT at GAO, a graduate, as I said, of the University of Maryland. She has received many awards and has looked extensively at the standard-setting process, and this gives me heartburn.

You don't give me heartburn, but—
[Laughter.]

Senator MIKULSKI [continuing]. But really, we know the VA development. I am really proud of the VA facility in Maryland that pioneered this. But you have seen a lot, and we really need to discuss the standards.

Having said that, we are just going to get right to the testimony. Actually, you know, Ms. Melvin, I think I am going to wind up with you because you are the standards lady, and I think it will be very useful after we listen to this content-rich discussion that we wrap up with you with really—well, you know, a lot was said about Joe the plumber, but we are going to talk about Ms. Melvin, the inter-operable lady here.

You are going to help us with, really, setting the standards and so on. So I will stop.

Mr. Cochran, let us start with really something working in the real world and what we need to know about your extensive experience at Kaiser, one of the true flagships in the delivering of healthcare.

STATEMENT OF JACK COCHRAN, M.D., FACS, EXECUTIVE DIRECTOR, THE PERMANENTE FEDERATION, OAKLAND, CA

Dr. COCHRAN. How am I doing?

Senator MIKULSKI. You are doing great.

Dr. COCHRAN. I get 6 seconds back. I am Dr. Jack Cochran, the executive director of the Permanente Federation, which is the national umbrella organization for the eight regional Permanente medical groups, which employ more than 14,000 physicians who care for 8.7 million members of Kaiser Permanente. I appear today on behalf of the National Kaiser Permanente Medical Care Program, the Nation's largest integrated delivery system.

As Congress considers ways to stimulate the economy, it should explore investing in the Nation's healthcare delivery system. I am

delighted to be here to discuss how promoting the effective use of information technologies can improve healthcare quality and efficiency and literally save lives.

In 2003, Kaiser Permanente began the KP HealthConnect Project. KP HealthConnect is a comprehensive health information system that includes one of the most advanced electronic health records available.

Today, KP HealthConnect securely connects 8.7 million people to their physicians, their healthcare teams, their personal health information, and the latest medical knowledge. With the support of a shared clinical record, we have experienced tremendous breakthroughs in coordination of care, patient safety, and clinical quality.

Some key lessons we have learned about implementing and gaining value from an HIT system are, No. 1, implementing health information technology in a clinical setting is disruptive. You should expect a reduction in productivity for the first few months and should not expect immediate cost savings.

You have to go slow to go fast in many ways because the initial stages of implementation must be well thought out. Patience and persistence is key, and physician leadership is critical.

No. 2, implementing the technology is a first step. A much more crucial evidence is figuring out how to translate the data collected in the system into useful information and delivering value. It is not just about digitizing the visit. It is about using the data from that visit and other sources to inform and, ultimately, transform care delivery. And once again, physician leadership is essential.

Physician input can lead to the creation of tools that organize the data into clinical decision support tools, disease registries, and other applications that help caregivers more effectively care for their patients. HIT can help facilitate processes like medication reconciliation at critical transitions of care, such as from the hospital to the home.

And one of the greatest lessons, No. 3, that we have learned is how much patients value using online tools to interact with us and manage their health. Our personal health record, My Health Manager, has more than 2 million active users who are taking advantage of such robust features as securely e-mailing their doctors, accessing lab tests, scheduling appointments, refilling prescriptions.

Having patients involved in their care in this way results in more engaged patients, ultimately better care, especially for those with chronic conditions.

So, as you consider the economic stimulus package, Congress should be clear about what returns it wants on its investment. Rather than rewarding providers for simply purchase or implementation of IT, dollars should be tied to actual usage and the value derived in terms of process improvements and health outcomes.

Incentives must be focused not simply on ensuring that a physician office has implemented an EHR, but incorporating a requirement that these systems are interoperable using federally sanctioned standards. And while not perfect, our experience has been that these standards are available now.

Finally, done well, we believe an electronic care support system can help to restore and enhance the physician's healing mission.

Maximizing access to information for the clinician means optimizing care for the patient.

The right systems provide more time with patients, better information about care, and less time with traditional paperwork. The right system also needs to be focused on the patient's needs for affordable, well-informed, customized, and compassionate care, and we believe that health IT is needed to support our Nation's healthcare reform agenda and help our Nation fulfill its ethical responsibility to improve healthcare access, reduce costs, and ensure quality of care for all.

Thank you.

[The prepared statement of Dr. Cochran follows:]

PREPARED STATEMENT OF JOHN H. COCHRAN, M.D., FACS

Senator Mikulski and Senator Enzi and other distinguished members of the committee, thank you for the invitation to be here today. I am Dr. Jack Cochran, the Executive Director of The Permanente Federation, the national umbrella organization for the regional Permanente Medical Groups. The Permanente Medical Groups employ more than 14,000 physicians, who care for approximately 8.7 million Kaiser Permanente members. I appear today on behalf of the national Kaiser Permanente Medical Care Program, the Nation's largest integrated health care delivery system.

THE PROMISE OF HEALTH INFORMATION TECHNOLOGY

As Congress considers ways to stimulate the economy, it should explore investing in the Nation's health care delivery system. I am delighted to be here to discuss how promoting the effective use of health information technologies can improve health care quality, efficiency, and literally save lives.

Medicine is far behind other industries in adopting and leveraging information technologies. While other industries have been quick to automate, the health care industry has often been slow to adopt.

Individual medical records, medication lists, along with the latest medical research and up-to-date information on applicable clinical trials must be available for clinicians and patients at the click of a mouse. Under appropriate patient confidentiality safeguards, secure electronic health records (EHRs) should allow various health care providers across vast geographic spans to collaborate and coordinate care for their patients based on current, comprehensive clinical information. The economic stimulus package should promote the development of effective, interoperable clinical information systems and the skills to use them.

But it is important to link these improvements in processes with systemic changes in financial incentives to continually advance the effectiveness and reliability of health care delivery. As you know, our Nation's health care delivery system is fragmented, disorganized, and hampered by ineffective and perverse incentives for quality and efficiency. Health information technology (HIT) is one critical tool that can help move our system toward a highly functioning, organized, patient-centered one. However, it is important that these investments be strategic and worthwhile. As one wise policymaker quipped, "making the wrong investments in HIT could simply result in doing the wrong things faster."

KAISER PERMANENTE

When she invited me to speak today, Senator Mikulski asked me to share some of the lessons we've learned in developing what we believe is the world's largest civilian deployment of an EHR. As Senator Mikulski knows, we are proud to serve members in the State of Maryland. We also provide health care to nearly nine million individuals in eight other States including California, Oregon, Colorado, Georgia, Hawaii, Ohio, Virginia, Washington, and the District of Columbia.

At Kaiser Permanente, we have found strength and opportunity through the fundamental and often unique partnerships within our organization: the physician and patient relationship; the collaboration between labor and management; the linkage of clinical research to improved care delivery; our investments and involvement in the communities we serve; and the shared coordination of care across inpatient, outpatient, ancillary services, and all the settings of care delivery.

In 2003, Kaiser Permanente began the KP HealthConnect™ project. KP HealthConnect is a comprehensive health information system that includes one of

the most advanced electronic health records available. Our success with this endeavor is the result of decades of work developing health records and training physicians and staff to use them. This experience spanned most of our operating regions. For example, the Colorado region, where I practiced, had a complete electronic health record beginning in 1997.

Today, KP HealthConnect securely connects 8.7 million people to their physicians, their health care teams, their personal health information, and the latest medical knowledge, leveraging the integrated approaches to health care available at Kaiser Permanente.

Kaiser Permanente has made a huge investment in HIT, both financially and philosophically. We believe it has the power to transform the way we deliver health care and improve patient health.

PHYSICIAN ADOPTION AND ACCEPTANCE OF HIT

In April 2008, we completed implementation of KP HealthConnect in every one of our 421 medical office buildings, ensuring that our 14,000 physicians and all other ambulatory caregivers have appropriate electronic access to their patient's clinical information. In addition, we have completed the deployment of inpatient billing; admission, discharge, and transfer; and scheduling and pharmacy applications in each of our 32 hospitals. Now, we are in the midst of an aggressive installation schedule for bedside documentation and computerized physician order entry (CPOE). As of the end of 2008, we had 25 of our 32 hospitals fully deployed. (An interesting anecdote: the new hospitals we are building in California as a response to the seismic upgrade requirements are being built without medical record rooms.)

Now, you may ask, did this all happen easily? Did our physicians and nursing staff immediately embrace our EHR? The simple answer is, no. Any major transition like this requires fundamental change in workflows. We had to build in time for testing, training, and some belly aching too. But if we tried to take KP HealthConnect away from any of our doctors and nurses now, a riot would ensue.

Implementing HIT in a clinical setting is tremendously disruptive. You have to expect about a 20 percent reduction in productivity in the first 3 to 6 months, and you should not expect immediate cost savings. You have to go slow to go fast. Initial stages of implementation must be well planned and tested. Patience is key, and physician leadership is critical.

Change can cause apprehension and concern. If not handled properly, it can also interfere with the quality of care that is delivered. In an outpatient setting, you can build in time for training by scheduling patients differently or making sure you do not implement a new IT system during flu season, for example. In an inpatient setting, you simply do not have the same flexibility, so the challenges are different.

At first, Permanente physicians were reluctant to complete after-visit summaries as a written acknowledgement of everything that was discussed during the visit. These after-visit summaries are stored in each patient's EHR. Because patients can access them later, the summaries can help remind them about what they and their doctors discussed regarding medications, follow-up treatment, etc. Primary care providers who give their patients an after-visit summary typically score an average of 14 points higher on satisfaction surveys.

Since the deployment of our integrated medical record, we have begun to see major advances in using health information systems as a diagnostic tool (for identifying and understanding patients with certain risk factors) as well as for appropriate therapeutic intervention (for encouraging adherence and for intensification or moderation of therapy when needed).

The EHR has allowed our physicians to be more efficient by giving them better practice management and communication tools that help them reduce unnecessary visits and phone calls. Today, our doctors don't ask, "How many patients can I see?" but rather, "How many problems can I solve?" Data gathered in three of our regions (Colorado, Hawaii, and the Northwest) demonstrate how implementing an EHR lowers both primary and specialty care office visit rates by enabling the clinician to resolve certain issues for patients with fewer face-to-face contacts. For example, a simple response to an e-mail may be all that a patient needs from his or her doctor. Because our system allows our physicians to view appropriate medical information online, patients and physicians can interact with each other when it's most convenient for both of them.

PATIENT ACCEPTANCE AND ADOPTION OF HIT

One of our greatest lessons has been how much KP members value the ability to use online tools to manage their health. Launched in 2005, our personal health record, *My Health Manager*, now has more than 2 million active users. This rep-

resents the largest user base of online personal health records (PHRs) in the United States. Using direct links to actual clinical and operational systems, we are able to provide our members with access to robust features, including access to lab test results, appointment scheduling, prescription refills, and even the ability to securely e-mail their doctors. To date, our members have viewed over 56 million lab test results online, sent over 5 million secure e-mail messages, made over 2 million online visits to book and review future appointments, and logged over 1 million online visits to view past office visit information.

With secure e-mail messaging, patients can communicate with their doctors at any time, from anywhere. Demonstrating the growing consumer interest in e-visits, our patients send more than 300,000 secure e-mail messages each month to their doctors and care teams. The average doctor's visit takes 3 hours out of an individual's day, so members value the ability to use *My Health Manager* on kp.org to handle routine health care needs, including refilling their prescriptions, which can be delivered directly to their home or a pharmacy. Results from a study published in the *American Journal of Managed Care* showed an 8 percent reduction in office visits and a 14 percent reduction in phone calls among *My Health Manager* users.¹ The study also confirmed that secure messaging is used primarily for non-urgent issues; nearly two-thirds were coded as "brief" or lower.

TRANSFORMING HEALTH CARE DELIVERY

While we have documented some specific dollar savings, our greatest benefits are improvements in clinical and service quality. With 24/7 access to comprehensive health information, our care teams are able to coordinate care at every point of service—physician's office, laboratory, pharmacy, hospital, on the phone, and even online. Unlike the paper chart locked in a physician's office, an EHR can be shared among all physicians caring for a patient. For example, when a patient comes into the Emergency Department at 2 am: (1) there will be no duplication of effort to collect data that already exists; (2) the insights of one physician are more easily available to others; and (3) care can be better coordinated. Our early results demonstrate what *Crossing the Quality Chasm* predicted: HIT helps to make care safer, more effective, patient-centered, timely, efficient, and equitable.

Through our experience with KP HealthConnect, we have found that implementing the technology was just the first step. A far more crucial endeavor is determining how to translate the data collected within the system into useful information that will deliver value. It's not just about digitizing the visit—it's about using the data from that visit and other sources to inform and ultimately to transform care delivery.

For example, our use of HIT and our comprehensive approach (partnership of primary care providers, cardiologists, nurses, and pharmacists with accountability across the continuum of care—preventive, chronic, and acute) have significantly reduced emergency department visits and mortality. In Colorado, we have seen a 76 percent reduction in cardiac mortality for those who participated in our Collaborative Cardiac Care Service compared with those who received regular treatment.² Based on NCQA data, as compared to the national HMO average, we prevent more than 280 cardiac events annually in Colorado. This improvement saves \$2 million in annual hospital costs. In northern California, if you are a member of Kaiser Permanente, you have a 30 percent less chance of dying of heart failure compared to a member of the general population. In Oregon and Washington, by using KP HealthConnect in a new Regional Telephonic Medicine Center staffed with emergency room physicians and advice nurses, we have achieved an 11 percent reduction in the number of members who need to visit the emergency room between the hours of 12 noon and 10 p.m. In southern California, from 2004 to 2007, combining the power of our IT systems and our integrated delivery model, we were able to increase mammography screening rates for women aged 50–69 from 80 percent to nearly 90 percent.

This last example was highlighted for me by a recent letter that puts a human face on these statistics:

¹Zhou YY, Garrido T, Chin H, Wiesenthal A, Liang L, "Patient Access to an Electronic Health Record with Secure Messaging: Impact on Primary Care Utilization," *American Journal of Managed Care*. July 2007; 13: 418–424.

²Sandhoff, B., Kuca, S., Rasmussen, J., Merenich, J., "Collaborative Cardiac Care Service: A Multidisciplinary Approach to Caring for Patients with Coronary Artery Disease," *The Permanente Journal*. Summer 2008, 12:3; 4–11.

Early last year, I came to your facility to have a foreign body removed from my eye. I visited your Ophthalmology Department, and your competent staff dealt with this minor emergency.

What made this visit so meaningful was my interaction with your nurse after my visit with the doctor. In addition to giving me some after-visit instructions, she noticed in the computer that I needed a mammography exam. I had been reminded before, but I tend to be too busy to take care of my own health. This time the nurse was very insistent. She even made me an appointment so I could walk in and get an exam within the hour. Since I did not have to wait too long, I had an exam done that day. Well, they found a mass in my right breast, and it was cancer. I have gone through chemotherapy and radiotherapy, and today I am cancer free.

I am convinced that I am alive today because of your organization's focus on my total health. My interaction with your entire health care system has been nothing but positive. I am especially appreciative to the young nurse who took the time to convince a stubborn old lady to take responsibility for my health.

Thank you for giving me many more years to thrive.

This letter describes a simple act by one of our nurses that was possible only because the nurse had access to that patient's information, acted on it, and was part of an integrated health care system that encourages this series of events.

KP HealthConnect also allows us to share content across all regional facilities, providing the best technical platform to disseminate drug formulary changes, best-practice alerts, and automated clinical guidelines to the entire enterprise. Our members can move through any facility within a given region, and their clinical and administrative information will follow them.

As an example, during the 2007 wildfires in San Diego, when Kaiser Permanente facilities within the fire lines closed, we contacted members and directed them to open facilities. When our members arrived at these new facilities, their new care teams had appropriate access to their records via KP HealthConnect, ensuring continuity of care in a time of crisis.

When we started down this path, Kaiser Permanente faced many of the same barriers that other health care organizations and providers face today when they start to utilize HIT to improve care delivery. These barriers involve both process (e.g., complexity of health care is increasing, workflows will be disrupted, end-to-end patient-centered view is not well known) and technology (e.g., data is "locked away" in various paper files, applications, and databases; data standards, interoperability standards, usability standards must be integrated). I am here to tell you that these issues can be overcome.

Kaiser Permanente and other multi-specialty groups like Group Health Cooperative, Intermountain Healthcare, and Geisinger can set the gold standard with a sophisticated EHR and integrated care delivery systems. Harder to overcome are the misaligned incentives in systems that are not vertically integrated, because these do not encourage providers to re-design care delivery to incorporate evidence-based care processes for improving quality and effectiveness. As a nation, we can decide to create payment incentives that reward health professionals who share information, who learn from each other, and who hold themselves and one another accountable in order to generate the best health outcome at the most reasonable cost for each patient.

AN INTEROPERABLE HIT SYSTEM

Congress has the ability to create a system that is truly interoperable. Today, far too often, our systems speak different languages. Even when electronic information exists for patients, critical clinical information can be lost during an emergency or when patients transfer from one system to another because the different systems simply cannot communicate with one another.

After discussing interoperability of medical records for years, Kaiser Permanente recently demonstrated successful data exchange of health records involving our shared patient population with the Veterans' Administration. This demonstration project uses test data for fictitious patients, but it also shows that privacy and security requirements will work to protect real patient data. The demonstration uses the national interoperability standards recognized by the Department of Health and Human Services (HHS), proving they work in the real world.

Sound HIT policy should stress the critical importance of standards-based interoperability to achieve coordinated patient-centered health care. The ability of separate HIT systems to interconnect with each other depends on uniform adherence to strictly defined standards. Most of these standards exist today. Kaiser Permanente supports the HHS-adopted interoperability standards selected by the Healthcare In-

formation Technology Standards (HITSP) and used in the National Health Information Network (NHIN).

Only when these existing technical standards are used consistently across the delivery system will HIT be able to achieve its promise for both direct care of individual patients and for population-based care.

Connected HIT will not be adopted by most clinicians and institutional providers without mandates or a system of incentives and penalties that are materially more advantageous or costly to providers than those outlined in current and previous proposals. For instance, one approach could use Medicare conditions of participation (COP) as a means to promote adoption, with metrics for adoption of HIT, determined by the Secretary and used by HHS as benchmarks. Achieving benchmark measures for HIT could trigger loan forgiveness or incentive payments.

Above all, dollars should be attached to outcomes. For example, organizations that receive HIT incentives could be required to adhere to certain clinical care pathways or demonstrate that they have “functional EHRs.” This may mean that their EHR must show it is capable of sending and receiving lab, pharmaceutical, and other clinical information—not just payment claims information.

HIT system functions and interoperability are essential cornerstones for policies such as primary care-centered medical homes, coordination of care for chronic conditions, value-based care, comparative effectiveness research, and pay-for-performance/pay-for-quality initiatives. Some EHR-systems come as “blank slates,” with functionality, but without built-in clinical content or knowledge; these systems demand tremendous amounts of time, skill, and energy to harness the tools to the purpose of actually improving quality. Linking the implementation of HIT to health system reforms is essential. To promote appropriate and clinically effective uses of HIT over the mere acquisition of technology, the Secretary of HHS should develop and implement measures for HIT connectivity and data exchange as well as measures for EHR-based quality reporting.

PRIVACY

All consumers should be able to rely on appropriate and consistent minimum levels for privacy and security protections among all entities—both public and private—that access or use individual health information. A high level of trust in these protections is crucial for HIT to succeed. It will be important for Congress to strike an appropriate balance between the competing interests of protecting privacy concerns versus advancing HIT, EHRs, and public health initiatives. Both can be achieved. Today, many State laws risk slowing down the rate of progress by allowing consumers to opt out of disease registries and other community health initiatives due to privacy concerns.

We believe that HIPAA should remain the basis of new privacy rules. However, privacy policy also must cover personal health data consistently, regardless of what entity holds the records. Privacy requirements can achieve better protection for consumers without adding to the cost of HIT, changing the practice of medicine, or creating medical liability issues.

There are good models in State law for guarding against security breaches in ways that do not impede access to health information by clinicians; it is important to remember that the lack of appropriate and complete health information for clinicians who are treating a patient can also endanger that patient’s life.

In our experience, California law provides a model for breach notification that is clear and consistent across all types of entities, events, and circumstances. We believe HIPAA disclosure accounting for treatment, payment, or health care operations purposes would add a significant amount to the total cost of HIT implementation and could harm the practice of medicine by disrupting clinical workflows. HIT innovators should not be penalized by regulations that force unnecessary or disproportionate system overhauls to achieve compliance, especially when such modifications will consume resources that could be spent to deliver high quality care. Efficiency should be a goal of new investments and rules.

IMPROVING SAFETY, QUALITY, AND EFFICIENCY

The real objective of HIT in the economic stimulus package should not be technology, but rather to improve safety, quality, and efficiency.

At Kaiser Permanente, we believe the keys to the solution will be health care led by clinicians, integrated with functional IT systems, and staffed with innovative, enthusiastic, computer-enabled health care professionals.

Having HIT and the means to exchange information will do us little good if we do not foster and support better information about the effectiveness of care, including the relative benefits, risks, and costs of treatments and services. We need a ro-

bust Federal commitment to comparative effectiveness research so that health professionals can ensure that each individual patient gets the care that is right for him or her. Reforms must also ensure that patient information can be used not only to optimize care for one specific patient but also to improve care for all patients through, for example, the development of clinical care guidelines and disease management protocols. These goals require the use of patient information and appropriate access to patient records, with privacy safeguards as currently required under HIPAA rules.

Ultimately, however, to effect real change, provider payment systems should be based on value rather than the number of procedures, drugs, tests or orders—regardless of whether the best evidence calls for such action. To keep coverage affordable and to really fix our broken health care system, we must change the way we deliver and pay for health care. Financial incentives must be changed so that plans compete on quality and efficiency, providers are rewarded for quality and keeping their patients healthy rather than for the volume of services delivered, and individuals are encouraged to seek high-quality care and to be more actively involved in maintaining their own health.

We believe a computerized care support system that is well-designed and implemented appropriately can help restore and enhance the physician's healing mission. Maximizing information available to the clinician means optimizing care for the patient. The right systems will yield more time with patients, better information about care, and less time with traditional paperwork. The right systems also must focus on the patient's need for affordable, well-informed, customized, and compassionate care. We believe a new HIT system will support our Nation's health care reform agenda and can help our Nation fulfill its ethical responsibility to improve health care access, reduce costs, and ensure quality care for all.

We look forward to working with you to achieve these goals.

Senator MIKULSKI. Well, you have covered a lot of ground. And just looking at your testimony; we could just spend all morning in a dialogue with you, and we will be coming back. Thank you. And thank you for being within the time limit.

Ms. Corrigan.

**STATEMENT OF JANET CORRIGAN, PH.D., PRESIDENT, THE
NATIONAL QUALITY FORUM, WASHINGTON, DC**

Ms. CORRIGAN. Chairwoman Mikulski and members of the committee, thank you for inviting me here today to talk about health information technology and quality.

My name is Janet Corrigan. I am the president and CEO of the National Quality Forum. NQF is a private sector standard-setting organization whose mission is to improve the quality of American healthcare by setting national priorities and goals for performance improvement and endorsing standardized performance measures that can be used to assess, publicly report, and, most important, improve performance on the front line.

A standardized performance measurement and reporting system is a core building block for creating a higher quality, more affordable healthcare system, and it is necessary to successfully implement virtually all reform strategies, including changes in payment policies, public reporting, and regulatory oversight. Investing in health information technology is critical to that standardized measurement and reporting system.

I commend the committee for focusing attention on how HIT investments can achieve maximum benefit, both for our economy and the quality of care our patients receive. You have probably heard it said that a crisis is a terrible thing to waste. And as unfortunate as they are, crises provide a prime opportunity to force clear thinking and prioritization of our actions and investments.

In my comments today, I am going to focus on the linkage between HIT investments and improvements in patient care. More specifically, I will cover three points. First, Federal funding to promote adoption of HIT is an essential foundation for improving safety, quality, and affordability, and we should make substantial investment now.

Second, investments in HIT will result in far greater improvement in patient care if steps are taken to ensure that electronic health records and personal health records possess the necessary capabilities to support performance measurement, reporting, and improvement.

And third, HIT investments and incentives should be tied to the effective use of HIT to improve safety, outcomes, and the experience of care, not just having the technology in place.

We are making progress in improving healthcare performance, but it is happening at a slower pace than it should. There are many examples of efforts to improve quality in virtually all types of settings that are substantial and lifesaving. But our healthcare system lacks the ability to bring these innovations to scale.

One of the reasons for this slow rate of improvement is that our current healthcare delivery system is extraordinarily fragmented. HIT can facilitate the exchange of patient information and communication between providers and across settings.

Much of the healthcare sector lacks critical organizational supports that are needed to manage patients across their entire episode of illness. I want to emphasize that HIT alone is not enough to transform the delivery system. HIT is a tool. It must be used effectively.

Investments in HIT will have the greatest impact if pursued within a broader policy agenda that encourages the development of higher levels of organizational capacity in all practice settings.

The second point I want to make is that for investments in HIT to have the greatest impact, EHRs and PHRs must be capable of capturing the necessary data to calculate measures and to provide clinical decision support to providers to enhance performance. Efforts are now well underway to create a bridge between the quality community and the HIT community.

In 2007, with initial support from AHRQ, NQF established the Health Information Technology Expert Panel. The initial work of HITEP has focused on identifying types of data that must be captured in EHRs to calculate performance measures that are currently used by Medicare for public reporting purposes.

HITEP works closely and collaboratively with the Health Information Technology Standards Panel that translates the quality dataset into HIT standards and with the Certification Commission for Health Information Technology to promote the development of EHRs capable of supporting performance measurement and improvement. I encourage you to build on this important collaborative work and not to reinvent the wheel.

My third and last point is that Federal funding to promote the adoption of HIT will only result in improvements in care if HIT systems are effectively used to perform key value-enhancing functions, including the exchange of data on prescriptions, laboratory

tests, and imaging procedures, and developing evidence on the safety and effectiveness of the treatments.

Interoperability and technical capabilities are important, but not enough. Investments should be tied to changes in care delivery that translate into real improvements in patient safety and clinical outcomes.

To support that need, NQF has endorsed a set of performance measures emphasizing HIT in five areas and its use—in electronic prescribing, interoperability, care management, quality registries, and the medical home.

In conclusion, NQF supports Federal funding to promote adoption of HIT as an essential foundation for improving safety, quality, and affordability. But it is important to invest wisely. The investment will yield far greater returns in terms of higher quality, more affordable care if EHRs and PHRs are built with the necessary capabilities to support performance measurement and improvement and if investments are tied to the effective use of HIT to enhance patient care.

Thank you very much.

[The prepared statement of Ms. Corrigan follows:]

PREPARED STATEMENT OF JANET CORRIGAN, PH.D.

Chairman Kennedy, Chairwoman Mikulski, Ranking Member Enzi and members of this committee, thank you for inviting me here today to talk about Health Information Technology (HIT) in the stimulus package, and its potential to help us move toward making higher-performing, lower-cost healthcare available to every American.

My name is Janet Corrigan. I am the President and CEO of the National Quality Forum. NQF is a private sector standard-setting organization with more than 375 members representing virtually every sector of the health care system. NQF operates under a three-part mission to improve the quality of American health care by:

- setting national priorities and goals for performance improvement;
- endorsing national consensus standards for measuring and publicly reporting on performance; and
- promoting the attainment of national goals through education and outreach programs.

NQF endorsement, which involves rigorous, evidence-based review and a formal Consensus Development Process, has become the “gold standard” for health care performance measures. Major health care purchasers, including the Centers for Medicare & Medicaid Services, rely on NQF-endorsed measures to ensure that the measures are scientifically sound, relevant and help standardize and raise the bar for performance across the industry. To date, NQF has endorsed more than 500 measures. A standardized performance measurement and reporting system is a core building block for creating a higher quality, more affordable health care system, and is necessary to successfully implement virtually all reform strategies. Investing in health information technology is critical to routinely assessing performance.

I commend the committee for focusing needed attention on how HIT investments can achieve maximum benefit—both for our economy and the quality of care our patients receive. You’ve probably heard it said that a crisis is a terrible thing to waste. Crises provide a prime opportunity to force clearer thinking and prioritization of our actions and investments. I believe this to be true of the current economic crisis and Congress and the Administration’s efforts to address it, particularly when it comes to healthcare.

Healthcare spending and our economy are inextricably linked. We can no longer sustain healthcare spending at a rate that will reach more than 20 percent of the GDP by 2020. After a stock market freefall in 2008, the Nation’s financial condition dropped to what is considered the worst economy in 70 years. Experts now agree that we have not yet hit bottom and that 2009 may bring the worst conditions faced in generations. We cannot continue to act as we always have. We can no longer afford the health care system we have, particularly considering that 30 percent of spending is wasteful—\$600–\$700 billion spent on care that is often unnecessary and even harmful care. HIT is not *just* a good idea, not *just* an innovation—HIT is essen-

tial if we hope to achieve the goals we have set to achieve higher quality, affordable care that fuels rather than drains our economy.

In my comments today, I am going to focus on the importance of strengthening the linkage between HIT investments and improvements in patient care. More specifically, I intend to cover three points. First, Federal funding to promote adoption of HIT is an essential foundation for improving health care safety, quality and affordability. Second, investments in HIT will result in far greater improvement in patient care if steps are taken to ensure that electronic health records (EHRs) and personal health records (PHRs) possess the necessary capabilities to support performance measurement, reporting, and improvement. Third, HIT investments and incentives should be tied to the *effective use* of HIT to improve patient safety, outcomes and experience of care, not just having it.

HIT'S ROLE IN IMPROVING QUALITY

We are making progress in improving healthcare performance, but it is happening at a slower pace than it should. For example, the National Health Care Quality Report shows an average annual improvement of only 1.9 percent on a selected set of performance measures between 2000 and 2004. By contrast, the rate of healthcare expenditures grew 7.6 percent during the same time period. There is entrenched over-use, mis-use and under-use of services. These gaps in quality, use and access affect everyone, but place the greatest burden on minorities. Efforts to close the disparities gap have to date had little impact.

There are many examples of efforts to improve quality in hospitals, small and large ambulatory practices, and long-term care settings that have been substantial and life-saving. But the health care sector lacks the ability to bring these innovations to scale; best practices in care delivery may take years if not decades to spread throughout a community and the Nation.

One reason for this slow rate of improvement is that our current health care delivery system is extraordinarily fragmented. The average Medicare patient sees two primary care physicians and five specialists annually, across a median of four different practices. The fragmentation of care is even more pronounced for patients with chronic conditions; for example, a Medicare patient with coronary artery disease sees three primary care physicians and seven specialists in a given year. This kind of fragmentation, particularly for the chronically ill, makes it extremely challenging to coordinate care and share information in a timely way that is responsive to patients' needs. HIT can facilitate the exchange of patient information and communication between providers and across care settings, which can create safer, more effective and patient-centered care.

Much of the health care sector lacks critical organizational supports necessary to consistently provide effective, safe and efficient care across the entire patient-focused episode. HIT is one of those critical organizational supports, but I want to emphasize that HIT is not enough on its own to transform the delivery system. HIT is a *tool* that must be used effectively. In its landmark report, *Crossing the Quality Chasm*, the Institute of Medicine emphasized the importance of *using* HIT to:

- Design care processes based on best practices.
- Translate new clinical knowledge and skills into practice.
- Support the work of multi-disciplinary teams.
- Enable the coordination of care across patient conditions, services and settings.
- Measure and improve performance.

Investments in HIT will have the greatest impact if pursued within a broader policy agenda that encourages the development of higher levels of organizational capacity in all practice settings.

Investment in HIT *now* will also enable more effective implementation of other elements of a comprehensive reform agenda over the coming years including: availability of information on the effectiveness of alternative treatments; reform of payment programs to promote value; and informed patient choice and shared decision-making. Virtually all of these strategies will require more comprehensive performance information than is currently available—performance information on the entire patient-focused episode including measures of patient outcomes, care processes, and resource use.

HIT THAT SUPPORTS PERFORMANCE MEASUREMENT AND IMPROVEMENT

Funds for HIT included in the stimulus provide an opportunity to take important steps towards the establishment of a secure, interoperable, nationwide health information network. With strong leadership from the Office of the National Coordinator, working collaboratively with a wide variety of stakeholders, a good deal of progress

has been made in recent years. The current state of the technology and standards is adequate to support this investment now.

At the same time, we should continue our efforts to ensure that EHRs and PHRs possess the necessary capabilities to support performance measurement, reporting, and improvement. In short, EHRs and PHRs must capture the necessary data to calculate measures; and provide clinical decision support (CDS) to providers to enhance performance. Establishing an HIT infrastructure to fully support performance measurement and improvement requires close and ongoing collaboration between the “quality community” and the “HIT community.”

Efforts are now well underway to create such a “bridge.” In 2007, with initial support from the Agency for Healthcare Research and Quality and pursuant to recommendations of America’s Health Information Community (now a public-private partnership known as the National eHealth Collaborative), NQF established the Health Information Technology Expert Panel (HITEP), chaired by Paul Tang, M.D., Palo Alto Medical Foundation. The initial work of HITEP has focused on identifying the types of data that must be captured in EHRs to calculate the performance measures that are currently used by Medicare for public reporting purposes. HITEP is now working collaboratively with the Health Information Technology Standards Panel (HITSP), to translate the “Quality Data Set” into HIT standards, and the Certification Commission for Health Information Technology, to promote the development of EHRs capable of supporting performance measurement and improvement.

I encourage you to build upon this important collaborative work and not to reinvent the wheel. The “Quality Data Set” will support both public reporting *and* enhanced patient care. It will enable both real-time feedback to clinicians on their performance *and* clinical decision-support (i.e. prompts and reminders to a clinician to ask a question or supply a drug; alerts that inform a clinician that something is amiss, such as a drug being prescribed that will react badly to another prescribed drug).

INCENTIVES FOR USING, NOT JUST HAVING HIT

Federal funding to promote the adoption of HIT will only result in improvements in care if HIT systems are used to perform key value-enhancing functions, including:

- exchanging data on prescriptions, laboratory tests, and imaging procedures;
- developing evidence on the safety and effectiveness of treatments; and
- reporting on safety, quality and affordability.

Interoperability and technical capabilities are important, but investments will prove most effective if tied to process changes that improve patient safety and clinical outcomes, while making the health care experience more meaningful.

HIT investments and incentives should be tied to the *effective use* of HIT to improve patient safety, outcomes and experience of care, not just having it. To support this need, NQF has endorsed a set of performance measures emphasizing HIT use in five areas: electronic prescribing, interoperability/information exchange, care management, quality registries, and the medical home. For example, the two care management measures endorsed by NQF assess the use of HIT to identify specific patients in need of care, track their preferences and lab results, and assist the clinician in providing evidence-based care according to national guidelines using automated alerts and reminders. To ensure information about patients doesn’t fall through cracks in the healthcare delivery system, the first of these NQF measures addresses HIT used during a patient-clinician visit and the second addresses capturing and sharing clinical results between visits.

In conclusion, the NQF supports Federal funding to promote the adoption of HIT as an essential foundation for improving health care safety, quality and affordability, but it is important to invest wisely. This investment will yield far greater returns in terms of higher quality, more affordable care, if steps are taken now to ensure that EHRs and PHRs possess the necessary capabilities to support performance measurement and improvement; and if investments are tied to the *effective use* of HIT to enhance patient care.

Thank you again for your focus on how HIT can drive improvements in healthcare quality and efficiency.

SUMMARY

The NQF supports Federal funding to promote the adoption of health information technology (HIT) as an essential foundation for improving health care safety, quality and affordability, but it is important to invest wisely. This investment will yield far greater returns in terms of higher quality, more affordable care, if steps are taken

now to ensure that EHRs and PHRs possess the necessary capabilities to support performance measurement and improvement; and if investments are tied to the *effective use* of HIT to enhance patient care.

HIT'S ROLE IN IMPROVING QUALITY

HIT is one critical organizational support; however HIT is not enough on its own to transform the delivery system. HIT is a *tool* that must be used effectively. Investments in HIT will have the greatest impact if pursued within a broader policy agenda that encourages the development of higher levels of organizational capacity in all practice settings. Investment in HIT *now* will also enable more effective implementation of other elements of a comprehensive reform agenda over the coming years including: availability of information on the effectiveness of alternative treatments; reform of payment programs to promote value; and informed patient choice and shared decisionmaking. Virtually all of these strategies will require more comprehensive performance information than is currently available—performance information on the entire patient-focused episode including measures of patient outcomes, care processes, and resource use.

HIT THAT SUPPORTS PERFORMANCE MEASUREMENT AND IMPROVEMENT

Funds for HIT included in the stimulus provide an opportunity to take important steps towards the establishment of a secure, interoperable, nationwide health information network. The current state of the technology and standards is adequate to support this investment now. EHRs and PHRs must capture the necessary data to calculate measures; and provide clinical decision support (CDS) to providers to enhance performance. Establishing an HIT infrastructure to fully support performance measurement and improvement requires close and ongoing collaboration between the “quality community” and the “HIT community.”

Efforts are now well underway to create such a “bridge.” In 2007, NQF established the Health Information Technology Expert Panel (HITEP), chaired by Paul Tang, M.D., Palo Alto Medical Foundation. The initial work of HITEP has focused on identifying the types of data that must be captured in EHRs to calculate the performance measures that are currently used by Medicare for public reporting purposes. HITEP is now working collaboratively with the Health Information Technology Standards Panel (HITSP), which is translating the “Quality Data Set” into HIT standards and the Certification Commission for Health Information Technology (CCHIT), which promotes the development of EHRs consistent with national standards.

The NQF recommends that future efforts build upon this important collaborative work and not to reinvent the wheel. The “Quality Data Set” will support both public reporting *and* enhanced patient care. It will enable real-time feedback to clinicians on their performance and clinical decision-support.

INCENTIVES FOR USING, NOT JUST HAVING HIT

Federal funding to promote the adoption of HIT will only result in improvements in care if HIT systems are used to perform key value-enhancing functions, including: exchanging data on prescriptions, laboratory tests, and imaging procedures; developing evidence on the safety and effectiveness of treatments; and reporting on safety, quality and affordability.

HIT investments and incentives should be tied to the *effective use* of HIT to improve patient safety, outcomes and experience of care, not just having it. To support this need, NQF has endorsed a set of performance measures emphasizing HIT use in five areas: electronic prescribing, interoperability/information exchange, care management, quality registries, and the medical home. To ensure information about patients doesn't fall through cracks in the healthcare delivery system, the first of these NQF measures addresses HIT used during a patient-clinician visit and the second addresses capturing and sharing clinical results between visits.

Senator MIKULSKI. Thank you. That was excellent. It really complements with what Mr. Cochran says and this whole issue of not only having it, but using it. So it has got to be usable, and then this buy-in from the physicians.

Well, I think that is a good time now to turn to our private sector experience, and Mr. Neupert, let us hear from the microchip crowd.
[Laughter.]

**STATEMENT OF PETER NEUPERT, VICE PRESIDENT,
MICROSOFT HEALTH SOLUTIONS, REDMOND, WA**

Mr. NEUPERT. Thank you, Senator Mikulski.

My name is Peter Neupert, and I am the corporate vice president of Microsoft's Health Solutions Group.

For over a decade, Microsoft has increased its commitment to health, developing software solutions supporting both consumers and businesses. And I am glad you are fired up because I am, too.

We have a powerful vision of the future. We see a dynamic patient-centric health system that transforms how physicians provide care and individuals manage their health, a totally connected network enabling the seamless exchange and reuse of health data.

Across the healthcare industry today, there are examples of organizations starting to realize this vision. The Marshfield Clinic, Kaiser Permanente, the Department of Veterans Health Affairs, and many others whose leadership thought about clear outcomes and embraced technology as a means to drive improved outcomes, efficiency, quality, and a reduction of costs. They built patient-centric, connected systems.

We believe that these kinds of successes need to be scaled nationally. We can expand on these successes and embrace their core ideals by doing the following three things.

First, we must drive the right health outcomes and payments to incent innovation. We must build an industry focused on lifelong wellness and reward caregivers when diseases and conditions do not develop. We need to reward doctors who provide preventive care and allow them to innovate in delivering care in new connected electronic ways.

Second, we must connect and share data among and between health organizations. Having access to a lifetime record of treatments, prescriptions, and tests will allow individuals and healthcare providers to make better medical decisions, reduce wasteful spending, and increase the quality of care. Health data is and should be treated as a valuable asset.

Third, we must empower consumers to be stewards of their own health data. Just as credit scores represent a lifetime of active and passive financial decisions and transactions, so should health data. We must help consumers to start building their health data into a lifelong asset, to manage it over time, and to share with those who support them in making key health decisions. We should begin today, with the health data that already exists electronically.

To move forward, we recommend that the public and private sectors take the following five steps. First, encourage innovation in health IT by setting out objective goals and criteria, not by mandating specific technologies or development models.

Second, reward innovative doctors who make the Internet the foundation for the patient-physician connection.

Third, provide incentives for sharing data today.

Fourth, focus on making data interoperable today, not waiting for future standards and insist that vendors separate data from their applications.

And fifth, and last, enable the private sector to develop an information infrastructure that connects data, systems, and people.

When we wanted to go to the Moon, we didn't focus on building the rocket. We set the goal of landing on the Moon, and we used money, technology, and innovation to make it happen. Once health objectives are set, stakeholders in the health ecosystem can figure out the right technology to reach these goals.

Microsoft looks forward to collaborating with the public sector and others in industry to drive real change in our healthcare system.

Thank you for the opportunity to appear before you today.
[The prepared statement of Mr. Neupert follows:]

PREPARED STATEMENT OF PETER NEUPERT

Chairman Kennedy, Ranking Member Enzi, and distinguished members of the committee, my name is Peter Neupert, and I am Corporate Vice President of Microsoft's Health Solutions Group. Thank you for the opportunity to share Microsoft's perspective on investments in health IT. We appreciate how much time and attention the committee has spent on this critical issue, and we commend you for your work in advancing the debate on information technology as part of healthcare reform.

My testimony begins by describing what we believe to be the future of U.S. healthcare—a totally connected, patient-centric system. It explains how technology can help make that future a reality by encouraging better outcomes and innovation, connecting patient data, and empowering consumers to be stewards of their own health. It then outlines ways in which the public and private sectors can work together to create an efficient, data-driven healthcare system, benefiting patients, healthcare providers, and the overall U.S. economy. Finally, it concludes by describing Microsoft's existing investments in health IT and how they are being implemented today.

I. THE FUTURE: THE U.S. HEALTH SYSTEM TRANSFORMED BY TECHNOLOGY

At Microsoft, we envision a dynamic, patient-centric health system that transforms the way physicians provide care and individuals manage their own health—a totally connected network that delivers predictive, preventive, and personalized medicine in an accessible, affordable, and accountable way. Specifically, we see:

- *Patients as consumers.*—Experiencing more control, more convenience, better service, and ultimately better value for what they spend on healthcare.
- *Physicians as knowledge workers.*—Professionals getting the right data in the right format at the right time to provide the best treatment and preventive care.
- *New interactions among the key members of the healthcare ecosystem.*—Physicians, patients, pharmacies, researchers, and insurance providers benefiting from a new flow of data to make better, faster decisions.
- *The extension of modern healthcare to the virtual space.*—Patients getting care when they want it, wherever they need it, thanks to virtual medical clinics, virtual doctor visits, virtual lab results, medical homes, and personalized medicine based upon genomic data.
- *A learning healthcare system.*—One that measures everything, identifies errors, and makes improvements in order to deliver value.¹

In summary, it is a world where everyone in the health ecosystem has the right information at the right time with computer-assisted decision support, enabling the seamless exchange and re-use of data. Health data is the asset that drives an efficient, high-quality, value-based, evidence-focused future for medicine.

II. THE BLUEPRINT: BUILDING A SCALABLE, PATIENT-CENTRIC HEALTH IT SYSTEM

We all know that information technology is a vital component in improving our healthcare system. But simply spending more money on information technology, without considering all the factors driving behavior in our healthcare system, is unlikely to lead to better health outcomes. There have been many investments in technology that did not solve the problems of better quality outcomes, increased access, or reduced costs.

¹Institute of Medicine Roundtable on Evidence-Based Medicine, *Learning Healthcare System Concepts v. 2008* (2008).

However, across the healthcare industry today, there are many examples of successful technology investments—the Marshfield Clinic, Kaiser Permanente, the Department of Veterans Affairs, and others. These are organizations whose leadership thought about clear outcomes and embraced technology on many different levels to drive improved efficiency, quality, and a reduction of costs across their systems. In essence, they created patient-centric systems. We believe that these are the kinds of successes that need to be scaled nationally.

A. Driving the Right Health Outcomes and Payments to Incent Innovation

An industry focused on lifelong wellness and outcomes would reward caregivers when diseases and conditions do *not* develop.

The problem with our current healthcare system is that it is designed to care for people who are ill, not to keep people healthy. For example, we focus on providing episodic treatment and medication to diabetics instead of asking how we can raise awareness of diabetes risk factors and prevent people from developing diabetes in the first place. The system is this way because we do not reward doctors who provide preventative care or innovative services.

Doctors typically receive a flat fee for each treatment they perform, regardless of the quality of the care, and the amount of the fee is set by a bureaucracy of insurers, health plans, and regulators. In this fixed-price system, there is no incentive for providers to improve customer satisfaction. Most physicians are not reimbursed for telephone or e-mail consultations, let alone more advanced uses of technology. Doctors who attempt to innovate—for example, by investing in systems to collect data from patients remotely—end up delivering better care but making less money.

In health-related areas where prices are set by the market, such as veterinary medicine, dentistry, and cosmetic surgery, providers do a much better job of investing in services that attract customers. For example, pet owners willingly pay for veterinarians who make house calls, maintain electronic medical records, remind owners to bring their pets in for scheduled vaccinations, call to make sure the pets are taking their pills, and are available for e-mail or telephone consultations. Veterinarians compete on price and quality, so they are constantly looking for innovations that allow them to provide better service and improve customer satisfaction. Because technology is often a source of innovation, veterinarians are quick to embrace new technologies that fuel better service and better patient care. We need to learn from these examples.

B. Connecting and Sharing Data Among and Between Health Entities

We believe the first step is to connect the many medication lists, laboratory test results, and diagnostic images that are already maintained electronically. Eventually, we can build a lifetime record of treatments, prescriptions, and tests that allows individuals and healthcare providers to make better medical decisions, reduce wasteful spending, and increase the quality of care.

Our current system is built around the idea of a specific provider prescribing specific treatment for a specific condition. Patients' health data is locked inside each provider's silo, without being connected or shared. Physicians are forced to either make treatment and prescription decisions without all available clinical data, or else waste time and resources attempting to aggregate data. MedStar Health's Washington Hospital Center estimates that 60 percent of a clinician's time is spent searching or waiting for information, with only 16 percent spent on direct patient care.²

The right investments in health IT can tear down these silos, offering patients and doctors a holistic picture of a patient's health history and thereby improving care. Consider chronic diseases, which account for over 75 percent of healthcare spending.³ Even though most care for chronic diseases occurs at home, data from at-home care is not integrated with data available at the hospital or at the doctor's office. Individuals and providers would all benefit if, for example, patients with diabetes could upload their blood glucose readings to a Web site that offered personalized advice and guidance; receive information alerts regarding changes in recommended treatment or behavior; share their results with a supportive community of fellow patients; and securely transmit readings to their clinician. Patients would have more information on managing their condition, would be in a better position to prevent acute incidents, and would need to make fewer trips to the doctor. Treating physicians would have a greater ability to understand their patients' health over

²Microsoft Health Solutions: Helping People Live Longer, Healthier Lives (June 26, 2007).

³Centers for Disease Control and Prevention, Chronic Disease Overview (Nov. 20, 2008), <http://www.cdc.gov/nccdphp/overview.htm>.

time, allowing them to identify the best treatment for existing patients and to help people who are at risk of developing the disease in the future.

C. EMPOWERING CONSUMERS TO BE STEWARDS OF THEIR OWN HEALTH DATA

Finally, we need to empower consumers to manage their health data. Just as credit scores represent a lifetime of active and passive financial decisions and transactions, so should health data. We must help consumers to start building their health data into a lifelong asset, to manage it over time, and to share with those who support them in making key decisions both within and outside of the health system.

Today, in order to manage their health, consumers must deal with both paper documents and electronic files. They fill out form after form, calling multiple doctors' offices for appointments. Few people have the resources to keep track of medication lists, vaccination histories, appointment calendars, lab results, diet plans, exercise schedules, and all the other components of health data. Many have little knowledge of how to prevent disease and little, if any, support for managing their healthcare.

Now imagine if consumers could connect all their health and wellness data electronically, share it securely from provider to provider, and keep it in one place over time, no matter the doctor or the insurance company. They would have all the relevant data at their fingertips, accessible at any time and any place. They could sign up for services that would provide personalized alerts and information. They could track fitness goals across numerous devices, such as exercise bikes that monitor vital signs, smart watches that record the number of miles run, and scales that measure body fat as well as weight. They could research relevant medical conditions online and interact with support groups so that they would be better prepared and informed for their next visit to the doctor. They could share data with their support systems and make better health decisions for themselves and their families.

We believe technology can make this vision a reality. The Internet and online social networks have already become an everyday resource for consumers seeking information in order to make health decisions, but what is missing is a way to link this information back to the individual's personal health history. And consumers are ready for it:

- 78 percent of Americans favor giving doctors the ability to share access to their medical records if done with their permission.⁴
- 66 percent see value in including their own information anonymously in a large database to help researchers.⁵

Pharmacy benefit managers maintain medication lists electronically, and many hospitals digitally record laboratory test results and diagnostic images. As a first step in empowering consumers, we could require providers to give patients electronic copies of any data that is already available in electronic format. Providing consumers with access to their healthcare data in a secure and private way, and allowing them to keep it in one place over time and share it from provider to provider, will permit them to make the best daily decisions about their health. It also will enable healthcare professionals to deliver better care.

III. THE NEXT STEPS: RECOMMENDATIONS FOR MOVING FORWARD

Microsoft has learned a great deal over the past several years as we have worked to improve healthcare through information technology. We know that just spending more money on health IT will not solve the problems in today's healthcare system. We believe the right investments are those that focus on the right outcomes. We believe that it is essential that data be connected and shared so that consumers and health enterprises can build their health data assets over time.

To achieve our vision will require that the public and private sector take several steps, including:

- **Encourage innovation in health IT by setting out objective goals and criteria, not by mandating specific technologies or development models.** Hundreds of innovative health IT products and services are available on the market today, and many companies are investing large sums to develop new technologies and solutions. Even as they compete, however, companies are collaborating to enable their products to work together and share information regardless of their underlying development, licensing, or business models. To take one example,

⁴Council for Excellence in Government et al., *The American Public on Healthcare: The Missing Perspective* (2008), <http://www.excelgov.org/Programs/ProgramDetail.cfm?ItemNumber=9404>.

⁵*Id.*

Microsoft's HealthVault can interface with the open source Vista EHR system and other open source healthcare applications.

As Congress considers how best to spur the broad adoption of health IT systems, it should take care not to mandate or prescribe any particular technology or development model. Doing so could deprive healthcare providers of the best available solutions, exclude scores of American companies and workers from competing to supply these solutions, and weaken incentives for further private-sector investment and R&D—just when we as a Nation should be trying to strengthen these incentives. To the extent Congress seeks to influence the development or adoption of health IT systems, it should set forth objective, technology-neutral goals and criteria that these systems should meet, such as those relating to security, privacy, interoperability, and total cost of ownership. It should then open the door to all companies to compete for the opportunity to supply health IT solutions that satisfy these criteria.

- **Reward innovative doctors who make the Internet the foundation of the patient-physician connection.** The Internet has created a society that has access to, and demands access to, up-to-date information around the clock. Patients need information about their medical conditions, appropriate drugs or treatments, pre-procedure instructions, and post-visit follow-ups. The Internet is the most efficient way for doctors to provide the “trusted information” that consumers want. But the fixed-price nature of physician reimbursement means that innovative doctors have no incentive to deliver this kind of additional service. Physicians should be encouraged to embrace basic Internet technologies that allow them to communicate more effectively and consistently with their patients.

- **Provide incentives for sharing data.** We believe that it is critical to seamlessly connect data and empower individuals to take control of their health and wellness. We hope that those in the public sector will facilitate the transformation of health data into a vital asset by removing barriers to data sharing and providing incentives for data exchanges that reduce costs, increase value, and improve the quality of care.

- **Focus on making data interoperable today, not waiting for standards tomorrow, and insist that vendors separate data from applications.** Microsoft is committed to the development of interoperability standards and works diligently with the rest of the industry to reach consensus on those standards, but exchanging healthcare data cannot wait—we need a migration path now. Today, data is too often used for a single application or a single purpose, then thrown away once that purpose is complete. We can use metadata—the details that describe the data and how it has been captured—to ensure that data is kept alive and made available for reuse, no matter what its original application or purpose. By insisting that vendors supply IT that allows data transfers to and from other non-vendor applications, we can get data moving better and faster between different systems today, without waiting for standards that may take years to complete. Better use of metadata will pave the way for integrating legacy data with standards-based data once these standards are more widely adopted.

- **Enable the private sector to develop an information infrastructure that connects data, systems, and people.** To move from today's fragmented delivery system to tomorrow's connected network, we need technology infrastructure—“plumbing”—that allows data to flow freely throughout the system and be reused. Without it, we will recreate our disconnected paper system in the virtual space. This infrastructure must be (1) flexible, to enable many different players across the ecosystem to do what they need to do; (2) interoperable, to leverage existing standards and infrastructure investments that work toward more unified ways of organizing and sharing data; (3) scalable, to adapt to the rate of medical and technology advances; and (4) secure and private, to foster consumer trust.

IV. HOW MICROSOFT CAN HELP: OUR INVESTMENTS IN HEALTH IT

More than 12 years ago, Microsoft started making investments in the health industry. We saw software and the Internet as essential tools to transform healthcare, as they have so many other industries—opening new ways of working, new ways of communicating, and new economics. We have steadily increased our investments and commitment to health globally. Our vision was simple—to improve health around the world through software innovation. From the beginning, we have thought about improving health in the developed world as well as developing economies. We have focused globally on openness and interoperability to drive truly scalable solutions that can benefit all.

We are concerned with the current focus on electronic medical records (EMRs) as a panacea. While some forms of EMRs are necessary, they represent only a part of

the solution. The future vision we describe is far broader than simply making records electronic.

We have a set of solutions in the market facilitating the connection and sharing of data for consumers and large health systems to help them build their health data assets.

A. Empowering Consumers to Access, Consolidate, and Share Their Health Data

For consumers, we launched HealthVault, a privacy and security-enhanced data storage and sharing Internet-based platform. People can use HealthVault to store copies of their health records from providers, plans, pharmacies, schools, government, or employers; upload data from home health devices like blood glucose monitors and digital scales; provide data to health care providers, coaches, and trainers; and access products and services to help improve their health. We worked with leaders across the industry to ensure that the right privacy and security standards would be in place, and we are seeing momentum starting to happen. Since launching, we have enabled 50 devices, have 40 live applications—services on top of HealthVault such as PHRs, alert services, etc.—and signed 91 partners across the country, including leading organizations like Aetna, Kaiser Permanente, Cleveland Clinic, and the Military Health System.

Of particular note is a pilot project with Cleveland Clinic that could have a wide-ranging impact on care—extending care to the home from traditional hospitals and doctors' offices. It is the first pilot in the country to follow multiple diseases (it addresses chronic disease management in the areas of diabetes, hypertension, and heart failure) in the clinical delivery setting using multiple at-home devices including glucometers, heart rate monitors, weight scales, and blood pressure monitors. Patients enrolled in the pilot upload device data to HealthVault using a home computer, and Cleveland Clinic downloads the data into the patients' Cleveland Clinic MyChart accounts, creating an online log of the readings available for physicians. We are particularly excited about the results of the pilot. Monitoring constant data, and having it shared in an efficient way with physicians, can result in better quality of life and increased efficiency. Even possible is the avoidance of acute care incidents, impacting expense.

B. Empowering Health Systems to Provide Patient-Centric Care

For hospitals and health systems, just under a year ago, we launched Amalga, our family of data sharing and intelligence solutions, which connect a hospital's or health system's existing legacy systems and any new systems. This allows patient data to be viewed and queried holistically, enabling a shift from departmentally focused systems to more patient-centric systems. Amalga has been adopted by many leading health organizations—Johns Hopkins, New York Presbyterian, Mayo Clinic, MedStar Health, St. Joseph Health System, Moffitt Cancer Center and Research Institute, District of Columbia Primary Care Association, Wisconsin Health Information Exchange, Novant Health, Children's Healthcare of Atlanta, and the University of Washington.

Of particular note is the Wisconsin Health Information Exchange (WHIE), the first health information exchange to use Amalga. Eight months ago, the WHIE set specific goals to improve physician decisionmaking and quality care in their emergency rooms. The project aggregates patient data from State Medicaid claims, 13 area hospitals, and more than 110 hospital-associated clinics in southeast Wisconsin. Amalga presents a single view of aggregated patient data, in real-time, to emergency department doctors at five area hospitals. Gaining a comprehensive view of a patient—including pharmacy prescription data, imaging and lab procedures, current and previous diagnoses as well as hospital admission, discharge, and transfer records—enables emergency room doctors to make fully informed decisions about the patient's care in time-critical situations. The benefits include reduced errors, more efficient care (physicians can see if tests have already been done so that tests are not repeated), and more effective ways to treat patients (physicians can see if patients have been to the ER multiple times, enabling them to follow up more aggressively or put patients on a different care routine to avoid further ER visits).

The early success of the WHIE Project has prompted Humana, one of the Nation's largest health benefits companies, to provide an incentive to providers for utilization of the WHIE. As part of its emergency care initiatives, Humana has entered into a pilot program with the WHIE. In this program, Humana recognizes the value of applying health information exchange technology, and its impact on avoiding duplication of services, and has agreed to provide a WHIE-administered incentive to ER physicians for utilization of the tool.

As we move into 2009 and beyond, we will expand our products and develop a new generation of software and services to help support and speed the move towards efficient, data-driven medicine.

When we wanted to go to the moon, we did not focus on spending exorbitant amounts of money to build a rocket. We set the goal of landing on the moon, and we used money, technology, and innovation to make it happen. Once health objectives are set, stakeholders in the health ecosystem can figure out the right technology to reach the goals as efficiently and effectively as possible.

Microsoft looks forward to collaborating with the public sector and others in industry to drive real change in our healthcare system. Thank you for the opportunity to appear before you today.

REINVENTING HEALTHCARE THROUGH HEALTH INFORMATION TECHNOLOGY

THE FUTURE

Dynamic, Personalized, Consumer-Driven Healthcare. At Microsoft, we have a powerful vision for how technology can improve healthcare, much broader than simply the use of electronic medical records. We envision a connected health ecosystem that delivers predictive, preventive, and personalized care. We see:

- *Patients as consumers.*—Experiencing more control, more convenience, better service, and ultimately better value for what they spend on healthcare.
- *Physicians as knowledge workers.*—Professionals getting the right data in the right format at the right time to provide the best treatment and preventive care.
- *A learning healthcare system.*—One that measures everything, identifies errors, and makes improvements in order to deliver value.

This new system will enable a data-centered approach to healthcare that shifts the priorities from *treatment and cure to prevention and lifelong wellness*.

THE BLUEPRINT

A Scalable, Patient-Centric Health IT System. Instead of allowing healthcare professionals to control the patient experience and healthcare facilities to control patient records, individuals are now poised to take greater responsibility for their overall health and wellness. Technology can drive this transformation by:

- *Encouraging better outcomes and more innovation.* Under today's flat-fee system, most physicians are not reimbursed for telephone or e-mail consultations, let alone more advanced uses of technology. In contrast, providers who compete on price and quality are constantly looking for ways to improve service.
- *Connecting patient data.* Because patients' health data is locked in silos, physicians are forced to either make treatment decisions based on incomplete data, or else waste time and resources aggregating information. A complete health history would enable providers to make better medical decisions, decrease wasteful spending, and increase the quality of care.
- *Empowering consumers.* If consumers could connect all their health and wellness data electronically, share their data securely with different providers, and keep it in one place over time, they would have information at their fingertips to make better choices about physicians, care options, and ways to improve their overall well-being.

THE NEXT STEPS

Recommendations for Moving Forward. To facilitate the use of health IT, we need to:

- *Encourage innovation in health IT by setting out objective goals and criteria, not by mandating specific technologies or development models.* The proposed "open source" preference would disadvantage a broad range of innovative, cost-effective health IT offerings already available in the market and undermine incentives for further industry investment in health IT. Rather than require the Administration to adopt a particular technology or development model, Congress should establish a framework based on objective, neutral criteria and then encourage all companies to compete on the merits.
- *Reward innovative doctors who make the Internet the foundation of the patient-physician connection.* Physicians should be encouraged to embrace basic Internet technologies that allow them to communicate more effectively and consistently with their patients.

- *Provide incentives for sharing data.* Removing barriers on data sharing and providing incentives for data exchanges would help shift healthcare economics, from expensive acute care setting to smart services in the home.

- *Focus on making data interoperable today, not waiting for standards tomorrow, and insist that vendors separate data from applications.* Vendors need to supply IT that allows data to be separated from applications and made available for reuse. Metadata-driven interoperability can get data moving better and faster between different systems today.

- *Enable the private sector to develop an information infrastructure that connects data, systems, and people.* A system that is flexible, interoperable, scalable, private, and secure will ensure that data flows freely and is reused.

Microsoft is developing health IT solutions that facilitate the connection and sharing of data. We look forward to collaborating with the public sector and others in industry to drive real change in our healthcare system.

Senator MIKULSKI. That was excellent and meaty. I hope you are not recommending that we develop a health score because for each and every one of us, there would be a lot of pass and fails going along with it. But I think this is exactly what we were looking for.

Before we go to you, Ms. Grealy, I want to acknowledge and welcome a new member to the HELP Committee, Senator Merkley from the State of Oregon.

Senator, we welcome you and look forward to your active participation. We are taking our testimony, and I will be asking some questions, and we will be sure to turn to you.

Senator MERKLEY. Thank you very much.

Senator MIKULSKI. Ms. Grealy.

STATEMENT OF MARY GREALY, PRESIDENT, HEALTHCARE LEADERSHIP COUNCIL, WASHINGTON, DC

Ms. GREALY. Chairman Mikulski and members of the committee, I want to thank you on behalf of the members of the Healthcare Leadership Council for this opportunity to testify on health information technology as a vital component of both economic recovery and healthcare reform.

Last Sunday on ABC News, President-elect Obama expressed again his determination to invest in health information technology to make our healthcare system better, to reduce medical errors, and to save Americans money. We could not be more supportive of the President-elect's priorities.

There is considerable evidence of the impact, both on our finances as well as our well-being, of HIT. Let me cite just one example.

One of our members, NorthShore University HealthSystem of Evanston, IL, has an electronic health record system that was implemented in 2003. Today, over 50,000 NorthShore patients can schedule appointments, refill prescriptions, or communicate with their doctors via the Internet.

Thanks to the ability to immediately check whether patients are receiving conflicting medicines, they have reduced medication error rates by 80 percent.

Senator MIKULSKI. Whoa.

Ms. GREALY. Thanks to the ability also to quickly identify infections in patients upon admission and their ability to manage those infected patients, they have reduced their MRSA infections by 70 percent.

Well, it is no wonder that HHS estimates savings as high as \$400 billion over a 5-year period if we implement a national health information network. But how do we get to this bright future?

There are three critical steps. The first is to create funding mechanisms to assist healthcare providers with the large infrastructure investments necessary for them to take part in the HIT revolution.

As you noted, only a small percentage of physician offices and 20 to 25 percent of hospitals have adopted an electronic record system, and the predominant obstacle cited is cost. Investing in HIT through economic recovery or stimulus legislation would be a tremendous catalyst.

Second, we need to encourage innovation in the field of standards development and foster innovation, which is absolutely essential to achieving nationwide interoperability. We firmly believe that the private sector should work collectively to develop a road map for an effective, efficient health information exchange.

The newly announced National eHealth Collaborative is poised to do effective work in this regard, and it is an important responsibility for the Federal Government to ensure that all involved stakeholders are at that collaborative table.

And finally, the Healthcare Leadership Council believes that engendering patient and consumer trust in the electronic exchange of information will be paramount to successful implementation of HIT. Progress hinges on striking a critical balance, protecting privacy while ensuring that medical professionals have ready access to the information that they need to save lives and provide quality care.

As I noted earlier, Senator Mikulski, the evidence is clear. HIT development will pay substantial dividends in the form of healthier Americans, improved care, and lower cost. Our members have absolutely seen the return on the investment that they have made.

Including HIT funding in the economic recovery stimulus measure will be a down payment on a brighter future that deserves our enthusiastic support. We look forward to working with you not only on HIT, but also on that larger issue of healthcare reform.

Thank you.

[The prepared statement of Ms. Grealy follows:]

PREPARED STATEMENT OF MARY R. GREALY

Senator Mikulski and other members of the committee, I want to thank you on behalf of the members of the Healthcare Leadership Council (HLC) for the opportunity to testify on health information technology (HIT) funding as an important component of economic stimulus and its role in health care reform.

My name is Mary Grealy and I am president of the Healthcare Leadership Council (HLC), a not-for-profit membership organization comprised of executives of the Nation's leading health care companies and organizations. Fostering innovation and constantly improving the affordability and quality of American health care are the goals uniting HLC members.

Last May, HLC released *Closing the Gap: A Proposal to Deliver Affordable, Quality Health Care to All Americans*. This proposal represented months of work and collaboration among HLC members and an acknowledgment that health care must be delivered more efficiently, safely, and effectively in this country. Widespread adoption of HIT affords us the opportunity to accomplish all of those things and more. Members of HLC—hospitals, academic medical centers, health plans, pharmaceutical companies, medical device manufacturers, biotech firms, health product distributors, and pharmacies—have seen firsthand what widespread adoption of HIT can mean to patients.

Several HLC member organizations are among the pioneers of health information technology. The collective experiences and achievements of these early adopters leads us to believe that HIT has the capability to transform our health care system by providing increased efficiencies in delivering health care; contributing to greater patient safety and better patient care; and achieving clinical and business process improvements. In combination with improvements to health care payment and delivery systems, HIT could have an even greater impact on improving health outcomes and lowering costs.

While many HLC members have embraced the promise of HIT, as many have testified before this and other committees of Congress in the past few years, physician and hospital uptake of this technology has been slow to date. Health care lags behind other industries in embracing information technology. When surveyed as to the reasons why they are hesitant to “go electronic,” non-adopters often cite many reasons—ranging from confusion or lack of understanding of new systems to liability concerns. But time and again, cost is identified as the most substantial barrier to widespread adoption and use of HIT.

In my testimony I will discuss the ways in which HIT brings greater quality and value to our health care system. I’ve included as part of my written statement an attachment (see Attachment 1) that describes how various HLC member companies and organizations have already achieved significant success utilizing information technology.

I also will outline the need for congressional action to remove barriers to nationwide adoption of HIT by creating funding mechanisms to assist health care providers with the sizable IT infrastructure investments that are necessary if they—and their patients—are to be part of this technological revolution. Lastly, I will address the need for Congress to oversee the development of national, uniform standards and address privacy concerns as part of an interoperable health information network.

THE BENEFITS OF HIT

HIT holds the potential to move our country toward truly patient-centered health care. The value proposition of HIT is putting tools in place to empower patients and physicians to make better decisions with more information at their fingertips. At the consumer level, HIT will help patients navigate their health care journey and arm them with decisionmaking abilities that have been elusive due to the lack of meaningful and actionable information at their disposal. This would lead to improvements in care management by empowering patients, their care givers and providers with critical information to improve care continuity and health outcomes.

Many HLC members are using electronic health records and other forms of HIT and documenting their successes. For instance, one of our members, NorthShore University HealthSystem of Evanston, IL, has operated a patient-centric electronic health record (EHR) system since 2003. Over 50,000 of NorthShore’s patients enjoy a direct link to the system on their home computers and PDAs, which enables them to schedule appointments online, refill prescription drug orders, and communicate with their primary care providers.

Since that time, NorthShore has garnered concrete evidence that EHRs are a critical tool that can improve care quality and patient satisfaction, as well as create efficiencies that lead to a positive return on investment. For example, they have cut in half the amount of time it takes to deliver the first dose of medication to an inpatient because of the speed with which they can check the possibility of conflicting medications or allergic reactions. This has resulted in a medication error reduction rate of close to 80 percent.

Furthermore, a March 2008 study in *The Annals of Internal Medicine* that was also reported in *The Wall Street Journal*, demonstrated a 70 percent reduction in MRSA infections at the three hospitals in NorthShore’s system. The use of HIT to identify infections and manage affected patients across the health care system was crucial to this undertaking.

HLC believes that the establishment of similar nationwide health information connectivity among physicians, and health care professionals such as home health aides, care managers, health plans, and others across the continuum of care, will dramatically improve both the quality and effectiveness of care. That is not to say that we believe HIT is the “silver bullet” that will address all of the health care challenges we face. We believe, though, that combined with comprehensive health system reform, HIT is a critical component in lowering health care costs over the long-term and providing safe, effective, efficient and equitable patient care.

Another way in which HIT would improve quality is by reducing or eliminating duplicative medical care and over-utilization, which the National Priorities Partner-

ship has identified as one of the six areas on which quality improvement efforts should focus. William Yasnoff, former Senior Advisor on the National Health Information Infrastructure for the U.S. Department of Health and Human Services (HHS), posits that 20 percent of all laboratory tests and radiology studies are redundant, performed because the results of previous tests are not available at the point of care. HHS estimates that nationally, savings could reach more than \$400 billion through the implementation of a national health information network.

Perhaps the greatest benefit of HIT is its potential to reduce medical errors. As is the case in other industries, technology in medicine will help to prevent the incidence of human error. A February 2008 *USA Today* article and an Auburn University study show that as Americans age, the projected odds of getting a prescription that results in a serious, health-threatening error is about 1 in 1,000. That could amount to 3.7 million such errors a year, based on 2006 national prescription volume. (*USA Today*. "Five-year-old Took Wrong Medication for Two Months." Brady, E. and McCoy, K., 2/12/08)

The HHS projects that medication errors alone cost the health care system \$76 billion per year (Yasnoff). For example, one of the most common errors in medication use history occurs when a patient or other caregiver forgets to tell a physician or nurse about a medication that is taken at home; a computerized physician order entry system cannot detect this omission without linkage to a community pharmacy database, which could integrate the patient's medication history with the physician's electronic record for that patient. This all points to the need for a unified EHR to serve as a single source of comprehensive clinical information across settings.

By having patient data, including laboratory and radiographic results, instantly available to the patient and any provider of the patient's choice via an interconnected network, HIT improves the ability of health care professionals and patients to make more informed decisions and avoid providing duplicative and redundant services. Furthermore, reconciliation of medications will decrease the likelihood of omission errors when medications are included in a unified EHR. Thus, errors of omission and commission can be prevented; both resulting in savings and, even more importantly, enhanced patient safety.

HLC member companies have already demonstrated that medical errors can be reduced by deploying proven technologies, including bedside bar-coded medication administration systems, widespread e-prescribing, and secure online, "anytime, anywhere" access for physicians to critical patient medication information.

Widely-implemented, interoperable and effectively utilized HIT also maintains the capability to improve population health by enabling advances in critical, oftentimes lifesaving, efforts. For example, data which could assist in early detection of a bioterrorism event include many categories of information, much of which would be derived from hospital computer systems, clinical laboratories, electronic health record systems, medical examiner recordkeeping systems, and 911 call center computers. Other efforts, such as monitoring the safety of drugs and devices through post-market safety surveillance, as well as linking interoperable standards to health care quality reporting efforts, are an important means to improving quality and value in our health care system.

Pressure is mounting for reform of current payment policy to encourage quality improvement, transparency and efficiency. Consequently, there is a growing need to measure the efficacy and efficiency of health care delivery. HLC believes the health care delivery system needs rapid adoption of HIT interoperability standards that not only facilitate the clinical management of an individual patient but that also support the ready aggregation of data for quality and safety measurement and reporting.

Currently, most EHRs cannot transmit quality data for reporting. As a result, hospitals must use a manual and resource intensive process to report mandatory quality data. It is not uncommon to see a nurse reviewing a patient record in an EHR, writing down the information needed and then entering that information into a quality reporting tool because there is no way to automatically extract the required data from the EHR to feed the quality reporting tool. To alleviate this problem, the Federal Government should require the adoption of transaction and semantic interoperability standards for the storage and transmission of data captured within EHRs. Further, the standard-format data captured in EHRs should be readily accessible to be transmitted to quality reporting systems.

Lastly, there is growing interest in comparative effectiveness research and evidence-based medicine to assist providers in evaluating the best care for patients. A well-functioning HIT system would be a crucial component of disseminating comparative effectiveness information to providers at the point of care. HIT tools such as Clinical Decision Support help providers gain easier access to the most current practice guidelines and evidence-based medicine information during patient encoun-

ters. Furthermore, initiatives aimed at chronic disease management are much more easily facilitated by an automated health care system.

FEDERAL FUNDING TO SPUR ADOPTION OF HIT

Given the benefits of HIT to the Nation's health care system, HLC believes that it is critical that the Federal Government invest funds to promote the widespread implementation of HIT.

Though some providers have begun the transition to electronic medical records (EMR), most medical records are still stored on paper. The United States lags behind many other countries in its use of EMRs. Only 15 to 20 percent of U.S. physician offices and 20 to 25 percent of hospitals have adopted some version of an EMR system, and the majority of these systems can't effectively interconnect through networks to coordinate care with other health care providers. (RAND)

In 2003, HLC established a Technical Advisory Board, comprised of clinicians and others with information technology expertise within HLC and other organizations, to provide insights regarding their HIT implementation experiences. In this and other more recent surveys, the high cost of HIT systems is repeatedly cited as a barrier to effective implementation. In addition to the front-end cost of investment, there are significant initial and ongoing maintenance and operational costs for HIT, including software, hardware, training, upgrades, and maintenance. Systems are virtually unaffordable for those providers who do not have ready access to the operating capital needed for such an investment. This reality is especially prevalent among rural providers, who are most likely to need help overcoming the financial and workforce-based barriers to connecting their practices to a nationwide system.

To date, while there has been considerable discussion and desire to enact legislation that would provide this much-needed capital, Congress has yet to complete action. Investing in HIT through an economic recovery package will help lead the way toward a "recovery" of our Nation's health care system. HLC believes that the Federal Government should provide a robust impetus to the Nation's implementation of HIT through financial incentives and funding mechanisms to help providers defray the huge costs of acquiring and operating HIT. Congress has significant interest in doing so both as a major payer of health care, through the Medicare, Federal Employee Health Benefits Program, and other Federal programs, and to further the quality of the Nation's health at-large. For example, as evidenced during natural disasters such as Hurricane Katrina, interoperable HIT is a critical component to successful public health responses during emergency situations.

While grants and contracts from the Agency for Healthcare Research and Quality (AHRQ) and the Office of the National Coordinator for Health Information Technology (ONCHIT) help to support the development of a national information network, we need to do more to get every provider using electronic health records now.

HLC advocates the implementation of multiple HIT funding mechanisms. These could include:

- payment rewards or "add-ons" for health care services administered in conjunction with the use of HIT;
- a revolving low-interest loan fund with debt forgiveness in accordance with specified criteria, such as long-term savings to the Medicare trust fund
- tax incentives for physicians, hospitals, and other health care entities;
- reimbursement incentives based on improved patient outcomes;
- matching private funds with public funds through grants from the HHS; and
- revising the exceptions to the physician self-referral (Stark) and anti-kickback rules that allow hospitals to share their HIT investment with physicians.

We look forward to working with the committee to determine how Congress might best be able to assist in this regard.

It is important to note that funding initiatives need not be limited solely to promoting physician uptake of EHRs. HIT systems such as safe medication technologies, e-prescribing, telemedicine, and educational and training initiatives will all need to be part of a successful strategy to digitize our health system. Expanded funding directed not only to physicians and hospitals, but also to other health care professionals who touch all aspects of the delivery of care supports a tangible move from reactive, episodic care to a fully-integrated continuum of care.

NATIONAL STANDARDS TO INSURE INTEROPERABILITY

In the area of standards, several public and private sector initiatives are making great strides in identifying and developing HIT interoperability standards that will enable disparate systems to "speak the same language." The Health Information Technology Standards Panel (HITSP) has made considerable progress testing these standards, and the work of the Certification Commission for Health Information

Technology (CCHIT) complements these efforts by certifying that products are compliant with criteria for functionality, interoperability and security. This will help reduce provider investment risks and improve user satisfaction.

Aside from cost, providers also routinely express concerns that systems they choose to purchase now could become second-rate or obsolete. Continuing the standards development and certification work that is already in progress can help assure them that systems they adopt now can be easily upgraded to facilitate ongoing interoperability.

HLC believes, first and foremost, that in setting national standards to ensure interoperability, we must also continue to encourage innovation in the field of standards development. We firmly believe that the private sector should work collectively to develop a roadmap for effective health information exchange that specifies the priorities and the standards necessary to make such an exchange possible. The newly announced National eHealth Collaborative, formerly the AHIC Successor, is poised to continue the important work that the American Health Information Community started. Such standards will foster smooth and efficient communications and cooperation, regardless of individual system structure or architecture. Among other things, this work should address the increasing need for data, connectivity, interface, and communications standards. The health care industry also needs standards for commonly accepted clinical definitions, vocabulary, and terminology. Currently, a great deal of data goes into systems, but little automatically comes out in a way that readily supports health care providers and researchers.

While it may seem appropriate to write standards-setting into statute, care should be taken to assure that existing activities are not duplicated or hampered by new efforts. The Federal Government can assist these activities by ensuring that all interested stakeholders are seated at these collaboratives (including those representing public entities) and that standards being developed align with the policy goals for national HIT. Harmonized technical standards to facilitate reporting quality measures, for example, would be one such requirement.

PRIVACY

With the development of electronic data exchange comes renewed concern over the privacy and security of health information. HLC has a longstanding involvement in the debate over health privacy and, through its chairing of the Confidentiality Coalition, played an integral role in the promulgation of the Health Insurance Portability and Accountability Act (HIPAA) Privacy and Security rules.

HLC strongly believes that engendering patient and consumer trust in EHR and other applications will be paramount to successful implementation of HIT. Thus, we continue to advocate for a balanced, consensus-driven approach to setting privacy policy as it relates to HIT. We recognize that, as we move towards widespread use of HIT, some aspects of the HIPAA Privacy Rule will need to be updated to meet these emerging privacy and security concerns. For example, meaningful notification of privacy or security breaches is an important improvement necessary to protect individuals whose identifiable health information has been compromised. We also have proposed that holders of personal health information not covered under HIPAA be held accountable to equitable and enforceable privacy standards.

Developing a multi-state, interoperable system depends not only on national technical standards but also on national uniform standards for confidentiality and security. Because the HIPAA Privacy Rule's preemption standard permits significant State variation, providers, clearinghouses and health plans are required to comply with the Federal law as well as many State privacy restrictions that differ to some degree from the Federal HIPAA Privacy Rule.

We believe congressional action to establish a uniform Federal privacy standard is vital in order to ensure the viability of a national health information network. State health privacy protections vary widely and are found in thousands of statutes, regulations, common law principles and advisories. Health information privacy protections can be found in a State's health code as well as its laws and regulations governing criminal procedure, social welfare, domestic relations, evidence, public health, revenue and taxation, human resources, consumer affairs, probate and many others. Virtually no State requirement is identical to the Federal rule.

Addressing this issue appropriately will be essential to achieving the interoperability necessary to improve the quality and cost effectiveness of the health care system—while still assuring patients' confidence that their information will be kept private.

CONCLUSION

In looking at the original HIT recommendations that HLC developed and issued in 2004, it is clear that there has been progress since that time.

Legislation to facilitate greater adoption of HIT enjoys bipartisan support and continues to gain momentum. Senate action in the past 2 years suggests that we are close to reaching consensus on the details surrounding HIT policy, such as standard setting and privacy and security policy. We believe that legislation that would begin to build an HIT infrastructure offers Congress a clear and important opportunity to improve our health care system. By creating a dedicated funding source and facilitating the development, adoption, and use of interoperable standards, legislation can focus on areas in which Congress *must act* to remove barriers to widespread adoption.

HIT expansion alone will not enable us to close the gap between the health care system we have today and the one we are capable of achieving. We all agree that we need reforms to achieve greater quality for patients and value for our dollar. The electronic exchange of health information will be crucial to long-term goals to overhaul our health care system. Working to build a virtual HIT infrastructure today will pay dividends over the long-term in the form of healthier Americans, safer care, and lower costs. For that reason, including significant funding in the economic recovery package to assist providers and others to adopt HIT would serve as an important down payment on the future of our Nation's health and long-term economic sustainability.

The Healthcare Leadership Council appreciates this opportunity to testify on HIT. Any questions about my testimony or these issues can be addressed to me or to Ms. Tina Grande, Senior Vice President for Policy, Healthcare Leadership Council (telephone 202-452-8700, e-mail tgrande@hlc.org).

ATTACHMENT 1.—EXAMPLES OF HLC MEMBER ORGANIZATIONS' SUCCESSES WITH HEALTH INFORMATION TECHNOLOGY

- **Aetna's** ActiveHealth CareEngine(r)-powered personal health record (PHR) helps over 8 million members manage and organize their health data so that they can work with their physicians to make informed decisions. Aetna will make this tool available to more members by the end of 2009. Aetna has also partnered with RxHub and the National e-Prescribing Patient Safety Initiative (NEPSI) to improve physician access to decision-support information and e-prescribing technology.

Aetna was the first health insurer and one of the first employers to sign the statement of support for the Department of Health and Human Services' "Four Cornerstones of Value-Driven Health Care," which calls for the development and use of HIT, as well as tools that provide quality and pricing information to consumers. To that end, Aetna has developed an innovative price and clinical quality transparency program to provide members with doctor and facility specific information.

Aetna is one of the Nation's leaders in health care, dental, pharmacy, group life, and disability insurance, and employee benefits. They are one of the Nation's leading diversified health care benefits companies, serving approximately 37.2 million people with information and resources to help them make better informed decisions about their health care.

- **Amerinet** is a group purchasing organization that promotes quality health care delivery and helps all types of providers more effectively manage expenses. They specialize in solutions related to technology, clinical operations, data management, executive-level decisions, and supply chain management.

An Amerinet member, the Virginia Mason (VM) Medical Center, is a private, non-profit organization that offers a system of integrated health services made possible through its large, multispecialty group practice of more than 480 physicians. Virginia Mason has been testing telemedicine services in rural areas throughout Washington State and Alaska for over 10 years, including a live, interactive video feed between VM and other remote clinics in the Pacific Northwest. This capability allows them to provide real-time information and store-and-forward communications related to a variety of medical fields, including radiology, dermatology, cardiology, and others, to a region that has been identified as lacking a sufficient health professional workforce. VM is able to use this service to transmit radiological studies, consult on diagnosis and referral, and conduct pre- and post-surgical examinations.

- **Ascension Health is the Nation's largest Catholic and largest nonprofit health system, serving patients through a network of hospitals and related health facilities providing acute care services, long-term care, community health services, psychiatric, rehabilitation and residential care.**

Spearheaded by Ascension Health, the Austin, Texas-based, Indigent Care Collaboration (ICC) has demonstrated the effectiveness of HIT in improving health care for the uninsured and underinsured. Drawing from funding through Federal and foundation grants, this community collaborative built I-Care, an integrating information structure providing for a shared patient record. This HIT system enables the area safety net providers, including hospitals and outpatient clinics and health centers, to obtain on a real-time basis a record for each patient's previous health care encounter. It also permits the ICC to map patients and diagnoses for health care planning and research; document, monitor, and manage diseases in the population, and measures the effects of policy changes on populations in the local region. In addition to improving the health and lives of vulnerable patients, ICC has become a self-sustaining business model upon which other communities can draw for expertise and inspiration.

- **BlueCross BlueShield of Tennessee** is an independent, not-for-profit, locally governed health plan company that provides health insurance benefits to Tennessee business customers and plan members.

SharedHealth, an independent subsidiary of BlueCross BlueShield of Tennessee, is the largest public-private electronic health information exchange in the United States and has made TennCare the only Medicaid program in the country to convert all its beneficiaries to an electronic health record application at the point of care.

By replacing paper-based systems with advanced technologies, TennCare effectively links authorized clinicians and patients with secure, up-to-date information at the point of care via an encrypted web-based system, including previous medical visits, service utilization, lab results, medications, allergies, and immunizations. The system also allows physicians to e-prescribe and will soon have additional functionality related to chronic care management.

Recent third-party studies have indicated that consistent utilization of SharedHealth increases clinician efficiency by 17%, resulting in savings of approximately \$59 per episode of care and \$9 per medication prescribed electronically.

- **Hospira** is a global specialty pharmaceutical and medication delivery company dedicated to Advancing Wellness™ by developing, manufacturing and marketing products that help improve the productivity, safety and efficacy of patient care. To meet the needs of hospitals working to minimize errors, adhere to the best clinical practices, maintain continuity of care standards and fully utilize infusion devices, Hospira developed Hospira MedNet Software. Hospira MedNet Software is a server-based suite of applications designed to connect data from a hospital's drug information library to infusion devices throughout the hospital to monitor, control and provide reports at the device, group or systemwide levels.

The adoption by hospitals of "smart pumps," infusion pumps with safety software, helps to prevent medication errors at the patient's bedside. The system helps hospitals define medication dose limits and track intravenous drug delivery to help prevent errors. It involves hospital pharmacists with the rest of the hospital team to develop and program best-practice dose recommendations for the infusion of drugs into a database that can then be transferred to the pump. HLC members, **Cardinal Health** and **Baxter International**, also manufacture similar devices.

- The **Marshfield Clinic** is one of the largest private, multispecialty group practices in the United States today and includes over 750 physicians in 84 medical specialties and subspecialties located in over 40 centers throughout northern, central and western Wisconsin. Although Marshfield Clinic has become synonymous with the city of Marshfield, Wisconsin, the Clinic's "community" goes well beyond the immediate area, embracing nearly all of Wisconsin and much of Michigan's Upper Peninsula. Patients from every State in the Nation and 25 foreign countries were seen in the Clinic system during fiscal year 2006.

As part of its participation in the 3-year CMS Physician Group Practice (PGP) Demonstration, Marshfield Clinic has relied on substantial investments made in tools such as their long-established telemedicine initiative and an EHR. Using the data in the EHR at the point of care ultimately allowed clinicians to deliver higher quality care at a more efficient rate. CMS recently announced that Marshfield was successful over the first-year of the project in improving quality of care while controlling costs to Medicare.

Marshfield Clinic has been pioneering integrated computer technology for patient care for nearly 20 years. The Clinic is chartless as of 2007. Wireless tablet computers allow access to EMRs and prescription writing through an advanced electronic prescribing program called Medications Manager. Marshfield also employs an application called iList that allows providers to quickly identify and reach out to patients that have one of three chronic illnesses—diabetes, heart failure, or hypertension—yet do not meet all of their recommended health goals.

- **Mayo Clinic** is a non-profit medical practice dedicated to the diagnosis and treatment of virtually every type of complex illness. Mayo provides clinic and hospital services at its locations in Rochester, MN; Jacksonville, FL; and Phoenix and Scottsdale, AZ.

The Automation of the Clinical Practice (ACP) at Mayo Clinic in Jacksonville, FL is a project undertaken in 1993 to encompass the computer-based patient record with the addition of the mechanisms for automated charging and order creation by physicians. This vision was crystallized and communicated as the "paperless" practice of medicine that would increase patient safety and improve physician effectiveness while at the same time driving down expenses. The last paper-based record was circulated in January 1996 and the integrated outpatient practice continues to the present day.

The Automated Clinical Practice program involves all clinical users. The areas that are automated now include most aspects of the practice and examples include:

- An electronic medical record (EMR) including all clinical documents, orders, scheduling, and laboratory.
- A fully electronic filmless radiology department with speech recognition for radiologist documentation.
- An automated Intensive Care Unit with EMR integration and bedside medical device interfaces directly to the EMR.
- Inpatient and outpatient surgery areas consisting of surgical scheduling, material management, and nursing documentation.

From this level of automation patient safety initiatives have been possible. For example:

- Orders automatically generate task lists for nursing, respiratory, etc., in the hospital.
- Automated fall risk assessment and Braden skin scale assessment are generated in the hospital.
- A medical data warehouse allows free text searching against the entire repository of millions of documents in the EMR for patient care and research.
- An infectious disease application allows bioterrorism surveillance and automated infection control monitoring.

Dictating notes shifted work from the physician and improved both legibility and medical record turnaround time. The system allowed for real time availability of clinical information (notes, Lab, X-ray, and other results), automatic checking for duplicate redundant orders, simultaneous access to the same patient chart, improved ability to answer ad hoc questions for patient calls, more timely response from physicians when patients have questions, and improved flow of information to the physician enabling him or her to have a more "complete" picture of what is known about the patient's condition at the time of the appointment. Savings to the organization have been significant.

- **McKesson** and their subsidiary, McKesson Provider Technologies, deliver vital pharmaceuticals, medical supplies, and HIT solutions that touch the lives of more than 100 million patients each day. McKesson is the world's largest health care services company and a leader in wholesale delivery of medicines and health care products.

Customers of McKesson Provider Technologies, a leader in the distribution and deployment of HIT solutions, have demonstrated the benefits of implementing HIT firsthand. One hospital that introduced bedside bar-code scanning of medications reduced its already-low medication error rate by 80 percent and sustained that rate for over 10 years. Additionally, a clinic in the process of deploying an ambulatory EHR and e-prescribing system reduced nurse time spent on charts by 24 percent and increased time spent with patients by 16 percent. Similarly, transitioning to electronic charts at a rural medical center cut the average nurse daily paperwork by 1.5 hours. Examples like these and many more demonstrate the potential for HIT to improve the quality and efficiency of care, allowing clinicians to spend more time and resources on providing better care to patients and less time on burdensome paperwork.

- **Pfizer** is the world's largest research-based biomedical and pharmaceutical company, with corporate headquarters located in New York and major research and development locations in the United States and England.

Since March 2006, Pfizer has been working with a small group of other pharmaceutical companies, including other HLC member organizations, to evaluate and explore how clinical research could be improved by leveraging the National Health Information Network (NHIN) and other Health Information Exchanges through an effort called the NHIN Slipstream Project. This group explored many important ways that the exchange of health information could improve patient health through the

research, development, and commercialization of new therapies, and determined that the three most important areas of initial focus in the ONC NHIN process are: post-marketing drug safety surveillance, connecting patients to clinical trials, and establishing appropriate care standards through outcomes, pharmacoeconomic, and personalized medicine research.

Pfizer has also participated in the Cancer Biomedical Informatics Grid (caBIG), a voluntary network individuals and institutions to enable the sharing of data and tools related to cancer research. caBIG is a partnership between the National Cancer Institute (NCI) and the private sector to facilitate integration of clinical information and the growing volume of genomic and proteomic data for the purpose of advancing development of new therapies. In conjunction with 80 companies as well as NCI, NIH, and FDA, Pfizer is working on the CRIX (Clinical Research Information eXchange) initiative to expand the caBIG vision from cancer to other therapeutic areas. caBIG is being built on open source, open access, open development, and federation principles.

Senator MIKULSKI. Thank you. And just the data that you gave on saving—I remember earlier in my own remarks, I said quality is about saving lives or improving the delivery of service and then saving money. And what you are saying, we already have demonstrable evidence that in very specific areas, even in so-called e-prescribing, it has had a tremendous impact.

Really, you know, my background is that of a social worker. And I love case examples because I think that is when you can get the picture of really what is the impact. But in listening to Mr. Cochran, what are some of the speed bumps and potholes not only in the technology, because we will focus on developing the technology. But it is really people—providers, including nurses, physician's assistants, diabetic educators who know what the doctors told the patient—I think this is what you are talking about.

Because it is a network even among a variety of providers, not only M.D. to M.D. Am I correct in that?

Ms. GREALY. Right.

Senator MIKULSKI. Yes, OK.

Well, now, Ms. Melvin, let us hear from GAO.

STATEMENT OF VALERIE MELVIN, DIRECTOR, INFORMATION TECHNOLOGY, THE GOVERNMENT ACCOUNTABILITY OFFICE (GAO), WASHINGTON, DC

Ms. MELVIN. Thank you, Madam Chairwoman, Senator Merkley.

I am pleased to be here today to comment on Federal efforts to advance the use of health information technology. Properly implemented, technology can, as you have noted, help make patients' information more readily available to healthcare providers, help reduce medical errors, and contribute to streamlined administrative functions, all of which could help improve the efficiency and the quality of healthcare.

Yet achieving the transition to a nationwide capability is a complex endeavor involving many stakeholders, technologies, and activities, and the best way to accomplish this has been subject to much debate.

Over the years, our various reviews of Federal health IT initiatives have determined that a successful transition will require addressing a range of important issues, as have been noted here today, three of which I am highlighting.

First, clearly defined health IT standards are needed to allow different systems to work together and to provide the right people access to the information they need. For example, technology stand-

ards must be agreed on, and a host of content issues must be addressed, such as the need for consistent medical terminology.

We previously recommended that HHS build the mechanisms and structures for defining such standards, and the National Coordinator for Health IT responded by tasking key organizations to address this issue. However, while progress has been made, continued work on standards initiatives remains essential to extend the use of health IT and fully achieve its potential benefits.

Second, because achieving interoperable health IT involves many stakeholders, technologies, and activities over an expanse of time, it is important that they be guided by comprehensive plans that include milestones and performance measures to allow the results of activities to be monitored and assessed and corrective actions to be taken as needed.

Yet across our work at HHS and elsewhere, we have seen repeated instances in which planning activities have not been sufficiently comprehensive. A framework for strategic action that the national coordinator released in July 2004 lacked these components, and we have noted similar management weaknesses in DOD's and VA's health IT efforts.

Last July, HHS released a new strategic plan. And if the milestones and measures contained therein are appropriate and properly implemented, this could help to further overall progress toward an interoperable health IT infrastructure.

Finally, a consistent approach to privacy protection is needed to help encourage public acceptance and adoption of electronic health records. We have identified key privacy principles and challenges that this approach would need to address, such as obtaining individuals' consent to use and disclose their personal health information.

Although HHS has begun to establish such an approach, more is needed, including a process to ensure that key privacy principles and challenges we identified are fully and adequately addressed.

Madam Chairwoman, this concludes my prepared statement, and I would be happy to respond to your questions.

[The prepared statement of Ms. Melvin follows:]

PREPARED STATEMENT OF VALERIE C. MELVIN

HIGHLIGHTS

WHY GAO DID THIS STUDY

As GAO and others have reported, the use of information technology (IT) has enormous potential to help improve the quality of health care and is important for improving the performance of the U.S. health care system. Given its role in providing health care, the Federal Government has been urged to take a leadership role to improve the quality and effectiveness of health care, and it has been working to promote the nationwide use of health IT for a number of years. However, achieving widespread adoption and implementation of health IT has proven challenging, and the best way to accomplish this transition remains subject to much debate.

At the committee's request, this testimony discusses important issues identified by GAO's work that have broad relevance to the successful implementation of health IT to improve the quality of health care.

To develop this testimony, GAO relied largely on its previous work on Federal health IT activities.

HEALTH INFORMATION TECHNOLOGY—FEDERAL AGENCIES' EXPERIENCES
 DEMONSTRATE CHALLENGES TO SUCCESSFUL IMPLEMENTATION

WHAT GAO FOUND

Health IT has the potential to help improve the efficiency and quality of health care, but achieving the transition to a nationwide health IT capability is an inherently complex endeavor. A successful transition will require, among other things, addressing the following issues:

- *Establishing a foundation of clearly defined health IT standards that are agreed upon by all important stakeholders.* Developing, coordinating, and agreeing on standards are crucial for allowing health IT systems to work together and to provide the right people access to the information they need: for example, technology standards must be agreed on (such as file types and interchange systems), and a host of content issues must also be addressed (one example is the need for consistent medical terminology). Although important steps have been taken, additional effort is needed to define, adopt, and implement such standards to promote data quality and consistency, system interoperability (that is, the ability of automated systems to share and use information), and information protection.

- *Defining comprehensive plans that are grounded in results-oriented milestones and measures.* Using interoperable health IT to improve the quality and efficiency of health care is a complex goal that involves a range of stakeholders, various technologies, and numerous activities taking place over an expanse of time, and it is important that these activities be guided by comprehensive plans that include milestones and performance measures. Without such plans, it will be difficult to ensure that the many activities are coordinated, their results monitored, and their outcomes most effectively integrated.

- *Implementing an approach to protection of personal privacy that encourages public acceptance of health IT.* A robust approach to privacy protection is essential to establish the high degree of public confidence and trust needed to encourage widespread adoption of health IT and particularly electronic medical records. Health IT programs and applications need to address key privacy principles (for example, the access principle, which establishes the right of individuals to review certain personal health information). At the same time, they need to overcome key challenges (for example, those related to variations in States' privacy laws). Unless these principles and challenges are fully and adequately addressed, there is reduced assurance that privacy protection measures will be consistently built into health IT programs and applications, and public acceptance of health IT may be put at risk.

Mr. Chairman and members of the committee: I am pleased to be here today to comment on Federal efforts to advance the use of health information technology (IT). Studies published by the Institute of Medicine and others have long indicated that fragmented, disorganized, and inaccessible clinical information adversely affects the quality of health care and compromises patient safety. Further, long-standing problems with medical errors and inefficiencies have contributed to increased costs of health care. With health care spending in 2007 reaching approximately \$2.2 trillion, or 16 percent of the U.S. gross domestic product, concerns about the costs of health care have continued to grow, and have prompted calls from policymakers, industry experts, and medical practitioners to improve the U.S. health care system.

As has been recognized by you and other members of Congress, as well as President Bush and President-elect Obama, the use of information technology to electronically collect, store, retrieve, and transfer clinical, administrative, and financial health information has great potential to help improve the quality and efficiency of health care. The successful implementation of health IT offers promise for improving patient safety and reducing inefficiencies and has been shown to support cost savings and other benefits. At the same time, successfully achieving widespread adoption and implementation of health IT has proven challenging, and the best way to accomplish this goal remains subject to much debate. According to the Department of Health and Human Services (HHS), only a small number of U.S. health care providers have fully adopted health IT due to significant financial, technical, cultural, and legal barriers, such as a lack of access to capital, a lack of data standards, and resistance from health care providers.

Given its role in providing health care, the Federal Government has been urged to take a leadership role to improve the quality and effectiveness of health care and has been working to promote the nationwide use of health IT for a number of years. In April 2004, President Bush issued an executive order that called for widespread

adoption of interoperable electronic health records by 2014,¹ and HHS, in turn, initiated activities to advance the nationwide implementation of interoperable health IT. In addition, for the past decade, the Departments of Defense (DOD) and Veterans Affairs (VA) have been pursuing initiatives to share data between their health information systems. In an effort to expedite the exchange of electronic health information between the two departments, the National Defense Authorization Act for Fiscal Year 2008² included provisions directing the two departments to jointly develop and implement, by September 30, 2009, fully interoperable³ electronic health record systems or capabilities.

Since 2001, we have been reviewing aspects of the various Federal efforts undertaken to implement information technology for health care and public health solutions. We have reported both on HHS's national health IT initiatives as well as on DOD's and VA's electronic health information sharing initiatives.⁴ Overall, our studies have recognized progress made by these departments, but we have also pointed out areas of concern that could jeopardize their success in advancing the use of interoperable health IT. At your request, my testimony today discusses important issues identified by our work that have broad relevance to the successful implementation of health IT to further improve the quality of health care.

In developing this testimony, we relied largely on our previous work. We conducted our work in support of this testimony between December 2008 and January 2009 in Washington, DC. All work on which this testimony is based was performed in accordance with generally accepted government auditing standards. Those standards require that we plan and perform audits to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

In summary, transitioning to a nationwide health IT capability is an inherently complex endeavor. Achieving this transition and the potential efficiencies and quality improvements promised by widespread adoption of health IT will require consideration of many serious issues, including the need for a foundation of clearly defined health IT standards that are agreed upon by all important stakeholders, comprehensive planning grounded in results-oriented milestones and measures, and an approach to privacy protection that encourages acceptance and adoption of electronic health records.

- Developing, coordinating, and agreeing on standards are crucial for allowing health IT systems to work together and to provide the right people access to the information they need. Any level of interoperability depends on the use of agreed-upon standards to ensure that information can be shared and used. Developing and implementing health IT standards requires structures and ongoing mechanisms that include the participation of the relevant stakeholders, in both the public and private health care sectors who will be sharing information. Although important steps have been taken, additional effort is needed to define, adopt, and implement such standards to promote data quality and consistency, system interoperability, and information protection.

- Using interoperable health IT to improve the quality and efficiency of health care is a complex goal that involves a range of stakeholders, various technologies, and numerous activities taking place over an expanse of time; in view of this complexity, it is important that these activities be guided by comprehensive plans that include milestones and performance measures. Milestones and performance measures allow the results of the activities to be monitored and assessed, so that correc-

¹ Executive Order 13335, *Incentives for the Use of Health Information Technology and Establishing the Position of the National Health Information Technology Coordinator* (Washington, DC: Apr. 27, 2004).

² Pub. L. No. 110-181, §1635 (2008).

³ Interoperability is the ability of two or more systems or components to exchange information and to use the information that has been exchanged.

⁴ GAO, *Computer-Based Patient Records: Better Planning and Oversight by VA, DOD, and IHS Would Enhance Health Data Sharing*, GAO-01-459 (Washington, DC: Apr. 30, 2001); *Computer-Based Patient Records: VA and DOD Efforts to Exchange Health Data Could Benefit from Improved Planning and Project Management*, GAO-04-687 (Washington, DC: June 7, 2004); *Health Information Technology: HHS Is Taking Steps to Develop a National Strategy*, GAO-05-628 (Washington, DC: May 27, 2005); *Health Information Technology: HHS is Continuing Efforts to Define its National Strategy*, GAO-06-1071T (Washington, DC: Sept. 1, 2006); *Information Technology: DOD and VA Have Increased Their Sharing of Health Information, but More Work Remains*, GAO-08-954 (Washington, DC: July 28, 2008); *Health Information Technology: HHS Has Taken Important Steps to Address Privacy Principles and Challenges, Although More Work Remains*, GAO-08-1138 (Washington, DC: Sept. 17, 2008); and *Electronic Health Records: DOD and VA Have Increased Their Sharing of Health Information, but Further Actions Are Needed*, GAO-08-1158T (Washington, DC: Sept. 24, 2008).

tive action can be taken if needed. Without comprehensive plans, it will be difficult to ensure that the many activities are coordinated, their results monitored, and their outcomes integrated.

- An important consideration in health IT is an overall approach for protecting the privacy of personal electronic health information. The capacity of health information exchange organizations to store and manage a large amount of electronic health information increases the risk that a breach in security could expose the personal health information of numerous individuals. Addressing and mitigating this risk is essential to encourage public acceptance of the increased use of health IT and electronic medical records. We have identified⁵ key privacy principles that health IT programs and applications need to address⁶ and key challenges that they need to overcome.⁷ Unless these principles and challenges are fully and adequately addressed, there is reduced assurance that privacy protection measures will be consistently built into health IT programs and applications, and public acceptance of health IT may be put at risk.

BACKGROUND

Health care in the United States is a highly decentralized system, with stakeholders that include not only the entire population as consumers of health care, but also all levels of government, health care providers such as medical centers and community hospitals, patient advocates, health professionals, major employers, non-profit health organizations, insurance companies, commercial technology providers, and others. In this environment, clinical and other health-related information is stored in a complex collection of paper files, information systems, and organizations, but much of it continues to be stored and shared on paper.

Successfully implementing health IT to replace paper and manual processes has been shown to support benefits in both cost savings and improved quality of care. For example, we reported to this committee in 2003⁸ that a 1,951-bed teaching hospital stated that it had realized about \$8.6 million in annual savings by replacing outpatient paper medical charts with electronic medical records. This hospital also reported saving more than \$2.8 million annually by replacing its manual process for managing medical records with an electronic process to provide access to laboratory results and reports. Other technologies, such as bar coding of certain human drug and biological product labels, have also been shown to save money and reduce medical errors. Health care organizations reported that IT contributed other benefits, such as shorter hospital stays, faster communication of test results, improved management of chronic diseases, and improved accuracy in capturing charges associated with diagnostic and procedure codes.

There is also potential benefit from improving and expanding existing health IT systems. We have reported that some hospitals are expanding their IT systems to support improvements in quality of care. In April 2007,⁹ we released a study on the processes used by eight hospitals to collect and submit data on their quality of care to HHS's Centers for Medicare & Medicaid Services (CMS). Among the hospitals we visited, officials noted that having electronic records was an advantage for collecting the quality data because electronic records were more accessible and legible than paper records, and the electronic quality data could also be used for other purposes (such as reminders to physicians). Officials at each of the hospitals reported using the quality data to make specific changes in their internal procedures designed to

⁵GAO, *Health Information Technology: Early Efforts Initiated but Comprehensive Privacy Approach Needed for National Strategy*, GAO-07-238 (Washington, DC: Jan. 10, 2007).

⁶We based these privacy principles on our evaluation of the HHS Privacy Rule promulgated under the Administrative Simplification provisions of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), which define the circumstances under which an individual's health information may be used or disclosed. For example, the uses and disclosures principle provides, among other things, limits to the circumstances in which an individual's protected health information may be used or disclosed by covered entities, and the access principle establishes individuals' rights to review and obtain a copy of their protected health information held in a designated record set. For more details, see GAO-07-238.

⁷We identified key challenges associated with protecting personal health information based on input from selected stakeholders in health information exchange organizations. These challenges are understanding and resolving legal and policy issues (for example, those related to variations in States' privacy laws); ensuring that only the minimum amount of information necessary is disclosed to only those entities authorized to receive the information; ensuring individuals' rights to request access and amendments to their own health information; and implementing adequate security measures for protecting health information. See GAO-07-238.

⁸GAO, *Information Technology: Benefits Realized for Selected Health Care Functions*, GAO-04-224 (Washington, DC: Oct. 31, 2003).

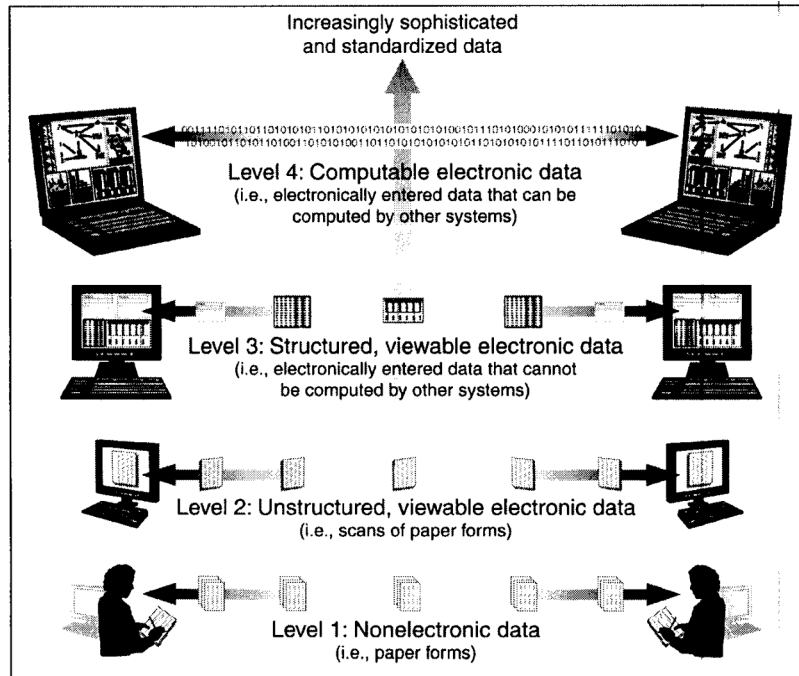
⁹GAO, *Hospital Quality Data: HHS Should Specify Steps and Time Frame for Using Information Technology to Collect and Submit Data*, GAO-07-320 (Washington, DC: Apr. 25, 2007).

improve care. However, hospital officials also reported several limitations in their existing IT systems that constrained the ability to support the collection of their quality data. For example, hospitals reported having a mix of paper and electronic systems, having data recorded only as unstructured narrative or other text, and having multiple systems within a single hospital that could not access each other's data. Although it was expected to take several years, all the hospitals in our study were working to expand the scope and functionality of their IT systems.

This example illustrates, among other things, that making health care information electronically available depends on interoperability—that is, the ability of two or more systems or components to exchange information and to use the information that has been exchanged. This capability is important because it allows patients' electronic health information to move with them from provider to provider, regardless of where the information originated. If electronic health records conform to interoperability standards, they can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization, thus providing patients and their caregivers the necessary information required for optimal care. (Paper-based health records—if available—also provide necessary information, but unlike electronic health records, do not provide automated decision support capabilities, such as alerts about a particular patient's health, or other advantages of automation.)

Interoperability may be achieved at different levels (see fig. 1). For example, at the highest level, electronic data are computable (that is, in a format that a computer can understand and act on to, for example, provide alerts to clinicians on drug allergies). At a lower level, electronic data are structured and viewable, but not computable. The value of data at this level is that they are structured so that data of interest to users are easier to find. At still a lower level, electronic data are unstructured and viewable, but not computable. With unstructured electronic data, a user would have to find needed or relevant information by searching uncategorized data.

Figure 1: Levels of Data Interoperability



Source: GAO analysis based on data from the Center for Information Technology Leadership.

It is important to note that not all data require the same level of interoperability. For example, computable pharmacy and drug allergy data would allow automated

alerts to help medical personnel avoid administering inappropriate drugs. On the other hand, for such narrative data as clinical notes, unstructured, viewable data may be sufficient. Achieving even a minimal level of electronic interoperability would potentially make relevant information available to clinicians.

Any level of interoperability depends on the use of agreed-upon standards to ensure that information can be shared and used. In the health IT field, standards may govern areas ranging from technical issues, such as file types and interchange systems, to content issues, such as medical terminology.

- For example, *vocabulary standards* provide common definitions and codes for medical terms and determine how information will be documented for diagnoses and procedures. These standards are intended to lead to consistent descriptions of a patient's medical condition by all practitioners. The use of common terminology helps in the clinical care delivery process, enables consistent data analysis from organization to organization, and facilitates transmission of information. Without such standards, the terms used to describe the same diagnoses and procedures may vary (the condition known as hepatitis, for example, may be described as a liver inflammation). The use of different terms to indicate the same condition or treatment complicates retrieval and reduces the reliability and consistency of data.

- Another example is *messaging standards*, which establish the order and sequence of data during transmission and provide for the uniform and predictable electronic exchange of data. These standards dictate the segments in a specific medical transmission. For example, they might require the first segment to include the patient's name, hospital number, and birth date. A series of subsequent segments might transmit the results of a complete blood count, dictating one result (e.g., iron content) per segment. Messaging standards can be adopted to enable intelligible communication between organizations via the Internet or some other communications pathway. Without them, the interoperability of health IT systems may be limited, reducing the data that can be shared.

Developing interoperability standards requires the participation of the relevant stakeholders who will be sharing information. In the case of health IT, stakeholders include both the public and private sectors. The public health system is made up of the Federal, State, tribal, and local agencies that may deliver health care services to the population and monitor its health. Private health system participants include hospitals, physicians, pharmacies, nursing homes, and other organizations that deliver health care services to individual patients, as well as multiple vendors that provide health IT solutions.

FEDERAL HEALTH IT EFFORTS HIGHLIGHT IMPORTANCE OF ESTABLISHING STANDARDS, DEVELOPING COMPREHENSIVE PLANS, AND ENSURING PRIVACY

Widespread adoption of health IT has the potential to improve the efficiency and quality of health care. However, transitioning to this capability is a challenging endeavor that requires attention to many important considerations. Among these are mechanisms to establish clearly defined health IT standards that are agreed upon by all important stakeholders, comprehensive planning grounded in results-oriented milestones and measures, and an approach to privacy protection that encourages acceptance and adoption of electronic health records. Attempting to expand the use of health IT without fully addressing these issues would put at risk the ultimate goal of achieving more effective health care.

MECHANISMS AND STRUCTURES FOR HARMONIZING AND IMPLEMENTING HEALTH IT STANDARDS ARE ESSENTIAL TO ENABLE INTEROPERABILITY

The need for health care standards has been broadly recognized for a number of years. In previous work, we identified lessons learned by U.S. agencies and by other countries from their experiences. Among other lessons, they reported the need to define and adopt common standards and terminology to achieve data quality and consistency, system interoperability, and information protection.¹⁰ In May 2003, we reported that Federal agencies recognized the need for health care standards and were making efforts to strengthen and increase their use.¹¹ However, while they had made progress in defining standards, they had not met challenges in identifying and implementing standards necessary to support interoperability across the health care sector. We stated that until these challenges were addressed, agencies risked pro-

¹⁰ GAO, *Health Information Technology: HHS Is Taking Steps to Develop a National Strategy*, GAO-05-628 (Washington, DC: May 27, 2005).

¹¹ GAO, *Bioterrorism: Information Technology Strategy Could Strengthen Federal Agencies' Abilities to Respond to Public Health Emergencies*, GAO-03-139 (Washington, DC: May 30, 2003).

mulgating piecemeal and disparate systems unable to exchange data with each other when needed. We recommended that the Secretary of HHS define activities for ensuring that the various standards-setting organizations coordinate their efforts and reach further consensus on the definition and use of standards; establish milestones for defining and implementing standards; and create a mechanism to monitor the implementation of standards through the health care industry.

HHS implemented this recommendation through the activities of the Office of the National Coordinator for Health Information Technology (established within HHS in April 2004). Through the Office of the National Coordinator, HHS designated three primary organizations, made up of stakeholders from both the public and private health care sectors, to play major roles in identifying and implementing standards and expanding the implementation of health IT:

- The American Health Information Community (now known as the National eHealth Collaborative) was created by the Secretary of HHS to make recommendations on how to accelerate the development and adoption of health IT, including advancing interoperability, identifying health IT standards, advancing nationwide health information exchange, and protecting personal health information. Created in September 2005 as a Federal advisory commission, the organization recently became a nonprofit membership organization. It includes representatives from both the public and private sectors, including high-level officials of VA and other Federal and State agencies, as well as health systems, payers, health professionals, medical centers, community hospitals, patient advocates, major employers, nonprofit health organizations, commercial technology providers, and others. Among other things, the organization has identified health care areas of high priority and developed “use cases” for these areas (use cases are descriptions of events or scenarios, such as Public Health Case Reporting, that provide the context in which standards would be applicable, detailing what needs to be done to achieve a specific mission or goal).

- The Healthcare Information Technology Standards Panel (HITSP), sponsored by the American National Standards Institute¹² and funded by the Office of the National Coordinator, was established in October 2005 as a public-private partnership to identify competing standards for the use cases developed by the American Health Information Community and to “harmonize” the standards.¹³ As of March 2008, nearly 400 organizations¹⁴ representing consumers, healthcare providers, public health agencies, government agencies, standards developing organizations, and other stakeholders were participating in the panel and its committees. The panel also develops the interoperability specifications that are needed for implementing the standards. In collaboration with the National Institute for Standards and Technology, HITSP selected initial standards to address, among other things, requirements for message and document formats and for technical networking. Federal agencies that administer or sponsor Federal health programs are now required to implement these standards, in accordance with an August 2006 Executive Order.¹⁵

- The Certification Commission for Healthcare Information Technology is an independent, nonprofit organization that certifies health IT products, such as electronic health records systems. HHS entered into a contract with the commission in October 2005 to develop and evaluate the certification criteria and inspection process for electronic health records. HHS describes certification as the process by which vendors’ health IT systems are established to meet interoperability standards. The certification criteria defined by the commission incorporate the interoperability standards and specifications defined by HITSP. The results of this effort are intended to help encourage health care providers throughout the nation to implement electronic health records by giving them assurance that the systems will provide needed capa-

¹²The American National Standards Institute is a private, nonprofit organization whose mission is to promote and facilitate voluntary consensus standards and ensure their integrity.

¹³Harmonization is the process of identifying overlaps and gaps in relevant standards and developing recommendations to address these overlaps and gaps.

¹⁴Members include representatives from the following sectors: clinicians; providers; safety net providers and their representative organizations; vendors that develop, market, install, and support health IT products; healthcare purchasers or employers; healthcare payers or health insurance companies; public health professionals; national organizations with a broad representation of stakeholders with an interest in healthcare IT standards; clinical and health-services researchers’ representative organizations; Federal, State, and local agencies; coordinating bodies with responsibilities for and/or a relationship to healthcare IT used in the public sector; and consumer organizations with an interest in health IT standards.

¹⁵Executive Order 13410, *Promoting Quality and Efficient Health Care in Federal Government Administered or Sponsored Health Care Programs* (Washington, DC: Aug. 22, 2006).

bilities (including ensuring security and confidentiality) and that the electronic records will work with other systems without reprogramming.¹⁶

The interconnected work of these organizations to identify and promote the implementation of standards is important to the overall effort to advance the use of interoperable health IT. For example, according to HHS, the HITSP standards are incorporated into the National Coordinator's ongoing initiative to enable health care entities—such as providers, hospitals, and clinical labs—to exchange electronic health information on a nationwide basis. Under this initiative, HHS awarded contracts to nine regional and State health information exchanges as part of its efforts to provide prototypes of nationwide networks of health information exchanges.¹⁷ Such exchanges are intended to eventually form a “network of networks” that is to produce the envisioned Nationwide Health Information Network (NHIN). According to HHS, the department planned to demonstrate the experiences and lessons learned from this work in December 2008, including defining specifications based upon the work of HITSP and standards development organizations to facilitate interoperable data exchange among the participants, testing interoperability against these specifications, and developing trust agreements among participants to protect the information exchanged. HHS plans to place the nationwide health information exchange specifications defined by the participating organizations, as well as related testing materials, in the public domain, so that they can be used by other health information exchange organizations to guide their efforts to adopt interoperable health IT.

The products of the Federal standards initiatives are also being used by DOD and VA in their ongoing efforts to achieve the seamless exchange of health information on military personnel and veterans. The two departments have committed to the goal of adopting applicable current and emerging HITSP standards. According to department officials, DOD is also taking steps to ensure compliance with standards through certification. To ensure that the electronic health records produced by the department's modernized health information system, AHLTA,¹⁸ are compliant with standards, it is arranging for certification through the Certification Commission for Healthcare Information Technology. Both departments are also participating in the National Coordinator's standards initiatives. The involvement of the departments in these activities is an important mechanism for aligning their electronic health records with emerging Federal standards.

Federal efforts to implement health IT standards are ongoing and some progress has been made. However, until agencies are able to demonstrate interoperable health information exchange between stakeholders on a broader level, the overall effectiveness of their efforts will remain unclear. In this regard, continued work on standards initiatives will remain essential for extending the use of health IT and fully achieving its potential benefits, particularly as both information technology and medicine advance.

COMPREHENSIVE PLANNING WITH MILESTONES AND PERFORMANCE MEASURES
IS ESSENTIAL TO ACHIEVING HEALTH IT GOALS

Using interoperable health IT to help improve the efficiency and quality of health care is a complex goal that involves a range of stakeholders and numerous activities taking place over an expanse of time; in view of this complexity, it is important to develop comprehensive plans that are grounded in results-oriented milestones and performance measures. Without comprehensive plans, it is difficult to coordinate the many activities under way and integrate their outcomes. Milestones and performance measures allow the results of the activities to be monitored and assessed, so that corrective action can be taken if needed.

Since it was established in 2004, the Office of the National Coordinator has pursued a number of health IT initiatives (some of which we described above), aimed at the expansion of electronic health records, identification of interoperability standards, advancement of nationwide health information exchange, and protection of

¹⁶In May 2006, HHS finalized a process and criteria for certifying the interoperability of outpatient electronic health records and described criteria for future certification requirements. Certification criteria for inpatient electronic health records were finalized in June 2007. To date, the Certification Commission reports that it has certified about 140 products offering electronic health records.

¹⁷These exchanges are intended to connect providers and patients from different regions of the country and enable the sharing of electronic health information, such as health records and laboratory results. DOD, VA, and the Indian Health Service are participating in a Federal component of this initiative.

¹⁸AHLTA originally was an acronym for Armed Forces Health Longitudinal Technology Application. The department no longer considers AHLTA an acronym but the official name of the system.

personal health information.¹⁹ It also developed a framework for strategic action for achieving an interoperable national infrastructure for health IT, which was released in 2004. We have noted accomplishments resulting from these various initiatives, but we also observed that the strategic framework did not include the detailed plans, milestones, and performance measures needed to ensure that the department integrated the outcomes of its various health IT initiatives and met its overall goals.²⁰ Given the many activities to be coordinated and the many stakeholders involved, we recommended in May 2005 that HHS define a national strategy for health IT that would include the necessary detailed plans, milestones, and performance measures, which are essential to help ensure progress toward the President's goal for most Americans to have access to interoperable electronic health records by 2014. The department agreed with our recommendation, and in June 2008 it released a 4-year strategic plan. If the plan's milestones and measures for achieving an interoperable nationwide infrastructure for health IT are appropriate and properly implemented, the plan could help ensure that HHS's various health IT initiatives are integrated and provide a useful roadmap to support the goal of widespread adoption of interoperable electronic health records.²¹

Across our health IT work at HHS and elsewhere, we have seen other instances in which planning activities have not been sufficiently comprehensive. An example is the experience of DOD and VA, which have faced considerable challenges in project planning and management in the course of their work on the seamless exchange of electronic health information. As far back as 2001 and 2002, we noted management weaknesses, such as inadequate accountability and poor planning and oversight, and recommended that the departments apply principles of sound project management.²² The departments' efforts to meet the recent requirements of the National Defense Authorization Act for Fiscal Year 2008 provide additional examples of such challenges, raising concerns regarding their ability to meet the September 2009 deadline for developing and implementing interoperable electronic health record systems or capabilities. In July 2008, we identified steps that the departments had taken to establish an interagency program office and implementation plan, as required. According to the departments, they intended the program office to play a crucial role in accelerating efforts to achieve electronic health records and capabilities that allow for full interoperability, and they had appointed an Acting Director from DOD and an Acting Deputy Director from VA. According to the Acting Director, the departments also have detailed staff and provided temporary space and equipment to a transition team. However, the newly established program office was not expected to be fully operational until the end of 2008—allowing the departments at most 9 months to meet the deadline for full interoperability.

Further, we reported other planning and management weaknesses. For example, the departments developed a DOD/VA Information Interoperability Plan in September 2008, which is intended to address interoperability issues and define tasks required to guide the development and implementation of an interoperable electronic health record capability. Although the plan included milestones and schedules, it was lacking many milestones for completing the activities defined in the plan. Accordingly, we recommended that the departments give priority to fully establishing the interagency program office and finalizing the implementation plan. Without an effective plan and a program office to ensure its implementation, the risk is increased that the two departments will not be able to meet the September 2009 deadline.

¹⁹In prior work, we described programs that other divisions within HHS, such as the Agency for Healthcare Research and Quality and the Health Resources and Services Administration, administer to provide funding to organizations engaged in building and testing health IT systems, standards, and projects. See GAO-05-628 for a description of these activities.

²⁰GAO, *Health Information Technology: HHS is Taking Steps to Develop a National Strategy*, GAO-05-628 (Washington, DC: May 27, 2005).

²¹In another example, as a result of the 2007 study of hospital quality data collection mentioned earlier, we recommended that the Secretary of HHS identify the specific steps that the department planned to take to promote the use of health IT for the collection and submission of these data, and that it inform interested parties of those steps and the expected timeframe, including milestones for completing them.

²²GAO, *Computer-Based Patient Records: Better Planning and Oversight by VA, DOD, and IHS Would Enhance Health Data Sharing*, GAO-01-459 (Washington, DC: Apr. 30, 2001) and *Veterans Affairs: Sustained Management Attention is Key to Achieving Information Technology Results*, GAO-02-703 (Washington, DC: June 12, 2002).

ESTABLISHING A CONSISTENT APPROACH TO PRIVACY PROTECTION IS ESSENTIAL
FOR ENCOURAGING ACCEPTANCE AND ADOPTION OF HEALTH IT

As the use of electronic health information exchange increases, so does the need to protect personal health information from inappropriate disclosure. The capacity of health information exchange organizations to store and manage a large amount of electronic health information increases the risk that a breach in security could expose the personal health information of numerous individuals. Addressing and mitigating this risk is essential to encourage public acceptance of the increased use of health IT and electronic medical records.

Recognizing the importance of privacy protection, HHS included security and privacy measures in its 2004 framework for strategic action, and in September 2005, it awarded a contract to the Health Information Security and Privacy Collaboration as part of its efforts to provide a nationwide synthesis of information to inform privacy and security policymaking at Federal, State, and local levels. The collaboration selected 33 States and Puerto Rico as locations in which to perform assessments of organization-level privacy- and security-related policies and practices that affect interoperable electronic health information exchange and their bases, including laws and regulations. As a result of this work, HHS developed and made available to the public a toolkit to guide health information exchange organizations in conducting assessments of business practices, policies, and State laws that govern the privacy and security of health information exchange.²³

However, we reported in January 2007 that HHS initiated these and other important privacy-related efforts²⁴ without first defining an overall approach for protecting privacy. In our report, we identified key privacy principles and challenges to protecting electronic personal health information.

- Examples of principles that health IT programs and applications need to address include the uses and disclosures principle, which provides limits to the circumstances in which an individual's protected health information may be used or disclosed, and the access principle, which establishes individuals' rights to review and obtain a copy of their protected health information in certain circumstances.²⁵

- Key challenges include understanding and resolving legal and policy issues (for example, those related to variations in States' privacy laws), ensuring that only the minimum amount of information necessary is disclosed to only those entities authorized to receive the information, ensuring individuals' rights to request access and amendments to their own health information, and implementing adequate security measures for protecting health information.²⁶

We recommended that HHS define and implement an overall privacy approach that identifies milestones for integrating the outcomes of its privacy-related initiatives, ensures that key privacy principles are fully addressed, and addresses challenges associated with the nationwide exchange of health information.

In September 2008, we reported that HHS had begun to establish an overall approach for protecting the privacy of personal electronic health information—for example, it had identified milestones and an entity responsible for integrating the outcomes of its many privacy-related initiatives.²⁷ Further, the Federal health IT strategic plan released in June 2008 includes privacy and security objectives along with strategies and target dates for achieving them.

However, in our view, more actions are needed. Specifically, within its approach, the department had not defined a process to ensure that the key privacy principles and challenges we had identified were fully and adequately addressed. This process should include, for example, steps for ensuring that all stakeholders' contributions to defining privacy-related activities are appropriately considered and that indi-

²³In June 2007, HHS reported the outcomes of its privacy and security solutions contract based on the work of 34 States and territories that participated in the contract. A final summary report described variations among organization-level business practices, policies, and laws for protecting health information that could affect organizations' abilities to exchange data.

²⁴Our January 2007 report (GAO-07-238) describes various privacy-related efforts incorporated into HHS's overall health IT initiative, including the activities of the American Health Information Community, the Healthcare Information Technical Standards Panel, the Certification Commission for Healthcare IT, and the Nationwide Health Information.

²⁵We based these privacy principles on our evaluation of the HHS Privacy Rule promulgated under the Administrative Simplification provisions of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), which define the circumstances under which an individual's health information may be used or disclosed.

²⁶We identified key challenges associated with protecting personal health information based on input from selected stakeholders in health information exchange organizations.

²⁷GAO, *Health Information Technology: HHS Has Taken Important Steps to Address Privacy Principles and Challenges, Although More Work Remains*, GAO-08-1138 (Washington, DC: Sept. 17, 2008).

vidual inputs to the privacy framework are effectively assessed and prioritized to achieve comprehensive coverage of all key privacy principles and challenges. Without such a process, stakeholders may lack the overall policies and guidance needed to assist them in their efforts to ensure that privacy protection measures are consistently built into health IT programs and applications. Moreover, the department may miss an opportunity to establish the high degree of public confidence and trust needed to help ensure the success of a nationwide health information network. To address these concerns, we recommended in our September report that HHS include in its overall privacy approach a process for ensuring that key privacy principles and challenges are completely and adequately addressed.

Lacking an overall approach for protecting the privacy of personal electronic health information, there is reduced assurance that privacy protection measures will be consistently built into health IT programs and applications. Without such assurance, public acceptance of health IT may be at risk.

In closing, Mr. Chairman, many important steps have been taken, but more is needed before we can make a successful transition to a nationwide health IT capability and take full advantage of potential improvements in care and efficiency that this could enable. It is important to have structures and mechanisms to build, maintain, and expand a robust foundation of health IT standards that are agreed upon by all important stakeholders. Further, given the complexity of the activities required to implement health IT and the large number of stakeholders, completing and implementing comprehensive planning activities are also key to ensuring program success. Finally, an overall privacy approach that ensures public confidence and trust is essential to successfully promoting the use and acceptance of health IT. Without further action taken to address these areas of concern, opportunities to achieve greater efficiencies and improvements in the quality of the Nation's health care may not be realized.

This concludes my statement. I would be pleased to answer any questions that you or other members of the committee may have.

CONTACTS AND ACKNOWLEDGMENTS

If you should have any questions about this statement, please contact me at (202) 512-6304 or by e-mail at melvinv@gao.gov. Other individuals who made key contributions to this statement are Barbara Collier, Heather Collins, Amanda C. Gill, Rebecca LaPaze, and Teresa F. Tucker.

Senator MIKULSKI. Thank you very much, Ms. Melvin. It is exactly what we had hoped to hear.

I am going to move right into my questions, and I am going to take about 7 minutes and then turn to Senator Merkley. And then, if we have time, we will come back for a second round.

But first, I want to say to the panel and to the many people in this room, this isn't the only conversation we are going to have. It might be the only formal hearing, but this isn't the only conversation.

I am asking my staff as well as our Republican colleagues, particularly Senator Enzi's staff and whoever else he will designate, that we can have this to get it right.

I didn't want this to become an appropriations hearing on the stimulus package, but I have to ask a question about what will be before us in the stimulus package. Let me give background quickly to my own thinking, and then I am going to turn to your thoughts and recommendations.

There is great desire in our country for change, and one of the areas is in healthcare. Our President has got it, and he wants to do it. The appointment of Senator Daschle, soon to be our Secretary of Health and Human Resources as well as the health czar. They want to move on health IT. You heard it on TV. We hear it everywhere.

I was a little skeptical of this. So let me tell you my skepticism, and it goes back because in my other committees I have watched where we dashed ahead with unbelievably good intentions, the will

of the American people behind us, and we threw a lot of money at stuff. And we ended up with boondoggle.

I can't go there again, and we can't afford to go there again. We can't afford to waste time on a fool's journey or waste money. We just don't have either one.

I want to work with our President and really then move health IT in the stimulus. So here is my question. We know about the interoperable challenges. We know about privacy. And for all in this room, from our ACLU friends and others who really raise the voice of privacy, we want to consider that.

I want to focus, as you do in healthcare, we need to be measured for performance and outcome. Having said that, conceptual language in the healthcare stimulus, could we be sure that when we spent it, we are achieving the goals?

Because there is fair unanimity here in what needs to be achieved. There is no difference of opinion. And so, my question is, No. 1, do you think we ought to put it in the stimulus? And No. 2, what, in addition to adequate funding, should we do? And should we be very prescriptive?

Could you share your thoughts because we are going to be marking up next week or the week thereafter, and I want to get it right. I am going to work with Tom Harkin and Senator Inouye and Senator Thad Cochran because it will move to appropriations. But we would like, really, your thinking.

Or do you think we should wait on it? Do you think we should wait? And if we don't wait, how can we get it right so that we make a down payment on what we need to do?

I am just going to go down the room in the way we testified on that.

Dr. COCHRAN. Well, I appreciate, No. 1, your recognition to be skeptical of how things have seemed simple in the past and didn't turn out to be as simple. I think the desire for the change in healthcare, we ought to all understand it is about time that this country of such great wealth needs to take a better view of the holistic healthcare system.

I think that we can debate, and I think what I heard this morning was a lot of agreement around the issues of interoperability and privacy and that sort of thing. What I would say when you look at the funding and the totality of the planning of health reform, to me, would be to really understand holistically the complexity of the issues and not try to find quick fixes.

Health IT is a perfect example that could be an investment that really costs a lot of money and not get any returns because it wasn't tied to significant improvements in workflows, delivery system, and the way healthcare is paid for.

I came originally from a private surgical practice, became a Permanente physician, went from fee for service to a different model. And the way we pay for healthcare can be very perverse in terms of does it really enable us to provide great quality?

We have in our coding for fee-for-service medicine 10,000 codes for treatments and interventions, and we have very few codes or none for outcomes and cure and treatment. So when you plan this process, health IT is not a silver bullet. Financing is not the only answer.

Resourcing healthcare personnel and some of those things to build up the capabilities of more social workers and more nurses and more primary care physicians, I think it has to be looked at holistically.

The Clinton plan was very holistic but lost a lot of political steam and lost a lot of acceptability. I think the way that the President-elect is approaching it is very formidable because he is really looking for input and being very interactive.

So I would say that the silver bullet is not IT. It is not in any necessarily financing mechanism. But if you are going to really make a difference, you have got to look at all of those factors. And I think what I have heard this morning is an awful lot of congruence around some of the issues that you are facing.

Senator MIKULSKI. Thank you.

Ms. Corrigan.

Ms. CORRIGAN. Yes, it is a wonderful question, Senator. I think that some investment in health information technology in the stimulus bill is very appropriate at this time. However, it needs to be viewed in a broader context and a broader policy agenda.

I would encourage a multi-pronged approach, that there be initial support to encourage investments in health information technology in the stimulus bill, but that that be health information technology that has been demonstrated to possess the necessary capabilities to actually perform some of those important functions that will result in better care.

For example, it is certainly appropriate to invest in HIT that is capable of exchanging data on prescriptions, laboratory tests, and other critical information. But we need to know that that functionality is there. That is what we should be paying for.

I think a second part, though, of a broader strategy is to begin to align our payment systems much better with paying for actual outcomes and improvements in patient care. That, in turn, will reward those who not only invested in good HIT with the necessary functionality, but put it to effective use.

Senator MIKULSKI. Mr. Neupert.

Mr. NEUPERT. I need to support the views of the prior speakers. I think payment reform is an important first step so that the right actions are motivated. But I would say that one additional comment is the data exist today. We don't need to just invest in creation of new electronic data.

I really would focus the near-term stimulus to leverage the existing data assets that are out there—prescriptions held by the pharmacy benefit managers or the pharmacies, labs that are held by the national labs—Quest, LabCorp—large health systems, and images.

If we can just get those data starting to move today in health information exchanges, we can go a long ways toward enabling and empowering both consumers and their physicians to deliver better outcomes right away. Then we can do the hard work of thinking about, holistically, how do we reform the system?

Senator MIKULSKI. I am going to turn to you, Ms. Grealy. But just a quick follow-up to you, Mr. Neupert, because I think many of my colleagues—because we are not geeks and techno wizzes here, though we ought to be more with it. But I think some envi-

sion like a national healthcare record that exists like your Social Security record.

I think what you are saying and what others have also indicated is that this is going to be a network of networks. So that, for example, I have a primary care doc who is a physician who has privileges at Mercy Hospital. Any acute care I have needed has been—mine would either be Mercy, Hopkins, or University of Maryland. But my point is, they will each have their own, and my blood work is being done by Quest.

So what you are saying is meet the networks that are already networking and then the stimulus, in other words, don't think of it like a Social Security record, think of it as a network of networks. Am I correct? And then, as we do the stimulus, get started with the networks that exist and could already begin to network?

Mr. NEUPERT. Yes. In many regards, the data is there today. We have to think of there is not going to be one record. There are going to be multiple records.

Hopkins needs to have its copy of your stuff. University of Maryland, if they treated you, needs to have your copy. But you, as a consumer, could have the longitudinal copy and share it appropriately.

That is the important thing, that the data is embedded in many of these systems already. It is not that hard to extract it. We have the knowledge, the technical capabilities today to make that available in an effective way, and then you start to see the network of networks start to happen.

Right now, they are all closed systems, and it is getting those open and sharing which is the most important first step, in our opinion.

Senator MIKULSKI. OK. Ms. Grealy.

Ms. GREALY. Well, I think Mr. Neupert made a very critical point, and that is critical data, rather than the whole enchilada, as it were. That with imaging data, lab test data, those really are the critical components that you want to share among these various providers.

I often use a very personal example of trying to help my, at the time, 89-year-old father, who was on dialysis, also being treated for cancer, doing radiation treatment five times a day. And the various providers—I spent 1 day—this is in Fort Lauderdale, FL—going to six different appointments.

And for each time to have to hand over a paper copy or have the dialysis center fax the latest blood test work, I mean it was ridiculous and harmful for the patient. So I think that is what it is all about. We do have the technology. We do have the data. We can start doing this now.

As Janet Corrigan said, let us think on parallel tracks. We would like to see in the stimulus package loans and grants to really facilitate those that have taken this on, that have taken the leadership and help others come onboard with e-prescribing and a whole host of other things.

We need to do more work on establishing the standards. A lot of good work has happened already, and I think all of us want to make sure that we don't duplicate what has already been done. Let us go ahead and build on it.

Then most importantly, I think, is not to be overly prescriptive. There is a lot of innovation out there. We want to foster that innovation. We can share the critical data, but I think each system will want to tailor their system to their particular needs. But we want to make sure that the critical data components are interoperable and can be shared for patients.

And as I noted in my testimony, we can see some very short-term, very dramatic results, and we also can see a financial return on the investment that has been made.

We have had members—I will use Baylor as an example. They knew this was the right thing to do. They did not expect to save money on it, and they have been very pleasantly surprised to see that return on the investment that they have made.

Senator MIKULSKI. Ms. Melvin.

Ms. MELVIN. Yes, speaking from an accountability perspective, obviously, the most important aspect that we see is a comprehensive approach to doing this.

And within that approach, where you are looking for the ultimate outcomes in terms of what you are trying to achieve, we think that it is important—and recognizing, again, what has been said about the number of initiatives that are already being undertaken—to take from those lessons learned, to see how successes can be applied, to see what has worked already, what hasn't worked, and to incorporate that into an overall strategy or a framework, if you will, or a plan for how and what is necessary to move forward.

Also trying to work at this in an incremental approach. I think I have heard today some emphasis on the fact that this is not something that you want to do very quickly. It is not something that has proven itself to be able to be done very quickly, as VA and DOD's experiences have already shown.

However, having an incremental approach would have the benefit of allowing opportunities to step back momentarily, assess what has worked, and to perhaps readjust and make changes along the way. But at the same time to carefully consider all of the experiences that have already been undertaken and what opportunities there are for greater enhancement in terms of quality of care and the successes associated with that.

The demonstrated uses relative to the assistance that can be provided. Oversight is another area that I would advocate for early efforts toward. From the standpoint that, as I have said in my statement, it is important to know what it is you are trying to achieve, and it is important to have measures for being able to assess your progress once you have gotten there.

So, from that standpoint, having some interim measures to work toward a final outcome would be, in our view, an important factor to have reflected early on in the process.

Senator MIKULSKI. Well, I appreciate this comment because there is a consensus. Go ahead with it. Be skeptical because that is a good thing. But don't use your skepticism to stop you, but to look at this in a well-paced, prudent way, looking at the endgame, which is that, ultimately, we will be doing health insurance or health reform.

We want to keep the word "health" and not just be looking at this as a new insurance scheme. But look at where we are going

to be heading. And I think there is agreement on what needs to be accomplished.

When you look at your testimony, what Dr. Bill Frist has said, what Newt has said, we all know the ultimate endgame that we want to achieve with health IT and even with health reform, which is improving patient care, management of chronic illness.

When you have an acute incident, everyone has access to what they need to know about you, and also you have to take responsibility for your own healthcare by keeping those appointments and asking those right questions.

I think these are excellent recommendations. I am going to ask when this is over, though, for my staff to have a little bit not from podium-dais to you, but to really talk about what you think would be essential so that Senator Harkin and those of us who are the appropriators working with Kennedy and Enzi can get into it.

I have some other questions, but now I am going to turn to Senator Merkley now for questions that he might have.

Senator MERKLEY. Thank you very much, Madam Chair.

And thank you for your testimony this morning.

I want to clarify what this looks like from the point of view of your average American. For example, consider the fact that I have had many different health records that have been built up and held in these different networks, and I am now back here in Washington, DC. Perhaps I have a health incident, and so the physician of the Capitol is going to access my records.

Is he going to do that by name, by Social Security number? Is he going to need a password? Is he going to see a list of networks that have information, or is he going to be able to use a simple identifier in order to gain access to the entire set of records?

If one of you could just take that on and help clarify the vision as you see it from the consumer's point of view?

Mr. NEUPERT. At Microsoft, we have developed a service called HealthVault, which allows you to keep your own copy of the records.

Senator MIKULSKI. Excuse me, Mr. Neupert. What is it called? Health what?

Mr. NEUPERT. HealthVault.

Senator MIKULSKI. Vault.

Mr. NEUPERT. Vault, as in safe, secure, private, yours, with a key.

Our vision doesn't imagine connecting all of those electronic systems to each other. That would be very complicated and might be kind of slow. But it is very easy to connect each of those electronic systems to this one hub, or Google has a competitive one, and there could be more than one of these.

But just like you choose what bank or financial institution you want to keep your assets in, you ought to be able to choose where you want to store your critical health data assets. All you need to do is be able to make sure that it is connected to each of those providers and to the pharmacy.

Because lots of health happens not just in the doctor's office. Some of it happens at home. You might want to keep your weight. You might want to keep your exercise workout stuff because those

are important attributes. What you eat are important attributes to your total health.

And then, when that acute incident happens, what you want is an easy mechanism for the provider of service for you to share, and this solves many of the privacy issues because you can choose with whom you want to share your critical information at every point in time and what part of that record you want to share out.

So we took a different approach to trying to solve that problem, and it exists today, and it is free for consumers.

Senator MERKLEY. If I am critically injured, how does the emergency room access that information?

Mr. NEUPERT. There are lots of solutions to that problem. The simplest solution is for you to carry something that gives a particular code for them to get access to it.

Senator MERKLEY. Did you want to add something?

Dr. COCHRAN. Yes. First of all, the tension at the level of the consumer is if you are injured or you are sick, you want people to have access to that data. You want to make sure they got it through a system that was very secure and very private, which goes back to basically the Hippocratic Oath anyway, that that is what physicians want.

So in a great world, an ideal world progressively. For example, we are an organization that if we were a State, we would be the 12th biggest State. So we have millions of members, many locations. When we talked earlier about how physicians were a little reluctant at first, it was hard because it disrupted their day. They weren't used to having a computer between them and the patient.

You could not get the computer out of their office. They absolutely love it, and it is because of that, it is because the information is available. It is secure.

If you are seeing a primary care physician with chest pain, and you have an old cardiology appointment, they can both be looking at your record at the same time and conferring with each other, in State, out of State. So in a perfect world, if we are large and leverageable, it could be done on a more national level for members and patients who have got to get to that security and privacy belief system before they are ever going to want to have that happen.

It creates a very safe system for people because if they have idiosyncratic diseases or complexity, they carry it around on a piece of paper in their wallet or they carry it in an EHR, which is very progressive, or PHR. But right now, you are really kind of on your own. And so, it is not a very safe way to have intercurrent disease.

Senator MERKLEY. Thank you for helping clarify that.

My wife works as a nurse for Providence, which has received many awards for being one of the most wired hospitals, very high technology use. However, it is much harder to get rural or smaller institutions involved, and what kinds of efforts do we need to really make the IT solutions reach out and connect to the rural parts of our country?

Ms. GREALY. I think this is probably where we have the greatest potential for seeing that return on the investment, whether we are talking about telemedicine or being able to share this information about patients over a broad geographic area.

I would say the key component for those facilities is going to be the financial support in order to implement and adopt these systems, and I think it can make a tremendous difference in helping patients in those rural areas have access to high-quality health-care.

Ms. CORRIGAN. Yes, and Senator, part of this has to do with encouraging the development of more organized systems of care. We have a two-class system right now in the country for those who have access to HIT-enabled care and those who don't.

If you look at the organized systems, whether it is Kaiser Permanente, it is the Veterans Health Affairs, it is Mayo, or Geisinger system—it doesn't have to all be multispecialty groups, but an organized system—they have upwards of 95 percent that have fully functional, sophisticated health information technology systems in place. And those who receive their services within a system like that are getting higher quality, more affordable care.

It is when you move out into communities that are highly fragmented where those relationships do not yet exist. So part of the solution here is to encourage the development of those relationships.

Mary Grealy mentioned Baylor earlier, and they have gone down the road in the last 5 years or so to really begin to reach out to the physicians that are the heavy admitters to the Baylor health system and to begin to work with them collaboratively on installing electronic health records that have connectivity with the rest of the system.

So I think one of the keys here is to break down barriers, and there are some important policy barriers to those relationships developing. The Stark anti-kickback legislation, I think, has unfortunately become a barrier to hospitals working with the physicians in the community to help them get the technological support and capital they need to be able to be a part of an EHR system and exchange information together.

Senator MERKLEY. Thank you very much, and my time has expired.

Senator MIKULSKI. Senator, first of all, those were excellent questions that I think all of us would share. It shows you are going to be a really active and great member of our committee, and again, we welcome you.

I just want to, first, ask unanimous consent that all full statements of our panelists be included in the record. Second, I want to be sure that we have unanimous consent that any Senator who wishes to place a statement in the record on this topic can. All Senators who might have additional questions will submit them.

I know that Senator Enzi in particular has a list of questions. I believe Senator Alexander and some others do. So anybody that has questions, they will be submitting those in writing.

I am going to ask one final question, and then this committee will adjourn. This goes to interoperability, and really, I am going to go right to you, Ms. Melvin.

Because we have many good ideas—we could be talking about the health manager that Kaiser has, the HealthVault that Micro has, the need to know as part of privacy, etc., but if this isn't interoperable, nothing is going to achieve our goals.

I looked at the chart of approval that is set over at HHS, and also our outgoing Secretary even wrote an op-ed in the Post about this. Ms. Melvin, what do you think we can do now? Particularly, do you think we need to streamline the interoperable process? How can we work on that now?

Then I invite our panel to submit to us even additional thoughts about how we can get this interoperability thing going now and have a streamlined, but ongoing process.

Ms. MELVIN. What I would emphasize is prioritization. I think that is probably the key. Whether that ultimately results in a streamlined process or perhaps a process that over time results in the ultimate outcome, the key, I think, will be to look at what are the significant clinical needs? What are the significant outcomes and results that are desired early on based on experiences that have already been proven through the initiatives that have been undertaken?

And use that information to drive what priority needs might be the ones that you focus on initially. We have seen VA do that in its work relative to specific types of information that needed to be in its medical record. I would say VA and DOD, as they have attempted to incorporate interoperability into their sharing efforts. And as a result of that, they have identified some key data that can be shared.

But one thing that is important to remember is that in terms of interoperability, and I have noted this in my statement, is that there are different levels. And not all levels are necessary for all aspects of healthcare.

It is important to figure out what needs to be done and to establish priorities for when they need to be done, and to let that drive what the ultimate outcomes will be relative to how standards are implemented and what particular data exchanges are taking place, when, and for what purposes.

Senator MIKULSKI. So, as we develop interoperability, we go for the goals that have been set here, that, ultimately, whatever we are developing should be improving healthcare outcomes and enabling all who are involved in patient care to be able to do this.

But to go to what Mr. Neupert said, we can begin now with what is already being developed in some ways by national systems like the bloodwork people.

Ms. MELVIN. There are important examples, very good examples out there relative to what has been done and what is capable of being done that do serve as great input to making decisions on what are key and primary efforts to focus on.

Senator MIKULSKI. Well, I looked at the chart. You have HHS, the Secretary. He has a policy recommendation for review and approval group. Then he has the Office of National Coordination. He has three things under him. You have the American Health Information Community, which has nine Government agencies. I mean, you have—we could be Rube Goldberg here.

But we are going to leave that to our Secretary of Health to streamline. I think what we need to do is take your input. I think you have given us excellent guiding principles over what we need to do and also what we need to be considering in the health stimulus.

We really look forward to ongoing conversations with you, with that which is represented in this room, with our privacy people, lead groups like the ACLU, and so that we are mindful of that because they have very good insights, and they often raise questions we don't always think about.

But at the end of the day, we want to improve patient healthcare and have providers be able to have the tools they need or what they need to know and what they need to know from each other.

This has been excellent. We would like to pursue this in more detail, and we are going to continue to do that. I view this hearing as a down payment on ongoing discussions on health IT.

Thank you very much for participating, and any additional information to be submitted is most welcome.

This committee will stand adjourned, subject to the call of the Chair. Thank you.

[Additional material follows.]

ADDITIONAL MATERIAL

PREPARED STATEMENT OF SENATOR KENNEDY

In this new century of the life sciences, almost every day brings new medical breakthroughs and extraordinary scientific discoveries. Biotechnology has created undreamed-of solutions to longstanding medical challenges. Conditions which once required invasive surgery can now be treated through increasingly less costly procedures. The human genome project has begun to solve some of the most profound medical mysteries, inspiring scientists to find better ways to treat cancer, diabetes, Alzheimer's Disease, and other major illnesses.

Our health care system itself, however, is still plagued by staggering inefficiencies. With the cost of health care approaching 20 percent of our gross domestic product, serious action is required to turn back this tide of rising costs. We need to recognize that the technology revolutionizing the development of new treatments can also increase patients' access to good care at a much lower cost.

In recent years, information technology has transformed many industries ranging from telecommunications to financial services. Yet, the health care industry continues to lag behind in implementing information technology, even though the potential for major improvement has been known for years.

Today, one in every seven primary care visits is undercut by missing medical information. More than 40 percent of Americans have been victims of preventable medical errors, and as many as 100,000 Americans die each year because of such errors. In a nation that spends more on health care than any other country, and that has the best doctors, nurses, hospitals, and scientists in the world, such errors are intolerable.

Information technology can reduce these errors significantly. Yet the gap is widening each year in implementing it. It now costs a physician's office about \$40,000 to install a new IT system. Increasingly, our public hospitals and community health centers remain in the dark ages of health technology, while health institutions with financial means are implementing life-saving, cost-effective systems. Estimates by the RAND Corporation indicate that the widespread adoption of electronic health records could save up to \$160 billion a year.

So far, the vast majority of investment in IT has come from the private sector. But Federal grants such as those proposed in the last Congress would enable the health care industry to convert individual examples of health IT success into a national trend.

The advantages of health IT must obviously be accompanied by careful protection of patient privacy. Many of us have been working with the provider and patient communities to develop strong privacy protections, including notice to patients when their medical information is wrongly disclosed. We also commend Secretary-Designate Tom Daschle's commitment to work on patient privacy, information security, and appropriate uses of health IT in health reform.

I look forward to working closely with my colleagues on the HELP and Finance committees and with the incoming Obama administration to ensure that our promise of a coordinated health

care system is delivered to the American people. Thank you, Senator Mikulski, for bringing this important issue to light.

PREPARED STATEMENT OF SENATOR ENZI

I would like to begin by thanking Senator Mikulski for holding this hearing today and thanking the witnesses who are before us.

I have been working on increasing the adoption of health information technology for the past 4 years and I am hopeful that this is the year when we can finally get something done. I believe that promoting widespread use of health information technology (health IT) will help to reduce health care costs and improve health care quality. Investing in health IT will pay enormous dividends not just in dollars saved, but more importantly, in lives saved.

In order for health IT to achieve this potential, however, it must be interoperable. Simply throwing around taxpayer dollars as an investment in health IT is not a solution. We need to establish consensus standards so that doctors will not have to worry that the IT investment they make today will be obsolete tomorrow. Purchasing health IT software should not be like investing in compact discs the day before iTunes launched.

Any investments made in health IT need to be coupled with a requirement that purchases comply with technology standards harmonized by the Healthcare Information Technology Standards Panel and certified by the Certification Commission for Health IT. Additionally, I urge the President-elect to ensure all Federal investments in health IT are fiscally sustainable and financially sound.

I look forward to working with President-elect Obama and Senator Daschle to build upon the progress of the Bush administration. Greater adoption of health IT also presents an opportunity to increase the privacy and security of patient records. Health IT systems can build in protections and tracking mechanisms that are impossible to achieve with a paper-based system. In some of these instances it may be necessary to take a fresh look at the current privacy and security rules, but I urge my colleagues to proceed with caution.

It is critical to strike the right balance between patient privacy and proper access to health information. If information is wrapped up in so much red tape that doctors and their staff are not able to access it when they need it, patients will suffer the consequences. It will take time and hard work, but we must find the right balance so patient care does not suffer.

In closing, I would like to reiterate that my primary reason for pursuing health IT legislation is to increase the quality of health care. I hope that any legislation that moves forward achieves that goal. I look forward to working with all of you during this Congress to increase the adoption of health information technology and improve the quality of health care in this country.

PREPARED STATEMENT OF SENATOR MURRAY

I am pleased that this hearing is being held so we can discuss how to expand the use of information technology in the health care system.

I've been a longtime advocate for increasing the use of IT to improve health care, especially to create electronic health-record systems.

And in my home State of Washington, I've been proud to support efforts to use IT to expand access to health care in remote communities—as well as to improve care for everyone.

On the national level, I think IT has the potential to revolutionize our health care system.

And it's critical that we make these investments now—especially in light of the economic crisis. Layoffs are on the rise, families are losing their health insurance, and that means more and more people are going without health care to save money.

We need to talk seriously about ways to reduce health care costs and improve care.

And I want to extend a special thanks to Peter Neupert from Microsoft Health Solutions for being a panelist.

Microsoft has been a leader in the effort to create electronic medical records and make them available to doctors and administrators in real time. They're developing ways to help doctors make better decisions about how to treat patients—and they're helping administrators plan how to use hospital resources.

Microsoft is already working with health care providers around the country, including Seattle Children's Hospital and the University of Washington. I'm sure that their valuable experiences will be useful as we move to expand health IT.

[Whereupon, at 11:06 a.m., the hearing was adjourned.]

○