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United States Government Accountability Office
Washington, DC 20548

February 16, 2005

The Honorable Jim Nussle
Chairman
Committee on the Budget
House of Representatives

Subject: Health and Human Services' Estimate of Health Care Cost Savings Resulting from the Use of Information Technology

Dear Mr. Chairman:

According to the Institute of Medicine and others, the U.S. health care delivery system is an information-intensive industry that is complex, inefficient, and highly fragmented, with estimated spending of $1.7 trillion in 2003. The Institute of Medicine has called for transformational change in the health care industry through the use of health information technology (IT) to improve the efficiency and quality of medical care.[1] As a regulator, purchaser, health care provider, and sponsor of research, the Department of Health and Human Services (HHS) has also been working over the years to promote the use of IT in public and private health care settings.

As you requested, we are currently working to provide you with an overview of HHS's efforts to develop a national health IT strategy, identify lessons learned from the Departments of Veterans Affairs and Defense regarding their use of electronic health records (EHR),[2] and identify lessons learned from international efforts to modernize national health IT infrastructures. As part of this ongoing work, you asked us to review how a recent HHS estimate of cost savings from the adoption of IT was derived and what portion of these savings are projected for the federal government. To develop this correspondence, we reviewed supporting documentation, interviewed HHS officials on potential cost estimates, and reviewed the methodology used to develop projected cost savings and other benefits. We performed our work in January 2005, in accordance with generally accepted government auditing standards.

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[1] Institute of Medicine, *To Err Is Human: Building a Safer Health System* (Washington, DC: November 1999) and *Crossing the Quality Chasm: A New Health System for the 21st Century* (Washington, D.C.: March 2001).
[2] There is a lack of consensus on what constitutes an EHR, and thus multiple definitions and names exist for EHRs, depending on the functions included. An EHR generally includes (1) a longitudinal collection of electronic health information about the health of an individual or the care provided, (2) immediate electronic access to patient- and population-level information by authorized users, (3) decision support to enhance the quality, safety, and efficiency of patient care, and (4) support of efficient processes for health care delivery.

In brief, IT can improve the efficiency and quality of medical care and result in costs savings. Although estimated nationwide savings are primarily based on studies with methodological limitations and are contingent on much higher IT adoption rates than are currently estimated, the potential for substantial savings is promising.

Background

In October 2003, we reported on cost savings achieved by health care delivery organizations and insurers resulting from the use of IT, including reduction of costs associated with medication errors, communication and documentation of clinical care and test results, staffing and paper storage, and processing of information.[3] IT also contributed to other reported benefits, such as shorter hospital stays, faster communication of test results, improved management of chronic disease, more accurate and complete medical documentation, improved accuracy in capturing charges associated with diagnostic and procedure codes, and improved communications among providers that enabled them to respond more quickly to patients' needs.

Over the past year, federal efforts to encourage the use of health IT have accelerated. As we reported in August 2004, HHS has a number of major health IT initiatives throughout the department that cover a broad range of activities and participants.[4] For example, in April 2004, President Bush established a goal that health records for most Americans should be electronic within 10 years and issued an executive order to "provide leadership for the development and nationwide implementation of an interoperable health information technology infrastructure to improve the quality and efficiency of health care."[5] As part of this effort, the President tasked the Secretary of HHS to appoint a National Coordinator for Health Information Technology—which he subsequently did 1 week later. At that time, the Secretary stated that IT could save the nation $140 billion annually in health care spending. The executive order also called for the Coordinator to develop a strategic plan to guide the implementation of interoperable health IT in the public and private health care sectors.

Since his appointment, the Coordinator has taken a number of actions to encourage the nationwide adoption of IT. In July 2004, HHS issued a document entitled *The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care*. This framework outlines an approach to achieving interoperability across the U.S. health care delivery system and establishes four major goals and 12 strategies, listed in table 1. To build upon the framework, in November 2004, the Office of the National Coordinator for Health IT issued a request for information seeking public comment by January 18, 2005, on how interoperability of health information technologies and information exchange can be achieved as part of a national health information network. HHS is currently evaluating over 500 submissions received during the comment period. As we testified in July 2004, as the

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[3] GAO, *Information Technology: Benefits Realized for Selected Health Care Functions*; GAO-04-224 (Washington, D.C.: Oct. 31, 2003).
[4] GAO, *HHS's Efforts to Promote Health Information Technology and Legal Barriers to Its Adoption*, GAO-04-991R (Washington, D.C.: August 13, 2004).
[5] Executive Order 13335, *Incentives for the Use of Health Information Technology and Establishing the Position of the National Health Information Technology Coordinator* (Washington, D.C.: Apr. 27, 2004).

National Coordinator for Health IT moves forward with this framework, it will be essential to have continued leadership, clear direction, measurable goals, and mechanisms to monitor progress.[6]

Table 1: National Health IT Goals and Strategies

Goal 1: Inform clinical practice with the use of electronic health records
Provide incentives for electronic health record adoption
Reduce risk of electronic health record investment
Promote electronic health record diffusion in rural and underserved areas
Goal 2: Interconnect clinicians so that they can exchange health information using advanced and secure electronic communication
Establish regional collaborations
Develop a national health information network
Coordinate federal health information systems
Goal 3: Personalize care with consumer-based health records and better information for consumers
Encourage the use of electronic health records
Enhance informed consumer choice
Promote use of telehealth systems
Goal 4: Improve public health through advanced biosurveillance methods and streamlined collection of data for quality measurement and research
Unify public health surveillance architectures
Streamline quality and health status monitoring
Accelerate research and dissemination of evidence

Source: HHS.

Potential Cost Savings from the Use of IT

According to the National Coordinator for Health IT, HHS's initial estimate of potential nationwide savings resulting from the adoption of health IT is based primarily on two studies conducted by the Center for Information Technology Leadership (CITL).[7,8] He also stated that the annual savings estimate is conservative and excludes clinical encounters from other health care delivery settings, such as inpatient care, disease surveillance, and clinical research trials. One of the CITL studies identified $78 billion in annual savings, while the other study estimated $44 billion from the widespread implementation of IT used in ambulatory care settings.[9] Both studies estimated savings based on the use of models to project the value of net cost savings from the adoption of IT and incorporated information from published studies, expert panels, and market research. However, CITL and other health care experts acknowledge that these estimates are based on a number of assumptions and inhibited by limited data and therefore are not necessarily complete and precise. The

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[6]GAO, *Health Care: National Strategy Needed to Accelerate the Implementation of Information Technology*, GAO-04-947T (Washington, D.C.: July 14, 2004).

[7]Center for Information Technology Leadership, *The Value of Healthcare Information Exchange and Interoperability* (Boston: 2004) and *The Value of Computerized Provider Order Entry in Ambulatory Settings* (Boston: 2003).

[8] CITL was chartered in 2002 by Boston-based, nonprofit Partners HealthCare System as a research organization established to help guide the health care community in making more informed strategic IT investment decisions.

[9]*Ambulatory care* refers to health services provided on an outpatient basis to those who visit a health care facility or hospital and depart after treatment on the same day.

studies reported savings based on (1) electronically sharing health care data between providers and stakeholders,[10] which resulted in saving time and avoiding duplicate tests, and (2) avoiding unnecessary outpatient visits and hospital admissions, as well as more cost-effective medication, radiology, and lab ordering. Net savings estimated nationwide are summarized in table 2.

Table 2: Potential Annual Cost Savings from Nationwide Adoption of IT

Category of IT adopted	Potential cost savings
Ambulatory electronic health records[a]	$78 billion
Ambulatory computerized provider order entry[d, b]	$44 billion

Sources: CITL.

[a] Study limitations: (1) the analysis was focused on provider-centric (i.e., no secondary transactions considered) and encounter-specific transactions between providers and their stakeholders; (2) financial value was based on information exchange and interoperability between entities, not within entities; (3) model does not take into account the financial impact of avoided tests and other changes in utilization that flow from improved information exchange; (4) model does not address the costs of developing relevant standards to support health care information exchange and interoperability; and (5) estimate of cost savings assumes widespread adoption of IT in order to achieve financial savings within 10 years, with 50% of benefits accruing in the first year of adoption and increasing by 10% each year.

[b] Study limitations: (1) projections are based on a small number of studies, sometimes extrapolating to national figures from a single data point; (2) CITL did not incorporate any assumptions about volume pricing discounts; (3) CITL did not project any savings for pharmacies, laboratories, or other affiliated providers who would presumable benefit from improved efficiencies with better orders; and (4) CITL makes projections for an "average" provider as defined by available national statistics.

[e] Computerized provider order entry is a software application that supports the ordering of medications, diagnostic tests, interventions, and referrals by outpatient providers.

Although HHS had originally given us estimated annual federal savings of $30 billion associated with the Medicare program, in its comments HHS stated that it is unable to reliably quantify savings. HHS also stated that it is actively working to determine what the savings will be and expects them to be substantial. Although the available data make estimating cost savings difficult, according to HHS Medicare would likely save a proportionate amount from reduced utilization of services for Medicare-funded office visits (because the program uses volume-based payments for ambulatory and inpatient care) and from reduced use of medications given inappropriately or unnecessarily.

The annual cost savings shown above assumes fairly high IT adoption rates, whereas the current rates are low. According to HHS documents, these savings estimates are based on the assumption that more than half of all physician practices[11] and hospitals would use EHRs that are connected to a national health information network. Therefore, increasing the rates of IT adoption is critical to achieving the benefits cited. However, the results of the surveys and analyses of adoption rates are varied. Respondents to two recent surveys reported that only 31 percent of physician group practices[12] and 19 percent of hospitals[13] use fully operational EHRs. According to a

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[10] CITL defines *providers* as hospitals and medical group practices and *stakeholders* as independent laboratories, radiology centers, pharmacies, payers, and public health departments.

[11] According to CMS, in 1999, out of 763,519 physicians in the United States, physicians in solo practices represented 25 percent, group practices represented 33 percent, and salaried physicians represented 41 percent.

[12] According to the Medical Group Management Association.

[13] According to the 15th Annual Leadership Survey of the Healthcare Information and Management Systems Society. The respondents to this survey consisted of 86 percent that worked for a hospital organization and 14 percent that worked in other types of health care delivery organizations.

study by the Commonwealth Fund,[14] approximately 13 percent of solo physicians have adopted some form of EHR, while 57 percent of large group practices (50 or more physicians) have adopted an EHR.[15]

In summary, IT can improve the efficiency and quality of medical care and result in costs savings. Although estimated nationwide savings are primarily based on only two studies with known methodological limitations and contingent on much higher IT adoption rates, the potential for substantial savings is promising. The estimated overall cost savings associated with the adoption of IT in the health care industry, the federal government's portion of the savings, and information on current IT adoption rates raise key questions, including the following:

- Can some savings be realized now given the limited adoption of health IT, and at what rate will additional savings be realized?
- What actions can be taken to improve IT adoption?
- What additional overall savings are there from other health care delivery settings, such as inpatient care or public health?
- What savings are there from federal programs, including Medicare, Medicaid, VA, and DOD?

Agency Comments

HHS's Acting Inspector General provided written comments on a draft of this correspondence. These comments are reprinted in enclosure I. HHS emphasized that costs, benefits, and net savings are difficult to quantify. Concerning Medicare, HHS stated that the department is presently unable to quantify specific savings, but it is actively working to determine what the savings will be; we modified our report accordingly. Regarding nationwide savings, HHS stated that there are many studies that estimate the potential for nationwide savings as a result of the adoption of health IT. We acknowledge that there are many published studies that discuss cost and other benefits of IT, some of which we pointed out in our October 2003 report, mentioned earlier in this correspondence. However, according to the National Coordinator for Health IT, the initial estimate was based primarily on the studies cited in our correspondence. In addition, the studies referred to in the department's comments are based on individual organizations and do not project nationwide savings. HHS agreed that the current adoption rates are low and indicated that estimates of rates are varied at best. The department provided additional examples that illustrate this variation, which we incorporated. HHS also provided technical comments, which we incorporated as appropriate.
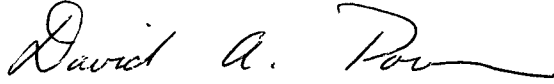
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We are sending copies of this report to the Secretary of Health and Human Services and other interested officials. We will also provide copies to others on request. In

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[14] The Commonwealth Fund is a private foundation that supports independent research on health and social issues and makes grants to improve health care practice and policy.
[15] The Commonwealth Fund, *Information Technologies: When Will They Make It Into Physicians' Black Bags?* (New York: December 2004).

addition, the report will be available at no charge on the GAO Web site at
http://www.gao.gov. If you or your staff have any questions about this report or need
additional information, please contact me at (202) 512-9286 or M. Yvonne Sanchez,
Assistant Director, at (202) 512-6274. We can also be reached by e-mail at
pownerd@gao.gov or sanchezm@gao.gov.

Sincerely yours,

David A. Powner
Director, Information Technology Management Issues

Enclosure

DEPARTMENT OF HEALTH & HUMAN SERVICES   Office of Inspector General

Washington, D.C. 20201

FEB 1 1 2005

Mr. David A. Powner
Director
Information Technology Management Issues
U.S. Government Accountability Office
Washington, DC 20548

Dear Mr. Powner:

Enclosed are the Department's comments on the U.S. Government Accountability Office's (GAO's) draft correspondence entitled, "Health and Human Services' Estimate of Health Care Cost Savings Resulting From the Use of Information Technology (GAO-05-309R). The comments represent the tentative position of the Department and are subject to reevaluation when the final version of this report is received.

The Department provided several technical comments directly to your staff.

The Department appreciates the opportunity to comment on this draft correspondence before its publication.

Sincerely,

Daniel R. Levinson
Acting Inspector General

Enclosure

The Office of Inspector General (OIG) is transmitting the Department's response to this draft report in our capacity as the Department's designated focal point and coordinator for U.S. Government Accountability Office reports. OIG has not conducted an independent assessment of these comments and therefore expresses no opinion on them.

**COMMENTS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
ON THE U.S. GOVERNMENT ACCOUNTABILITY OFFICE'S (GAO'S) DRAFT
CORRESPONDENCE ENTITLED "HEALTH AND HUMAN SERVICES'
ESTIMATE OF HEALTH CARE COST SAVINGS RESULTING FROM THE USE
OF INFORMATION TECHNOLOGY (GAO-05-309R)**

The Department of Health and Human Services (HHS) appreciates the opportunity to review the draft correspondence to the Committee on the Budget, House of Representatives, entitled "Health and Human Services' Estimate of Health Care Cost Savings Resulting from the Use of Information Technology" (GAO-05-309R). The GAO draft correspondence focuses on estimates of potential savings to the health system and Federal Government programs through widespread adoption of electronic health records (EHRs), as well as implementation rates and savings assumptions. The draft correspondence is part of a broader, ongoing GAO study involving an overview of HHS efforts to develop a national health information technology (HIT) strategy, lessons learned from the Department of Defense and Veterans Administration efforts, and the experience of other countries in their HIT efforts.

Because the focus of the draft correspondence report is on cost savings, our major comments relate to that issue. We emphasize that the costs, benefits, and net savings are genuinely difficult to quantify. In fact, there are several studies in related areas that demonstrate the potential to achieve a wide range of savings. Moreover, we note that consideration is not given in the report to the broader benefits of HIT in areas such as quality improvement, patient satisfaction, public health, and clinical research.

MAJOR COMMENTS

Medicare Savings

At this time HHS is unable to quantify reliably the Medicare savings. Accordingly, all references to Medicare savings or cost estimates that are attributable to HHS should be removed from the draft correspondence. While HHS is presently unable to quantify specific savings, we are actively working to determine what the savings will be and expect them to be substantial.

Basis For Nationwide Savings

There are many studies that estimate the potential for nationwide savings as a result of the adoption of HIT. The draft correspondence cites only two such studies conducted by the Center for Information Technology Leadership. To provide additional resources, excerpts from other studies are detailed below.

Several studies report that EHR use by physicians results in substantial improvement in clinical processes. The effects of EHRs include reducing laboratory and radiology test ordering by 9 to 14% (Bates, 1999; Tierney, 1990; Tierney, 1987), lowering ancillary test charges by up to 8% (Tierney, 1988), reducing hospital admissions, costing an average of $17,000 each, by 2-3% (Jha, 2001), and reducing excess medication usage by 11% (Wang,

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2003; Teich, 2000). A forthcoming study evaluating the impact of EHRs on resource utilization in two States demonstrates that physician visits decrease by 9% after EHR implementation. There is also evidence that EHRs can reduce administrative inefficiency and paper handling (Khoury, 1998). These studies are peer-reviewed, and their findings have been replicated using a variety of methodologies.[i]

Adoption Rates

HHS agrees that, "current (adoption) rates are low." The report cites adoption rates for fully operational EHRs as 31% for physician group practices and 19% for hospitals. However, surveys and analyses of adoption rates are varied at best. To illustrate, the estimate of 31% adoption rate in physician group practices may be somewhat misleading because physician group practices represent only a small portion of physicians in the U.S., and the size of the group must be taken into account when considering such statistics. The majority of physicians in the U.S. practice as solo physicians or in small group practices, which have a significantly lower adoption rate for EHRs than larger group practices. According to a Commonwealth study, approximately 13% of solo physicians have adopted some form of an EHR whereas 57% of large group practices of 50 or more physicians have adopted an EHR. This study estimated that 35% of physicians in practices of 10 to 49 physicians have EHRs. Moreover, there can be significant variation in what is considered to be an EHR. Accordingly, we ask that the draft correspondence reflect the information provided above, including the lack of consensus on what constitutes an EHR.

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