Opportunities for Coordination and Clarity to Advance the National Health Information Agenda: A Brief Assessment of the Office of the National Coordinator for Health Information Technology - A Letter Report

Committee on the Review of the Adoption and Implementation of Health Information Technology Standards by the U.S. Department of Health and Human Services Office of the National Coordinator for Health Information Technology, Jack C. Ebeler, Michelle Bruno, and Ted Schmitt, Editors, National Research Council

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A Letter Report

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Board on Health Care Services

Computer Science and Telecommunications Board

Jack C. Ebeler, Michelle Bruno, and Ted Schmitt, *Editors*

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This report has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council's (NRC's) Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. We wish to thank the following individuals for their review of this report:

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Although the reviewers listed above have provided many constructive comments and suggestions, they were not asked to endorse the conclusions or recommendations nor did they see the final draft of the report before its release. The review of this report was overseen by **JOHN C. BAILAR III,** The University of Chicago, Professor Emeritus. Appointed by the National Research Council, he was responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this report rests entirely with the authoring committee and the institution.

ABSTRACT

The Institute of Medicine (IOM) has long advocated for improving the quality of health care and the nation's health and has recognized the importance of a robust health information infrastructure in realizing that vision. A recent report acknowledged the impetus provided by the creation in 2004 of the Office of the National Coordinator for Health Information Technology (ONC) within the U.S. Department of Health and Human Services, and applauded the Department's 10-year goal for creation of the National Health Information Infrastructure and the high priority given to the creation of standards.

This report responds to a request by ONC for IOM to convene a Committee of experts (the Committee) to review and comment on the pace and cohesion of the standards activities it coordinates.

The Committee is supportive of ONC and the attention and sense of urgency that it and the Secretary of Health and Human Services have brought to the national health information agenda, and concludes that ONC's activities have helped advance this agenda in the 3 years since its establishment.

The Committee also concluded that the appropriate pace differs across the standards entities, activities, and processes coordinated by ONC and that the major issue for overall coordination is primarily one of relative pace, or sequencing.

The Committee saw several opportunities to improve coordination and clarity in critical areas. To improve the adoption and implementation of standards for health IT, it recommends that the National Coordinator for Health Information Technology should:

- Develop the strategic plan required by the Executive Order that established the office, providing a roadmap with specific objectives, milestones, and metrics for the national health information technology (IT) agenda.
- Clarify and improve the Office of the National Coordinator's processes for advancing the national health IT agenda—specifically, processes for decision making, workflow, coordination, and feedback.

The Committee cannot predict what the impact of the transformation of the American Health Information Community (AHIC)—a critical element of the national health IT enterprise—will be on the ability of the Coordinator to develop and implement a strategic plan. Accordingly, it would be appropriate for the Secretary of Health and Human Services to consider the AHIC transformation in light of this.

INTRODUCTION

The Institute of Medicine (IOM) has long advocated the importance of a robust health information infrastructure for improving the quality of health care and the nation's health and has issued numerous reports that recommend an ambitious vision and agenda for such infrastructure. These reports have recommended that the federal government support the development of a national health information infrastructure, including national data standards, to enable a national electronic health record system and the real-time exchange of information to support decision making by patients and their providers (IOM, 1991, 1994, 2001, 2002a,b, 2003b, 2004a,b, 2005a). IOM has previously acknowledged the impetus provided by the creation in 2004 of the Office of the National Coordinator for Health Information Technology (ONC) within the U.S. Department of Health and Human Services (HHS), and applauded the Department's ten-year goal for the creation of the Nationwide Health Information Network and "the high priority given to the creation of standards for the complex network necessary for communications among highly dispersed providers and patients" (IOM, 2005a).

Task

In late July 2007, ONC requested that IOM convene a committee of experts to review and comment on the effectiveness of its standards processes in advancing the national health information agenda and deliver its report within 3 months. In response, IOM's Board on Health Care Services, in collaboration with the National Research Council's Computer Science and Telecommunications Board, convened the Committee on the Review of the Adoption and Implementation of Health Information Technology Standards by the U.S. Department of Health and Human Services Office of the National Coordinator for Health Information Technology (the Committee). The Committee's task was to review ONC's standards activities as follows:

> The Institute of Medicine will form an ad hoc committee to examine the processes of the Office of the National Coordinator for Health Information Technology, determine how effectively they are working to advance the national Health IT agenda, and make recommendations for improvement as warranted.
>
> The committee is asked to deliver its report in less than 3 months and thus will focus on the narrow task of determining whether the Office of the National Coordinator for Health Information Technology is effectively advancing the national Health IT agenda. The committee is not tasked with developing a new agenda.
>
> Specifically, the committee will determine whether the processes are advancing as rapidly and cohesively as possible and whether they are aligned to move forward in a coordinated fashion on common priorities so as to meet the challenges of the national Health IT agenda.
>
> In examining issues of pace and timing of the program, the committee is asked to consider these processes as well as the many needs for standards, the level of specificity required for achieving interoperability and processing of content, the complexities of standards implementation in the health domain, the range of software and systems that need to accommodate them, and the other issues related to their implementation and use.

Scope

As charged, the Committee assessed the cohesiveness of ONC's standards processes and the pace at which they are proceeding. These processes include those of the Office of the National Coordinator (chiefly ONC's Office of Interoperability and Standards), as well as those of the Healthcare Information Technology Standards Panel (HITSP); the American Healthcare Information Community (AHIC); the Certification Commission for Healthcare Information Technology (CCHIT); and the Nationwide Health Information Network (NHIN). Closely related activities such as those underway at Regional Health Information Organizations (RHIOs) and other health IT standards development organizations (SDOs) were also considered.

The report's scope is limited to an assessment of the pace and cohesiveness of ONC's standards processes. The report does not assess the processes or products of the individual entities listed above. Moreover, the brief time in which this study was conducted necessarily constrained the breadth of issues the Committee could reasonably consider, even within the limited scope described in the statement of task. For instance, the committee was not in a position to compare the pace and structure of ONC's standards activities to those in domains other than health or to health IT standards activities in other countries. Nor did the committee apply results from economics research about the dynamics of standards-setting processes. Further investigation in each of these areas may be useful as ONC continues to develop and refine its activities.

Method

The Committee included 12 members who bring expertise and experience in the development, implementation, and impact of health information technology standards. Individually and collectively, the Committee's expertise is concentrated in the following areas: government health-care policy; health data standards development, implementation, and use; medical informatics and computer science; implementation and use of information technology in health- care settings and systems and by patients and consumers; and impact of health information technology on institutions, practitioners, consumers, and patients. Appendix B provides brief biographies of the Committee members.

The Committee conducted its work between late August and early October, 2007 by e-mail, telephone, and during one in-person meeting on September 16th through 18th, 2007. The Committee reviewed publicly available materials about ONC and its work, including: those available on the ONC website, in the scientific literature and lay press; those provided by ONC; and those provided by people who addressed the Committee during its open sessions or through the National Academy of Sciences' public comment mechanism. During its 2 days of open sessions, the Committee heard from 40 people representing a wide range of perspectives on the work of ONC. Appendix C shows the agenda for the open sessions and provides a list of the speakers. The materials presented during the public sessions are available on the project website at www.iom.edu/HIT.

BACKGROUND

Information technology has been used for many decades in health care. However, the health-care sector is generally recognized to be among the last sectors to widely embrace and

adopt IT. In recent years, a vision has emerged in which health IT would be used universally to improve the administrative efficiency of health-care entities, provide a key information source for evidence-based practice, enhance clinical outcomes, and help contain escalating health-care costs.

Although the potential benefits are high, adoption of health IT remains quite low as documented in a number of recent reports. For example, a 2005 RAND study estimated that 20–25 percent of health-care facilities had fully installed electronic medical records for in-patient activities and only 9 percent had done so for ambulatory care (Fonkych and Taylor, 2005). In a more recent report, the American Hospital Association found that a mere 11 percent of hospitals reported using electronic health records (EHRs) that were fully implemented, while another 57 percent were only partially implemented (AHA, 2007). There are many barriers to rapid wide-scale adoption, including the uneven distribution of costs, benefits, and incentives; the sheer scale and cost of achieving widespread adoption; concerns about privacy and security; limited public awareness about benefits; and reluctance on the part of institutions and individuals to adopt new technologies and associated changes in practice.

The Office of the National Coordinator

This section provides a brief description of the context in which the Committee made its assessment, and of ONC and its processes. In 2004, the President issued an executive order that called for the establishment of a national health information technology coordinator within the Office of the Secretary of Health and Human Services (Executive Order No. 13335—included in its entirety in Appendix E), with the goal that Americans have access to an interoperable electronic medical record by 2014. ONC was established in 2005 and its budget for FY 2007 was approximately $60 million.[1] ONC is composed of the director of the American Health Information Community and four offices, including the Office of Health IT Adoption, Office of Programs and Coordination, Office of Policy and Research, and Office of Interoperability and Standards.

A subsequent 2006 executive order on the quality and efficiency of health care (Executive Order No. 13410) called for increased transparency in both quality and pricing for health-care services and procedures and for increased efficiency of information exchange across patients and providers. It also called for all federal health-care organizations to require that federal IT system procurements adhere to interoperability standards recognized by the Secretary of Health and Human Services, which has heightened the importance and potential impact of ONC's standards activities.

The 2004 executive order states that, in serving as principal advisor to the Secretary of Health and Human Services on health IT, ONC is meant to be a focal point for the development of national health IT standards. It also directs that ONC provide management and logistical support to a national health IT advisory body, AHIC, and develop and direct the implementation of HHS's strategic plan for health IT in both the public and private health-care sectors (HHS, 2007c). As part of carrying out these functions, ONC oversees the formation and development of NHIN.

As coordinator of national health information standards, ONC operates amidst a complex

[1] Comparatively, as presented by Dennis Giokas, Chief Technology Officer of Infoway Inc., the Canadian government allocated $500 million to their nation's HIT effort in its first year of inception, and $400 million for FY 2007.

array of governmental and non-governmental, national and international standards development entities and efforts, many of which are long-standing. Within HHS, for example, the Centers for Medicare and Medicaid Services, the National Committee on Vital and Health Statistics, and the National Library of Medicine have extensive involvement in health data standards. Moreover, other federal agencies such as the Department of Defense and the Veteran's Administration; national efforts such as the implementation of Health Insurance Portability and Accountability Act of 1996 (P.L. 104-191); and international standards activities like the International Classification of Disease developed under the auspices of the World Health Organization are all part of the crowded landscape in which ONC works.

Key Health IT Standards Entities and Activities

In addition to ONC itself, the key health IT standards entities and activities coordinated or supported by ONC discussed in this report are:

- *AHIC* is a federally chartered advisory board created in 2005 to make recommendations to the Secretary of Health and Human Services on how to accelerate the development and adoption of health IT. Bringing stakeholders from pertinent areas together to analyze the issue, it originally identified four areas with potential for early breakthroughs in the advancement of standards toward interoperability (population health and clinical care connections, consumer empowerment, chronic care, and electronic health records) and later identified three more (confidentiality, security, and privacy; quality; and personalized health care) (HHS, 2007a). AHIC is actively pursuing recommendations in these three new areas, having delivered its first set of recommendations for the four initial workgroups to the Secretary in May 2006. AHIC plays a critical leadership role by providing the context (use cases[2]) for all subsequent standards activities. Currently, HHS is planning to transform AHIC from a federal advisory committee to an independent public–private entity.
- *HITSP* operates under the auspices of the American National Standards Institute by contract with ONC. Additionally, HITSP assists in the development of NHIN by addressing broader policy issues such as privacy and security within a shared health-care information system, though this role is still evolving. Its mission is to serve as a cooperative partnership between the public and private sectors for the purpose of achieving a broadly accepted and useful set of standards specifically to enable and support widespread interoperability among health-care software applications, as they will interact in a local, regional, and nationwide health information network for the United States (ANSI, 2007). Another major role of HITSP is to identify gaps where standards do not yet exist.
- *CCHIT* creates certification criteria to determine whether vendor systems meet standards accepted or recognized by the Secretary of Health and Human Services, and then certifies systems that meet those criteria. CCHIT is governed by a Board of Commissioners from academia, the private sector, and governmental agencies. The Commission oversees the work of CCHIT's professional staff and voluntary workgroups. The roles of the Commissioners are to represent all stakeholders, provide strategic direction, ensure objectivity and credibility, provide guidance to and review the reports of the workgroups, and approve the final certification criteria and processes.

[2] ONC has described use cases as a means to, "provide a common focus for the different activities and help lead to specific requirements, architecture, standards and policy discussions. Analysts typically develop use cases to convey specific business processes and indicate ways that systems should interact with users and with other systems to achieve specific goals." (ONC, 2006).

- *NHIN* is ONC's mechanism for producing a prototype information exchange network, intended to provide a secure, nationwide, interoperable health information infrastructure that will connect providers, consumers, and others involved in supporting health and health care across the nation. ONC intends that NHIN will enable health information to follow the consumer, be available for clinical decision making, and support appropriate use of health-care information beyond direct patient care. ONC views NHIN as a "network of networks," built out of state and regional health information exchanges and other networks to support the exchange of health information (HHS, 2007b).

A critical part of the national health information landscape is the Regional Health Information Organization. RHIOs are Health Information Exchanges at the state, regional, mission, or cross-organizational levels that represent a significant component of the NHIN network of networks.

ASSESSMENT

In the briefings it received at its September 2007 meeting, the Committee heard positive statements of support from a wide variety of organizations about the general goals of the processes coordinated by ONC. Even those whose comments included critiques and desired changes praised the office for launching several standards-related organizations, for establishing processes, and for executing a full cycle of standards development from use case selection and definition to system certification. Presenters expressed admiration for the achievements made by HITSP in adopting and harmonizing standards and by CCHIT in certifying systems that meet the adopted standards. Briefers across the spectrum of stakeholders also observed that HIT standards development had accelerated since the initiation of ONC activities and that ONC's influence on advancing the national health IT agenda, especially in advancing IT standards, was generally positive.

Along with this positive feedback, speakers also identified areas for potential improvement. The Committee perceived opportunities for greater specificity and clarity about a number of critical aspects of ONC and its work: strategy, processes, and policy leadership. Many remarks to the Committee also pointed to the anticipated AHIC transformation as a major event that would likely have an impact on ONC's activities. Several presenters offered opinions about the impacts that this transformation from a federal advisory committee to a public–private entity might have. Presenters cited both potential advantages (for example, continuity across administrations) and potential disadvantages (for example, a reduced federal role). Exploration of the potential consequences of this transformation exceeded the scope and time available to the committee.

Pace

A key element of the Committee's charge was to assess the pace of ONC's activities. The committee was unable to make a straightforward assessment of pace because ONC had not set forth a clear and complete set of milestones against which such an assessment could be made. The Committee heard in briefings what ONC itself has reported hearing—that some believe the process (from selection of use cases to standards acceptance) is going too slowly, while others believe it is going too quickly. These views reflected both varying perceptions about the

standards processes as a whole as well as concerns about whether a uniform pace was appropriate for all activities.

Such a diversity of views is natural given the varied perspectives of stakeholders. Reasons voiced for perceiving the pace of standards development activities to be too fast include: (1) the burden it represents for developers and system adopters to stay engaged with multiple, concurrent standards activities; (2) the burden it represents to the volunteer experts who constitute the standards bodies; (3) the time needed for sufficiently validating standards before they enter the commercial marketplace; and (4) the time needed for standards to be sufficiently matured before they are mandated in federal contracts.

On the other hand, reasons for perceiving the pace to be too slow include: (1) the imperative of making progress to realize national goals toward improved quality of care; (2) the many existing gaps in agreed-on HIT standards; (3) the need for greater guidance in purchasing decisions; and (4) the need to reduce local variation if efforts to build regional health information exchanges are to move forward expeditiously.

As outlined in presentations to the Committee, ONC's standards activities are organized into fixed-length cycles that run from the selection of a set of use cases to the adoption of standards to support those use cases. Each cycle coordinated by ONC follows a predefined sequence through the various entities—AHIC, HITSP, CCHIT, and the Secretary of Health and Human Services. However, it is not evident that this one-size-fits-all pace and process is appropriate. A more streamlined process may be appropriate where the problem is relatively simple, where relevant standards already exist, and where there is a low level of contention. Alternatively, where the problem is complex, where needed standards have not been developed, where stakeholder interests will be hard to reconcile, or where policy issues must be resolved if progress is to be made, a slower pace may be appropriate.

To accommodate such variation, it will be necessary to establish criteria for what processes are to be used and at what pace. Such an approach would be most effective if established with reference to an overall roadmap for health IT activities (see next section), aligning the pace of activities to the framework established by a strategic plan, the complexity and interdependencies of the task, the iterative nature of the process, and the available resources.

Ultimately, the pace of progress toward the goal of having in place interoperating electronic health records by 2014 is more important than the pace of ONC's health IT standards activities processes. The Committee believes that, in general, the activities coordinated by ONC should proceed as rapidly as feasible because nothing less than the public's health is at stake in the establishment of a national health information infrastructure. However, as the following section discusses, it is difficult to assess this progress without a clearly articulated strategy that includes a well-specified endpoint, milestones, and metrics.

Strategy

The Committee attributes its difficulty in assessing the pace of progress and its concerns regarding the cohesiveness of ONC's activities, in part, to ONC's decision to launch a set of parallel activities in order to generate momentum without first fleshing out a strategic plan. The Executive Order that established the National Coordinator required a strategic plan to be developed, maintained, and implemented (Executive Order No. 13335). In 2006, the Government Accountability Office (GAO) and the Office of Management and Budget (OMB) reached similar

conclusions about the state of ONC's activities toward this end, whereby the OMB observed that the strategic plan and related metrics required by the executive order had not yet been developed (OMB, 2006), and the GAO observed that ONC's existing plan lacked details, milestones, and performance measures (GAO, 2006).

Other organizations have attempted to outline a strategic plan to address this 10 year goal with useful insights and achievable targets, but most have only addressed one or two components of the overall health IT agenda. For example, a plan developed by the Commission on Systemic Interoperability in 2005 highlighted steps that could be taken to reach having interoperable electronic medical records for all Americans by 2014 (CSI 2005). While this report is a good example of what the Committee might expect to see as part of a strategic plan, electronic medical records are only one component of the national health IT agenda. This plan also does not address the steps necessary for standards development, adoption, or implementation. A more comprehensive strategic plan will be expected from ONC to improve coordination of all health IT standards efforts.

In his presentation to the Committee, the National Coordinator, Dr. Robert Kolodner, stated that although a number of strategic documents exist, there is currently no detailed strategic plan with strategic targets or deliverables. Kolodner referred to a 2005 framework during his remarks to the Committee as still guiding their vision, but explained that it was outdated; for example, it did not include a role for AHIC. Kolodner said they were currently working on a new framework and strategic plan. Thus, ONC has not developed a strategy and roadmap that indicates its "destination," specific interim goals, or a schedule for achieving them. ONC's approach to planning appears to be more tactical, centered on driving successive cycles of standards activities that stimulate progress.

Kolodner noted the challenges of developing a strategic plan in an environment of rapid change, especially at the beginning of a new effort. He identified several benefits of a strategic plan with minimal specifics, including the need to generate momentum, the flexibility to rapidly adjust to developments, and the desire to limit the risk that failure to achieve ambitious targets might jeopardize the effort. However, ONC's current approach makes it difficult to assess where it is in the process of developing and deploying standards, poses challenges for those seeking to adopt standards, and hampers estimates of the overall level of effort required to achieve its goals—or for it to demonstrate its progress and successes. Without such a guide, it was difficult for the Committee to measure ONC's efforts in these areas.

Frustration with the absence of a plan was echoed by many of the speakers who presented to the Committee, saying that this led to a sense that there was insufficiently clear direction. Several people also expressed concern about a lack of clarity regarding ONC's overall vision and mission, as well as its role among other health IT agencies and entities. In particular, speakers expressed confusion about ONC's role in relation to AHIC and where the community should turn for direction regarding health IT efforts, as well as uncertainty about how ONC's future role would be affected by the AHIC transformation.

The Coordinator is charged with developing, maintaining, and implementing the strategic plan, and the Committee appreciates the Coordinator's initial decision to put ONC's limited resources into creating momentum for standards development rather than into developing a strategic plan. However, the Committee observes that given the frustration with a lack of strategic direction and leadership, and now that activities are well underway, it is time to develop an explicit strategic plan. Therefore, the Committee makes the following recommendation:

The National Coordinator for Health Information Technology should develop the strategic plan required by the Executive Order that established the office, providing a roadmap with specific objectives, milestones, and metrics for the national health information technology agenda.

The Committee believes that development of the strategic plan need not draw inordinate resources from standards activities and agrees with Kolodner that a tome which merely sits on a shelf is not useful. Indeed, the strategic plan should be a succinct "living document" that clearly articulates the following, many of which are already specified in the Executive Order:

- *A "destination" for the health information technology initiatives*—that is, a more concrete and specific set of objectives for realizing the vision of an EHR for every American by 2014.
- *Specific milestones and metrics* against which the pace of progress can be measured, reported, and used to inform and manage the ongoing evolution of the plan.
- *Clearly articulated mechanisms for coordination* among AHIC, HITSP, SDOs, CCHIT, RHIOs, and other health information exchanges.
- *Specifications for how privacy and security are to be explicitly addressed in all of the activities that ONC coordinates,* including use cases, standards identification, certification, and implementation.
- *A communication strategy* that is aimed at ensuring that all stakeholders understand ONC's objectives and mechanisms.
- *Estimates of resources required annually to reach the 2014 destination,* including the required level of federal funding; expectations for regional, state, and private investment; and the expected contributions by volunteers to its activities.
- *An overarching technical/architectural strategy* based on a suite of use cases that maximizes data reuse and integration and that supports incremental interoperability.

Processes

The Committee's review of ONC documentation and materials presented in briefings pointed to several areas where the cohesiveness and coordination of ONC's standards processes could be clarified and improved. In evaluating those briefings, the Committee could not always distinguish between dissatisfaction with process and dissatisfaction about outcome. Nonetheless, several difficulties were consistently mentioned, suggesting opportunities for ONC to better communicate with the health IT community and to clarify and enhance its standards processes in areas such as decision making, work processes, coordination, and feedback.

Accordingly, the Committee recommends that:

The National Coordinator for Health Information Technology should clarify and improve the Office of the National Coordinator's processes for advancing the national health information technology agenda—specifically, processes for decision making, workflow, coordination, and feedback.

The specific areas for clarification and process improvement include:

- *Decision-making processes*. A lack of clarity was evident about: who makes what decisions; the criteria they use; how decisions are communicated, especially in an environment with myriad stakeholders; and accountability for decisions. An area meriting particular care is the

criteria and process AHIC employs in selecting use cases, because the use cases drive the rest of ONC's standards activities. As a result, AHIC plays an important leadership role in this process.

- *Workflow processes*. Some presentations to the committee reflected uncertainty about the sequence of and relationship among ONC activities. For example, many indicated they were unaware of a single point of contact for receiving direction about standards development activities or recommending items for use cases. Furthermore, because AHIC, HITSP, and CCHIT are all working concurrently on many interrelated activities, any confusion could result in delays, duplication of work, or other suboptimal use of resources. Presenters cited the recent memorandum of understanding between HITSP and CCHIT as a positive development (Conn, 2007).
- *Coordination processes*. Presenters also suggested that ONC could improve coordination among its standards activities and with other efforts, activities, processes, and entities. For example, better coordination with state and regional activities would allow ONC to take better advantage of advances being made by state and regional initiatives and foster interoperability nationwide. Presenters also noted that ONC needs to be cognizant of international health IT standards activities.
- *Feedback and maintenance processes*. Presenters also suggested that stakeholder feedback from each round of testing and implementation could be better used to inform standards evolution. Indeed, the validity, effectiveness, and consequences of a standard may only be evident as experience in its use grows. Standards evolve based on such experience and require ongoing maintenance. The continual need for updating standards requires mechanisms for systematically indentifying, collecting, and incorporating lessons learned.

Another closely related and recurring theme heard by the committee was the issue of stakeholder engagement and resources necessary to conduct the various processes required to execute ONC activities. These concerns fell into three broad areas: (1) the limited pool of qualified people; (2) the sustainability of a highly volunteer-dependent process; and (3) the strain on the capacity of small organizations to participate and contribute. The Committee believes that clarity in decision-making and workflow processes, interorganizational coordination, and enhanced feedback processes could have a positive impact on stakeholder engagement.

Policy Leadership

The need for coherence and coordination is a theme that runs through the preceding discussion of pace, strategy, and process. Indeed, leadership is an essential element of providing coherence to and coordinating across such a complex set of interrelated activities, identifying specific goals, and achieving them. Moreover, presenters to the committee commented that policy issues are important considerations for—and potential barriers to—progress toward national health IT goals. For instance, policies regarding security, privacy, confidentiality, and accountability are essential and can best be addressed within a comprehensive policy framework. Several speakers expressed frustration with the slow pace of development of such critical policies. The Committee was also concerned to hear from a range of presenters—including standards setters, certifiers, implementers, and adopters—that they were unclear about the policy-setting processes related to health IT.

The Committee believes that clarifying policy-setting authority is likely to facilitate cohesive and rapid adoption of the set of interoperability standards necessary to achieve the national health IT agenda. A number of presenters noted that there are multiple government and private groups with potentially overlapping and duplicative activities underway and suggested

that a stronger coordinating role is needed to provide more visible national leadership and better address key policy issues. Such leadership could provide a common vision, set strategic goals, properly modulate and sequence the pace of activities, and identify key milestones against which the various standards processes could be measured.

CONCLUSION

To improve the adoption and implementation of standards for health IT, the Committee recommends that the National Coordinator for Health Information Technology should:

- Develop the strategic plan required by the Executive Order that established the office, providing a roadmap with specific objectives, milestones, and metrics for the national health IT agenda.
- Clarify and improve the Office of the National Coordinator's processes for advancing the national health IT agenda—specifically, processes for decision making, workflow, coordination, and feedback.

The Committee believes these recommendations are critical for advancing the national health IT agenda to improve the nation's health, and they should be implemented expeditiously. Such an approach would allow ONC to better align the pace of activities to the framework established by a strategic plan, the complexity and interdependencies of the task, the iterative nature of the process, and the available resources.

The Committee assumes that ONC advises the Secretary on the national health IT agenda and is (and will continue to be) the federal focal point for and the coordinator of health IT activities. Efforts are currently underway to transform AHIC—a critical element of the national health IT enterprise—from a federal advisory committee to a public–private entity and the Committee did not have time to explore the implications of this transformation for ONC. The Committee is unable to predict what impact this transformation of AHIC will have on the ability of the Coordinator to develop and implement a strategic plan. Accordingly, the Committee believes it would be appropriate for the Secretary of Health and Human Services to consider the AHIC transformation in light of this.

The Committee underscores the need to advance health IT standards within the larger context of the health-care system. As noted in the introduction to the report, IOM has called for action on the nation's health information infrastructure for a number of years, not as an end in itself, but as a necessary component of the transformation of care. In 2001, *Crossing the Quality Chasm* set out six aims for a 21st century health-care system: health care that is safe, effective, patient centered, timely, efficient, and equitable (IOM, 2001). The report set out a number of recommendations for how to proceed, including recommendations to establish a new environment for care. Specifically, as part of that approach, recommendation 9 called for a renewed national commitment to building an information infrastructure.

Crossing the Quality Chasm also called for other elements of a new environment for care, noting that the current delivery and payment environment inhibits the changes needed. In addition to health IT, it called for a more evidence-based approach to care delivery, and aligning payment incentives with quality improvement (IOM, 2001). A number of reports followed in the *Quality Chasm* series, building on the need for specific changes in the environment for care and the care

system, citing such needs as decision support tools and workforce development (IOM 2003a, 2005a,b). Further, *Rewarding Provider Performance* calls for "pay for performance" in Medicare, and points specifically to the linkage between such payment changes and other conditions, such as the use of electronic health records, in driving system improvement (IOM, 2007).

A number of the expert witnesses who presented to the Committee pointed out that ONC efforts to drive the health IT agenda also require attention to a broader set of environmental factors to help foster demand for and adoption of health information infrastructure by patients, providers, and payers. The Committee recognizes that imperative, and reinforces the prior IOM reports' call for appropriate attention to the other environmental factors that should be addressed to support this effort.

Appendix A

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Appendix B

Committee Biographies

Jack C. Ebeler, M.P.A. (Chair), is a consultant in health-care policy and health care. He provides counsel on the federal policy environment and the changing health-care marketplace. He is currently serving a 3-year term as a commissioner on the Medicare Payment Advisory Commission. He serves on the Health Care Services Board of the Institute of Medicine (IOM), the boards of directors of Families USA and the National Academy of Social Insurance, the Health Care Services Board of Inova Health System in Virginia, and a number of advisory boards and committees. Previously, he was president and chief executive officer (CEO) of the Alliance of Community Health Plans (ACHP). Before working at ACHP, he was senior vice president and the first director of the Health Care Group at The Robert Wood Johnson Foundation. In 1995 and 1996, he served in the U.S. Department of Health and Human Services, first as deputy assistant secretary for planning and evaluation/health and then as acting assistant secretary for planning and evaluation. Prior to that he worked in both the private and public sectors in health policy and health financing, including service at the Health Care Financing Administration (now Centers for Medicare & Medicaid Services) and as a staff member on Capitol Hill. He has a master's in public administration from the John F. Kennedy School of Government at Harvard University and a B.A. from Dickinson College.

Suzanne Bakken, R.N., D.N.Sc., FAAN, is the alumni professor of nursing and professor of biomedical informatics at Columbia University. Her research interests are at the intersection of informatics and outcomes research. She serves as director of the National Institutes of Health-(NIH-) funded Research Center for Evidence-based Practice in the Underserved, the Reducing Health Disparities Through Informatics Pre-and Post-doctoral Training Program, and Wireless Informatics for Safe and Evidence-based APN Care. Her current NIH-funded research grants focus on mobile decision support for guideline-based care for smoking cessation, depression, and obesity. Dr. Bakken is an elected fellow of the American Academy of Nursing and American College of Medical Informatics. She has spoken on informatics-related topics internationally and has published extensively. She previously served on the IOM Committee on Patient Safety Data Standards and on the SNOMED Editorial Board. She is currently a member of the Clinical LOINC Committee and the Institute of Medicine.

J. Robert Beck, M.D., is senior vice president and chief academic officer at the Fox Chase Cancer Center in Philadelphia. From 2001 to 2007, he was vice president and chief information officer at Fox Chase, having also served as deputy director of the Population Science Division from 2006. Dr. Beck received his A.B. in mathematics from Dartmouth College and his M.D. from Johns Hopkins University. He trained in anatomic and clinical pathology at the Dartmouth-Hitchcock Medical Center, followed by a fellowship in clinical decision making at the Tufts-New England Medical Center. He has held positions in blood banking, clinical pathology, and biomedical informatics at Dartmouth, the Oregon Health Sciences University, and Baylor College of Medicine before coming to Fox Chase. Dr. Beck's research interests are in technology assessment, cost-effectiveness of cancer therapies, and the organization of biomedical informatics resources. He has served as the chair of the strategic planning efforts for the National Cancer Institute's cancer biomedical informatics grid (caBIG(TM)) project. Additionally, Dr. Beck serves on the boards of IDM Pharma, a public biopharmaceutical company developing cancer

therapeutics, and RosettaMed, a development stage company creating tools for patient input of clinical data.

Patricia F. Brennan, M.S.N., Ph.D., focuses her research on designing and evaluating home care community computer systems for use by patients. Her work ranges from the development and evaluation of computer networks as a mechanism for delivering nursing care to homebound ill persons and their caregivers to assessing the impact of patient-centered computer technology on the health outcomes of persons following coronary artery bypass graft surgery. Her most current projects include exploring how individuals and families manage health information in their homes, studying the usability of secure e-mail use in clinics, and developing information tools and resources to support self-care and health self-management. She is also a member of the Institute of Medicine.

Robert H. Dolin, M.D., F.A.C.P., F.A.C.M.I., received his M.D. in 1986 , and served as chief resident, University of California–Los Angeles (UCLA) Department of Medicine, in 1989, where he developed Harbor UCLA's first outpatient electronic medical record system. He has earned his fellowship in the American College of Physicians, and was recently elected into fellowship in the American College of Medical Informatics in recognition of his work on standards development. Dr. Dolin is currently working as a hospitalist at Kaiser Permanente, Department of Internal Medicine. At Kaiser, he is also the physician lead for the enterprise terminology services team, responsible for deploying SNOMED in their national electronic health record. He is a member of the Health Level 7 (HL7) Board of Directors, co-chairs the HL7 Structured Document Committee, and is coeditor of the CDA and CCD specifications. In addition, Dr. Dolin was recently appointed to the SNOMED CT Content Committee, and co-chairs the U.S. HITSP Foundations Committee.

W. Edward Hammond II, Ph.D., M.D, is professor emeritus of community and family medicine and professor emeritus, biomedical engineering at Duke University. He is an adjunct professor in the Health Sectors Management Division of the Fuqua School of Business. He has been involved in standards activities, as well as design and implementation of electronic patient records, since the early 1980s. His extensive experience includes having been involved with HL7 since its beginning in 1987 and having been a developer of a clinical information system at Duke Medical Center. He has implemented HL7, ASTM, X12N, and NCPDP standards. Duke Medical Center has more than 75 HL7 interfaces and the number continues to expand. He is active in several professional organizations and has been a member of the National Library of Medicine (NLM). Integrated Advanced Information Management Systems review team.

James Hereford, M.B.A., is the executive vice president, strategic services and quality, at Group Health Cooperative in Seattle. His responsibilities at Group Health include technology, quality, and human resources. While at Group Health, Mr. Hereford has been responsible for the development of the MyGroupHealth patient portal and the implementation of their electronic medical record in a 900-member physician group. The MyGroupHealth portal connects more than 40 percent of Group Health's members to their clinical data in the electronic medical record and to their physicians through secure messaging. Mr. Hereford has also served as a faculty member at the Institute for Healthcare Improvement in Boston. He is currently a faculty member at the University of Washington, teaching operations management in the master's of health administration program, and is a frequent speaker nationally on health-care operational improvement through the use of quality and technology. Mr. Hereford currently serves on the state of Washington's Health Information Infrastructure Advisory Board, commissioned to create a statewide clinical data-sharing infrastructure, and on the board of One Health Port, a shared security service established by health-care organizations in the state of Washington.

Arthur A. Levin, M.P.H., is director of the Center for Medical Consumers, a New York City-based nonprofit organization committed to informed consumer and patient health- care decision making; patient safety; evidence-based, high-quality medicine; and health- care system transparency. Mr. Levin was a member of the IOM Committee on the Quality of Health Care, which published the reports *To Err is Human* and *Crossing the Quality Chasm.* He also served on the IOM Committee that evaluated the federal quality effort in its report *Leadership By Example.* Mr. Levin serves as a consultant consumer expert on risk management for select Food and Drug Administration (FDA) Drug Advisory Committee meetings. For 4 years he served as the consumer representative on the FDA's Drug Safety and Risk Management Advisory Committee. Mr. Levin is a member of the Committee on Performance Measures of the National Committee for Quality Assurance and the National Quality Forum Consensus Standards Approval Committee. Mr. Levin has also served on numerous New York State Department of Health committees and workgroups, most recently one that authored successful legislation to provide oversight of office-based surgery. He earned his M.P.H. from Columbia University School of Public Health and his B.A. in philosophy from Reed College.

Daniel R. Masys, M.D., is professor and chair of the Department of Biomedical Informatics and professor of medicine at the Vanderbilt University School of Medicine. An honors graduate of Princeton University and the Ohio State University College of Medicine, he completed postgraduate training in internal medicine, hematology, and medical oncology at the University of California–San Diego (UCSD) and the Naval Regional Medical Center, San Diego. Prior to joining Vanderbilt, Dr. Masys was director of biomedical informatics and professor of medicine at UCSD. There he led a research team that developed a secure Internet-based communications system giving patients access to their medical records online, and developed bioinformatics systems for interpreting gene expression patterns. He previously served as chief of the International Cancer Research Data Bank Branch of the National Cancer Institute, and as associate director of the National Library of Medicine, National Institutes of Health. Dr. Masys is an elected member of the IOM. He is a fellow of the American College of Physicians, and a fellow of the American College of Medical Informatics. He was a founding associate editor of the *Journal of the American Medical Informatics Association*, and has received numerous awards, including the NIH Director's Award and the U.S. Surgeon General's Exemplary Service Medal.

Stephanie L. Reel, M.B.A., is the chief information officer (CIO) for all divisions of the Johns Hopkins University and Health System. She was appointed vice provost for information technology and CIO for the Johns Hopkins University (JHU) in 1999. She is also vice president for information services for Johns Hopkins Medicine, a post she has held since 1994. As CIO Ms. Reel leads the implementation of the strategic plan and operational redesign for information services, networking, telecommunications, as well as clinical, research, and instructional technologies. She formed a governance structure to support funding and priority setting across both the university and health system to meet the education and research needs of the enterprise. Ms. Reel has more than 25 years of experience in information systems, working with educators, regulators, researchers, and health-care providers and payers. Under her direction, the Johns Hopkins Health System is enhancing and advancing the use of the Johns Hopkins Electronic Patient Record. Also under her direction, JHU has implemented self-service solutions for faculty, staff, and students, leveraging the power of Internet 2 and other emerging technologies to support electronically enhanced education and research. Ms. Reel was named CIO of the Year 2000 by the College of Healthcare Information Management Executives (CHIME) and is the 2002 recipient of the National CIO 20/20 Vision Leader Award. She is a member of the Healthcare Information Management and Systems Society, the Healthcare Advisory Council, the American Medical Informatics Association, and Educause. She is a member of the College of Healthcare

Information Systems Executives and serves on the faculty of CHIME's CIO Boot Camp. She is a member and past president of the Healthcare Information Systems Executive Association.

Thomas C. Rindfleisch, M.S., is director emeritus of the Stanford University Lane Medical Library and former chief technology officer and vice president for research and development of SKOLAR, Inc. At Stanford, Mr. Rindfleisch directed the medical library for 4 years, and was a senior research scientist in the Departments of Medicine and Computer Science for 30 years. He was director of the NIH-funded SUMEX-AIM and CAMIS resources that served national biomedical research communities from 1973 to 1996. In these roles, he developed open, network-based, distributed computing resources for applications in health care. Software developed under his leadership was the basis for four successful Silicon Valley start-up companies, including Cisco Systems and SKOLAR. Before coming to Stanford in 1971, he developed some of the earliest digital image processing technologies at the Caltech/NASA Jet Propulsion Laboratory for early unmanned space missions, and for civilian applications. He has been a frequent advisor to NIH and the National Science Foundation. He has a deep interest in open standards and in privacy and security issues and was a member of the National Research Council study group that produced an influential report in 1997 on best security practices in modern health-care organizations. He served on the Federal Networking Council Advisory Committee and has been a board member and trustee of the Charles Babbage Foundation. He is a fellow of the American College of Medical Informatics. He holds an M.S. in theoretical physics from the California Institute of Technology.

Peter Szolovits, Ph.D., is professor of computer science and engineering in the Massachusetts Institute of Technology (MIT) Department of Electrical Engineering and Computer Science, professor of health sciences and technology in the Harvard/MIT Division of Health Sciences and Technology, and head of the Clinical Decision-Making Group within the MIT Computer Science and Artificial Intelligence Laboratory. His research centers on the application of artificial intelligence (AI) methods to problems of medical decision making and design of information systems for health-care institutions and patients. He has worked on problems of diagnosis, therapy planning, execution, and monitoring for various medical conditions; computational aspects of genetic counseling; controlled sharing of health information; and privacy and confidentiality issues in medical record systems. His interests in AI include knowledge representation, qualitative reasoning, and probabilistic inference. His interests in medical computing include web-based heterogeneous medical record systems, life-long personal health information systems, and design of cryptographic schemes for health identifiers. He teaches classes in artificial intelligence, programming languages, medical computing, medical decision making, knowledge-based systems, and probabilistic inference. Dr. Szolovits has served on the editorial board of several journals and as program chairman and on the program committees of national conferences, and has been a founder of and consultant for several companies that apply AI to problems of commercial interest. He was elected to the IOM and is a fellow of the American Association for Artificial Intelligence, the American College of Medical Informatics, and the American Institute for Medical and Biological Engineering.

Appendix C

Agenda for Open Sessions of the Meeting of

The IOM Committee on the Review of the Adoption and Implementation of Health Information Technology Standards by the U.S. Department of Health and Human Services Office of the National Coordinator for Health Information Technology

The National Academies Building
2100 Constitution Avenue
September 16–17, 2007

Sunday, September 16, 2007

11:00 – 12:30	**Office of the National Coordinator for Health Information Technology (ONC), Department of Health and Human Services** *Rob Kolodner,* National Coordinator, ONC *John Loonsk,* Director, Office of Interoperability and Standards, ONC
12:30 – 1:30	Lunch Speaker **The HIT Standards Experience in Canada** *Dennis Giokas,* Infoway
1:30 – 1:45	*Jamie Ferguson,*[*] Kaiser Permanente
1:45 – 3:15	**Key Activities Underway as Part of ONC Standards Efforts** American Healthcare Information Community (AHIC) *10 minutes for presentation and 5 minutes for Q&A per panelist* *Chip Kahn,* Federation of American Hospitals *Steven Waldren,* American Academy of Family Physicians Healthcare Information Technology Standards Panel (HITSP) *15 minutes for presentation and 15 minutes for Q&A* *John Halamka,* Chair *LeRoy Jones,* Program Manager, American National Standards Institute

[*] Speaking at this time due to schedule constraints.

	Certification Commission for Healthcare Information Technology (CCHIT) *15 minutes for presentation and 15 minutes for Q&A* *Mark Leavitt,* Chair *Alisa Ray,* Executive Director
3:15 – 3:30	Break
3:30 – 4:00	National Healthcare Information Network (NHIN) *10 minutes for presentation and 5 minutes for Q&A per panelist* *Brian Kelly,* Accenture
4:00 – 4:15	*Robert Tennant,*[*] Medical Group Management Association
4:15 – 5:15	**Existing HIT Standards Landscape** *10 minutes for presentation and 5 minutes for Q&A per panelist* *Wes Rishel,* Gartner Consulting *Chris Chute,* Mayo Clinic *Virginia Lorenzi,* New York Presbyterian Hospital *Chuck Jaffe,* HL7
5:15 – 5:30	*Rob Kolodner,* National Coordinator, ONC *Follow-up Q&A with the committee*

Monday, September 17, 2007

8:30 – 10:00	**Healthcare IT Vendors** *10 minutes for presentations by each panelist, followed by 30 minutes for Q&A* *Charles Mead,* National Cancer Institute through Booz Allen Hamilton *Donald Rucker,* Siemens Medical Solutions *John Travis,* Cerner *Bruce Greenstein,* Microsoft *Hugh Zettel,* General Electric Global Health *Tim Leery,* HIMSS/EHRVA
10:00 – 10:15	Break

10:15 – 11:15	**Institutional Healthcare IT Implementers** *10 minutes for presentations by each panelist, followed by 20 minutes for Q&A* *Richard Umbdenstock,* American Hospital Association *Melanie Allison,* CalRHIO, CTO *Devore Culver,* Maine HealthInfoNet *Jan Root,* Utah Health Information Network
11:15 – 12:00	**Insurers and Plans** *10 minutes for presentations by each panelist, followed by 15 minutes for Q&A* *Jeanette Thornton,* America's Health Insurance Plans *Joseph Smith,* Arkansas Blue Cross Blue Shield *Hayes Abrams,* Blue Cross Blue Shield of Illinois, Texas, New Mexico, and Oklahoma
12:00 – 1:00	Lunch Break
1:00 – 2:00	**Fostering Patient Participation, Protecting Privacy and Public Health** *10 minutes for presentations by each panelist, followed by 20 minutes for Q&A* *Joy Pritts,* Georgetown University *Sam Karp,* California Healthcare Foundation *Stephen Downs,* Robert Wood Johnson Foundation *Carol Diamond,* Markle Foundation
2:00 – 2:30	*10 minutes for presentations plus 5 minutes for Q&A per person* *Lee Partridge,* National Partnership for Women & Families *Mark Frisse,* Vanderbilt University
2:30 – 3:30	**Healthcare IT Standards and the Medical Professional** *10 minutes for presentations by each panelist, followed by 30 minutes for Q&A* *Bill Bria,* Association of Medical Directors of Information Systems *Don Mon,* American Health Information Management Association *Peter Basch,* MedStar Health *Clem McDonald,* National Library of Medicine; Regenstrief Institute
3:30 –	**Public Comment Period** *Trish Hughes,* MinuteClinic, Inc.

Appendix D

List of Abbreviations

AHIC – American Health Information Community
CCHIT – Certification Commission for Healthcare Information Technology
EHR – Electronic Health Record
GAO – Government Accountability Office
HITSP – Health Information Technology Standards Panel
HHS – Department of Health and Human Services
IOM – Institute of Medicine
IT – Information Technology
NHIN – Nationwide Health Information Network
OMB – Office of Management and Budget
ONC – Office of the National Coordinator for Health Information Technology
RHIO – Regional Health Information Organization
SDO – Standards Development Organization

Appendix E

Executive Order 13335

Executive Order: Incentives for the Use of Health Information Technology and Establishing the Position of the National Health Information Technology Coordinator

By the authority vested in me as President by the Constitution and the laws of the United States of America, and 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, it is hereby ordered as follows:

Section 1. Establishment.

(a) The Secretary of Health and Human Services (Secretary) shall establish within the Office of the Secretary the position of National Health Information Technology Coordinator.
(b) The National Health Information Technology Coordinator (National Coordinator), appointed by the Secretary in consultation with the President or his designee, will report directly to the Secretary.
(c) The Secretary shall provide the National Coordinator with appropriate staff, administrative support, and other resources to meet its responsibilities under this order.
(d) The Secretary shall ensure that the National Coordinator begins operations within 90 days of the date of this order.

Sec. 2. Policy. In fulfilling its responsibilities, the work of the National Coordinator shall be consistent with a vision of developing a nationwide interoperable health information technology infrastructure that:

(a) Ensures that appropriate information to guide medical decisions is available at the time and place of care;
(b) Improves health care quality, reduces medical errors, and advances the delivery of appropriate, evidence-based medical care;
(c) Reduces health care costs resulting from inefficiency, medical errors, inappropriate care, and incomplete information;
(d) Promotes a more effective marketplace, greater competition, and increased choice through the wider availability of accurate information on health care costs, quality, and outcomes;
(e) Improves the coordination of care and information among hospitals, laboratories, physician offices, and other ambulatory care providers through an effective infrastructure for the secure and authorized exchange of health care information; and
(f) Ensures that patients' individually identifiable health information is secure and protected.

Sec. 3. Responsibilities of the National Health Information Technology Coordinator.

(a) The National Coordinator shall, to the extent permitted by law, develop, maintain, and direct the implementation of a strategic plan to guide the nationwide implementation of interoperable health information technology in both the public and private health care sectors that will reduce medical errors, improve quality, and produce greater value for health care expenditures. The National Coordinator shall report to the Secretary regarding progress on the development and implementation of the strategic plan within 90 days after the National Coordinator begins operations and periodically thereafter. The plan shall:

(i) Advance the development, adoption, and implementation of health care information technology standards nationally through collaboration among public and private interests, and consistent with current efforts to set health information technology standards for use by the Federal Government;
(ii) Ensure that key technical, scientific, economic, and other issues affecting the public and private adoption of health information technology are addressed;
(iii) Evaluate evidence on the benefits and costs of interoperable health information technology and assess to whom these benefits and costs accrue;
(iv) Address privacy and security issues related to interoperable health information technology and recommend methods to ensure appropriate authorization, authentication, and encryption of data for transmission over the Internet;
(v) Not assume or rely upon additional Federal resources or spending to accomplish adoption of interoperable health information technology; and
(vi) Include measurable outcome goals.

(b) The National Coordinator shall:

(i) Serve as the Secretary's principal advisor on the development, application, and use of health information technology, and direct the Department of Health and Human Services' health information technology programs;
(ii) Ensure that health information technology policy and programs of the Department of Health and Human Services (HHS) are coordinated with those of relevant executive branch agencies (including Federal commissions) with a goal of avoiding duplication of efforts and of helping to ensure that each agency undertakes activities primarily within the areas of its greatest expertise and technical capability;
(iii) To the extent permitted by law, coordinate outreach and consultation by the relevant executive branch agencies (including Federal commissions) with public and private parties of interest, including consumers, providers, payers, and administrators; and

(iv) At the request of the Office of Management and Budget, provide comments and advice regarding specific Federal health information technology programs.

Sec. 4. Reports. To facilitate the development of interoperable health information technologies, the Secretary of Health and Human Services shall report to the President within 90 days of this order on options to provide incentives in HHS programs that will promote the adoption of interoperable health information technology. In addition, the following reports shall be submitted to the President through the Secretary:

(a) The Director of the Office of Personnel Management shall report within 90 days of this order on options to provide incentives in the Federal Employee Health Benefit Program that will promote the adoption of interoperable health information technology; and
(b) Within 90 days, the Secretary of Veterans Affairs and the Secretary of Defense shall jointly report on the approaches the Departments could take to work more actively with the private sector to make their health information systems available as an affordable option for providers in rural and medically underserved communities.

Sec. 5. Administration and Judicial Review.

(a) The actions directed by this order shall be carried out subject to the availability of appropriations and to the extent permitted by law.
(b) This order is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity against the United States, its agencies, its entities or instrumentalities, its officers or employees, or any other person.

GEORGE W. BUSH

THE WHITE HOUSE,

April 27, 2004.