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ACCELERATING THE ADOPTION OF HEALTH INFORMATION TECHNOLOGY

HEARING

BEFORE THE

SUBCOMMITTEE ON TECHNOLOGY, INNOVATION, AND COMPETITIVENESS

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE

ONE HUNDRED NINTH CONGRESS

SECOND SESSION

JUNE 21, 2006

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ACCELERATING THE ADOPTION OF HEALTH INFORMATION TECHNOLOGY

WEDNESDAY, JUNE 21, 2006

U.S. SENATE,
SUBCOMMITTEE ON TECHNOLOGY, INNOVATION, AND COMPETITIVENESS,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Subcommittee met, pursuant to notice, at 2:30 p.m. in room SD–562, Dirksen Senate Office Building, Hon. John Ensign, Chairman of the Subcommittee, presiding.

OPENING STATEMENT OF HON. JOHN ENSIGN, U.S. SENATOR FROM NEVADA

Senator ENSIGN. Good afternoon. Welcome to today's hearing on accelerating the adoption of health information technology.

We all know that the promise of health information technology is very real. Electronic medical records have the potential to completely transform our healthcare system. If properly implemented, this technology will reduce medical errors, improve the quality of care, and lower healthcare costs.

Last year, this Subcommittee held the first Senate hearing on health information technology. That hearing focused on the promise of health information technology. Today, I want to focus on progress.

In 2004, President Bush outlined a plan to ensure that most Americans have electronic health records within the next 10 years. We need to make serious and measurable progress toward meeting that goal. The question is: How close are we to meeting the President's objective?

Since 2004, the Office of the National Coordinator for Health Information Technology and the American Health Information Community have been established to improve healthcare through information technology. The Department of Health and Human Services has issued requests for proposals and awarded contracts to explore key issues, including interoperability and certification. We need to know the status of the work being done in these areas. Lack of interoperable standards remains one of the key barriers to the widespread adoption of health information technology. In order to talk to each other, health information systems need to speak a common language. For that to occur, we need to agree on common data and messaging standards. Today, the standard-setting process is fragmented. The Department of Health and Human Services has noted that the current system lacks coordination and specificity.

This results in overlapping standards and gaps in areas that need to be filled.

We need to coordinate existing standards and develop new standards in areas, where necessary. This will help us ensure that electronic medical records can work at any point in the healthcare system, much in the same way that a bank card should work in any bank's ATM.

Data and messaging standards in the area of electronic prescribing, or "e-prescribing," could serve as a model for interoperable electronic health records. E-prescribing allows doctors to transmit prescriptions electronically to pharmacies. It also allows doctors and pharmacies to obtain information about the patient's eligibility and medication history from prescription drug plans.

Having better access to patient information at the point of care makes writing, filling, and receiving prescriptions quicker, easier, and more accurate, and this leads to reduced prescription errors caused by hard-to-read physicians' handwriting and automates the process of checking for drug interactions and allergies.

Both the public and private sectors agree on the need for the successful implementation of interoperable health information technology. Given the sheer size of the healthcare sector in our economy, as well as the complexity of this task, there is no shortcut. Success will not happen overnight, but we need to be making significant and measurable progress toward interoperability to reach our ultimate goal. The challenges are great, especially since our healthcare system is highly fragmented. Nevertheless, the healthcare system needs to begin adopting the technologies that are used in virtually all other industries. To encourage the widespread adoption of these technologies, we need to increase the confidence that doctors and other healthcare professionals have in making the decision to purchase health information technology. We can start by creating an infrastructure for interoperability and a process for certifying that products meet acceptable standards.

We must focus on making healthcare more affordable, more available, and more accessible to hardworking Americans. We can make healthcare better for all Americans through health information technology. An interoperable, interconnected healthcare system will improve quality of care, and save patients and taxpayers' dollars.

A key component of this system is the electronic medical record. An electronic record is more reliable than a paper record. It is exactly where it should be, even if you aren't. This means that an electronic record may be accessed from any point in the healthcare system. So, if you happen to be traveling in my home state of Nevada, and you get sick or get in an accident, a physician can instantly obtain medical information, such as allergies, medications, and prior diagnoses, to determine how best to treat you. Electronic medical records just makes sense.

I am eager to hear about the progress that is being made in health information technology in both the public and the private sectors. It is my hope that this hearing will help us understand what needs to be done to accelerate the adoption of health information technology. I look forward to the expert testimony of our dis-

tinguished witnesses, and want to thank each and every one of you for attending and participating in today's hearing.

Our first panel will have one witness, Dr. Carolyn Clancy. Dr. Clancy is the Director of the Agency for Healthcare Research and Quality. Today, she will be speaking on behalf of the Department of Health and Human Services.

Dr. Clancy, we look forward to receiving your testimony. Please proceed.

STATEMENT OF CAROLYN M. CLANCY, M.D., DIRECTOR, AGENCY FOR HEALTHCARE RESEARCH AND QUALITY, DEPARTMENT OF HEALTH AND HUMAN SERVICES

Dr. CLANCY. Good afternoon. Chairman Ensign, I'm Dr. Carolyn Clancy, of the Agency for Healthcare Research and Quality. Thank you for inviting me to testify today, and I'd ask that my written statement be entered into the record.

As you said, in——

Senator ENSIGN. Your full statement and the statement submitted by each witness will be made part of the record.

Dr. CLANCY. As you noted in April 2004, President Bush announced his commitment to the promotion of health IT to improve efficiency, reduce medical errors, improve quality, and provide better information for patients and physicians, and he called for widespread adoption of electronic health records within 10 years so that health information will follow patients throughout their care in a seamless and secure fashion wherever they're getting their care. And I think it's fair to say that we're making good progress in reaching that goal.

Reaching this goal requires cooperation among Federal agencies that play a role in advancing our understanding and use of health IT in coordination across all Federal health IT programs and with the private sector. So, to help ensure that we achieve the President's vision, the Secretary of Health and Human Services moved forward with two critical steps. One was appointing the Director of the Office—the National Coordinator for Health IT, and creating an office, and second was, in very rapid order, publishing a strategic framework, delivering consumer-centric and information-rich healthcare. And this framework outlined an approach toward nationwide implementation of interoperable electronic health records and identified four major goals, and these are detailed in the written statement.

Since that time, HHS has been building the clinical business and technical foundations for its health IT strategy. We believe that health IT can save lives, improve care, and improve efficiency. More than 5 years ago, as many of us remember, the Institute of Medicine estimated that as many as 44,000 to 98,000 people die every year as a result of medical errors. So, health IT, through applications such as computerized provider order entry, can help reduce medical errors and improve quality. For example, studies have shown that adverse drug events have been reduced by as much as 70 percent to 80 percent by targeted programs, with a significant portion of that improvement attributable to the use of health IT.

A recent study in the Journal of the American Medical Association confirmed what we believe intuitively, and certainly experience directly as clinicians, that information is frequently missing at the point of care, and that this missing information can be harmful to patients. The study also found that information was far less likely to be missing in those offices that had electronic health records.

Patients know this, as well. In a survey that we conducted with the Kaiser Family Foundation and the Harvard School of Public Health, nearly one in three people reported that they or a family member had created their own set of medical records to make sure that all of their healthcare professionals had all of their current medical information.

Current estimates of whether health IT will produce cost savings show mixed results. These estimates are based, in part, on the reduction of obvious errors. For example, on average, a medical error is estimated to cost about $3,700. But these savings are not guaranteed simply through acquiring health IT. If poorly designed or implemented IT will not bring these benefits, and we are seeing that health in some cases, may even lead to new medical errors and potential costs.

Achieving improvements in healthcare, and realizing cost savings, then, must be in the result of the hardware and software, combined with real process change. The Department, through AHRQ and CMS, is currently funding over 125 projects and demonstrations to better understand how health IT can improve safety, quality, and efficiency of care. And these projects range from physician office integration of electronic prescribing to health information exchange at the state level. And the knowledge from these projects is being disseminated as rapidly as possible to providers, payers, consumers, and other stakeholders.

One example is a recent report that the agency commissioned on the costs and benefits of health IT. This was conducted by one of our evidence-based practice centers at the University of Southern California, RAND. The report found that health IT can lead to significant and substantial improvements. However—and that's available through our National Resource Center—they also found that a quarter of the studies came from just four institutions, and most of those systems were homegrown. So, we're very pleased that our current portfolio is addressing the lessons learned from implementing commercial products.

In 2004, HHS solicited public input about whether and how a nationwide health information network could be developed. Key questions addressed the organization and business framework, the legal and regulatory issues, management and operational considerations, standards and policies for interoperability, and other considerations for the development of such a network. So, two critical challenges to realizing the President's vision are now being addressed: interoperability and portability of health information using IT, and, second, electronic health record adoption. The Office of the National Coordinator is addressing these challenges first by harmonizing health information standards and promoting the certification of health IT products to assure consistency with standards, and you will be hearing from Drs. Halamka and Leavitt shortly. Second is addressing variations in privacy and security policies that can pose

challenges to interoperability. And third is developing a prototype nationwide Internet-based architecture for sharing of electronic health information.

Secretary Leavitt established a new Federal advisory committee, the American Health Information Community, that brings together the leading public payers and leading private-sector payers and stakeholders from the private sector. And the focus of this community is market power combined with consensus to drive change, rather than the use of mandates.

Now that HHS is developing an infrastructure to address standards harmonization, compliance certification, nationwide health information network architecture, security and privacy, and electronic health record adoption measurement through its contracts, there is a need to gain the Federal perspective in these and other Federal health IT areas. And to accomplish this, we're working closely with the Federal health architecture, an OMB line of business managed by the Office of National Coordinator, to create interoperability and to increase efficiency in the public health and healthcare sectors, as well as to ensure that interoperability exists within and between the public and private sectors.

The Department recognizes that interoperable health IT is critical not only for redesigning healthcare as delivered, but also for informing patients and other consumers about the costs of care and some aspects of its quality. But we're learning that it's more than the technology simply being put in place. New initiatives linking outcome, safety, and quality will only succeed if the technology supporting the programs is implemented securely and well.

Finally, and very importantly, we cannot succeed here unless Americans are assured that their health information will not be disclosed without their permission. In addition, users have to have a level of comfort about the integrity of the information being presented to them. Attention has to be paid to how we maintain the public trust in the new electronic health information systems and how we can assure that safeguards are built into the technologies being used, as well as putting in place workplace practices that better protect privacy.

I want to thank you for the opportunity to update you on the progress that we're making in the area of health IT. Under Secretary Leavitt's leadership, we're giving the highest priority to fulfilling the President's commitment to promote widespread adoption of interoperable electronic health records, and it's really, really a privilege to be part of this transformation.

That concludes my prepared statement, and I'd be happy to answer any questions.

[The prepared statement of Dr. Clancy follows:]

PREPARED STATEMENT OF CAROLYN M. CLANCY, M.D., DIRECTOR, AGENCY FOR HEALTHCARE RESEARCH AND QUALITY, DEPARTMENT OF HEALTH AND HUMAN SERVICES

Chairman Ensign and members of the Subcommittee, I am Dr. Carolyn Clancy, Director of the Agency for Healthcare Research and Quality (AHRQ). Thank you for inviting me to testify today on some of the health information technology activities underway in the Department of Health and Human Services.

Setting the Context

On April 27, 2004, the President signed Executive Order 13335 announcing his commitment to the promotion of health information technology (HIT) to improve efficiency, reduce medical errors, improve quality of care, and provide better information for patients and physicians. In particular, the President called for widespread adoption of electronic health records (EHRs) within 10 years so that health information will follow patients throughout their care in a seamless and secure manner. Reaching this ambitious goal requires cooperation among Federal agencies and departments that play a role in advancing our understanding and use of health information technology: coordination across all Federal HIT programs; and coordination with the private sector. Toward those ends, the Secretary of Health and Human Services established within his office the position of National Coordinator for Health Information Technology on May 6, 2004, to advance the President's vision.

As my testimony will demonstrate, this approach is working. The Office of the National Coordinator works closely with AHRQ (one of the largest funders of HIT research projects), the Centers for Medicare and Medicaid Services (CMS), the Department of Defense, the Department of Veterans Affairs, and multiple other agencies and departments to ensure synergy in our efforts and avoid unnecessary duplication.

On July 21, 2004, the Department published the "Strategic Framework: The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care." The Framework outlined an approach toward nationwide implementation of interoperable EHRs and identified four major goals. These goals are: (1) inform clinical practice by accelerating the use of EHRs, (2) interconnect clinicians so that they can exchange health information using advanced and secure electronic communication, (3) personalize care with consumer-based health records and better information for consumers, and (4) improve public health through advanced bio-surveillance methods and streamlined collection of data for quality measurement and research. Since that time, the Department has been building the clinical, business, and technical foundations for its health IT strategy.

The Clinical Foundation: Evidence of the Benefits of Health IT

We believe that health IT can save lives, improve care, and improve efficiency in our health system. Five years ago, the Institute of Medicine (IOM) estimated that as many as 44,000 to 98,000 deaths occur each year as the result of medical errors. Health IT, through applications such as computerized provider order entry can help reduce medical errors and improve quality. For example, studies have shown that adverse drug events have been reduced by as much as 70 to 80 percent by targeted programs, with a significant portion of the improvement stemming from the use of health IT.

Every primary care physician knows what a recent study in the Journal of the American Medical Association (JAMA) showed: that clinical information is frequently missing at the point of care, and that this missing information can be harmful to patients. That study also showed that clinical information was less likely to be missing in practices that had full electronic records systems. Patients know this too and are taking matters into their own hands. A recent survey by AHRQ with the Kaiser Family Foundation and the Harvard School of Public Health found that nearly 1 in 3 people say that they or a family member have created their own set of medical records to ensure that their health care providers have all of their medical information.

Current analyses examining whether health IT will produce cost savings show mixed results. Models projecting the potential savings from health IT vary widely. These estimates are based in part on the reduction of obvious errors. For example, on average, a medical error is estimated to cost about $3,700 in 2003 dollars. But, these savings are not guaranteed through the simple acquisition of health IT. If poorly designed or implemented, health IT will not bring these benefits, and in some cases may even result in new medical errors and potential costs.

Shortening the Translation Lag

Achieving improvements in health care and realizing cost savings requires a much more substantial transformation of care delivery that goes beyond simple error reduction and the use of health IT. Health IT must be combined with real process change in order to see meaningful improvements in our delivery system. The Department, through AHRQ and CMS, is currently funding over 125 projects and demonstrations to better understand how health IT can improve the safety, quality and efficiency of care. These projects range from physician office integration of electronic prescribing to health information exchange at the state level. Further, the knowledge gained is quickly made available to providers, payers, consumers and other

stakeholders. One example includes a report on the costs and benefits of health information technology prepared by AHRQ's Southern California Evidence-Based Practice Center. The report notes improvements in care for large organizations utilizing health IT. The report also noted an absence of evidence—neither pro nor con—for individual providers or smaller organizations. The report is now part of a much larger repository of nearly 6,000 knowledge products at AHRQ's National Resource Center for Health IT.

Business Foundation: The Health IT Leadership Panel Report

Recognizing that the healthcare sector lags behind most other industries in its investment in IT, HHS employed a contractor, the Lewin Group, to convene a Health IT Leadership Panel to help understand how IT has transformed other industries and how, based upon their experiences, it can transform the health care industry.

The Leadership Panel was comprised of nine CEOs from leading companies that do not operate health care businesses, but purchase large quantities of healthcare services for their employees and dependents. They were called upon to evaluate the need for investment in health information technology and the major roles that both the government and the private sector can play in achieving widespread adoption and implementation. The Leadership Panel identified as a key imperative that the Federal Government should act as leader, catalyst, and convener of the Nation's health information technology effort. Private sector purchasers and health care organizations can and should collaborate alongside the Federal Government to drive adoption of health IT. In addition, the Leadership Panel members recognized that widespread health IT adoption may not succeed without buy-in from the public as health care consumer.

The Technical Foundation: Public Input Solicited on Nationwide Network

HHS published a Request for Information (RFI) in November 2004 that solicited public input about whether and how a Nationwide Health Information Network (NHIN) could be developed. This RFI asked key questions to guide our understanding around the organization and business framework, legal and regulatory issues, management and operational considerations, standards and policies for interoperability, and other considerations.

Over 500 responses to the RFI were received. These responses yielded rich insights on how a National Health Information Network based on interoperability of health information exchange could be developed to realize our goal of the safety, quality and efficiency of care. Clear themes that emerged from this wide group of stakeholders include:

- A NHIN should be a decentralized architecture built using the Internet, linked by uniform communications and a software framework of open standards and policies.
- A NHIN should reflect the interests of all stakeholders with a governance entity composed of public and private stakeholders to oversee the determination of standards and policies.
- A key challenge will be the provision of sufficient safeguards to protect the privacy of personal health information. Others include the need for additional and better refined standards; accurately verifying patients' identity; and addressing discordant inter- and intra-state laws regarding health information exchange.
- Incentives may be needed to accelerate the deployment and adoption of a NHIN.
- Existing technologies, Federal leadership, and certification of EHRs will be the critical enablers of a NHIN.

Departmental Action

Two critical challenges to realizing the President's vision for health IT are now being addressed: (a) interoperability and portability of health information using information technology and (b) electronic health record adoption. Further, the gap in EHR adoption between large hospitals and small hospitals, between large and small physician practices, and among other healthcare providers must also be addressed. This adoption gap has the potential to shift the market in favor of large players who can afford these technologies, and can create differential health treatments and quality, resulting in a quality gap.

These challenges are being met by key actions currently underway in the Office of the National Coordinator: harmonizing health information standards; promoting the certification of health IT products to assure consistency with standards; addressing variations in privacy and security policies that can pose challenges to interoperability; and developing a prototype, nationwide, Internet-based architecture for

sharing of electronic health information. These efforts are interrelated, and a new Federal advisory committee, the American Health Information Community, is in the process of formulating recommendations regarding the Federal Government's role in responding to these challenges.

American Health Information Community

On July 14, 2005, Secretary Leavitt announced the formation of the American Health Information Community (the Community), a national public-private collaboration formed pursuant to the Federal Advisory Committee Act. The Community has been formed to facilitate the transition to interoperable electronic health systems in a smooth, market-led way. The Community is providing input and recommendations to the Secretary on use of common standards and how interoperability among Health IT systems can be achieved while assuring that the privacy and security of those records are protected. On September 13, 2005, Secretary Mike Leavitt named the Community's 17 members, including nine members from the public sector and 8 members from the private sector.

At its November 29, 2005 meeting, the Community formed workgroups that were charged to make recommendations for specific achievable near-term results in the following areas:

- Consumer Empowerment—Make available a consumer-directed and secure electronic record of health care registration information and a medication history for patients.
- Chronic Care—Allow the widespread use of secure messaging, as appropriate, as a means of communication between doctors and patients about care delivery.
- Electronic Health Records—Create an electronic health record that includes laboratory results and interpretations, that is standardized, widely available and secure.
- Biosurveillance—Enable the transfer of standardized and anonymized health data from the point of health care delivery to authorized public health agencies within 24 hours of its collection.

These workgroups advanced recommendations at the May 16 meeting of the Community, and key actions related to these and future recommendations are beginning to unfold. In addition to the formation of the Community, HHS through the Office of the National Coordinator has issued contracts, the outputs of which will serve as inputs for the Community's consideration. Specifically, these contracts focus on the following major areas:

Standards Harmonization. HHS awarded a contract to the American National Standards Institute, a non-profit organization that administers and coordinates the U.S. voluntary standardization activities, to convene the Health Information Technology Standards Panel (HITSP). The HITSP brings together U.S. standards development organizations and other stakeholders. The HITSP is developing and implementing a harmonization process for achieving a widely accepted and useful set of health IT standards that will support interoperability among health care software applications, particularly EHRs.

Today, the standards-setting process is fragmented and lacks coordination and specificity, resulting in overlapping standards and gaps in standards that need to be filled. A process was implemented where standards are identified and developed specific to real-world scenarios, or "use cases." As of March 2006 we have three common use cases for the standards harmonization process, which will also be used in the other contracts discussed below. In May 2006, the HITSP proposed "named standards" for the three use cases and is now developing interoperability specifications for each.

Compliance Certification. HHS awarded a contract to the Certification Commission for Health Information Technology (CCHIT) to develop criteria and evaluation processes for certifying EHRs and the infrastructure or network components through which they interoperate. CCHIT is a private, non-profit organization established to develop an efficient, credible, and sustainable mechanism for certifying commercial health care information technology products. The contract, currently scheduled for a three-year period, will address three areas of certification: ambulatory electronic health records, inpatient electronic health records, and the infrastructure components through which they could interoperate.

The CCHIT has made significant progress toward the certification of commercial ambulatory electronic health records. In February 2006, CCHIT began using its final criteria to conduct ambulatory electronic health record certification pilot tests and has been accepting applications for operational certification as of March 2006, with the goal of having certified electronic health record products in the market-

place on July 18, 2006. Certification will help buyers of HIT determine whether products meet minimum requirements.

NHIN Architecture. HHS has awarded contracts totaling $18.6 million to four consortia of health care and health information technology organizations to develop prototype architectures for the Nationwide Health Information Network (NHIN). The four consortia will move the Nation toward the President's goal of personal electronic health records by creating a usable architecture for health care information. The NHIN architecture will be coordinated with the work of the Federal Health Architecture and other interrelated infrastructure projects. The goal is to develop real solutions for nationwide health information exchange by stimulating the market through a collaborative process and the development of network functions. In June 2006, the contractors submitted proposed functional requirements for the NHIN's to HHS and a public meeting will be held to review them.

Security and Privacy. HHS awarded a contract to RTI International working with the National Governors Association Center for Best Practices to study privacy and security practices that affect health information exchange. Through this contract, stakeholders, including consumers, within and across 34 states and territories will assess variations in organization-level business policies and state laws that affect electronic health information exchange; identify and propose practical solutions for addressing such variation that will comply with privacy and security requirements in applicable Federal and state laws; and develop detailed plans to implement identified solutions.

All state and territory Governors were invited to submit, or have a designee submit, a proposal for participation. States and territories that participate will be required to undertake certain activities that include: examining privacy and security policies and business practices regarding electronic health information exchange; convening and working closely with a wide range of stakeholders in the state, including consumers, to identify best practices, barriers and solutions; and developing an implementation plan for solutions to address organization-level business practices and state laws that affect privacy and security practices for interoperable health information exchange.

In the next 6 months, state consortia will produce an interim assessment of current privacy and security variations. To do this, state subcontractors will form collaborative workgroups to define this preliminary landscape. State solutions and implementation plans under this contract will be finalized in early 2007.

EHR Adoption Study

To assess progress toward the President's goal for EHR adoption, we must be able to measure the rate of adoption across relevant care settings. To date, several health care surveys have queried health care providers such as individual physicians, physician group practices, community health centers, and hospitals on their use of EHRs in an effort to estimate an overall "EHR adoption rate." These surveys indicate an adoption gap; however, the surveys and what they have measured have varied. These variations occur from survey factors such as the type of entity, geography, provider size, type of health information technology deployed, how an EHR is defined, the survey sampling frame methodology (*e.g.,* the source list of physicians), and survey data collection method (*i.e.,* phone interview, mail questionnaire, Internet questionnaire, etc.).

Due to the variations in the purpose and approach, these surveys have yielded varying methods of EHR adoption measurement. In particular, no single approach yields a reliable and robust long-term indicator of the adoption of interoperable EHRs that could be used for: (1) bench marking progress toward meeting the President's EHR goal and (2) informing Federal policy decisions that would catalyze progress toward reaching this goal. Therefore, HHS awarded a contract to the George Washington University and Massachusetts General Hospital Harvard Institute for Health Policy to support the Health IT Adoption Initiative. The new initiative is aimed at better characterizing and measuring the state of EHR adoption and determining the effectiveness of policies to accelerate adoption of EHRs and interoperability.

Federal Health Architecture

Now that HHS has established an infrastructure to address standards harmonization, compliance certification, nationwide health information network architecture, security and privacy, and EHR adoption measurement through its contracts, there is a need to gain the Federal perspective in these and other Federal health information technology areas. To accomplish this, we are looking to the Federal Health Architecture (FHA), an OMB line of business, established on March 22, 2004, and managed by the Office of the National Coordinator for Health Information Tech-

nology (ONC) to create interoperability and increase efficiency within the public sector. To better meet the President's health IT goals, FHA as of March 2006, has been realigned to provide the Federal perspective using the processes created within ONC to ensure that interoperability exists within and between the public and private sector. FHA will achieve this refined vision by providing input into the established infrastructure and guidance for implementation within the public sector. Moving forward, FHA will be representing and coordinating the Federal activities in all matters relating to the President's health IT plan.

Interoperable HIT as a Foundation for other Initiatives

The Department recognizes that interoperable health IT is critical in not only transforming how care may be delivered, but also in informing patients and other consumers about costs of care, and some aspects of its quality. Innovative incentive programs such as value-based purchasing could benefit from high fidelity reliable, information being available.

Conclusion

Thank you for the opportunity to update you on the progress we are making in the area of health information technology. HHS, under Secretary Leavitt's leadership, is giving the highest priority to fulfilling the President's commitment to promote widespread adoption of interoperable electronic health records, and it is a privilege to be a part of this transformation.

This concludes my prepared statement. I would be pleased to answer any questions.

Senator ENSIGN. Very good. Thank you, Dr. Clancy. I have a few questions for you.

One of the areas that I've been focusing on is the concept of health information technology driving best practices. A 2003 RAND study found that patients receive care in accordance with best practices only 55 percent of the time. It seems like I'm a lonely voice when it comes to advocating for best practices and quality measurement provisions in health information technology legislation. How do you foresee that we use health information technology to encourage best practices in medicine?

Dr. CLANCY. This is obviously critical to many parts of HHS, because it has been estimated that it takes, on average, about 17 years to turn 14 percent of funded research to the benefit of patient care. Now, funding research is inherently a risky business. You don't always know it's going to pay off. But some of the quality aspects that we're still trying to improve now were first reported in the peer-review literature when I was in medical school. I won't be specific there, but it has been quite a while. And the point is that we need to shorten that translation lag very much.

And health IT gives us the opportunity to actually bring evidence-based information to the point of care. So, we, right now, at AHRQ, and with colleagues across the Department, are working closely with vendors to try to understand how we can make that transition happen more rapidly.

At the most recent meeting of the American Health Information Community, a roadmap for what's called "clinical decision support," which is about bringing the information you need when you're making decisions with a patient, was presented to the community, and the excitement in the room was really quite remarkable. So, most—many parts of HHS will be following up on those recommendations.

Senator ENSIGN. I would like to follow up on your comments. As you know, various medical organizations and colleges have established best practices and protocols. Do you have any recommenda-

tions on how we can get some of those protocols down to the practitioner level through health information technology? Do you have any comments on our role in achieving this? How can we encourage best-practice protocols and algorithms at the practitioner level?

Dr. CLANCY. Well, I want to just draw one distinction here. We, at the agency, have supported, initially in collaboration with the American Medical Association and what was then called the American Association of Health Plans, an Internet-based repository of evidence-based clinical-practice guidelines, which might otherwise be known as protocols. And I can never give accurate statistics on how many visits we get to this site, because it's constantly increasing, but it is remarkable how many clinicians and members of the public and people around the world actually seek this site out, looking for what's the latest practice. And we have policies in place that make sure that that evidence is kept up to date.

So, for example, when Vioxx was pulled off the market, we actually pulled several of these guidelines down, told the developers that they had to make changes, because it wouldn't be current science. So, all of this happens very rapidly. And we know that doctors and patients themselves are very interested in this information.

Where we're trying to get to with interoperable health IT, and what I think is the most exciting, is that you're not looking at just an electronic version of having a book on your shelf, but that it's actually integrated with the patient record in front of you, so that if you're seeing a patient with diabetes, the right reminder comes up that not only is about the current evidence and recommendations for diabetes, but also takes factors unique to that patient into account. We're not there yet, but I think we will get there, and are making progress toward that.

Senator ENSIGN. Would clinical decision support tools indicate whether or not a practitioner is using best practices? Would these tools indicate if a practitioner veers away from best practices? Is that envisioned? In other words, what you are going to prescribe, as far as a treatment, and as far as, a workup is concerned, must be able to be overridden, because medicine is an art and a science. At the same time, however, it would seem to me that best practices should be flagged as a reminder to practitioners, to encourage them to make a decision to use the best practice or override it, if appropriate.

Dr. CLANCY. Right. And the sophisticated systems—Intermountain Healthcare, for example, in Salt Lake City—that have built their own systems for doing this, find that they can learn something when practitioners do override those reminders, so they can find out when a guideline doesn't necessarily fit a patient. And sometimes that actually leads to refinements in the guidelines and protocols themselves, which, I think, is really the exciting part, that we could actually learn as we are providing, and improving the care delivered to patients.

Senator ENSIGN. I have one last question for you concerning the grant process for health information technology. Money is always a touchy subject around Washington, D.C., as it is everywhere. How do we ensure that the Federal grant dollars are only directed

to the projects that actually improve the quality of care? And how should the quality of care be measured?

Dr. CLANCY. Well, that's a little bit of a complicated question, but I can tell you how we launched this a couple of years ago. We insisted that any applicant for us that was going to be eligible for funding had to tell us how they were building the community foundations for interoperability. In other words, what partners they had in the local community. At that time, as encouraged by the Congress, we actually placed a strong focus on those organizations providing care to rural and underserved populations. And they also had to tell us how they were going to meet certain goals in quality and safety. So, it's an area that I think is deserving of more work, but I think we're going to learn a lot about how we'll be able to reduce errors and how we will be able to make sure that people get the highest quality care that they need.

Right now, the good news is, I think, that we do have a lot of good-quality measures to work with, thanks to investments from HHS and others. There is a private-sector entity, the National Quality Forum, that actually certifies or endorses measures. It's a consensus-setting organization, so it is a somewhat streamlined alternative to regulation, if you will, that's authorized by statute. And I think the real trick is not—we're going to need to develop better measures as—over the future, as we get smarter, but the real trick is actually implementing the measures that we have right now.

Senator ENSIGN. This hearing is focused on the progress we are making in the area of health information technology. In your opinion, where are we? As you know, the President set a goal to ensure that most Americans have electronic health records within the next 10 years. Do you think we are on schedule or behind schedule? Can we accelerate the adoption of health information technology? Or, is it just going to take more time?

Dr. CLANCY. I guess I would quote my colleague, the former national coordinator, Dr. Brailer, who actually believes that we're ahead of schedule. I think a lot of very important work has begun to put the foundation in place for interoperability. That is the new piece in healthcare. But without interoperability, if we simply wired hospitals, physicians' offices, and so forth, we wouldn't have achieved very much, because we would simply be digitizing what we're doing on paper now, and that wouldn't be a terribly lofty goal.

So, I think with the beginnings of the harmonization of standards, the certification of products, the nationwide health information network prototypes, and, very importantly, the work on privacy, we've put the building blocks in place for this to happen.

I can tell you, in the provider community there's huge excitement about adopting electronic health records. And I think the certification process is likely to accelerate that interest. But, just by way of example, 30 percent of family physicians have already adopted electronic health records for their practice. And these are, by and large, physicians practicing in very small-practice settings. So, I think there are lots of good reasons to be optimistic.

Senator ENSIGN. Speaking as a healthcare professional who has dealt with different types of computers and computer systems over

the years, I have learned that there are advantages and disadvantages to technology. But if this technology works the way that we envision it to work, it seems to me that every practitioner will benefit personally from the implementation of health information technology—so will their patients. It is obvious that health information technology will benefit patients. However, one of the primary reasons that practitioners don't want to invest in health information technology, is because they don't see a direct benefit. Some practitioners do not think that health information technology will benefit them personally; they view health information technology as a benefit for health insurance companies and for patients. Yet, healthcare practitioners are the ones who have to invest in health information technology. If practitioners would realize the tangible benefits of health information technology, I think, we would see more practitioners voluntarily obtain the systems that they need. I recognize that we also have to address the interoperability barrier. At last year's hearing on health information technology, we learned that interoperability is the biggest impediment to the adoption of health information technology. If interoperability standards are agreed upon, I believe that more health care professionals will begin to invest in this technology.

Dr. CLANCY. I would agree, but I think we are making good progress in getting there, and we are going to be tracking our progress, on an annual basis, through a standardized adoption survey, so we'll be able to give you progress reports on that front, as well.

Senator ENSIGN. Thank you, Dr. Clancy. I encourage you and others to continue to work with us and update us regularly on the progress being made in the area of health information technology.

Dr. CLANCY. We'd be happy to.

Senator ENSIGN. We certainly have some challenges ahead. There are specific laws that we will have to deal with as health information technology efforts move forward, including the Stark Laws and the privacy laws. These laws are not simple. It is not easy to craft language to ensure that we protect privacy, and at the same time, allow physicians access to medical records when they need them. Health information technology is something everybody wants, but everybody also wants their privacy to be protected. That is not an easy provision to write into law. We're going to need your expertise, and the expertise of folks in the private sector to help us as we address these key areas. Experts need to educate those of us on Capitol Hill, who have the responsibility for writing these laws.

Dr. Clancy, thank you very much for your testimony today.

At this point, I would like to call the second panel to the table.

[Pause.]

Senator ENSIGN. We will start this panel with our next witness, Dr. John Halamka. Dr. Halamka is the Chairman of the Health Information Technology Standards Panel.

Dr. Halamka, please keep your testimony to 5 minutes. If you need extra time, take it, but I would appreciate it if each witness would keep their testimony to 5 minutes. All of your full statements will be made part of the record.

Dr. Halamka?

STATEMENT OF JOHN D. HALAMKA, M.D., M.S., CHAIR, HEALTH INFORMATION TECHNOLOGY STANDARDS PANEL; CIO, BETH ISRAEL DEACONESS MEDICAL CENTER AND HARVARD MEDICAL SCHOOL

Dr. HALAMKA. Great.

Senator ENSIGN. Am I pronouncing your name correctly?

Dr. HALAMKA. That is perfect.

Senator ENSIGN. Good.

Dr. HALAMKA. Great.

Well, thank you, Mr. Chairman. I'm very happy to be here.

My name is Dr. John Halamka. I am a practicing emergency physician at Beth Israel Deaconess Medical Center, in Boston, CIO of Harvard Medical School, and Chairman of the Healthcare Information Technology Standards Panel.

This is a hearing about progress, so I am here today to describe the progress we have made toward standards harmonization.

As an emergency physician, I completely concur with Dr. Clancy's testimony that often we are delivering care with a fractured medical record. Typically, records are spread to pharmacies and labs and payer databases, and scattered around inpatient and outpatient facilities. I, as an emergency physician, often have to deliver care without the benefit of knowing a complete medication list or allergy list.

So, to solve these problems, it's clear that we need standards. And often it is said, "Well, standards, why can't you simply just do what we've done for the automated teller network." I can take an ATM card and walk anywhere in the world, get yen, if I want to, from my regional bank in New England, because there are interoperable standards in the financial services industry.

Well, in the financial services industry, with an ATM card, there are about five pieces of data you need to exchange. Who are you? Where is the money coming from? What's the dollar amount, the date/time, and maybe some security identifier, like a PIN code. The average electronic health record has 65,000 pieces of information in it. So, the challenge—of course, doable; and, of course, as you'll hear, will get done in rapid time—but it's a much more significant magnitude of difficulty than a financial transaction. And, of course, we need to ensure that as doctors and patients and payers exchange data, that it's nonrepudiatable, that it's secure, that it's auditable. So, the standards in healthcare have become quite complex.

Well, adding to this complexity is the fact that there are so many stakeholders. Pharmacies think about medication data as the kind of package. Let's say Tylenol comes in a bottle that's purple with a 20-percent discount. They need to identify it to the level of the package. The FDA needs to identify it to the level of the lot. Whereas, a doctor just wants to write for Tylenol. So, here we have a challenge of each actor in this stakeholder arrangement with a different set of standards with a different set of granularity that they may wish to employ.

The Healthcare Information Technology Standards Panel was assembled to begin to reduce the complexity of all of this history of data exchange, multiple stakeholders, and competing standards. It is comprised of 170 different stakeholder organizations. And, im-

portantly, that includes nine consumer organizations. We feel quite passionate about ensuring that patients and consumers are well represented. Some of us are doctors, some of us are payers, but all of us are patients.

That organization seeks to have a very open and transparent process to reduce what today are over 500 standards in healthcare to a manageable and unambiguous number of standards, enabling the vendor community, enabling all our stakeholders, to say, "I want to exchange labs, medications, allergies, or basic patient demographics, and do it with a cookbook, a way that says there's one uniform way to accomplish this."

To do this, we have to take all of those standards development organizations that have created some of the basics of healthcare interchange to date, all the stakeholders from the payer community, the vendor, the pharmacy, and the patient community, and ensure that we meet all their requirements.

The American Health Information Community, as you've heard from Dr. Clancy, has given us an initial charge. In March of this year, they gave us three use cases, specifically: biosurveillance, looking at the ways in which we identify syndromes, infections, trauma, get those data to appropriate public-health authorities; consumer empowerment, ensuring that you never again need to fill out the clipboard when you go to a doctor's office, the idea that we can ensure that your demographics, medication, and allergy list follow you wherever you go; and also we want to ensure laboratories and electronic health records are interoperable.

To do this, our process includes technical committees that look at each use case from AHIC, take all of the actors, actions, and events in those use cases, and look at all the standards that are out there today, and identify the most appropriate standards, using objective criteria such as: Is the standard widely implemented? Is it developed through an open and transparent process? Is it appropriate and applicable to the given need—pharmacy, payer, or patient? Those standards, once winnowed down using objective criteria, then are given from the technical committees to the entire panel of 170 stakeholder organizations, and a consensus process is used to agree that, yes, 500 standards can be reduced to a much smaller number.

Our progress? We started in March with 500 standards. In May, we reduced to 180 standards. In June, we have just approved 90 standards. And now we have until September—that is our deliverable to the Office of the National Coordinator—we will have a set of unambiguous cookbooks called "interoperability specifications," that will reduce those standards even further.

So, progress is real. Stakeholders are involved. The process is well-described and transparent. I encourage anyone with an interest to go to *www.hitsp.org,* and on that website you will find a complete record of all that we have done, all of our work in progress.

And certainly I look forward to any comments you may have and any questions you have.

[The prepared statement of Dr. Halamka follows:]

PREPARED STATEMENT OF JOHN D. HALAMKA, M.D., M.S., CHAIR, HEALTH INFORMATION TECHNOLOGY STANDARDS PANEL; CIO, BETH ISRAEL DEACONESS MEDICAL CENTER AND HARVARD MEDICAL SCHOOL

Mr. Chairman and distinguished members of the Subcommittee, I am Dr. John Halamka, the Chair of the Health Information Technology Standards Panel. I am grateful for the opportunity to testify before you today on the need for harmonized electronic data exchange standards to empower patients and healthcare providers.

The Current Landscape of Healthcare Information Technology

As an Emergency Physician at Beth Israel Deaconess Medical Center in Boston, I treat patients using incomplete medical information. Patients often do not know their medications, their medical history or their latest laboratory results. Patients seek care from a heterogeneous collection of primary care providers, specialists, hospitals, clinics, laboratories, imaging centers and pharmacies—all of which have disconnected pieces of their medical record.

Patients, providers and payers believe that communication among caregivers is key to delivering quality, personalized medicine. Many think that electronic records shared across the entire community of clinicians is key to care coordination.

At this point, only 18 percent of clinicians in the U.S. have electronic health records in their offices. Massachusetts, one of the most wired states, has 52 percent adoption of electronic health records. However, data does not flow among all these systems because of the inconsistent use of data standards, lack of a consistent architecture for exchange of data, and lack of community-wide agreement on privacy policies.

The Need for Standards

While traveling anywhere in the world, I can walk up to an ATM, insert my card (issued by a rural New England Bank), and retrieve whatever local currency I need. This is made possible by the worldwide adoption of electronic standards for banking and cash transfers.

However, if I suffer a major medical problem while in my hometown of Boston, my medical records cannot be electronically exchanged among the world's best teaching hospitals that are located across the street from each other.

This is because there has not been consistent adoption of standards for the storage and exchange of medical information among clinicians, hospitals and insurance companies in the U.S. But all of this is changing in 2006.

Health and Human Services (HHS) Secretary Michael Leavitt has established the American Health Information Community (AHIC), a group of 17 government, business, and non-profit organization leaders charged with fostering adoption of interoperable electronic records throughout the country. Further, the HHS-based Office of the National Coordinator for Health Information Technology (ONCHIT) has funded a coordinated effort to accelerate electronic medical record interoperability efforts. This effort is comprised of three parts:

The first is to harmonize all the electronic standards for healthcare in the country. Currently there are more than a dozen organizations creating healthcare standards in the U.S. These standards are at times redundant, competitive and non-interoperable. There are so many versions and variations that the standards are non-standard. To achieve the kind of universal functionality our ATM cards provide today, the country must agree on a common set of healthcare data standards, implemented consistently by hospitals, clinician offices and nursing homes.

The second step is to ensure electronic medical records provide the basic functions needed for a doctor to record and transmit patient medical information. The average patient over 80 years old has ten medications and three clinicians. Rarely is there any coordination of care among caregivers. Objective criteria to certify that an electronic record system meets the basic requirements for data capture and exchange is essential.

The third step is to standardize privacy and security policies across our 50 states. In Massachusetts, doctors cannot retrieve a complete electronic medical list from insurance companies, even with patient consent, if a medication related to mental health, substance abuse or HIV treatment is present. In Ohio, doctors must use a cryptographic electronic signature to prescribe medications electronically. In California, only paper signed consent forms (not electronic forms) are considered a valid patient consent. The laws that created many of these regulations were appropriate 30 years ago when electronic systems lacked the sophistication available today, but now are an impediment to delivering safe, patient focused care.

The Role of HITSP

The Healthcare Information Technology Standards Panel, which I chair, was established in 2005 to convene all the stakeholders necessary to build consensus around the most appropriate standards for clinical care, public health reporting and consumer empowerment. The Panel brings together experts from across the healthcare IT community—from consumers to doctors, nurses, and hospitals; from those who develop healthcare IT products to those who use them; and from the government agencies who monitor the U.S. healthcare system to those organizations who are actually writing the standards.

The HITSP is sponsored by the American National Standards Institute (ANSI), in cooperation with strategic partners such as the Healthcare Information and Management Systems Society (HIMSS), the Advanced Technology Institute (ATI) and Booz Allen Hamilton. Funding for the Panel is provided via the ONCHIT1 contract award from the U.S. Department of Health and Human Services.

More than 170 stakeholder members and 15 standards developing organizations are working together in HITSP to identify the most appropriate standards for specific use cases involving patients, providers, and government agencies. Panel members and experts have committed themselves to setting and implementing standards that will ensure the integrity and interoperability of health data.

A standard specifies a well-defined approach that supports a business process and has been agreed upon by a group of experts, has been publicly vetted, provides rules/guidelines/characteristics, helps to ensure that materials, products, processes and services are fit for their intended purpose, is available in an accessible format and is subject to an ongoing review and revision process. Harmonization is required when a proliferation of standards prevents progress rather than enables it.

In some cases, redundant or duplicative standards will be eliminated. In other cases, new standards may be established to span information gaps. In all cases, the resulting standards serve the consumer and other healthcare stakeholders by addressing issues such as data accessibility, privacy and security.

The Standards Harmonization Process

HITSP's most important work is the development of a well-defined, repeatable process to identify the most appropriate standards for each AHIC use case. Our process to date is:

a. AHIC and its working groups develop Breakthroughs.

b. AHIC Working Groups or other customers prepare a HITSP Harmonization Request.

c. HITSP Technical Committees identify candidate standards, which are harmonized into a final list of standards. They also identify overlaps and highlight gaps. Gaps are forwarded to standards developing organizations for their guidance as to emerging candidate standards or new standards requirements.

d. HITSP Coordinating Committees provide technical committees with important background information to support their work, such as objective criteria to evaluate the appropriateness of standards for a given purpose.

e. The final chosen standards produced by the Technical committees are discussed and ratified by the full Panel.

f. These standards are made available for public comment and feedback.

g. Technical committees work with standards developing organizations and other groups to produce detailed specifications, an unambiguous "cookbook" for the implementation of chosen standards. HITSP provides a convening and facilitation function for this activity.

h. HITSP work products are delivered to AHIC for their endorsement.

i. After AHIC endorses HITSP work, the Certification Commission on Healthcare Information Technology will include HITSP specifications in its certification work. Hospitals and clinicians will be more likely to buy products, which are certified as interoperable. This will lead to increased success of vendors, which embrace standards and interoperability.

Coordination With Other HHS Activities

The standards harmonization activities of HITSP are well coordinated with the efforts of the three other Health and Human Services Healthcare IT projects:

National Health Information Network architecture (NHIN)—Four lead contractors—Computer Sciences Corporation, Northrop Grumman, IBM, and Accenture have been given contracts to develop a nationwide architecture for the secure exchange of medical records using HITSP harmonized standards. These contrac-

tors generate requests for harmonization to HITSP and the Panel shares its work products with NHIN contractors through ongoing group forums that ensure ongoing coordination and communication.

Health Information Security and Privacy Collaboration (HISPC)—HITSP work products will be shared with the HISPC program management and harmonized privacy use cases will undoubtedly be shared with HITSP in the future to inform the selection of technical standards which enforce security.

Certification Commission on Health Information Technology (CCHIT)—CCHIT staff attend HITSP meetings and CCHIT has committed to include HITSP work products in its future certification criteria as described above.

Progress to Date and Next Steps

HITSP has established an initial process for resolving gaps and overlaps in the HIT standards landscape. In May of 2006, HITSP reduced 570 candidate standards to 180 appropriate standards for secure exchange of medication, lab, allergy and demographic data. By June 2006, these 180 standards will be further reduced to a few dozen.

By October 30, 2006, HITSP will deliver unambiguous interoperability specifications, which will enable vendors, hospitals and government to create software components for clinical data exchange.

Beyond 2006, HITSP will develop harmonized standards and unambiguous implementation guides, which provide precise instructions for data sharing for all future requests for harmonization. Also, it will standardize the interoperability specifications for technology products, while permitting differentiation and competitive advantage in the marketplace. HITSP hopes to empower patients and care providers with Electronic Health Records (EHR) that facilitate easy access to critical health data that is accurate, private and secure.

HITSP is a key component of the Health and Human Services vision to create an interoperable healthcare system, and we look forward to our work products empowering patients, providers and government stakeholders in 2006 and beyond.

Senator ENSIGN. Thank you.

I would now like to recognize and welcome testimony from someone I have a great deal of respect for—someone who served as the Speaker of the House when I was a freshman Member of Congress. I think our next witness is one of the great futuristic thinkers in America today. Speaker Gingrich, we welcome you to this panel, and we look forward to your testimony today.

STATEMENT OF HON. NEWT GINGRICH, FORMER SPEAKER OF THE HOUSE; FOUNDER, CENTER FOR HEALTH TRANSFORMATION

Mr. GINGRICH. Well, thank you very much, Senator Ensign. And let me thank the Senate for holding this hearing on how health information technology is transforming health and healthcare in America.

I've submitted, for the record, a fairly lengthy paper, which I would just ask permission to have put in the record and not——

Senator ENSIGN. All of your statements will be placed in the record.

Mr. GINGRICH. I want to take my limited time and focus very narrowly on one area that I think the House and Senate could look at aggressively that would dramatically change the rate of implementation, and that is the degree to which the Congressional Budget Office is now a reactionary and stunningly inaccurate institution. I wanted to focus on this, in part, because they sent, on June 15, a letter that, in effect, postponed bringing up H.R. 4157, the Health Information Technology Promotion Act, in the House, arguing that it would increase direct spending and reduce revenues

to move toward allowing institution—hospitals and other institutions to provide health information technology capability to doctors.

But I want to put this in a larger context. If you just look on a macro level, in 2005 the CBO deficit forecast was off by $80 billion, or 20 percent. In 2006, in 4 months' time, they were off by $60 billion, or 17 percent. On the estimate for Medicare prescription drug premiums, they were off by 35 percent. They estimated premiums for seniors would be $35 a month; they actually came in at $23 a month, which turns out to be a multi-billion-dollar error, because there's no sense of market dynamics and no sense of productivity increase at CBO. I mean, I think it's a major problem, because they play such a role in defining, for Members of the House and Senate, what they can do.

So, let me take the case of the cost and savings from health information technology, and apply it directly to real cases, because I'm hoping that somebody in Congress will challenge CBO and will ask for hearings and will insist on transparency and accuracy.

A couple of examples. At no place that I know of has CBO scored the cost of paper records after Katrina. The Veterans Administration, which had 50,000 veterans with electronic records, did not lose a single record. The rest of the system lost 1,100,000 records. Now, I don't know what the direct cost to the government, for example, in Medicare, Medicaid, Federal Employee Health Benefit Plans, TRICARE, Indian Health Service, recreating those records were, nor do I know what the indirect costs of the tax revenue loss when private insurance companies and private businesses had to pay to recreate records. But the combination had to be staggering. It's never scored, doesn't count.

Piedmont Hospital recently went to computer order entry by physicians. They reduced the number of medication errors from more than 7 per 10,000 to less than 1 per 10,000. I know of no scoring by CBO which takes into account the savings to the system, the savings to Medicare, et cetera, when somebody does not have an adverse medication reaction. And it dropped from more than 7 per 10,000. Less than 1 per 10,000 is a substantial savings in lives, in pain, and in money.

Henry Ford Hospital System, in Detroit, went to electronic prescribing, and, for a million-dollar investment, they've reported publicly, they saved $3 million the first year, because when doctors could see, on a screen, the real price of the drugs, they tended to order the less expensive medication. They also reported they saved, on average, 3 hours per nurse per week not having to take callbacks from pharmacists who could not read the physician's writing.

Now, none of this can be scored by CBO, because it is an anachronistic static model, which assumes no behavioral change, no productivity increase, and essentially is so rigid and so limited that it is one of the most important straightjackets to us moving toward an electronic system. That has had a very direct impact on the Administration, which is—OMB tends to model off of CBO, not the reverse. And the result is that the Administration has gone through an elaborate talk process in order to avoid having to make a commitment to buy precisely the records we could have, which could be interoperable over the next 3 to 5 years. None of the technical

problems are real. That is, all of them will be solved within a matter of time once the system decides to solve it.

And I think to engage in a long talk process instead of making the capital investment means if we get hit by the avian flu in a serious way, if it crosses over to humans, if we get hit by an engineered biological attack, or if we get hit by a nuclear attach, we will all look back at the inevitable commission that will ask why we were still living in an anachronistic mid-20th-century paper world in the area of health. And I think there's nothing the Senate and the House could do more effective than to demand transparency from CBO, hold hearings on CBO scoring models, and bring in case after case after case—and we've submitted 36 in this testimony—of private-sector examples, several of which are right here at this table, where people are solving the problems for real in the modern world, if only the bureaucracy of CBO would go out and talk to people who are actually doing the job.

Thank you.

[The prepared statement of Mr. Gingrich follows:]

PREPARED STATEMENT OF HON. NEWT GINGRICH, FORMER SPEAKER OF THE HOUSE; FOUNDER, CENTER FOR HEALTH TRANSFORMATION *

Chairman Ensign, Senator Kerry, and members of the Subcommittee:

Thank you for the opportunity to testify today about how health information technology is transforming and will continue to transform health and healthcare in America.

We are on the cusp of enormous change. The level of scientific knowledge we will discover over the next 25 years will be four to seven times greater than the last 25 years. Combine this fact with the economic engines revving in China and India, we know that our current path is unsustainable. Look at the American manufacturing sector, particularly the pain of the automakers, where they spend more dollars per car in healthcare than they do in steel. This is the future of all sectors of the economy if we do not change.

The outlook for the Federal Government is no better. Healthcare consumes 26 percent of all Federal spending and growing, dwarfing every other priority. The looming retirement of the Baby Boomers and their entrance into Medicare will call for painful choices tomorrow if we do nothing today. With continued budget deficits running hundreds of billions of dollars every year, despite the recent "success" of cutting the deficit in half, we will pay a severe price if we do not transform health and healthcare.

Thankfully today we can see the glimmerings of a brighter future. With momentum building for healthcare consumerism, chronic care management tools, and the adoption of health information technology, we know what that brighter future will look like: 100 percent insurance coverage; consumers will be empowered; quality and price information will be readily available; early detection and prevention will create a culture of health; reimbursement will be driven by outcomes; and the use of interoperable technology will be ubiquitous. We will have built what we call a 21st Century Intelligent Health System.

Change of this magnitude is never easy. But the level of difficulty should not dissuade us from progress, because in the end our goal is a 21st Century Intelligent Health System—a fully interoperable, consumer-centered healthcare system that saves lives and saves money for all Americans. This system will improve individual health, reduce costs, and build a brighter future for all Americans.

And to get there, the widespread adoption of health information technology is essential.

In this testimony, there are eleven key messages that I urge this Subcommittee, the Congress, and the private sector to act upon. If we act we will modernize healthcare through the adoption of health information technology and help build that 21st Century Intelligent Health System.

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*The Center for Health Transformation is a collaboration of leaders dedicated to the creation of a 21st Century Intelligent Health System that saves lives and saves money for all Americans.

1. Build a National Health Information Network as a Vital Part of Our National Security Preparedness and Response Strategies

In 1954 Vice President Richard Nixon called for the Federal Government to spend "a very substantial sum of money," $500 million at the outset, to build an interconnected interstate highway system.[1] He called for the Federal Government to make this a national priority because ". . . our highway network is inadequate locally, and obsolete as a national system." President Eisenhower had seen the wisdom of an interconnected system as early as 1919, when he was on an Army convoy from Washington, D.C. to San Francisco. It took 60 days to complete the journey.

On June 29, 1956, nearly 50 years ago to the day, President Eisenhower signed the Federal-Aid Highway Act. It called for the construction of more than 40,000 miles of interstate highways and appropriated $25 billion over 10 years. This was a vast sum of money, considering that *total* Federal spending in 1956 was $70 billion, which made this one of the Nation's highest priorities.

It was no mistake that the original highway system was named the National System of Interstate and Defense Highways. The President, the Congress, and the states knew that a national, interconnected system would be a vital tool to properly prepare for and respond to a national emergency. In fact legislation required that one mile out of every four be built in a straight line so that military aircraft could land in case of a national emergency. As Vice President Nixon said, an interconnected system was necessary because of the "appalling inadequacies [of the current system] to meet the demands of catastrophe or defense, should an atomic war come."

Fifty years later another national, interconnected system is needed: this time we must build a national health information system because it, too, is a national security necessity.

A modernized, interconnected system could electronically monitor and automatically alert officials in an extreme disaster such as Hurricane Katrina, an avian flu pandemic, or a terrorist attack using a weapon of mass destruction. Advanced expert systems could electronically track patient visits, their symptoms, and their conditions; direct scarce resources to where they are most needed; assess the effectiveness of response strategies in close to real time; support contact tracing for appropriate infectious diseases; determine possible origins and causes of an outbreak; and capture other vital sources of data. The earlier we can detect a public health crisis, the better the chance of containing and managing it—and the better chance we have of saving lives and properly caring for those who need it.

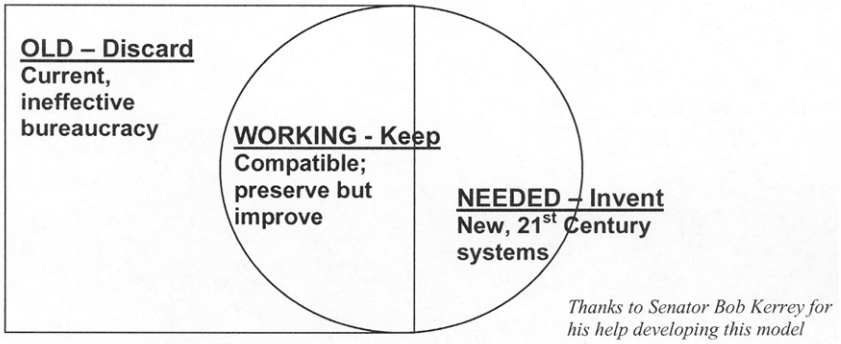
Our most recent extreme disaster, Hurricane Katrina, provided many lessons for us to learn. The most important lesson is that bureaucratic systems do not and cannot work. In Katrina we witnessed bureaucratic failure at every level: the city of New Orleans failed, the state government of Louisiana failed, and the government of the United States failed.

Current bureaucracy is best described as a box, be it state government, the Federal Government, or a local school board. They are inefficient, incompetent, and arrested in time. "Reforms" within the box are nothing more than attempts to appear relevant in today's world, when in fact the box was created by the Civil Service Acts of the 1880s and has not been modernized since the 1930s. Modernization to them is transitioning from quill pens and long hand to manual typewriters and carbon paper.

In the real world we have seen the advent of the radio, television, computers, and the Internet. This world is best described as a circle. It is highly efficient, intelligent, and extremely innovative. We use examples of the circle everyday through services like UPS, FedEx, Google, Amazon, and electronic ticketing. These organizations are centered upon and at the service of the individual, not the system and its mindless processes.

To truly transform we must migrate to this new system over time. We must discard the hopeless parts of the current system, incorporate what does work, and build the rest.

[1] Richard M. Nixon, Speech to the Governors Conference, Lake George, NY, July 12, 1954.



Transforming bureaucracy is the only way we will avert a repeat of the Katrina debacle. For further detail on this subject, please see Appendix II of this testimony, which is a working paper entitled *21st Century Entrepreneurial Public Management: Getting Government to Move at the Speed and Effectiveness of the Information Age.*

Because of bureaucratic failures, survivors of Hurricane Katrina had to rebuild much of their lives, but unfortunately they have had to rebuild their healthcare history as well. One million one hundred thousand paper medical records were destroyed in Katrina's fury and the subsequent floods. Most survivors fled the Gulf with no medical histories, no medication lists, no treatment regimen, no lab results—no healthcare documentation of any kind.

When citizens made their way to emergency shelters, how did healthcare professionals properly care for them with no information? Think of the AIDS patients who were taking an intricate drug cocktail to prolong their lives. Think of the Medicare beneficiaries who were taking multiple prescriptions to treat a host of chronic conditions. What about the cancer patients who were in the middle of radiation treatment—what happened to them after their paper medical records were destroyed?

M.D. Anderson in Houston, one of the premier cancer treatment centers in the world, treated hundreds of evacuees in the aftermath of Hurricane Katrina. For those Gulf residents who were in clinical trials with the National Cancer Institute, their data was electronic and available immediately at M.D. Anderson, and their treatments were resumed exactly where they left off. For those who were not in a clinical trial and did not have their records stored electronically, doctors scrambled to quickly redo tests and recreate intricate treatment regiments. Intuitively we know that many people died as a result. Their cancer ultimately killed them—but the lack of information most assuredly did as well.

In the wake of Katrina, the Department of Veterans Affairs (VA) demonstrated the power of electronic health records in action. As the hurricane barreled toward the Gulf Coast, the VA made final backup copies of tens of thousands of electronic health records for their veterans in the region. Unlike the hundreds of thousands of citizens who received care with no documented history, when veterans arrived at VA facilities across the country, their full medical histories were intact and available immediately.

A generation ago our leaders made a national, interconnected highway system a national priority, and today we have the most modernized transportation infrastructure in the world. It changed the face of America forever. It released the power of interstate commerce, created a national sense of community, connected rural America with urban cities, and drove innovation from coast to coast. The benefits, both economically and socially, are incalculable.

A national, interconnected health system would have the same effect. When there is no emergency, this network could be leveraged in innumerable ways in the routine care of patients. This could be the information highway that every healthcare provider in the country could use in the course of care. From electronic prescribing and transmitting images to clinical trials and medical research—this could be the technical infrastructure that allows for the connectivity, efficiency, and improvement that we all aspire to achieve. Networks like the World Wide Web and network application platforms, such as Internet2, hold such explosive potential that it would be tragic to not leverage them in healthcare.

The Congress must make the construction of a national health information network a top priority. In such a dangerous world, it should be an integral part of our

national security strategy. I urge the Congress to take action on this priority now. It is an investment in the health and security of our country.

2. Transform the Reimbursement System to Reward Quality Outcomes and Drive Adoption of Health Information Technology

We get what we pay for. We have designed an acute-care system that is based on the myth of the 15-minute cure . . . just go see your doctor, and he will make you better. Today we are doing a wonderful job if our measures of success are inefficiency, high costs, and poor patient health. If we are satisfied with these outcomes, with its needless deaths and waste, then we should maintain the status quo. But if we truly want an intelligent, modernized health system that delivers more choices of greater quality at lower cost, then we must enact real change—starting with the reimbursement structure.

Our current payment system is not based on the quality of care that is delivered. Instead it pays providers for simply delivering care, regardless of outcome. Hospitals and providers that deliver better care are for the most part reimbursed at the exact same rate as those who provide poorer care.

Additionally, the payment system encourages the overutilization of resources. Like any contracted professional, be it a plumber or a builder, doctors are paid for performing their craft, which in this case is treating patients. They are not paid for keeping their patients healthy and out of their office or hospital—they are paid when they treat their sick patients in their office or hospital. This approach is so perverse that many argue that medical errors actually reward a hospital or physician because they can then bill for additional services.

We need a new model. Reimbursement drives adoption, be it a new test, device, or treatment, and we need a reimbursement model that takes into account the *quality* of the care that is delivered, not simply that it *was* delivered.

Current pay-for-performance and other incentive programs are a first step toward an outcomes-based payment structure. The Centers for Medicare and Medicaid Services (CMS) and many private insurers are partnering with their physician and hospital networks to pilot new financing and delivery models based on outcomes, from the Leapfrog Group and Integrated Healthcare Association to Blue Cross Blue Shield plans and Bridges to Excellence. All of them know that reimbursement drives adoption.

In Georgia the Center for Health Transformation is leading the Nation's largest Bridges to Excellence diabetes program. Led by UPS, BellSouth and Southern Company, all members of the Center for Health Transformation, there are currently 14 major employers, including the State of Georgia, participating in the program. The state medical society and hospital association are actively participating as well. Serving in the role of administrator are Blue Cross Blue Shield of Georgia, Humana, Aetna, CIGNA, Kaiser Permanente, and UnitedHealthcare. Physician recruitment efforts are ongoing, with WellStar Health System and the Morehouse Community Physician Network leading the way.

The program, like other pay-for-performance initiatives, pays incentives to physicians who practice best standards of diabetes care. The program encourages individuals with diabetes to see these physicians to improve their quality of life and avoid the long-term complications of the disease. In the process, physicians are rewarded for providing high-quality care, individuals with diabetes are healthier, and employers save money. A recent actuarial analysis of the program by Towers Perrin reports an estimated savings of $1,059 per individual if blood pressure, Hemoglobin A1C, and LDL control measures are met. By saving lives and saving money, this Bridges to Excellence module should be the minimum standard of diabetic care throughout the country.

CMS will soon roll out an innovative initiative called the Medicare Health Care Quality Demonstration Program, also known as the 646 demonstrations. A major focus of these five-year demonstrations will be to improve the delivery of care in ambulatory offices by testing significant changes to payment and reimbursement, as well as performance measures and the practice of evidence-based medicine. Health information technology, and reimbursing for its use, will be front and center.

Reimbursement drives adoption. One example is telemedicine. This is an innovative and cost-effective approach that allows hospitals, clinics, and physicians without technology to partner with those that do. Videoconferencing with experts, transmitting images and records for second opinions, remotely monitoring patients, and virtual emergency rooms and tele-pharmacy services are some of its uses. Particularly for rural facilities, telemedicine improves patient care by increasing access to specialists, and it also saves money by delivering better care and reducing expensive services.

Most insurers reimburse their network providers for telemedicine, which drives adoption, because they know it will save lives and save money. Colorado is poised to become the 39th state to reimburse its Medicaid providers for telemedicine services. Unfortunately this means that eleven states still do not reimburse providers for using this technology. This shortsighted perspective, most likely based on perceived budget savings, is blind to the financial savings that technology can bring, and, more importantly, the improved health outcomes.

One way to guarantee better health outcomes—which in the system of the future should bring higher reimbursement rates—is to encourage the use of health information technology, such as electronic health records, decision support tools, bar coding, and computerized physician order entry. Please see the attached appendix to this testimony for documented clinical results and operational efficiencies that health information technology can bring.

If we truly want better health at lower costs, the number one priority of every stakeholder in healthcare should be to get technology into the hands of every provider in the country. And the surest way to accomplish this is to reimburse hospitals and physicians for using health information technology in the course of care. Reimbursement indeed drives adoption.

Insurers—especially Medicare and Medicaid—should incentivize the purchase of health information technology through higher reimbursement rates. From electronic prescribing tools to electronic health records, even nominally higher rates will drive the adoption of technology because providers want long-term, predictable revenue streams. Consider the Hospital Compare site, *www.hospitalcompare.hhs.gov.* CMS reimburses at a slightly higher rate those hospitals that electronically report their quality data. With an incentive of only .45 percent, nearly 99 percent of hospitals electronically submit their data. Organized properly, the broad adoption of technology would be no different.

Health insurance giants Aetna and CIGNA Healthcare recently announced that in select markets they will reimburse physicians for conducting electronic or web-based consultations with their patients. Studies have shown that utilizing technology this way decreases administrative time for providers and their staffs, increases patient satisfaction, and decreases office visits and utilization. Every other insurer, including Medicare and Medicaid, should follow their lead.

The real question boils down to this: if a provider endangers their patients' lives by delivering care through a paper record, should we pay them the same as a provider that delivers better care because they invested thousands of dollars in technology? A rational reimbursement system would pay more for the latter.

Representative Nancy Johnson introduced H.R. 3617, The Medicare Value-Based Purchasing for Physicians' Services Act, which begins the transformation to a new system. Congress should lead by holding hearings on this vital topic and begin the necessary process of building a new and rational payment system.

3. Create Legislative Exemptions to Stark and Anti-Kickback Laws to Speed Health IT Adoption and Deliver Better Care

Physician adoption of electronic health records is woefully inadequate, and current Stark and Anti-kickback laws are part of the problem. Congress should pass reforms that create new exemptions to these statutes so that hospital systems and other entities can choose to provide community physicians with health information technology, particularly electronic health records. These reforms will speed the widespread adoption of health IT, quickly close the "adoption gap" between large and small physician practices, and, most importantly, improve the lives and healthcare of millions of Americans.

With tens of billions of dollars lost every year due to fraudulent claims and payment abuses, Stark and Anti-Kickback laws seek to protect the system—and patients—from criminal providers and suppliers. The Anti-Kickback laws prohibit hospitals, home health providers, nursing homes, and other providers from giving or receiving "remuneration," or financial incentives, to physicians and others in exchange for referring patients to their facilities. The Stark statutes prohibit physicians from referring their patients to a hospital, urgent care center, laboratory, or other facility with which they (or a family member) have a "financial relationship," be it as an investor, contractor, or owner of the facility.

Unfortunately these laws are also barriers to the widespread adoption of health information technology. Even the Government Accountability Office concluded as much:

> "[These laws] present barriers by impeding the establishment of arrangements between providers—such as the provision of IT resources—that would otherwise promote the adoption of health IT . . . Health care providers are uncertain about what would constitute violations of the laws or create a risk of litigation.

To the extent there are uncertainties and ambiguity in predicting legal consequences, health care providers are reluctant to take action and make significant investments in health IT."[2]

Representatives Nancy Johnson and Nathan Deal introduced H.R. 4157, which, among other things, creates new exemptions to these statutes that will permit hospitals, doctors, and other organizations to drive adoption of health information technology at the physician level. Representatives Lacy Clay and Jon Porter introduced H.R. 4832, which also provides clear, concise, and workable reforms. Under these exemptions hospital systems and other entities, such as pharmaceutical manufacturers and clinical laboratories, could utilize their existing IT infrastructure to provide the hardware, software, connectivity, and support to their community physicians, clinics, and rural hospitals.

A hospital executive told us at the Center for Health Transformation that if the Congress were to pass straight-forward legislative exemptions, his system would wire 6,000 physicians within twelve months. That is dramatic progress that is blocked by current law. By preventing the rapid adoption of health information technology, the current Stark and Anti-kickback statutes are not protecting patients—they are endangering them. It is time the Congress enact exemptions to these statutes before even more American lives are lost.

4. Modernize the Congressional Budget Office to Ensure Accurate Scoring and Encourage Transformational Legislation

Financing the adoption of health information technology could be rapidly expedited with reimbursement reform at HHS and reforming Stark and Anti-kickback statutes. But it might be expedited even more quickly by modernizing the scoring processes at the Congressional Budget Office (CBO). Ensuring more accurate scoring at the CBO will lead to a dramatic improvement in American health and healthcare. Doing so will literally save thousands of American lives and billions of their tax dollars.

Today, we spend billions of dollars on government programs that are financial black holes, while at the same time the CBO will not properly score legislation that would actually reap dramatic improvements—both financially and socially. The CBO ignores the economic growth, efficiencies, and cost savings that result from implementing innovative and transformational policies.

The following results were documented by real hospitals and real physicians who everyday see the benefits of their investments in health information technology. But the CBO refuses to score these kinds of savings:

- The Indiana Heart Hospital in Indianapolis built a new facility that is totally paperless, which reduced medication errors by 85 percent.

  If we could achieve the same results nationwide, we would save more than 6,000 Americans every year, since medication errors kill nearly 7,500 citizens annually, according to the Institute of Medicine.[3]

- PeaceHealth is a billion-dollar hospital system with facilities in Alaska, Washington, and Oregon. With the help of GE Healthcare, a member of the Center for Health Transformation, PeaceHealth built a sophisticated electronic health record that helped triple its patients' compliance rate with diabetic guidelines, thanks to a combination of online disease management tools and the involvement of diabetes educators. As a result, hemoglobin A1C levels of less than 7, the target level for diabetes control, improved from 44 percent in 2001 to more than 60 percent last year.

  Diabetes was the sixth leading cause of death in the U.S. in 2000 and costs the system $132 billion every year.[4] If the results that PeaceHealth documented with its diabetics were seen nationwide, we would save thousands of lives and billions of dollars every year.

- The Health Alliance Plan and Henry Ford Health System in southeastern Michigan partnered with the Big Three automakers, which are all members of the Center for Health Transformation, to implement electronic prescribing in the region. In the first 12 months of the program, the technology electronically caught more than 85,000 prescriptions that generated drug-interaction or allergenic alerts. According to the Henry Ford Health System, the $1 million start-

[2] GAO–04–991R, August 13, 2004, *HHS's Efforts to Promote Health Information Technology and Legal Barriers to Its Adoption.*

[3] Institute of Medicine (IOM), "To Err Is Human: Building a Safer Health System," 2000.

[4] Centers for Disease Control and Prevention National Diabetes Fact Sheet, *http://www.cdc.gov/diabetes/pubs/factsheet.htm.*

up investment generated a $3.1 million savings, primarily due to increased generic drug utilization. Generic use jumped by 7.3 percent because of the automatic alerts that physicians receive when they begin to prescribe a branded drug if a comparable generic is available.

If Federal legislation were introduced to wire the Nation's physician offices for electronic prescribing, the savings would be breathtaking. With more than three billion prescriptions written every year,[5] studies have concluded that universal electronic prescribing could save an estimated $27 billion every year.[6]

- Within the year the State of Tennessee will deploy to every Medicaid beneficiary an electronic health record filled with their personalized medical history. Tennessee officials project that for every $1 spent on the new technology in its first years of operation, the state will save $3 to $4—from reductions in duplicate tests, adverse drug effects, and unnecessary inpatient admissions. Some estimate that the savings from this investment could grow to as much as 9-to-1, as the number of doctors using the system increases.

CBO refuses score these kinds of savings. From their perspective a similar Federal approach would result in a net loss against the Federal budget, even though such ubiquitous technology would have a dramatic net gain in revenue because it would help deliver better care.

With the search underway for a new CBO director, this is the perfect time for the Congress to modernize the office. Representative Jim Nussle, Chairman of the House Budget Committee, and Senator Judd Gregg, Chairman of the Senate Budget Committee, should immediately hold hearings on this vital issue and push the CBO to modernize and ensure accurate scoring.

5. Pass Federal Legislation on Health Information Technology Now

For the last year the Congress has played games on health information technology. More than a dozen bills have been introduced, but still nothing has become law. It is time for the Congress to act.

The Senate passed S. 1418, the Wired for Health Care Quality Act. This bill, among other things, directs the Secretary of Health and Human Services (HHS) to develop uniform quality measures to be used to assess the quality of care a patient receives, including elements of a qualified health IT system. It also contains grant funding for connecting physicians and creating community networks, authorizing $652 million from 2006 through 2010.[7]

Last week H.R. 4157 was passed by the House Ways and Means Committee, and key provisions were also passed by the House Energy and Commerce Committee. The bill, most notably, creates clear and workable exemptions to Stark and Anti-kickback laws; complements current Federal activities to develop interoperable data standards; lays out a roadmap to create a consistent and common framework of state and Federal privacy laws; and requires HHS to move to ICD–10 coding.

The House and Senate should see immediately pass legislation that:

1. Drives adoption of health information technology and spells out the Federal Government's role in developing interoperability standards, including deadlines for action;

2. Provides meaningful grants or an innovative loan program to spur adoption, in the absence of reimbursement reform;

3. Creates clear, concise, and straightforward exemptions to Stark and Anti-kickback statutes so that hospital systems and other entities can choose to provide community physicians with health information technology, particularly electronic health records;

4. Begins the process of harmonizing the wide discrepancy between state and Federal privacy laws, while ensuring consumer confidentiality;

5. Directs HHS to move to ICD–10 coding, despite its complexity, to ensure that technology captures accurate information, and;

6. Makes uniform quality measures and reporting a vital part of this bill.

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[5] Agency for Healthcare Research and Quality. MEPS Highlights #11: Distribution of health care expenses, 1999.

[6] eHealth Initiative, *Electronic Prescribing: Toward Maximum Value and Rapid Adoption,* April 2004.

[7] Notwithstanding the overwhelming evidence that health information technology dramatically improves the quality of care while saving money, the CBO score did not incorporate any macroeconomic savings in its analysis. The CBO provided a four-page overview of the Federal dollars that would be spent, but not a word on the anticipated savings.

There has been enough posturing on this issue by both chambers and both parties. Now it is time for leadership. When the Congress does send a bill to President Bush, I urge Members to avoid checking this issue off your list. To truly build a 21st Century Intelligent Health System, this must be the first of many legislative initiatives, from reimbursement reform to its role in national security, health information technology should be a priority for years to come.

6. Solve the Interoperability Issue by Developing Data Standards for Health Information Technology

Interoperability means that every stakeholder in healthcare will have the ability to securely exchange electronic data in the course of patient care. This may sound impossible, considering that we hope to connect hundreds of thousands of doctors; thousands of hospitals; tens of thousands of pharmacies; hundreds of insurers; 300 million patients; all 50 state governments; Medicare; public health agencies; long-term care facilities; and dozens of other entities.

While this does appear daunting, technology is the easy part. Through the Internet, fiber-optic cables, high-speed connectivity, and the continued innovation of technology companies, the technology exists today to build a national, interconnected system.

The private sector, particularly those companies that develop health information technology products and those that use them, should take the leading role in developing data standards that will enable the electronic exchange of information from one system to another.

Data standards of interoperability have been achieved in other industries. Tom Friedman, in his book *The World is Flat,* provides an excellent summary of how the private sector collectively agreed upon data standards for the Internet, so that every system spoke the same language. They gave up competing over who could build the best island of isolation, fit with its own language, platforms, and applications. Instead they agreed to a common framework where they would compete on service, functionality, and quality. This common playing field gave rise to the modern Internet and all of its marvels. Healthcare should follow this model.

The Electronic Health Record Vendors Association (EHRVA) is doing just that. EHRVA is a group of more than forty technology companies, lead by industry innovators like Siemens, GE Healthcare, and Allscripts, all of which are members of the Center for Health Transformation. The EHRVA recently released an updated Interoperability Roadmap that outlines workable and pragmatic approaches over the next few years to achieve a common framework where all systems can exchange information. The vendor community (which creates most of the health IT products) and hospitals and doctors (who actually use these products) must actively partner together for us to move ahead. These efforts should be mindful of or in conjunction with any Federal efforts on data standards and interoperability, such as Secretary Leavitt's American Health Information Community.

7. Support Community Efforts to Build RHIOs and Health Information Exchanges

Building the system of tomorrow requires action today. From adoption and interoperability to consumer engagement and data research, innovators at the local and regional level are not waiting for others to lead. Hospitals, doctors, technology vendors, health plans, state and local governments, employers, and consumers are collaborating in hundreds of communities from coast to coast to build regional health information organizations (RHIO) for the betterment of individual health.

The Federal Government sees the value in these efforts as well. Last year the Department of Health and Human Services awarded four contracts worth nearly $20 million to build prototypes for a national health information network. Technology leaders such as Microsoft, Cisco, IBM, CSC, and Sun Microsystems will work with RHIOs from across the country. These demonstrations will provide key lessons that communities can learn.

The characteristics of RHIOs differ greatly from one to the next, just as communities themselves differ from one to the next. Differences abound in geographic location, size, scope, sophistication, and stakeholder involvement. There is no single recipe for success. However, the experiences of health information exchanges from across the country will be invaluable as we progress toward building the national health information network. While there are significant differences between RHIOs, there are four crucial areas all efforts must address if they are to succeed: financing, health management, privacy and security, and interoperability.

Financing is critical to every business—local and regional healthcare networks are no different. These initiatives must bring value to their communities, participating organizations, and perhaps most importantly, they must bring value to the con-

sumer. But to build such a network, proper funding is needed. Many health information exchanges have relied on grant funding as their primary revenue stream. In the long run, with little hope for large Federal investments, this business model is not viable. Health information exchanges must be independent and self-sustaining, and their operating costs must be borne by all participating stakeholders. If the value of a RHIO is demonstrated to its community, the market will ensure its financial viability.

The key promise and payoff from a connected healthcare community is improving the quality of care that all patients receive—from reducing medical errors to monitoring chronic conditions to discovering new treatments. RHIOs must be designed so that clinicians exchange patient data in real time for use at the point of care. Changes of this magnitude are always disruptive. That is why RHIOs must be designed to complement workflow rather than complicate it. By data-mining patient health information, we will yield new breakthroughs in treatments, therapies, and understanding of disease that will transform the practice of medicine.

Health information exchanges must make privacy and security a top priority. If personal health information is not secure, if consumer privacy is not adequately protected, the network is doomed to fail. A uniform patient identifier is part of this process, be it a common algorithm or a unique number. By ensuring that the right patient's information is pulled at the right time, both clinicians and patients will have confidence in the RHIO, and the public can be convinced that their electronic information is accurate, confidential, and secure. One step in the right direction is to dramatically toughen the penalties for hacking into electronic medical files and making slander laws applicable to publishing or posting online any personal health information. The Congress should closely examine possible changes to Title 18 of the U.S. Code of Criminal Procedures that would harshly punish the malicious use of personal health information.

Connecting a healthcare community means developing technologies so that all stakeholders can share information in real time: hospitals, pharmacies, physicians, nurses, long-term care facilities, health plans, and consumers. This is daunting—but it can be done. The technical architecture will differ from one RHIO to another, but the use of common data standards will not. Through their experiences and successes, RHIOs can push the industry to reach consensus and convergence upon common data standards that will help achieve interoperability. This must be done with existing systems in mind. Data standards must be designed so that current technologies can be upgraded to meet new requirements, rather than forcing providers to replace current systems and start from scratch.

As industry stakeholders come together in communities across the country, the Congress—as well as state and local governments—must actively engage these efforts. From funding and regulatory reform to building networks and Medicaid engagement, these projects are laboratories of innovation. Many will likely fail, but some will likely succeed, and they could provide a guidepost for the rest of the Nation to follow.

8. Empower Consumers with Personal Health Records, A Significant Step in Building a 21st Century Intelligent Health System

Personal health records are a significant step forward in building a 21st Century Intelligent Health System. Hospital admissions, physician office visits, diagnosis codes, procedure codes, pharmacy orders, and other valuable pieces of information are often electronically captured by a health plan through the claims process. Laboratory and other clinical data is even more valuable. Combine these two data sets with other information such as family history, allergies, and medication history, we have a powerful foundation on which to build a personal health record that will help improve individual health and healthcare.

Insurers, providers, and technology vendors are actively building and deploying interfaces that consumers can securely use for decision support, education on chronic conditions, and e-mail with their providers. Using claims data, health plan personal health records are often personalized with an individual's medical history, contact information for their physicians, and tailored information for their health conditions. Representatives Jon Porter and Lacy Clay introduced the Federal Family Health Information Technology Act of 2006 (H.R. 4859), which complements many of the existing efforts already underway in the health plan community to deploy consumer-centric personal health records. CMS should also move quickly to deploy personal health records to all Medicare beneficiaries.

Consumers will be an integral part of any national health information network because it will be designed around them. At the end of the day we are talking about the health of each individual American, and personal health records are an innova-

tive and important way to engage them to proactively take responsibility for their health.

9. Ensure Consumer Confidentiality by Protecting Privacy and Strengthening Security

Individuals have the right to control—and must have the ability to control—who can access their personal health information. All health information technology should be deployed to improve individual health, not to protect the status quo of proprietary claims to data. Each stakeholder should be given equal access to the record—by the consumer—in the course of delivering care. At the same time consumer privacy protections at the state and Federal levels should be consistent. Health information technology and the sharing of medical data must not be constrained simply because it moves from one state to another. An integrated regulatory and statutory framework should complement technology, not complicate it. H.R. 4157 lays out a reasonable roadmap to accomplish this.

10. Uphold the Individual's Right to Know Price and Quality of Health Services

Every American has the fundamental right to know the price and quality of health and healthcare services *before* making a purchasing decision. Sites like *www.myfloridaRx.com* and *www.floridacomparecare.gov* must become the norm in a consumer-centered system. CMS is moving in this direction, by posting prices for 30 common procedures in Medicare, and every state should follow Florida's lead.

An individual's right to know price and quality goes hand-in-hand with health information technology. Electronic physician offices, wired long-term care facilities, and modernized hospitals can easily capture and report price and quality information. But they must first have the capability to capture information. This is yet another reason why the adoption of health information technology is so vital.

For more information on this important issue, please see my testimony I provided on this subject to the House Energy and Commerce Committee Subcommittee on Health on March 15, 2006. This is available at *www.healthtransformation.net.*

11. Create an Undersecretary of Commerce for Health to Drive Innovation, Economic Growth, Competition, and Quality Care

Most policy debates frame healthcare as a problem—whether a matter of financing, provision, equity, or quality. While important, these discussions ignore that the health sector is not only the largest sector of the U.S. economy, but it is a vibrant and quickly growing sector as well.

The position of Undersecretary of Commerce for Health should be created within the Department of Commerce, and should be charged with ensuring that domestic and international policies do not stifle the innovation and competitiveness of this increasingly vital sector of the economy. The Undersecretary would be charged with ensuring that: (1) regulations do not place unwarranted burdens on healthcare companies; (2) foreign governments protect the intellectual property rights of U.S. companies and allow these companies fair access to their domestic markets; and (3) the U.S. Government enthusiastically and meaningfully promote the U.S. health sector in the international marketplace.

The Undersecretary of Commerce for Health would be the sole undersecretary within Commerce charged with representing the interests of a specific sector of the U.S. economy. This attention is warranted for two reasons. First, the healthcare sector is subject to greater government regulation than any other leading sector of the U.S. economy. Thus, it follows that at least one senior official within the U.S. Government be explicitly charged with ensuring that these domestic and international regulations do not place an undue burden on the sector. Second, the healthcare sector is of vital importance to all Americans, as the following points make clear:

- *Economic Engine.* The healthcare sector is the largest component of the U.S. economy, accounting for one seventh of U.S. economic activity. Composed of 8,500 firms (mostly employing fewer than 50 people), the U.S. medical technology industry already sustains 350,000 high-value manufacturing jobs paying an average of 49 percent more than those in other manufacturing sectors and accounts for roughly half of the $175 billion global production of medical products and supplies.
- *Job Creation.* The healthcare industry is the largest high-value job-creating sector in the United States—in 2002, health services accounted for 12.9 million American jobs. The Department of Labor projects that by 2012, one out every six new jobs will be created within the healthcare sector. A 2003 New England Health Care Institute study showed that every job in the medical technology sector generates another 2.5 jobs elsewhere in the economy.

- *International Competitiveness.* Boasting the world's leading pharmaceutical companies, medical device manufacturers, and treatment facilities, the U.S. health sector holds tremendous potential for significantly reducing the U.S. current account deficit. However, the $3 billion trade surplus the United States has historically enjoyed in this sector has recently vanished, prompting serious questions about the fairness of overseas markets.
- *Quality of Life.* The most significant output of the U.S. health sector—increased quality of life for Americans, as well as for beneficiaries of U.S. innovation throughout the world—is not captured by conventional economic measures. Yet it is of fundamental importance to all Americans.

Health information technology and the Undersecretary of Commerce for Health go hand-in-hand: without technology, there will be little innovation, and the deliver of care will continue to lag behind other nations. Technology, innovation, and better quality care will be a magnet for people from all over the world to visit our country and utilize our system.

The creation of this position is another way for the Federal Government to take a lead role in promoting the adoption of technology and innovation. I urge the Congress to hold hearings on this issue and quickly create this vital position.

Looking Ahead

If healthcare in America is to survive and transcend the challenges of the future, we must build a 21st Century Intelligent Health System that saves lives and saves money for all Americans.

In a 21st Century Intelligent Health System, every American will have the tools to maximize their health, happiness, and security. Every American will have insurance coverage and access to the care that they need when they need it. Every American will be empowered to make responsible decisions about their own health and healthcare. Every American will own their health records. Every American will have a right to know the price and quality of medical services.

In a 21st Century Intelligent Health System, the focus will be on prevention and wellness. Innovation will be rapid, and the dissemination of health knowledge will be in real time and available to all. And reimbursement will be a function of quality outcomes, not a function of volume.

This will require fundamental changes, but they are changes that are absolutely necessary. I know that this will indeed improve consumer health, reduce costs, and build a brighter future for America.

APPENDIX I

The following success stories document the progress that the private sector has made deploying health information technology, from real clinical improvements to conclusive efficiency gains. These serve as a small sample of what is happening in communities across the country where transformational leaders are coming together to implement technology that saves lives and saves money. While I cannot vouch for the accuracy of the case studies, I applaud each of the success stories that were forwarded to us. I urge the Congress to examine them in more detail, seek out other successes that are happening in your states and districts, and actively support them.

Allscripts

www.allscripts.com

We are fortunate to have a healthcare IT industry that has consistently provided innovative solutions to all sectors of healthcare. From saving lives to saving money, the healthcare IT industry is working closely with doctors, nurses, technicians, administrators, and patients to change the paradigm of waste and inefficiency to one that promotes quality, efficiency, and a return on investment. In California the Brown & Toland Medical Group implemented health information technology including electronic health records and personal health records. The group received $3.2 million in 2004 and 2005 from a major pay-for-performance program, scoring in the top 10 percent of all California medical groups and IPAs enrolled. In the District of Columbia, in just 30 days, physicians at George Washington University Medical Faculty Associates, a non-profit, academic multi-specialty D.C.-based medical group practice decided that they couldn't afford to wait any longer on technology. In an impressive show of teamwork, GW implemented the EHR for 100 physicians in only 30 days.

America's Health Insurance Plans and Blue Cross Blue Shield Association

www.ahip.org and *www.bcbsa.com*

America's Health Insurance Plans and the Blue Cross Blue Shield Association, both members of the Center for Health Transformation, are partnering in the area of personal health records (PHRs). Patient-centered PHRs hold the potential to transform the health care system. They will empower both consumers and their caregivers with information; help promote the use of effective, evidence-based treatments and procedures, help improve the safety and effectiveness of health care quality; and ultimately, decrease health care costs. However, AHIP and BCBSA recognize to realize these objectives, PHRs must be both portable and interoperable. As an individual moves through the health care system, from plan to plan, employer to employer, or into the Medicare program, the information in the PHR should be readily available. AHIP and the BCBSA are developing a standardized minimum PHR data content description, the processing rules, and standards required to ensure data consistency, record portability, and PHR interoperability. These standards will be made publicly available later this year.

Last November, AHIP released an in-depth report on health insurance plans' latest IT solutions in areas such as e-prescribing, digital radiology, online decision support, electronic health records, and personal health records. A useful, one-page summary is available at: *http://www.ahipresearch.org/pdfs/AHIP__InvHealthIT__05.pdf*.

Bridges To Excellence

www.bridgestoexcellence.org

Bridges To Excellence has created innovative programs that are, through financial incentives and public recognition, encouraging physicians and physician practices across the country to adopt and use better systems of care, in particular EHRs. This technology, as well as following best practices, is helping to deliver better care for patients with chronic conditions. During its pilot phase, more than 1,000 physicians in the Boston area and Albany have significantly changed the way they practice medicine, adopted EHRs, and are delivering better clinical and financial outcomes for all their patients—Medicare, Medicaid, and private sector employers. As a result of the efforts, the employers participating in BTE have saved over $3 million in direct medical costs and their employees are getting better care.

CareScience, A Quovadx Company

www.carescience.com

With the help of CareScience™ Quality Manager, St. Vincent Indianapolis Hospital has dramatically improved its approach to blood utilization and management. By analyzing and comparing blood usage practice patterns, St. Vincent Indianapolis Hospital has increased the safe utilization of blood, improved patient outcomes and reduced blood utilization costs. In fact, the organization has reduced total blood use by 30 percent, decreased iatrogenic blood loss in critical care settings by 86 percent, and documented $4.4 million in blood acquisition cost savings over 5 years with an estimated $35 million in total cost savings when fully accounting for labor, supplies, and reduction in adverse event—all as a direct result of improvements in blood management.

Utilizing CareScience Quality Manager and the philosophy of "care-based management of cost," North Mississippi Medical Center was able to thoroughly investigate their trauma and neurosurgery patient populations, identify root causes, and engage a team of clinicians across departments to improve processes and treatment protocols. The end results included improved patient outcomes, increased staff satisfaction, reduced length of stay, and a savings of over $1.4 million for Medicare patients alone.

Citizens Memorial Healthcare, Bolivar, Missouri

www.citizensmemorial.com

Citizens Memorial Healthcare is an integrated rural healthcare delivery system with 1,538 employees and 98 physicians serving a population of 80,000 in southwest Missouri. The system includes one hospital, five long-term care facilities, 16 physician clinics and home care services. Citizens' electronic medical record crosses the continuum of care and is used by every admitting physician.

Ninety-two percent of registered patients are "known to the system" and therefore not asked to repeat demographic information. 20,000 bar-coded express registration cards have been issued. More than one half of radiology exams are scheduled directly by a physician office. 64,860 patient records have been created. A unique EMR identification number links visits together. Physicians are able to view individual visits, multiple visits, or all visits in one comprehensive online chart. Over $1,000,000 in supply and procedure charges are captured per month as a byproduct of care documentation. "Yellow-sticker-charging" has been eliminated from hospital

inpatient floors. Citizens has also experienced an improvement in the revenue cycle through a decrease in accounts receivable for the Citizens physician clinics, an increase in supply charges per patient day, and a decrease in claim denials. Because of its efforts, CMH was awarded a Nicholas E. Davies EHR Recognition Program, sponsored by the Healthcare Information and Management Systems Society (HIMSS). The program recognizes healthcare provider organizations that successfully use EHR systems to improve healthcare delivery.

Clearwave

www.clearwaveinc.com

Clearwave, a member of the Center for Health Transformation, is the ATM network of healthcare. Clearwave is implementing technology within physician offices that will allow the real-time identification of patient benefits, create a network for the delivery of Individual Health Records (IHR, PHR, VHR) to the physician, as well as allow patients to do a self pay as it relates to co-pays, outstanding balances, and high deductible amounts. For too long, physicians have not been in control of real-time benefit determination and/or obtaining payment at the time of service, and with the advent of consumer-directed health plans, the physicians' financials are at serious risk. The Clearwave network via its self-service kiosk will ensure physicians get paid in a more timely manner with real-time data support.

The Clearwave network is not just for the large or financially viable practices. The Clearwave network is priced so that all physicians can participate whether in Atlanta or Vidalia because it is not driven by the installation of costly hardware but by an Internet connection. Clearwave is currently rolling out hundreds of kiosks in the Georgia and Florida markets, with thousands to follow in the near future.

Covisint, a subsidiary of Compuware Corporation

www.covisint.com

Led by North Carolina State Medicaid, BCBSNC and WakeMed Health & Hospital's Raleigh Campus, healthcare providers and payers across the state coalesced around Covisint's web-based technology environment to exchange patient information. More than 57 hospital systems and 317 post acute and ancillary providers within the state are managing external patient communications through this secure online environment.

By expediting communications with nursing homes and the state Medicaid program—combined with a commitment to quality case management—WakeMed Raleigh reduced the average length of stay for patients being transferred to nursing homes by 1.35 days. Advanced Home Care, one of the largest privately held home medical equipment companies in the region, reduced Medicaid prior approval turnaround time to less than 10 days, where the average for the industry is 83 days. The company attributes this improvement to rapid, online physician signature collection and e-form communication with Medicaid—enabled through the Covisint environment. Other results included increased employee productivity, management oversight, and accountability into external communications, as well as increased patient satisfaction. Expanding throughout the southeast to Louisiana, South Carolina, Georgia, Virginia and Florida, Covisint's technology environment is now more than 6,000 users.

DaimlerChrysler Corporation

www.daimlerchrysler.com

DaimlerChrysler Corporation, along with General Motors and Ford Motor Company, all members of the Center for Health Transformation, partnered with Medco Health Solutions and RxHub to form the Southeast Michigan e-Prescribing Initiative (SEMI). The goals of the initiative are to actively promote the adoption of electronic prescribing standards and practices by the Southeast Michigan prescriber community, reduce medication errors and associated costs, and improve the quality of care. Also partnering in the initiative are Health Alliance Plan and Henry Ford Health System. Participating in the initiative are Blue Cross Blue Shield of Michigan and PharmaCare. This initiative is also supported by the United Auto Workers.

To date, more than 800 physicians have enrolled in the SEMI program. In 2005, SEMI was awarded a grant by the Centers for Medicare and Medicaid Services to study the results of the initiative on seniors. Henry Ford Health System and Health Alliance Plan were awarded the Health Information Technology Award by the Greater Detroit Area Health Council in part because of their success in enrolling over 60 physicians into the SEMI program. In February 2006, the Henry Ford physicians reached the milestone of 500,000 prescriptions placed via e-prescribing. From a quality of care standpoint, e-Prescribing messages alerted doctors to 6,500 potential allergic reactions. From a cost standpoint, 50,000 prescriptions were changed or

canceled due to formulary alerts, which increased the use of generic drugs. Additionally, e-Prescribing helped improve overall generic use rate by 7.3 percent, which will save $3.1 million in pharmacy costs over a one-year period.

DaimlerChrysler has also been working with Ford Motor Company and General Motors to transform health and healthcare through the use of best practices and health information technology. Working together with Covisint, a division of Compuware and member of the Center for Health Transformation, the three automakers have engaged employers, hospital systems, physician groups, and health care payer organizations to join an eight-week pilot project that will gather input for a long-term healthcare IT solution in southeastern Michigan. The goal is to increase patient safety by reducing medical errors and reducing health care costs. Electronic health record technology will also provide patients with greater control of their information, empowering individuals as health care consumers. The three autos are also working with the State of Michigan's Health Information Network (MI HIN) Conduit to Care project to promote connecting health care communities across the State of Michigan.

Electronic Health Record Vendors Association

www.ehrva.org

HIMSS EHRVA is a trade association of Electronic Health Record (EHR) vendors who have joined to lead the accelerated adoption of EHRs in hospital and ambulatory care settings. Representing an estimated 98 percent of the installed EHR systems across the country, our industry contributions are founded in a competency to recognize the diverse needs of our combined provider clients—and a capacity to respond with a unified voice relative to core challenges within today's healthcare environment. The association focuses on issues surrounding standards development, the EHR certification process, interoperability, performance and quality measures, and other EHR issues subject to increasing government, provider and payer-driven initiatives and requests.

The Certification Commission for Healthcare Information Technology (CCHIT) process for certificating EHRs was greatly advanced through EHRVA contributions and involvement. In addition to thousands of hours dedicated to providing detailed feedback to the Commission, the association has provided a commissioner and work group-level representation to the CCHIT since its inception. While continuing to engage the Commission in dialogue related to process transparency, achievable certification targets, and improving the cost effectiveness of the certification process, EHRVA members remain engaged in CCHIT efforts through participation in the certification process for ambulatory EHRs and in representation in current and new work groups.

Geisinger Health System, Danville, Pennsylvania

www.geisinger.org

As her father was slowly dying of liver disease, Carol agonized over his condition. Even though she lived in New Jersey, far from her father, she took an active role in his care. With her father's permission, Carol used the Internet to securely view portions of his electronic medical record from Geisinger Health System in Danville, Pennsylvania. *MYGeisinger.org* allowed Carol to check her father's lab results, view his medications, order prescription refills, and make appointments. From New Jersey Carol noticed unusual fluctuations in his temperature and alerted his doctor in Pennsylvania. Her vigilance, even from hundreds of miles away, was able to forestall the possible onset of pneumonia.

Another Geisinger patient was visiting her son in Bar Harbor, Maine, when she suddenly saw double. Her son immediately took her to the local emergency room, where doctors reviewed portions of her Geisinger medical record online. With her permission, they reviewed her vital signs and previous test results and compared them to her current status. Fortunately, her vision returned to normal and she was soon released from the hospital. Her online medical record avoided a series of uncomfortable, unnecessary, and expensive tests.

HCA (Hospital Corporation of America)

www.hcahealthcare.com

HCA, a member of the Center for Health Transformation with more than 170 hospitals in the U.S., has created and recently completed implementation of eMAR (electronic medication administration record), the largest hospital bar code system to help prevent medication errors. The system uses handheld scanners and mobile laptop computers to read bar code labels on medications and patient armbands. An HCA nurse scans the bar code labels and the system checks the patient's electronic medication record to help ensure the right patient receives the right dose of the

right drug at the right time through the right route. In 2005, more than 116 million doses of medication were scanned using eMAR, and HCA estimates it helped prevent more than 2 million medication errors. According to the American Society of Hospital Pharmacists, only 10 percent of U.S. hospitals are using bar code systems like HCA's eMAR.

HealthTrio

www.healthtrio.com

HealthTrio, a member of the Center for Health Transformation, has developed a PHR/EHR which consists of a combination of personal entry data and an ambulatory electronic health record. The foundation of the HealthTrio PHR/EHR is clinical information collected from claims data residing in the various health plans, which then ensures that the list of encounters between the consumer and the provider is completely irrespective of the number of providers and facilities visited by the patient. The PHR/EHR is supplemented by the consumer's own direct personal entries. Initial input is done by completing a "Health Risk Assessment" and appropriate surveys. The patient could enter their progress and history through free text. This record is further supplemented by electronic import or download of the information from pharmacy benefit managers, providing a medication list and history, as prescribed by all the providers interacting with the patient. Selected clinical information, which is necessary for continuing care of the patients from the labs, outpatient facilities, and hospital EMRs, is imported into the PHR/EHR by using HL7 or customized interfaces. This record then allows for better coordination of care and prevents duplication of tests and medications. In addition, SNOMED has been deeply integrated in the technology, so the information in the PHR/EHR is all encoded.

The integration of SNOMED into the PHR/EHR is going to produce a transformational change in the practice of medicine by allowing electronic analysis of very large population-based studies and would provide criteria for evidence-based practice of medicine, profiling of the providers, allowing transparency of the cost and quality of care provided by the providers. Care management and disease management could be done more effectively at a fraction of the cost.

Henry Ford Health System, Detroit, Michigan

www.henryford.com

At Henry Ford Health System (HFHS) in Detroit, Michigan, information for more than 3.5 million patients has been recorded electronically and made available to Henry Ford providers throughout SE Michigan since the 1980s. Henry Ford physicians have not seen a paper chart at hospital bedside or clinic since 2001. Everything is electronic.

HFHS is currently committing approximately $90 million to convert its vast electronic data repository into a fully automated and interactive system. HFHS estimates a 100 percent return on investment within 4 years. They expect an 8 percent to 10 percent savings in operational efficiency. This savings is measured by the number of physician or other provider hours expended per patient day. The savings increase capacity and allow the same number of physicians, nurses and allied health professionals to provide care to more patients. HFHS expects a 10 percent savings on patient throughput. Rework, readmissions, and hospital discharge inefficiencies (resulting in longer lengths of stay) are a common source of cost that can be eliminated through the fully automated and interactive medical record. They expect a 2 percent to 7 percent savings in billing recovery. Savings accrue primarily through better capacity to bill for services provided, but not captured or adequately documented without the Automated Medical Record improvements. HFHS is deploying more than 1,500 end-user devices in 2007, including computers on wheels, TabletPCs, laptops, and handheld devices at a cost of about $8 million. This investment supports the full spectrum of clinicians (physicians, nurses, therapists, pharmacists) engaged in entering and reviewing patient information at the point of care in a wireless environment.

Humana and BCBS of Florida

www.humana.com and *www.bcbsfl.com*

Blue Cross Blue Shield of Florida and Humana, a member of the Center for Health Transformation, have partnered to roll out a statewide personal care profile based on health plan claims data to share information that may be useful to physicians in treating plan members. Using the existing Availity infrastructure, which all network physicians with Humana and BCBS of Florida currently use to check eligibility, a button will be added that will allow physicians and nurses to print a simple two-page summary with a patient's medication history, lab order history, diagnosis codes, and provider information. This effort lays a foundation upon which

both health plans and healthcare providers can add on functionality to make the technology more sophisticated with the ultimate state being achieved with increased quality of care.

In a future phase of this program, a consumer who currently has coverage with Humana changes plans and selects BCBS of Florida, their personal care profile will still be available to their physician transcending the plan to plan data barrier. This multi-plan approach is the only one of its kind in the country. It is the beginning of a permanent personal care profile that follows the consumer wherever they go. Nearly a third of Floridians are covered by Humana and BCBS of Florida, and these two plans are actively recruiting other insurers to join the effort, including Medicaid. By adding Medicaid beneficiaries to the project, more than half of the state's population will be involved.

IBM

www.ibm.com/us/

Prospective healthcare involves collaborating with employees in a coordinated fashion to improve health—in effect, heading problems off before they occur. IBM, a member of the Center for Health Transformation, is developing patient-centric programs that are doubly proactive: they both reach out to a wider range of employees, and are more able to help them anticipate and manage health risks.

The personal health records that IBM is providing to its U.S. employees are a prime example of this patient-centered approach. When an IBMer first goes to the website for their personal health record, they are offered a financial incentive to complete an employee health risk appraisal, develop a personal preventive care action plan, and identify quality hospitals in their area. Based on the results, an IBMer can subscribe to receive expert information, articles, and advice on how to reduce their risks. It identifies eligibility for additional benefits and services such as disease management and refers employees to those resources. Decision support tools for drug comparison and interactions, hospital quality and Leapfrog results (from the Leapfrog Group's performance measurement system) provide individual support for optimizing benefits quality and costs.

For IBM, the risk assessment tools and the personal health records provided to its workforce are an investment that is recouped through improvements in employee health and the significant cost savings that result. As a result of our consumer-centric health programs for employees, IBMers are healthier and have lower health expenses than others in our industry. We have demonstrated that information-rich, patient-centric wellness programs aren't marginal benefits. They are very good business:

IBM's employee injury and illness rates are consistently lower than industry levels; IBM has documented significant decreases in the number of health risks among its workforce as a result of participating in wellness initiatives; IBM's disease management programs have demonstrated a 9–24 percent reduction in emergency room visits and a 13–37 percent reduction in hospital admissions resulting in an overall 16 percent reduction in medical and pharmacy costs adjusted for medical trend over a two-year period. IBM has also had significant success in improving the management of care for employees with chronic problems such as asthma and diabetes.

With the health improvements, IBM has seen cost benefits. IBM healthcare premiums are 6 percent lower for family coverage and 15 percent lower for single coverage than industry norms. IBM employees benefit from these lower-costs as well—they pay 26 to 60 percent less than industry norms. In total, these well-being programs deliver more than $100 million in annual savings.

Inland Northwest Health Services

www.inhs.org

Inland Northwest Health Services (INHS), a 501(c)(3) in Spokane, Washington, and member of the Center for Health Transformation, is a shared services organization providing centralized information technology and clinical systems across the continuum of care covering 34 hospitals and numerous physician clinics in Washington, Idaho and Alaska. Four new hospitals are in progress in southern California. This network is significant because of its size (2.7 million patient records), breadth of clinical data and images available, and because competitive healthcare facilities have been collaborating successfully on the governance and technology infrastructure for more than 9 years. Facilities are contributing to a regional data repository, with standardized data and a common Master Patient Index, which allows health care providers to access needed patient data from any hospital in the region. The repository also includes data from reference laboratories and imaging centers, providing a single source of comprehensive information about any patient. Providers can either view the data via a secure web portal, download it wirelessly to a per-

sonal digital assistant, or have the data transferred as a standard electronic message to their clinic's electronic medical record system. INHS not only makes data available when and where it is needed, the standardized approach to hospital information systems saves money. Further, the centralized data repository provides a ready source of information on the health of the population, for use in public health and bioterrorism surveillance.

INHS is also implementing a centralized approach to physician office electronic medical record systems. In this model, INHS serves as an Application Service Provider, housing EMR systems for physicians on central servers. This helps physicians implement and maintain EMR systems at a lower cost than individual physicians would pay on their own. Further, the centralized approach assures that INHS can readily develop interfaces between the hospital system and the EMR system, allowing bidirectional electronic transfer of data between the two systems. The result will be a comprehensive electronic health record, with healthcare providers able to access ambulatory care, emergency room, and inpatient data from wherever care is delivered. Because of this simplified approach to EMR adoption and utilization, INHS anticipates that 40 percent of physicians in the Spokane area will be using EMRs by the end of 2006.

InterComponentWare (ICW)

www.us.icw-global.com or *www.us.lifesensor.com*

ICW is a leading international e-health provider founded in Germany with transforming market entry strategies for the U.S. ICW delivers components for interoperability solutions for healthcare stakeholders, utilizing "connector" technology and the patient-centered and patient-owned LifeSensor®, a true interoperable Personal Health Record. ICW interoperability can enable bidirectional autopopulation of data to and from the LifeSensor PHR. Continued technology expansion includes recent integration of the CHILI web-server into the ICW hospital networking solution, now allowing access to DICOM image data, permitting viewing of digital images and videos, magnetic resonance tomographies, and x-ray and ultrasound images in a virtual patient record.

ICW has played vital roles in the national e-health card (eCard) program in Germany and Austria. Current ICW projects in Europe include: (1) a physician's network enabling interoperable connectivity, which has been recognized as a leading RHIO in a study by the University of Erlangen; (2) a privately funded implementation of a regional eHealth network, which delivers interoperability to providers, practitioners and pharmacies, and via LifeSensor, patients; (3) an interoperability project at Rhön Hospitals connects existing, but until now, isolated information systems without requiring the replacement of existing software. ICW is also involved with hospital and clinical projects including the "Partnership for the Heart" program at Charité hospital, for patients with chronic heart failure, utilizing remote patient monitoring. ICW is also leading a breast cancer project at the University of Tubingen, which enables authorized medical personnel outside the University system to view and add treatment information, resulting in better patient management, improved care, and better health outcomes.

McKesson Corporation

www.McKesson.com

For more than 170 years, McKesson has led the industry in the wholesale delivery of medicines and healthcare products. Today a Fortune 16 corporation, McKesson delivers vital pharmaceuticals, medical supplies, and healthcare IT solutions that touch the lives of more than 100 million patients each day in every healthcare setting. As the world's largest healthcare services company with a customer base that includes more than 200,000 physicians, 25,000 retail pharmacies, 5,000 hospitals and 600 payers, McKesson is well positioned to help transform the healthcare system.

Today more than 4 million care providers use McKesson's Horizon Clinicals® solutions to process more than 22 million orders per week. More than 500,000 full time equivalent registered nurses rely on McKesson solutions to deliver safe, high-quality care. The company's bar-code medication administration solution issues more than 649,000 alerts weekly. Its interdisciplinary documentation solution automates chart audits required for regulatory purposes, reduces documentation time by up to 35 percent, and in combination with bar-coded medication administration, improves nursing satisfaction by up to 45 percent. McKesson currently records over 3 million logins each month to its Web-based physician portal. This online gateway lets community-based physicians, hospitalists, and other caregivers log on once to gain single-source access to the patient's virtual EHR, no matter where the data resides.

McKesson offers a medication administration system that features bar code technology to support the hospital team and protect the patient by verifying the "five rights" of medication administration: right patient, right drug, right dose, right route and right time. The bar code technology used in McKesson's solution suite has been shown to reduce medication administration errors by as much as 87 percent.

M.D. Anderson Cancer Center, Houston, Texas

www.mdanderson.org

The University of Texas M.D. Anderson Cancer Center has enabled its health transformation through the development of ClinicStation, its in-house developed electronic medical record system. This year, more than 74,000 people with cancer will receive care at M.D. Anderson, and about 27,000 of them will be new patients. Approximately one-third of these patients come from outside Texas seeking the research-based care that has made M.D. Anderson so widely respected. With the ClinicStation EMR, M.D. Anderson's caregivers initiate over 1.5 million patient queries a month reviewing digitally available information such as images (240,000 studies reviewed/month), transcribed clinical documents (3.3 million/month), radiology reports (658,000/month), as well as pathology and laboratory reports (1.8 million/month). M.D. Anderson caregivers access the EMR system via both wired and wireless access in the hospital, out-patient clinics, offices and even remotely from home or while traveling. When outside M.D. Anderson, caregivers have remote access to their patient's records via a virtual private network (VPN) connection. The ClinicStation EMR allows caregivers to simultaneously review and consult on patient records regardless of where they are located (access is available anywhere with an Internet connection). While there is universal access to patient records, access is restricted to authenticated users. Every accession of patient data is permanently recorded in audit record databases.

Most patients referred to M.D. Anderson have their diagnosis of cancer revealed on diagnostic imaging studies prior to their arrival. Patients bring these "outside" studies on film or ever more commonly on compact disks (CD–R). M.D. Anderson informatics personnel have developed innovate diagnostic image importation software to allow images obtained throughout the country and world to be imported directly onto the M.D. Anderson Picture Archiving and Communications (PACS) system and then made instantly available for caregivers to deliver expert diagnostic oncology opinions. In the past year, over 33,000 "outside" studies were imported into M.D. Anderson's PACS system. Of the 77 million images available on PACS from the past 12 months, over 5.6 million images (7.3 percent) originated from "outside" studies. Currently, over 190 million images, representing the past 5½ years of diagnostic study information is available for instant review. As filming of M.D. Anderson studies is no longer routinely performed, upon request, patients are provided CD–R disks of images from their M.D. Anderson studies. This technology improves patient health because radiologists are better able to diagnose current cancer status by comparing the current study to imaging studies obtained months or in some cases years before.

Methodist Medical Center of Illinois, Peoria, Illinois

www.methodistmedicalcenter.org

Methodist Medical Center has been at the forefront in implementing electronic systems to reduce medical errors and improve physician access to patient records and test results. The 353-bed facility has not only reduced medication errors by 50 percent using bar code scanning at the bedside, but it uses technology to provide network physicians anytime, anywhere access to information on 18,000 inpatients and more than 300,000 outpatients each year. When a medication is scanned at a patient's bedside, it is verified against the physician order and screened for allergies, interactions, and therapeutic duplication by pharmacists using the pharmacy system. Two of Methodist's 15 nursing units have achieved the targeted 90 percent rate for medication bar code verification. For its efforts, Methodist achieved the National Patient Safety Goals with zero violations.

Methodist also achieved an almost-perfect score from the Joint Commission on Accreditation of Healthcare Organizations—ranking it in the top 4 percent of all U.S. hospitals. But that was not enough for this hospital, which also supports 30 clinics and physician practices. Using McKesson's ambulatory EHR many redundant, inefficient paper-based processes in ambulatory settings were eliminated. Methodist practitioners now write more than 40,000 electronic prescriptions monthly, and paper charts for medication-related issues have been virtually eliminated. In addition, chart pulls related to medication refills were reduced by 93 percent. Methodist also estimates it will save $300,000 in external transcription fees.

MinuteClinic

www.minuteclinic.com

MinuteClinic, a member of the Center for Health Transformation, is the pioneer and largest provider of retail-based health care in the United States, with 82 MinuteClinic health care centers in 10 states and 150–200 additional centers planned by the end of 2006. MinuteClinic has managed approximately 500,000 patient visits using an electronic medical record system that guides diagnosis and treatment, generates patient education materials and builds diagnostic records that are sent to primary care providers. The EMR embeds nationally established clinical practice guidelines from the Institute for Clinical Systems Improvement, the American Academy of Family Physicians and the American Academy of Pediatrics. This system provides a foundation for generation of Continuity of Care Records (CCR) and HL7 patient encounter reports. MinuteClinic actively seeks and supports ways to improve the secure, appropriate exchange of patient care information by electronic methods.

North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT), Chapel Hill, North Carolina

www.ncdetect.org

NC DETECT is a secure, Web-based system that provides access to emergency department data (ED) in a timely manner to authorized users at the local, regional and state level. NC DETECT receives ED data from disparate hospital information systems across the state electronically on a daily basis. Aggregated and standardized based on CDC's Data Elements for Emergency Department Systems (DEEDS), the data are immediately available to authorized users via a secure, database-driven, web-based portal. The portal provides reporting on disease and injury conditions and utilizes both diagnostic data and syndrome-based data. Emergency department data, and the other sources soon to be loaded into production, are also instrumental in monitoring the public's health after natural disasters. Hurricanes especially have had a huge effect in North Carolina in recent years, and NC DETECT will greatly reduce the burden on data providers when it comes to reporting on disaster-related illness and injury. Because of its efforts, NC DETECT was awarded a Nicholas E. Davies EHR Recognition Program, sponsored by the Healthcare Information and Management Systems Society (HIMSS). The program recognizes healthcare provider organizations that successfully use EHR systems to improve healthcare delivery.

Northwest Physicians Network, State of Washington

www.npnwa.net

The Northwest Physicians Network is comprised of nearly 400 providers representing primary care and more than 30 different specialty disciplines in two Washington State counties. NPN incorporated in January 1995 and is now the largest IPA in the state. The foundation of its success is based on the belief that patient centered, physician driven care, coupled with solid data, responsible use of resources, and active disease management programs are imperative components to the successful delivery of care.

NPN has sponsored the South Sound Health Communication Network, linking patients to their doctors and their clinical data. Approximately 75 independent community doctors, nurses, and office managers are online. Quest Diagnostics and Medical Imaging Northwest now push lab data and imaging results into the Network for real-time consultations and complete patient data storage. One seven-physician clinic in Pierce County, Washington, implemented the Network to complement their existing EHR system. A line-item audit of the previous twelve months versus the twelve months after implementation reveal impressive savings: savings from administrative supplies, $7,142; savings from FTE reduction, $19,600; savings from dictation reductions, $7,525. Total workflow net savings per physician was $4,098, for a total net savings per year of nearly $30,000.

Partners HealthCare, Boston, Massachusetts

www.partners.org

Partners HealthCare is an integrated health system founded by Brigham and Women's Hospital and Massachusetts General Hospital in 1994. In addition to its two academic medical centers, the Partners system also includes community hospitals, specialty hospitals, community health centers, a physician network, home health and long-term care services, and other health-related entities. Computerized physician order entry will be completely implemented in all Partners acute care hospitals by the end of 2006. Electronic medical records are being used or implemented by 85 percent of physicians at the academic medical centers and 52 percent of com-

munity primary care physicians in our Network. We have roughly 6,000 physicians in our Network of which 4,300 are targets for ambulatory EMR (excluding pathologists, anesthesiologists, radiologists and other specialists who would be unlikely to use an ambulatory EMR).

Partners IT executives, who are members of the College of Health Information Management Executives, are implementing a "fail safe" system for medication ordering and administration, including computerized physician order entry, "smart" pumps, electronic medication administration record software, and bar-coding of patients, staff, and drugs.

PeaceHealth

www.peacehealth.org

PeaceHealth is a billion-dollar hospital system with 1.4 million patient records with six facilities in Alaska, Washington, and Oregon. With the help of IDX (now GE Healthcare), a member of the Center for Health Transformation, PeaceHealth built the Community Health Record. The Community Health Record contains all the information a provider needs to care for a patient—from lab results to MRI images to cardiology charts. It is secure, HIPAA-compliant, and totally online. Patients can access their records from anywhere via a secure connection—individuals are able to refill prescriptions, correspond via e-mail with doctors, check lab results, schedule appointments, and request referrals. Every stakeholder has access to these records, including doctors, nurses, case managers, health plans, and independent physician groups.

Adverse drug events have been reduced by 83 percent, as documented by a pilot study in Eugene, Oregon. Allergy lists are close to 100 percent complete, thanks to an expert technical rule that flags missing information. Compliance with diabetic guidelines has tripled in three PeaceHealth facilities, thanks to a combination of online disease management tools and the involvement of diabetes educators. Hemoglobin A1C levels of less than 7, the target level for diabetes control, improved from 44 percent in 2001 to more than 60 percent last year. And LDL levels of less than 100, the target range, jumped from 28 percent in 2001 to 52 percent last year.

Per-Se Technologies

www.per-se.com

In the U.S. approximately 20 percent of new prescriptions and as many as 30 percent of refillable prescriptions are never filled. The adoption of technology in the prescribing process provides a way for physicians to know when a patient is not taking his medication. Ensuring patients take their medication as prescribed significantly reduces healthcare costs by avoiding situations where patients arrive sicker at a healthcare provider than if they had taken their medication. To help reduce medical errors and the cost of healthcare, Per-Se Technologies began an electronic prescribing initiative in early 2006 to help physicians electronically obtain a complete picture of a patient's medication history and plan coverage before issuing a new prescription.

Through partnerships as well as Per-Se's extensive customer base, Per-Se is connected to more than 20 percent of U.S. physicians, more than 50 percent of U.S. hospitals, more than 90 percent of U.S. pharmacies, and all of the Nation's insurance companies. Per-Se's ePrescribing offering provides functionality during the prescribing process to a physician at the point of care. This functionality includes patient medication history to assess drug allergies and drug-to-drug interactions, and checks benefit plan drug formularies to facilitate less expensive generic drug use. Per-Se's goal is to increase ePrescribing adoption of the Nation's physicians from today's 2–3 percent to more than 30 percent by 2010.

Presbyterian Healthcare Services, Albuquerque, New Mexico

www.phs.org

A true end-to-end medication management system drives out errors at every stage where they can occur—ordering, transcribing, dispensing, and administering. Presbyterian Healthcare Services has been building such a system since 1999, beginning by automating pharmacy operations to support bar code point-of-care medication administration, or "BPOC." Results of a three-year study showed a 77.9 percent drop in medication administration errors. In 2004, PHS integrated BPOC with a pharmacy information system that enables nurses and pharmacists to share information regarding patient allergies, schedule changes, and missing doses. Via pharmacy-laboratory system integration, the pharmacist is notified of abnormal values. A nursing electronic documentation system incorporates the updated medication administration record in the patient's chart after every med pass. And a secure portal gives

clinicians anywhere, anytime access to patient information. More than 1,000 physicians and other caregivers use it today.

Most recently, PHS introduced a computerized physician order entry system with clinical decision support (CPOE/CDS) to its hospitalists, with other physician groups scheduled a month apart throughout the year. Two-way communication with the pharmacy system simplifies the verification process, eliminates transcription errors and enables physicians and pharmacists to share a common drug knowledge base, formulary and allergy information. As a result of this large technology deployment, between 2002 and 2005 the mortality index at Presbyterian Hospital dropped from 1.2 to 0.9. Harm rate has also continued to decline to a current low of 0.48 (number of adverse drug events per 1,000 doses), which is within the top 10th percentile for harm rate nationally.

Quality Improvement Organizations

www.ahqa.com

Under a performance-based contract with Medicare, Quality Improvement Organizations (QIOs) in every state and territory in the U.S. are supporting healthcare transformation by giving free hands-on assistance with health IT adoption to more than 3,500 doctors. To help these doctors avoid simply automating our current system of care, QIOs are providing valuable support with the redesign of care processes to improve quality and efficiency. And QIOs are not just working with practices in affluent areas—nearly one quarter of the practices receiving QIO assistance are those that treat underserved patients.

Medicare's investment in health IT adoption assistance through the QIOs holds significant promise for achieving higher quality of care for Americans. Policymakers should examine the approach QIOs are taking to help physicians effectively use health IT and consider how this strategy could also help the increasing number of long-term care providers pursuing the use of IT for better quality care for the frail and elderly. QIOs in at least 42 states are also supporting local health information exchange efforts, many in leadership roles. QIOs are helping accelerate the formation of these efforts by serving as neutral conveners, bringing together diverse stakeholders—including home health agencies and nursing homes—to build consensus around governance structures, sustainable business plans, and policies for data use and information sharing.

Quest Diagnostics

www.questdiagnostics.com

Quest Diagnostics, a member of the Center for Health Transformation and the Nation's largest clinical reference laboratory, has developed its Care360 patient-centric physician portal for small to mid-size physicians and physician practices. Care360 allows a medical practice to easily collect, review, and seamlessly communicate vital clinical aspects of a patient's medical history, including laboratory and medication information. Care360 is positioned as an affordable alternative to expensive and complex EHR systems for ambulatory physician practices that are seeking clinical information technology solutions. Care360 gives the physician a convenient way to order laboratory tests and prescriptions online; an effective and integrated view of a patients' laboratory and medication history at the point of care; and the ability to share information securely with other physicians and other caregivers within and beyond their office for treatment and other appropriate purposes in a truly interoperable fashion. Additionally, Care360 provides physicians with the tools for participating in pay for performance programs.

By virtue of its national network of Care360 and other systems and a clinical transaction infrastructure supporting over 80,000 physicians nationwide and over 1,000,000 clinical transactions daily, Quest Diagnostics is playing a leadership role in the growing number of community initiatives focused on healthcare information technology adoption and interoperability.

Quovadx

www.quovadx.com

Quovadx, a member of the Center for Health Transformation and a worldwide supplier of healthcare interoperability solutions, has enabled the Florida Department of Health (FDOH) to transform a manual set of data collection processes and disparate applications into an integrated system for reporting and analysis of critical information for public health and safety. Utilizing Cloverleaf® Integration Services from Quovadx, the FDOH now provides managers and policymakers with access to critical data residing in various counties and application systems across the state.

These vastly improved capabilities enable the FDOH to immediately distribute alerts as soon as lab reports are processed by the Cloverleaf engine for the early

detection and intervention of impending healthcare risks. Laboratory data needed for disease surveillance programs can now be accessed within 48 hours compared to the previous average of 10 days. Additionally, on a Federal level, the Department can now make connections between diseases and infected persons or populations in multiple locations, enabling the FDOH to respond to national biohazard security threats, such as smallpox or anthrax, quickly identify and respond to regional outbreaks and environmental hazards, and securely transmit data from their Immunization Registry to the CDC.

Southeast Texas Medical Associates, Beaumont, Texas

www.setma.com

SETMA began in 1995 as a single-location, primary-care practice with five providers utilizing transcription for documenting medical records. In 1997, SETMA had grown to a 10-provider practice and realized that future growth and development was limited by the paper-based medical record. Today, SETMA has three clinical locations and 36 clinical personnel, including 23.0 full-time-equivalent physicians. In 2005, SETMA was located directly in the eye of Hurricane Rita, however, no medical records were lost as a result of SETMA's EHR and back-up process. Because of its efforts, SETMA was awarded a Nicholas E. Davies EHR Recognition Program, sponsored by HIMSS. The program recognizes provider organizations that successfully use EHR systems to improve healthcare delivery.

Patients can request prescription refills online, with requests automatically routed for physician approval and transmission to a pharmacy. Prior to implementing the EHR, SETMA had a 20 percent immunization compliance rate. Post EHR, it exceeds 80 percent. Comprehensive electronic disease management efforts have been launched, with over 5,000 patients assessed through a comprehensive program each month. SETMA has established a continuum of care model of healthcare delivery by tying the clinic to the hospital, to the physical therapy clinic, to the home, to the hospice, to the home health agency, etc. The full continuum of care is captured electronically.

Decreases in medical transcription costs saved more than $340,000; increases in average billable charges generated more than $150,000 in revenue; overall average charge per patient visit increased 20 percent and the average collection increased 30 percent; administrative staff required to handle the patient's chart decreased by 76.7 percent, saving more than $120,000 per year; the average man-hour cost to establish a chart decreased 85 percent, an annual savings of more than $22,000; average cost for administrative supplies decreased more than 87 percent; the practice saved more than $380,000 in paper and supply costs; amount of time required to handle phone call inquiries that required the chart has been reduced by 73 percent; number of tasks decreased from 18 down to 2, total annual savings exceed $103,000; and number of claim denials has decreased 26 percent, reduced days in accounts receivables by 7 days, thus increasing actual revenues by $102,000.

Southwest Medical Associates, a subsidiary of Sierra Health Services, State of Nevada

www.smalv.com

The largest medical group in Nevada, Southwest Medical Associates, a subsidiary of Sierra Health Services, is changing the way doctors practice medicine. SMA successfully deploying Allscripts Electronic Health Record, TouchWorks™ to its nearly 250 medical providers, and is providing electronic prescribing to all of the physicians in the State of Nevada—for free.

It has worked. In 2005, Nevada physicians wrote more than one million electronic prescriptions for their patients, making them a leader in electronic prescribing practices with a growing body of data proving a reduction in medical prescription errors and a significant improvement in utilization of generic prescription drugs. Electronic prescribing ensures that physicians write safe, clean prescriptions for their patients, and helps them select medication alternatives that are covered by their patients' insurance plans, thereby reducing the out-of-pocket cost of prescription drugs for their patients.

More than $5 million saved. After 3 years of using electronic prescribing, SMA's generic fill rate (GFR) had achieved a 4.8 percent lead over a controlled group of physicians in other SHS network groups that do not use electronic prescribing. Because every one point increase in GFR equals a cost savings to the organization of 1.5 percent, SMA's increased generic utilization saves $4.75 million each year, or 7.2 percent of its 2005 drug spend of $66 million. TouchWorks, which is a full electronic health record, also greatly streamlines the process of approving prescription refills, in the process creating indirect financial savings to SMA of $208,640 a year through increased nurse productivity. Taken together, the EHR's annual financial savings of

$4.96 million has netted SMA a reduction in costs of $5.17 per prescription on average. SMA's solution also has increased formulary compliance for the group's physicians, and enhanced patient safety. Thanks largely to its eRx initiative, SMA now has a generic utilization rate of 73.2 percent, one of the highest rates in the country.

SureScripts

www.surescripts.com

SureScripts was founded in 2001 by the National Association of Chain Drug Stores and the National Community Pharmacists Association to improve the quality, safety, and efficiency of the overall prescribing process through electronic prescribing. The SureScripts Electronic Prescribing Network is the largest network to link electronic communications between pharmacies and physicians, allowing the electronic exchange of prescription information. Through the SureScripts Network, providers can send and receive new prescription information, renewal requests, other messages related to prescriptions, medication history, and formulary/eligibility information. SureScripts' system helps to ensure neutrality, patient choice of pharmacy, and the provider's choice of the best therapy. The pharmacy industry has been a leader in implementing information technology in healthcare, resulting in cost savings, efficiency in the delivery of care, and better healthcare.

Virtua Health

www.virtua.org

Virtua Health is a community based four hospital system in Southern New Jersey. While in the process of installing EHR and other ancillary technology in their hospitals, they are using the opportunity to streamline clinical workflows, reduce duplication and waste, and improve patient care. Virtua has brought in a clinical informaticist from PricewaterhouseCoopers (PwC) to assist in realizing these opportunities. An early adopter of Six Sigma methods in healthcare, Virtua has been able to realize savings of several million dollars in operations. Simultaneously, Virtua is piloting a physician practice based EHR which will ultimately be integrated with the hospital EHR. Through this process, Virtua hopes to improve communications with the community physicians as well as provide better continuity of care.

Along the continuum, Virtua has implemented an electronic record for their home care division. Patient discharge information is automatically passed to the home care agency. Appointments scheduling is accomplished electronically before the patient leaves the hospital. Homecare nurses carry tablets or laptops to the patient's home where all of the necessary information is available. Nurses travel from home to the clients and transmit information to the main office each evening. Productivity has increased, patients are seen in a more timely fashion, and cost savings have been close to $1 million by implementing technology simultaneously with streamlining workflow.

APPENDIX II—21ST CENTURY ENTREPRENEURIAL PUBLIC MANAGEMENT AS A REPLACEMENT FOR BUREAUCRATIC PUBLIC ADMINISTRATION: GETTING GOVERNMENT TO MOVE AT THE SPEED AND EFFECTIVENESS OF THE INFORMATION AGE—BY NEWT GINGRICH (DECEMBER 12, 2005)

It is simply impossible for the American government to meet the challenges of the 21st century with the bureaucracy, regulations and systems of the 1880s.

Implementing policy effectively is ultimately as important as making the right policy. In national security we have an absolute crisis of ineffective and inefficient implementation which undermines even the most correct policies and risks the security of the country. In health, education and other areas we have cumbersome, inefficient, and ineffective bureaucracies which make our tax dollars less effective and the decision of representative government less capable. People expect results and not just excuses.

To get those results in the 21st century will require a profound transformation from a model of Bureaucratic Public Administration to a model of 21st Century Entrepreneurial Public Management.

As Professor Philip Bobbitt of the University of Texas has noted: "Tomorrow's [nation] state will have as much in common with the 21st century multinational company as with the 20th century [nation] state. It will outsource many functions to the private sector, rely less of regulation and more on market incentives and respond to ever-changing consumer demand."

It is an objective fact that government today is incapable of moving at the speed of the Information age.

It is an objective fact that government today is incapable of running a lean, agile operation like the logistics supply chain system that has made Wal-Mart so success-

ful or the recent IBM logistics supply chain innovations which IBM estimates now saves it over $3 billion a year while improving productivity and profits.

There is a practical reason government cannot function at the speed of the information age.

Modern government as we know it is an intellectual product of the civil service reform movement of the 1880s.

Think of the implications of that reality.

A movement that matured over 120 years ago was a movement developed in a period when male clerks used quill pens and dipped them into ink bottles.

The processes, checklists, and speed appropriate to a pre-telephone, pre-typewriter era of government bureaucracy are clearly hopelessly obsolete.

Simply imagine walking into a government office today and seeing a gas light, a quill pen, a bottle of ink for dipping the pen, a tall clerk's desk, and a stool. The very image of the office would communicate how obsolete the office was. If you saw someone actually trying to run a government program in that office you would know instantly it was a hopeless task.

Yet the unseen mental assumptions of modern bureaucracy are fully as out of date and obsolete, fully as hopeless at keeping up with the modern world as that office would be.

Today we have a combination of information age and industrial age equipment in a government office being slowed to the pace of an agricultural age mentality of processes, checklists, limitations, and assumptions.

This obsolete, process-oriented system of bureaucracy is made even slower and more risk averse by the attitudes of the Inspectors General, the Congress, and the news media. These three groups are actually mutually reinforcing in limiting energy, entrepreneurship, and creativity.

The Inspectors General are products of a scandal and misdeed oriented mindset which would bankrupt any corporation. The Inspectors General communicate what government employees cannot do and what they cannot avoid. The emphasis is overwhelmingly on a petty dotting the i's and crossing the t's mentality which leads to good bookkeeping and slow, unimaginative, and expensive implementation.

There are no Inspectors General seeking to reward imagination, daring risks, aggressive leadership, or over achievement.

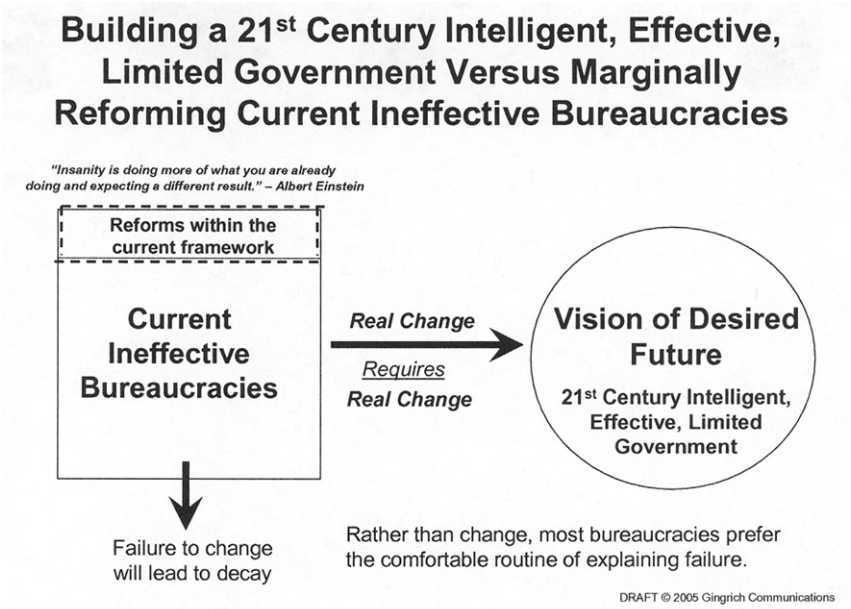
Similarly, the Members of Congress and their staffs are quick to hold hearings and issue press releases about mistakes in public administration but there are remarkably few efforts to identify what works and what should be streamlined and modernized.

Every hearing about a scandal reminds the civil service to keep its head down.

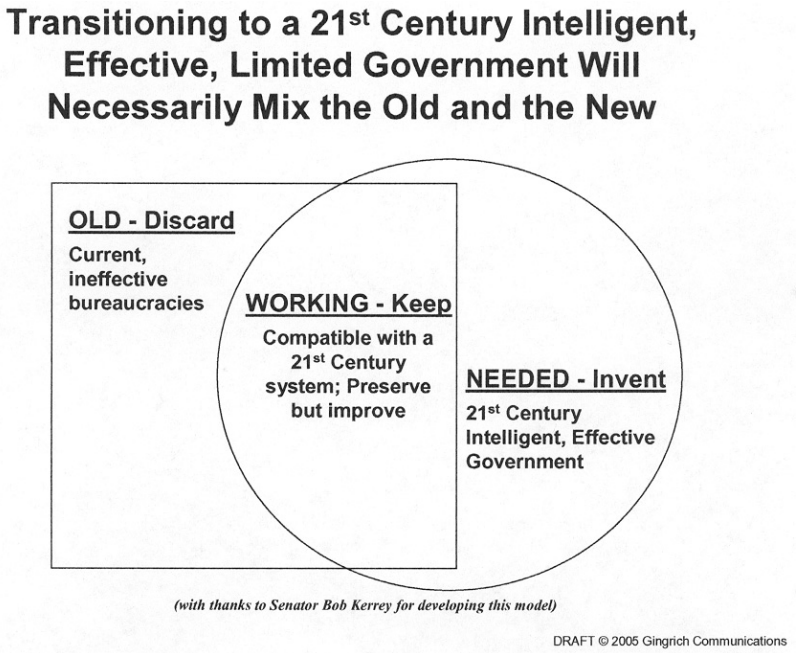
Similarly, the news media will uncover, exaggerate and put the spotlight on any potential scandal but it will do remarkably little to highlight, to praise, and to recognize outstanding breakthroughs in getting more done more quickly with fewer resources.

Finally, the very nature of the personnel system further leads to timidity and mediocrity. No amount of extra effort can be rewarded and no amount of incompetent but honest inaction seems punishable. The failure of the system to reinforce success and punish failure leads to a steady drift toward mediocrity and risk avoidance.

The difference in orientation between what we are currently focused on and where we should be going can be illustrated vividly.



Of course, it is not possible to reach the desired future in one step. It will involve a series of transitions, which can also be illustrated.



Without fundamental change, we will continue to have an unimaginative, red tape ridden, process-dominated system which moves slower than the industrial era and has no hope of matching the speed, accuracy and agility of the information age.

The Wal-Mart model is that "everyday low prices are a function of everyday low cost." The Wal-Mart people know that they cannot charge over time less than it costs them. Therefore if they can have the lowest cost structure in retail they can sustain the lowest price structure.

This same principle applies to government. The better you use your resources the more things you can do. The faster you can respond to reality and develop an effective implementation of the right policy the more you can achieve.

An information age government that operated with the speed and efficiency of modern supply chain logistics could do a better job of providing public goods and services for less money.

Moving government into the information age is a key component of America being able to operate in the real time 24/7 worldwide information system of the modern world.

Moving government into the information age is absolutely vital if the military and intelligence communities are to be capable of buying and using new technologies as rapidly as the information age is going to produce them.

Moving government into the information age is unavoidable if police and drug enforcement are to be able to move at the speed of their unencumbered private sector opponents in organized crime, slave trading and drug dealing.

Moving government into the information age is a key component of America being able to meet its educational goals and save those who have been left out of the successful parts of our society.

Moving government into the information age is a key component of America being able to develop new energy sources and create a cleaner environment with greater biodiversity.

Moving government into the information age is a key component of America being able to transform the health system into a 21st Century Intelligent Health System.

This process of developing an information age government system is going to be one of the greatest challenges of the next decade.

It is not enough to think that you can simply move the new developments in the private sector into the government. The public has a right to know about actions which in a totally private company would be legitimately shielded from outside scrutiny. There will inevitably be Congressional and news media oversight of public activities in a way that would not happen in the purely privately held venture.

As Peter Drucker warned thirty years ago in *The Age of Discontinuities,* the government is different. There are much higher standards of honesty and fairness in government than in the private sector. There are legitimately higher standards for using the public's money wisely. There are legitimate demands for greater transparency and accountability. The public really does have a right to know about actions which in a totally private company would be legitimately shielded from outside scrutiny. There will inevitably be Congressional and news media oversight of public activities in a way that would not happen in the purely privately held venture.

There are also legitimately higher expectations of accuracy. In early July, in yet another adjustment to an earlier estimate, the Congressional Budget Office revised its budget deficit projections for this Fiscal Year. In less than 6 months, the CBO was off by nearly 12 percent. If the Office of Management and Budget agrees with the new CBO projection, its estimate will have missed the mark by nearly 24 percent—an error of more than $100 billion. How can our elected officials make informed policy decisions with such faulty analysis? We deserve honest answers.

The House and Senate Budget Committees should hold hearings to reform the current CBO scoring processes because modernizing government starts with open and accurate budget projections. These projections must include the impact that proposed legislation will have on the private sector, not just its impact on the Federal budget. For instance, Federal spending that promotes health information technology or medical innovation has the potential to save countless lives and billions of dollars in the private sector. But without scoring these benefits CBO and OMB will never be able to distinguish between legislation as an investment and legislation as a cost.

All of these factors require us to develop a new model of effective government and not merely copy whatever the private sector is doing well.

That new model can be thought of as 21st Century Entrepreneurial Public Management.

21st Century Entrepreneurial Public Management

The term 21st Century Entrepreneurial Public Management was chosen to deliberately distinguish it from Bureaucratic Public Administration. We need two terms to distinguish between the new information age system of entrepreneurial management and the inherited agricultural age system of bureaucratic administration.

The one constant is the term public. It is important to recognize that there are legitimate requirements of public activity and public responsibility which will be just as true in this new model as they were in the older model. Simply throwing the doors open to market oriented, entrepreneurial incentives with information age systems will not get the job done. The system we are developing has to meet the higher standards of accountability, prudence, and honesty which are inherent in a public activity.

We have to start with a distinguishing set of terms because we are describing a fundamental shift in thinking, in goals, in measurements, and in organization. Changes this profound always begins with language. People learn new ideas by first learning a language and then learning a glossary of how to use that new language. That is the heart of developing new models of thought and behavior.

Shifting the way we conceptualize, organize and run public institutions will require new models for education and recruitment as well as for the day to day behavior.

We must shift from professional public bureaucrats to professional public entrepreneurs. We must shift from administrators to managers. The metrics will be profoundly different. The rules will be profoundly different. The expectations will be profoundly different.

A first step would be for Schools of Public Administration to change their titles to Schools of Entrepreneurial Public Management. This is not a shallow gimmicky word trick. Changing the name of the institutions that attract and educate those who would engage in public service will require those schools to ask themselves what the difference in curriculum and in the faculty should be.

The President, Governors, Mayors, and County Commissioners should appoint advisory committees from the business community and from schools of business to help think through and develop principles of 21st Century Entrepreneurial Public Management.

Principles of 21st Century Entrepreneurial Public Management

This is a topic which is just beginning to evolve. Over the next few years it will lead to books, courses, and even entire programs. Obviously it can only be dealt with briefly in this paper. For more information and for developments since the date of this paper, go to *www.newt.org* and click on 21st Century Entrepreneurial Public Management.

The following are simply an introductory set of principles:

1. Every system should define itself by its vision of success. Unless you know what a department or agency is trying to accomplish (and has been assigned to accomplish by the President and the Congress), you cannot measure how well it is doing, how to structure the agency, how to train the employees so they can be an effective team. Definition of success precedes everything else.

2. Planning has to always be in a deep-mid-near model. For government deep is probably 10 years, mid is about 3 years and near is next year. Unless the agency plans back from the desired future it is impossible to distinguish between activity and progress. In Washington and most state capitals far too much time is spent on today's headline and today's press conference and not nearly enough time is spent preparing for tomorrow's achievement.

3. Every agency and every project has to be planned with a clear process of:

a. defining the vision of success;

b. defining the strategies which will achieve that vision;

c. defining the projects (definable, delegatable achievements see below) necessary to implement the strategies;

d. defining the tasks which must be completed to achieve the projects;

e. defining the metrics by which you will be able to measure whether the project is on track; and

f. turning to the customers, the experts, and the decisionmakers and following a process of listen-learn-help-lead to find out whether your definition of success and definition of implementation fits their understanding. This process properly used turns every person into a consultant helping improve your planning and your execution.

4. Every significant system requires a reporting process comparable to the COMSTAT and TEAMS reporting instituted by Mayor Giuliani in the New York City Police Department and the Prisons. Giuliani's *Leadership* is a good introduction to the concept of COMSTAT and similar reporting and managing tools. The key is for senior leadership to constantly (weekly in key areas, monthly in others) review

the data and make changes in a collaborative way with the team charged with implementing the system. Every significant strategy requires an Assessment Room in which the senior leadership can visibly see all the key data and review the totality of the strategy's implementation in one sweeping overview. Determining what metrics should be used to define success and maintaining those metrics with accuracy is a major part of this process. The absence of COMSTAT systems, the absence of Assessment Rooms, and the absence of routine review is a major factor in the ineffectiveness and inefficiency of the Federal Government in almost every department. "You get what you inspect not what you expect" is an old management rule. If no one knows what is going to be inspected and if no data is available for inspection it should not surprise us that the current system also does not function very well.

5. When a strategy is not working well senior leaders need to ask the following tough minded questions:

a. Is the strategy the right one (this suggests a courageous reexamination of external realities to see if we have simply tried to do the wrong thing)?

b. If it is the right one then is the problem resources?

c. If we have the right strategy and the right resources then do the people implementing it need more training?

d. If we have the right strategy, the right resources, the right training, do we have the wrong people in charge?

e. If everything looks like it should be working is there something inherently wrong with the structure and the system which needs to be changed so we can achieve our goals?

f. If everything is in place but it still is not working, are there regulations which are slowing us down and making us ineffective and if there are who is drafting up the replacement regulations to be issued by the President or whatever authority is required?

g. If everything is in place that the executive branch can control is the problem with the law and should the President send to Congress proposed changes to enable the strategy to be implemented?

h. Can these seven steps be undertaken on a weekly or at most monthly basis so the rhythm and tempo of government can begin to match the requirements of the information age?

6. The process of defining and managing projects will require profound changes in the laws governing personnel, procurement, etc. Projects are the key building block of Entrepreneurial Public Management. They permit the senior leader to delegate measures of accomplishment rather than measures of activity. A simple distinction is between asking bureaucracies to engage in cooking and asking someone to prepare dinner for 12 people at 8 o'clock tomorrow night for $11 a piece and making it Mexican food. The Bureaucratic Public Administration request for cooking allows the bureaucracy to report on activities (we are cooking every day, we are studying cooking, we are having a cooking seminar) without any metric of achievement. The process of defining achievements and delegating them is virtually impossible under today's personnel, procurement and spending laws. A clear example of the difference can be found by studying the division commanders' use of commander's emergency money in Iraq with the Coalition Provision Authority process. One division commander told me they could use the emergency money to order cars from a local Iraqi and that Iraqi could procure the cars in Turkey and drive them to the local town faster than they could process the paperwork in Baghdad to begin the process of purchasing through the CPA. The Congress and the President agreed to spend $18 billion rebuilding Iraq and 10 months later $16 billion was still tied up in paperwork. Only the commander's emergency money was being spent in a timely, effective way. The same experience happened in Afghanistan where the United States Agency for International Development could not process the paperwork fast enough to meet the requirements of rebuilding Afghan civil society. One commander said that in rebuilding a society after a war "dollars are to rebuilding what ammunition is to a firefight." If the ammunition for the war were as constrained and slow as the dollars in reconstruction we would lose every war. Getting the system to move at the speed of wartime requirements and at the speed of information age processes requires a totally new model of delegating massively to project managers who are measured by their achievements not by the details of process reporting. This will be the most profound change in shifting from Bureaucratic Public Administration to Entrepreneurial Public Management and it will require substantial change in law, in culture, and in congressional and executive leadership expectation. To be

sustained it will also have to be understood by reporters and analysts so the news media is focused on the same metrics as the leadership.

7. At every level leaders have to sift out the vital from the nice. In the information age there is always more to do than can possibly get done. One of the keys to effective leadership and to successful projects is to distinguish the vital from the useful. A useful way to think of this is that lions cannot afford to hunt chipmunks because even if they catch them they will starve to death. Lions are hyper-carnivores who have to hunt antelopes and zebras to survive. Every leader has to learn to distinguish every morning between antelopes and chipmunks by focusing on success as defined in a deep-mid-near time horizon then allowing that definition of success to define the antelope that really have to be achieved in order for the project to work.

8. An effective information age system has to focus on the outside world and "move to the sound of the guns." In the Bureaucratic Public Administration model which was developed at the cusp of the shift from an agrarian to an industrial society the key to focused achievement was to define your silo of responsibility and stick within that silo. As long as you were doing your job within that system of accountability you were succeeding even if the larger system were collapsing or failing. In the information age this internally oriented approach is doomed to fail. There are too many things happening too rapidly for people to be effective staying focused only on their own system. As Peter Drucker pointed out, in his classic, The Effective Executive, effective leaders realize that all the important impacts occur outside the organization and the organization exists for the purpose of achievements measured only by outside occurrences. Since the world is so much larger and so much faster moving than our particular activity we have to constantly be paying attention to the outside world. The military expression of this is the term OODA-loop. In the modern military the winning side Observes a fact, Orients itself to the meaning of that fact, Decides what to do, Acts and then loops back to Observe the new situation faster than its competitor. The winning team is always more AGILE and AGILITY is a vital characteristic for winning systems in the information age. This process is characterized by Dr. Andy von Eschenbach of the National Cancer Institute as the ability to discover-develop-deliver as rapidly as possible. However you describe these capabilities, they are clearly not the natural pattern of Bureaucratic Public Administration. They have to become the natural rhythm of Entrepreneurial Public Management if government is to meet the requirements of the information age.

9. When dealing with this scale of complexity and change people have to be educated into a doctrine so they understand what is expected and how to meet the expectations. We greatly underestimate how complex modern systems are and how much work it takes to understand what is expected, what habits and patterns work, how to relate to other members of the team. The more complex the information age becomes and the faster it evolves, the more vital it is to have very strong team building capabilities so people can come together and work on projects with a common language, common system, and common sense of accountability. Developing this kind of common understanding is what the military calls doctrine. Every system has to have a doctrinal base and the team members will be dramatically more effective if they have a shared understanding of the doctrine of their team.

10. The better educated people are into doctrine, the simpler the orders can be. The less educated someone is into the common doctrine, the more complete and detailed the orders have to be. With a very mature team that has thoroughly mastered the doctrine and applied it in several situations, remarkably few instructions are required. In a brand new team the orders may have to be very detailed. The Entrepreneurial Public Management system has to have the flexibility to deal with the entire spectrum of knowledge and capability this implies.

11. The information age requires a constant focus on team building, team development, and team leadership. It is the wagon train and not the mountain man that best characterizes the information age. People have to work together to get complex projects completed in this modern era. It takes a while to build teams. There should be a lot more thought given to changing personnel laws so leaders can arrive in a new assignment with a core team of people they are used to working with. Admiral Ed Giambastiani of the joint Forces Command (which has responsibility for pioneering information age transformation in the military) has captured the distinction in modern sophisticated team requirements. He has a single chart that shows the growth in maturity toward truly interdependent teams. These teams are integrated, collaborative, inherently joint, capabilities based and network-centric. Entrepreneurial Public Management will require similar standards of sophisticated organization and teamwork for it to work at its optimum.

12. Information technology combined with the explosion in communications (including wireless communications) create the underlying capabilities that should be at the heart of transforming government systems from Bureaucratic Public Adminis-

tration to Entrepreneurial Public Management. The power of computing and communications to capture, analyze and convey information with stunning accuracy and speed and at ever declining costs creates enormous opportunities for rethinking how to deliver goods and services. These new capabilities have been engines of change in the private sector. They are the heart of Wal-Mart's ability to turn "everyday low price is a function of everyday low cost" into a realistic implementation strategy. They are at the heart of the revolution in logistics supply chain management. They are this generation's most powerful reason for being sure we can expect more choices of higher quality at lower cost. We have only scratched the surface of the potential. The Library of Congress now has a digital library with millions of documents available 24 hours a day 7 days a week for free to anyone in the world who wants to access them through the Internet. It is possible for every school in the country to have the largest library in the world by simply having one laptop accessing the Internet. This is a totally different kind of system for learning. NASA is now connecting to schools to allow students to actually direct telescopes and search for stars from their classroom. This is an extraordinary extension of research opportunities to young scientists and young explorers. The potential to use the computer, the Internet, and communications (again including wireless) has only begun to be tapped. The more rapidly government leaders study and learn the lessons of these new potentials the more rapidly we will invent a 21st century information age governing system which uses Entrepreneurial Public Management to produce more choices of higher quality at lower cost.

13. Creating a citizen centered government using the power of the computer and the Internet. The agrarian-industrial model of government saw the citizen as a client of limited capabilities and the government employee as the center of knowledge, decision and power. It was a bureaucrat-centered model of governance (much as the agrarian-industrial model of health was a doctor-centered model and the agrarian-industrial school was a teacher-centered model). The information age makes it possible to develop citizen centered models of access and information. The Weather Channel and *Weather.com* are a good example of this new approach. The Weather Channel gathers and analyzes the data but it is available to you when you want it and in the form you need. You do not have to access all the weather in the world to discover the weather for your neighborhood tomorrow. You do not have to get anyone's permission to access the system 24 hours a day 7 days a week. Google is another system of customer centric organization that is a model for government. You access Google when you want to and you ask it the question that interests you. Google may give you an answer that has over a million possibilities but you only have to use the one or two options that satiate your interest. Similarly *Amazon.com* and E-Bay are models of systems geared to your interests on your terms when you want to access them. Compare these systems with the current school room, the courthouse which is open from 8 to 5, the appointment at the doctor's office on the doctor's terms, the college class only available when the professor deigns to show up. Government is still mired in the pre-computer, pre-communications age. A key component of Entrepreneurial Public Management is to ask every morning what can be done to use computers, the Internet, CDs, DVDs, teleconferencing, and other modern innovations to recenter the government on the citizen.

14. A customer centered, citizen centered model of governance would start with the concept that as a general rule being online is better than being in line. It would both put traditional bureaucratic functions on the Internet as is happening in many states (paying taxes, ordering license tags, etc.) but it would also begin to rethink major functions of government in terms of the new Internet based system. The information age makes possible a lot more citizen self help as defined by the citizen's needs. If learning is individually centered and adapted to the needs of each person, and available when they need it and on the topics of skills they need, then how would that learning system operate? If prisoners out on parole were monitored by wireless information age technology to ensure they were going to work, taking their classes, staying out of off limits areas, etc., then how would the new model parole system operate? If migrant children could be connected to an online, videoconferencing and teleconferencing learning system so they had a continuity of learning experience how would that process operate? These are just some examples of how a citizen centered new model would be different from using information systems to improve the existing agrarian and industrial era delivery systems.

15. One of the key side effects of information technology and ubiquitous communications is the development of much flatter hierarchies and much greater connectedness across the entire system. In private business, the military, and in customer relationships, there is a much flatter system of information flow. The power of knowledge is to some extent driving out the power of the hierarchy. A networked system seems to operate very differently than the pyramid of power which has been

dominant since the rise of agriculture with a few at the top giving orders to the many at the bottom. Increasingly, who knows is defining who is in charge. Entrepreneurial Public Management will have a much more fluid system for shifting authority based on expertise and on identifying what knowledge needs to be applied so the right informed person can be brought in to make the decision as accurate and effective as possible. Bureaucratic Public Administration defined who was in the room by a system of defined authority without regard to knowledge. Entrepreneurial Public Management will define participation in the decisions by a hierarchy of knowledge and experience rather than a hierarchy of status and defined authority.

16. There will be a radical shift toward online learning and online information. In the information age people need to know so much in so many different areas and the knowledge itself keeps changing in a rapidly evolving world that it is impossible for the traditional classroom based continuing education system to keep up with modern reality. The combination of videoconferencing, online learning, mentoring and apprenticeships will presently create a totally different system of professional development and continuing education. Governments will shift from flying people to conferences and workshops toward having video conferences. They will also shift from courses built around the teacher's convenience and occurring inconveniently in time and place toward ongoing learning opportunities that can be accessed 24/7 so people can learn when they need, what they need, and at their own convenience. This will increase the learning while decreasing the cost in both time and money.

17. Personnel mobility will be a major factor in the information age and will require profound changes in how we conceptualize a civil service. The information age creates career paths in which the most competent people move from challenging and interesting job to challenging and interesting job. A government civil service that required a lifetime commitment was both guaranteeing that it would not attract the most competent people and guaranteeing that it would not have the flexibility to bring in the specialists when they are needed. A new system of allowing people to move in and out of government service, to move from department to department as they are needed, to accumulate and take with them health savings accounts and pension plans, to buildup seniority with each passing assignment, and to be able to rise without continuous service as long as their experience and knowledge has risen, these are the kind of changes which will be necessary for an Entrepreneurial Public Management system to attract the kind of talent it will need in the information age. It may also make sense for different governments to agree to count the experience in other governments in assigning status and pension eligibility so people could move between governments as well as within them.

18. Outsourcing is inevitably going to be a big part of the information age. Virtually every successful private sector company uses outsourcing extensively. The ability to create competitive pressures and shift to the best provider is inherent in the outsourcing model. Applying these principles to the public sector will both save the taxpayer money and improve substantially the quality and convenience of services provided to the citizens. It is also simply a fact that in many of the most complex developments of the information age the public sector bureaucracy simply cannot attract the expertise and build the capability to manage the new systems effectively. In these cases outsourcing is the only way to bring new developments into the government.

19. Privatization is a zone that needs to be readdressed in Washington and in the states. At one time the United States was a leader in privatization but now we have fallen far behind many foreign countries. There are a number of opportunities for privatization which would help balance the budget, increase the tax rolls of future contributors to government revenue, and increase the efficiency of the services delivered to the citizen. The Thatcher model of selling some of the stock to the beneficiaries of the services dramatically reduced resistance to privatization in Britain. A similar strategy of developing an economic incentive for those most likely to object to conclude that privatization was a good thing for them personally would lower the resistance and increase the opportunity to move naturally market oriented entities off the government payroll and into the market where it belongs.

20. For activities where privatization would be wrong there is a pattern of public-private partnerships which should be examined. The Atlanta Zoo was on the verge of being disaccredited because the city of Atlanta bureaucracy simply could not run it effectively. Mayor Andrew Young courageously concluded that the answer was to create a public-private partnership with the Friends of the Zoo. The city would continue to own the zoo and would provide some limited funding but the Friends of the Zoo would find additional resources and would provide entrepreneurial leadership. The Friends of the Zoo then recruited Dr. Terry Maples, a brilliant professor from Georgia Tech and a natural entrepreneur and salesman. With Terry's leadership and the Friends of the Zoo's enthusiastic backing, he rapidly turned ZooAtlanta

into a world class research institution and a wonderful attraction both for the families of the Atlanta area and to visitors from around the world. ZooAtlanta went from being an almost disaccredited embarrassment to an extraordinary example of a public-private partnership. Other zoos around America have had similar experiences with new entrepreneurial leadership bringing new ideas, new excitement, and new resources to what had formerly been a government run institution. The government retains ownership of the zoo but the daily operations are under the control of the entrepreneurial association that raises the money and provides strategic guidance. The result is far more energy and creativity and a great deal more flexibility of implementation than could ever be achieved with a purely public bureaucracy. This is the model that should be applied to creating a truly national zoo in Washington where the National Zoo has suffered from the problems of a neglectful bureaucracy. This is also a model of the kind of activities which could be used in many other areas. When something can't be privatized or outsourced the next question should be whether or not there is a useful public-private partnership that might be used to accomplish the same goals with fewer taxpayer resources and more creativity, energy and flexibility.

21. As a general principle, proposals that (i) dramatically improve applying logistics supply chain management, go paperless, adapt a quality-metrics system and/or (ii) outsource or privatize, should be viewed by 3rd party independent experts with no financial interests as well as by the agency to be changed. As a general rule government agencies or department leaders faced with improvements that will shrink their workforce or shrink their budget will be reluctant to say yes. There are no incentives and rewards in government for downsizing and modernizing. The senior leader and the legislative branch need third party opinions as well as the in-house review and the vendor's proposal to ensure that the maximum improvements are being implemented.

22. Create pressure for modernizing government at all levels by requiring Federal and state governments to benchmark best practices every year and agree to pay no more than 10 percent above the least expensive, most effective programs. This approach would create a continuous pressure to have government programs in each state constantly adapting toward better outcomes at lower cost. This approach also might entail providing a bonus to the state which has the best program in the country. It would also create an annual rhythm of benchmarking and data gathering which would revolutionize how we think about government. Benchmarking would also make very visible the cost of recalcitrant government unions and the cost of bureaucratic resistance to modernization.

23. This system of Entrepreneurial Public Management requires profound changes in the analytical assumptions of the Congressional Budget Office (CBO) and the Office of Management and Budget (OMB). Today neither office has a model for distinguishing between investments (which increase productivity and lower cost) and pure costs. Neither system has a model for offsetting future savings against innovation and technological breakthroughs. Neither system has a model for the impact of incentives on behavior. The result is both systems are essentially reactionary and premodern in their assessment of proposed policies. In many ways the CBO–OMB reactionary models are the greatest single roadblock to sound investment in an incentivized, technologically advanced, dramatically more productive future. Their scoring systems reinforce current spending on obsolete bureaucracies and inhibit investments in profound change.

These 23 principles are examples of the kind of thinking which will be required to move from a system of Bureaucratic Public Administration to a system of Entrepreneurial Public Management. It is one of the most important transformations of our lifetime and without it government will literally not be able to keep up with the speed and complexity of the information age.

The Legislative Role in Developing 21st Century Entrepreneurial Public Management

The Congress and state legislatures should begin holding hearings on the difference between a government run according to the information age principles of Entrepreneurial Public Management from a government run according to the principles of Bureaucratic Public Administration. For the legislative branch the changes will include:

- Replacing the current civil service personnel laws with a new model of hiring and leading people including part time employees, temporary employees, the ability to shift to other jobs across the government, the ability to do training and educating on an individualized 24/7 Internet based system;

- Radically simplifying the disclosure requirements which have become a major hindrance to successful people coming to work for the Federal Government;
- The Senate adopting rules to minimize individual Senators holding up Presidential appointments for months. The current process of clearing and confirming Presidential personnel should be a national scandal because it disrupts the functioning of the executive branch to a shocking degree. There should be some time limitation (say 90 days) for every appointment to reach an up or down vote on the Senate floor (this is separate from judicial nominations, which is a different kind of problem). The current Senate indulgence of individual Senators is a constant wound weakening the executive branch ability to manage;
- Creating a single system of security clearances so once people are cleared at a particular level (e.g., Secret, top secret, code word) they are cleared throughout the Federal Government and do not have to go through multiple clearances;
- Writing new management laws that enable entrepreneurial public leaders to set metrics for performance and reward and punish according to the achievement level of the employees;
- Within appropriate safeguards creating the opportunity for leaders to suspend and when necessary fire people who fail to do their jobs and fail to meet the standards and the metrics;
- Working with the major departments to reshape their education and training programs and their systems of assessment so they can begin retraining their existing workforce into this new framework;
- Developing a new set of goals and definitions for the Inspectors General's job and refocusing those professionals into being pro-active partners in implementing the new Entrepreneurial Public Management approach including in their own offices;
- Designing a new salary structure that reflects the remarkable diversity of capabilities, hours worked, level of knowledge, independent contracting, part time engagement, etc., that is evident in the information age private sector;
- Passing a new system of procurement laws that encourage the supply chain thinking that is sweeping the private sector;
- Developing a new model of Congressional and state legislative staffing to ensure that enough experts and practitioners are advising legislators at the Federal and state level so they can understand the complex new systems that are evolving and that are transforming capabilities in the private sector;
- Transforming the Congressional Management Institute so it is playing a leading role in developing the new legislative version of Entrepreneurial Public Management (some states have similar institutions);
- Transforming the Government Accountability Office, the Congressional Research Service and the Congressional Budget Office into institutions that understand and are implementing the principles of Entrepreneurial Public Management;
- Developing a system for educating new Members of Congress and new congressional staff members into these new principles;
- Creating an expectation that within 2 years every current congressional staff member will have taken a course in the new method of managing the government in an entrepreneurial way;
- Rethinking the kind of hearings that ought to be held, the focus of those hearings, and the kind of questions that government officials ought to be answering;
- Designing a much more flexible budget and appropriations process that provides for the kind of latitude entrepreneurial leaders need if they are to be effective;
- Establishing for confirmation hearings the kind of questioning that elicits from potential office holders how they would work in an Entrepreneurial Public Management style and apply these questions with special intensity to people who come from a long background of experience in the traditional bureaucracy.

With this set of changes the legislative branches will have prepared for a cooperative leadership role in helping the executive branch transform itself from a system dedicated to Bureaucratic Public Administration into one working every day to invent and implement 21st Century Entrepreneurial Public Management.

Senator ENSIGN. Thank you, Mr. Speaker. You really need to work on your speaking skills.

[Laughter.]

Senator ENSIGN. You never have been very persuasive. No, I appreciate your being here. It was very good testimony. In my questions, you'll be interested in what I was doing yesterday.

So, we'll next hear from Dr. Mark Leavitt. Dr. Leavitt is the Chairman of the Certification Commission for Health Information Technology.

Dr. Leavitt?

STATEMENT OF MARK LEAVITT, M.D., PH.D., CHAIR, CERTIFICATION COMMISSION FOR HEALTHCARE INFORMATION TECHNOLOGY (CCHIT)

Dr. LEAVITT. Thank you, Mr. Chairman. Thanks for inviting me. I'm Mark Leavitt, Chairman of the Certification Commission for Healthcare Information Technology, which we'll call CCHIT for the next 5 minutes. I'm honored to be here.

In my written testimony, I spend a page or two on the need for the adoption of health IT. Today, I'm not going to attempt to duplicate what Speaker Gingrich has said. We know we need it. I'm going to talk about CCHIT and what we're doing to help accelerate it.

CCHIT was formed in 2004 in response to the strategic framework that was put forth by the first national coordinator. And our mission is to accelerate the adoption of health IT in the United States healthcare system. And when we say "health IT," we mean robust—does what people expect, has the expected benefits—and interoperable, meaning information becomes portable and comparable.

We think we can do that in four ways:

First, we think we can reduce the risk when providers invest in health IT that it will deliver what they need.

Second, we want to make sure that the adoption of health IT produces compatibility and interoperability, not a digital version of the current information islands we now have with paper.

Third, we want to try to unlock financial incentives. You've already said, Mr. Chairman—pointed out how the payback for the IT often goes to the payers and the purchasers, and not necessarily the provider. Many payers and purchasers are willing to send some of the gains back as incentives, but they need assurance that these health IT systems will deliver the expected benefits. We can help simplify that and provide a gating process.

And, finally, we need to help ensure that when we move from a paper to a digital world, we enhance privacy rather than reduce it. And we can do that, if we do it right.

CCHIT was founded by three health IT organizations—AHIMA, HIMSS, and the Alliance. They provided the seed funding and the seed personnel. We broadened our funding with eight additional organizations a year later, and, as you know, we were awarded the HHS contract in September 2005, a 3-year, $7.5-million contract. We certify the compliance of EHRs, electronic health records, and networks with standards.

We work with Dr. Halamka's organization and the other ones, the other contractors, very much hand-in-glove. And I like to think of CCHIT as the interface between HITSP, the standards organiza-

tion, the architecture prototype contractors, the privacy solutions contractor, and the real world marketplace of everyday manufacturers making products and doctors and hospitals buying products. We're the interface. We drive this new structure into the marketplace, basically using market mechanisms.

I'd like to now provide a status report. We're pleased to report that we have met all of our contractual milestones to date. The first phase of the contract required development of standards compliance criteria and an inspection process for ambulatory care EHRs—doctors offices and clinics. The criteria were developed. The inspection process was developed. They were refined through multiple cycles of public comment. We responded to over 2,000 comments. We pilot-tested the criteria and the inspection process, and, finally, published the criteria on May 1st. We accepted applications. And I'm pleased to report that we actually are now testing the first round of ambulatory EHR products. We had more than two dozen vendors apply, and we're a good way—about a third of the way through that process. We'll make our first announcement of certified products on July 18, 2006, less than a month from now.

The certification will then be made available every quarter. We do this in batches, so that our announcements have some significance. And we'll repeat it quarterly and update the criteria annually. We need to update the criteria, because this is an evolutionary and incremental process. Besides ambulatory care, in the next year we will add inpatient electronic health record components. And, in the following year, we'll begin to add the networks through which inpatient and ambulatory record systems interoperate.

Although we operate in the private sector, our organization strives to meet the stringent requirements for openness and transparency that apply to governmental activities, and that's because we could have a substantial influence on the marketplace and the fortunes of vendors, so we're very meticulous about it. We engage a broad array of stakeholders. We publish all of our work. We use public comment. We've worked with both the private and the public sector. For example, NIST is helping us with a mechanism to monitor our jurors, the inspection juror reliability.

So, to sum up, our goal is to help accelerate the adoption of health IT by certifying standards compliance of health IT products. We have engaged diverse stakeholders. We have developed the first set of criteria. We are now testing products, and hope to soon have an impact—a very positive impact on the marketplace.

We're proud to play a role—a partial role in this strategy to advance the adoption of health IT. Thank you for your time, and I look forward to any questions you may have.

[The prepared statement of Dr. Leavitt follows:]

PREPARED STATEMENT OF MARK LEAVITT, M.D., PH.D., CHAIR, CERTIFICATION COMMISSION FOR HEALTHCARE INFORMATION TECHNOLOGY (CCHIT)

Introduction

Mr. Chairman, Mr. Co-Chairman, and distinguished members of the Committee, thank you for inviting me today. My name is Mark Leavitt, and I am here in my capacity as Chairman of the Certification Commission for Healthcare Information Technology (CCHIT). I am honored to have the opportunity to address this hearing on "Accelerating the Adoption of Health Information Technology."

Need for Action to Accelerate the Adoption of Interoperable Health IT

The United States may lead the world in its deployment of advanced diagnostic and treatment technology, but our country paradoxically lags behind many others in the adoption of healthcare *information* technology—computer systems and networks that can manage patient information, enhance care team and patient communication, support evidence-based decision-making, and help prevent medical errors. Dr. David Brailer, the first National Coordinator for Health Information Technology, previously testified before this Subcommittee that widespread health IT adoption could reduce healthcare costs by 7.5 percent to 30 percent as well as prevent a substantial fraction of medical errors.[1]

Despite these potential benefits, adoption of health IT has proceeded unevenly. While some of the largest healthcare delivery organizations have fully embraced information technology, adoption in other settings has lagged; for example, fewer than 15 percent of physicians have electronic health records available in their offices today.[2] Even in cases where hospitals and offices have installed this technology, their systems are not interoperable, and without this ability to electronically retrieve a patient's record of care from other locations, billions of dollars are wasted annually in unnecessary duplication of tests and procedures.[3]

The Certification Commission for Healthcare Information Technology (CCHIT)

In July 2004, the National Coordinator issued a Framework for Strategic Action to accelerate the adoption of interoperable health IT, and in that report he challenged the private sector to develop certification of health IT products as one of the "key actions" necessary to both accelerate adoption and ensure interoperability of these systems.[4]

In response to that call for action, the Certification Commission for Healthcare Information Technology (CCHIT) was formed, with the mission of accelerating the adoption of robust, interoperable health IT throughout the U.S. healthcare system, by creating an efficient, credible, sustainable mechanism for the certification of health IT products. Through certification, CCHIT seeks to help accelerate the adoption of health IT in four ways:

1. By reducing the risk healthcare providers face when investing in health IT.
2. By ensuring interoperability of these systems with emerging networks.
3. By enhancing the availability of financial incentives and/or regulatory relief.
4. By protecting the privacy of personal health information.

Funding and staff to launch CCHIT were contributed by three industry associations: the American Health Information Management Association (AHIMA), the Healthcare Information and Management Systems Society (HIMSS), and the National Alliance for Health Information Technology (Alliance). In June 2005, eight additional organizations further broadened the Commission's funding base. CCHIT then responded to a Request for Proposal from ONC/DHHS for development of compliance criteria and an inspection process to certify electronic health records and networks, and that three-year, $7.5 million contract was awarded to CCHIT in September 2005. Concurrently, contracts were awarded to other entities to harmonize standards, develop National Health Information Network prototypes, and analyze and develop solutions for state-to-state variations in electronic health information privacy policies.

Status Report on the Efforts of CCHIT

CCHIT is pleased to report that it has met all contractual milestones to date. The first phase of the contract required development of standards-compliance criteria and an inspection process for Electronic Health Record (EHR) systems that are used in ambulatory care settings. These criteria, and an inspection process for certifying compliance, have been developed, refined through multiple cycles of public comment, pilot tested, and published. At the present time, testing of the first round of appli-

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[1] Brailer DJ, Testimony before the U.S. Senate Committee on Commerce, Science and Transportation Subcommittee on Technology, Innovation, and Competitiveness, June 30, 2005.

[2] Gans D, Kralewski J, Hammons T, Dowd B, "Medical Groups' Adoption of Electronic Health Records and Information Systems," *Health Affairs* 24:5, 1323–1333, Sept 2005.

[3] Walker J, Pan E, Johnston D, Adler-Milstein J, Bates DW, Middleton B, "The Value Of Health Care Information Exchange and Interoperability," *Health Affairs* web exclusive W5–10, Jan 2005.

[4] Thompson TG, Brailer DJ, "The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care—A Framework for Strategic Action, July 2004 (*www.hhs.gov/healthit/documents/hitframework.pdf*).

cants is underway, with the first certification announcement to occur on July 18, 2006. Certification testing will be made available every quarter, and the criteria themselves reviewed and updated annually. Besides listing the criteria required for certification in the current year, CCHIT also publishes a forward-looking roadmap indicating what additional functionality, interoperability, and security capabilities will be required in future years. In the coming year, the Commission will address certification of components of EHR systems in the hospital, and in the following year, certification will be developed for the emerging networks that interconnect these systems.

Although CCHIT operates in the private sector, the organization strives to meet the stringent requirements for openness and transparency that apply to governmental activities, and its work represents a broad consensus among both private and public stakeholders. In the private sector, this includes physicians, hospitals, other care providers such as safety net facilities, health IT vendors, payers and purchasers of healthcare, quality improvement organizations, standards development organizations; informatics experts, consumer organizations; and others. From the public sector, CCHIT has benefited from participation by representatives of Federal agencies including HHS/ONC, CMS, VA, and CDC. In addition, NIST has an active role in providing expert advice to CCHIT on the development and execution of its test processes. CCHIT also works collaboratively with the other HHS health IT contractors.

Summary

CCHIT's goal is to help accelerate the adoption of robust, interoperable health IT by certifying the standards-compliance of health IT products. The Commission has engaged diverse stakeholders in its efforts while achieving the milestones set forth in its contract with HHS, and the first announcement of certified products will take place in less than 1 month. CCHIT is proud to play a role as part of the Federal Government's leadership strategy in health IT.

Mr. Chairman and Members of the Commission, thank you for your time. I would be pleased to answer any questions you have.

Senator ENSIGN. Thank you, Dr. Leavitt.

Next, we will hear from Mr. Michael Raymer. Mr. Raymer is the Senior Vice President for Global Product Strategy at GE Healthcare.

STATEMENT OF MICHAEL RAYMER, SENIOR VICE PRESIDENT FOR GLOBAL PRODUCT STRATEGY, GE HEALTHCARE

Mr. RAYMER. Thank you, Chairman Ensign and—for the opportunity to testify today on behalf of GE Healthcare.

My name is Michael Raymer. I'm responsible for global product strategy for GE. In addition to being one of the largest health IT suppliers, GE is also both a major payer and employer in this country, spending approximately $2.5 billion on insurance today for our employers, covering almost a million lives.

While GE has been active in promoting higher-quality and lower-cost care through the formation of two employer-led coalitions, the Leapfrog Group and Bridges to Excellence, the driving force behind these two coalitions is that our healthcare system still rewards providers for volume of services, as opposed to the quality of outcomes they provide. It is GE's firm belief that health IT technology will be a key enabler of a modern, 21st-century intelligence healthcare system.

Quite frankly, the state of healthcare today is still troubling. Healthcare organizations and the patients they serve still suffer from three fundamental problems: quality, cost, and access. We spend two and a half times the average of other industrialized countries. For that investment, Americans get only half the appropriate acute, chronic, or preventive care, and as many as 100,000 Americans die each year due to preventable medical mistakes.

Chronic disease accounts for 80 percent of our spend, and congestive heart failure alone accounts for $15.2 billion of the spend within Medicare today.

What we need is a fundamental change in the system to make sure medical care is both safe and effective. This transformation is best enabled through health information technology. It has been shown in other industries IT can be a transformation force. Just look around the world today at ATMs, Google, eBay, Travelocity, Yahoo!, and Amazon. They have revolutionized the world in which we live, yet today healthcare remains paper-based. As a result, most individuals have fragmented medical records literally littered across this country. This is both costly and deadly.

Healthcare IT has been proven to do five things: one, reduce medical errors by providing accurate allergy lists, and accurate lists of medication; two, enable collaboration among caregivers, knitting together that care community today that takes care of that 80 percent chronic-care community; sets a foundation for clinical best practice—Dr. Clancy referenced the 17 years from discovery to consistent implementation of best practice—IT can make a difference; help clinicians deliver personalized care—that's not nicer care, but that's targeted therapies aimed at both the physiological and clinical condition of the patient; and, finally and most importantly, provide performance and quality data enabling a true market-driven system where consumers can make informed choices both about cost and quality.

These results are not theoretical. GE is working in partnership with Intermountain Healthcare in Utah to commercialize their health advances. Intermountain has been repeatedly recognized as the highest quality care-delivery organization in this country. Actually, Dr. Clancy referenced them in her testimony. Intermountain routinely combines clinical best practice with computer-based decision support. Intermountain's able to provide higher quality care at lower cost, 27 percent lower than the national average.

In just one example of their HIT best practice, Intermountain has utilized computerized decision support to assist in the discharge process for congestive heart failure. In a 1-year period of time, they prevented 551 readmissions, they saved $2.5 million, and prevented 331 deaths. Just imagine if that health IT best practice was implemented across the country.

Yet, although there remains real and tangible cost and quality benefits to healthcare IT, adoption rates are still too low. We believe that cost and interoperability are creating barriers to widespread adoption. A recent RAND Corporation study published last year found that only 15 to 20 percent of physician offices are automated. Only 20 to 25 percent of hospitals have adopted EMRs. Lack of interoperability, the ability to share data across different systems among different institutions, can prevent the realization of benefits to EMRs on a communitywide, regional, or national basis. An interconnected healthcare system would save lives and save money. The above-referenced RAND study estimates annualized savings at $80 billion to $500 billion. So, following on the Speaker's comments, that probably wouldn't be scored by OMB.

The same system could also be invaluable in controlling the spread of a natural pandemic or bioterrorism attack. And I had,

personally, the opportunity to sit down after SARS, and, really, health IT played a fundamental role in getting that pandemic under control.

GE Healthcare is providing industry leadership in the transformation of the healthcare industry. In addition to co-forming Bridges to Excellence and the Leapfrog Group, GE has also been active in the formation of standards for system interoperability. Historically, GE played a leadership role in the formation of the DICOM standard for interoperability of diagnostic imaging devices and information systems. This advance accelerated the adoption of imaging technology, while eliminating the second-highest operating expense for hospitals: film. As a result, images can be shared and transmitted globally regardless of the vendor system utilized. The EHR Vendor Association, a group of 39 of the largest EHR vendors today, had that same goal in mind, translated to the electronic medical record.

Today, there are four specific recommendations that GE Healthcare would have for this body:

One, to continue support and expand pay-for-performance models of reimbursement, which are necessary to promote quality over quantity of care.

Two, facilitate the continuation of industry interoperability efforts through fair and transparent collaboration among private- and public-sector stakeholders in the AHIC process.

Three, continue to be a strong proponent of RHIOs in health information exchanges by appointing a strong and effective successor to Dr. Brailer and adequately funding the Office of National Coordinator. It sent a very bad message to the industry when David's office was not originally funded.

And, four, most importantly, we believe creating market-based incentives that allow physicians to choose a certified EMR system that best meets the needs of their practice.

On behalf of GE Healthcare, Mr. Chairman, I'd like to thank you for the opportunity to express the views of GE.

[The prepared statement of Mr. Raymer follows:]

PREPARED STATEMENT OF MICHAEL RAYMER, SENIOR VICE PRESIDENT FOR GLOBAL PRODUCT STRATEGY, GE HEALTHCARE

Accelerating the Adoption of Health IT: GE Perspective

Thank you, Chairman Ensign, Senator Kerry and other members of the Subcommittee for the opportunity to testify before you today on behalf of GE Healthcare. My name is Michael Raymer, Vice President of Global Product Strategy for GE Healthcare Integrated IT Solutions.

GE Healthcare Integrated IT Solutions is a leading health IT (HIT) vendor with one of the most comprehensive suites of clinical, imaging, and business information systems available. Through our acquisition of IDX Systems Corporation, we now provide a comprehensive range of cutting-edge global healthcare information solutions, which can accelerate efforts to seamlessly connect clinicians across the continuum of care, from physicians' offices to hospitals, and can help reduce medical errors, improve the quality of care, and streamline healthcare costs.

Our interest in the adoption of HIT extends beyond our role as a vendor of these systems. As a major employer and a healthcare payer, it is critically important that we support initiatives to improve healthcare quality while controlling costs. GE's direct healthcare costs total approximately $2.5 billion annually for our close to 1 million employees and their dependents. Under the leadership of Dr. Robert Galvin, GE was instrumental in bringing together The Leapfrog Group—a consortium of healthcare purchasers dedicated to improving the quality and affordability of care by steering employees to high quality and highly efficient hospitals—and we found-

ed Bridges to Excellence, a multi-employer coalition to reward quality across the healthcare system.

We believe technology will play a key role in supporting more cost-effective, higher quality care—leading to transparent, free flow of information that will lay the foundation for a complete and much-needed transformation of healthcare.

I. The State of Healthcare Today Is Troubling

Healthcare organizations—and the patients they serve—all face the same three challenges: quality, cost, and access.

As the cost of care continues to rise, we are not seeing a corresponding improvement in health status. In 2004 the U.S. spent $1.9 trillion on healthcare—$6,280 per person, equivalent to 16 percent of GDP.[1] By 2015, those numbers are expected to rise to $4 trillion and 20 percent of GDP.[2] On a per capita basis, we spend two and a half times the average for industrialized countries, despite the fact that we have fewer physicians and nurses and shorter hospital stays[3]—and in many cases, worse health outcomes.[4]

In a country with the most advanced medical technology in the world, barely half of Americans get appropriate acute, chronic, or preventive care.[5] This lack of quality is pervasive, and irrespective of age, sex, or economic status. The challenge we face is not just one of providing better care to patients who can pay for it—or those who can't. What we need is fundamental system change to ensure that medical care is safe and effective, that it is based on clinically proven best practices, and that is focused earlier in the disease process.

When we do receive care, it is often duplicative and even dangerous. Medical records are fragmented—Medicare patients see an average of three providers, for example—so that no single provider has an accurate, comprehensive, and up-to-the-minute picture of the patient's condition on which to base critical treatment decisions. As a result, patients are often forced to undergo duplicate tests, which drive up the cost of care while providing no added benefit. With no access to an individual's complete medication history, especially in the context of other factors such as diagnoses and allergies, patients may receive prescriptions for drugs that can have fatal interactions if taken together. Preventable medical errors account for as many as 100,000 deaths every year, and an untold number of serious injuries. A 1997 study in the Journal of the American Medical Association calculated the average cost to the institution of preventable adverse drug events for a 700-bed teaching hospital was $2.8 million per year. This number reflects only increased treatment costs and length of stay—it does not include other costs of the injuries borne by the patient.[6]

And we have seen how paper medical charts are vulnerable to natural disasters such as Hurricane Katrina, that can destroy the lifetime medical histories of hundreds of thousands of people in the blink of an eye.

All of these factors contribute to the continuing upward spiral of healthcare costs, straining employers who are the primary source of health insurance; creating hardships for individuals who are struggling with higher co-pays or who have no insurance at all; and squeezing providers who are facing shrinking reimbursements.

We simply cannot keep doing more of what we've been doing, and expect a different result. Fortunately, much of the roadmap of how we need to change is already apparent. Both vendors and the government have roles to play.

To control costs while also improving health outcomes will require a complete transformation of our healthcare delivery system—one that in large part will be based on information technology. A recent study by the RAND Corporation, cited in the September/October 2005 issue of Health Affairs,[7] estimated that the use of electronic medical records (EMRs) to exchange select patient data across an interconnected U.S. health system could save more than $80 billion a year in healthcare

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[1] Smith C., Cowan C., *et al.,* National Health Spending in 2004, *Health Affairs* 2006; 25:186–196.

[2] Centers for Medicare and Medicaid Services, National Health Care Expenditure Projections: 2005–2015.

[3] Anderson G.F., Frogner B.K., *et al.,* Health Care Spending And Use Of Information Technology In OECD Countries, *Health Affairs* 2006; 25:819–831.

[4] Banks J., Marmot M., *et al.,* Disease and Disadvantage in the United States and in England, *JAMA* 2006; 295:2037–2045.

[5] Asch S.M., Kerr E.A., *et al.,* Who Is at Greatest Risk for Receiving Poor-Quality Health Care?, *N Engl J Med* 2006; 354:1147–56.

[6] Bates D.W., Spell N., *et al.,* The costs of adverse drug events in hospitalized patients, *JAMA* 1997; 277:307–11.

[7] Taylor R., Bower A., *et al.,* Promoting Health Information Technology: Is There a Case for More-Aggressive Government Action?, *Health Affairs* 2005; 24(5): 1234–1245.

costs. By identifying unusual areas of disease outbreak, such a system could also be invaluable in controlling the spread of a natural pandemic, or in recognizing the early stages of a bioterror attack.

II. The Promise of Technology To Predict and Treat Disease Earlier

Care for patients with chronic conditions is a major driver of U.S. healthcare costs, comprising as much as 83 percent of all healthcare spending.[8] In 2003, the cost of treating chronic illness was $510 billion, with estimates that number will rise to $1.07 trillion by the year 2020.[9] Today, almost half of all Americans—133 million people—live with a chronic condition. By 2020, as the population ages, this number will increase to 157 million. This mounting burden can only be mitigated by changing how we treat disease, not just what diseases we treat.

If you break healthcare down into four phases—predict, diagnose, inform, and treat—fully 80 percent of U.S. healthcare spending happens in the treat phase. This is much too late in the disease process to have any impact on improving this country's health status. The earlier we focus on an individual's health—rather than on a patient's disease—the more opportunities we will have to reverse these dangerous trends.

GE's vision of "early health" is a transformative approach, based on the intersection of diagnostics, therapeutics, and information technology. With early health, providers use technology and clinical knowledge to prevent and/or treat chronic diseases in the earliest phases, when health impacts are less severe and effective treatment is less costly.

Better care need not mean more costly care. CHF is the costliest chronic condition among Medicare patients, to the tune of $15.2 billion per year. When Duke Medical Center instituted an integrated program for CHF patients, it found that increased access to outpatient care—in this case, a six-fold increase in cardiologist visits—improved patients' health status markedly. Because there were fewer hospitalizations and shorter lengths of stay when patients were hospitalized, the total cost of care actually dropped by 40 percent, or $9,000 per patient per year.[10]

And yet despite examples such as this, the healthcare system continues to reward providers for the volume of care they deliver, rather than the quality. The way our current system is structured, a provider organization that successfully works with individuals to prevent heart attacks and CHF will not reap the financial benefits—and will, in fact, make less money than a provider organization that treats patients after they have come down with these conditions.

As a company, GE is uniquely positioned at the convergence of advances in life sciences, diagnostics, and information technology to promote the model of early health.

III. The U.S. Healthcare Industry Lags in the One Area That Has Made Every Other Industry Successful: Technology

While other industries have been transformed by information technology, the healthcare industry (especially in the U.S.) remains largely paper-based. Other industries that spent the last decade and a half integrating IT into their core processes have seen measurable productivity growth that is directly attributable to those efforts.[11] Today, bar codes are more common in grocery stores than in hospitals, passengers can book their airline tickets online, and ATMs are interconnected across a continent and around the world—but most healthcare providers still fax paper charts across town, or courier X-ray films, or handwrite (sometimes illegible) medication prescriptions.

Healthcare providers still primarily manage information on paper, with the result that most individuals have fragmented medical records. No single provider has the complete picture of an individual's medical history. More than half of people with serious chronic conditions see three or more physicians concurrently,[12] making coordination of care among primary care physicians and specialists a challenging task. Those without health insurance—who now number more than 45 million[13]—are un-

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[8] Partnership for Solutions, "Chronic Conditions: Making the Case for Ongoing Care," September 2004.

[9] Landro, "Six Prescriptions to Ease Rationing in U.S. Healthcare," *The Wall Street Journal,* Dec. 22, 2003.

[10] Herzlinger R., Testimony before the Committee on Homeland Security and Government Affairs, Subcommittee on Federal Financial Management, Government Information and International Security, May 24, 2005.

[11] Hillestad R., Bigelow J., *et al.,* Can Electronic Medical Record Systems Transform Health Care? Potential Health Benefits, Savings, And Costs; *Health Affairs* 2005; 24:1103–17.

[12] Gallup Serious Illness Survey, 2002.

[13] Source: U.S. Census Bureau, Aug. 2005.

likely to have a primary care physician and instead tend to rely on emergency room care, where clinicians have little or no knowledge of a patient's prior medical history.

Even with the current efforts being made to incorporate IT in healthcare, the U.S. is a dozen years behind other industrialized nations in HIT adoption, and our spending on HIT is a fraction of what other countries have spent to date.[14]

While the technology has been available for decades, adoption and awareness remain low. President Bush became the first American President to address this issue when, in 2004, he signed Executive Order 13335, setting forth the broad charge that every American should have an electronic health record within 10 years. The executive order also established the Office of the National Coordinator for Health Information Technology (ONC). In its first 3 months, through the visionary leadership of the country's first health IT Czar, Dr. David Brailer, ONC drafted a framework for strategic action, outlining four key goals for the use of IT to transform healthcare in the U.S.[15] Interoperability is vital to ONC's strategy to encourage the formation of regional health information organizations (RHIOs) to promote the exchange of medical data among providers. Numerous non-governmental organizations are actively supporting the concept of RHIOs, including the Markle Foundation's Connecting for Health, e-Health Initiative, the Center for Health Transformation, and others.

While the efforts of these organizations have helped to educate both healthcare providers and the general public about the benefits of electronic medical records (EMRs), actual adoption is low. A RAND Corporation study published last year found that only 15 to 20 percent of physician offices and 20 to 25 percent of hospitals in the U.S. have adopted EMR systems.[16]

IV. Measuring the Benefits of HIT Adoption

HIT is crucial to improving the health status of Americans while also reining in skyrocketing healthcare costs. One study analyzing the savings that could be achieved nationally simply by eliminating duplicate testing yielded estimates of $8 billion to $26 billion annually.[17] Another estimated the cumulative net savings from HIT at more than $500 billion over 15 years.[18]

HIT can:

- Help prevent medication errors and other types of medical errors;
- Enable clinicians to collaborate and deliver higher quality care, while reducing redundant tests and other procedures;
- Set a foundation of clinical best practices so that care is more consistent from one institution to another and from one region to another;
- Help clinicians deliver more personalized care, based on the patient's condition and medical history; and
- Provide performance and quality data so that healthcare organizations can better assess and improve their own performance, and so the industry as a whole can become more transparent, allowing consumers to select the highest quality providers.

GE Healthcare provides our customers with services to help them measure the value of their investment in a clinical information system, and to institute workflow best practices that will help them achieve the full potential of that system. Our value on investment team helps customers identify key performance indicators that track both the financial return and improvements in efficiency and quality of care. We also work with our customers to support their use of clinical best practices, change management techniques, and Kaizen (Lean) principles to support greater efficiencies of workflow.

For example, Park Nicollet Health Services, located in the Twin Cities, documented a 50 percent return on investment in its clinical information system. The benefits spanned both inpatient and outpatient environments, including more efficient online documentation, improved registration processes, and decreased need for

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[14] Anderson G.F., Frogner B.K., *et al.,* Health Care Spending And Use Of Information Technology In OECD Countries, *Health Affairs* 2006; 25:819–831.

[15] "The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care," July 21, 2004.

[16] Fonkych K. and Taylor R., "The State and Pattern of Health Information Technology Adoption," RAND 2005.

[17] Walker J., Pan E., *et al.,* The Value Of Health Care Information Exchange And Interoperability, *Health Affairs,* 10.1377/hlthaff.w5.10.

[18] Hillestad, *supra,* n.11.

medical records storage. Park Nicollet is one of about a dozen organizations selected for CMS' pay for performance pilot.

We have also seen how organizations such as the Indiana Health Information Exchange (IHIE) and HealthBridge in Cincinnati are demonstrating the cost savings that can be achieved by providing online access to emergency department data. The amount that participating healthcare institutions pay for this service—which still results in a net savings to them—is enough to fund other health information exchange projects and make both IHIE and HealthBridge self-sustaining. One health system served by HealthBridge has saved $500,000 per year simply from using electronic data exchange instead of photocopying or faxing for delivery of test results.

The reduction of medical errors is another important indicator of the value created by HIT. Every medication order in a hospital goes through a multi-step process of hand-offs involving doctor, nurse, and pharmacist. Almost all medication errors can be traced to one of two stages:[19] ordering—where illegible handwriting can result in the patient being given the wrong medication or the wrong dose of the right medication; and administration—where one patient may be given medication intended for another, or incorrect amounts are administered because packaged unit doses differ from the prescribed dosage.

By replacing handwritten medication orders with an electronic system, Montefiore Medical Center in the Bronx has reduced potential medication errors by 80 percent. Because the system instantly transmits the order from the physician to the pharmacist, Montefiore has also reduced by 2 hours (60 percent) the time lag from when the order is written to when the medication is first administered to the patient.

Bar coding—the technology we take for granted to ensure accuracy at the supermarket checkout stand—is just beginning to be used to ensure the same level of accuracy for inpatient medication administration. At Lehigh Valley Hospital and Health Network in Pennsylvania, every hospital patient wears a bar-coded wristband, and every unit dose of medication is similarly labeled. Nurses scan both bar codes, and the software system performs a final check to ensure the "five rights" of medication administration are present: the right patient receives the right dose of the right drug via the right route at the right time. If any of these don't match up, the system alerts the nurse to a potential error.

Since instituting this system, the institution has prevented 50 potential medication errors per month on an average 30-bed patient care unit. Seasoned nurses were initially skeptical of the technology when it was first rolled out, but having seen the number of errors that were being caught, they became major proponents of the system.

V. Improving the Quality and Cost of Healthcare With Portable Clinical Best Practices

Too much of medical care is still guided by tradition, without a solid evidence-based foundation.[20] The dissemination of new scientific discoveries can take as long as 17 years before they become an accepted medical practice.[21]

As we become better able not just to treat acute disease, but also to diagnose serious illness earlier in its progression—and even to predict who is at greatest risk before the disease process sets in—there is a corresponding obligation to ensure that best practice guidelines are widely disseminated, so that patients in Nevada, Massachusetts, or Texas can all expect to receive the same scientifically proven treatment for the same condition.

The 100,000 Lives Campaign demonstrates the power of adherence to best practices. A project of the Institute for Healthcare Improvement (IHI), the campaign's goal was to prevent 100,000 deaths over 18 months through the uniform application of six practice guidelines at hospitals throughout the country. Last week, IHI announced that it had far exceeded the goal, with an estimate of 122,300 lives saved.

Where evidence-based guidelines do exist, they can be complex documents, not easy to evaluate on the fly while evaluating information from a patient's chart. Incorporating evidence-based guidelines into clinical information systems can help get life-saving protocols into common practice much faster, while at the same time helping to ensure that they are not inappropriately overused.

Many healthcare organizations struggle to institutionalize best practices so that they can consistently provide high quality care across the organization—or care that is comparable to that at other competing institutions. GE is working on this chal-

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[19] Bates D.W., Leape L.L., *et al.,* Effect of Computerized Physician Order Entry and a Team Intervention on Prevention of Serious Medication Errors, *JAMA,* 1998, 280:1311–1316.

[20] *See, e.g.,* "Medical Guesswork," *BusinessWeek,* May 29, 2006.

[21] Balas, Information Systems Can Prevent Errors and Improve Quality, *J Am Med Inform Assoc.* 2001; 8: 398–399.

lenge in partnership with Intermountain Healthcare, an integrated delivery network (IDN) with 21 hospitals in Utah and Idaho, as well as physician clinics and insurance plans. Intermountain has been recognized 5 years in a row as the Nation's top IDN, and is the winner of numerous national awards for healthcare quality. A report assessing the value of HIT in improving healthcare quality recognized Intermountain among only a handful of institutions leading the development of these systems.[22]

Not coincidentally, Intermountain is able to provide higher quality care at lower cost—27 percent lower than national averages. One of the ways it does this is by combining clinical best practices with computer-based decision support that incorporates data from the patient's medical record.

The example of congestive heart failure provides a useful illustration. When heart attack patients are discharged from the hospital, they can usually benefit from medications such as statins to lower cholesterol and beta blockers to reduce blood pressure, making it easier for the damaged heart to do its work and reduce the potential impact of CHF. Yet at many healthcare organizations, patients are sent home without the appropriate prescriptions.

After Intermountain introduced computer alerts to prompt clinicians about these medications prior to a patient's discharge from the hospital, the institution saw dramatic results. In the first year, the protocol:

- prevented 551 readmissions for CHF;
- saved $2.5 million because of the reduced readmissions; and
- prevented 331 deaths from complications of CHF.

Other GE customers are also using expert rules and clinical decision support to improve patient care and patient safety. Thomas Jefferson University Hospital in Philadelphia, for example, is utilizing an expert rule for pediatric dosing that automatically calculates the correct amount of medication based on the patient's weight, eliminating a common source of potentially dangerous errors.

Our partnership with Intermountain entails encoding evidence-based clinical guidelines in such a way that they communicate with a patient's electronic medical record to deliver appropriate alerts to clinicians with recommendations tailored to each patient's condition. The alerts do not replace a clinician's judgment; rather, they provide the most relevant and reliable information to the clinician at the point of care.

In the early stages, our work with Intermountain will focus on building that organization's best practices into GE's Centricity® Enterprise clinical information system. Ultimately, however, our goal is to devise an interoperable encoding mechanism so that any institution's guidelines can be integrated with any vendor's clinical system. We have already been able to demonstrate proof of concept that such integration is possible using a clinical guideline for pediatric immunizations. This work, which has been partially funded by a grant from the National Institute of Standards and Technology (NIST), also involves other prestigious healthcare institutions, including the Mayo Clinic, Stanford University, and the Nebraska Medical Center.

VI. Overcoming Barriers to HIT Adoption

Three major factors that impede adoption of HIT are the current lack of interoperability, cost and complexity of implementing the systems, and resistance to change.

In order to evolve toward the promise of early health, we must begin to put the enabling framework in place today. Physicians are the backbone of our healthcare system. The evolution begins with our Nation's physicians being assured that they will have the freedom to choose the best facilities and services for their patients, the ability to dictate their own workflow and protocols and the ability to share patient data with other systems. True interoperability is absolutely critical to achieve these physician requirements and the Federal Government's efforts are key in this endeavor. The biggest challenge we face is the current lack of interoperability in healthcare IT systems. Interoperability for the healthcare industry is a challenging undertaking. Redundant standards, inconsistent implementations of standards, incomplete data models and terminology make the task complex, time consuming and costly. However, technical complexity is only a part of the problem. Interoperability is not a reality today because the incentives are wrong for those who could drive it. IT vendors' incentive under the current market structure is to lock-in providers into their own proprietary solutions. In this structure it is economically rational for them to invest money in proprietary solutions rather than to invest in interoperability. The providers' incentive is to choose the most cost effective solution. Today,

[22] "Costs and Benefits of Health Information Technology," AHRQ Publication No. 06–E006, April 2006.

once a provider is "locked-in" to a proprietary solution, the interoperability and switching costs are so high that the provider likely will not change a vendor after the initial vendor decision is made. Interestingly, this system lock-in works to the advantage of providers and/or health plans if it has the effect of locking up a referral network.

For many healthcare organizations, especially small physician practices, the initial costs of implementing EMR systems can be prohibitive. These costs include not only purchasing and installing the system itself, but also lost revenue resulting from reduced patient visits while providers spend time learning the system. Organizations that choose to make this initial investment find that they can recoup the cost within, on average, two and a half years—and even begin to see significant positive benefits after that.[23]

There is active debate as to how best to reduce the barriers to adoption. As the custodian of the public health, and the largest employer and healthcare payer in the country, the Federal Government has a fiduciary responsibility to provide incentives for HIT adoption.[24] Legislative approaches currently under consideration include increasing tax breaks for physicians who invest in HIT (H.R. 4641, the ADOPT HIT Act, introduced by Rep. Phil Gingrey, R–GA), and relaxation of the Stark and anti-kickback provisions (H.R. 4157, the Health Information Technology Promotion Act, sponsored by Rep. Nancy Johnson, R–CT, and Rep. Nathan Deal, R–GA).

PeaceHealth, an integrated delivery network serving three states in the Pacific Northwest, is already using an ASP model to share its clinical information system with unaffiliated physicians in its service area. This model enables providers to lease remote access to an EMR system without the need for investing in dedicated hardware.

The nurses' experience at Lehigh Valley demonstrates the other challenge of integrating information technology into the culture of healthcare. Experienced clinicians in all areas of the healthcare organization can be highly resistant to new technologies that threaten their established patterns. Changing workflows—the way providers practice on a day-to-day basis—is not an easy task, and yet it is absolutely essential to realizing the benefits of HIT. The transformative impact of HIT comes not from transferring existing processes from paper to computer screens, but from thoroughly analyzing those processes and using technology as a means to achieve greater efficiencies and improve the quality of care. Institutions that have failed in their implementation of HIT have largely done so because they underestimated the cultural component of the project.

Another important culture change that needs to happen is addressing patients' concern about the privacy of their medical records. Although digital records are in many ways more secure than paper—using, for example, biometric login and the automatic creation of audit trails that make it possible to detect unauthorized access—incidents such as the recent theft of 26.5 million VA employment records serve to undermine public confidence in the security of electronic data of any kind.

As happens with any new technology, HIT has evolved ahead of standards that enable competing systems to easily share data. Think about the early days of ATMs, when a customer could enact a transaction only at an ATM machine owned by the bank where he or she had an account. Today, we can get money from an ATM halfway around the world. Just as standards enabled different institutions' ATMs to talk to each other, we need interoperability standards to enable the appropriate sharing of medical information. Although the content of healthcare records is significantly more complex, ATMs and other technologies demonstrate that the technological aspects of interoperability are clearly achievable.

Here, too, overcoming cultural attitudes about competition and collaboration is critical to success. Because healthcare is primarily local, competing organizations are especially sensitive about sharing information lest they lose their advantage in the marketplace.

VII. Delivering on the Promise of an Interoperable Digital Healthcare System

In order to create a comprehensive lifetime patient record that will support the delivery of patient-centered care, we first need to ensure that the IT systems and infrastructure are capable of ensuring that physicians will have a portable health record and that the physicians have the freedom to associate with any facility, service provider or other physician. The next challenge is to determine who will pay for the IT systems for physicians use.

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[23] Miller R.H., West C., *et al.,* The Value Of Electronic Health Records In Solo Or Small Group Practices, *Health Affairs* 2005; 24:1127–1137.

[24] Taylor R., Bower, A. *et al.,* Promoting Health Information Technology: Is There a Case for More Aggressive Government Action:, *Health Affairs,* 2005; 24:1234–1245.

Lack of interoperability—the inability to share data across different systems and among different institutions—can prevent realization of the benefits of EMRs on a community-wide, regional, or national basis. Many medication errors occur because patient information exists in different silos, with no communication between them. When patients cross the boundary, for example, from inpatient to ambulatory care, complete medical records may not make the transition with them. As a result, patients may receive duplicate or conflicting prescriptions, with sometimes fatal results. These boundary errors can be avoided with technology that eliminates the boundaries among healthcare providers.

Unfortunately, market incentives are not aligned for vendors to promote interoperability. Instead, the burden of multiple standards falls on the end users (providers), while the benefit—in terms of cost savings—largely accrues to payers.[25]

The evolution of the U.S. cellular telephone industry provides an illustration of this. In the early days, regional cell phone carriers used different standards. Phones that used CDMA would not work in an area covered by TDMA, and vice versa. Once customers made a purchase decision, they were effectively locked into that vendor's telecom IT infrastructure. The burden of bridging different standards fell on the customer—who would have to buy multiple handsets or more-expensive dual- or tri-mode phones in order to have broader access. The industry's initial response to consumer demand for greater accessibility was more affordable handsets that would work with multiple standards. Consumers were still locked in to a specific carrier, however, until the FCC stepped in with regulations on number portability, enabling customers to keep their phone number when they changed carriers. Similarly, Federal policies and regulations for HIT can either create or break down barriers to transparency and choice.

Once a healthcare organization selects an HIT system—a decision often based on cost as much as on other criteria—it is locked into that decision. The cost and disruption of replacing these systems is simply too great. In the same way, in the absence of interoperability hospitals can lock in their referral networks by influencing local providers to acquire the same system. When data can be freely shared, regardless of software, it will increase competitiveness in the market.

GE Healthcare is committed to the development of a nationwide health information network as the foundation for improving the quality of care in the U.S. It is crucial that all participants in healthcare—including payers, vendors, and providers—work together to support and evolve to a single set of standards that enable different HIT systems to exchange patient data.

We have a long history of successfully driving open, standard-based data exchange with other vendors. The earliest example is the Digital Imaging and Communications in Medicine (DICOM) standard, which has enabled diagnostic imaging devices and software systems to exchange images and related information regardless of vendor. Diagnostic imaging vendors historically created proprietary formats for the CT or MR images created by their systems. While image exchange was interoperable between systems supplied by the same vendor, that was not the case among systems supplied by competing vendors. This lock-in limited the flexibility of hospital radiology departments to utilize imaging technology in an optimum fashion. Consequently, the radiology community was on the verge of seeking government help to mandate interoperable systems when the diagnostic imaging vendors, through the National Electrical Manufacturers Association (NEMA), and radiologists, through the American College of Radiology and the Radiological Society of North America (RSNA), collaborated to develop the DICOM standard, which became available in 1993.[26] DICOM allowed images to move from system to system, enabled hospitals to centralize storage of images to reduce costs, and led the radiology department to move toward diagnosing images on a computer screen. Consequently, DICOM enabled the creation of today's $2 billion picture archiving and communications systems (PACS) market, and has allowed many hospitals to eliminate the second highest expense in their operating budgets: film. PACS has transformed the workflow within the radiology department, leading to increased efficiency and higher quality of care. Physicians at different locations can consult while simultaneously examining the same images and comparing them with other clinical results to get a more complete picture of the patient's condition.

More importantly, the lesson of DICOM is that market pressure to demand interoperability of HIT vendors is more effective than regulatory remedies. Through the competitive marketplace of allowing radiologists to choose diagnostic imaging systems, the diagnostic imaging industry created an interoperability solution that al-

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[25] Hillestad, *supra,* n.11.

[26] Wiley, G. The Prophet Motive: How PACS was Developed and Sold., *Imaging Economics,* May 2005.

lows complex systems to plug-n-play, and demonstrates how interoperability led to broader and competitive innovation in healthcare.

GE has been a long-term leader in Integrating the Healthcare Enterprise (IHE), an industry-led initiative that is creating a standards-based framework for clinical IT. IHE was established in 1998 by RSNA and the Health Information Management and Systems Society (HIMSS), as the popularity of DICOM led to the desire to improve imaging information exchange beyond the radiology department to other clinical IT systems in the hospital. IHE's interoperability showcases—held at major industry conferences—encourage competing vendors to build and demonstrate data exchange between their products via a collaborative and transparent process. This includes laboratory results, radiology images, medical summaries, and cardiology reports—the very information that today is often still faxed, couriered, or mailed between the majority of healthcare organizations in the U.S.

And GE is one of the leaders in the EHR Vendor Association (EHRVA), a group of the top 39 EHR vendors committed to making EMRs interoperable and to accelerating EMR adoption in hospital and ambulatory care settings. EHRVA is playing a pivotal role in driving standards for electronic health records interoperability, similar to the role NEMA played in the 1990s for diagnostic imaging. Standards for electronic medical records are complex, because they involve multiple types of data, and terminologies that are not 100 percent congruent from one specialty to the next—or even from one hospital to the next.

In February 2005, EHRVA presented to Dr. David Brailer the first roadmap and phased timeline for the interoperability needed to implement a nationwide health information infrastructure (NHIN). The first phase of that roadmap was demonstrated less than a year later at the HIMSS Conference in 2006, with GE joining 37 other IT vendors, including the VA and DOD in showcasing multiple interoperability use-cases. One of the NHIN pilot implementations uses several aspects of the proposed roadmap, and GE and EHRVA are reaching out to other stakeholders to encourage further implementation and convergence of the roadmap.[27]

The roadmap also contemplates that interoperability will be achieved incrementally. As standards become more mature, GE is fully prepared to incorporate them into our products, and we are encouraging other vendors do the same. In the early days of fax machines, there was little value in owning one if there wasn't anyone else you could fax to. Similarly, to be the only vendor implementing interoperability standards benefits no one.

While pursuing technical solutions supporting data exchange is critical to achieving the goal of interoperability, there is only so much vendors can do. HHS Secretary Leavitt, speaking at the January 2006 meeting of the American Health Information Community (AHIC), recognized that there are sociological barriers here that need to be overcome. Even if the technological capacity existed to securely exchange information wherever and whenever it is needed to deliver safe and effective care, providers may be reluctant to participate fully for fear of losing their edge in a fiercely competitive marketplace. That is why it is critical that all of us as stakeholders work together to try to put in place creative solutions that create market demand for interoperability.

VIII. Government's Role and Responsibility

Vendors can advocate for improved interoperability standards and ensure that our products meet those standards as they evolve. We can pioneer new technologies that make clinical best practices both inherent in clinical information systems and portable between competing systems. And we can assist customers in both realizing and measuring the true value that HIT can deliver in terms of both cost and quality of care.

Ultimately, however, our customers still operate in a world of declining reimbursements and a population of increasingly older and more acutely ill patients. Hospital operating margins are declining: according to the American Hospital Association, they were 6.7 percent in 1996 and only 4.6 percent in 2000.[28] Smaller physician clinics are even less able to make an investment in clinical information systems, which can cost, on average, $44,000 per provider initially and $8,500 per provider per year on an ongoing basis.[29]

Our healthcare system still rewards healthcare organizations for the volume of services they provide rather than the quality of outcomes they produce. Except for

[27] The EHRVA interoperability roadmap can be found at *http://www.ehrva.org/docs/roadmap_v2.pdf.*

[28] Statement of the American Hospital Association before the Federal Trade Commission Health Care Competition Law and Policy Workshop, September 9–10, 2002.

[29] Miller and West, *Health Affairs, supra* n.23.

very limited pay-for-performance pilot programs, where providers receive higher reimbursements for instituting quality measures, the beneficiaries of improved outcomes are the payers, not the providers. Investing in HIT can generate a demonstrated return on investment, but the start-up costs are high enough that they are a deterrent to adoption.

In this environment, there are several things government can and must do to improve adoption of HIT:

- Continue to support and expand pay-for-performance models of reimbursement, which are necessary to promote quality over quantity of care;
- Facilitate the continuation of industry interoperability efforts, through fair and transparent collaboration among private and public sector stakeholders in the American Health Information Community (AHIC) and the standards harmonization and nationwide health information network pilot efforts that AHIC oversees;
- Continue to be a strong proponent of RHIOs and health information exchanges by appointing a strong, effective successor to Dr. Brailer, and adequately funding the Office of the National Coordinator;
- Create market-based incentives that allow physicians to choose a certified EMR system that best meets the needs of their practice.

The policy choices we make today regarding adoption of HIT will determine whether existing barriers to portability and transparency of health information are maintained, or whether we will encourage market forces to demand interoperable solutions that will support the delivery of highest quality care.

On behalf of GE Healthcare, Mr. Chairman, I want to express my gratitude for the opportunity to share with you our perspective on accelerating the adoption of health information technology. I would be happy to answer any questions you and the Subcommittee might have.

Senator ENSIGN. Thank you.

Next, we will hear from Mr. Kevin Hutchinson, the President and CEO of SureScripts.

STATEMENT OF KEVIN D. HUTCHINSON, PRESIDENT/CEO, SURESCRIPTS, LLC

Mr. HUTCHINSON. Chairman Ensign, thank you for the opportunity to testify today on behalf of SureScripts on the important topic of accelerating the adoption of health information technology in the United States.

My name is Kevin Hutchinson. I'm the President and Chief Executive Officer of SureScripts. In addition, I'm a member of the Board of Directors of the eHealth Initiative, and a commissioner on the American Health Information Community, appointed by Secretary Leavitt.

Speaking on behalf of SureScripts, I thank the Subcommittee for inviting me to share experiences and conclusions gleaned from our ongoing effort to deploy electronic prescribing connectivity nationwide, and to share our vision of the future.

SureScripts was created to improve the overall prescribing process by focusing on the efficiency, the safety and quality of medication decisions made as part of that process. This is an important point that I'd like to touch on for just a moment.

We've found that, all too often, the popular, but narrowly focused term, "e-prescribing," has caused confusion and misunderstanding about the true scope of what we hope to accomplish for patients and the health professionals who care for them. As with all health information technology, the solution must be comprehensive, taking into account all aspects of the workflow in the provider's office and care setting. The prescribing process is not just the act of writing

a new prescription or a refill request. Moreover, the prescribing process does not begin merely when the physician's pen first touches the prescription pad. Nor does the process end when the pharmacist hands the medication to the patient.

The case for electronic prescribing is compelling. According to the Center for Information Technology Leadership, every year more than 8 million Americans experience adverse drug events. CITL's research estimates that by addressing drug events caused by preventable medication errors, e-prescribing systems, with a network connection to pharmacy and advanced decision support capabilities, can help avoid more than 2 million ADEs annually, 130,000 of which are life-threatening.

By eliminating paper from the prescribing process, e-prescribing has also been proven to offer significant time savings by eliminating the need for phone calls and faxes, allowing prescribers, pharmacists, and their staff more time to care for their patients. A study by the Medical Group Management Association estimated that the administrative complexity related to prescriptions cost a practice over $15,000 a year for each full-time physician on staff. Multiplying that figure by an estimated 527,000 physicians practicing in an office environment reveals an opportunity to save more than $8 billion from conversion to e-prescribing.

Today, more than 90 percent of the Nation's retail pharmacies have now tested and certified their pharmacy applications on the SureScripts network, and every major physician software vendor, whose collective customer base represents over 150,000 prescribing physicians, today have contracted with SureScripts.

We're proud to say that the rate of adoption of electronic prescribing technology is increasing at a rapid rate. In fact, recently, community pharmacies, including NACDS and NCPA, sponsored the SafeRx Award. The annual SafeRx Award recognizes the top ten e-prescribing states in the Nation, along with three physicians in each winning State who have demonstrated leadership through their use of e-prescribing technology. The winning states in 2006 included the home states of several of the Members of this Subcommittee, including Nevada.

But much more needs to be done. The technology exists and is readily available today. The problem is that there are other barriers to the adoption of health information technology. Traditionally, outside of electronic prescribing, these include a lack of interoperable standards, a lack of appropriate financial incentives to adopt technological advances, and a resistance on the part of providers to change the historic modes of operating and workflows.

In implementing our electronic prescribing network, we selected the nationally recognized NCPDP SCRIPT Standard to serve as the foundation for our network. The NCPDP SCRIPT Standard was developed by the National Council for Prescription Drug Programs, or NCPDP, an ANSI-accredited standards development organization. It is our experience that the use of the NCPDP SCRIPT Standard improves patient safety, quality of care, and efficiency, without presenting undue administrative burden on prescribers or pharmacists.

This opinion was further endorsed when the Medicare Modernization Act of 2003 adopted the NCPDP SCRIPT standard as

the standard for electronic transmission of prescriptions for patients under Medicare Part D.

The Medicare Prescription Drug Improvement and Modernization Act of 2003 required the Secretary of Health and Human Services to conduct a 1-year pilot project in 2006 to test the standards that will provide for the HIPAA-compliant transmission on a real-time basis with information on eligibility and benefits, medication history, and other prescription information. The Secretary is obligated to report to Congress the results of the pilot programs by April 2007. SureScripts was awarded a grant by the Agency for Healthcare Research and Quality to conduct one of the pilot programs, and we are providing pharmacy connectivity in three other programs.

The pilot programs will play an important role in further increasing the interoperability of health information technology. There are several bills pending before Congress related to the adoption of health information technology. The time is now for the adoption of meaningful legislation that will promote health information technology, as well as the President's goal of making electronic health records available to all Americans by 2014.

We support legislation that would codify the Office of the National Coordinator of Health Information Technology, encourage the adoption of interoperable standards by a certain date, provide financial assistance, whether through grants, pay-for-performance payments, loans, tax incentives to providers who adopt health information technology, that meet certain standards, create exceptions and safe harbors to the anti-kickback statute in what is commonly referred to as the Stark Law, to encourage the adoption of healthcare technology, all while protecting against the abuse that those statutes were enacted to address. Further standards developed to encourage interoperability of health information systems across a broad spectrum is certainly needed.

In addition, we believe that there are a number of stakeholders who have an interest in promoting health information technology and the safety of efficiencies that come with it. And, in particular, stakeholders are willing to fund technology necessary to promote electronic prescribing. Accordingly, we wholly support the Government's current attempts to provide a clear framework in which the stakeholders, with the financial resources to promote the electronic healthcare infrastructure, may donate hardware, software, training, and other services in order to foster and promote the implementation of health information technology.

For instance, because of the value that laboratories convey in the data they transmit, they pioneered the provision of secure, efficient IT solutions in order to transmit laboratory tests to physician offices. These same tools could be expanded to include additional clinical functions, like e-prescribing.

Much work has been done, and there is enormous momentum, both in the public and private sectors, with respect to the adoption of health information technology, but much more needs to be done, and lives are at stake. We applaud the leadership that Secretary Leavitt and Dr. David Brailer have demonstrated in this area, and we are thankful for the Subcommittee's attention to this very important national healthcare and security issue.

We, at SureScripts, thank the Subcommittee for the opportunity to share our experiences with respect to electronic healthcare.

[The prepared statement of Mr. Hutchinson follows:]

PREPARED STATEMENT OF KEVIN D. HUTCHINSON, PRESIDENT/CEO, SURESCRIPTS, LLC

Chairman Ensign, Ranking Member Kerry, and distinguished Subcommittee Members, thank you for the opportunity to testify today on behalf of SureScripts on the important topic of accelerating the adoption of health information technology in the United States.

My name is Kevin Hutchinson, and I am the President and Chief Executive Officer of SureScripts. In addition, I am a member of the Board of Directors of the eHealth Initiative, and I am a commissioner, appointed by Secretary Leavitt of Health and Human Services, to the American Health Information Community.

Speaking on behalf of SureScripts, I thank the Subcommittee for inviting me to share our experiences and conclusions gleaned from our ongoing effort to deploy electronic prescribing connectivity nationwide through the SureScripts Electronic Prescribing Network,™ and to share our vision of the future.

SureScripts was created by the National Community Pharmacists Association (NCPA) and the National Association of Chain Drugs Stores (NACDS) in 2001. Our mission is to improve the overall prescribing process and to ensure, among other things, neutrality, patient safety, privacy and security, and freedom of choice of a patient's choice of pharmacy and a physician's choice of therapy. Under the leadership and with the backing of the pharmacy industry, SureScripts has created an open, neutral, and secure information system that is compatible with all major physician and pharmacy software systems.

SureScripts was created to *improve the overall prescribing process* by focusing on the efficiency, safety, and quality of medication decisions made as part of that process. This is an important point that I would like to touch on for just a moment. We have found that all too often, the popular but narrowly focused term "e-prescribing" has caused confusion and misunderstanding about the true scope of what we hope to accomplish for patients and the health professionals who care for them. As with all health information technology, the solution must be comprehensive, taking into account all aspects of the workflow in the providers' office and care setting. The prescribing process is not just the act of writing a new prescription or a refill request. Moreover, the prescribing process does not begin merely when the physician's pen first touches the prescription pad, nor does the process end when the pharmacist hands the medication to the patient.

Looking at the prescribing process from the standpoint of the physician, one can see there are numerous indispensable steps that occur before the creation of the prescription. The patient's chart is pulled and reviewed, the patient is interviewed and examined, a diagnosis is decided upon, and a course of therapy is contemplated and then decided upon. If it is decided that medication therapy is an appropriate choice for the patient, it is at this point that a prescription is created and noted in the patient's chart.

When it comes time to authorize a refill renewal request for the patient, many of these activities are repeated. All in all, considerable time, effort, expertise, and judgment are invested in these activities, and we believe there are several points in the process that can be improved by a comprehensive and interoperable health information technology solution beyond the simple act of generating a prescription.

At the pharmacy end, much more is involved in dispensing a prescription medication than simply placing tablets or capsules in a vial and handing the vial to the patient. You would be hard pressed to find a pharmacy anywhere in the United States that does not store all of its patient records electronically today. Electronic pharmacy patient records include allergies and existing medical conditions. Prescription insurance information must also be entered and updated periodically. Upon receipt of a prescription for a patient, the prescription information also is entered in the pharmacy computer, which immediately performs a drug interaction check against medications listed in the patient's pharmacy record. Once the pharmacist has reviewed any potential drug interactions flagged by the pharmacy system, the prescription is billed to the insurer; during the billing process an additional interaction check is performed by the pharmacist against the insurer medication records; any resultant payer issues, whether financial, claim, or clinically related, are resolved by the pharmacist; the prescription is dispensed to the patient; and the patient is counseled on its use by the pharmacist. In the future, pharmacies and pharmacists will play a much greater clinical role in the care of the patient, pro-

viding medication therapy management services and assisting in medication adherence and reconciliation programs.

My point in going into all of this detail is to emphasize to the Members of the Subcommittee that our goal as a nation, and certainly ours as a company, must be to *improve the overall prescribing and care giving process.* From our perspective, to focus too narrowly on just the act of generating a prescription and transmitting it to a pharmacy ignores many opportunities to enhance the level of safety and quality of health care delivered to patients.

The case for electronic prescribing is compelling. According to the Center for Information Technology Leadership (CITL), every year, more than 8 million Americans experience Adverse Drug Events (ADEs). CITL's research estimates that, by addressing ADEs caused by preventable medication errors, e-prescribing systems with a network connection to pharmacy and advanced decision support capabilities can help avoid more than 2 million ADEs annually—130,000 of which are life-threatening.

By eliminating paper from the prescribing process, e-prescribing has also been proven to offer significant time-savings by eliminating the need for phone calls and faxes, allowing prescribers, pharmacists, and their staff more time to care for their patients. A study by the Medical Group Management Association's (MGMA) Group Practice Research Network (GPRN) estimated that administrative complexity related to prescriptions costs a practice over $15,000 a year for each full time physician on staff. Multiplying that figure by an estimated 527,000 physicians currently practicing in a physician office environment and prescribing medications in the United States reveals an opportunity to save more than $8 billion from conversion to e-prescribing.

SureScripts was founded in late 2001. During its first 2 years, the Company focused on development of its technology necessary to transmit prescription information electronically. The Company's services were first put into production, sending and receiving electronic prescription transactions, in January 2004. Today, more than 90 percent of the Nation's retail pharmacies have now tested and certified their pharmacy applications on the SureScripts Electronic Prescribing Network, and physician software vendors whose customer base represents over 150,000 prescribing physicians today have contracted with SureScripts, and most have completed the process of certifying their applications on the SureScripts Electronic Prescribing Network. The remaining physician software vendors contracted will complete certification by the end of this year.

The first step for improving the prescribing process was focused on new and renewal requests, and accompanying response messages. We have now started rolling out Step 2 to include other prescription messages, including a message confirming that a prescription has been dispensed, known as the prescription fill, and messages related to change requests. The prescription fill message can be used to let physicians know when patients pick up their medications or let a patient know their prescription is ready to be picked up. We also are rolling out the exchange of patient medication history between pharmacies and physicians, and formulary/eligibility messages between payors and physicians. All of this information, delivered in a secure and private manner to the point of care, will make the healthcare delivery system more efficient, more cost effective, and will save lives.

We are proud to say that the rate of adoption of electronic prescribing technology is increasing at a rapid rate. In fact, recently, community pharmacies, including NACDS and NCPA, sponsored the SafeRx Award. The annual SafeRx award recognizes the top ten e-prescribing states in the nation, along with three physicians in each winning state who have demonstrated outstanding leadership through their use of e-prescribing technology. The winning states in 2006 included the home states of several Members of this Subcommittee, including Nevada, Massachusetts, Virginia, and Florida.

But much more needs to be done. The technology exists and is readily available today. The problem is that there are other barriers to the adoption of healthcare information technology. Traditionally, outside of electronic prescribing, these include a lack of interoperable standards, a lack of appropriate financial incentives to adopt technological advances, and a resistance on the part of providers to change the historic modes of operating and workflows.

In implementing our electronic prescribing network, we selected the nationally recognized NCPDP SCRIPT Standard to serve as the foundation for our network. The NCPDP SCRIPT Standard was developed by the National Council for Prescription Drug Programs, or NCPDP, an ANSI-accredited standards development organization, to facilitate the electronic, bidirectional transmission of prescription information between prescribers and pharmacies. It is our experience that the use of the NCPDP SCRIPT Standard improves patient safety, quality of care, and efficiency,

without presenting an undue administrative burden on prescribers and pharmacists. We believe that NCPDP SCRIPT is the best standard to meet the e-prescribing needs of patients and the physicians and pharmacists who serve them. This opinion was further endorsed when the Medicare Modernization Act of 2003 adopted the NCPDP SCRIPT standard as the standard for the electronic transmission of prescriptions for patients under Medicare Part D.

The NCPDP SCRIPT Standard was developed through a consensus process among community pharmacy organizations, pharmacy software vendors, database providers, and other stakeholders. Currently, the standard addresses the electronic transmission of new prescriptions, prescription refill requests, prescription fill status notifications, formulary lookups, cancellation notifications, and medication history exchange—the nuts and bolts of e-prescribing, if you will.

Future enhancements will address other possibilities that may include patient eligibility, compliance, lab values, diagnosis, disease management protocols, patient drug therapy profiles, and/or prescription transfers.

The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 required the Secretary of Health and Human Services to conduct a 1-year pilot project in 2006 to test the standards that will provide for the HIPAA-compliant transmission, on a real-time basis, of information on eligibility and benefits, medication history, and other prescription information. The Secretary is obligated to report to Congress the results of the pilot programs by April 2007. SureScripts was awarded a grant by the Agency for Healthcare Research and Quality to conduct one of the pilot programs, and we are providing pharmacy connectivity in three other programs. The pilot programs will play an important role in further increasing the interoperability of health information technology.

There are several bills pending before Congress related to the adoption of healthcare information technology. The time is now for the adoption of meaningful legislation that will promote healthcare information technology as well as the President's goal of making electronic health records available to all Americans by 2014. We support legislation that would:

1. Codify the Office of the National Coordinator of Health Information Technology.
2. Encourage the adoption of interoperability standards by a certain date.
3. Provide financial assistance, whether through grants, pay-for-performance payments, loans, or tax incentives, to those providers who adopt healthcare information technology that meet certain standards.
4. Create exceptions and safe harbors to the anti-kickback statute and what is commonly referred to as the Stark law to encourage the adoption of health care technology, all while protecting against the abuse that those statutes were enacted to address.

Further standards development to encourage the interoperability of health information systems across a broad spectrum is certainly needed. We encourage the Congress to help facilitate and encourage the standards setting process. The private sector has the expertise and capability to develop standards as necessary, and the private sector has the capability to react to market conditions in an effective, yet prudent, manner to revise and update standards as the circumstances warrant. A collaboration between the public and private sectors to adopt interoperability standards on a timely basis is key to the widespread adoption of health information technology.

The implementation of healthcare information technologies requires a capital commitment on the part of pharmacies, physicians, and other providers. Physicians in particular might not always be in a position to devote the capital resources necessary to implement the software and hardware needed to permit electronic prescribing. In addition, funding to support efforts by pharmacies to implement new patient care tools, such as medication therapy management and new medication adherence/compliance approaches, is necessary. Accordingly, we encourage governmental financial incentives to promote and foster the adoption of healthcare information technologies that satisfy certain standards, including those of interoperability.

In addition, we believe that there are a number of stakeholders that have an interest in promoting healthcare information technology and the safety and efficiencies that come with it, and in particular such stakeholders are willing to fund the technology necessary to promote electronic prescribing. Accordingly, we wholly support the government's current attempts to provide a clear framework in which the stakeholders with the financial resources to promote the electronic healthcare infrastructure may donate hardware, software, training, and other services in order

to foster and promote the implementation of electronic healthcare information technology. For instance, because of the value that laboratories convey in the data they transmit, they pioneered the provision of secure, efficient IT solutions to order and transmit laboratory tests to physician offices and hospitals throughout the country. These same tools could be expanded to include additional clinical functions like electronic prescribing at low or no cost to a physician. As the Administration and Congress seek to expand the permissive donation of healthcare information technology, we strongly recommend that laboratories be included among the list of permissible donors to facilitate the exchange of their current offerings (*i.e.,* lab test requisition and results) as well as other healthcare information.

Any discussion and legislation about healthcare information technology must address privacy and security of patient data as well as user authentication requirements. There must be adequate laws regarding the privacy and security of healthcare information, vigorous enforcement of those laws, and the public must have faith and confidence that the laws will protect their privacy and the security of their information. Privacy and security is an important policy matter that must be addressed. The HIPAA Privacy Rule is the benchmark for patient privacy, and establishes the minimum standards for the protection and security of personal healthcare information. Many states have laws that go further than HIPAA. While we applaud the efforts of the states to maximize the protections afforded to their citizens, the reality is that the patchwork of Federal and state privacy laws, both statutory and common law, creates a barrier to the rapid adoption of healthcare information technology in the United States. In order to identify the various applicable laws and assess the impact the various laws have on health IT adoption, the Health Information Security and Privacy Collaboration, a partnership consisting of a multi-disciplinary team of experts and the National Governor's Association, pursuant to a contract with the Department of Health and Human Services, will work with 34 states and territories to address variations in state laws that affect privacy and security, and pose challenges to interoperable health information exchange. We believe this is an extremely important effort, and are pleased with the Federal and state collaboration in this effort.

The adoption of healthcare information technology not only is a matter of the Nation's health, but we believe it is also a matter of national security. There is an acute need for reliable healthcare information to be available to healthcare providers in the event of a national emergency, whether man made, such as a terrorist attack, or caused by nature, such as a hurricane or an influenza pandemic. The experiences after Hurricane Katrina exemplify the acute need for healthcare information to be readily available to care givers throughout the Nation. Hurricane Katrina destroyed millions of medical records, and approximately 40 percent of the 1.5 million evacuees were taking a prescription drug. Many of these evacuees fled their homes and were displaced without knowing what drugs they were taking, or their medication regimes. Following Hurricane Katrina's landfall near New Orleans last August, a group of private and public health and information technology experts created *www.KatrinaHealth.org,* an online service for authorized health professionals. The website provided access to evacuees' medication information in order to renew prescriptions, prescribe new medications, and coordinate care. *KatrinaHealth.org* provided authorized users with access to the medication history of evacuees who lived in the areas affected by Hurricane Katrina, with data or prescription information made available from a variety of government and commercial sources. Sources included electronic databases from community pharmacies, government health insurance programs such as Medicaid, private insurers, the Veterans Administration, and pharmacy benefits managers in the states most affected by the storm.

Privacy and security were central to the design of *KatrinaHealth.org.* KatrinaHealth was accessible only to authorized healthcare providers and pharmacists who were providing treatment or supporting the provision of treatment for evacuees. In addition, consistent with many state privacy laws, highly sensitive personal information was filtered from the site.

This site was implemented after the fact, in response to the Hurricane—and we were pleased to play a role in this effort, but almost 1 year later, and now 21 days into the 2006 hurricane season, while we and others have the technology in place to replicate these efforts immediately upon the occurrence of another national emergency, there are insufficient policies and procedures in place to quickly operationalize the system in an effective and meaningful manner in the event of another national emergency.

Much work has been done, and there is enormous momentum both in the public and private sectors with respect to the adoption of healthcare information technology. But much more needs to be done—and lives are at stake. We applaud the leadership that Secretary Leavitt and David Brailler have demonstrated in this

area, and we are thankful for the Subcommittee's attention to this very important national healthcare and security issue. We at SureScripts thank the Subcommittee for the opportunity to share our experiences with respect to electronic healthcare, and it would be my pleasure to answer any questions that you might have.

Senator ENSIGN. Thank you for your testimony.

Before we hear from the next witness, we will take a two minute recess.

[Recess.]

Senator ENSIGN. Now, the Subcommittee will hear from Mr. Terry Ragon, the founder and CEO of InterSystems Corporation.

STATEMENT OF PHILLIP T. "TERRY" RAGON, CEO/FOUNDER, INTERSYSTEMS CORPORATION

Mr. RAGON. Thank you. Good afternoon, Mr. Chairman. My name is Terry Ragon, and I am the founder, owner, and CEO of InterSystems Corporation.

InterSystems is a software company, with offices in 22 countries, providing both database and integration software. In the United States, we are the predominant vendor of database software for healthcare clinical applications. For electronic patient records, more than 1,000 hospitals around the world use our technology, including all of the Department of Veterans Affairs and Department of Defense hospitals, and the Indian Health Service.

There are two lessons that I have learned that I would like to share with the Subcommittee today. First, the choice of technology is critically important, and far more important than vendor size or name recognition. And, second, evolution works better than revolution.

As you may have seen, NBC News recently aired a special report on the radical improvement of care at VA hospitals over the last 25 years, and credited much of that improvement to an extremely sophisticated computer system that has evolved over those 25 years. I am proud to have played a part in that result, and I believe the VA's success illustrates that technology can make a difference, and that evolution, not revolution, usually produces better results in health information technology.

Also illustrating these points over the last decade, the DOD, Kaiser Permanente, and the U.K. National Health Service all embarked upon ambitious projects to write detailed specifications and build replacement systems from scratch. DOD has now concluded that evolving its current systems is a better path, and Kaiser abandoned its project in favor of acquiring a commercially available system. As for the U.K., the *Times of London* recently warned, "The new NHS computer system could be the biggest IT disaster in history." Again, the choice of technology is critically important, and evolution works better than revolution.

As the new millennium approached, some 7 years ago, many organizations rushed to rip and replace all of their legacy systems with a single new system. A high percentage of these projects were, frankly, failures. Companies learned firsthand that they had no choice but to live with their existing systems, even as they endeavored to move forward and modernize.

Installing an electronic medical records system at a hospital has traditionally meant selecting a comprehensive product that re-

places many of the existing departmental systems, even if those applications are functioning well and beloved by their users. It's as if, to add a sundeck on your house, you had to tear down the whole house, including the foundation. Rip-and-replace strategies are extremely difficult, very expensive, and often lead to failure, as the U.K. is discovering.

I believe the future lies with a different strategy in which a medical records system is built as a new type of application that sits on top of existing departmental applications and glues them together.

To facilitate this approach, a new generation of technology is required, which we have built, and others are building. This new technology makes it simpler to create such composite applications and connect them with the organization's existing systems.

This need for interoperability within a hospital, to share information among departments, is strikingly similar to the emerging need to share information between organizations. The same technology we built for connecting an organization is also being used to link organizations into regional and national entities. For example, in the Netherlands our technology is being utilized to link all hospitals, clinics, and physician practices nationwide.

We are now building a health information exchange product designed specifically for regional and national health records.

What should the Federal Government's role be in this area?

A lack of standards for interoperability clearly inhibits the sharing of medical data. It also inhibits health surveillance and other important public health projects. I believe the government can be, and is being, extremely helpful in establishing standards for interoperability, and I fully support the work of Dr. Halamka.

However, standards also serve to limit innovation and inhibit the adoption of improvements. Therefore, I would like to emphasize the importance of limiting that standardization to interoperability and not to the specification of what a medical record should be, or what its database should be, or how the information should be structured within a system.

In my opinion, there is no need for the Federal Government to fund the development of medical records software, other than the continued evolution of existing Federal clinical systems, which are working well.

In closing, I would like to emphasize that the technology to achieve affordable and effective electronic health records exists today, and this goal can be more quickly realized through an approach that stresses evolution, not revolution; evolving existing systems to be connected systems.

Mr. Chairman, thank you for the opportunity to testify today, and I look forward to any questions that you may have.

Thank you.

[The prepared statement of Mr. Ragon follows:]

PREPARED STATEMENT OF PHILLIP T. "TERRY" RAGON, CEO/FOUNDER, INTERSYSTEMS CORPORATION

I. Introduction

Good morning, Mr. Chairman, Senator Kerry, and members of the Subcommittee. My name is Terry Ragon, and I am the CEO, founder, and owner of InterSystems Corporation—a private company headquartered in Cambridge, Massachusetts.

InterSystems, which I started in 1978, is a multinational database company with offices in over 20 countries, providing both database and integration software technology to connect enterprises. We specialize in extremely high performance large-scale systems used by tens of thousands of users, but we support systems of all sizes.

In the United States, we are the predominant vendor of database software for health care clinical applications. For electronic patient records (EPRs), more than 1,000 hospitals around the world use our technology including all of the Department of Veterans Affairs and Department of Defense hospitals, the Indian Health Service, and Kaiser Permanente. In fact, all 10 of the top ranked U.S. hospitals, as ranked by *U.S. News and World Report,* are InterSystems clients. Our application partners, who build clinical application products with our software, include Epic Systems, GE, Misys, and QuadraMed, to name a few.

Since I am not a member of any government task force, I am not in a position to report on progress in standards specifications. However, I do have a number of comments on healthcare IT and the state of interoperability.

II. Lessons Learned

Throughout my 28 years leading InterSystems, I have witnessed a fundamental transformation in the way health information is managed, and I have seen both successful and unsuccessful projects. There are two lessons that I have learned that I would like to share with the Subcommittee today. They are:

1. The choice of technology is critically important—far more important than vendor size or name recognition.
2. Evolution works better than revolution.

In some respects software development is much like an artist painting—it is the choice of artist that counts. Hiring additional artists to work on the canvas does not result in it being completed quicker or better—nor does hiring additional people to advise the artist on how to paint. Better paint, canvas, brushes, lighting—better technology—*does* make a difference.

As you may have seen, NBC News recently aired a special report on the radical improvement of care at VA hospitals over the last 25 years and credited much of that improvement to an extremely sophisticated computer system—a system that has evolved over those 25 years and uses our technology as its core database technology. I am proud to have played a part in that result, and I believe the VA's success illustrates that: (1) technology can make a difference; and (2) evolution—not revolution—usually produces better results in health information technology (IT).

Another clear example of these two points lies in the Department of Defense, whose healthcare applications were initially derived from the VA's software in the 1980s. Those applications are based on InterSystems database technology and are still operating reliably in every DOD hospital. Over a decade ago, the Department embarked upon an ambitious program to specify and build from scratch replacement applications using legacy relational database technology. They now recognize the difficulty of such an undertaking and believe that the best path to rapidly create more advanced clinical systems is through thoughtful evolution—and are working with us to do so.

Kaiser Permanente provides another good example of how the choice of technology is important. Kaiser spent many years and hundreds of millions of dollars attempting to develop clinical applications using legacy relational database technology. Eventually, they decided to abandon this internal effort and selected Epic, whose applications are based upon our technology, to deploy their clinical applications, including medical records. Although the deployment is not fully complete, clinicians are now realizing the benefits of sophisticated IT.

As can clearly be seen in the VA, DOD and Kaiser examples, in healthcare evolution works better than revolution and the choice of technology is critically important. Why? Healthcare clinical applications, including EPRs, are quite complex—far more than most commercial applications. They are used by intelligent, dedicated, and demanding professionals delivering care in very sophisticated environments. Doctors expect their clinical systems to be just as sophisticated, and tolerance for errors is non-existent as the penalties for failure can be crushing. While more can

be done, I urge caution in mandating sweeping changes, and I urge recognition that evolution that builds on past successes is more likely to work in a scientific setting.

III. Leveraging Existing Investments

A key dilemma facing many organizations today is "How do I move forward with new technology when I have to live with existing systems that are already embedded in the organization and are doing an effective job of running the business?" As the new millennium approached some 7 years ago, many organizations rushed to "rip-and-replace" all of their legacy systems with a single new system. A high percentage of these projects were failures, either admittedly so or in fact. Companies learned first hand that they had no choice but to live with their existing systems—even as they endeavored to move forward and modernize.

Healthcare organizations share this same dilemma. Installing an EPR at a hospital has traditionally meant selecting a vendor with a comprehensive healthcare product that replaces many of the existing departmental systems such as lab, radiology, and pharmacy, even if those applications are functioning well and are beloved by their users. This "rip-and-replace" strategy in a mature health IT market like the United States is extremely difficult, very expensive, and often leads to failure. In most cases, it is not really what the hospital wants in the first place.

I believe the future lies with a different strategy, in which the EPR is built as a new type of software application called a "composite application" that "sits on top of" existing departmental applications, communicating with the already installed departmental systems. Each system has embedded technology that optimizes the functionality of that particular application, and they are connected to support a connected enterprise.

This approach avoids the massive "rip-and-replace" scenarios that often fail, it is less expensive, and it produces positive results much quicker. It also allows the hospital to continue to use a "best of breed" approach for departmental systems. While the benefits are so overwhelming that it may seem obvious that this is the way to proceed, I can assure you that it is a revolutionary approach in IT.

In essence, this is the real interoperability issue facing healthcare institutions today. "How do I get my systems to work together, sharing information, to achieve a true connected enterprise?"

To facilitate this approach, a new generation of technology is required—which we have built. This new technology (Ensemble) makes it simpler to connect such composite applications with the organization's existing systems, and we have begun to see its adoption over the last year in a number of highly successful projects. This technology allows organizations to retain and leverage their substantial investments while continuing to modernize and enhance functionality.

This need for interoperability within a hospital—the need to share information among departments—is strikingly similar to the emerging need to share information between organizations. There are, however, two additional issues in a regional or national EHR that typically do not occur within a hospital: (1) determining whether or not two patients seen at different facilities are in fact the same patient (which currently involves human intervention due to the lack of a national medical record number), and (2) differing clinical terminology—it's hard to communicate effectively if we don't have a shared vocabulary for diseases, treatments, medications, and so on.

The same technology we built for connecting an organization and supporting composite applications is also being used to link organizations into regional and national entities. For example, in the Netherlands, Ensemble is being utilized to implement a national Electronic Health Record (EHR), linking all hospitals, clinics, and physician practices.

Clearly, the technology to achieve regional and national EHRs exists today—the key questions are how to use such systems and for what purposes. That is why the health industry is currently in a phase of launching pilot projects, known as Regional Health Information Organizations (RHIOS), as experiments.

Because of the volume of opportunities we have seen both in the U.S. and abroad for such regional and national EHRs, we are building a Health Information Exchange product designed specifically for that market. We look forward to better interoperability standards, which we will enthusiastically adopt, but we are not waiting.

This same technology could be easily used to connect VA and DOD health records.

IV. The Role of Government in Electronic Health Records

What should be the Federal Government's role in this area?

The main inhibitions to further adoption of EPRs by individual hospitals, clinics, and physicians is not standardization and certification—it is money and, in some

cases, the usability of the software. However, a lack of standards for interoperability does inhibit the sharing of medical data between facilities to create a regional or national Electronic Health Record (EHR). A lack of interoperability standards also inhibits health surveillance and other important public health projects.

I believe the government can be, and is being, extremely helpful in establishing standards for interoperability, including both technology protocols for communicating and medical content standards.

However, I would like to emphasize the importance of limiting that standardization to interoperability—such as HL7 messaging standards—and not to the specification of what a medical record should be, or what its database should be, or how medical information should be structured within a system. Such specifications are unnecessary, stifle innovation, and encourage costly "rip and replace" strategies that are not in the national interest.

In my opinion there is no need for the Federal Government to fund the development of EPR or regional EHR technology. The key enablers already exist, and we, along with other companies, are already building and deploying such products. Rather, the Federal Government should continue to facilitate evolutionary improvements to existing systems, especially to Federal clinical systems within the Veterans Administration, Indian Health Service, and Department of Defense, and support RHIO pilot projects that can demonstrate interoperability and provide "proof of concept" validation. Importantly, these pilot projects can be accomplished through limited, targeted funding, and do not require massive capitalization. Ultimately, Federal funding of a national EHR may be appropriate, but not today.

One factor that limits the utility of an EHR is that regional EHR systems rely upon a human to determine if two patients seen at different facilities are really the same patient. While the computer can make estimates of the likelihood of it being the same person, in the absence of a unique nationwide medical record number, human intervention is likely to be a continuing requirement. Other countries are actively considering the establishment of national medical record numbers for their citizens and, while I do not have a formal position on this issue, it is something that the Subcommittee may want to explore further.

In short, while the Federal Government has an important role to play, I believe it is already providing necessary and effective support.

V. The U.K. Experience

As the Subcommittee considers avenues to accelerate the adoption of health information technology, I would like to caution against the approach taken in the United Kingdom (U.K.) over the last few years, which is an example of how well intentioned public policy can produce extremely counterproductive results. A few years ago, the U.K. government concluded that improving health IT was simply a procurement problem that required the participation of big public companies. They divided the country into several regions, appointing a large well-known company for each region even though those companies often had little or no expertise in implementing complex healthcare systems.

Rather than selecting existing software products, detailed specifications for new systems were created. The systems to be installed became huge development projects with the objective of "ripping-and-replacing" all existing systems, even those legacy systems that were functioning well. Software development and delivery is well behind schedule.

The results have been poor for everyone involved. Health IT in the U.K. has been stagnant for years. Clinicians and patients are seeing no significant benefit and little in the way of new systems, large sums of money have been wasted, and vendors have reported huge loses. The companies who were previously providing successful health IT solutions have been frozen out of the market, and they are either no longer in business or have been damaged. A concurrent effort to connect U.K. hospitals, clinics, and doctors into a national EHR has met with a similar fate.

The difficulties with this approach are becoming more evident each day. Cost estimates for completing the project range from £15 to 30 billion and the *Times of London* recently warned that "the new NHS computer system could be the biggest IT disaster in history."

I would argue that the lessons to be learned from the U.K. experience are essentially what I have stated: (1) that evolution works better than revolution; (2) that prior success in healthcare is critical in vendor selection; (3) that existing systems that are functioning well should be leveraged; and (4) that embarking on massive development projects when the needed technology already exists is counter-productive and a bad use of taxpayer dollars. Most importantly, the U.K. government failed to recognize that the choice of technology is critically important, and it is far more important than vendor size or name recognition.

VI. Conclusion

In closing, I would like to emphasize that the technology to achieve affordable and effective EPR and EHR exists today, and that the EHR vision can be more quickly realized through an approach that stresses "Evolution, Not Revolution." Our Nation has invested substantial resources in legacy systems that continue to provide useful and necessary clinical information. These investments can continue to be effectively leveraged—avoiding the need to discard and replace existing healthcare systems—and system functionality can be enhanced through incremental modernization that connects composite applications to installed departmental systems.

Mr. Chairman, thank you for the opportunity to testify today. I look forward to your questions.

Senator ENSIGN. I want to thank the entire panel, both panels, for their excellent testimony. As you can see, we had a very diverse group testify. I also want to thank my staff for selecting the experts we heard from today. I think the information that was provided is critically important for us to review and consider. It is essential for us to become more knowledgeable about health information technology. Senators and members of the House know very little about this fascinating field. Health information technology is important and it is important to ensure that we get it right.

Mr. Ragon, during your testimony, you mentioned the experiences of the U.K. If we go down the wrong road, and implement health information technology in a wrong manner, we will encounter problems. Healthcare is a vital and important issue. The name of this Subcommittee includes the word "competitiveness." We are in a global economy today. Healthcare is one of the areas that is making America less competitive in the world today. A big reason for this is because health information technology has not been fully incorporated into our healthcare systems. Health information technology will allow healthcare to become more efficient, it will make the delivery of services more cost effective, and it will improve the quality of care.

Mr. Speaker, you talked about the CBO. Interesting, we held a markup in the Senate Budget Committee yesterday. The markup was on Senator Gregg's bill, called SOS, or the Stop Over-Spending Act. One of the amendments I offered to the bill was on dynamic scoring. Unfortunately, the amendment was defeated, 11 to 11, largely along party lines. The arguments that I made in support of the amendment were very similar to some of the things that you have mentioned today. Sometimes the scoring that we use with respect to tax cuts doesn't accurately take into account human behavior. I was making that argument. I used several healthcare issues as examples. I wish I would have had the benefit of a few of your examples for the debate we had on that amendment. It makes no sense that CBO doesn't fully take into account—human behavior when conducting scoring. It appears that CBO says: "OK, this is how much it costs to purchase the health information technology, and that's, therefore, what the cost is." CBO doesn't take into account any of the cost savings that results from improved outcomes. It doesn't take into account the fact that improved care means that we can keep people out of hospitals. It seems to me that if you reduce medical errors, which keeps patients out of hospitals, that there has got to be savings associated with better medicine. That is just common sense. But, you are correct, CBO does not take that into account. And the argument is, that they can't. My amendment

would have required that CBO conduct side-by-side static scoring along with dynamic scoring. The idea was that over time, we would have a few years of data to review and we could then direct CBO how to determine the real cost of policies that we enact into law.

Speaker Gingrich, perhaps you and Mr. Ragon could comment further on this. Mr. Ragon, you have had many dealings with the VA. Do you happen to know the savings that the VA has experienced using their health information technology system? Is there any way to calculate that savings?

Mr. RAGON. To be honest, I'm always suspicious of cost-benefit studies. As the CFO of a company once said to me when we explained, "We could produce some kind of cost-benefit study for you," he said, "Don't bother. We know how to do those ourselves. We can make any project look good."

I believe the importance of the VA system is the unbelievable impact it's had on the quality of patient care. I delivered a similar message in a speech a couple of months ago. Afterwards I had people come up to me, telling me that they called their family members who were veterans of the Vietnam War, and those veterans were just in tears, because of the unbelievable improvement that's occurred. I wandered the hallways in the Bronx VA, back in the 1970s, and it was dismal.

So, I really don't know how to measure this, in terms of cost, but I can tell you that, in terms of quality care, the impact is enormous.

Senator ENSIGN. Actually, now that I think about it, the VA system has probably showed an increase in cost, because more veterans are now using it now, because it's a lot better system.

[Laughter.]

Senator ENSIGN. And because we actually have seen that. But what they don't look at is the total system cost.

Mr. Speaker?

Mr. GINGRICH. Well, you asked a question of—that leads in a couple of directions, and I'll start with the VA example. But what really got me dug into this was a conversation I had with Fred Smith, the founder of FedEx, when we were actually talking about defense modernization, and he made the point that, "The government cannot distinguish investment from cost." And so, the government can't make a calculation of productivity return. And, therefore, he said he could never have financed FedEx under Federal budget rules. And that's what began this particular process.

I don't talk about dynamic or static scoring; I talk about accurate scoring.

Senator ENSIGN. That's what we use——

Mr. GINGRICH. And there's a very important distinction here.

Senator ENSIGN. Yes.

Mr. GINGRICH. And I would say that the challenge you have, if I can disagree slightly about cost-benefit studies—the challenge you have today is that the bias of CBO, which is what Congress delegates to validate decisions about spending—the bias is to say, "In the absence of overwhelming proof, the answer is no." And overwhelming proof is only defined by seven people who are lifetime employees of the CBO.

Now, the first step, I would argue, is to simply create transparency, to insist that—what their scoring baseline is, what their formulas are, what their sources are. The second thing I would do is start holding hearings and bringing in case after case where people say, "Oh, yes, in our hospital, or our company, or whatever, and in our doctor's office—these are our savings." And then to say to CBO, "Disprove it." But why should the burden of proof be on the future, and burden of proof be on innovation, and all of the weight be in favor of a paper-based acute-care transaction system which kills people?

Second, you mentioned competition. I just want to say, as an aside, I would really hope somebody up here would introduce a bill to create an Under Secretary of Health in Commerce. And the reason is, health is actually going to be the largest source of foreign exchange in the 21st century. Health is our greatest net advantage in the world market. Health is something we do better than any other country in the world. Look at the total number of pharmaceuticals, the total number of biologicals, the total number of breakthroughs in health information technology. Frankly, the reason the British system is so messed up is that they decided to pick a British company, for national reasons, that had never done a system like this, over picking an American company that had a track record of doing it. And so, they got national pride and no delivery, for $2.5 billion. I mean, it was a very expensive purchase of the flag. Because the fact is, you go around the world, and the leading producers of health information technology are American, the leading producers of pharmaceuticals are American, the leading producers of medical technology are American, and there is not a single Federal official at a senior level who gets up every day and says, "How do I maximize American sales worldwide? How do I make sure that we're being treated fairly worldwide? How do I make sure that we create the maximum number of earnings?" So, your competitiveness issue is a twofold issue. How do we lower cost and improve life here, and how do we make sure that we're able to compete overseas?

Just one or two other quick things.

When you talk about technology, it's not always complicated. Jeb Bush has created *MyFloridaRx.gov* and *FloridaCompareCare.gov*. And, for the first time, you can go online, you can put in the address or the zip code, and any of the top hundred drugs that are purchased in Florida—and every drugstore comes up, starting with the least expensive. Recently, when we tried it out in Fort Lauderdale, there was a 3-to-1 gap between the least expensive and most expensive drugstore. And we know, from airline experience real markets with real information drive down cost.

Senator ENSIGN. Along those lines, can you comment on combining health information technology with expanded HSAs, health savings accounts?

Mr. GINGRICH. Sure. It's a four-part process. I tell every business—every American, at a minimum, should have an HSA immediately. That's a no-risk beginning health reimbursement account. Every American should have the opportunity to buy a health savings account immediately. And, frankly, TRICARE should offer health savings accounts to entering military, because they're the

healthiest population on the planet. As you long as you exempted all their combat—and say, "We'll take care of 100 percent of any combat-related problems," these 18-, 19-, and 20-year-olds, if they stay for a career, would leave, at 45 or 48, with an amazing health savings account package that would be sitting there, that would be money they could take. In other words, I'm saying, if you don't combine—this is the VA problem—if you don't figure out a way to incentivize behavior, simply making it electronic gets you to the first step, but not the second step.

The third thing you want to do is shift from acute care to prevention, wellness, and early testing. We have a Georgia project on obesity and diabetes at the Center for Health Transformation built off the Bridges to Excellence model. In Cincinnati and Louisville, they are saving $250 per diabetic, net, by having an early training, early mentoring doctor relationship that is a totally different payment model. Can't be scored by CBO, by the way. But if you take those packages, you begin to get a totally different model of behavior.

Let me mention one last thing, because you start—you're going to get into cost presently. We work with MedImpact to take the Travelocity airline model of purchasing and to shift from a co-payment, which is my dollars up front, to an after-payment, which is my dollar comes at the end. And our estimate was that you could take 40 percent out of the cost of drugs. Now, this ought to be an enormous national argument, because I'll guarantee you, in the next 4 or 5 years, the U.S. Congress is going to drift to price controls. And yet, if you would go to a Travelocity model, since we are the largest market on the planet, we should have the lowest costs. That's what's true, by the way, of every other nonregulated, nongovernmentally messed up part of our economy. Big markets lead to lower costs. And I think that that's an example.

Last example. Medicare—CMS currently has a staff project underway to figure out a new model of scoring so they can establish pricing in a way which is utterly irrational. I mean, to have a Republican administration engage in Soviet-style, managed, bureaucratic, centralized decisionmaking is just infuriating. What they ought to be doing is saying, "Let's put all the prices in the country online. And if you want to leave the most expensive health market in the country, and go to a less expensive health market, and you save the government money, we'll pay your travel costs. So, if that means they end up, for example, to take a random case, in Las Vegas, getting their health done while they had 3 days to golf or do whatever else they want to do, you will drive down the cost of Medicare voluntarily by people doing smart things, much faster than you will by having bureaucrats try to out-think the people who want the money.

Senator ENSIGN. Very interesting.

Mr. Hutchinson, you talked about e-prescribing saving a minimum of $8 billion. Is that in direct costs, as far as savings from the physicians' offices, callbacks and things like that? Can you please describe all of the costs that add up to the $8 billion figure?

Mr. HUTCHINSON. Well, this is the Center for Information Technology Leadership's study. And my understanding is that components of that cost are directly related to the adverse drug events and the causes and the healthcare costs associated with those ad-

verse drug events. So, the patient ends up in the emergency room, additional lab tests are needed, additional follow-up visits are needed, all associated with those adverse drug events.

Senator ENSIGN. So, the study examined the total costs?

Mr. HUTCHINSON. I don't believe that it takes into account the administrative costs and the inefficiencies of the system, as associated with refill requests and others. It's strictly associated with adverse drug events.

Senator ENSIGN. I've always thought about the amount of time people spend filling out medical forms in doctors' offices. Not only do patients fill out forms and medical records, but so do nurses and other health care professionals. And, many patients see multiple specialists. A lot of our senior citizens do that. They go to the doctor and they have to fill out the same form time and time again. Somebody has to input that data each time the senior goes to the doctor. The bureaucracy of the private sector in healthcare is enormous. And the idea that CBO can't score the savings from health information technology, is unbelievable. How health information technology can't save Medicare, Medicaid, and other Federal programs money in the long run, is mind-boggling.

Mr. Ragon, let's get back to the VA system, just so we can talk. You talked about this overarching—you talked about not completely replacing everything. You talked about Great Britain—or the VA. In your description, what the VA did, did they put it, like, on top, or did they kind of replace their system just over time?

Mr. RAGON. Well, the VA had no clinical systems at the time, so what a number of people in the VA actually did, was to start a skunkworks project. They weren't supposed to really be doing it. The VA Central Office was opposed. Out in the field of each of the VA hospitals, a number of programming teams each took a particular application; and, over time, each built it up. It was all under the radar screen, because, as I said, they were not supposed to be doing it. But because what they did was highly successful, it wound up being adopted.

More recently, they almost fell into the same trap as everybody else, which is being a victim of their own success. They figured, "Ah, what we really should do," once they became the victors rather than the vanquished, "is, Why don't we scrap what we have and start over, and do it," quote/unquote, "right this time?" So, there has been a lot of pressures over the last 10 years or so to do that, and those efforts actually wound up not working very well. At this point, many in the VA have retrenched and recognized that continued evolution of what they currently have really works better for them.

One of the problems is that once you've built up so much functionality over such an extended period of time, it's hard to just start out from scratch and replace all of that with a system that either works or satisfies people's demands.

Senator ENSIGN. In my earlier conversation with Dr. Clancy, Dr. Halamka, and Dr. Leavitt, we talked about the Stark laws. We also talked about the privacy laws, HIPAA, and various other laws. Dr. Leavitt, I think you mentioned that we can enhance privacy with health information technology. Could you describe that? And, Dr.

Halamka, if you can, could you address this question as well, I would greatly appreciate it.

Dr. LEAVITT. Sure. Thank you.

Privacy is one of the issues that—it becomes kind of a knee-jerk reflex. We hear about, "A hacker did something on the Internet," and people say, "Wow, if the records are computerized, that's going to happen to mine." But, in reality, every day, banking is going on, credit cards are going on, people are buying things. And we're basically using the Internet for financial transactions constantly. It's just a matter of appropriate—not just technology, but properly trained people using the technology.

The way IT can enhance privacy is that a paper record can't tell you who's looked at it. It lays around on a desk. It ends up in the trunks of doctors' cars. When you request a copy being sent to someone else, it's disassembled and fed to a fax machine, document feeders, all 300 pages. With an electronic system, there's an audit trail. Who looked, where was it sent, and you could even selectively disclose—say, just send the relevant information, not bulk feed it to a copier. So, the presence of the audit trail, especially if the consumer has the right to see it—and I think they should—should be able to actually look at the audit trail of who's looked at your record. That introduces a great transparency and a tremendous incentive against abuse.

So, I think that this is something that we need some help with, getting to the consumer the message that your information on paper is really at risk, and, properly implemented, electronic systems can be more secure.

Dr. HALAMKA. Oh, absolutely. I can put on a white coat and walk into any hospital in this country, pick up a paper record, make a Xerox of 17 pages, put them into a PDF and submit them to Google, and no one would have any idea what I have done. But with an electronic system, you can, as has been described, audit every lookup, restrict every lookup. You can, in a hospital, decide, well, if a clerk is registering you for care, they should see your home address and your insurance and absolutely nothing more. If a clinician is seeing you, they see your medications, your allergies, and your problem list; however, certain problems or certain aspects of the record, such as your HIV status or issues of mental health, are segregated in a very highly secure area that requires a break-the-glass approach. At Beth Israel Deaconess, for example, if you go to look up mental health records, you must justify why you need such access. The author of the mental health record is e-mailed that you accessed it, and why. And if you access it inappropriately, you're fired. All of that kind of control, authorization, role-based access, is only possible with electronic systems.

Senator ENSIGN. Very good.

Mr. Speaker, I've been informed that you have an appointment at 4 o'clock on the House side. Before you leave for your appointment, can you comment on health information technology and how it can enhance quality measurements and improve outcomes? Can you also explain why it is important for us to make sure that quality measurement is part of the focus?

Mr. GINGRICH. Well, let me start with the commonly cited Institute of Medicine report that it takes up to 17 years for a new best

practice to reach the average doctor. Combine with that the Institute of Medicine report that up to 9,000 Americans die annually from medication error, not counting the ones that get very sick. And add to that the Institute of Medicine report that between 44,000 and 98,000 Americans a year die in hospitals from mistakes. Those would imply, between them, an opportunity for tremendous quality breakthrough.

If you study Deming and Juran and others who were the authors of "modern quality," if you look at the total production system model, or look at Womack's "lean manufacturing," in every case it requires data. You get data vastly easier when it's electronic. And one—and every hospital system we've talked to at the center, as they gather data, every group of doctors—and currently it's mostly groups of four or more who have done this—as they gather data, you begin to see an evolution. If you were to talk to Kaiser Permanente about how much they're learning because they have access to millions of patients' dataflow in a depersonalized way—and they surfaced Vioxx as a problem much earlier than anybody else because they had so much data. If you were to talk to the VA about how many things they now learn—I mean, just because they have the capacity to analyze it—or if you were to bring in the American Medical Group Association and Don Fisher and look at the best medical systems in the country, all of these are data-driven. Somebody cited, earlier, Intermountain Health, which I guess Carolyn Clancy had cited, as 27 percent less expensive. I think it's generally regarded as one of the three or four most effective places in the country.

To go back to my—to beat my earlier drum as I get ready to leave, imagine if you said to CBO, "If we could get Intermountain to be the standard"—I was once told by the head of Mayo that—Mayo did about 70 percent right—or no, he thought Mayo did—was at about 70 percent of what they'd like to be. He thought most people were at 50 or less. He said, "If we could get everybody else up to 70, get Mayo up to 90, imagine what the health system would be like." Now, that's what we do in manufacturing. That's what we do in lots of other parts of the service industry, is, we actually work at a process of continuous improvement to set new standards. So, imagine you ask for a score over the next 5 years that said Medicare senior citizens deserve to be treated at the Intermountain standard of quality and cost. That would take 27 percent out of the projected costs, while improving how long people live, keeping them out of nursing homes, which would save even more money, and giving them greater independence, because they'd be healthier. Now, that's the kind of dynamic approach that ought to be taken, as opposed to whatever the current backward models are. But that's a very different way to think about it. And I think it's doable.

I think that you've got to get to—but it's two things. It's not best practices. It's this week's best practice. Because you're going to have—I'll just close with this, but it's a really important concept—you're going to have 4 to 7 times as much science over the next 25 years as you had over the last 25. Literal numbers. Now, that means that the flow of new knowledge is going to be so enormous that every week somewhere, somebody's going to be inventing a new better practice. And so, we've got to invent a dynamic model

of continuous improvement, and not get trapped into bureaucracies that make decisions so slowly that, in the name of improvement, we actually guarantee obsolescence. I think it's a very complicated, very important challenge for our generation. And I am very grateful that you all are holding this hearing. I think it's a very, very important topic.

Senator ENSIGN. Mr. Speaker, I would like to share one quick anecdote with you. For those of you who don't know, I practiced veterinary medicine for a number of years. Occasionally, I did some research at the UCLA Medical Center on some of their practices when I was working down in Los Angeles. I found that the same studies that were being conducted in human medicine were also being conducted in veterinary medicine. But, practice implementation was happening much faster in veterinary medicine than it was in human medicine, because we didn't have the same bureaucratic processes put into place about changing best practices. And it happened much more rapidly. And I think it continues, even though costwise, we stay—because we can't afford to buy the new—whether it's PET scans or whatever, we're usually 3, 4, 5 years behind on those kinds of things, but when it comes to actually changing protocols, veterinary medicine is much farther ahead of human medicine, simply because of the bureaucracies that are in place. I think that a big part of this can be changed with the idea of health information technology.

Dr. Halamka?

Yes?

Mr. GINGRICH. One last comment along that line. Having Governor Perdue as a former veterinarian, and you a—I feel like I've now worked with people and they see me as a large dog and approach the conversation from a treatment perspective.

[Laughter.]

Mr. GINGRICH. But let me just say——

Senator ENSIGN. My kids actually read this book called "The Big Red Dog." I don't know why that just came to mind.

[Laughter.]

Mr. GINGRICH.—I ran into somebody in an information technology company the other day in—from Atlanta, and she pulled out of her pocket her dog's electronic record. And she said, "This is standard at my veterinarian." And I just leave you that thought about where we're at on the evolution of these things.

Senator ENSIGN. I guess if human medicine would follow veterinary medicine a little more, we would be OK. Thank you, Mr. Speaker.

Dr. Halamka, I know you've been a practitioner in emergency rooms. There probably is no more critical of an area in medicine than the ER for needing electronic medical records. Can you comment on how health information technology would help you, as an ER physician? For example, you are presented with a patient who has been in a car accident, or brought to the hospital comatose and you don't know why. If that patient had a credit card or a smart card, that would provide you with access to their entire health record, how would that improve the quality of their care?

Dr. HALAMKA. Certainly. Sir, the emergency department is one of the first areas we automated at Beth Israel Deaconess. Imagine

that you've come in, and you have, as you say, a car accident, you're unconscious, but you have several allergies. Well, there are medications I may want to give you that could actually cause more harm, or there are medications you're taking—if I give you a medication, there could be drug-to-drug interactions. Certainly helping even me understand why you're unconscious—are you unconscious because of the accident, or did you have a seizure that led to the accident, or are you a diabetic, and your blood sugar has dropped below 50 and you became unconscious and got into the accident—could radically affect treatment.

Certainly one of the things that's quite helpful to us is to understand cardiac history. We have two and a half million EKGs online in our community, and we can access those, via the Web, securely. So, if a patient comes in with chest pain, I can compare what has happened to this patient since they were last evaluated by a clinician, and get them to the cath lab, if that's necessary, in very rapid time.

So, time and time again, it improves quality, but also it improves the efficiency of the way we deliver care. Our emergency departments are, today, in crisis. The Institute of Medicine issued a report last week on the future of emergency medicine, and it's very clear that without healthcare IT, that emergency care system may very well collapse out of the sheer demand and undersupply.

Senator ENSIGN. Mr. Raymer, the Speaker was just talking about Intermountain Healthcare. Can you comment on what they've done and how they've done it, using your products?

Mr. RAYMER. Well, I think, to make clear, is that what we're doing is working with Intermountain to commercialize some of the work that they did internally. So, Intermountain, for a number of years, has been what the industry—what we call a self-developed shop. And so——

Senator ENSIGN. So, similar to what Mr. Ragon was speaking about, Intermountain Healthcare was an evolutionary project.

Mr. RAYMER. That's correct. So, they had the basis of a commercial product, called the 3M HELP system, and they evolved that over time and became very advanced in the application of decision support to the care delivery workload. And so, much of what they've done is much more advanced than what hospitals routinely do in this country. They look at much more longitudinal history of data, they have much more complex algorithms, like automated weaning of patients off ventilators, which is not really routinely utilized in any hospital in this country. So, what our objective is—is commercially—is to take what has been developed in their location and commercially package that and make that available to the typical community hospital that does not have the informatics staff to make that possible and attainable.

Senator ENSIGN. Mr. Raymer, I would like you to comment on what Mr. Ragon said about replacing systems that people were comfortable with. Have you found that employees reject new systems, or has your experience been positive? One of the common things that I hear is that just because a product is electronic doesn't mean it is good. It has to be the right kind of electronic, medical record. It has to be the right kind of system. And, to be able to improve quality, the right kind of training is also needed.

Mr. RAYMER. Well, Intermountain has had a very inclusive process of the clinician community, whether it be nurses, whether it be physicians, whether it be therapists that are involved in the care delivery process, to really map out the clinical processes today as they're performed in their current system, and how those would be enhanced and improved in the installation of the new product. So, Intermountain's been very cautious about the change management process associated with the clinicians.

What they realized is that in many areas they were very advanced, but in other areas their application was falling behind the times. And they could not afford to make that investment on both fronts. So, what they chose is to get a commercial partner that could help them commercialize some of their ideas, get some proceeds from that, but, more importantly, to ride the coattails of other large-scale investments that are being made in routine improvements in health information systems.

Senator ENSIGN. We try to keep subcommittee hearings to an hour and a half. We are just a few minutes over these time parameters. At this point, I would like to conclude this hearing. If I have questions that I was not able to ask due to time limitations, I will submit those questions to you in writing. I would greatly appreciate your responses to any outstanding questions.

Health information technology is an area I am very passionate about and very interested in. I think it's one of the more important areas that we need to address. The neat thing about this issue is that it really isn't ideological. It seems to me that health information technology can be a completely nonpartisan issue. Republicans love that health information technology saves costs and improves quality of care. Democrats love a lot of these aspects as well. It seems to me that we can actually make some big improvements in our healthcare system by encouraging the adoption of health information technology and actually showing the American people that we can work together on something.

In closing, thank you for your input today. It's been very valuable.

At this time, this Subcommittee is adjourned.

[Whereupon, at 4:05 p.m., the hearing was adjourned.]

A P P E N D I X

PREPARED STATEMENT OF HON. TED STEVENS, U.S. SENATOR FROM ALASKA

Mr. Chairman, I'm pleased we are holding this hearing today to explore how we may encourage the adoption of Health Information Technology (IT) throughout our healthcare system.

Adoption of Health-IT holds the potential to reduce medical errors, improve patient care and reduce costs. The Institute of Medicine has estimated that between 44,000 and 98,000 Americans die each year due to medical errors in hospitals. This is simply unacceptable. I support President Bush's goal to make deployment of Health-IT throughout our system one of our highest priorities.

Health-IT has the potential to aid our soldiers wherever they may be stationed, including in theatres of war, so that fast and accurate treatment may be given to them when needed. Health-IT also has the potential to do the same for our aging population. Health-IT in our non-defense health care system must be a priority.

I also want to recognize the efforts of former Speaker Newt Gingrich to foster development and implementation of health information technology. His has been a passionate and knowledgeable voice on this subject for some time. I welcome him here today as a witness before this Subcommittee.

Government and the private sector must work together to address challenges that remain before we can realize the benefits of system-wide Health-IT. These challenges include the high costs of implementing health-IT systems, especially for small providers and individual practitioners; privacy concerns, a lack of standards to allow sharing of information among providers; and resistance by some health providers.

We look forward to working with public and private entities to make deployment of Health-IT a reality.

Thank you, Mr. Chairman. I look forward to hearing from our witnesses.

JOINT PREPARED STATEMENT OF THE AMERICAN HEALTH CARE ASSOCIATION (AHCA) AND THE NATIONAL CENTER FOR ASSISTED LIVING (NCAL)

The American Health Care Association (AHCA) and the National Center for Assisted Living (NCAL) thank the Senate Commerce, Science, and Transportation Subcommittee on Technology. Innovation, and Competitiveness for holding this important hearing today and we thank Chairman Ensign for convening this series of hearings designed to explore the many ways we can accelerate the adoption of health information technology.

Mr. Chairman, one of the American health care system's most pressing problems is the fact we do not have a seamless transfer of patient data and information between the rapidly growing numbers of long term care settings. Health IT (HIT) offers the promise of better health outcomes for patients and residents by catching conflicting prescriptions, providing reminders to improve timely prevention and other recommended care, and better public health monitoring.

As the Nation moves toward uniform intra-provider electronic recordkeeping, long-term care must be included right from the start so that seniors today and those just reaching retirement age can benefit from HIT as soon as possible. Congressional leadership and a strong Federal commitment are needed to ensure nursing facilities can adopt interoperable health information technology, electronic health records, and e-prescribing systems without undue financial burden to nursing facilities.

To ensure adoption, grants and loans must be available to long-term care providers to assist them in adopting this technology. The value of such grants and loans will be recognized in the reduction of duplicative care, lowering health care administration costs, avoiding errors in care, and, in the final analysis, improving seniors' overall care quality—AHCA/NCAL's preeminent mission.

Dr. David Brailer, the former National Coordinator for Health Information Technology, has estimated that the U.S. health care system will save an estimated $140

billion per year—close to 10 percent of total U.S. health spending—if health information technology is adopted. A recent Rand Corporation study found the U.S. health care system could save $162 billion annually with widespread use of HIT.

There is widespread, bipartisan support for accelerating the creation of a nationwide, interoperable HIT infrastructure that can facilitate four major improvements in the health care system:

1. Reducing administrative costs in areas such as claims processing, provider reimbursement, referrals and eligibility;
2. Improving health care quality, efficiency and care coordination:
3. Transforming systems to improve patient safety; and
4. Significantly improving the treatment of chronic diseases.

Adequate resources must be deployed quickly to ensure timely implementation of a HIT system, and AHCA has previously announced its support for three bills to help accomplish this objective: the Health Information Technology Promotion Act, sponsored by U.S. Rep. Nancy Johnson (R–CT), and the Wired for Health Care Quality Act, sponsored by Senator Enzi (R–WY).

There are also many demonstration projects and efforts underway to ensure providers are prepared to adopt and become trained on such technology. Such existing and future efforts must support grants and loans to long-term care facilities, so that America's frail, elderly, and disabled can recognize the improvements in care that health information technology affords.

On a broad policy basis, AHCA/NCAL encourages Member of Congress to pass legislation that: (1) encourages the setting of standards for HIT so different products will be interoperable and able to retrieve and share data for the identified functions; and (2) appropriately aligns incentives as part of the development of a National Health Information Infrastructure (NHII), so that the financial burden on nursing facilities is not disproportionate once these technologies are implemented.

Passing legislation incorporating these important fundamental provisions will assist and complement our profession's quality improvement initiatives. and we urge every Member of Congress to help move this effort forward in order to help and benefit America's most vulnerable frail, elderly and disabled citizens. Thank you, Mr. Chairman.

PREPARED STATEMENT OF THE HEALTHCARE LEADERSHIP COUNCIL (HLC)

The Healthcare Leadership Council (HLC), a not-for-profit membership organization comprised of chief executives of the Nation's leading health care companies and organizations supports rapid adoption of healthcare information technology (HIT), including electronic medical records, to improve quality of care, reduce medical errors, and lower health care costs.

Members of HLC—hospitals, health plans, pharmaceutical companies, medical device manufacturers, biotech firms, health product distributors, pharmacies and academic medical centers—have seen firsthand what widespread adoption of HIT can mean to patients and healthcare providers.

Several HLC member organizations have been among the earliest adopters and pioneers of health information technology. We believe HIT has the power to transform our health care system and provide increased efficiencies in delivering health care; contribute to greater patient safety and better patient care; and achieve clinical and business process improvements.

More to the point, the Healthcare Leadership Council shares President Bush's goal that most Americans have electronic health records by 2014. We believe that Congress can significantly reduce or eliminate barriers to HIT adoption and that it *must act this year* to address this issue. Specifically, HLC asks Congress to:

- Create funding mechanisms to assist health care providers in investing in health information technology, including electronic health records.
- Enact exceptions to current Federal rules that preclude hospitals and medical groups from helping physicians to acquire health information technology.
- Create a national, uniform patient privacy standard to facilitate the development of a multi-state, interoperable health information network.

The Healthcare Leadership Council's interest in this issue is long-standing. In the summer of 2003, HLC established a Technical Advisory Board, comprised of clinicians and others with information technology expertise within HLC's member companies to provide information about their HIT implementation experiences.

Attached to this statement is a copy of the White Paper that resulted from this effort. The paper attempted to quantify key benefits of HIT along with barriers to HIT implementation. The paper concluded with the following recommendations:

- Standards to assure interoperability;
- Financial incentives and funding mechanisms;
- Liability protections to facilitate sharing of safety and quality data; and
- Stakeholder collaboration on best practices.

In looking at these recommendations, it is clear that there has been significant progress since 2004.

Last summer, the President signed into law the, "Patient Safety and Quality Improvement Act." HLC advocated for this legislation as an important step toward fostering a culture of safety—through liability protections to allow voluntary information-sharing and reporting.

In the area of standards, several public and private sector initiatives are making great strides to identify or develop health information interoperability standards that will enable disparate systems to "speak the same language." And the work of the Certification Commission for Health Information Technology will complement 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.

As important as it is to applaud the progress that has been made, it is necessary to focus on the barriers that stand in the way of widespread HIT implementation. We have some significant challenges ahead of us, including patient privacy regulations and standards.

Developing a multi-state, interoperable system depends on national technical standards as well as national uniform standards for confidentiality and security. The Health Insurance Portability and Accountability Act (HIPAA) governs the privacy and security of medical information. Though HIPAA established Federal privacy and security standards, it permits significant state variations that create serious impediments to interoperable electronic health records, particularly when patient information must be sent across state lines.

We believe Congressional action to establish a uniform Federal privacy standard is essential in order to ensure the viability of a national health information network.

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 HIPAA privacy rule.

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.

HLC is not alone in calling for action in this area. The 11 member Commission on Systemic Interoperability, authorized by the Medicare Prescription Drug, Modernization, and Improvement Act to develop recommendations on HIT implementation and adoption, recommended that Congress authorize the Secretary of HHS to develop a uniform Federal health information privacy standard for the Nation, based on HIPAA and preempting state privacy laws, in order to enable data interoperability throughout the country.

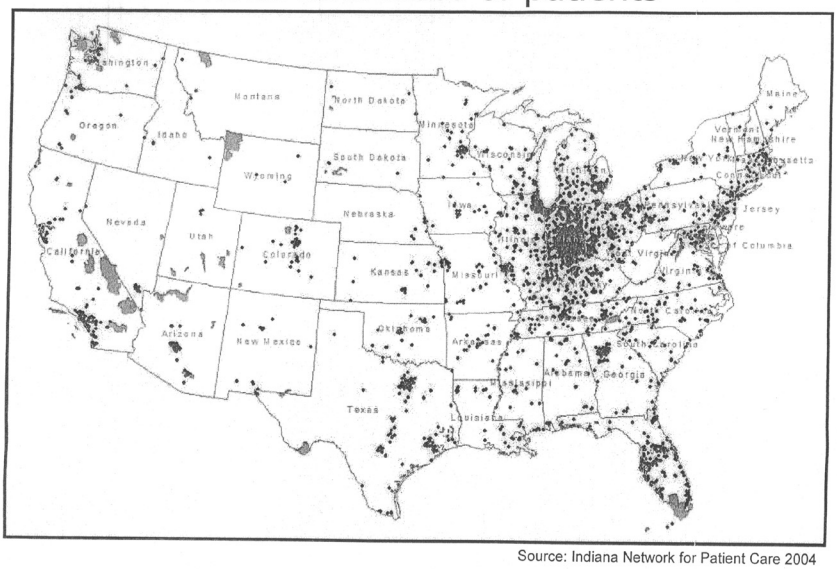
While we believe strongly in the need for a national privacy standard, HLC believes just as strongly that any regional or national system designed to facilitate the sharing of electronic health information must protect the confidentiality of patient information.

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.

To further underscore the importance of this issue to HIT development, attached is a map developed by the Indiana Network for Patient Care. Each dot represents a patient seen at an Indianapolis hospital during a 6-month period. While the dots are stacked very deep around Indianapolis as you would expect, patients served by the Indiana health providers during this period were also located in 48 of the 50 states. Today's health care providers, meeting the needs of a mobile society, serve patients from multiple and far-flung jurisdictions. Looking at this map it is easy to

see why regional agreements will not be adequate to address the myriad regulations with which providers and others will need to comply to achieve "interoperability."

Indiana Network for Patient Care
Home addresses of patients



Source: Indiana Network for Patient Care 2004

In addition to national privacy standards, the lack of funding or adequate resources—combined with the high costs of HIT systems—was repeatedly cited in our member study as a barrier to effective implementation of HIT systems. There are significant front-end 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.

In an age in which health care providers, in many cases, must deal with rising costs associated with uncompensated care, medical liability rates, homeland security needs and addressing staffing shortages, it is a simple fact that many providers do not have the financial wherewithal to invest in these new systems.

HLC believes that the Federal Government should drive the Nation's implementation of HIT through financial incentives and funding mechanisms to help providers defray the huge costs of acquiring and operating HIT. Rapid implementation of interoperable HIT is also a critical component of the Nation's emergency preparedness.

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

HLC advocates the consideration and implementation of multiple HIT funding mechanisms. However, we also recognize that current fiscal deficits and budget constraints will limit the ability of Congress to directly fund any new program or initiative. HLC is working with our member companies and organizations to develop workable, creative financing proposals for HIT. We look forward to sharing those ideas with the Subcommittee.

However, Congress can facilitate greater physician adoption of electronic health records now by allowing hospitals and medical groups that have successfully implemented electronic health records to share their expertise and IT investment with physician offices. This will facilitate better integration of hospital and physician information systems to improve continuity of care, decrease duplicate tests and provide greater safety and quality of care to consumers. By providing exceptions to the

physician self-referral prohibition (Stark) and anti-kickback rules for HIT, Congress can accelerate physician use of electronic health records.

Current law prohibits anyone who knowingly and willfully receives or pays anything of value to influence the referral of Federal health care program business, including Medicare and Medicaid. Physicians are also prohibited from ordering designated health services for Medicare patients from entities with which the physician has a financial relationship—including compensation arrangements. The penalties for violating Stark and anti-kickback rules are significant. The Stark law is a "strict liability" statute and no element of intent is required. Violators are subject to significant civil monetary penalties and risk being excluded from participation in the Medicare and Medicaid programs. The anti-kickback law is a criminal statute that also provides significant penalties—including fines and imprisonment—for knowing and willful violations.

Though HHS has released proposed regulations that would provide limited exceptions to the Stark and anti-kickback rules for e-prescribing and electronic health records, industry analysis suggests that the exceptions will be of little value under the proposed rule. Hospitals and medical groups that want to assist physicians with the adoption of HIT will need to comply with restrictive and overly burdensome requirements on both donors and recipients of IT products.

Due to the severe consequences of violating these laws, providers need a workable safe harbor for HIT. Congress must provide a clear roadmap for hospitals, medical groups and others to provide HIT hardware, software, and related training, maintenance and support services to physicians.

We believe that enactment of exceptions to the Stark and anti-kickback rules will help spur adoption of electronic health records and provide immediate benefits to consumers in the form of improved quality of care and patient safety.

In conclusion, HLC believes that HIT legislation should especially focus on areas in which Congress and the President *must* act to remove barriers and facilitate successful implementation of HIT. Therefore, HIT legislation should accelerate the adoption of health information technology and interoperable electronic health records by ensuring uniform IT standards including privacy and security and providing exceptions to Stark and anti-kickback rules to allow hospitals, medical groups and others to share their expertise and investment in electronic health records with physician offices. HLC will continue to work with Congress to continue to explore other funding mechanisms to promote wide spread adoption of HIT.

The Healthcare Leadership Council appreciates the opportunity to submit this statement for the record.*

PREPARED STATEMENT OF THE AMERICAN COLLEGE OF CARDIOLOGY (ACC)

Introduction

The American College of Cardiology (ACC) appreciates the opportunity to provide a statement for the record of the Subcommittee's hearing on accelerating the adoption of health information technology (HIT). We believe that Congress has an important role to play in promoting the adoption of HIT by physician practices.

The ACC is a 33,000 member non-profit professional medical society and teaching institution whose purpose is to foster optimal cardiovascular care and disease prevention through professional education, promotion of research, and leadership in the development of standards and formulation of health care policy.

In the world of health care informatics, the ACC is a leader in the physician community and supports the national agenda to accelerate the integration of HIT, and specifically electronic health records (EHRs), into physician practices. To meet the HIT needs of its members, the ACC established an Informatics Work Group to coordinate the HIT activities and policies of the College. The ACC participates in many activities in the health informatics domain, and is involved with efforts related to interoperability, standards harmonization and EHR evaluation.

EHR use results in time savings, improved clinical outcomes and increased efficiency. EHRs reduce paper-based tasks such as work-orders, scanning and indexing, thereby improving practice workflow and reducing the potential for errors. Another advantage of EHRs is the ability to integrate decision support software that matches a patient's condition with quality care guidelines for that condition.

The successful integration of EHRs into an increasing number of physician practices will be largely dependent upon adequate financial incentives to offset the costs of HIT adoption; successful interoperability and standards harmonization; and educating physicians about the benefits of EHRs to their practices and their patients.

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*Attachments to this prepared statement have been retained in Committee files.

Federal Financial Incentives to Promote HIT Adoption

While the ACC realizes the potential benefits of widespread EHR use, including health care quality improvement, we are concerned that physicians face significant costs in implementing and supporting HIT. At a time when physicians are facing declining reimbursements and an uncertain future for Medicare payments, investing in HIT imposes an unmanageable financial burden on many physician practices. Aside from the significant initial investment in technology, physicians also incur large costs from training and maintenance over time. In fact, the actual software costs are far overshadowed by the infrastructure and staff costs over time. These costs would be especially prohibitive for small physician practices. While cost savings from the implementation of HIT would benefit the health care system overall, the return on HIT investment for physician practices would be more gradual and over the long term.

In order to drive widespread adoption of EHRs, the Federal Government must provide sufficient financial assistance to help physicians implement HIT. The ACC strongly supports Federal financial assistance, such as tax credits, grants, Medicare add-on payments or loans, to physician offices for implementing HIT systems. Such assistance is critical to accelerating broad use of HIT in the Nation's health care system.

The ACC also supports safe harbor provisions in existing Federal anti-kickback and self-referral laws that allow entities to share HIT systems and support with physician practices as a means to provide some relief from the cost-burdens associated with HIT implementation.

Moving From ICD–9 to ICD–10

The ACC supports the move to the International Classification of Diseases, 10th edition, Clinical Modification (ICD–10–CM) as a more precise and granular coding system than the currently used ICD–9–CM; however, the College is concerned with the level of resources that physician practices will need to invest in order to make the transition. Aside from the additional practice cost, the change will also require physician practices to dedicate resources to training of support staff. While physician practices would most likely be able to meet an implementation deadline, our concern is the processes software vendors and payers (including the Centers for Medicare and Medicaid Services) will first need to go through in order to allow for an effective transition will make a deadline impracticable from the physician perspective. The College recommends that any move to ICD–10 include implementation benchmarks for software vendors and payers, and that a practical deadline for physician practices to implement ICD–10–CM be based upon when those benchmarks are reached. Without requiring that benchmarks be met throughout the transition, the situation may be reminiscent of the implementation delays of the transactions and code set requirements under HIPAA.

Working Toward Interoperability

To realize the benefits of HIT, software and operating systems must be able to exchange data, or be interoperable. This requires coordinated efforts across all levels of the health care system. The College is currently one of three North American sponsors of the Integrating the Healthcare Enterprise (IHE) initiative, an international, multi-stakeholder project that facilitates system-to-system connectivity within and across care settings. The ACC is the primary sponsor of the IHE Cardiology domain. As a lead organization in IHE, the College provides a much-needed clinical perspective to the development of an interoperable framework for cardiovascular information systems, including imaging. Jonathan Elion, M.D., F.A.C.C., describes the IHE initiative as the way to resolve the "pain points" in the cardiologist's clinical workflow through information technology, with an end result of higher quality patient care.

Through its joint sponsorship of IHE, the College has developed a relationship with the Health Information and Management Systems Society (HIMSS), which is a health care industry membership organization exclusively focused on providing leadership for the optimal use of HIT and management systems. Earlier this year, the ACC participated in the HIMSS Interoperability Showcase at the HIMSS Conference and Exhibition, during which the latest advancements were demonstrated. The College also cosponsored National Health IT Week, June 5–10, 2006 in Washington, D.C., which took place in tandem with the Agency for Healthcare Research and Quality Annual Conference on Patient Safety and Health IT and the HIMSS Summit. National Health IT Week was the Nation's first fully collaborative annual forum where public and private sector organizations unite to foster widespread HIT adoption.

The Need for Standards Harmonization

The standards harmonization effort is crucial to the adoption of EHRs in the ambulatory care setting. Using existing HIT standards such as Health Level 7 (HL7) and Digital Imaging and Communications in Medicine (DICOM), as well as broader industry standards such as those developed by Liberty Alliance (security) and the Internet Engineer Task Force (IETF), the standards harmonization effort will deliver a consistent implementation guide or "cookbook" for building systems that can share data reliably within and across settings. Purchasers benefit from more efficient implementations because vendor-to-vendor interface negotiations are eliminated. End users benefit through increased and improved access to clinical information at the point of care as more vendors develop products according to a standard set of guidelines.

The College actively participates in the Department of Health and Human Services Office of the National Coordinator for HIT contract for standards harmonization, which was awarded in 2005. As a founding member of the Health Information Technology Standards Panel (HITSP), the College was an early participant in the development of the processes used to produce deliverables for the standards harmonization contract. In addition, the College represents the clinical end user on the transfer of lab results across care settings (the "breakthrough area for EHR/Lab").

Facilitating EHR Evaluation and Certification

The ambulatory care EHR market is still immature with many vendors entering the market. In such a market, products vary immensely not only in functionality, but also in technology platforms, clinical content and costs. The development of a set of certification criteria and an associated testing program will greatly assist clinicians in the EHR adoption process by providing a mechanism to validate vendors' functional claims.

The ACC is developing an EHR Evaluation Project to provide members with a toolkit to assist them in EHR implementation and to identify individual EHRs that have passed a juried test of functionality. The EHR Evaluation project will deliver much-needed education and tools to physicians who are considering purchase of an EHR. The ACC believes that the use of an EHR that meets criteria developed by members will improve both care and practice by providing better access to clinical data across care settings and through identifying areas for increased efficiency in the practice workflow.

The College also is a founding member of the Physicians' Electronic Health Record Coalition (PEHRC), a collaborative of professional medical associations including the American Medical Association, the American College of Physicians and the American Academy of Family Physicians, in which member organizations share information technology best practices and respond to ongoing Federal initiatives by providing clinician input. The goal of this group is to increase the adoption of EHRs by physicians through education, standards promotion and policy.

In addition, the College was selected to serve on the Commission for the Certification of Health Information Technology (CCHIT) to represent providers in the development and promotion of EHR certification criteria. The CCHIT will soon announce its first round of vendors whose EHRs meet its criteria for exchanging data. The College participated in the public comment phase for ambulatory EHR criteria.

Creating Standardized Terminology

The College is developing a program to create a subset of SNOMED (Systemized Nomenclature of Medicine) terms for cardiology. Since SNOMED has become the "de facto" terminology used by system developers of clinical systems, the College understands the great need for clinical expertise in defining the cardiovascular terms used by these vendors to develop application functionality, e.g., documentation templates and clinical decision support tools. As the premier cardiovascular society it is important for the College to leverage the clinical expertise of its members to inform the terminology standards and provide consistency of definitions for the area of cardiovascular medicine.

The College also participates in the HL7 Special Interest Group (SIG) for Cardiology, whose goal is to identify and resolve cardiology-related terminology needs. HL7 is an international standards group whose partnership with cardiology groups sets the bar for the creation of international cardiology data standards.

EHRs' Impact on Data Collection and Research

The adoption of EHRs, along with the application of interoperability standards and common terminology, will help improve data collection and research efforts. Widespread EHR use is critical to the ability to measure quality, performance and efficiency. Adoption of EHR into physician practices is integral to payment systems

structured around quality and performance, and will allow clinical data as well as existing administrative data to be collected.

Through its participation in the Duke Clinical Research Institute (DCRI) Clinical Trial Networks (CTN) Best Practices project, the ACC is participating in the NIH Roadmap program. The College provides clinical expertise in the development of data standards and best practices for creating a more collaborative information-sharing clinical trial network.

Safeguarding Privacy

While the Health Insurance Portability and Accountability Act (HIPAA) provides a baseline for health information privacy and security, some states have implemented stronger laws. The difference in Federal and state privacy laws will be a challenge to interoperability of EHR systems. The successful nationwide implementation of interoperable HIT in both the public and private health care sectors will require a national set of privacy standards. The Veterans Health Administration and military health systems are good examples of why a uniform patient identifier is so critical.

Conclusion

In summary, the ACC is committed to working with the health care informatics community on interoperability, standards harmonization and EHR evaluation and to helping its membership understand and facilitate participation in EHRs. To drive the integration of EHRs into physician practices, the ACC urges Congress to provide physicians with sufficient financial assistance to implement and maintain HIT. As the Subcommittee addresses HIT this year, the ACC would like to offer itself as a resource.

PREPARED STATEMENT OF THOMAS H. JOHNSON, MIS MANAGER, DUBOIS REGIONAL MEDICAL CENTER; ON BEHALF OF THE WEST CENTRAL PENNSYLVANIA REGIONAL HEALTH INFORMATION ORGANIZATION

I serve as the Management Information Systems (MIS) Manager for DuBois Regional Medical Center (DRMC), a 214-bed rural healthcare center in Clearfield County, Pennsylvania. DRMC is the lead organization for a five hospital, Regional Health Information Organization (RHIO) in western Pennsylvania—The "West Central Pennsylvania RHIO."

I submit written testimony today to share with the Committee the challenges our consortium and other RHIOs face as we collaborate in our endeavors to provide our patients with efficient, effective, quality health care. We also write to offer the Committee possible solutions to accelerate the adoption of health information technology.

Moving Toward a Paperless System in Rural America

Spurred on by the introduction of new technologies and the widespread acceptance of the Internet as an invaluable communication medium, hospitals and other health care providers throughout the Nation have been implementing electronic means to collect and review patient information. More recently, hospitals and others are seeking effective and secure ways to share health information between and among other health care providers. These Health Information Exchanges (HIEs) are forming rapidly in many states. Large multi-stakeholder organizations consortiums have adopted the title Regional Health Information Organizations (RHIOs).

One of the greatest fears for rural community hospitals, as the Nation advances toward a national health Information Network (NHIN), is the cost associated with upgrading current systems and purchasing the technology needed to create Electronic Health Records Systems (EHRS). While EHRS allow hospitals to become more efficient and provide a higher degree of patient safety, the struggle to maintain a positive bottom line or even a solvent facility has deterred many hospitals from establishing EHRS.

The benefits of the EHRS are many including, more efficient care, increased patient safety, timely results reporting, fewer medical complications and treatment errors, more comprehensive documentation, improved continuity of care, reduced costs in healthcare expenditures, medical research opportunities, biosurveillance, etc. Yet, the benefits of the electronic record are not in question. The question is how can rural hospitals afford such costly upgrades?

Many healthcare institutions, large or small, have fragile financial structures. Rural community hospitals in particular, are confronted by numerous economic barriers such as lower reimbursement rates and difficulty recruiting and retaining physicians and other qualified healthcare professionals. These financial and personnel

factors have contributed to the lack of capital to initiate additional services needed in the communities served by rural hospitals.

Many rural hospitals struggle just to provide core services. Others face tough decisions like closing obstetrics and maternity services because of the costs of malpractice insurance and the flight of many obstetricians and other physicians from rural areas, such as we are facing in rural Pennsylvania. According to the Pennsylvania Department of Health, the number of rural hospital beds decreased by some 31 percent from 1990 to 1999. Today this decline continues. In May 2006, Philipsburg Area Hospital some 40 miles southeast of DuBois closed its doors declaring bankruptcy.

The overall financial burden is a large problem facing smaller hospitals that wish to initiate EHRS. Even after the initial funding to create the system is met, maintaining these systems will still cost hospitals more on a year-to-year basis. Converting their current medical records into the digital system also looms as a daunting task for many smaller institutions.

West Central RHIO Goals and Challenges

The West Central Pennsylvania RHIO currently consists of five small rural hospitals, DuBois Regional Medical Center (DRMC), Brookville Hospital, Clearfield Hospital, Elk Regional Health Center, and Punxsutawney Area Hospital.

The goal of the RHIO is to create a link between the information systems of the participating consortium members. Utilizing a system overlay, the existing information systems of partner organizations will communicate/interface with one another via a private web portal to create a single patient record. Through both public and private funding, the West Central Pennsylvania RHIO aims to implement a system that will allow doctors and other healthcare providers to access important medical records via computer. This system will provide a much more efficient way to take care of patients with processes set in place to bring important patient safety alerts to the forefront.

The goal of the RHIO is for each partner hospital to have its own EHRS and then, to link all partners together into one network—the RHIO. Partner organizations could choose to maintain their own databases or lease space on DRMC's medical records database, if they so choose. The network would provide an option to the smaller community hospitals, and eventually to local nursing homes, to share the latest in technology at a fraction of the cost of creating their own stand-alone system.

Our hospitals are working very hard to realize our goal of fully integrating health care technology in rural Pennsylvania. Our four partners are smaller independent community hospitals in rural PA. We realized years ago that if we wanted to survive as an independent community based hospital in rural Pennsylvania we needed to work together to solve common problems that we all faced. We have a strong history of collaboration with our partners, sharing clinical resources in a manner that is mutually beneficial, while maintaining each hospital's independence and competitive spirit.

We collaborated on many clinical initiatives that enabled sharing of information with physicians from various clinical specialties such as, Neonatal, Oncology, Cardiology, Neurology, Pediatrics, Radiology, and Psychiatry. We installed tele-radiology in three of the hospitals to cover for one hospital that lost their only Radiologist. We have also started training programs in cooperation with local universities to train nurses and other technical specialties that are difficult to find.

Although these initiatives have made a huge impact on mitigating the challenges we face as health care providers in rural American, they all lack the appropriate flow of health information required to provide timely high quality healthcare. As a result, the RHIO's primary focus is to ensure the timely exchange of secured health information among the five hospitals, and any other stakeholders that impacts the continuum of care for the patients of our region.

Suggested Solutions To Help Rural Areas Implement Much Needed Health Information Technology

The West Central Pennsylvania RHIO, and the hospitals themselves, need Health Information Technology (HIT) to be successful and survive. Therefore, we are prepared to make investments in the IT infrastructure to support the type of high speed data exchange that will be required in a RHIO environment.

Our RHIO believes that HIT can be acquired through further collaboration with our partners. We are using new business models to leverage group purchasing and implement cost sharing and are actively seeking funding from government grants and private foundations. We realize that each hospital cannot afford to purchase all of this technology by themselves. So, we plan to coordinate our efforts to maximize

our investment in HIT, further our likelihood of successful implementation, and improve vendor support. Furthermore, the consortium also plans to involve our major payers to see how they can become the sustaining factor in helping to fund the RHIO. We believe that quantitative data will very quickly show that improvements in quality will serve to also reduce overall health care costs.

Despite our commitment and efforts, the consortium also needs the support of government at all levels. There are a myriad of ways that our state and the Federal Government can help to improve health care for rural Americans. Specifically, we recommend the following:

- *Increase Federal Health IT funding, especially in rural areas.*

  New grant programs are absolutely critical in advancing health care IT. Directed Federal and state funding to form and operate RHIOs would be especially useful for those in rural areas who do not have the funding or capitol to do so on their own.
- *Continue support to the Office of the National Coordinator for Health IT and the Certification Commission for Health IT.*

  Their work on setting guidelines for the adoption of national standards and certification of products is vital in the development of RHIOs and Health Information Exchange throughout the Nation.
- *Advance legislation that will help alleviate the current burdens on rural hospitals.*

  Proposed cuts to Medicare and poor funding for rural hospitals directly threaten the health care of patients in our in state. This year alone, four rural hospitals in Pennsylvania closed their doors. Patients in rural areas are particularly vulnerable. When hospitals close, patients are forced to seek care often at a great distance and at a much more expensive price than locally delivered care.
- *Advance legislation to address the medical liability crisis.*

  Medical liability costs in Pennsylvania are simply out of control. We are losing physicians' to other states and it is impossible to recruit physicians because of the lack of effective tort reform in the state. Pennsylvania is retaining only 5 percent of medical school graduates. Training costs are born not only by the hospitals but by the state and Federal Government. Further, recruiting skilled nurses and technicians in all specialties of healthcare is proving increasingly difficult because of the lack of meaningful medical liability reform. As such, retaining health care professionals becomes the first priority, further slowing advances in health care technology.
- *Reign in "specialty hospitals" expansion.*

  Specialty Hospitals are taking the high dollar procedure from hospitals. These organizations are draining hospitals of critical revenues needed to support and maintain the overhead of a 24×7 general acute care facility. Federal legislation has been proposed for all of these issues, but none has been passed as law.
- *Promote capital investment in hospital based IT systems.*

  Systems such as EMRs, e-Rx, PACS, CPOE, etc., would streamline operations, improve quality, and reduce costs. Support for such programs at the state and Federal levels would be useful.
- *Promote the installation of high speed broadband Internet and wide area networks in rural areas.*

  These technologies would enable rural areas to share large volumes of secured data and also level the playing field with urban areas.

Thank you for your time and interests in Health IT and for allowing me to submit this written testimony.

PREPARED STATEMENT OF CHRIS A. LUMSDEN, ADMINISTRATOR/CHIEF EXECUTIVE OFFICER, HALIFAX REGIONAL HEALTH SYSTEM

Chairman Ensign, Ranking Member Kerry, and members of the Subcommittee on Technology, Innovation, and Competitiveness, I appreciate the opportunity to testify for Halifax Regional Health System concerning the need for health information technology improvements. We believe that Halifax Regional Health System's IT upgrade can serve as a model for the Nation—particularly for rural, low income areas. Halifax is pleased to be answering the call by President George W. Bush and healthcare industry leaders to upgrade health system IT.

For over 50 years, Halifax Regional Health System has served rural and low income areas of Charlotte, Mecklenburg and Halifax counties and adjoining communities in southern Virginia. A nonprofit locally owned and governed organization, Halifax offers comprehensive healthcare including emergency services, obstetrics, general and specialized surgery, acute and long-term care, dementia care, rehabilitation, home health, hospice and behavioral health services. Halifax employs approximately 1,000 individuals and has about 125 doctors on the Medical Staff.

In his 2006 State of the Union Address, President Bush urged health systems to implement medical information technology upgrades, and called on the Federal Government to help create a model electronic system for healthcare agencies. Additionally, the Joint Commission on Accreditation of Healthcare Organizations, the Leap Frog Group (a leading healthcare safety and quality advocate), the Institute of Medicine and other healthcare leaders across the Nation are calling for improved medical safety through enhanced health system automation and technology upgrades.

Halifax Regional Health System is providing leadership for the healthcare sector by implementing leading-edge technology upgrades through its Model Healthcare Information Technology Project. As a community-based nonprofit health system serving one of the largest geographic service areas in rural Virginia, Halifax can demonstrate improved health outcomes and efficiencies from state-of-the-art technological improvements, and can provide a national model for providing safer, more efficient healthcare in rural areas.

Halifax Regional Health System has embarked upon a program to vastly improve the entire range of patient care and safety. Halifax has begun implementing technology upgrades including Electronic Medical Records (EMR), Computerized Physician Order Entry (CPOE), Picture Archival Communication Systems (PACS), real-time monitoring and diagnostics, as well as other components designed to greatly increase patient safety and the quality of care. According to the Leap Frog Group, CPOE has been shown to reduce serious prescribing errors in hospitals by more than 50 percent.

Despite this growing consensus, Health Care Informatics On-Line reports that less than 4 percent of U.S. hospitals are implementing CPOE, and healthcare has lagged behind other industries in adopting computerized systems to prevent errors and improve efficiency. CPOE, EMR, PACS and related technology upgrades not only help prevent adverse medication effects and longer hospital stays, they also can provide evidence-based guidelines which physicians can use to help improve the overall quality of care. Doctors, nurses, and other clinical professionals at Halifax can attest to significant results it already is achieving from these technology upgrades.

Common Medical Information Technology Problems That Plague Health Systems in Virginia and Throughout the United States

The following identifies information technology related concerns common to almost all healthcare practices in the United States.

- *Medical Errors.* In traditional medical practice, 25 individual steps routinely take place from a physician's consideration of an order entry to the successful execution of that order. Each of these steps carries with it redundancies, inefficiencies and opportunities for error. With the implementation of CPOE, these steps are removed. In addition, CPOE can institute on-the-spot drug allergy and drug-to-drug interaction checks, and can provide additional medical information for physicians at the point of service to improve patient safety and care.
- *Differing Health Information Platforms.* Hospital emergency rooms, physician medical record systems, laboratories, radiology units and outpatient care settings generally do not operate on common information technology platforms that can share patient information and treatment outcomes. This leads to delays and errors due to data transfers. Technology upgrades such as Electronic Medical Records link information platforms so that multiple providers can view and use patient records and data simultaneously, in real time, while maintaining security and HIPAA compliance. This enables faster, more accurate diagnoses and fewer redundancies in the health system.
- *Wasted Healthcare Dollars.* Healthcare workers spend unnecessary time assembling data and handling numerous telephone calls and faxes to obtain copies of x-rays, medical images, radiology reports and other documentation that could be available to them instantly through an information technology upgrade. Picture Archival Communication Systems (PACS) are computer networks dedicated to the storage, retrieval, distribution and presentation of medical images. PACS reduce the need for unnecessary phone calls, faxes and follow-up, as medical documentation and information is readily retrievable by all providers. PACS

also increases the efficiency of imaging departments by simplifying workflow, enhancing productivity and making information accessible to multiple users simultaneously. This results in improved patient care including shorter hospital stays, decreased waiting times and faster diagnoses. Many of the Halifax doctors confirm that PACS has saved them at least 1 hour per day that can now be used for patient care activities.

- *Unnecessary Patient Travel and Physician Time.* Like other rural health systems, Halifax Regional Health System covers a considerable geographic area, one in which medical offices and nursing homes are separated by relatively long distances. This makes communication among healthcare professionals very difficult. Currently, there is little or no electronic data sharing between primary care and specialist settings to allow the continuous monitoring of disease states without requiring patient travel. Technology upgrades including EMR, CPOE, and PACS allow data to be shared across healthcare continuums, enabling all providers to monitor patient care in less time and with less travel.
- *Barriers to Recruitment and Retention of Health Professionals.* Halifax Regional Health System is located in a federally designated Health Professional Shortage Area. Additionally, Halifax Regional Hospital is designated under Medicare as a Disproportionate Share Hospital, where a disproportionately large share of the patients who rely on the hospital for treatment are considered low income or elderly. These factors pose a challenge for Halifax in recruiting and retaining highly trained doctors and other professionals. By bringing to the health system technology advancements such as EMR, CPOE, and PACS, Halifax will establish a superior health system and a national model, which in turn will increase the likelihood that health professionals will choose to practice in the region.

Opportunity To Reduce Medical Malpractice Claims and Healthcare Costs

By adopting technology upgrades such as EMR, CPOE, PACS, and other innovations, the resulting reduction in errors by medical personnel can in turn reduce the number of medical malpractice claims, which will help to lower the costs of operating the health system. Fewer malpractice claims leads to reduced costs of insurance and other expenses for healthcare providers. By spending less on liability insurance and legal costs, the health system can invest more funds in enhancing patient care.

Halifax's Technology Upgrade: A Model Project for Virginia and the Nation

Halifax Regional Health System is implementing technology that will provide a model for the future of safer, more effective, and less costly patient care. These technological upgrades remove unnecessary steps and obstacles in the diagnosis, decisionmaking and testing processes. The improvements save time, reduce medical errors and, most importantly, save lives. The benefits for hospitals in Virginia and throughout the United States are numerous, including:

- *Increased Patient Safety.* Due to the fact that physicians, nurses and other medical personnel enter data into the health system electronically, paperwork-based problems are eliminated, including misinterpretation of illegible data, needless duplication of tests, incomplete information, and time delays. Implementing technology upgrades helps health systems avoid medical mishaps, such as inappropriate drug selection or dosage, or unnecessary radiographic or laboratory testing.
- *Expanded Treatment Options.* By automatically providing evidence-based clinical protocols and care management guidelines, physicians have access to treatment options they might not otherwise have considered. Providing best-practice guidance for physicians and other professionals at their fingertips promotes optimal patient management strategies.
- *Single Information Platform Communication.* Coordinated real-time communication across an entire health system provides simultaneous access to patient data from any location by any provider. This access allows for improved rapid changes in care addressing patients' evolving needs in physician offices, hospitals, ambulatory care, or post-hospital settings.
- *Data Access for Overall Disease Management.* Providing practitioners with immediate and shared access to patient historical data through Electronic Medical Records and other upgrades helps hospitals and providers identify trends that can lead to significant changes to improve the management and treatment of disease.

What Makes Halifax Regional Health System an Ideal Model?

Halifax Regional Health System is an ideal model for advancing technology upgrades for rural areas for the following reasons:

- *Halifax is a Rural Health System.* Halifax Regional Health System is a rural health system in which healthcare providers and patients are spread over considerable distances. As such, the health system offers a proving ground for the advantages of data sharing among distant healthcare providers. The Model Healthcare Information Technology Project will allow Halifax to connect remote physician offices and serve rural and low-to-moderate income communities. Halifax intends for this project to serve as a demonstration model for other rural health systems across the Nation.
- *Good Testing Ground.* Halifax Regional Health System operates several components that together can serve as a useful testing ground for technology upgrades. The system is comprised of Halifax Regional Hospital, Volens Family Practice, Clarksville Family Practice, Chase City Family Practice, Woodview Nursing Home, and Meadow View Terrace Nursing Home, among other locations in Charlotte, Mecklenburg, and Halifax counties and adjoining areas. The hospital provides a full range of acute care in-patient and outpatient services including cardiology, obstetrics, gynecology, general surgery, internal medicine, urology, family medicine, pediatrics, psychiatry, radiology, nephrology, ophthalmology, occupational medicine, home health, hospice, sleep medicine and rehabilitation services. As such, this system operates numerous testable components that can provide necessary feedback in order to perfect technology.
- *Spearheaded by Leading Healthcare IT Professionals.* Halifax's technology upgrade is being designed and implemented with the assistance of one of the world's largest healthcare services and technology company, McKesson Information Solutions. McKesson reports that implementation of the Halifax technology upgrade "has been an overwhelming success to date." The team for the implementation of the technology upgrade "has been highly successful in addressing leadership, communication and the cultural aspects of the implementation—critical elements to ensuring widespread clinician acceptance and adoption of the deployed technology" (See attached letter from McKesson's President, Pamela J. Pure.)
- *Less Costly.* Due to its size, Halifax Regional Health System would be a less costly location to pilot a model project than would a large urban hospital system. After implementing the technology upgrades at Halifax, this model can be implemented at rural health systems throughout the Nation.
- *The Project Leverages Substantial Non-Federal Funding.* Halifax's Model Healthcare Information Technology Project represents a very significant commitment of non-Federal funding. Non-Federal sources of funding are expected to provide over 80 percent of the project costs.
- *Great Progress Has Already Been Made.* Within the next 2 years, the Halifax technology upgrades will be 75 percent successfully complete.

Halifax Regional Health System is proud to be on the leading edge of innovations in health system operation. The technological advancements that will be achieved at Halifax will serve as a model for the Nation. We sincerely appreciate the opportunity to present our perspective on this important healthcare issue.

ATTACHMENT

MCKESSON INFORMATION SOLUTIONS
Alpharetta, GA, May 18, 2006

Mr. CHRIS A. LUMSDEN,
Chief Executive Officer,
Halifax Regional Health System,
South Boston, VA.

Dear Chris:

It is with tremendous satisfaction that I am updating you on the information technology initiative underway at Halifax Regional Health System.

The McKesson team reports that the implementation has been an overwhelming success to date. All projects have been completed on time and on budget. In fact, this project has gone as smoothly as any project across the country. Tom Kluge and his team have devoted significant time, energy and resources to deploy a broad

range of our clinical systems, which have been proven to improve efficiency and safety and to create electronic health records.

Equal in importance, the post-implementation feedback from the Halifax and McKesson staff has been very positive. The implementation team has been highly successful in addressing leadership, communication and the cultural aspects of the implementation—critical elements to ensuring widespread clinician acceptance and adoption of the deployed technology. The nursing staff has embraced documentation for charting care at the bedside. The physicians have embraced the use of the medical imaging technology and our physician portal, which enables medical staff to complete charts and view critical patient orders and results, anytime, anywhere.

This three-year, $12 million capital project was a formidable task and unique in many ways. As the world's largest healthcare services and technology company, it is truly significant to McKesson when we are enlisted by a small rural hospital to digitize and automate its environment to enhance the quality and safety of patient care. Typically, hospitals in much larger and more affluent areas of the country have been the early adopters of our advanced technology.

As you know, Halifax is staged to deploy Horizon Admin-Rx™, McKesson's bedside medication administration solution. Once installation is complete, your hospital will join the ranks of the 5 to 10 percent of healthcare facilities nationwide that use bar-coding scanning to accurately track and record patient medications.

This technology found in most grocery stores has been proven to help ensure the right patient receives the right medication by using a handheld device to scan medication bar codes at the bedside. It's clear that in organizations where there is a commitment to addressing all aspects of the safety equation, health IT becomes a valuable enabler in reducing human error, saving lives, saving lost time and avoiding millions of dollars in wasted money.

We are very proud you have elected to work with McKesson to provide your community with the best possible array of medical services using the most advanced clinical tools. Please do not hesitate to contact me if you have any questions on our services and support as you continue to pursue becoming an established health leader in your community.

Sincerely,

PAMELA J. PURE,
President, McKesson Provider Technologies.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN ENSIGN TO JOHN D. HALAMKA, M.D., M.S.

Question 1. Some individuals have indicated that we are not making nearly enough progress on health information technology and have suggested that we should proceed without interoperability standards in place.

Why has it taken so long for the public-private partnership to come to an agreement on interoperability standards?

Answer. The healthcare domain is very complex.

- Although the typical bank transaction has 5 pieces of data in it, the average health record for a patient has 65,000 pieces of information.
- The data needs of payers, providers, patients, and pharmacies are all very different.
- Over 700 standards have evolved to meet these various needs. HITSP has been able to reduce this to 20 standards in the past 6 months based on 206 stakeholder organizations coming together in a public private partnership created by AHIC/ONC.

This partnership was a catalyst for harmonization. The government provided funding and a sense of urgency.

Question 2. What would be the long-term implications of proceeding without interoperability standards in place; especially as we work toward the goal of having a national health information technology infrastructure?

Answer. If standards are not adopted, stakeholders will have to maintain an increasingly complex set of proprietary interfaces. Imagine if music was distributed on 78 rpm records, LPs, 8-track tape, cassettes, CDs and iPods and the industry had to engineer a device to play all of them! That's the situation in healthcare currently. Standards harmonization will let us all use a single approach, reducing cost and improving interoperability.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN ENSIGN TO MARK LEAVITT, M.D., PH.D.

Question 1. Some individuals are skeptical about certification and do not think it is necessary.

Why do you believe a certification process is so essential?

Answer. There are four reasons. First. the low level of health IT adoption—especially in physician offices—is the best evidence of the need for certification to reduce the risk of provider investments in this technology. In a recent survey by the government's National Center for Health Statistics, only 9.3 percent of physician respondents reported having all the required capabilities for a fully electronic record in 2005.

Second, certification is needed to ensure health IT systems will be compatible with emerging health information networks, Without this interoperability, the electronic records of tomorrow will be as fragmented and incomplete as our paper records are today.

The third reason is that without agreed-upon standards and certification, financial incentives and regulatory safe harbors for health IT could end up misdirected toward technologies that do not deliver the benefits needed by the public.

Finally, certification is needed to ensure that electronic records are held to high standards in protecting the privacy of personal health information.

Question 2. How can quality measurement standards be incorporated into certification initiatives?

Answer. CCHIT already includes, as a requirement for certification, the ability to capture and report on clinical data from the electronic record. Enhanced reporting capabilities are on CCHIT's roadmap as additional requirements in 2007 and 2008. As quality measurement standards emerge. CCHIT can make the certification criteria even more specific, ensuring that all certified EHR systems are capable of reporting quality data in a standardized format.

RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN ENSIGN TO MICHAEL RAYMER

Question. Has the lack of available data and messaging standards hindered the development of new products at GE Healthcare?

Answer.

1. *Duplicate or overlapping standards.* The Health Information Technology Standards Panel (HITSP), a contractor identified by Secretary Leavitt to create a uniform set of healthcare IT standards, has identified over 900 standards relevant to healthcare information technology. Since there is no dominant vendor in the fragmented healthcare market, healthcare IT suppliers invest product development resources to support many duplicate standards that accomplish the same tasks, or delay product development until a dominant or preferred standard emerges in the market. HITSP is crucial for developing a single universal set of standards that can be implemented by all healthcare IT systems suppliers, and we encourage the Senate Commerce Committee to continue to support HITSP.

2. *Misapplication of standards.* Historically standards have been developed to support a wide variety of uses many of which can not be identified at the time the standard is written. This has led to varying interpretations of how a standard should be implemented by the healthcare industry, leading to many "dialects" of the standard and adversely impacting the interoperability between systems increasing our cost to both develop the systems and supporting systems. The HITSP also provides a crucial role in providing unambiguous requirements as to how specific standards are to be implemented to solve specific healthcare workflow tasks, also referred to as use-cases. HITSP is utilizing an industry best practice established by a multi-stakeholder organization called Integrating the Healthcare Enterprise, which has created a process that, allows complex healthcare IT systems to seamlessly exchange information for very simple or very complex healthcare workflow tasks. IHE is an example of the marketplace demanding interoperability solutions and the industry responding to provide them in a responsive and cost-effective manner. We encourage the Senate Commerce Committee to explore market-based solutions such as IHE to promote and accelerate interoperability of healthcare information.

3. *New applications.* The last area where the lack of available data and messaging standards impacts product development is in the area where technology is being used in a new way for the first time. Home health care is an area that currently lacks standards for interconnecting the emergence of information technology that is used for providing monitoring, data collection and other support tasks that improves

the quality of life for patients at home. Today the private sector has created a multi-stakeholder organization to provide nonproprietary standards that can interconnect these home-based devices with health information technology systems that use the information to provide safe and effective healthcare delivery at the patient's home. We encourage the Senate Commerce Committee to explore ways to accelerate the development of open and nonproprietary standards in the private sector to link home health care devices with healthcare information technology systems.

RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. JOHN ENSIGN TO KEVIN D. HUTCHINSON

Question. What is the status of e-prescribing standards and what is required in order to fulfill e-prescribing standards under the Medicare Drug, Improvement and Modernization Act?

Answer. In enacting the Medicare Drug, Improvement and Modernization Act, Congress required that the Secretary of Health and Human Services adopt certain standards for electronic prescribing messages. In its final rulemaking entitled Medicare Program; E-Prescribing and the Prescription Drug Program (the "Final Rule"), the Secretary adopted Version 5.0 of the NCPDP Script Standard as the applicable standard. The Final Rule requires any Prescription Drug Plan to comply with such standards. The NCPDP Script Standard is the standard that SureScripts adopted when it created the SureScripts Electronic Prescribing Network, and is widely used in the industry as the national standard. The Final Rule mandated the immediate use of Version 5.0 Standard for certain electronic prescribing messages, such as new prescriptions and renewal requests, and such standards are referred to as Foundation Standards. For certain other message types, such as medication history requests by way of example, the Secretary felt that there was not sufficient industry experience to declare them as Foundation Standards, and has directed AHRQ to conduct pilot programs to test the standards, with a view to declaring them a Foundation Standards at some time in the future based upon the results of that research and further rulemaking. SureScripts is participating in many of the AHRQ research programs on electronic prescribing.

In addition, on June 26, CMS issued an Interim Final Rule permitting the voluntary use of the backward compatible Version 8.1 of the NCPDP Script Standard as satisfying the requirements of the adopted standard Version 5.0. We support the Interim Final Rule.

Accordingly, we believe that the Federal Government has taken, and continues to take, appropriate action under the MMA to promulgate and require standards for electronic prescribing. We do encourage CMS to act with all deliberate speed in adopting the additional electronic prescribing message types supported by the NCPDP Script standard which expand on improving the safety and efficiency of the prescribing process beyond just "new prescriptions" and "refill authorizations" to include message types like "medication history lookup" which can assist healthcare providers in making a higher quality and safer medication therapy decision for patients. These additional message types are the ones being piloted this year by four separate organizations, including SureScripts, under the direction of an AHRQ grant as required by the MMA.

With respect to the adoption of the NCPDP Script standard, we would like to point out that over 95 percent of the pharmacies in the U.S. support and have had their software vendors implement the NCPDP Script standard in their software over the past 2 to 3 years. In fact, in order to be certified on the SureScripts Electronic Prescribing Network, a pharmacy must be using the NCPDP Script Standard, and today every pharmacy in the United States that has activated electronic prescribing for their store(s) is connected to the SureScripts network. In addition, most major electronic health record (EHR) software vendors also have adopted the NCPDP Script Standard and have been certified to work properly on the SureScripts network. In addition, most, if not all, stand alone electronic prescribing software vendors have implemented the NCPDP SCRIPT standard in their products and have also certified their software on the SureScripts network to connect to pharmacies.

We would like to take this opportunity to comment, however, on a provision in the Final Rule that many in the industry rely on in order to avoid implementing electronic prescribing pursuant to the standards adopted by CMS. Section 423.160(a)(3)(i) of the Final Rule states as follows:

> "Entities transmitting prescriptions or prescription related information by means of computer generated facsimile are exempt from the requirement to use NCPDP SCRIPT Standard adopted by this section in transmitting such prescriptions or prescription-related information."

While Congress, Secretary Leavitt, CMS, and many others in the government have taken steps to promote electronic prescribing pursuant to mandated standards, all in an effort to achieve the President's goal of deploying electronic health records throughout the United States by 2014, many in the industry point to Section 423.160(a)(3)(i) as support for them continuing to fax prescription information, and as a result they do not take steps to implement electronic prescribing pursuant to the standards adopted by CMS. This loophole in the Final Rule has resulted in, and continues to result in, an adverse impact and slowdown in the adoption of electronic prescribing pursuant to CMS standards. We strongly encourage that Congress, through legislative action, or CMS, through rulemaking, take steps as soon as possible to delete the fax exception from the Final Rule.

If you have any further questions, please do not hesitate to contact us.