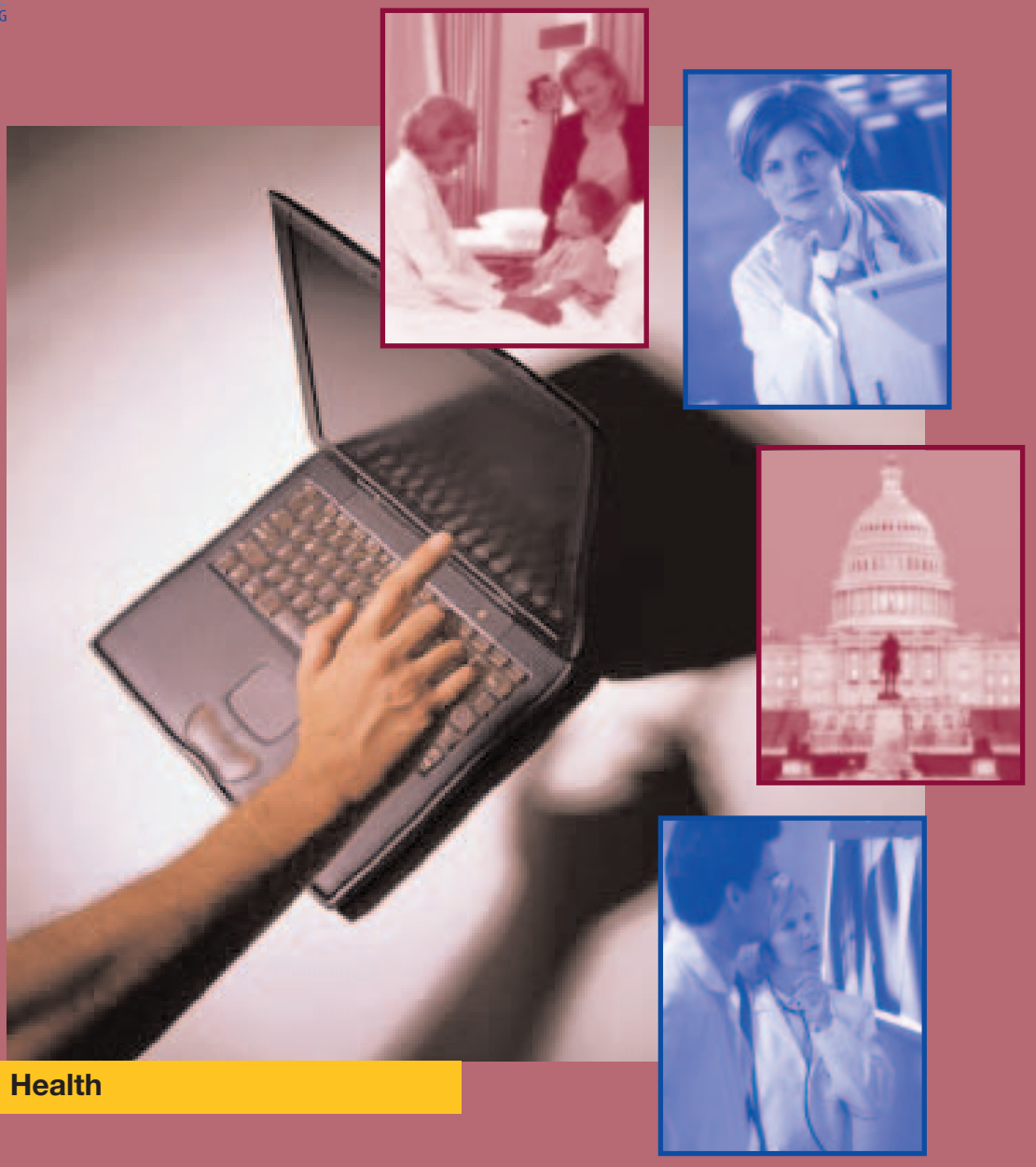
Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING



Health

Health Information Technology and the Electronic Health Record:

Implications for Healthcare Organizations

Health Information Technology and the Electronic Health Record:

Implications for Healthcare Organizations

Contents

Acknowledgements

Capgemini wishes to extend our appreciation to Stan Huff, MD, Intermountain Healthcare and the University of Healthcare for his review; and W. Edward Hammond, PhD, Community and Family Medicine Duke University for his insightful comments on this paper.

Executive Summary

In the spring of this year, President Bush established a vision of interoperable electronic health records within 10 years, and appointed David Brailer, MD, PhD to serve as the National Coordinator for Health Information Technology (HIT). This established a focal point for action and captured the attention of both the health care industry and the nation.

A recent publication by Health and Human Services Secretary Tommy Thompson and Dr. Brailer established four overarching goals. Paraphrased, these goals are: informing clinical practice; interconnecting clinicians; personalizing patient care; and improving population health, including access to care for underserved Americans.

Executives within the health industry have long acknowledged the inherent societal "good" of fostering technology adoption and applying HIT to the clinical environment through Electronic Health Records (EHRs). Beyond the goals articulated in Dr. Brailer's July 2004 Framework for Strategic Action, HIT and EHRs in particular offer the potential for improved patient safety and reduced medical errors; and lower administrative and medical costs.

But the barriers to implement these technologies are high, and the immediate tangible benefits to health organizations remain elusive. As a result, development of EHRs in the United States has been extremely slow and lags behind many other countries. The federal government has issued its call for action, but many unanswered questions remain. How will HIT and EHRs be developed and by whom? Where will the money required for development and implementation come from? What are the implications for physicians, hospitals, payers, and employers? What, if anything, do they need to do to respond to the government's initiative?

There are certainly significant challenges facing HIT and EHRs, encompassing structural, technical, financial, and social/cultural issues. None of these challenges represent insurmountable barriers to successful national adoption, but they will need to be addressed nevertheless. First and foremost, the process will need to address funding for capital outlays and financial incentives to encourage provider adoption. Funding will need to come from private-public partnerships and include a combination of grants, loans, reimbursements, and tax and other policy incentives. Healthcare organizations will need to self-fund at least a portion of EHR acquisition and local infrastructure development through business process changes that yield administrative efficiencies and cost savings. In the private sector, employers ultimately will need to support financing HIT and EHRs, since almost all private health expenditures come directly (through

self-insurance) or indirectly (through insurance premiums) from employers purchasing health benefits on behalf of their employees.

Additionally, EHR adoption will require standards to facilitate easy exchange of data from one computer system to another, or interoperability. Though the approach will certainly be decentralized, a national health information infrastructure of standards and privacy safeguards that restricts access only to caregivers authorized by the patient themselves will be required at some level. And the issue of identifiers will need to be resolved so that clinical information can be connected at the patient level while ensuring individuals' privacy.

Broad IT adoption most certainly will require major changes in the relationships between physicians, hospitals, payers, employers, technology vendors, and patients. All will need to participate and be invested in technology development, implementation, and success. A high degree of collaboration at a local level will be necessary and constituents will need to overcome historical animosities.

Achievement of a national health information infrastructure is surely a long-term vision. Progress will occur over the next ten years and will continue to evolve even after that. Though at this early stage it is difficult to predict what the specifics will look like, it is not too early for health organizations to take action. Hospitals and health plans need to take steps now to secure their place as a market leader in locally-driven health information networks.

The remainder of this white paper explores the framework that the federal government has laid out for HIT and EHR development; key changes that will be required for the initiative to succeed; implications for physicians, hospitals, payers, employers, and patients; and steps that health care provider and managed care organizations can begin to take now to ensure their leadership position in the future.

Introduction

The ability for different providers and organizations to electronically store and then exchange health-related information anywhere that a patient needs care does not exist, and looks likely not to exist, unless significant coordinated efforts are undertaken by all parties in the health industry.

Information Technology (IT) in health care has made great progress in diagnostic and therapeutic applications. Using computers to assist in imaging, surgery, and critical life support has meant lives are being saved that as recently as five years ago were being lost.

Investments in IT have been slowly increasing in the business applications as well. As a result of the Health Insurance Portability and Accountability Act (HIPAA) that standardized transactions and code sets, it now is becoming more financially rewarding for providers to communicate common business transactions with third party payers.

However, the application of HIT to clinical records (the Electronic Health Record or EHR) has been dreadfully slow. The ability for different providers and organizations to electronically store and then exchange health-related information anywhere that a patient needs care does not exist, and looks likely not to exist, unless significant coordinated efforts are undertaken by all parties in the health industry.

To date, the United States lags many other countries in significantly expanding the use of HIT in general and specifically through the adoption of EHRs. Countries currently making progress in EHRs include Germany, Finland, New Zealand, Australia, Canada, the United Kingdom (UK), and France. All have some element of national government ownership of the initiative or outright control, and all have relied heavily on specifying standards for the record itself and the communication of the record among healthcare provider settings. Although the recent decision by the US Department of Health and Human Services (DHHS) to adopt 15 additional standards (e.g., HL7, and vocabulary standards, SNOMED CT, LOINC and others) moves us towards standardization, our decentralized health care system and the varying levels of technology in the HIT community make acceptance and adoption an ongoing challenge.

The environment in the U.S. is markedly different than what is found in the other countries. While the Federal government is indeed heavily involved in health care in both financing (Medicare, Medicaid, and TRICARE) and delivery (the Veterans Health Administration, Public and Indian Health Services, and Military Treatment

Despite spending over $1.6 trillion on health care as a Nation this year, there are still serious concerns about preventable errors, uneven health care quality, and poor communication among doctors, hospitals, and many other health care providers involved in the care of any one person.

Facilities), the regulation and credentialing of health care professionals is a state function and the health care sector, itself, in the U.S. is very much under private control, by both for-profit and not-for-profit organizations as well as individuals.

Health care now accounts for 15% of the Nation's Gross Domestic Product (GDP) with Federal and State Governments paying for almost 50% of that cost, making the health sector in the U.S. the largest and most complex economic and social sector in the world. Yet despite spending over $1.6 trillion on health care as a Nation this year, there are still serious concerns about preventable errors, uneven health care quality, and poor communication among doctors, hospitals, and many other health care providers involved in the care of any one person. It is estimated that a national health information network can save about $140 billion per year—about 10 percent of total US health spending—through improved care and reduced duplication of medical tests.[1]

In 1776 Adam Smith, the Scottish economist and philosopher, published *The Wealth of Nations* in which he described economic forces in a marketplace, including the now-classic metaphor of the "invisible hand" that propels changes based on each individual's economic desires. While this remains a powerful and useful metaphor for economic activity, its application to the health care market sector is only partially useful at best. Direct economic relationships exist between parties in the health care market, but more often than not there are multiple parties to any activity. Providers care for patients but are paid by third parties that have little involvement with the care delivered. Hospitals must compete with each other for business (i.e., for patients), and now must often compete with physicians as well. Physicians are loathe to compete directly with each other, but their needs to keep their appointment books full (if in private practice) or to provide a good clinical experience (if in academics) is undeniable. Researchers compete for grants and strive to produce high quality studies. Payers compete for members from employer groups. Many more examples exist, the point is that competition does exist in health care, but the usual economic relationships are different from what exist in other markets.

[1] US Department of Health and Human Services. The Decade of Health Information Technology: Delivering Consumer-centric and Information-Rich Health Care. July 21, 2004.

It does not appear that pure market forces will foster the widespread adoption of EHRs that are capable of interacting with each other despite the obvious advantages to patients and to society as a whole.

Why is this important to the topic of HIT? Because economic forces have provided rewards (or return on investment [ROI]) for technology spending in the direct provision of clinical services, such as diagnostic and therapeutic interventions, and are now providing an ROI for business standardization such as the routine transactions and code sets codified by HIPAA. But rewards for implementing EHR have proven more elusive, and the expense is considerable. In 2002, only about 14% of hospitals had implemented some form of EHR, and far fewer physicians had done so in their practices.[2] Even hospitals that currently have an EHR have only an average of 54% of their caregivers actually using the EHR.

Confounding the progress of even this small amount of EHR implementation is the distressing fact that none of the disparate EHR systems currently in the market are capable of communicating with each other in any but the most rudimentary ways, if at all. Even two or more implementations of the same vendor's EHR product for the most part cannot be made to communicate with each other each other because choices such as differing vocabularies and code sets that were made during each EHR system's implementation preclude communication.

It does not appear that pure market forces will foster the widespread adoption of EHRs that are capable of interacting with each other, despite the obvious advantages to patients and to society as a whole. Although there are some promising examples of collaboration in the private sector that demonstrate innovation in EHR, the Federal government has recognized the need to act as a catalyst by funding several community or regional EHR-related grants as well as considering incentives to entice health care providers to adopt e-prescribing.

Beyond the economic forces at play, the lack of functional interacting HIT systems in the U.S. has terrible clinical and patient-oriented impact. For example, the often cited Institute of Medicine report[3] estimated 98,000 preventable deaths due to medical errors of commission each year. Experts estimate that the total number of errors may be as high as 350,000. A recent study by Health Grades[4] more

[2] The Markle Foundation, The Robert Wood Johnson Foundation; Connecting For Health; Achieving Electronic Connectivity in Healthcare; July 2004.
[3] Kohn LT, Corrigan JM, Donaldson MS, eds. To Err Is Human: Building a Safer Health System (Washington: National Academy Press, 1999).
[4] Health Grades, Inc., Patient Safety In American Hospitals, July 2004.

than doubled those mortality figures and calculated that the U.S. spent an extra $19 billion on preventable patient safety incidents between 2000 and 2002. A recent report by Kerr et al[5] underscored the need to advance HIT to disseminate knowledge and wisdom in healthcare. This study suggested that there is a huge disconnect between best practices and appropriate medical treatments and the clinical care that is actually delivered; that between 40 to 50% of Americans who do not receive appropriate medical treatments could have access through widespread adoption of EHRs and other HIT tools. Far too many similar conclusions have been presented to catalogue here, but the need to seriously improve adherence to standards of care is an issue of primary importance that has a direct relationship to the use of HIT.

Much has been made in the press, in political and policy speeches, and in academic publications about how Americans are provided services in other areas of their lives that are fully and efficiently automated (e.g., banking cards, online air travel ticketing). Certainly health care is hugely more complex an undertaking than travel or even financial services, but the central point remains accurate: Americans should not accept our health care system's current inability to ensure that any provider, anywhere can access a patient's health records if the clinical

[5] Kerr EA, McGlynn EA, Adams J et al. Profiling the quality of care in twelve communities: results from the CQI study. Health Affairs 2004;23(3):247-56.

need arises. Too many errors resulting in patient injury or death, too many wasted tests and treatments and far too much inconvenience exists in the current system and it cannot continue indefinitely.

Employer groups, coalitions and other stakeholders have also been weighing in on HIT, quality, and patient safety. Groups such as The Leapfrog Group, The Massachusetts Health Council, Greater Detroit Area Health Council, and the Michigan Health and Safety Coalition are actively advocating standards and measures for healthcare organizations. Organizations such as the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO), Commission on Accreditation of Rehabilitation Facilities, Accreditation Association for Ambulatory Health Care, the National Committee for Quality Assurance (NCQA), and others are also turning their attention to the development of HIT and specifically EHRs, particularly around both improving and measuring quality and patient safety.

Health care industry leaders recognize the magnitude of the problem, even if they are not financially able to address it. Healthcare IT executives believe that increasing patient safety/reducing medical errors is among the top business issues that will have the most impact on healthcare in the next two years[6]. They consider clinical information systems, electronic medical record (EMR) and computer-based practitioner order entry (CPOE)—all of which can have a significant impact on reducing medical errors—to be among the most important applications their organizations will need to invest in over the next two years. Yet they continue to cite inadequate financial support as **the** most significant barrier to successful implementation of technologies in their organizations.

Too many errors resulting in patient injury or death, too many wasted tests and treatments and far too much inconvenience exists in the current system and it cannot continue indefinitely.

[6] Healthcare Information and Management Systems Society, 15th Annual HIMSS Leadership Survey, February 24, 2004

Key Challenges and Issues to Implementing EHRs

There are two main structural issues to be addressed in any national approach to adoption of the EHR: identifying the patient and accessing the data.

There are significant challenges facing a shared EHR, and some of those challenges were introduced earlier. It is worthwhile looking more closely at some of the issues related to HIT research, planning, and implementation since an inability to address them will surely hinder adoption of the EHR. These issues are presented below in the context of structural, technical, financial, and social/cultural challenges. It is important to note at the outset that none of these challenges represent insurmountable barriers to a successful national adoption of HIT or, specifically, shared EHRs. On the other hand, understanding these challenges (or opportunities in working clothes, to paraphrase Henry J. Kaiser) is the first step to resolving them. What follows is a high level discussion of some of the more important ones.

Structural Challenges

There are two main structural issues to be addressed in any national approach to adoption of the EHR: identifying the patient and accessing the data. While seemingly unrelated, in all cases there is a need to be able to access medical records and information about the correct patient, when that information is needed, and ensure that all patient information is available in a way that can be quickly prioritized and assimilated **only** to authorized care givers (i.e., maintain strict medical information privacy). Privacy and security issues have been addressed under HIPAA and as briefly described elsewhere in this paper are more an issue of proper application to existing and new shared use processes than they are of creating new means of accessing data.

The challenge of identifying the patient is perhaps the most significant one that a national EHR initiative faces. Under the original HIPAA legislation, in addition to creating standard provider and health plan identifiers, standard patient identifiers would also be created. This provision led to a political firestorm as privacy advocates made it clear that it was not the place of government to create a national ID. Legislation was passed to prevent DHHS from creating patient identifiers and the issue was then dropped. Furthermore, while it is true that the federal government does indeed create an identifier, the social security number (SSN), using that number has become more difficult in recent years. Many health plans do use the SSN to identify members, but most providers use a

different numbering system. Due to concern over identity theft, some states such as California have even gone so far as to prohibit the use of the SSN for other needs such as the printed identifier on an ID card issued by a health plan. For a truly national HIT system with a sharable EHR to function, it would be vastly easier and ultimately safer with a national and standardized patient identifier, and that may require both the Congress and various state legislatures to revisit the use of the SSN since it is the most logical number to use. However, we also cannot let this largely political barrier stop the shared EHR. If a national identifier cannot be produced, then technology will have to be applied to correctly link all of the available clinical information about a patient. Care providers will be disinclined to use information from a shared EHR when making life and death decisions if that data contains a known risk of error due to patient misidentification of even less than 1% (and most experts expect even more). **In order for EHRs to succeed, we will need to resolve the issue of patient identifiers and identify a workable approach to connect clinical information at the patient level.**

The other structural issue is that of actually accessing the data. In a country with socialized medicine such as the U.K., it is possible to create a central repository for electronic health information. A centralized approach is not available in the U.S., however, and is not even being contemplated. What is being contemplated as a viable approach is a peer-to-peer networking approach, in which one EHR system directly communicates with another (peer) system or makes its patients available directly to the clinician through a web browser. Much like the file-sharing phenomenon that has occurred in recent years for MP3 music files, clinical users and local EHR systems will need to be able to locate those other systems that have pertinent clinical information and access it on an as-needed basis.

Technical Challenges

Technical challenges are the most obvious and the most abundant. They range from well understood problems such as the lack of standardization of clinical data and messages, to more subtle challenges such as the need for extremely flexible and easy to support configuration management for IT

In order for EHRs to succeed, we will need to resolve the issue of patient identifiers and identify a workable approach to connect clinical information at the patient level.

A set of consistent standards must be developed and widely accepted in order for EHRs to function.

environments that must support extreme process variability across health care settings. Indeed, this one issue alone is responsible for many implementation failures (partial or full) that we see of HIT in general in the health marketplace today.

Other examples of technical challenges include:

- True 24x7 high availability that justifies the replacement of the paper chart (unfortunately not usually a real requirement in the world today, but nevertheless an important goal);
- The need to interconnect with a varied and ever evolving assortment of devices that today include customized computer terminals, laptops, PDAs, pagers, cell phones and more;
- User interfaces, functionality and performance that make the electronic patient record more (rather than less) efficient to the physician than the paper chart;
- Standard underlying reference vocabularies and presentation formats for clinical data;
- Support for reference vocabularies and elimination from future use of local vocabularies across the life of the coded clinical data;
- The need for standard data and process models; and
- Best-of-breed application support through component-based architectures to support real-time workflow interactions among systems that result in semantic interoperability across IT systems.

Emerging technologies also represent challenges since any HIT enablement undertaken now must be able to grow with the IT and health care environment. Examples of known emerging technologies likely to have direct bearing on HIT include: handheld devices, wireless communications, biometrics, continuous speech recognition, new imaging modalities, Web access, thin client based ubiquitous connection, and customer, or Personal Health Record, support through the Internet. Providers desire to achieve more than just clinical information when they implement HIT solutions. They need advances in functionality as well, and indeed it may be improved functional capabilities that provide the final impetus for adoption of HIT.

Challenges such as these and many others support the need to address common areas of technical concern for any participant in the health care sector. Without a legislative mandate of standards in HIT, addressing these common concerns requires voluntary development and compliance by interested parties, or at least a critical mass. It is for this reason that **the approach advocated by Dr. Brailer is the only viable one: starting from the bottom and working up.** However, a bottom up approach still requires a clear understanding of the final product. We can't afford to all build at the bottom to our own imaginations only to find that what we constructed can't work with what others have designed. A top-down approach would necessitate federal mandates of standards and processes in HIT, and that simply does not exist. **Nevertheless, a set of consistent standards must be developed and widely accepted in order for EHRs to function.** Developing and endorsing these standards and then working with communities to create viable, working HIT capabilities is the first step towards creating a critical mass of users, allowing standards to be adopted in larger and larger segments of the health care sector.

Widespread adoption by physicians in their office practices will require the EHR system to make their professional lives easier, not more complex, and will need to provide a clear benefit to their clinical activities.

Financial Challenges

Financial challenges come down to the obvious: financial resources are constrained, especially as overall health care costs escalate and place ever more pressure on access to capital. And because of the complexity of the U.S. health system, financial incentives are not always aligned in the best interest of long-term efficiency and quality. This is particularly the case for EHRs; though society as a whole certainly stands to benefit, individual providers—who will bear the lion's share of the implementation costs in terms of money, time, and effort—have little to gain in the short-term.

Hospital systems and other institutional providers have been applying ROI analyses to all types of spending, including IT. ROI analyses for large devices (e.g., CT functional imaging with PET) are routine. ROI analyses for business-related IT to take advantage of transactions with third party payers are more scarce, but are starting to emerge. ROI analyses with a credible positive return for EHR have been the hardest of all. In very large institutions it has been possible, particularly as processes are redesigned with the support of clinical packages, to improve overall efficiency rather than implement EHRs as a stand-alone feature. But savings that accrue to the EHR such as reduced error rates are not so easily quantified by hospital systems. Savings related to the EHR such as reduced costs for paper-based activities are generally not readily accepted by many executives in the industry today. Regardless, in most cases, providers feel the need to allocate scarce capital only to those investments that produce a positive short-term ROI or otherwise clearly meet the overriding mission of the organization.

Physician offices represent an environment in which financial constraints are even higher. Larger medical groups may have the resources to undertake significant HIT, but small groups and solo practitioners rarely do. Practice management software is widely used, though the functionality of such systems varies widely and seldom has an EHR component. As the ubiquity of the EHR rises and the costs to install and use decrease, it can be fairly anticipated that the EHR will become widely used by physicians. Even then, however, widespread adoption by physicians in their office practices will require the EHR system to make their professional lives easier, not more complex, and will

need to provide a clear benefit to their clinical activities (where the argument supporting the EHR is already strong).

For successful adoption of HIT in general and **EHRs in particular, organizations will need to find ways to self-fund part of the implementation through "quick results" — changes that produce tangible benefits right away.** Quick results may be cost savings or increased revenue due to improving clinical or administrative processes prior to automating them. These can provide the initial funding necessary to secure momentum and adoption of EHRs.

As well, **organizations will need to look beyond financial results to more qualitative types of benefits.** Based on the overall goals set by the President and the DHHS Secretary, there are at least three additional goals that can be defined, measured and used for decision making, even if standard definitions for these do not currently exist. The first is clinical outcomes, including reduced medical errors, improved access to care, improved quality care and improved patient satisfaction. The second is better clinical processes, using HIT to substantially improve the quality, efficiency, and efficacy of the clinical processes themselves. This is Clinical Decision Support which, as part of an EHR, brings potentially missed but possibly relevant information to the clinician when they most need it as well as improved access to care and patient satisfaction. This type of ROI is necessarily linked to the additional functionality that many clinical support systems provide. The third type of non-financial ROI is medical progress, including advances in research, and diagnostic and therapeutic interventions. By using all four definitions of ROI (or other measurable types of returns), measurable goals may be set that are acceptable to all parties.

Perhaps most importantly, health leaders need to view EHR development as an opportunity to make needed and valuable changes in their organizations. Because EHR extends far beyond IT requirements to core business processes, strategies, and policies, it provides the opportunity to reinvent operations and achieve administrative efficiencies to realize longer-term savings. Just as HIPAA acted as a catalyst to redesign processes regarding claims transactions and electronic communications, so does EHR provide a forum to streamline workflows regarding documentation and transmission of clinical information. Health organizations can and should combine EHR and HIT initiatives with changes in business practices. Through this combination, they can achieve enormous improvements in efficiency and quality.

A discussion of costs cannot avoid looking at the other side of the metaphorical coin: where will the money come from? Current thinking is that there will be financial incentives put into effect that reward those providers using EHRs. Certainly Medicare can put such incentives in place, and when Medicare makes such changes, the private sector often follows. In order for Medicare to provide financial incentives, it is expected that it will do so in a budget-neutral environment, which means that the funds will probably come at least in part by either reducing or freezing payments to providers not using EHRs. Defining what constitutes sufficient use of EHRs to be eligible to receive such incentives will also need to evolve as EHRs themselves evolve. A first step towards this was the recently completed HL7 ANSI Draft Standard

for trial use (DSTU) that functionally defines an Electronic Health Record. This was commissioned by DHHS in 2003 and completed by HL7 in 2004. Following that, DHHS—through the National Library of Medicine—is asking HL7 to go the "next step" and begin to develop the implementation guides that will define specific events of interaction, and attach specific messages to the events and clinical vocabularies to the messages' data elements so that users can implement EHRs that will be able to seamlessly communicate with authorized users and other EHR systems.

In the private sector, there may be some initial reluctance by some payers to increase payments to providers who are investing in HIT. This is particularly the case if premium rates are highly competitive; a payer that pays higher reimbursement may see its costs rise faster than a competitor that does not. Over time such reluctance may diminish as the value of HIT is realized, but in the private sector, some types of incentives to the payers themselves may be required.

It is also critically important to note that almost half of all private sector health insurance is actually self-funded by employers; in other words, it is not the health insurance companies using their own funds, but rather using the employer's funds. In order to increase payments to providers for patients covered under self-funded health plans, employers will need to agree to such payments. Since health coverage costs are already tax-deductible by employers, this may be a viable area for public policy support to reward employers who agree to such provider incentives for HIT.

To be successful, a national EHR approach will need to realign and/or redistribute financial incentives among health industry participants. Providers in particular will need to receive tangible, short-term benefits in exchange for their investment. This can be accomplished through a variety of government-driven tax and other policy initiatives, as well as privately sponsored efforts at collaboration.

In all cases, it is worth bearing in mind that as health care is 15% of our current economy and growing, any costs associated with the implementation of all aspects of HIT will barely show up in our overall spend in health care. Both the costs and the savings associated

To be successful, a national EHR approach will need to realign and/or redistribute financial incentives among health industry participants.

The application of technology never solves a problem by itself, and failure to address these other aspects of HIT beyond the EHR will surely result in a very substantial work effort that leads to very little success.

with HIT will be dwarfed by other financial forces in health care, including the various reasons for health care cost increases such as changing demographics, new drugs and therapeutic interventions, and life-style factors. The Markle Foundation has estimated that financial incentives in the range of $3 to $6 per patient visit, or $0.50 to $1.00 per member per month would be sufficient to encourage and sustain widespread adoption of basic EHR technologies by small, ambulatory primary care practices. This represents 1.2% to 2.4% of the total amount spent on outpatient care annually.[7]

Social and Cultural Challenges

It would be naïve, and seriously counterproductive, not to recognize the significant social and cultural challenges that implementation of HIT faces. The application of technology never solves a problem by itself, and failure to address these other aspects of HIT beyond the EHR will surely result in a very substantial work effort that leads to very little success. These types of challenges are ultimately as large as the technical challenges, not because of the sheer number, but because they are pervasive throughout the industry. They are not cut and dry, and require very different approaches during different phases of successful activity, and such approaches are often quite different depending on the location (urban, rural, etc.) and types of individuals involved (e.g., private practice physicians, academicians, nurses and other primary care-givers, diagnostic technicians, business executives, etc.). A deep understanding of how and why they do what they do is necessary for any forward progress to be made, and a lack of that understanding fosters resistance to change that is perceived as being imposed from the outside with little concern for their unique professional needs.

Social and cultural challenges are perhaps the most difficult to sharply define, but show up in almost every aspect of HIT implementation. The health industry operates in silos. This is only natural since no organization, no matter how large, can envelop the entire realm of health care. Some silos are self-created, such as economic self-interest or deliberate decisions not to

[7] The Markle Foundation, The Robert Wood Johnson Foundation; Connecting For Health; Achieving Electronic Connectivity in Healthcare; July 2004.

understand other aspects of the health care system (e.g., a physician not wanting to understand how a hospital supports clinical activities or creates medical records). Most silos occur simply because individuals functioning in health care tend to concentrate on what they are supposed to do and how they do it. We all learn habits, or more accurately processes, and are reluctant to change them. If we do not see an immediate advantage to our own activities, we are unlikely to strongly support change; if our work burden goes up, we may actively resist it. In our current health care environment in which all types of professional providers, especially in hospitals, are feeling highly overburdened as it is, implementing changes as substantial as HIT can face serious social inertia.

One of the most unique aspects of health care as compared to all other economic sectors is the emotional content of what we do. Patient care has deep roots in the caring tradition, roots that still run deep despite modern pressures on cost control. Patients obviously have strong emotional content as regards their own care but even more so the care of their loved ones. The Personal Health Record

(PHR) will increase the probability that the individual will become even more involved in the choices to be made about themselves and their loved ones. Professionals providing that care have a deeper emotional commitment to their care-giving than may be found in almost any other field of human endeavor. Any activities that have direct or even indirect impact upon patient care cannot help but be seen through the lens of the human aspect of caring for people. Recognition of this fundamental underlying principle is necessary in order to achieve necessary changes, and may also provide an important positive reason for adoption of HIT by professionals.

New Efforts

Just as John Kennedy set the goal of putting a man on the moon, President Bush has set a goal of all Americans having access to electronic health records within ten years.

Dr. Brailer's recent report both acknowledges the current state of HIT and sets the direction for its future evolution. It acknowledges that EHR development and adoption must be a grass roots effort. It provides a framework for the promotion of healthcare informatics, cautioning that the document ought not be viewed as detailed blueprint of the government's future actions, but rather as an outline spelling out the best way to encourage a healthcare revolution.

Just as John Kennedy set the goal of putting a man on the moon, President Bush has set a goal of all Americans having access to electronic health records within ten years. To accomplish this goal, widespread adoption by hospital systems and physicians—even those in solo or small group practices—will be required. The vision is that EHRs will be available to authorized users anywhere and at anytime. Interoperation of data and process across EHRs will be associated with individual providers and provider organizations.

As noted earlier, the government's plan includes four strategic goals:

- **Inform Clinical Practice:** HHS plans to incent EHR adoption by clinicians, reduce the risk of investment, and promote EHR diffusion in rural areas. Potential incentives include regional grants and contracts, improving availability of low-rate loans, using Medicare reimbursement to reward the use of electronic records, and testing new concepts whereby Medicare pays for performance-linking payments to quality of care and patient safety rather than volume of services only; and such a focus is highly facilitated by the use of HIT. Lastly, HHS intends to serve as a coordinating and educating body for the implementation of HIT and the EHR through the creation of a Health Information Technology Resource Center (HITRC) as an activity of the Agency for Health Care Research and Quality (AHRQ).

- **Interconnect Clinicians:** By fostering regional collaborations and developing a national health information network, HHS hopes to allow medical information to be portable and move from one point of care to another. There are currently a small number of local initiatives underway, and these form an excellent initial laboratory for working through many of the issues discussed earlier. By fostering and supporting such local and regional initiatives, the "bottom up" strategy of national adoption of HIT and the EHR can be successful. DHHS's Agency for Health Care Quality and Research (AHRQ) has solicited requests for 50 grants for planning, implementation and value proving. These will be given to organizations proposing the development of Local Health Information Infrastructures (LHIIs) that will interconnect clinicians. Almost 300 submissions have been received for what will be 50 grant awards.

- **Personalize Care:** Consumers are going to be encouraged to maintain Personal Health Records (PHRs); the government is going to promote the use of telehealth in rural areas; and consumers will eventually be better able to select clinicians and institutions based on quality metrics. More importantly, by having the entire EHR available, it will be far more possible to tailor medical care for each individual's clinical needs. Individualized disease management and prevention programs will be easier to implement, and expert IT systems will be possible to aid clinicians in carrying out their profession.

- **Improve Population Health:** Goals include unifying public health surveillance architectures; streamlining quality and health status monitoring; and accelerating the dissemination of evidence. It is also strongly believed that successful implementation of a national HIT will improve access to care, particularly in rural

By having the entire EHR available, it will be far more possible to tailor medical care for each individual's clinical needs.

In support of its broad strategies, the government has begun to implement a set of initiatives to foster EHR development and HIT adoption.

and inner city areas. HIT by itself cannot improve access of course, but it can enable practitioners to provide care more efficiently than before, and provide patients with access to specialized services (e.g., using remote diagnostic capabilities or telehealth). The positive effect of HIT on patient safety clearly leads to improved population health, and as noted when discussing personalized care, effective HIT will enable more effective disease management and prevention, leading to improved clinical outcomes.

In support of these broad strategies, the government has begun to implement a set of initiatives to foster EHR development and HIT adoption. Initiatives currently being given attention include:

- Appointment of a Health Information Technology Leadership Panel to assess costs and benefits;
- Creation of the HITRC under the AHRQ, charged with (among other activities) figuring how best to form a national information network and address the issue of interoperability;
- Private sector certification of IT products, especially standards for electronic health records, supported by the work that HHS has asked HL7 to undertake;
- $2.3 million in awards to nine communities to help spark and expand local initiatives for electronic health information;
- Setting standards for electronic prescribing;
- Establishing a Medicare beneficiary portal that will ultimately include both claims information and preventive care management capabilities;
- Sharing clinical research data through a secure infrastructure; and
- Federal commitment to a set of standards to make it easier for information to be shared across agencies and serve as a model for the private sector.

What the Future Holds

HIT development will be grounded in regional demonstrations and "seed" projects that conform to the framework's goals and adhere to its standards.

The private sector is quite cognizant of the value that the EHR can bring. Relative to the hospital industry, in the Fifth Annual Survey of Electronic Health (EHR) Trends & Usage, conducted from April 15 to May 23, 2003 by the Medical Records Institute,[8] the following major factors were cited for the adoption of the EHR more than 50% of the time:

- Facilitate workflow improvement
- Improve clinical documentation to support appropriate billing service levels
- Improve patient safety
- Share comparable patient data among different sites within multi-entity delivery system
- Meet the requirements of legal, regulatory, or accreditation standards
- Contain or reduce healthcare delivery costs
- Establish a more efficient and effective information infrastructure as a competitive advantage

Thus it appears that the time truly is right for public-private collaboration on HIT and the EHR.

The adoption and implementation of HIT and the EHR in the U.S. will be a long term process. Progress will occur over the next ten years and will continue to evolve even after that. At this early stage in the strategic formulation of a national HIT agenda, it is difficult to predict what the specific results will look like. Given the "ground up" approach that is being adopted, the details are likely to vary from region to region, at least in the near term.

What is clearer is what the process will look like and what issues will need to be addressed. To accomplish the strategic goals that have been established, **the process will need to address existing barriers such as funding for capital outlays, incentives to encourage physician adoption, and standards to facilitate easy exchange of data from one computer system to another, or interoperability.** In the end, all of the potential challenges described earlier in this paper will need to be addressed, with the structural and technical challenges achieving a standardized approach, while approaches to the financial and social/cultural challenges will be more variable. In truth, such variability represents an excellent opportunity for imaginative solutions.

HIT development will be grounded in regional demonstrations and "seed" projects that conform to the framework's goals and adhere to its standards. While there will be heterogeneity across various vendor systems, the demonstration projects will need to be consistent in their ability to support defined interoperation functions. At some level, **a national health information infrastructure of standards and privacy safeguards that supports a decentralized, federated architecture will be required** to support electronic connectivity between health industry constituents. The issue of proper identification of the patient and comprehensive ability to locate individualized patient information will be paramount, requiring attention when demonstrations move from strictly local activities to regional (and ultimately national) interconnectivity.

[6] http://www.medrecinst.com/resources/survey/results03/surveyOverview03.pdf

Broad HIT adoption will most certainly require serious changes in the relationships between health industry constituents.

More clarity of funding and finance will definitely be required. Funding sources will certainly come from private-public partnerships in the form of grants, loans, reimbursement, and incentives. The Federal government will wield its hefty purchasing power through Medicare, and both the federal government and state governments can do so through Medicaid. Other federal programs such as the Veterans Administration and the military health system can and will play a crucial role in the effort, and funding will be an issue there as well. In the private sector, it is ultimately the employer community that will need to support funding and financing HIT and the EHR since almost all private health expenditures come directly (through self-insurance) or indirectly (through insurance premium) from employers purchasing health benefits on behalf of their employees.

Broad HIT adoption will most certainly require serious changes in the relationships between health industry constituents. **A high degree of collaboration—even among previously antagonistic entities—will be required.** Patients will have a far greater opportunity to become directly involved in managing their own health records through Personal Health Records (PHRs) (when compared to their current ability to do so under HIPAA), and many will take advantage of that opportunity, make more informed choices and become responsible for their own health; this will directly affect the patient-physician relationship. Physicians and hospitals will need to work together on EHR implementation, and health systems and IT vendors will need to work together to foster the diffusion of the EHR to the physician's office. Lastly, hospitals and health insurers will need to overcome their historical animosity and collaborate to ensure a seamless communication of health data.

Ultimately, the widespread adoption of EHR will completely revolutionize how we measure success in health care. It will provide an opportunity to redefine measures of quality and outcomes, and as a nation we will be able to gauge levels and improvements in patient safety like never before. There is no doubt that the EHR will come to occupy a central place in our health care system. What comes in the next ten years will be the reality of how that occurs.

Implications for Health Organizations

It is not too early for provider and payer organizations to begin to address HIT and EHRs in a proactive manner.

While the national debate about HIT and EHR is still in its infancy, much of the future direction is clear. It is not too early for provider and payer organizations to begin to address this issue in a proactive manner. Capgemini has identified a number of steps that hospitals and health plans should begin to put in place in order to secure their place as leaders in local market-driven health information networks:

- **Begin a community dialogue on EHR** involving physicians, hospital leaders, payer executives, consumers, and employers. Since EHR adoption will be a bottom's up initiative, all of the major constituents in the local health care community will need to be involved in a collaborative manner. Through early action, organizations can secure their position as future leaders in their local market EHR networks. Such a dialogue should evolve into a more substantial working group; one that can be supported through the many programs and avenues described earlier in this paper.

- **Start developing an IT infrastructure** to support the processes of the advanced clinical information system. By taking steps now, from the bottom up starting with vocabularies and coding standards and working on up to their messaging infrastructures, organizations can ensure that no or minimal downtime will be required when the EHR is developed. Health organizations should work with their existing IT vendors to best understand their approach(es) to the EHR and HIT, and how that fits in with national initiatives and voluntary standards.

- **Engage physicians** in the process of preparing for EHRs. Health organizations should employ change management techniques to secure physicians' commitment to the process and willingness to adopt new technologies. They should execute education, communications, and awareness programs, and consider including physician practice management software vendors in discussions about the EHR. At the same time, they should include e-prescribing in discussions with physicians and vendors. The Medicare Modernization Act of 2003 requires DHHS to also facilitate the adoption of computer assisted prescription orders. HHS is already combining their efforts. As a matter of efficiency health organizations should do the same.

- **Start to engage local governments** who will need to be involved in the development of community infrastructures. Mayors, city councils, school boards, county commissioners, governors, state legislators and local public health officials need to start setting levels of expectations in the community. They, along with employers and the patients themselves, are the real primary stakeholders in the shared EHR. They have the ability to influence and, if necessary, regulate provider organizations to work together through the processes of creating local infrastructures and adoption of local EHR systems by individual and organizational healthcare providers.

- **Redesign clinical documentation workflows** by working with physicians and other clinical staff. In order to capitalize on the

The sooner an EHR can begin to return value to the organization, the greater its overall contribution.

potential benefits of new technology, organizations need to redesign their associated business processes. To fail to do so could well result in an EHR that serves as little more than an expensive add-on that could end up making physicians less efficient.

- **Define and establish the service levels** that must be met by clinical information systems. It is not enough to plan for implementation of HIT and the EHR. Service levels must be defined and delivered for the adoption to be successful.

- **Conduct a thorough assessment of patient safety** to quantify the magnitude of medical errors and estimate the potential clinical and financial benefits of implementing an EHR as well as broader HIT.

- **Conduct a thorough assessment of patient access** to identify the benefits of EHR from a revenue cycle perspective. EHRs offer the potential for health organizations to streamline registration, scheduling, eligibility, charge capture, and claims management processes. They can contribute bottom line results in terms of reduced days in accounts receivable, lower denial rates, and reduced write offs.

- **Establish a delivery and support model** to support the EHR that addresses resources, help desk operation, issues resolution and escalation policies, project prioritization, project management, and user satisfaction—all at appropriate service levels.

- **Ensure HIPAA compliance,** particularly requirements for Privacy and Security. At a minimum, EHRs will need to conform to the requirements specified in the administrative simplification portion of the regulation.

- **Develop a business case to guide the EHR development process.** This plan should identify quick results that can start to produce benefits within weeks or months, and estimate the value they can provide. The sooner an EHR can begin to return value to the organization, the greater its overall contribution. The business case helps to provide the necessary momentum and buy-in by physicians and other clinicians. In addition to delivering value sooner, quick results can help to keep the entire effort on track.

Conclusion

When people of good will, supported by visionary public policy and resources put in the effort, success will follow.

After years of mostly ineffective talk, the forces are now aligned for the successful implementation of HIT and the EHR in the U.S. Both public and private health sectors agree on the need, and if there are differences of opinion as to the degree of value, there is no disagreement that the value is positive. Given the massive size of the health care sector in our economy as well as the complexity of the task, there is no short cut; success is likely to take at least seven to ten years. The challenges are significant, especially in the highly decentralized health system in the U.S., and cooperation will be voluntary, not mandatory. But what have served in the past as insurmountable barriers to success are now seen to be challenges that can be successfully addressed by all of the individuals and organizations affected. When people of good will, supported by visionary public policy and resources put in the effort, success will follow.

About Capgemini

Capgemini is the global leader in professional services to the health industry, delivering results-driven solutions for today's business challenges. We are the only company with the diversity, dedication, and resources to address all sectors of the health industry, including hospitals and health systems, academic health centers, post acute care facilities, physician groups, managed care organizations, life sciences organizations, public sector health agencies, and health-related technology companies. We have the pulse of complex issues facing health organizations, and we offer leading practice experience around the world including the United States, Canada, United Kingdom, France, Netherlands, Germany, Norway, Sweden, Spain, and Australia.

Industry analysts confirm Capgemini's leadership position in healthcare consulting. Gartner, Inc. recently named Capgemini the #1 Top Consultant and System Integrator, and the #1 Top Outsourcer worldwide in the health provider market. Kennedy Information, Inc. ranked Capgemini #1 in the provider, payer and life sciences categories in a recent report entitled "The Global Healthcare Consulting Marketplace."

Capgemini's Collaborative Approach: It's What Makes Us Different

Our clients tell us that what differentiates Capgemini is the unique, collaborative way in which we help them pursue opportunities and solve problems. Collaboration is a long-recognized cornerstone of our approach to business and is part of our corporate DNA.

Capgemini's "Collaborative Business Experience" represents our commitment to our clients' success and focuses on how we work together. Backed by over three decades of industry and service experience, we make our clients stronger by combining what they do best with what we do best to improve their performance. We recently published a book entitled *Health Care Technology: Enabling Collaboration Between Payers and Providers*. Our Collaborative Business Experience is designed to help organizations achieve better, faster, more sustainable results through seamless access to our network of leading, global technology partners. With our collaboration-focused tools such as our Accelerated Solutions Environment (ASE), we help companies create strategic and technology solutions in record time.

The Capgemini Collaborative Business Experience is more than a philosophy; it represents a measurable promise to our clients. From our very first meeting together, we begin demonstrating the value we will bring to your organization. With every meeting, phone call, or e-mail, we add value—with a new idea, tool, or insight to transform your business. As we build relationships, we start delivering the right results from the start… the results that bring your company further, faster.

We don't just serve health organizations. We have deep roots within the health industry.

Our professionals include clinicians and former industry executives, who collectively bring hundreds of years of healthcare experience to clients. Capgemini is uniquely positioned to help health organizations succeed, with the following capabilities:

- **Top talent and unparalleled experience.** With a team of 1500 people dedicated to the health industry worldwide, our proven solutions are delivered by former CEOs, CFOs, CIOs, and COOs of hospitals, managed care, and health insurance organizations, as well as former executives from research-based life sciences companies, and former government decision-makers. We have more clinicians on staff than any other consultancy – including physicians, nurses, coding specialists, laboratory and radiology technicians, pharmacists, and dieticians.

- **Knowledge transfer and proven solutions.** Through organization-wide efficiency, revenue and system performance initiatives, we've helped to reduce operational costs by as much as 15 percent for some of the largest health organizations. Our tools deliver proven results and speed cycle times, including advanced facilitation techniques, demonstration centers and development laboratories.

- **Unbiased technology orientation.** We have a network of world-leading partners with all of the major technologies used by the health industry, including Eclipsys, IDX, Trizetto, IBM, Microsoft, HP, Oracle, PeopleSoft, SAP, Cerner, McKesson, EPIC, Cambio, QCSI, Novell, INLOG, Carefx, and Siemens. We have full resources to run an IT organization, and the depth and breadth to advise, consult, or outsource.

- **Thought leadership and industry involvement**. Capgemini has a longstanding tradition of investing a portion of our yearly profits into research and development—a commitment that brings deep market insights and innovative solutions to our clients. We are an accomplished **thought leader** in the health industry, recognized by Gartner and other analysts for our ability to capture "mindshare" of healthcare organizations. We published the first comprehensive resource on clinical information systems, entitled *Transforming Clinical Care Through Technology*. We helped develop **Café RX**, a collaborative alliance of industry leaders working together to facilitate electronic prescribing. In addition, Capgemini's professionals hold a leadership role in the health industry, chairing HIPAA-related committees including HL7; participating in national efforts to develop an electronic health record; testifying before the National Council on Vital and Health Statistics; sponsoring key industry events such as the World Health Congress; and actively participating in industry professional associations including: AAHP, AHA, ACHE, AONE, HFMA, HIMSS, CHIME, HRDI and NCPDP.

- **A focus on value and results.** We deliver tools that give a full picture of potential opportunities, assigning value not just to financial capabilities but also to intangibles such as improving patient safety, service quality, technical capabilities, market share, professional resources, clinical expertise, operational productivity and reputation – all in a manner that maximizes ROI and profitability.

- **A wide range of health-specific solutions.** We address the full scope of operational and technology issues, including: business strategy and transformation, care management, clinical transformation, customer relationship management, cost and revenue cycle management, supply chain management, HIPAA, electronic health records (EHRs), ERP and Health Information System implementation, emerging technologies, portal development, e-prescribing, and outsourcing.

About Capgemini

Capgemini is one of the world's largest providers of Consulting, Technology and Outsourcing services. The company helps businesses implement growth strategies and leverage technology. The organization employs approximately 55,000 people worldwide and reported 2003 global revenues of 5.754 billion euros. More information about individual service lines, offices, and research is available at www.capgemini.com.

Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

Hindy Shaman
Capgemini
8000 Towers Crescent Drive
Suite 800
Vienna, VA 22182
e-mail: hindy.shaman@capgemini.com

Capgemini

CONSULTING.TECHNOLOGY.OUTSOURCING

Capgemini U.S. LLC
Health and Managed Care Consulting

Peter Kongstvedt, M.D.
(571) 382-6250
e-mail: peter.kongstvedt@capgemini.com

John Quinn
(216) 583-1242
e-mail: john.quinn@capgemini.com

Hindy Shaman
(703) 453-6161
e-mail: hindy.shaman@capgemini.com

www.capgemini.com

10K – 0904