STATE E-HEALTH ACTIVITIES IN 2007: FINDINGS FROM A STATE SURVEY

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ABSTRACT: Virtually all states now are actively engaged in e-health strategies to facilitate the use of information technology to make the health care system more effective while providing greater value and higher quality. States see e-health initiatives as high-priority; however, they and their private sector partners face significant challenges that accompany such initiatives, including the issues of cost and time required for implementation and for realizing a return on investment. Nevertheless, as reflected in the wide range of e-health activities across the states, a consensus has emerged that these policies and initiatives are significant and well worth the effort. This report is based on a 2007 survey of states and the District of Columbia conducted by the National Governors Association (NGA) in partnership with Health Management Associates (HMA) and with support from The Commonwealth Fund. The purpose of the survey was to identify current e-health initiatives, priorities, and challenges within state governments.

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EXECUTIVE SUMMARY

"E-health" is a term used to describe any health care practice supported by electronic processes and communication, including health information technology (HIT) and electronic health information exchanges (HIEs). Across the nation, states have taken on the challenge of promoting e-health policies and initiatives, encouraging a wide variety of public and private sector efforts. States are motivated by their interest in improving performance, assuring quality, and obtaining greater value in their roles as health care purchasers, providers, and regulators, and as protectors of public health and catalysts for private-sector action.

Broad agreement exists that health information technology (HIT) can significantly improve health care delivery and quality and reduce its costs. Indeed, HIT has the potential to transform health care delivery and produce great improvements in efficiency and effectiveness for all the programs in which states have a role and an interest. However, states are faced with real constraints on what they can do, owing to limits on state funds and the many competing demands for those resources. As a result, important goals, including those that might lead to a "nationwide health information network," remain on the horizon, with states pursuing a variety of strategies and approaches toward their attainment.

To better understand the e-health landscape within state governments, the National Governors Association (NGA) partnered with Health Management Associates (HMA) to survey states, the District of Columbia, and the U.S. Territories. The project was also supported with funding from The Commonwealth Fund. The survey was designed to capture state HIT and electronic health information exchange (HIE) activities, challenges that states face in pursuit of these activities, emerging best practices and benefits, current directions, and future goals. Forty-one states and the District of Columbia responded to the survey (42 responses in total), providing a rich set of data and an important baseline of state e-health initiatives, activity, and progress. Key findings are outlined below.

All states now place a high priority on e-health activities. No state indicated that e-health activities were *not* significant, and almost 70 percent of states (29 of 42 responding) described e-health activities as *very significant*. States listed a wide range of initiatives as their most significant, including electronic HIE activities, adoption of HIT components, quality and transparency initiatives, registries, and efforts to resolve privacy and security issues.

According to the survey, state governors' two highest e-health priorities over the next two years were the development of electronic HIEs and of policies fostering local or state-level electronic HIEs, to assure interconnectivity among health care providers. When asked to identify the two state e-health activities they considered most significant, over three-quarters of responding states (32 of the 42) identified electronic HIE activities. Among such activities, 11 states reported forming a statewide committee, commission or board to study electronic HIE issues; 17 states reported other electronic HIE planning and monitoring activities; and seven states described either developing or implementing electronic HIEs. Also, four states (Florida, Georgia, Minnesota, and Washington) described as their significant activity providing grants, loans, or pro bono technical support to spur both HIT and electronic HIE development.

State HIT initiatives span a broad range of activities. Many states identified various HIT components (Table ES-1) as their most significant e-health activities. These activities not only help states operate more efficiently, but also help states improve health care quality. They also provide states with opportunities to participate in e-health partnerships with private payers.

Table ES-1. HIT Activities That States Identified as Significant

HIT Component	States Indicating Activity as Significant
Telehealth	HI, NE, NM, OR, WV
E-Prescribing	AR, IL, MA, NH, PA, RI, KY
Medicaid Management Information System (MMIS) Replacement	ND
Electronic Medical Records (EMRs)	FL, HI, NM, OR, RI
Electronic Health Records (EHRs)	AR, DC, KS, MN, MO
Patient Health Records (PHRs)	OR
Decision-Support Tools, Chronic Disease Management, and Case Management	ME, MO, IN, VT
Web-Based Tools	AL, MA, UT

E-health applications are enabling states to implement quality and transparency initiatives. Five states identified significant e-health activities that focused on quality and transparency, including efforts to collect and distribute data on health outcomes, costs, utilization, and pricing and thereby increase accountability in public and private health care delivery systems.

Privacy and security remain key concerns of states and a clear focus for state action. Most states participating in the survey (31 of the 42) reported having state privacy laws and other protections in place and two-thirds (28 states) reported establishing

policies and procedures to address data privacy and security breaches. Five states listed actions related to privacy and security as their most significant e-health activities.

The greatest barrier to release of health information within an electronic HIE lies in differing consent requirements, especially for services related to substance abuse, mental health, and HIV/AIDS; the second-greatest barrier identified was federal privacy requirements. In particular, most states (24 of 38 responding states) indicated that federal laws related to substance abuse services create a barrier when implementing an electronic HIE. Thirteen states reported that state and federal confidentiality and consent laws create obstacles for e-health activities and nine states reported HIPAA preemption standards as a barrier. Other barriers included the technological challenges of securing data and authentication.

States demonstrate interest in knowing and improving the availability of medical data to health care providers and Medicaid enrollees. One barrier for beneficiaries is lack of access to computers. One-third of states (13 of the 42 responding) had recently assessed the extent to which the Medicaid population has access to computers and the Internet. A similar number of states indicated they had initiated education efforts about e-health specifically intended to inform consumers from culturally and linguistically diverse communities. Two-thirds of states had assessed provider connectivity.

Barriers to implementing EMRs included initial and ongoing costs associated with the implementation process, lack of quantifiable return on investment (ROI), and difficulty finding an EMR application that is interoperable.

States have formed public-private consortiums to develop standardized measures of utilization and performance. Eighteen states reported working with private payers to develop statewide measures of utilization and performance.

States have adopted HIT activities across a wide variety of programs. States reported a range of e-health activities across five state-administered health care programs: Medicaid, employee health benefit plans, state-operated mental health hospitals, state prison systems, and public health. The greatest number of state e-health activities were in the area of public health, with the second-highest number within Medicaid. States reported registries as the most prevalent e-health activity. The next most frequently cited initiative was telehealth, followed by decision-support tools.

Public health has extensive experience operating registries, which will be foundational to other e-health activities. In many states, public health agencies for decades have operated electronic registries related to immunization, surveillance, disease, newborn screening, and early and periodic screening, diagnosis and treatment (EPSDT). In fact, all but one of the 42 responding states reported operating one or more of these registries. States indicated that their experience operating these registries will be foundational as they develop other HIT and electronic HIE activities. As one state official commented, a registry "is much like an RHIO with a narrow focus of information and a broad user base."

Almost all states reported e-health initiatives in Medicaid. Of the 42 responding states, a total of 37 reported e-health initiatives in Medicaid. Over half reported implementing Web-based Medicaid Management Information Systems (MMIS), telehealth, and decision-support tools. Web-based provider enrollment and certification and immunization registries were reported in about one-third of the responding states.

Obtaining funding for both implementation and long-term operations is the most significant barrier to the widespread adoption of interoperable HIT and a nationwide network of electronic HIEs. Over half of responding states identified lack of funding as the greatest barrier. Thirteen states also referred to "sustainability" or difficulty in establishing a "business case" as a barrier, e.g., building a business model in which revenues or savings from the use of HIT would be sufficient to offset its additional cost.

In addition to financial issues, other impediments observed in state survey responses included:

- **Stakeholder Engagement.** Almost half of responding states (20 of the 42) mentioned the challenge of obtaining the trust, buy-in, and participation of health care providers and of other stakeholders that are vital to success.
- **Lack of Standards.** Twelve states reported lack of defined nationwide standards for interoperability and coordination with federal standards development.
- **Privacy and Security Concerns.** As mentioned above, privacy and security are key concerns in state e-health initiatives. Two states also reported difficulty in coordinating with the privacy laws of neighboring states.
- **Terminology.** There was wide but not yet complete agreement regarding the interpretation and usage of common e-health terms. States also recommended that public health be included in the definitions for HIT and electronic HIE.
- **Legal Constraints for E-Prescribing.** Several states noted federal legal barriers related to e-prescribing and Schedule II prescription drugs.

States indicated that the most important "lesson learned" was the need for collaboration and stakeholder engagement. For the e-health activities that each state identified as most significant, states provided the most important lessons learned that would benefit another state undertaking the same activity. By far the most commonly cited "lesson learned" was the need to collaborate with, work with and obtain the buy-in of the full range of stakeholders. One official recommended that other states make "sure that everyone is buying in to what you want to accomplish and what the next steps will be" and "collaborate with stakeholders from the start to develop a level of trust and confidence in the information exchange."

Other lessons learned reported by states included:

- **Planning.** Ten states addressed the need for sufficient time and careful planning. One commented, "Proceed slowly gaining trust and fully exploring policy issues related to privacy and security, access, authorization, and authentication." Another, however, cautioned, "You don't need all the answers today to move forward; plan broadly, implement incrementally."
- **Clear and Effective Communication.** Eight states stressed the need for clear and effective lines of communication and the importance of educational activities.
- **Resources and Funding.** Other states emphasized the need for dedicated resources and start-up funding; the need for leadership from both government and the private sector; and the importance of strong project management.
- **Versatile Electronic HIE Model.** One state noted that an important lesson learned was to use an electronic HIE model that did not lock out prospective participants because of its dependence on a particular vendor or service.

CONCLUSION

Virtually all states now are actively engaged in the promotion and implementation of e-health strategies intended to use information technology to provide better effectiveness, efficiency, value, safety, and quality in the health care system. Reflecting a belief that information technology can assist state and private efforts to slow the growth in health care costs and help them get greater value for their health care dollars, every state has placed significant priority on e-health. The challenges are significant, including the issues of cost and the time required for implementation and for realizing a return on investment. Nevertheless, a broad consensus has emerged, as reflected in the wide range of e-health activities across the states, that the promotion of e-health policies and initiatives is a significant undertaking that will be well worth the effort.

This report provides a benchmark of state e-health activities, showing what states have achieved and where they are going during state fiscal year 2008. States and their stakeholders can learn from their colleagues across state lines, and can leapfrog beyond what has been attained elsewhere. One state official noted, "It is powerful to learn that the majority of states share similar perspectives and plans for the future . . . . This report will open up lines of communication between state HIE efforts."

States desiring more information on this report may contact any of the authors. For information about specific states, please contact:

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STATE E-HEALTH ACTIVITIES IN 2007: FINDINGS FROM A STATE SURVEY

BACKGROUND

Broad agreement exists that health information technology (HIT) has significant potential to improve health care delivery and quality and to reduce its costs. Forward-looking state officials and private-sector leaders have even come to visualize the long-term goal of a "Nationwide Health Information Network" that would allow clinicians and authorized entities to exchange electronic health information in real time, with security and privacy protections sufficient to instill confidence in all users.

As states began their fiscal year 2008, all had taken on the challenge of promoting and implementing e-health[1] policies and encouraging public- and private-sector e-health efforts. The strategies and approaches vary, heavily influenced by each state's private-sector initiatives. States are constrained by the necessity to balance their budgets and to allocate limited resources among many competing demands, including those related to the health care roles they are expected to fill. As a result, despite a solid commitment to e-health and a vision of its benefits for the future, much remains to be done across the states to achieve widespread adoption of HIT tools by providers and purchasers.

As purchasers and providers of health care, states have much to gain from development and adoption of HIT initiatives in programs such as Medicaid and the State Children's Health Insurance Program (SCHIP). The e-health payoff potentially may accrue to the entire population through the states' roles in protecting the general public as regulators and key administrators of the public health function. Finally, states are uniquely positioned to be catalysts for private-sector action by providing funding and data and by acting as partners, project facilitators, or neutral conveners of statewide e-health efforts across the public and private sector.

Momentum for Change

Early efforts to use computers to support patient care through the management of clinical information began more than 40 years ago, long before the emergence of personal computers, local area networking, and the Internet.[2] While technological advances since then have transformed other industries and society in general, the primary means to collect, manage, and distribute most health information continues to be "the pen, paper, telephone, fax, and Post-It note."[3] The relentless rise in health care costs in recent years, however, has driven both public and private sector payers to look for ways to realize the potential quality, efficiency, and cost-saving benefits of HIT, such as:

- avoidance of unnecessary and redundant medical treatments and tests
- reductions in medical errors
- decreases in paperwork
- improvements in provider productivity
- improvements in the quality of patient care
- early detection of infectious disease outbreaks
- evaluation of health care based on value obtained, enabled by the collection of price and quality information that can be compared

At the national level, a number of events and initiatives have also accelerated the momentum for change at the state level (Table 1).

Table 1. National-Level Events and Initiatives Impacting State E-Health Efforts

Year	Event/Initiative	Description
1996	Health Insurance Portability and Accountability Act (HIPAA)	This legislation required states, insurers, and providers to ensure the privacy and security of health care information and mandated data transmission standards.
2000	Institute of Medicine Report: "To Err Is Human: Building a Safer Health System"	This landmark report raised public awareness of the high number and cost of preventable medical errors.
2002	Terrorism Preparedness and Response Appropriation	Following September 11, 2001, Congress appropriated $918 million for state health agency grants to enhance terrorism preparedness and response including enhancements to epidemiological and surveillance capacity, and for the development of information technology and systems to support various public health functions.
2004	Office of the National Coordinator for Health Information Technology (ONC)	President Bush established the ONC and pledged to work toward the goal of accomplishing the widespread adoption of electronic medical records (EMRs) within 10 years.
2005	Hurricanes Katrina and Rita	The hurricane dramatized the potential value of electronic health records (EHRs) that could be preserved and made available during natural disasters.
	Deficit Reduction Act of 2005 (DRA)	This legislation included $150 million for "Medicaid Transformation Grants" to promote efficiency and effectiveness in Medicaid programs, with HIT specifically listed as a priority use of the funds.[4]
2007	*State Alliance for e-Health* (the "State Alliance")	The State Alliance was established by the NGA Center for Best Practices[5] to address state-level HIT issues including barriers to interoperability, privacy and security issues, and state law and regulatory barriers to HIT related to the practice of medicine.
	Multi State Collaboration for the Planning and Development of State Medicaid Electronic Health Record and Health Information Exchange Initiatives	Sponsored by the National Association of State Medicaid Directors, this effort included 13 states as of May 2007. State participants agree to share best practices and, where possible, enter into joint ventures.[6]

State Actions in the Context of State Roles

To understand the e-health landscape within state governments, the National Governors Association (NGA) and Health Management Associates (HMA) partnered to survey states, the District of Columbia, and the United States Territories. The project was also supported with funding from The Commonwealth Fund. This survey was designed to identify key accomplishments, initiatives underway in the states, and future directions for e-health.

State e-health efforts occur in a variety of contexts including the states' roles as health care purchasers, payers, providers, regulators, and facilitators, and also in their unique roles as key protectors of public health. A recent federal study assessed Medicaid e-health efforts,[7] but there had been little effort to describe state e-health activities more broadly. The survey was therefore designed to capture a wide scope of potential actions across multiple state health care–related roles including, but not limited to, state actions and initiatives to:

- Ensure that the systems used to purchase health care (e.g., Medicaid and SCHIP) are built on interoperable HIT
- Promote a more effective marketplace, greater competition, and increased choice by providing consumers with access to accurate information on health care costs, quality, and outcomes
- Use state regulatory authority to protect consumers, ensure the privacy and security of health information, and address liability issues
- Support public health functions with interoperable HIT (e.g., the establishment of interoperable registries and surveillance systems)
- Create electronic medical records (EMRs) and electronic heath records (EHRs) for Medicaid beneficiaries and for patients in state-operated facilities (including state hospitals and prisons)
- Use the state's market power to leverage interoperable HIT adoption in the private sector (e.g., through contractual requirements and procurement policies)
- Align state government to better coordinate HIT and electronic health information exchange (HIE) efforts across multiple agencies; and
- Act as a catalyst for private-sector action by:
  - Functioning as a neutral convener, project facilitator, or educator
  - Providing data resources
  - Offering fiscal incentives or other support for the adoption of interoperable HIT, participation in an electronic HIE, or delivery of telehealth

The survey was intended to provide national organizations, federal agencies, and other relevant partners with useful information about the needs of states, their current actions, and opportunities for further e-health development. The NGA Center for Best Practices plans to share identified best practices among the states and with its "State Alliance for e-Health" to build consensus for interoperability among health information resources across the nation. Individual states will be able to use this analysis when assessing future e-health opportunities. Finally, the findings of the survey also provide a benchmark of state e-health activity against which to measure future state progress.

> *"The results of this study will be important for educating national organizations, federal agencies, and other relevant partners about the needs of states, and the opportunities ripe for further development."*
>
> —Raymond C. Scheppach, Executive Director, National Governors Association

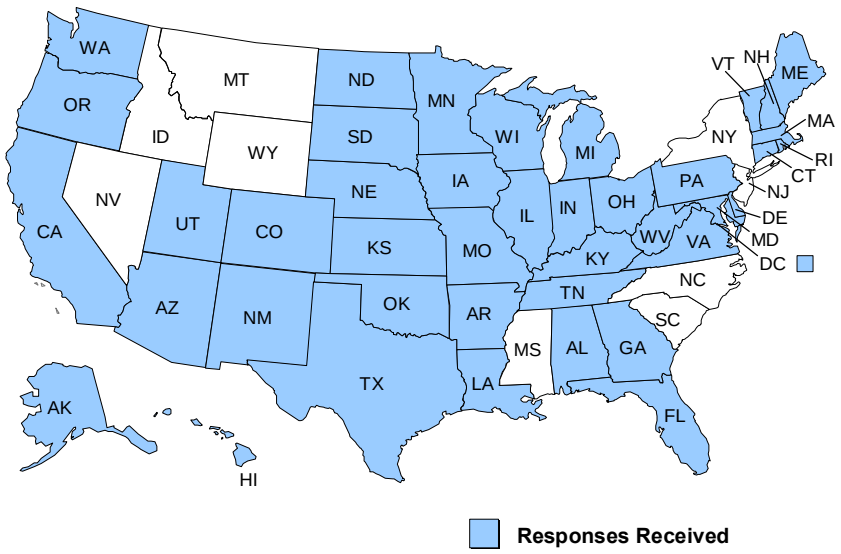
SURVEY METHODOLOGY AND RESPONSE

The survey instrument was developed with input from the State Alliance Health Information Communication and Data Exchange Taskforce, the National Association of State Chief Information Officers, and the Systems Technical Advisory Group of the National Association of State Medicaid Directors. The survey questionnaire focused on the most significant e-health activities: state actions on concerns relating to privacy laws; performance measures; consumer and provider engagement with e-health; state government roles in e-health; implementation obstacles; and lessons learned.

In July 2007, the survey was distributed to the governors' offices in the 50 states, to the U.S. territories, and to the mayor's office in the District of Columbia.[8] Its distribution included mailing a paper copy with a cover letter from the National Governors Association's executive director, Raymond C. Scheppach, followed by an electronic version sent by e-mail to the governors' health policy advisers. Each state was asked to provide a single response representing all agencies including appropriate input from, for example, the state's chief information officer; the office of information technology; Medicaid; and public health, mental health, corrections, insurance, state budget, and privacy officers. Participation was encouraged so that individual state HIT and electronic HIE successes could be recognized and so that each state could learn from others' experiences. During August and September 2007, staff from The Commonwealth Fund, the NGA, and HMA sent e-mail reminders and made personal telephone calls requesting state responses.

Survey responses were received from 41 states and the District of Columbia (42 responses in total).[9] In some cases, states indicated that their response reflected input from one or more agencies, such as Medicaid or public health, but did not include input from all agencies in which e-health activities might be underway. Responses were not received from Idaho, Mississippi, Montana, North Carolina, Nevada, New Jersey, New York, South Carolina, Wyoming, or the territories (Figure 1).

Figure 1. State Responses to E-Health Survey



This report's findings are based solely on the responses received, and focus on:

- e-health terminology
- state e-health priorities
- significant e-health initiatives reported by states
- state privacy laws and other protections for e-health information
- obstacles related to electronic release of health information
- performance measures in e-health
- stakeholder engagement in state e-health activities
- state government roles, organizational structure, and financing for e-health
- implemented electronic HIE and HIT activities by state public programs

- barriers and obstacles
- lessons learned

E-Health Terminology

The vision of a "Nationwide Health Information Network" ("NHIN"), as enunciated by the federal ONC, is a "network of networks built out of state and regional health information exchanges (HIEs) and other networks so as to support the exchange of health information by connecting these networks and the systems they, in turn, connect."[10] The term "health information exchange" is used often as a noun, interchangeably with the term "regional health information organization" ("RHIO"), which refers to "a group of organizations and stakeholders that has come together for the purpose of electronic data exchange and is focused on improving the quality, safety, and efficiency of health care delivery."[11]

Like RHIO, the term **"electronic health information exchange" ("HIE")** can refer to a "group," but is also used to refer more generally to the "act of exchanging electronic health data between two or more organizations or stakeholders." For purposes of the survey, electronic HIE was defined broadly to include both.

In contrast, the term **"health information technology" ("HIT")** is *not* used to refer to a group, project, or initiative, but rather is defined as "information technology specific to the health care domain." Thus, the term "HIT" captures a wide range of technologies and processes related to the electronic generation, storage, and transmission of health information. HIT can be understood as the technology that enables an electronic HIE to function and ideally become a building block for the Nationwide Health Information Network.

State Comments on Use of E-Health Terms

Across states, within state agencies, between state and federal agencies, and among various stakeholders (including public and private payers), various e-health terms are not always understood to mean exactly the same thing. For the survey, definitions of commonly used terms from a nationally recognized association were provided (see box), along with an opportunity to comment on whether each term was commonly understood to have the same meaning in a state.

HIT Technology Terms and Definitions Used in the Survey

Electronic health information exchange (HIE) is electronic mobilization of health information across organizations and disparate electronic systems within a region, community, or state. It is a catchall term that includes regional health information organizations (RHIOs) and quality improvement organizations (QIOs), and Agency for Healthcare Research and Quality (AHRQ)–funded communities and private exchanges.

Electronic medical record (EMR) is a computer-based patient medical record. The EMR is the source of information for the electronic health record (EHR).

Electronic health record (EHR) is a longitudinal electronic record of patient health information generated in one or more care settings. EHR data includes patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports.

Electronic health record system is a set of components that form the mechanisms by which electronic health records are created, used, stored, and retrieved. This includes data rules, procedures, processing and storage devices, and communication support facilities.

Personal health record (PHR) is usually used when referring to the version of health/medical record owned by the patient.

Metadata is machine-understandable information for the Web that describes content, quality, condition, and characteristics of the data it provides. It describes the who, what, when, where, why, and how of a data set.

Telehealth uses communication networks to provide health services including (but not limited to) direct patient care, health prevention, consulting, and home visits to patients in a geographical location other than that of the provider of the services.

E-prescribing is the use of electronic tools to order drug prescriptions. E-prescribing tools may include both software programs and hardware like personal computers, handheld devices, and touch screens.

Note: The survey used definitions from a nationally recognized association, the *HIMSS Dictionary of Healthcare Information Technology Terms, Acronyms and Organizations,* Health Information and Management System Society (HIMSS), 2006, www.himss.org.

In a large number of survey responses (about 40 percent, or 18 of 42 provided), states commented on the definitions. Key state comments are included in Appendix B. Some responders indicated agreement with the listed definitions (e.g., telehealth and e-prescribing), and others expanded the scope of a definition by describing a component's functionality or benefits. Clearly, there was widespread but not yet complete agreement on how the listed terms are understood across states. The following observations regarding terminology were drawn from the state responses to the definitions provided and to other questions within the survey:

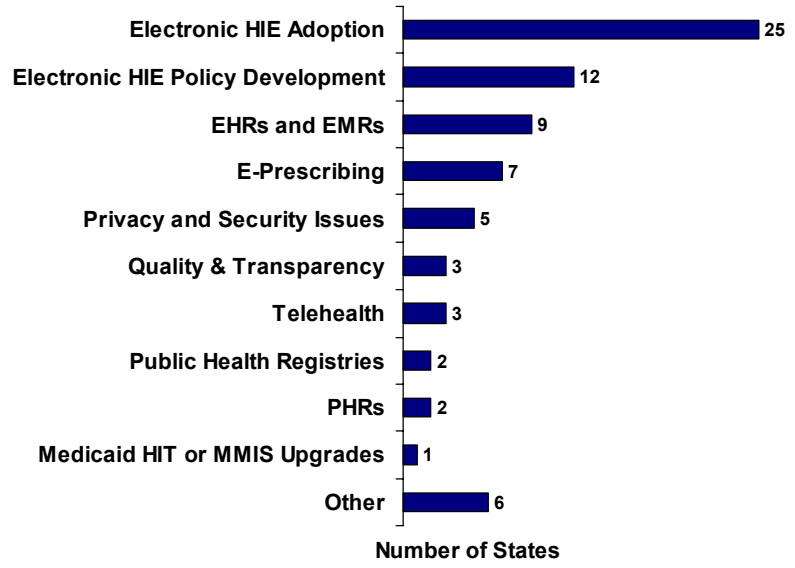
- Two states recommended that "public health" be included in the definitions for e-health, HIT, and electronic HIE, to recognize public health practices and registries.[12]

- Three states mentioned that electronic medical records (EMRs) and electronic health records (EHRs) are terms that are often used interchangeably.
- Personal health records (PHRs), one state recommended, would be more appropriately identified as "records accessed and controlled by the patient" rather than "owned" by the patient.
- Electronic health information exchange (HIE) was applied differently by states. For example, some states described similar initiatives involving EMRs, telehealth, and e-prescribing as integration related to electronic HIE while others did not.[13]
- The terms "governance," "infrastructure," and "sustainability" were used in state survey responses to mean different things. For example:
  - *Governance* was frequently used without qualifiers and was interpreted either as state government oversight and accountability of e-health activities or as the organizational structure of entities engaging in e-health activities.
  - *Infrastructure* was used to refer to (a) organizational and human resources or (b) hardware and software.
  - *Sustainability* was linked to funding in some contexts and to administration and staffing oversight in others.

State E-Health Priorities

Almost 70 percent of the states (29 of 42 responding) described e-health activities as *very significant*. No state indicated e-health was *not* significant. The survey asked each state to identify the governor's two highest e-health priorities for the next two years.[14] By far the most frequently cited priority area was developing and fostering local or state-level electronic HIEs to assure interconnectivity among health care providers—about a third of priorities fell into this category. The second most common priority area was policy development related to electronic HIE adoption, including policies relating to stakeholder collaboration and education; interoperability; infrastructure; governance; financing mechanisms; and statutory and regulatory barriers (Figure 2).[15] Other cited priorities included implementation of HIT or electronic HIE components that link clinical and administrative claims-based data to facilitate improvements in quality and efficiencies in health care delivery (e.g., e-prescribing, telehealth, EHRs, EMRs, and registries). For a complete list of the state e-health priorities identified, see Appendix C.

Figure 2. Top State E-Health Priorities for Next Two Years



Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Most Significant E-Health Initiatives Reported by States

Another key objective of the survey was to identify state e-health initiatives that states themselves considered *most significant*. States were asked to identify up to two such initiatives (either implemented or under development) and to describe the initiatives' significance, implementation challenges, and lessons learned that could be helpful for other states. Eighty activities were reported across the 42 responding states (Table 2).

Table 2. E-Health Categories for Which States Indicated Most Significant Activities

E-Health Category	States Indicating Category as Significant[16]
Electronic HIE Development	AK, AR, AZ, CA, CO, CT, DE, DC, GA, IA, IL, KY, LA, MD, MI, ND, NE, NH, OH, OK, , OR, PA, RI, SD, TN, TX, VT, WA, WI, WV
Grants, Loans, and Other Technical Assistance for HIT and Local HIEs	FL, GA, KY, MI, MN, WA
Telehealth	HI, NE, NM, OR, WV
E-Prescribing	AR, IL, MA, NH, PA, RI, KY
Replacement Information System	ND
Electronic Medical Records (EMRs)	FL, HI, NM, OR, RI
Electronic Health Records (EHRs)	AR, DC, KS, MN, MO
Patient Health Records (PHRs)	OR
Decision-Support Tools, Chronic Disease Management, and Case Management	ME, MO, IN, VT
Web-Based Tools for Eligibility, Program Benefits, Provider Billing, etc.	AL, MA, UT
Quality and Transparency Activities	AL, AR, CA, GA, VA
Registries	ME, OH, UT
Privacy and Security Issues	CA, CT, LA, MD, OK, WI

In response to several open-ended questions, states were able to list additional activities, which are included in the next sections along with the activities described as most significant. To facilitate discussion of the survey responses, the initiatives listed by states were grouped into five categories: electronic HIE activities, HIT components, quality and transparency initiatives, registries, and privacy and security issues.

* * * * *

Authors' note: The following sections focus on key e-health activities identified only by those states responding to the survey. Counts reported therefore do not include every state's e-health activities.

State Electronic HIE Initiatives: Effective Actions and Strategies for Success

The survey asked states to indicate whether electronic HIE initiatives had been *implemented* within Medicaid, state health benefit plans, state-operated mental health hospitals, state prison systems, or public health. Of the 42 states responding to the survey, a total of 25 reported they had implemented electronic HIE activities within one or more of these five state-administered programs. The most frequently cited program area for

electronic HIE activities was public health, followed by Medicaid. Notably, two states (Indiana and Kentucky) reported operational electronic HIE activities within all five program areas addressed in the survey.

States participating in the survey described the 40 electronic HIE activities they considered most significant. The most frequently reported was planning and developing policies leading to electronic HIE adoption. The next-highest was the formation (or continuance) of a committee or commission to study electronic HIE issues. Other highlights follow.

Planning Toward Electronic HIE Development

Eleven states reported forming a statewide committee (sometimes called a board or commission) to study electronic HIE issues as a significant activity in their state. Five (Colorado, North Dakota, Oregon, Texas, and Washington) were funded by public-private sources. States listed several objectives of these committees and collaborations, including (1) assessment of current electronic HIE and HIT usage, (2) formation of an electronic HIE governing structure, (3) evaluation of financial implications, (4) identification of private resources and public-private partnerships to fund efforts, (5) development of long-range plans related to electronic HIE, and (6) formulation of recommendations on best practices or policies for their respective state governments.

Another 17 states mentioned electronic HIE planning and monitoring activities, such as:

- "Participat[ing] in [and] monitoring of private initiatives"
- "Accelerat[ing] the use of health information technology [and] leveraging state purchasing power, including support for uniform interoperability standards . . ."
- "Establishing additional RHIOs within the state"
- Enabling "Medicaid data exchanges between the state and RHIOs" that will also "supply clinical information to Medicaid providers"
- Developing a "statewide e-health portal as the basis for statewide HIE"

States indicating that they were either developing or implementing electronic HIEs provided the following descriptions in their survey responses:

- The **Arizona** Health Care Cost Containment System (AHCCCS) Health Information Exchange and Electronic Health Record (HIeHR) is a $12 million

effort that will provide an electronic health record system for the 1.1 million Arizona citizens currently on Medicaid, facilitated by development of a health information exchange with Arizona health care institutions and providers and funded by the Centers for Medicare and Medicaid Services (CMS). Through a Web portal, providers will access applications such as e-prescribing, lab orders, and results viewing, and will provide an aggregated patient-centric view of the data. Later phases are anticipated to include decision-support and analytic tools for providers.

- "The **Colorado** Regional Health Information Organization (CORHIO), a not-for-profit organization, was created in early 2007 to lead development and . . . oversight for the ongoing operation of the statewide network for the exchange of electronic health information, including links between an array of providers, organizations and networks throughout the state and eventually a bridge to other states . . . . CORHIO will establish business rules, technology standards and governance for the exchange of clinical and other health data to support patient care decisions, quality improvement and research, [and] public health surveillance . . . ."
- "The **Delaware** Health Information Network (DHIN) is the first statewide health information exchange in the nation. It is comprised of hospitals, payers, physicians, national reference labs and will soon be adding radiology facilities . . . . The DHIN currently exchanges lab, radiology, pathology results . . . admission, discharge and transfer reports electronically to providers . . . ."
- The **District of Columbia** is designing and implementing "a Medicaid Information Technology Architecture (MITA) Patient Hub which will enable the exchange of Medicaid recipient information among the Medicaid program, selected DC Department of Health programs, the DC Safe Passages program, six community health centers, and three local DC hospitals."
- **"Kentucky** plans to develop a secure, interoperable, statewide electronic health network providing an electronic health record for all citizens of Kentucky . . . . Kentucky received a $4.9M Medicaid Transformation Grant that will provide funding to develop Kentucky's statewide e-Health portal."
- The **Louisiana** Health Information Exchange (LaHIE) was created in response to hurricanes Katrina and Rita, which tested the state's fragmented health information system. "The publishing partners in LaHIE were participants in the [design of] the NHIN [National Health Information Network] architecture . . . . LaHIE is architected to be a statewide solution, establishing an eMPI ([electronic] Master Patient Index) of all residents within the state, as well as establishing a

minimum patient dataset to facilitate continuity of care for displaced residents in the event of a disaster . . . ."

- **Oklahoma**'s Secure Medical Records Transfer Network (SMRTNet) is an expandable network that was built over a two-year period. Oklahoma received a $3.4 million federal grant through the Agency for Healthcare Research and Quality (AHRQ) to develop SMRTNet.

States as Facilitators: Grants and Technical Support to Local Health Information Exchange
States have a clear role to play in the development, organization, and implementation of an electronic HIE initiative. Several states explained that implementing local HIEs was a "foundational step" that would ultimately enable a state-level electronic HIE. One respondent observed: "State funding creates the building blocks for stakeholder participation in the RHIO, and development of local HIE efforts. [The] expectation is that local efforts will eventually interconnect across the state." Four states (Florida, Georgia, Minnesota, and Washington) mentioned providing grants to spur both HIT and electronic HIE development as a significant activity. In addition to providing grants, one state (Minnesota) has a loan program and another (Florida) provides pro bono volunteer work for the local RHIO communities. Ongoing technical assistance also will soon be available in Michigan, which is implementing a resource center to assist the local HIE efforts. States described their facilitation efforts as having enhanced communication among RHIOs and between RHIOs and the state-level governance body.

Challenges of and Lessons Learned from State Electronic HIE Activities
Electronic HIE challenges that states reported in their survey responses include:

- "Establishing a formal structure and levels of engagement to drive technical implementation"
- "Reaching consensus on system functionality and rollout"
- "[S]ecuring capital funding"
- "Collaboration among competitive entities"
- "[E]stablishing governance (which includes specific privacy and security of patient data) to establish the trust among stakeholders necessary for the providers to agree to participate in the exchange process"
- "Linking Medicaid to the larger HIE efforts will be a significant challenge."

The survey also asked states to identify important lessons that could benefit another state. State responses related to electronic HIEs include:

- "[B]uild a common vision for how HIE will serve statewide health related goals and then common understanding of the best approach to building interoperability that suits your state. The work of building and maintaining an effective statewide HIE system requires sustained collaboration and an entity whose business it is to leverage different interests and resources for a common good."
- Provide "strong project management and dedicated resources from each of the participating organizations."
- "Involve stakeholders early on; define your governance structure very early on; engage high level champions."
- "Establish the governance as the first priority. Availability of appropriate interface engines and other HIT technologies is no longer the primary challenge as it was two years ago."
- Include "adequate staffing, education activities and communications."
- "Use an HIE model that doesn't lock out prospective participants, because of dependence on a single vendor product or service."

State Adoption of HIT Components

HIT initiatives may be stand-alone or may be components of more comprehensive electronic HIE integration. The following examples of HIT activities, drawn from state responses, illustrate state priorities, challenges, and lessons learned.

Telehealth: State Involvement and Support

Five states (Hawaii, Nebraska, New Mexico, Oregon, and West Virginia) identified telehealth as one of their most significant e-health initiatives. One state observed that telehealth "may be as simple as two health professionals discussing a case over the telephone, or as sophisticated as using satellite technology to broadcast consultation between providers at facilities in two countries . . . ." Another state noted that for its state's Medicaid program "telemedicine services (also known as 'telehealth') are services provided from a remote location using a combination of interactive video, audio, and externally acquired images through a networking environment between a recipient (i.e., the originating site) and a Medicaid-certified provider at a remote location (i.e., distant site) . . . . Telemedicine services do *not* include telephone conversations or Internet-based communication between providers or between providers and recipients." Telehealth benefits mentioned by states included (1) increased health care access in rural areas and

for the elderly and economically disadvantaged, (2) wider availability of continuing medical education, and (3) improved access to specialized health care professionals in state-operated mental health hospitals and prisons.

Related to telehealth, the survey also found:

- Telehealth is operational in Medicaid programs for 20 of the 42 responding states; in prison systems for 19; and in public health delivery systems for 13.
- Nebraska reported that a 2001 needs assessment identified the cost of telecommunications lines as its "greatest barrier." Sources of telehealth funding vary as shown from five states providing financing information (Table 3).

Table 3. Telehealth Funding Used by Selected States

State	Implementation Stage	Telehealth Funding Sources
Hawaii	In Progress	Private Funding
Nebraska	Fully Implemented	Federal Grant or Contract Private (The Nebraska Universal Service Fund provides up to $900,000 annually and rural hospitals pay $100 monthly.)
New Mexico	Fully Implemented	State General Funds Federal Grant or Contract
Oregon	Initiation and Planning	Investigating FCC Grant
West Virginia	Initiation and Planning	State General Funds Federal Grant or Contract and Medicaid Private, e.g., Benedum Foundation Grant

- Reimbursement for services provided via telehealth is an issue in some states. Special reimbursement for telehealth services is provided in 12 Medicaid programs, in five State Children's Health Insurance Programs (SCHIP), and in two state health benefit plans. One respondent also explained that state regulations had been amended to permit insurers to pay for telehealth. Another state noted that Medicaid reimbursement for telehealth services requires prior authorization.
- One state emphasized the importance of collaboration with health care providers, stating that telehealth "is not [simply] about technology. A state must have available providers and the necessary support infrastructure."
- Another state indicated that it was considering a statewide telehealth initiative modeled after one developed by a private rural hospital. This hospital recently applied for a Federal Communications Commission (FCC) grant to help finance its telehealth costs.[17]

E-Prescribing

Seven states (Arkansas, Illinois, Kentucky, Massachusetts, New Hampshire, Pennsylvania, and Rhode Island) identified an e-prescribing activity as one of their most significant e-health initiatives. Several responders emphasized that e-prescribing is *not* simply the use of electronic tools, but comprises three core components that improve quality and efficiency (table 4). Another state observed that while e-prescribing is often a functionality of EMRs, prescribers may use personal digital assistant (PDA) devices or stand-alone Web-based applications as "practical, low cost" alternatives to purchase e-prescribing technology.

Table 4. Three Core Components of E-Prescribing

E-Prescribing Component	Description
Medication History	Provides data from a variety of sources, including electronic medical records, pharmacy claims data, or prescriber-to-pharmacy transactions
Drug-to-Drug Interaction and Allergy Alerts	Provides decision-support rules at the point of prescribing and combines this information with plan formularies to assist prescribers in drug selection
Bi-Directional Pharmacy Communication	Enables electronic transmission of prescriptions and refill requests between prescribers and pharmacies, eliminating the need for faxes or phone calls

Summary descriptions of selected state e-prescribing initiatives are listed below.

- **Florida** implemented its Medicaid "Wireless Handheld Clinical Pharmacology Drug Information and E-Prescribing Program" in 2005. The program is available at no charge to participating Florida Medicaid physicians. The Florida Attorney General provides oversight to prevent fraud and abuse. Adoption of e-prescribing and EMRs among non-Medicaid physicians is in the planning stage.
- **Kentucky** awarded five e-prescribing grants throughout 14 communities in the state. The state official responding to the survey explained that these grants are part of Kentucky's efforts "to expand the use of Health IT and galvanize communities together to use e-Health to provide higher quality, lower cost health care." Additional HIT grants are anticipated in the next year and beyond. Most practices and clinics used the grants to implement EMR systems that enabled e-prescribing. Initial problems included prescriber confusion about laws and regulations regarding e-prescribing (especially for Schedule II drugs). [18]
- **New Hampshire** intends to have e-prescribing implemented for all prescribers by October 2008, about two years after beginning its initiative.

- The **Rhode Island** governor's "Anywhere Anytime" health care agenda includes e-prescribing and EMRs. Strategies used to promote adoption included peer-to-peer education. Cost issues have been raised by health care providers. The state official responding to the survey commented, "Once willing to adopt [e-prescribing], there is four to six months of decreased efficiency and income . . . during implementation and training, but after that [period] the benefits begin . . . ." Other issues raised by Rhode Island prescribers were inability to order Schedule II drugs with e-prescribing tools and uncertainty over standards and products.

Medicaid Management Information System (MMIS)

Over the past 35 years, every state has made significant investments to develop and maintain a Medicaid Management Information System (MMIS), which comprises information technology to support claims payment and data analysis for financial and quality oversight. Federal Medicaid matching funds ("federal financial participation," or "FFP") are available to fund 90 percent of the cost of MMIS design, development, and installation and 75 percent of the cost of operation and ongoing maintenance.[19] Combined state and federal spending for Medicaid investments in information technology is substantial, totaling about $2.7 billion in fiscal year 2004.[20] Many states have made, or are making, MMIS upgrades to facilitate future HIT and electronic HIE development, often following the Medicaid Information Technology Architecture (MITA) Initiative and Framework (see box). Based on survey responses, two examples are North Dakota and Michigan.

Medicaid Information Technology Architecture (MITA) Initiative and Framework

The Centers for Medicare and Medicaid Services' new and evolving Medicaid Information Technology Architecture (MITA) Initiative and Framework seeks "to foster integrated business and IT transformation across the Medicaid [MMIS] enterprise to improve the administration of the Medicaid program."[21] This initiative provides guidance and a significant funding mechanism for state investments in HIT and electronic HIE architecture standardization and interoperability across state agencies and between public and private entities.

- **North Dakota** listed replacing its 30-year-old MMIS as a significant e-health activity. The state indicated that the replacement system represented the "largest state expenditure on an information technology system project in the history of our legislative process." When the state's request for proposal was issued, staff found that vendors had not fully adopted MITA requirements. Delays resulted as additional legislative spending authorization was requested for the project.[22] North Dakota staff believe that other states will have less difficulty procuring replacement systems as vendors are now more experienced with MITA requirements.

- **Michigan** also reported replacing its MMIS, which was originally developed in the early 1970s. The project will allow health care providers to enter billing claims and update records in real time. According to the state, the new system will feature "a Web portal, customer relationship management system, an electronic document management system, and an improved base system to better support all aspects of Medicaid operations."[23]

> "*From a state agency perspective, the replacement of the Medicaid Management Information System will bring opportunities for the Medicaid program to participate in appropriate exchange* [electronic HIE] *scenarios that may not have previously been possible."*
>
> —State Survey Respondent

Electronic Medical Records (EMRs)

Five states (Florida, Hawaii, New Mexico, Oregon, and Rhode Island) cited EMR adoption as a significant e-health activity. Several states also linked their EMR efforts with e-prescribing functionality. Two states (New Mexico and Rhode Island) reported implementation in progress; others were in planning stages. State activities focused on statewide implementation; however, one (Florida) was beginning with implementation on a regional basis before expanding statewide.

States described EMR adoption as a significant tool for expanding access to health care and improving quality of care. A state also said EMRs were needed "to create [an] electronic repository of clinical data [that will be] integrated into the HIE at the local level, but anticipated [to be integrated into a] statewide HIE in the future." One state mentioned that other states considering EMR projects should "work with local communities and expect lots of training" and outreach to health care providers. Implementation challenges provided in the state responses included issues of costs, provider resistance, standardization of data and record configurations, and unresolved privacy issues.

Electronic Health Records (EHRs)

Five states singled out EHR adoption as a significant e-health activity. Implementation was in progress in four states (District of Columbia, Kansas, Minnesota, and Missouri) and fully implemented in one state (Arizona). One state's goal was achieving a statutory mandate for all health care providers "to implement interoperable EHR Systems by 2015." Other states' activities were focused on Medicaid. When asked why EHR development is significant, one state explained that EHRs can "enhance the availability and accuracy of patient data; provide powerful decision-support tools to improve clinical

care; facilitate reporting necessary for improved health care quality and safety; [and] strengthen and advance public health to protect communities in times of need."

Personal Health Records (PHRs)

Oregon was the only state identifying PHRs as one of its most significant e-health activities. The Oregon Medicaid program, funded by a $5.5 million Medicaid Transformation Grant, is developing a health record bank ("HRB Oregon") that will store health information on Medicaid beneficiaries. The state noted: "HRB Oregon will be an online, standardized, widely available and secure means by which Medicaid beneficiaries can access recent and historical laboratory results, imaging reports, dictated reports, and other patient data and share this information in clinical situations . . . . HRB Oregon will connect the individual client to private and public health systems and Medicaid managed care plans, thereby helping to coordinate care."[24]

Decision-Support Tools and Web-Based Tools

Two states (Indiana and Vermont) reported significant activities related to their chronic care information systems to assist providers in meeting health care needs for their patients. One state official explained that implementation included a complex contract between the state, an RHIO, and two vendors. Her recommendations to other states were to "avoid [such] complex contracts that use multiple vendors . . . have a detailed communication plan for stakeholders developed very early . . . where possible use an *out of box* application [that may be] implemented quickly, then work on upgrades." The other state cautioned that primary care physician endorsement and network development were a challenge and that from "the inception of the program, it took 3–4 years for the significant results to be measured and evaluated in order to provide decision support . . . ." The latter state also mentioned its development of a hospital emergency room surveillance system that "prevented three disease outbreaks within the sixth month." Financing this effort, however, was a concern.

Four states described Web-based tools that were implemented as public-private collaborations. Interestingly, one state (Utah) is moving to expand the Utah Health Information Network (UHIN)[25] to encompass exchange of clinical information. State-provided descriptions of the other three initiatives follow.

- **Alabama** "The Camellia I Web-based eligibility tool is the result of both public and private efforts to bring Alabama citizens a more responsive and efficient way to possibly determine their eligibility for State health and human services. The tool not only helps in the determination process, but also directs the consumer to

the closest agencies (both public and private) available by county. In addition, many other Web sites are linked to the site to enable the user to find needed information and other assistance. For example, the site has information on State agencies, family services centers, Earned Income Tax Credit, employment and unemployment . . . ."

- **Massachusetts** "[P]ayers and providers developed NEHEN [New England Healthcare EDI Network] to exchange HIPAA standard ANSI X-12 transactions for eligibility, referrals, and billing. NEHEN has a greater than 90 percent adoption rate among the commercial health insurance carriers in New England."
- **Michigan** "Blue Cross Blue Shield of Michigan's (BCBSM) Web-DENIS Provider Portal is a fully functional payer-provider portal. Providers can access information relevant to claims [and] prior authorization, and can validate BCBSM member eligibility and benefits. Excluding Medicaid and Medicare, BCBSM is the largest health care payer in Michigan . . . . In March 2005 the Web-DENIS feature began allowing Michigan Medicaid providers to access Michigan state program beneficiary eligibility and benefits information."

Web-Based Certification for Health Care Providers

The Ohio Nursing Board maintains a Web-based license and certificate verification system. The general public can examine a licensee or certificate holder's credentials and disciplinary status at any time on any day. This state-operated system offers credential holders the convenience of renewing licenses and certificates online. The licensure data is regularly transmitted to the National Council of State Boards of Nursing for inclusion in a nurse licensing verification database.

Quality and Transparency Initiatives

Five states participating in the survey indicated e-health activities related to quality and transparency as most significant in their states. One official stated that the goals of these activities were to "increase quality, strengthen health care transparency and increase accountability in public and private health care delivery systems." Summaries of the five states' activities follow.

- **Alabama**'s *Together for Quality Medicaid System Transformation Grant* is "an initiative well under way in Alabama to introduce an integrated open systems health information system that links Medicaid, other State HHS Agencies, providers, and private payers and establishes a comprehensive, quality improvement model for the Alabama Medicaid program. This activity is

important because it is an attempt to address inefficiencies, inadequacies, and inconsistencies in health care caused by information fragmentation with the ultimate goal of creating better patient care and health outcomes."

- **"Arkansas** Medicaid Information Interchange (AMII) provides a secure Web-based opportunity (Web portal) for physicians enrolled in Medicaid to see their caseload demographics and performance data on specific measures. AMII was launched in 2007 and will continue to evolve with expanded performance measure sets and interactive information opportunities."
- **California** reported activities intended to "leverage improved health care outcomes and quality improvements via Medi-Cal [Medicaid] reimbursement policies; encourage public and private sector purchasers to require the measurement and reporting of provider performance and the aggregation of data for quality transparency and consumer choice; collaborate with private and public entities to develop a quality reporting mechanism . . .; strengthen the ability of the Office of Statewide Health Planning and Development to collect, integrate and distribute data on health outcomes, costs, utilization and pricing for use by purchasers, health plans, providers and consumers to help information and drive decision making . . .; [and] examine appropriate opportunities to promote private and public sector efforts . . . ."
- **Georgia**'s legislature funded a health information technology initiative that includes two components: (1) a transparency Web site for consumers and (2) grant awards for health information exchange pilots. According to the state, the transparency Web site will be available to consumers in January 2008.
- **Virginia** reported that its Office of Health Information Technology (a collaborative effort between the Secretaries of Health and of Technology) has partnered with the Virginia Hospital and Healthcare Association and the Virginia Association of Health Plans to create an initiative called *VaHEN (The Virginia Health EDI Network).* According to the state, VaHEN efforts include "encouraging members to use [Council for Affordable Quality Healthcare] CAQH's CORE data set . . . ."

Registries

The National Committee on Vital and Health Statistics defines a public health or medical registry as "an organized system for the collection, storage, retrieval analysis, and dissemination of information on individual persons who have either a particular disease, a condition (e.g., a risk factor) that predisposes to the occurrence of a health-related event, or prior exposure to substances (or circumstances) known or suspected to cause adverse

health effects."[26] Electronic registries related to immunization, surveillance, disease, newborn screening, and early and periodic, screening, diagnosis, and treatment (EPSDT) have been in existence for decades. All but one of the 42 responding states reported operational registries. Although registries were the most frequently reported implemented e-health activity, only three states listed registries as one of their most significant e-health activities. Several states, however, provided descriptions of their registry applications.

One official observed that a registry "is much like a RHIO with a narrow focus of information and a broad user base." Experiences and lessons learned from implementing registries will be foundational as states develop other HIT and electronic HIE activities.

Responding states emphasized the importance of involving stakeholders, developing a shared vision, and ensuring a clear understanding of roles and responsibilities. Key stakeholders cited were local public health departments, consumers and their advocates, managed care organizations, physicians, hospitals, and laboratories. Challenges included financial sustainability and the design and implementation of multiple networks throughout the state in question, "each interconnected with secure functionality meeting [the] needs of both state and local health partners."

Selected state-provided summaries follow.

- "The **Georgia** Immunization Registry is designed to collect and maintain accurate, complete and current vaccination records . . . . Providers have quick and easy access to immunization records on individual children and are able to generate a variety of reports . . . ."
- **"Maine**'s Integrated Public Health Information System (IPHIS) is a secure, Web-based system which allows information to be shared amongst public health agencies."[27]
- "The **Michigan** Childhood Immunization Registry (MCIR) is an award winning, state-of-the-art electronic, statewide childhood immunization tracking system . . . . This system is accessible to both private and public providers . . . [and stores] a child's immunization record regardless of the [record's] location . . . . Legislation currently moving through the Michigan Senate (SB728) will dramatically expand its scope by removing age limits, and allowing the system to collect information in addition to childhood immunizations."
- The **Nebraska "**Statewide Trauma Data Collection System was created to gather trauma information timely and accurately to improve performance of the state

trauma system and to reduce morbidity and mortality. The system allows integration of pre-hospital and hospital information; eliminates data redundancies and ensures patient centric data aggregation; provides secure access; and simplifies the creation of reports."

- **Ohio**'s Public Health Network (PHN) provides "secure, high-speed connectivity for electronic exchange of clinical, laboratory, environmental, and other public health information between state and public health partners . . . to allow us to react immediately to an act of bioterrorism, infectious disease outbreaks and other public health threats and emergencies."
- **Oregon** findings from a Public Health and Medicaid Assessment Initiative noted advantages from collaboration and data exchange between the two departments. Data exchanges mentioned included vital records of births and deaths and the immunization and disease registries.[28]]
- **Pennsylvania**'s National Electronic Disease Surveillance System (PA-NEDSS) is a Web application built upon an integrated data repository handling a wide range of disease reporting. The application includes state-of-the-art security, outbreak management, Web-based disease reporting by hospitals and laboratories, follow-up events, patient management for treatment, electronic laboratory reporting, data extract with CDC, and other functionalities.
- **Utah**'s Center for Excellence in Public Health Informatics "has the potential to permit government to support the private sector with basic and applied knowledge necessary to move forward in e-health." With the aid of computer scientists and mathematicians at the Virginia Bioinformatics Institute and the University of Michigan, University of Utah researchers will develop tools to track and analyze disease surveillance data.[29]

Privacy and Security Initiatives

Six states participating in the survey reported privacy and security initiatives as their most significant e-health initiatives. Summaries of these initiatives are described below.

- In **California**, the Privacy and Security Advisory Board (PSAB), a collaborative public-private advisory board, has been established to analyze privacy and security issues and make recommendations to the Secretary of Health and Human Services (HHS) on possible solutions including standards, policies, and procedures or statutory changes. The California Office of HIPAA Implementation (CalOHI) within HHS provides leadership and oversight for the implementation of HIPAA by all governmental agencies within the State of California. CalOHI

serves as the lead in supporting the PSAB and is integral to the implementation of HIT and HIE within California.

- In **Connecticut**, the Health Information Security Privacy Collaborative (CT-HISPC) was established to create an effective privacy and security solution to enhance health information exchange. "HISPC increased the level of public-private collaboration in Connecticut which had previously been low despite the maturity of HIT and the number of HIE initiatives in existence."
- **Maryland** is in the process of identifying privacy and security concerns, barriers, risks, and best practices related to electronic health information exchange. Sector group analysis has produced preliminary data in the implementation stage of this project.
- As early participants in the NHIN (Nationwide Health Information Network), the **Louisiana** Health Information Exchange (LaHIE) collaborated with multiple health systems and payers creating governance aimed at working together to further the adoption of health information exchange and addressing issues with health information security and privacy.
- **Oklahoma**, selected as a participant in the federally funded Health Information Security and Privacy Collaboration (HISPC), is working to build partnerships among the state's health care providers and individual consumers interested in examining privacy issues, information security policies, and state laws.
- Under a Medicaid Transformation Grant, **Wisconsin**'s Health Information Exchange Initiative in Milwaukee joined the Wisconsin Health Information Exchange (WHIE), the Milwaukee Health Care Partnership, the Wisconsin Department of Health and Family Services, and Microsoft in an initiative to implement a secure system for sharing medical information between the Milwaukee hospital emergency departments, community health centers, and public health.

State Privacy Laws and Other Protections for E-Health Information

Technological advances have paved the way for increased access to health information for most individuals in the United States. Internet users can now easily view general health information in their own homes and become better informed about immunizations, for example, or about symptoms related to acute conditions. Many Internet users also have used this technology to manage their health care needs. But as consumer access to electronic health information has increased, concerns remain regarding the security of the data being transmitted. Although patients are excited about the possibility of e-mailing

their doctors to learn about treatment regimens, schedule appointments, or obtain test results online, use of online patient-provider communication remains low.

In 2005, only 10 percent of Internet users reported communicating with their health care provider online.[30] A study conducted by *Health Care and Informatics Review* found that consumers do not have a high degree of confidence that there is a sufficient level of privacy and security protections when health information is exchanged.[31] Reinforcing this concern, the survey findings revealed that approximately half of the responding states (19 of 42) reported that consumers were *not* informed when their health care information held by state programs was accessed.

Many consumer advocates also want uniform policies and regulations at both the state and federal levels governing patient-provider communication. Pursuant to the Health Insurance Portability and Accountability Act of 1996 (HIPAA), the first broad-based federal health care information privacy protection regulations were promulgated by the U.S. Department of Health and Human Services (HHS), and became effective in April 2003. These regulations establish a uniform, federal floor of privacy protections for consumers across the country and provide patients with access to their medical records and more control over how their personal health information is used and disclosed.[32] More restrictive state privacy laws already in existence are not affected by this ruling and provide added protection to the consumer.

The survey included questions focusing on current or developing state privacy laws and other protections for e-health information. In addition to HIPAA, most states participating in the survey (31 of 42 responding) reported also having state privacy laws currently in place. As discussed later in this report, state officials continue to have questions and concerns about when and how information may be used in accordance with state and federal regulations, and which law supersedes the other when they differ. (See discussion of HIPAA preemption in the section titled "Obstacles Related to Electronic Release of Health Information," on the next page.)

State Policies and Procedures Relating to Security Breaches

Two-thirds of states (28 of 42 responding) reported that policies and procedures exist to address data privacy and security breaches, should they occur. States reported using federal HIPAA regulations along with state privacy and security protocols to monitor and react to personal health information data breaches. Eight states revealed that protocols regarding privacy and security breaches are embedded within the individual state agency privacy and security protocols, leaving the state agencies responsible for hiring a privacy

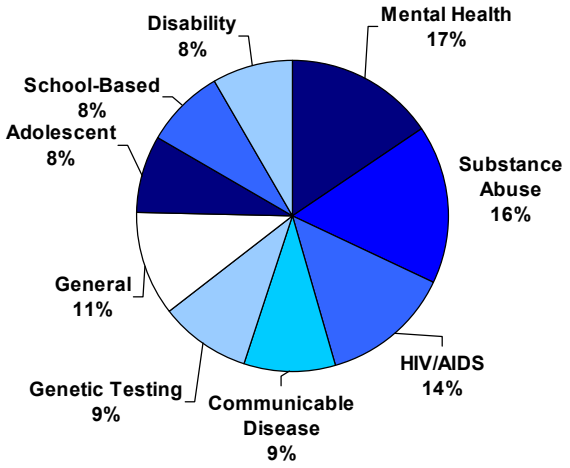
officer to interpret and enforce state regulations regarding privacy and security. One state mentioned that state privacy and security statutes are also incorporated and reinforced in contracts. Following are selected survey findings relating to state handling of security breaches.

- **California** state law requires any person, business, or government agency owning or licensing computerized data that includes personal health information to disclose any breach in the security of the data to California residents whose unencrypted personal information has been compromised.
- **Massachusetts'** governor signed legislation in August 2007 regarding security freezes and notification of data breaches. The new law mandates reporting of personal data breaches, provides guidelines for disposal of personal information, and gives the consumer the ability to place a "security freeze" on credit reports.[33] Personal health information is included in the legislation.

Obstacles Related to Electronic Release of Health Information

The survey asked states to identify barriers to release of data when attempting to implement an electronic HIE, and the program areas in which these barriers exist. Overall, program areas where barriers were most likely to exist were substance abuse, mental health, and HIV/AIDS, representing 47 percent of state responses (Figure 3).

Figure 3. State-Reported Barriers to Release of Health Data, by Service Area



Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Consent Process

State officials indicated that the greatest barrier to release of health information for purposes of an electronic HIE is differing consent requirements. The variation in state and federal laws, the variation in consent form language, and the lack of standardization of required elements within the consent, as well as the regulations associated with treatment of sensitive information, have all presented major hurdles in implementing an electronic HIE. Across the 42 responding states, 29 states found the consent process most difficult in the areas where regulations involve sensitive information such as mental health, substance abuse, and HIV/AIDS. Unlike regulations applying to general medical data, those applying to these three areas may restrict disclosure for payment and treatment purposes, in accordance with federal and state statutes.

Most states (30 of 39 states responding to this question) also indicated that they do not have separate consent policies and procedures for electronic HIE. However, some states are uniquely defining protections for their residents through state laws, and in many cases they are more stringent than current federal laws. For example, Vermont's Patient Privilege Statute allows release of information with patient consent for the purpose of treatment, payment, and operations, but not for public health purposes. Using a "Business Associate Agreement," the state reported that "limited data set information" could continue to be released for public health purposes without obtaining separate patient consent. Three other states reported that public health transactions used within an electronic HIE do require a separate consent form. One state reported that all transactions within an electronic HIE involving treatment, payment, and operations, including public health, require a separate consent form.

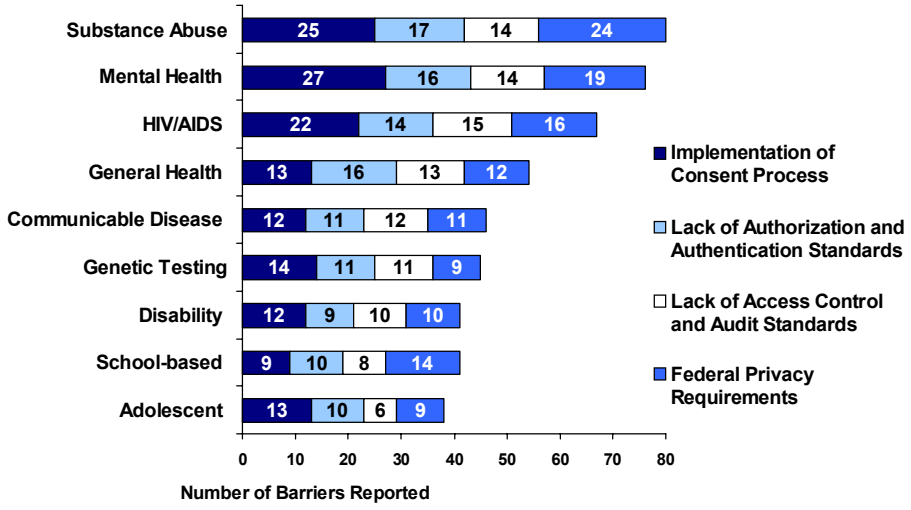
Federal Privacy Requirements

States identified federal privacy requirements as the second-largest barrier related to the release of health data. In particular, most states (24 of the 38 responding to this question) noted that the federal laws associated with substance abuse services create a barrier when implementing electronic HIEs.[34]

Authentication and Authorization Standards

Another state-identified barrier to the implementation of an electronic HIE was the lack of authentication and authorization standards (Figure 4). These standards involve security systems and audits to verify that persons or entities seeking access to electronic personal information are who they claim to be. State officials reported that substance abuse, mental health, HIV/AIDS, and general health information were specific areas of concern in this regard. Survey responses did not indicate whether states regarded federal or state regulations as the primary contributor to these issues.

Figure 4. Breakdown of State-Reported Barriers Related to Release of Health Data in Electronic HIE



Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Other Obstacles

States were encouraged to share their experiences with other obstacles or legal implications they had encountered related to the electronic release of health information. Thirty-three states responded, providing a wide array of valuable feedback. Thirteen states indicated that the variation in interpretation of laws around confidentiality and consent is the greatest barrier. The second-greatest barrier (reported by nine states) involved HIPAA preemption standards. States also described technological challenges of securing data, opt-in versus opt-out procedures, and regulations prohibiting global access as problematic.

Variation in Interpretation of Laws Regarding Confidentiality and Consent

Despite the existence of regulatory guidelines regarding the release of protected personal health information (PHI), 13 states noted that variations in interpretation and the complexity of both federal and state laws create an unclear direction for moving forward with e-health activities. One state reported: "The complexity of the rules and regulations creates confusion in the area of privacy. Because the HIPAA preemption rules are complex, individuals in a position to potentially disclose protected health information (PHI) are sometimes unsure if the PHI may be disclosed with written individual authorization."

HIPAA Preemption

The federal Health Insurance Portability and Accountability Act of 1996 (HIPAA) gave the U.S. Department of Health and Human Services (DHHS) the authority to develop

health information data and privacy standards. HIPAA specifies that such standards shall not preempt or supersede state law that imposes more stringent standards. Nine states reported that, owing to this provision, there are variations in interpretation of state and federal laws that create inconsistent business practices and barriers to exchanging data resulting from undefined or misleading communication of the "true" regulations. In an attempt to remedy this obstacle, many states are establishing a "preemption analysis." This state-level analysis provides a roadmap, or crosswalk between state and federal statutes, explaining which state regulations supersede federal law.

Technological Challenges of Securing Data and Authentication

Another barrier (reported by eight states) to implementing an electronic consent process is the selection of the platform used to administer the consent process. Interoperability between various networks and the system used for administering state or interstate regulations regarding the consent process is difficult and expensive to administer.

Opt-In versus Opt-Out

Two states have provisions in state legislation to require patient consent prior to the release of medical records, otherwise known as an opt-in requirement. Even though some states do not have the opt-in requirement, they may choose to implement an electronic HIE process that allows patients to have control over who can view their data along with tracking of disclosures. Issues regarding authentication in these circumstances become an even greater concern.

Current State Statutes Prohibiting Global Access

One state reported that current state law prohibited release of information even with consent. In this instance, global access to patient medical information is prohibited and consent is limited to certain entities, possibly creating a fractured use of information at a provider level. Many states also reported that classes of medical services such as mental health, substance abuse, and genetic testing make disclosing the patient health information a difficult and costly process.

Possible Solutions

States also shared their thoughts for possible solutions at the state or federal levels related to release of health data. Their responses included recommendations to:

- Adopt standards for authentication
- Create uniform electronic health information language at the national level

- Construct standard consent language across all states
- Address state and federal laws in conflict with electronic HIE activities
- Address provider-level concerns regarding liability

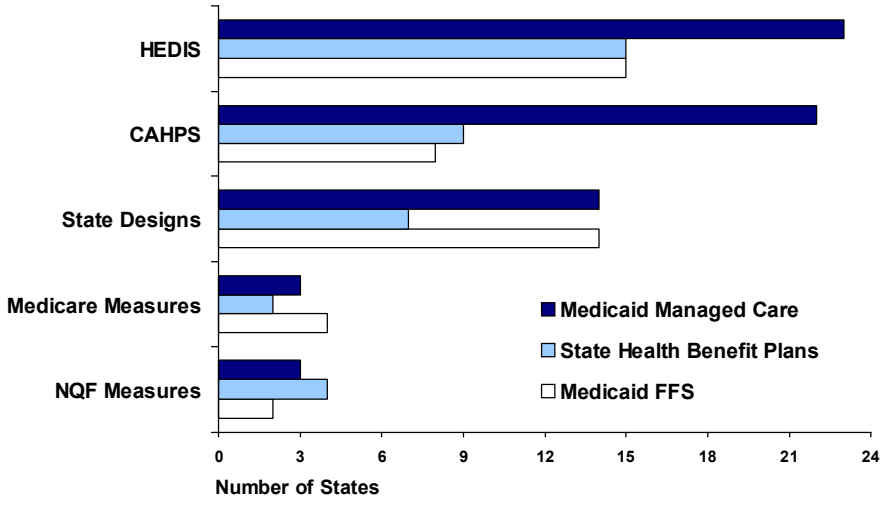
Performance Measures in E-Health

Utilization and performance standards measure the quality of health care among health plans in a uniform manner. Commonly used standardized measures included Healthcare Effectiveness Data and Information Set (HEDIS), National Quality Forum (NQF) measures, Consumer Assessment of Healthcare Providers and Systems (CAHPS), and Medicare measures. Payers also design their own customized performance measures, which may include portions of the standardized measures.. As electronic HIE and HIT efforts move forward, a growing challenge is creating a "uniform data set" for utilization and performance measures applicable across payers. The survey examined which utilization and performance measures are being used by three state-administered programs: Medicaid fee-for-service (FFS), Medicaid managed care organizations, and the state employee health benefit plan.

States were given the opportunity to choose more than one measure from a list of the aforementioned standardized measures and state-designed measures. Overall, HEDIS was the most frequently selected standardized measure (53 times), followed by CAHPS (39 times) and state-designed measures (34 times). NQF and Medicare measures were reported used fewer than 10 times. Most states (24 of 42 responding) also reported using electronic technology to track standardized data sets for quality performance.

Twenty-six states indicated that they used utilization and performance measures for Medicaid managed care, the most frequently reported of the three state-administered programs. The next-highest was Medicaid fee-for-service, reported by 18 states, followed by state employee health benefit plans, reported by 16 states. Within Medicaid managed care, HEDIS measures were the most prevalent measures used, followed by CAHPS. Similar findings were applicable for Medicaid fee-for-service and state employee health benefits plans. NQF and Medicare performance measurements were less likely to be used by the three state-administered programs (Figure 5).

Figure 5. Measures of Utilization and Performance Within Medicaid and State Health Benefit Plans



Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Utilization and Performance Measures: Public-Private Partnerships

Eighteen states reported engaging both public and private payers in consortiums to develop statewide standardized measures of utilization and performance. Some states have chosen to provide a vehicle that allows private and public partners to share data openly. One example is the Wisconsin Collaborative for Healthcare Quality. The collaborative is focusing on development of ambulatory care measures that enable physician groups or health systems to collect data on patient quality of care and to share quality-of-performance data through public reporting.[35]

Public Reporting of Plan Report Cards

Within the survey, states indicated whether quality-of-performance indicators or health plan report cards are available to the public via state Web sites for Medicaid fee-for-service, Medicaid managed care, and state health benefit plans. Twenty-nine states reported that they provided such reporting for at least one of the three programs. Most frequently reported available data is for Medicaid managed care (Table 5). Only one state (Kentucky) makes this data publicly available for all three programs.

Table 5. Health Plan Report Cards Available on State Web Sites

Health Plan	Number of States with Report Cards Posted on Web Site
Medicaid Managed Care	24
State Employee Health Benefit Plans	11
Medicaid Fee-for-Service	8

Stakeholder Engagement in State E-Health Activities

States are currently developing relationships with and engaging many stakeholders in their e-health activities. Appendix D lists key stakeholders that states mentioned in their survey responses. In recent years, the Internet has become a vital tool in electronic health exchange for all stakeholders, from consumers to providers to purchasers. Broadband Internet, previously limited to higher-income adults, has become a common staple in both the workplace and the home. This has opened up access to a broad expanse of data and information not previously available to most people. However, at the same time that Internet and e-health have made information more broadly available across the entire health care industry, there is concern over access to e-health capabilities by certain population groups, especially by Medicaid enrollees and health care providers.

Medicaid Enrollees and E-Health Activities

The U.S Census Bureau reported that 69 percent of all adults were Internet users in 2005, but the percentage declines with age and increases with annual household income. With the growing use of information technology, there is concern that such benefits are not equally enjoyed by all populations.

Thirty-one percent of the responding states reported assessing whether the Medicaid population has access to computers and the Internet. One state's (Oregon) described 2006 survey findings showed that 50 percent of the Medicaid population had Internet access through computers at their private residences or at other sites such as public libraries. Another study conducted by American Medical Informatics Association concluded that a somewhat higher rate (68 percent) of Medicaid beneficiaries had access to the Internet.[36] That study also noted that educational material, such as facts on immunizations, is one component that Medicaid enrollees found most interesting.

Just over 50 percent of states (21 of 39 responding) indicated that they had *not* initiated any education efforts about e-health specifically intended to inform consumers from culturally and linguistically diverse communities. Ten responding states indicated that they are in the developmental stages of addressing this issue, and Massachusetts reported the creation of the Massachusetts eHealth Collaborative Health Project, aimed at developing materials sensitive to literacy levels and produced in multiple languages.

Health Care Provider Connectivity

Despite the fact that the deployment of HIT is expected to improve health care quality and reduce costs, provider connectivity remains low. In 2005, the National Center for Health Statistics reported that 25 percent of office-based physicians use EMRs. While the

share of physicians using EMRs was up from 18.1 percent in 2001, this represents relatively slow growth.[37] The percentage of use among community acute-care hospitals was somewhat higher, at 30 percent.[38]

The survey asked states if they had assessed provider connectivity. Of the 42 states responding to this question, 28 reported assessing provider connectivity at some level, ranging from simple utilization studies to in-depth analysis. Sample state descriptions of these activities follow.

- As a Doctor's Office Quality Information Technology (DOQ-IT) pilot state, **Arkansas** works with physician offices through its Foundation for Medical Care (AFMC) to assess HIT functionality needed to move forward with the adoption of EHRs. Arkansas currently has approximately 280 practices representing more than 750 physicians engaged at various HIT adoption levels.
- **Connecticut**'s Quality Improvement Organization provides free assistance for primary care physicians and their office practices to make informed decisions in selecting and implementing EHR systems.
- **Minnesota** monitors its goal of achieving interoperable EHRs statewide by 2015 through an eHealth Information Technology Adoption Status. This update on the Health Information Technology adoption is conducted periodically by reviewing existing data sources, including ongoing national surveys and onetime or regional studies as well as integrating Minnesota-specific information on adoption and utilization metrics.[39]
- With funding from a 2006 Excellence in Practice Grant, Nebraska is launching an EHR project. The project is designed to facilitate the adoption of EHRs by physicians. The project will assist providers in evaluating their current workflow and business processes to identify opportunities to improve these areas for a more successful transition to an electronically based system.

State-reported barriers to the implementation of EMRs included:

- Initial and ongoing costs associated with EMRs, including administrative costs for training staff and cost of slowdowns associated with the implementation process
- Lack of quantifiable return on investment (ROI)
- Difficulty in finding an interoperable EMR application

State Government Roles, Organizational Structure, and Financing for E-Health

State officials were asked to provide information about funding for e-health activities, to describe those individuals within state government responsible for e-health activities, and to describe roles in e-health of other state agencies.

Funding for E-Health Activities

The survey asked states to *estimate* the total dollar amount funded for e-health activities in their state during fiscal years 2007 and 2008. More than one-third of the states (16 of 42 responding) indicated that (1) there has been no funding in their states for e-health activities during fiscal years 2007 and 2008 or (2) they were unaware of any funding. One state reported e-health funding that significantly exceeded other states', prompting the authors to contact the responding state official to follow up. She explained that a comprehensive review of every department's and agency's information technology plans for the two years was conducted to identity funding amounts for e-health–related projects. It was not possible to ascertain whether other states had undertaken such a comprehensive review.

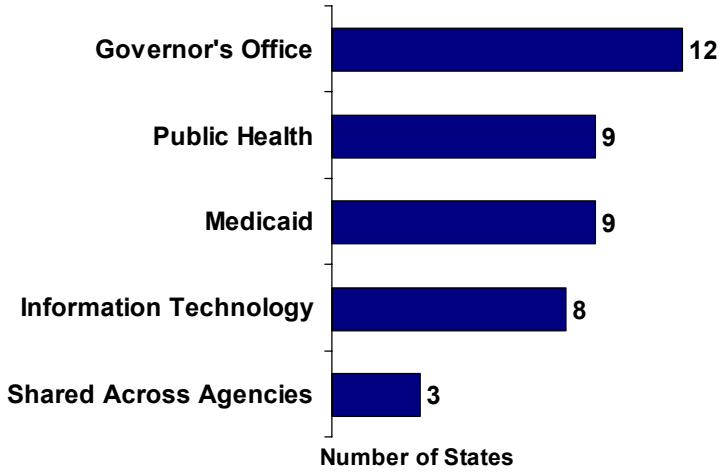
Although it was clear that states varied in their ability to provide such information, states that provided funding levels for their e-health activities (21 for fiscal year 2007 and 25 for fiscal year 2008) indicated amounts that ranged from less than $100,000 per year to more than $100 million per year, with a number of states reporting funding at higher levels in fiscal year 2008 than in 2007. Other findings follow.[40]

- Eight states had funding below $1 million in fiscal year 2007, compared with six states in fiscal year 2008.
- Nine states had funding greater than $1 million but less than $10 million in fiscal year 2007; nine states also reported this level of funding in fiscal year 2008, but they were not all the same states.
- Five states had funding greater than $10 million in fiscal year 2007, compared with 10 states in fiscal year 2008.
- Four states responded that they had been awarded federal Transformation Grants from the Centers for Medicare and Medicaid Services (CMS) for e-health initiatives, with amounts ranging from $2.8 million to $11.7 million combined for the two fiscal years.

State Government Lead Agencies for E-Health Activities

The lead agencies responsible for e-health activities varied across the responding states (Figure 6). Twelve states participating in the survey noted that senior advisers in the governor's office are overseeing e-health activities. In other states, e-health activities are coordinated by officials in departments of information technology or public health or in the department responsible for administering the state's Medicaid program. Coordination in three states is shared by multiple agencies within the state.

Figure 6. Lead State Agencies for E-Health Activities



Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Other State Agency Roles Related to E-Health

The survey also asked states to describe the roles selected state agencies have in regard to e-health activities. Following are summaries of the responses received by states.

- **Chief Information Officer (CIO).** Nine of the responding states have created chief information officer (CIO) positions, generally in departments responsible for information technology. The CIOs serve on boards or commissions and are instrumental in the development of HIT infrastructure in their respective states through oversight and the provision of technical assistance regarding e-health.
- **Insurance Commission.** Nine states reported that staff from their state's insurance commission serves on e-health advisory or investigatory committees.
- **Office of Attorney General.** Six respondents indicated that their attorney general or his/her staff serve on e-health commissions and other advisory or investigatory

bodies in their state. Other comments provided noted that the state's attorney general and staff provide legal advice (and other consultation) as requested regarding e-health issues and the procurement of HIT.

- **Budget Office.** Virtually every state indicated that their budget office staff are aware of and monitor e-health as it impacts the state's budget. However, no state reported that this staff serves on any related e-health committees.

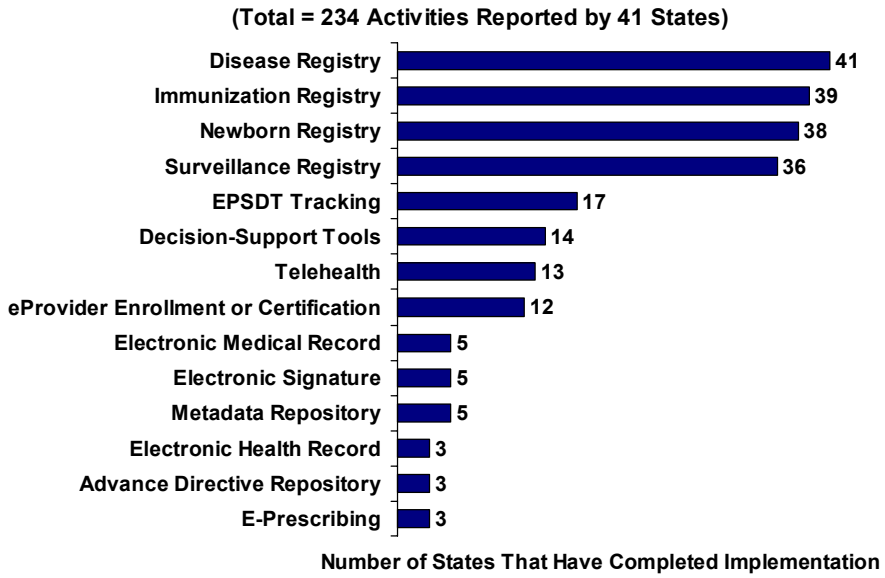
State Public Programs and Their Implemented HIT Activities

States also were asked to identify their HIT activities within public health, Medicaid, state health benefit plans, and selected state-operated facilities. All states responding to the survey indicated that they had implemented numerous HIT initiatives within the public programs. No state reported implementing fewer than four HIT activities; the median was 12.[41] States reported registries (including those for immunizations, disease, newborn screening, EPSDT tracking, and surveillance) as the most prevalent. The next most frequently cited initiative was telehealth, followed by decision-support tools. Advance-directive repositories and patient health records were least frequently reported. Across the 42 responding states, the greatest number of state efforts focused on public health and Medicaid. Appendix F summarizes the state responses and the next sections highlight key findings.

Public Health

All but one of the 42 responding states reported implementing e-health activities within public health. Most activity (nearly 75 percent) focused on one area: electronic registries for disease, immunization, newborn screening, surveillance, and EPSDT tracking. The next-highest reported activities were decision-support tools and telehealth (Figure 7).

Figure 7. E-Health Activities Implemented Within Public Health



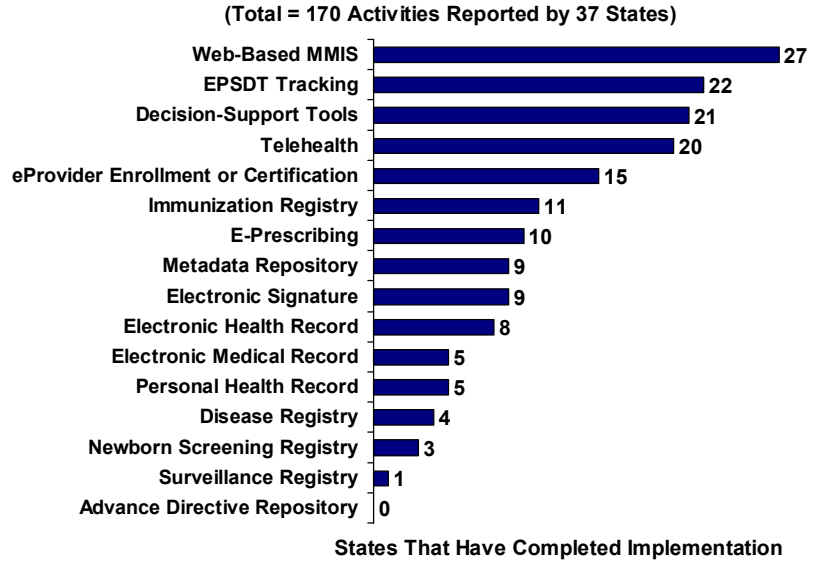
Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Among the responding states, EMRs had been implemented by five states (Indiana, Massachusetts, New Mexico, Tennessee, and Utah) and EHRs by three states (Kansas, Tennessee, and West Virginia) within public health. One state noted that the survey did not include a choice for one of its initiatives, an automated vital-statistic system for registering births and deaths that was linked to EHRs.

Medicaid

After public health, the next most prevalent HIT activities implemented were in Medicaid, with initiatives reported in 37 of 42 responding states. Initiatives underway covered a broad range of HIT activities. Across all possible activities listed in the survey, only advance directives were not identified by any state. More than half the responding states reported implementation of a Web-based Medicaid Management Information System (MMIS) initiative along with other decision-support tools. About half of states had implemented telehealth and EPSDT tracking. Other key activities included Web-based provider enrollment and certification and immunization registries, in about one-third of states; and metadata repositories, electronic signature, e-prescribing, and EHRs in about one-fifth of states (Figure 8).

Figure 8. E-Health Activities Implemented Within Medicaid



Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

State Employee Health Benefit Plans

Half of responding states (21 of 42) reported operational HIT activities undertaken by their state health benefit plans. Interestingly, eight states (Alabama, Georgia, Iowa, Massachusetts, Louisiana, Oregon, Texas, and West Virginia) reported having implemented personal health records (PHRs) for state health benefit plans, whereas only five Medicaid programs and no public health program had implemented a PHR initiative. Other top activities included decision-support tools and Web-based provider enrollment, each implemented by seven states; telehealth, by five states; and EHRs, EMRs, electronic signature, and e-prescribing, each listed by four states.

State Roles as Health Care Providers: E-Health Clinical Applications

As health care providers, states provide medical services to targeted populations through various state-operated facilities, including mental health facilities, hospitals, prison systems, juvenile justice facilities, nursing homes and intermediated care facilities for individuals with mental retardation or related conditions, veteran facilities, and public health clinics. States in their health care–provider roles must access HIT not only to operate efficiently, but also for communicating with external entities during enrollment, for disease surveillance and reporting, and for bioterrorism preparedness and response. The survey asked participating states to provide further insights into the e-health activities being undertaken by these state-operated facilities. Appendix G summarizes the survey results. Key findings included:

- *Mental health hospitals.* Almost half of the states (20 of 42 responding states) identified operational HIT initiatives in their state-operated mental health hospitals. Among these states, a total of nine reported use of EMRs in state mental facilities and eight reported use of telehealth; these were the two initiatives most frequently reported in this setting.
- *State prison systems.* Just over half of the states (22 of 42 responding) identified various clinical e-health activities used in their prison systems. States reported a wide array of clinical activities, with the most prevalent being telehealth. The next most prevalent activities were immunization registries, e-signature, EHRs, and e-prescribing.

Barriers and Obstacles

A number of barriers exist that make the full realization of widespread adoption of interoperable HIT and a nationwide network of electronic HIEs unlikely for years to come. For the survey, state officials were asked what they saw as the most significant barriers and obstacles to pursuing each of the top e-health priorities they had identified. Officials were given the opportunity to name more than one barrier for each priority, and many did. For purposes of this report, responses were sorted into nine categories (Figure 9).[42]

Figure 9. Barriers to Accomplishing E-Health Priorities

Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Without question, the greatest barrier identified by officials (in 26 of 42 responding states) was lack of funding, including lack of funding for implementation as well as for long-term operations. Thirteen responses also referred to "sustainability" or difficulty in establishing a "business case" as a barrier, e.g., building a business model in which revenues or savings from the use of HIT would be sufficient to offset its additional cost. The second-largest category (20 of 42 responding states) addressed the challenge of obtaining the trust, buy-in, and participation of health care providers and of other stakeholders, which are vital to success.

A total of 11 states identified privacy and security concerns. Of these, two referred to the difficulty of coordinating with the privacy laws of neighboring states. Twelve states also referred to the lack of standards. Examples of the responses in this category included:

- "[L]ack of defined nationwide interoperability standards"
- "Selection and implementation of standards for interoperability of EHRs and other HIT"
- "Availability of the necessary broadband and data standards"
- "[C]oordination with federal standards development"
- "[L]ack of uniform method to capture standardized criteria to identify a patient and no standard method to verify patient identifiers at the time of exchange"
- "Where state law and HIPAA leave flexibility to entities to interpret the law, variations in business practices and preemption analysis result"

Finally, examples of responses in the "other" category include:

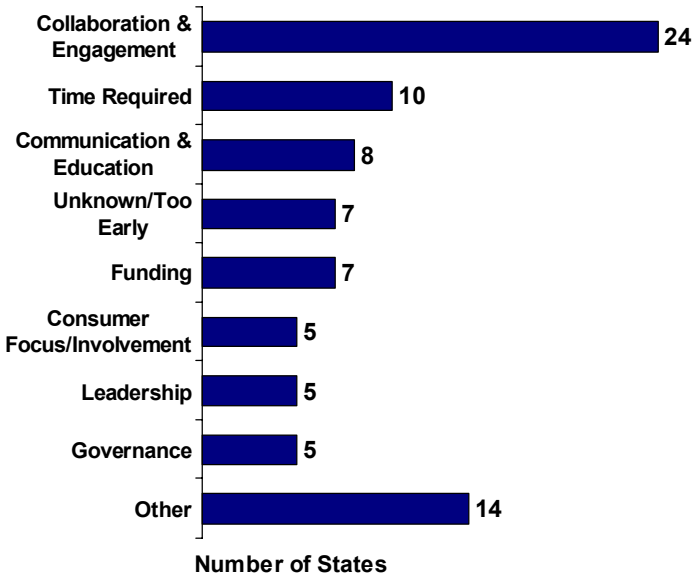
- "Limited capacity" (to undertake a technology assessment)
- "Distinct and proprietary records systems [are] already in place"
- "Fragmentation of current efforts"
- "Lack of ability to obtain health technology for interoperability purposes which may impact the provider's current work flow"
- "Misunderstanding and lack of standard regulations [for] e-prescribing and controlled substances"

- "Securing a defined HIT CTO position within the state whose presence will provide the continuity in project initiative momentum"
- "Coordinating multiple efforts into a statewide strategy while not slowing down individual agency efforts to meet their specific goals"

Lessons Learned

For each of the e-health activities identified as most significant, states were asked to identify one or more of the most important lessons learned that would benefit another state undertaking the same activity. Responses fell into eight general categories: communication and education, collaboration and engagement, leadership, governance, funding, time, consumer involvement, and "other." Seven states indicated that it was still "too early" in the project to identify lessons learned (Figure 10). [43]

Figure 10. Lessons Learned from State E-Health Activities



Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

By far the most commonly cited lesson learned was the need to collaborate with and obtain the buy-in of stakeholders. Some of the responses in this category include:

- "Making sure that everyone is buying into what you want to accomplish and what the next steps will be. Collaborate with stakeholders from the start to develop a level of trust and confidence in the information exchange."

- "It is important to build a common vision for how HIE will serve statewide health related goals and then common understanding of the best approach to building interoperability that suits your state. The work of building and maintaining an effective statewide HIE system requires sustained collaboration and an entity whose business it is to leverage different interests and resources for a common good to build the social capital of HIE."
- "[I]nvolve all parties early."
- "Building shareholder and shared vision is the critical building block."
- "We have kept the process 100% transparent and open to any and all who wish to participate."
- "To include all levels or sectors of health care providers. Each has a unique perspective on e-Health as it relates to their organization. Each provider has issues based on their geographic location in rural areas, to size of the organization, and the expertise and availability of technical expertise."

Ten responses addressed the need for sufficient time and careful planning. One responder noted the need for "patience and determination." Another noted that considerable planning is required to collaborate with stakeholders, and yet another commented, "Proceed slowly gaining trust and fully exploring policy issues related to privacy and security, access, authorization and authentication." However, one responder also stated, "You don't need all the answers today to move forward; plan broadly, implement incrementally." One responder said, "Big change will only happen incrementally and only slightly more quickly if you're willing to throw a lot of money at the issue."

Eight responses stressed the need for clear and effective lines of communication and the importance of educational activities. One responder advised, "Expect lots of training." Other lessons learned included the need for dedicated resources and start-up funding, the importance of staying focused on consumers' needs, and the value of defining the governance structure early on. Further responses focused on the need for broad leadership from both government and the private sector as well as the importance of strong project management and the value of engaging a "high level champion." Finally, one responder noted that an important lesson learned was the need to use an electronic HIE model that did not lock out prospective participants because of a dependence on a particular vendor.

CONCLUSION

Virtually all states are actively engaged in, and place a high priority on, the promotion and implementation of a range of e-health strategies. As purchasers and providers of health care services, states have much to gain from the adoption of interoperable HIT that can improve quality and cost-effectiveness. States, in fact, reported hundreds of implemented e-health activities in their survey responses. Those activities occurred most frequently in state Medicaid and public health programs but also included important e-health activities in state employer health benefit plans, prisons, and state-operated mental health hospitals. However, when asked to indicate their *most significant* e-health initiatives, about three-quarters of responding states identified an electronic HIE initiative that involving efforts to plan and develop needed policies and to convene state-level study commissions, and to implement electronic HIEs.

The challenges facing states and their private-sector partners are significant, including the issues of cost and the time required for implementation and achieving a return on investment. It is not always easy to obtain "buy-in" from stakeholders. The lack of standards in many areas continues to be a barrier. Difficult privacy and security issues remain unresolved, including how to accommodate legal requirements that sometimes vary from program to program, from state to state, and from the federal government to state governments. Nevertheless, as reflected in the wide range of activities across the states, a consensus has emerged that these e-health policies and initiatives are significant and well worth the effort. States have made significant progress, and more is clearly within sight in the near future. State efforts may well ultimately contribute to the achievement of a Nationwide Health Information Network

This report was intended to provide a benchmark of state e-health activities, showing what states have achieved and where they are headed during state fiscal year 2008. It is also a resource that states can use to learn from their colleagues across state lines to further their own efforts. As one state official who reviewed an earlier draft of this report noted, "It is powerful to learn that the majority of states share similar perspectives and plans for the future . . . . This report will open up lines of communication between state electronic HIE efforts. Since many share similar experiences, it would be meaningful to come together to more completely share ideas, lessons, and successful approaches . . . . As we work to align and educate stakeholders, it will be helpful for states to have this report to lend credibility to [our own] electronic HIE activities."

States are uniquely positioned to implement e-health initiatives that have the potential to improve health care delivery, health programs, and health outcomes for their

citizens. It will therefore be important to continue to monitor these actions and initiatives as they progress and evolve.

NOTES

[1] *E-health* is a term for a health care practice supported by electronic processes and communication. The term includes health information technology (HIT) and electronic health information exchanges (HIEs), discussed later in this report.

[2] E. H. Shortliffe, "Strategic Action in Health Information Technology: Why the Obvious Has Taken So Long," *Health Affairs,* Sept./Oct. 2005 24(5):1222–33.

[3] J. D. Kleinke, "Dot-Gov: Market Failure and the Creation of a National Health Information Technology System," *Health Affairs,* Sept./Oct. 2005 24(5):1246–62.

[4] See Appendix A for a list of Medicaid Transformation Grants awarded for HIT-related projects.

[5] State Alliance for e-Health, www.nga.org under Center for Best Practices and then Health.

[6] Medicaid Transformation Grant Information, www.nasmd.org/issues/medicaid_transformation.asp.

[7] "State Medicaid Agencies' Initiatives on Health Information Technology and Health Information Exchange," OEI-02-06-00270 (Washington, D.C.: U.S. Department of Health and Human Services, Office of Inspector General, Aug. 2007), available at www.oig.hhs.gov.

[8] The survey questionnaire is provided at Appendix H.

[9] For analysis purposes, this report includes the District of Columbia in its references to states.

[10] http://www.hhs.gov/healthit/healthnetwork/background/.

[11] *HIMSS Dictionary of Healthcare Information Technology Terms, Acronyms and Organizations,* Health Information and Management System Society (HIMSS), 2006, www.himss.org.

[12] Registries include immunization, surveillance, lead screening, newborn screening, EPSDT (early and periodic screening, diagnosis, and treatment), and disease tracking.

[13] For reporting purposes, survey responses describing e-prescribing, telehealth, EMRs, EHRs, etc., are listed under these topics even when a state indicated them as electronic HIE integration. Responses generally describing electronic HIE planning were classified as "Electronic HIE policy development" in this report's findings.

[14] One state responding from a Medicaid perspective chose not to identify e-health priorities and another two states provided one priority.

[15] If a state indicated two priorities in the same category they were counted as only one, resulting in 75 total priorities.

[16] Some states described multiple initiatives as one e-health activity, e.g., telehealth with electronic prescribing and electronic HIE adoption. HMA subdivided such responses into the above categories, when possible. Counts of responder initiatives, accordingly, will not total to 80.

[17] The FCC Telemedicine Pilot Program provides funding to "facilitate the creation of a nationwide broadband network dedicated to health care, connecting public and private non-profit health care providers in rural and urban locations." More information is available at www.fcc.gov/cgb/rural/rhcp.html#orders.

[18] The Drug Enforcement Administration (DEA) classifies drugs with high potential for abuse as Schedule II drugs.

[19] Medicaid Management Information Systems Overview available at http://www.cms.hhs.gov/MMIS/.

[20] Alfreds, Tutty, and Himmelstein, *Establishing a Foundation for Medicaid's Role in the Adoption of Health Information Technology: Opportunities, Challenges, and Recommendations for the Future*, AHRC Publication No. 07-0046, prepared for the Agency for Healthcare Research and Quality by The Center for Health Policy and Research, University of Massachusetts Medical School, Apr. 2007, available at http://www.umassmed.edu/uploadedFiles/UMass_HIT_Report.pdf.

[21] Medicaid Information Technology Architecture (MITA) at http://www.cms.hhs.gov/MedicaidInfoTechArch/.

[22] *North Dakota Department of Human Services Memorandum to All Prospective Medicaid System Replacement Project Vendors and Interested Parties*, March 28, 2006.

[23] CHAMPS (Community Health Automated Medicaid Processing System) Alert, *Your MMIS Replacement Project Update*, June 2006.

[24] *The Health Record Bank of Oregon Medicaid Transformation Grant Proposal*, available at www.cms.hhs.gov/MedicaidTransGrants/02_2007awards.asp.

[25] Utah Health Information Network (UHIN) http://www.uhin.com/.

[26] *Frequently Asked Questions about Medical and Public Health Registries*, www.ncvhs.hhs.gov.

[27] IPHIS, available at https://iphis.maine.gov.

[28] J. Mohr Peterson, "Sustaining Oregon's Public Health/Medicaid Assessment Initiative," Office of Medical Assistance Programs, 2006.

[29] "U of U to Lead $4.5 Million Center of Excellence Grant to Improve Public Health Response to Disease Outbreaks," Jan. 9, 2007, available at http://unews.utah.edu/p/?r=010907-2.

[30] "Use of the Internet to Communicate with Health Care Providers in the United States: Estimates from the 2003 and 2005 Health Information National Trends Survey (HINTS)," available at www.jmir.org.

[31] P. Chanabhai and A. Holt, "Health Care Consumers, Security, and Electronic Health Records," *Health Care Informatics Review*, Mar. 2006, available at http://hcro.enigma.co.nz.

[32] "Protecting the Privacy of Patient Health Information," available at www.hhs.gov.

[33] Chapter 82 of the Acts of 2007, an act relative to security freezes and notification of data breaches, August 2007, available at www.mass.gov.

[34] The Public Health Service Act, 543, 42 U.S.C. 290 dd-2 and related federal regulations at 42 CFR Part 2 (available at http://aspe.hhs.gov/datancl/reports/MHPrivacy/Chap-1.htm) stipulate that medical records of patients in federally assisted substance abuse treatment programs are subject to federal law restricting disclosure and redisclosure.

[35] Available at http://www.wchq.org/about/.

[36] D. F. Lobach, J. M. Willis, J. M. Macri et al., "Perceptions of Medicaid Beneficiaries Regarding the Usefulness of Accessing Personal Health Information and Services Through a Patient Internet Portal," *American Medical Informatics Association Annual Symposium Proceedings*, 2006:509–13.

[37] "Electronic Medical Record Use by Office-Based Physicians: United States," National Center for Health Statistics, 2005.

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

[39] Available at http://www.health.state.mn.us/e-health/hitadoptionstatus2007.pdf.

[40] Appendix E lists various federal funding mechanisms used by states to support their e-health activities.

[41] A project implemented across different state programs was counted only once for each state.

[42] Three states did not respond.

[43] Five states did not provide responses.

[44] This display represents the two rounds of awards. Medicaid Transformation Grants from Round 1 included 32 awards totaling $103.6 million and from Round 2 included 17 awards totaling $51.9 million. Patricia MacTaggart categorized states by grant focus.

[45] *HIMSS Dictionary of Healthcare Information Technology Terms, Acronyms and Organization, Health Information and Management System Society (HIMSS)*, 2006, www.himss.org.

[46] AHRQ National Resource Center www.healthit.AHRQ.gov.

[47] RTI International, www.rti.org, under Research Fields, Advance Technology, and then Information Technology.

[48] Alfreds, Tutty, and Himmelstein, *Establishing a Foundation*, 2007.

[49] "HRSA Awards $31.4 Million to Expand Use of Health Information Technology at Health Centers," *HRSA News*, August 27, 2007, available at http://newsroom.hrsa.gov/releases/2007/HITgrantsAugust.htm.

[50] B. Robinson, "Portland VA Center Pilots Personal Health Portal," Nov. 14, 2005, available at www.fcw.com/print/11_45/news/91428-1.html.

Appendix A. Medicaid Transformation Grants

Grant Focus[44]	No. of Grants	State Grantees
Decision-Support Tool Box	1	AZ
Electronic Health Record (EHR) Systems, Health Information Systems or EHR Hubs	20	AL, AZ, DC, GA, HI (2), IN, KY, MN, MS, MT, NM, NV, OR, RI, TX, WV (2), WI (2)
Electronic Verification of Citizenship	3	AR, MA, MI
Eligibility Online	1	OK
Health Provider Credentialing	1	MI
HCBS Web-Based Tool	1	MO
Medicaid Estate Recovery	2	IN, MT
Medical Information for Children	1	NJ
Neonatal Outcomes	1	OH
Pharmacy HIT Tools	8	CT, DE,FL, NM, ND, TN, UT, WV
Predictive Modeling System	3	IL, KS, PA
Program Integrity (Fraud and Abuse Reduction)	6	MD, MS, NY, PR, RI, WA
Promoting Good Health and Personal Responsibility	2	WV (2)

Appendix B. State Comments on Electronic HIE and HIT Definitions

Definition Cited in the Survey[45]	Comments from States Responding to the Survey
Health Information Technology (HIT) is information technology specific to the health care domain. Health Information is used synonymously with the term "health data."	• "HIT is information technology specific to the health care AND PUBLIC HEALTH domains." • "This term should not be used synonymously with 'health data' because it also deals with infrastructure and is not limited to data." • "HIT is the use of computer software and hardware to process health care information electronically within a health care organization, thereby enabling the storage, retrieval and use of data, information and knowledge for communication and decision making related to patient care delivery."
Electronic Health Information Exchange (HIE) is electronic mobilization of health information across organizations and electronic disparate systems within a region, community or state. This term is a "catch all" phrase that includes Regional Health Information Organization (RHIO), Quality Improvement Organization (QIO), and Agency for Healthcare Research and Quality (AHRQ) funded communities, and private exchanges.	• "We would add Public Health Information Networks and Public Health reporting systems." • Electronic HIE is "The electronic mobilization of health care information across organizations through shared infrastructure between organizations . . . . Examples include results delivery, historical patient information such as prescribed medication list, and other products, which are supported by regional implementation of technologies. These technologies may include a secure Web portal, health care terminology translation tools, a master patient index (MPI), authentication and authorization infrastructure, and products that aggregate information from multiple sources." • Electronic HIE "refers to an electronic system used to acquire, store, process, retrieve and transmit digital information related to a health record through a formal arrangement, among health care providers and other recipients as authorized by law . . . ." • Electronic HIE is "a technological infrastructure and a set of agreed upon business processes to enable movement of health care information electronically among and between organizations for patient care, with primary emphasis in a region or community and ultimately, across the [state] and the nation . . . ." • Electronic HIE may "include components of clinical care in a data exchange, e.g., prescription drug information in collaboration with PBMs and private/public insurers, or lab data . . . ." • "HIEs improve health care quality, reduce medical errors, and lower costs by establishing increased interoperability and information-sharing among patients . . . ." • "We differentiate the HIE as the information system and capacity we are building to allow critical health care be made available when and where it is needed throughout the state . . . the RHIO as the entity that manages and operates the HIE." • RHIOs provide interconnection between hospitals and physicians within a "defined geographic area, enabling a robust patient matching solution to the specific demographics of their patient population and enhancing quality of care via shared access to patient medical data."

Definition Cited in the Survey[45]	Comments from States Responding to the Survey
Electronic Medical Record (EMR) is a computer-based patient medical record. The EMR is the source of information for the Electronic Health Record (EHR).	• EMR is "a health care provider based electronic patient medical record." • EMR is the "set of databases (or repositories) that contains the health information for patients within a given institution or organization. Thus, an EMR contains the aggregated datasets gathered from a variety of clinical service delivery processes, including laboratory data, pharmacy data, patient registration data, radiology data, surgical procedures, clinic and inpatient notes, preventive care delivery, emergency department visits, billing information, and others." • EMRs may contain "clinical applications that can act on the data contained within this repository; e.g., a clinical decision support system (CDSS), a computerized provider order entry system (CPOE), a controlled medical vocabulary, or a results-reporting system." • "EMR and EHR are often used synonymously."
Electronic Health Record (EHR) is a longitudinal electronic record of patient health information generated in one or more care settings. EHR data includes patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports.	• "EHR is distinguished from EMR in that EHR includes information about disciplines other than 'medicine' e.g. dental and mental health." • "EHR is a payer based (or third party provided) health record that provides a 'single view' of the patient's health information . . . ." • EHR may ". . . support the collection of data for uses other than clinical care, such as billing, quality, management, outcome reporting and public health disease surveillance and reporting." • EHR is a "real-time patient health record with access to evidence-based decision support tools . . . ." • EHR ". . . includes progress notes, allergies, discharge summaries, reports on emergency room utilization, etc." • EHR extends "the notion of an EMR to include the concept of cross-institutional data sharing. Thus, an EHR contains data from a subset of each institution's EMR (that is agreed upon by the institution). An EHR may also reside 'entirely within one institution' and link the various affiliated practice sites together . . . ." • "[O]ften EMR and EHR are used interchangeably . . . ."
Electronic Health Record System is a set of components that form the mechanisms by which electronic health records are created, used, stored, and retrieved. This includes data rules, procedures, processing and storage devices, and communication support facilities.	• "[An] EHR system is technology software applications and interfaces that support a single view of the patient's health record. An EHR provides a standardized formatted health record to any point of care that has authorized access and Internet connectivity." • An EHR system is an "information processing system, involving both computer hardware and software that deals with the storage, retrieval, sharing and use of health care information, data and knowledge for communication and decision making, and includes: (a) EHR; (b) Personal Health Record; (c) computerized order entry technology that permits a health care provider to order diagnostic and treatment services; (d) electronic alerts and reminders to health care providers to improve compliance with best practices, promote regular screenings and other preventative practices, and facilitate diagnoses and treatment; (e) error notification procedures that generate warning if an order is entered that is likely to lead to a significant adverse outcome for a patient; and (f) tools to allow for the collection, analysis and reporting of data on adverse events, near misses, the quality and efficiency of care, patient satisfaction and other health care-related performance measures."

Definition Cited in the Survey[45]	Comments from States Responding to the Survey
Personal Health Record (PHR) is usually used when referring to the version of health/medical record owned by the patient.	• "Personal health records represent a suite of tools, automated and manual, that allow an individual to obtain, synthesize and take action on all information related to their personal health state. A robust PHR also provides the functions necessary to manage privacy policies as established by the individual, to promote information sharing as needed for care, and to integrate institutionally generated and personally obtained observations, data, and experiences." • PHR refers to "computer-based patient records intended primarily for use by consumers, which may or may not interface with providers' electronic records . . . . The survey definition could be interpreted to mean that patients do NOT own the data in an EMR or an EHR" • "We have not established ownership of records in [our state] . . . . We would likely refer to these as records accessed and controlled by the patient."
Metadata is machine understandable information for the Web that describes content, quality, condition, and characteristics of the data.	• "We would not define this as 'machine understandable' as this implies coding for programming included only [when] . . . there is also a component to explain the code development as well as data exceptions and assumptions." • ". . . [E]xpand the definition to include that metadata is data about data, and is not restricted to just Web information."
Telehealth uses communication networks to provide health services including (but not limited to) direct patient care, health prevention, consulting, and home visits to patients in a geographical location different than the provider of the services.	• "Telehealth is health care provided through two way channel[s] of communication via Internet or store[d] and forward[ed] digital imaging or video system[s] that facilitate remote consultation or evaluation by a third party health care provider located at a remote site." • Telehealth is "services provided from a remote location using a combination of interactive video, audio, and externally acquired images through a networking environment between a recipient (i.e., the originating site) and a Medicaid-certified provider at a remote location . . . . [S]ervices do not include telephone conversations or Internet-based communication between providers or between providers and recipients." • "The delivery of health related services and information via telecommunications technologies. It may be as simple as two health professionals discussing a case over the telephone, or as sophisticated as using satellite technology to broadcast a consultation between providers at facilities in two countries, using videoconferencing equipment or robotic technology." • Examples of telehealth services should include (1) monitoring health care services and (2) continuing medical education programs.
E-Prescribing is the use of electronic tools to order drug prescriptions. E-prescribing tools may include both software programs, as well as hardware.	• E-prescribing enables secure bi-directional communication of information electronically between practitioners and pharmacies or between practitioners and intended recipients of pharmacy orders. • "A type of computer technology whereby physicians use handheld or personal computers to review drug formulary coverages and to transmit prescriptions to a printer or to a local pharmacy. E-prescribing software can be integrated into clinical information systems to allow access to patient-specific data to screen for drug interactions and allergies."

Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Appendix C. Top State E-Health Priorities for the Next Two Years

State	Priorities
AK	• Improved interconnectivity among providers • Collaborative planning among stakeholders
AL	• The Medicaid Transformation Grant – "Together for Quality" • The Camellia Project
AR	• Priorities will be shaped by the work of the Governor's Healthcare Roundtable
AZ	• Statewide HIE • Medicaid HIE/EHR
CA	• Telehealth • E-prescribing by 2010
CO	• Successfully build CORHIO into a sustainable HIE capability for the State of Colorado and promote its adoption into the Colorado Healthcare Community. Also, develop a long-term plan for HIT per SB-07-196 • Fix CBMS – The Colorado Benefits Management System
CT	• Designate a lead health information exchange organization that will assess the capacity to enable HIE • Develop a statewide health information technology plan
DC	• Development of EHR for DC Medical Homes Project • DC participation in local RHIO efforts
DE	• Enhancement of the Delaware Health Information Network (DHIN)
FL	• Building RHIOs from the "local community up" and developing HIE among providers • EMR system penetration into physician practices
GA	• Transparency • Health Information Exchange and Interoperability
HI	• Electronic Medical Records System • Telehealth Expansion of Communications Network
IA	• Establish a uniform interoperable medical record system • Establish Iowa HealthNet, an online network of providers
IL	• Electronic health data exchange • E-prescribing
IN	• Economic Development • Healthy Indiana Plan
KS	• Develop organizational and funding models • Educate/Inform stakeholders
KY	• Building a statewide portal and electronic patient health summary • Providing funding for health information technology adoption
LA	• Promote use of EMR in Community Care physician offices; develop State of LA health information exchange into working product to enable interconnection of hospital systems and RHIOs (Regional Health Information Organizations); establish the North Louisiana Rural Hospital Coalition RHIO, connecting 27 rural hospitals. • Provide integrated HIT software to all sites within the Louisiana State University Health Science Center (LSUHSC) and the Louisiana State University—Health Care Services Division (HCSD); deploy telemedicine solution to the 27 rural hospitals in the state, increasing level of care delivery and improving health outcomes.
MA	• Adoption of EMR Systems by other than large provider organizations • Development of HIE networks and administrative issues (e.g. privacy, security)
MD	• Complete planning phase for a statewide HIE • Begin developing a statewide HIE

State	Priorities
ME	• Integrated Public Health Information System (IPHIS) • Electronic Birth and Death Certificates
MI	• Bring benefits of HIE to all MI citizens by developing and fostering regional Health Information Exchanges • Connect regional HIEs to form a statewide HIE that exchanges information throughout all regions of the state
MN	• Developing a clear implementation plan for meeting the statutory mandate that all health care providers adopt interoperable electronic health records and other HIT by 2015. In addition, implementing legislation requiring all payers and providers to be exchanging electronic eligibility, claims, and remittance advice transactions by 2009 • Delivering $14 million in public funds (grants and loans) to support adoption of interoperable EHRs and other HIT in rural and underserved areas; providing technical assistance and support
ND	• Continue improvement in the quality, safety, and efficiency of health care through information and information technology • To participate in the defining of standards and clarifying of privacy rights as both relate to intra and interstate exchange of electronic health information
NE	• To review statutes and regulations to determine if legislative changes are necessary to promote the adoption of e-health technologies or to remove impediments to the adoption of e-health technologies and to enact legislation if deemed appropriate • To engage citizens by providing information on the benefits of health information exchange and to secure relationships through partnering with entities involved in the delivery of health care to address issues related to the adoption of e-health technologies
NH	• Privacy and security • E-Prescribing
NM	• Broaden access to health care through the use of technology • Establishment of seamless, transportable electronic health records for all New Mexicans
OH	• Supporting a public/private partnership to support the creation of a statewide RHIO • Integrating disparate state health systems to allow improved health outcomes for Ohio citizens
OK	• Engaging all identified stakeholders in Oklahoma • Further examination of privacy and security issues leading to implementation of the OK HISPC recommendations
OR	• Personal Health Records for each Oregonian • Health Information Exchange with appropriate privacy protection
PA	• Interoperability • E-Prescribing
RI	• HIE development and implementation • EMR/e-prescribing adoption
SD	• Continued funding of Health Information Exchange / Health Information Technology • Cost containment
TN	• Infrastructure • E-Prescribing
TX	• Drive quality and safety • Drive efficiency and cost containment
UT	• Support for extending health insurance to small business and individuals • Increased efficiency in the use of electronic health information throughout the health care delivery system

State	Priorities
VA	• Improving collaboration and reducing administrative costs for all actors in the system • Procurements for EMRs for Mental Health, Public Health Clinics, Corrections, etc.
VT	• Statewide access to patient medical information via statewide RHID and provider based EHRs • Chronic Care Information Systems
WA	• Implement pilot recommendations for Health Record Banking (HRB) • Continue Collaborative to award start-up funding for EMR adoption
WI	• EMR adoption and HIE development • Health information security and privacy
WV	• Establish operations of the West Virginia Health Information Network (WVHIN) • Promote adoption of EMRs, e-prescribing, and support administrative transactions

Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Appendix D. Stakeholders Engaged in State E-Health Activities

States identified that they consistently worked with physicians, hospitals, consumers (and their advocates), private insurers, and HMOs. Other key stakeholders engaged in state e-health activities are listed below.

Type	Stakeholders
Health Care Providers and Their Associations	Academic Medical Centers Chiropractors Community Health Centers Complementary and Alternative Care Providers Federally Qualified Health Centers (FQHC) Home Health Agencies Hospice Care Laboratories Medical Schools Mental Health Providers Nurses Nursing Homes and Long-Term Care Facilities Optometrists Pharmacies Primary Care Clinics
Technical Resources	Health Information Professionals and Vendors Local RHIOs Pharmacy Benefits Managers (PBMs) Private Telecom Companies Quality Improvement Organizations
Other	Financial Institutions Private Attorneys Employers Tribal Counsels Minority Health Coalitions

Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Appendix E. Federal E-Health Resources for States

Source	Description
Federal Matching Funds for Medicaid Management Information Systems (MMIS)	Enhanced federal match is available to fund 90 percent of the cost of MMIS design, development, and installation and 75 percent of the cost for operation and ongoing maintenance. States interested in enhanced match for HIT or electronic HIE adoption may submit an Advanced Planning Document (APD) to the Centers for Medicare and Medicaid Services to obtain initial "seed" money for planning and must receive prior approval for design, development, implementation, and operations funding. E-prescribing, EHRs, EMRs, personal health records, and electronic HIEs are examples of components of an enhanced MMIS.
Medicaid Transformation Grants	The Deficit Reduction Act of 2005 included $150 million for grants to Medicaid agencies to promote efficiency and effectiveness, with HIT listed as a priority use of the funds. The e-health–related grants vary from technology to improve the administration of health care, such as electronic verification of citizenship in four states, to full electronic HIEs. Multiple states are pursuing HIT or EHR hubs.
Agency for Healthcare Research and Quality (AHRQ)	AHRQ has provided more than $166 million in grants and contracts in 41 states to support and stimulate investment in HIT, especially in rural and underserved areas.[46] AHRQ, along with the Office of the National Coordinator (ONC), also provides funding to the National Governors Association (NGA) and RTI International to address privacy and security policy issues relating to interoperable health information exchange.[47] This project, called Health Information Security and Privacy Collaboration (HISPC), conducted assessments to identify best practices, participate in solution development, and develop implementation plans for addressing privacy and security concerns.[48]
Health Resources and Services Administration (HRSA)	Since 2002, HRSA has funded telehealth for its grantees through its Office for the Advancement of Telehealth. In 2005, HRSA created the Office of Health Information Technology, which was charged with developing an agencywide HIT strategy that benefits safety net providers and responds to the needs of the uninsured, underserved and special-needs populations. In August 2007, HRSA also awarded $31.4 million to help health centers to prepare to adopt and implement EHRs and other HIT initiatives. Forty-six grants were awarded to health centers in 25 states and the District of Columbia.[49] HRSA has also created EHR "Selection Guidelines" to help health centers evaluate EHR products and develop requests for proposals or requests for information.
Office of the National Coordinator for Health Information Technology (ONC)	ONC has funded four Nationwide Health Information Network Pilots. Participation by some states in these national initiatives was their first real entrée into state-federal, public-private electronic HIE arrangements. ONC has also entered into a contract with the National Governors Association (NGA) for the State Alliance for e-Health.

Appendix F. Implemented HIT Activities, by State Public Programs

Activities	Medicaid	State Health Benefit Plans	State Mental Health Hospitals	State Prisons	Public Health
Advance-Directive Repository	0	0	0	1	3
EPSDT Tracking	22	1	0	1	17
Surveillance Registry	1	1	1	1	36
Newborn Screening Registry	3	1	0	0	38
Immunization Registry	11	3	2	4	39
Disease Registry	4	2	2	2	41
E-prescribing	10	4	4	3	3
Telehealth	20	5	8	19	13
Personal Health Record	5	8	1	1	0
Electronic Medical Record	5	4	9	3	5
Electronic Health Record	8	4	2	3	3
Electronic-signature	9	4	5	4	5
Decision-Support Tools	21	7	5	2	14
Metadata Repository	9	3	4	1	5
Web-Based Medical Management Information Systems	27	2	2	0	0
Web-Based Provider Enrollment or Certification	15	7	2	0	12

Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Appendix G. States as Health Care Providers and Their E-Health Activities

State Facility	Survey Results and Highlights of State Efforts
Mental Health Facilities	About half of states (20 of 42 responding) identified operational HIT initiatives. EMRs were used by nine states and telehealth by eight states. These were the two most prevalent initiatives in this setting. Selected highlights of planned initiatives included: • **Kentucky** is undertaking an EHR system across all its state mental health facilities. • **Ohio's** Department of Mental Health is currently analyzing its multisystem exchanges to position systems architecturally for data sharing.
State Prisons	Just over half of states (22 of 42 responding) reported implemented HIT activities. Nineteen states indicated telehealth as operational. Other key activities were immunization registries, EHRs, and e-prescribing. Key descriptions provided by states included: • **Kentucky** has an EHR system implemented across all state-operated correctional facilities. • **Virginia's** Department of Corrections has conducted over 20,000 telemedicine consultations since 1995. Implementation is planned for an EHR system. • **Washington's** Department of Corrections is assessing the feasibility of a single, integrated EHR that spans all state juvenile corrections, state prisons, and city and county jails.
Public Health Clinics	Nearly one-third of states (9 of 25 states providing descriptions) indicated current or future use of EMRs or EHRs in their public health clinics. Other state responses included: • **Colorado** has implemented a treatment management system used for substance abuse. • **Nebraska** public health clinics are connected to the Nebraska Statewide Telehealth network. • The **District of Columbia** plans to link six community health clinics into its Medicaid Patient Hub using a commercial EHR product.
State-Operated Hospitals	Of the 23 states providing descriptions of e-health activities in their state-operated hospitals, 56 percent (13 states) have EMRs or EHRs in place or are in the planning or implementing stages to attain them. State responses also revealed that hospitals have developed an internal infrastructure to implement e-prescribing and other HIT activities.
Juvenile Justice Facilities	Twelve states provided descriptions of their e-health activities for juvenile justice facilities. Four states (Colorado, Michigan, Ohio, and Washington) described using "internal systems" for EMRs. Examples of other e-health activities described by states included: • **Colorado's** youth corrections utilizes an electronic dietary system and child care case management system. • **Georgia's** Department of Juvenile Justice has a full EMR within its juvenile tracking systems that includes physical examinations, health histories, chronic care data, and prescribing. Plans are underway for sharing data between other state agencies and for participating with e-prescribing vendors.
State Veterans Facilities	Six (Iowa, New Mexico, Louisiana, Ohio, Pennsylvania, and Utah) of 14 states describing e-health activities in this setting reported using EMRs. Colorado also noted benefits from implementation of an electronic case management system. The following states described joining resources with the federal government to meet the health care needs of the veterans: • **Oregon** created a gateway that links several facilities with the federal My HealtheVet Web portal, which provides veterans with safe, secure, private electronic health records.[50] • **Washington** State veterans' homes are using the free federal Veteran Administration's EMR system for scheduling consultations, for reviewing drug regimens, and for limited telemedicine.

Source: The Commonwealth Fund and National Governors Association E-Health Survey, conducted by Health Management Associates, 2007.

Appendix H.
Survey on State eHealth Information Strategies

Requested Response Due By Friday August 17, 2007
One survey response is requested from the Governor's Office, representing all state agencies.

Survey Purpose – To Provide An eHealth Best Practice Report To States

This survey is conducted with the National Governors Association by Health Management Associates (HMA), supported with funding from The Commonwealth Fund. Its purpose is (1) to identify what states are doing now in eHealth; (2) to highlight the best practices, important activities, and accomplishments of states; (3) to identify the challenges and issues states have faced in pursuit of these activities; and (4) to ask about current directions and goals for the future.

Our hope is that every state will respond, so we can highlight the successes you have achieved, and also so other states can learn from your experience and know the issues and obstacles they may need to confront. We appreciate all your time and effort in completing this important survey. Your responses will be summarized into a report to be published through The Commonwealth Fund.

Survey Organization
The survey is organized in the following manner:

Section 1: General eHealth Information

Sections 2 and 3 focus on eHealth activities you regard as *significant* that your state is undertaking (or has implemented).

Section 4: State Privacy Laws and other Protections for eHealth Information

Section 5: Consumer and Provider Engagement

Section 6: Standardized Data and eHealth

Section 7: eHealth Clinical Applications

Section 8: State Alignment with Federal Initiatives

Section 9: Other Comments

Survey Instructions:

We are directing this survey to the Governor's Office recognizing that it may require coordination across several state agencies. For example, it may be useful to coordinate with the Chief Information Officer, an Office of Information Technology, Medicaid, Public Health, Insurance Agency, the state budget office, privacy officers, etc. One single response however is requested from each state.

If you have any questions, please call Vernon Smith or Sandy Kramer at 1-800-678-2299.

Please return your completed survey by ***Friday August 17, 2007 via email to*** VSmith@healthmanagement.com.
If you would prefer regular mail or fax, send your response to:

Vernon K. Smith, Ph.D.
Health Management Associates
120 N. Washington Square, Suite 705
Lansing, MI 48933
FAX: 517-482-0920

On behalf of the National Governors Association and The Commonwealth Fund
Thank You!

THE COMMONWEALTH FUND

HEALTH MANAGEMENT ASSOCIATES

NATIONAL GOVERNORS ASSOCIATION

SECTION 1: GENERAL EHEALTH INFORMATION

1. Enter your state and a contact person who we could call or email, if we have questions with your responses.
   a. State:
   b. Contact Name:
   c. Contact Title:
   d. Contact Office:
   e. Phone Number:
   f. Email:

2. The following are common eHealth terms. To facilitate accurate interpretation of your survey responses, indicate if your state's definitions vary from those listed and describe the differences.

	Survey Definition[1]	If Your Definition Varies, Please Describe How
a.	**eHealth** is a term for healthcare practice which is supported by electronic processes and communication. [This term includes HIT and HIE defined below.]	
b.	**Health Information Technology (HIT)** is information technology specific to the healthcare domain. Health Information is used synonymously with the term "health data."	
c.	**Electronic Health Information Exchange (eHIE)** is electronic mobilization of health information across organizations & electronic disparate systems within a region, community or state. This term is a "catch all" phrase that includes Regional Health Information Organization (RHIO), Quality Improvement Organization (QIO), and Agency for Healthcare Research & Quality (AHRQ) funded communities, and private exchanges.	
d.	**Electronic Medical Record (EMR)** is a computer-based patient medical record. The EMR is the source of information for the Electronic Health Record (EHR).	
e.	**Electronic Health Record (EHR)** is a longitudinal electronic record of patient health information generated in one or more care settings. EHR data includes patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports.	
f.	**Electronic Health Record System** is a set of components that form the mechanisms by which electronic health records are created, used, stored, and retrieved. This includes data rules, procedures, processing and storage devices, and communication support facilities.	
g.	**Personal Health Record (PHR)** is usually used when referring to the version of health/medical record owned by the patient.	
h.	**Metadata** is machine understandable information for the Web that describes content, quality, condition, and characteristics of the data. It describes who, what, when, where, why, and how information about a data set.	
i.	**Telehealth** uses communication networks to provide health services including (but not limited to) direct patient care, health prevention, consulting, and home visits to patients in a geographical location different than the provider of the services.	
j.	**ePrescribing** is the use of electronic tools to order drug prescriptions. E-prescribing tools may include both software programs, as well as hardware like personal computers, handheld devices, and touch screens.	

[1] *HIMSS Dictionary of Healthcare Information Technology Terms, Acronyms & Organizations*, HIMSS, 2006, www.himss.org

3. How would you describe the importance of eHealth activities within your state?
   - ☐ a. Not significant
   - ☐ b. Significant
   - ☐ c. Somewhat significant
   - ☐ d. Very significant

4. Is there a position within the Governor's office responsible for eHealth?
   - ☐ a. Yes
   - ☐ b. No

5. Please provide the following contact information for the individual responsible for eHealth activities in your state.
   - a. Name: ☐
   - b. Title: ☐
   - c. Office: ☐
   - d. Phone Number: ☐
   - e. Email: ☐

6. How would you describe the role of the Governor's office related to eHealth Information Technology?
   Please Describe: ☐

7. Are eHealth activities specifically funded within your state's appropriations?
   ☐ a. Yes ☐ b. No ☐ c. Don't Know

8. Can you estimate the total dollar amount funded for fiscal years 2007 and 2008 for eHealth activities? If you do not know, enter "Unknown."
   - a. FY 2007: ☐
   - b. FY 2008: ☐

9. Over the next two years, what are the Governor's highest two priorities for eHealth?
   - a. 1st Priority: ☐
   - b. 2nd Priority: ☐

10. In pursuing the priorities you listed above, what would you see as the most significant barriers or obstacles?
    - a. Barriers to 1st Priority: ☐
    - b. Barriers to 2nd Priority: ☐

11. Please indicate which of the eHealth activities your state has implemented for the following programs. Mark column 6 if the activity has not been implemented by any of the five state-funded programs listed.

(Please check all that apply)

Activities	(1) Medicaid	(2) State Health Benefit Plans for Employees	(3) State-Operated Mental Health Hospitals	(4) State-Operated Prisons	(5) Public Health	(6) Not Implemented
a. eSignature	☐	☐	☐	☐	☐	☐
b. ePrescribing	☐	☐	☐	☐	☐	☐
c. Immunization Registry	☐	☐	☐	☐	☐	☐
d. Surveillance Registry	☐	☐	☐	☐	☐	☐
e. Disease Registry	☐	☐	☐	☐	☐	☐
f. Newborn Screening Registry	☐	☐	☐	☐	☐	☐
g. EPSDT Tracking	☐	☐	☐	☐	☐	☐
h. Advance Directive Repositories	☐	☐	☐	☐	☐	☐
i. Telehealth	☐	☐	☐	☐	☐	☐
j. Web-Based Provider Enrollment or Certification	☐	☐	☐	☐	☐	☐
k. Metadata Repository	☐	☐	☐	☐	☐	☐
l. Decision Support	☐	☐	☐	☐	☐	☐
m. Private-Funded electronic Health Information Exchanges	☐	☐	☐	☐	☐	☐
n. State-Funded electronic Health Information Exchanges	☐	☐	☐	☐	☐	☐
o. Federal-Funded electronic Health Information Exchanges	☐	☐	☐	☐	☐	☐
p. Public-Private Funded electronic Health Information Exchanges	☐	☐	☐	☐	☐	☐
q. Other Funded electronic Health Information Exchanges	☐	☐	☐	☐	☐	☐
r. Personal Health Record	☐	☐	☐	☐	☐	☐
s. Electronic Medical Record	☐	☐	☐	☐	☐	☐
t. Electronic Health Record	☐	☐	☐	☐	☐	☐
u. Web Medicaid Management Information System	☐	☐	☐	☐	☐	☐

12. Please describe the roles the following state departments have in regard to eHealth activities?

State Departments, Offices, or Programs	Describe Role in eHealth
a. Chief Information Officer	
b. Attorney General	
c. Budget Office	
d. Insurance Commission	
e. Others? – Describe:	

13. Which of the eHealth activities you checked above are integrated across public and private programs?

Please describe: ☐

14. You will be asked to highlight your two most significant eHealth activities in Sections 2 and 3. This item provides an opportunity for you to list comments on other eHealth activities or to provide additional details on activities you indicated above.

Comments: ☐

15. Does your state monitor eHealth activities implemented by private entities?

☐ a. Yes ☐ b. No ☐ c. Don't Know

If yes, list the key players identified and describe the collaboration or integration your state has had with each.

☐

16. If your state participates in an electronic Health Information Exchange (eHIE), please indicate the type. Otherwise go to Section 2.

(Please check all that apply)

Activities	(1) Regional (within a state)	(2) Statewide	(3) Multi-State	(4) Other-Describe	(5) Not Implemented
a. Private-Funded eHIE	☐	☐	☐		☐
b. State-Funded eHIE	☐	☐	☐		☐
c. Federal-Funded eHIE	☐	☐	☐		☐
d. Public-Private Funded eHIE	☐	☐	☐		☐

17. If your state participates in an electronic Health Information Exchange (eHIE), what is the governing structure?

☐ a. State governed
☐ b. Public – Private governed
☐ c. Private governed
☐ d. Other – Please describe: ☐

SPECIAL INSTRUCTIONS FOR SECTIONS 2 AND 3

In Sections 2 and 3, we are asking you to identify two eHealth activities that you regard as the most significant activity, initiative, or action you are implementing or have completed in your state.

SECTION 2: YOUR STATE'S MOST SIGNIFICANT EHEALTH ACTIVITY

18. Please indicate the eHealth activity your state is undertaking or has implemented that you would regard as the most significant? If you do not have an initiative to report, list "None" and proceed to Section 4.

Please describe: ☐

19. Why are you regarding this eHealth activity as the most significant in your state?

Please describe: ☐

20. Is the eHealth activity you listed above integrated into an electronic Health Information Exchange?
(Please indicate only one)

☐ a. Yes ☐ b. No ☐ c. Don't Know

21. Indicate which categories below best describe this activity.
(Please indicate only one)

☐ a. Telecommunication Infrastructure, e.g., Internet, Broadband, Central Repository, Federated Model
☐ b. Architecture Interoperability
☐ c. eHealth Privacy and Security
☐ d. Standardized Data
☐ e. Other – Please describe: ☐

22. In reference to the initiative above, please describe the type of initiative.
(Please check all that apply)

- ☐ a. Regional within a state
- ☐ b. Statewide
- ☐ c. Multi-state
- ☐ d. Other, please describe:

23. Which stage is your initiative currently in?
(Please indicate only one)

- ☐ a. Stage 1 – Initiation and Planning
- ☐ b. Stage 2 – Design and Development
- ☐ c. Stage 3 – Implementation in Progress
- ☐ d. Stage 4 – Fully Implemented

24. If the initiative has been fully implemented, please list the year of its implementation. Year: ☐

25. How did you promulgate this initiative?
(Please check all that apply)

- ☐ a. State Law
- ☐ b. State Regulations (or Administrative Rules)
- ☐ c. Executive Order
- ☐ d. Governor Established Advisory Council
- ☐ e. Privately Initiated State-Level Council or Task Force
- ☐ f. Leveraging Medicaid Purchasing – (Initiative mandated contractually)
- ☐ g. Leveraging State Employee Purchasing – (Initiative mandated contractually)
- ☐ h. Court Action
- ☐ i. Other, please describe: ☐

26. Please indicate the funding sources for this initiative.
(Please check all that apply)

- ☐ a. State General Funds
- ☐ b. Federal Grant or Contract
- ☐ c. Medicaid
- ☐ d. Foundation Grant – Please list source: ☐
- ☐ e. Private
- ☐ f. Private - Public
- ☐ g. Other – Please describe: ☐

27. What incentives did you use during adoption of this initiative to encourage its implementation?
(Please check all that apply)

- ☐ a. Tax credits to healthcare organizations (HMOs, hospital systems, etc.)
- ☐ b. Tax credits to individual healthcare practitioners
- ☐ c. Tax credits to employers
- ☐ d. Direct grants to electronic health information exchanges
- ☐ e. Direct grants to healthcare provider groups
- ☐ f. Other – Please describe: ☐
- ☐ g. None used

28. Who are your stakeholders?
(Please check all that apply)

- ☐ a. Physicians and Hospitals (and their associations)
- ☐ b. Long-Term Care Providers
- ☐ c. Managed Care Organizations (MCOs) and Health Maintenance Organizations (HMOs)
- ☐ d. Private Insurers
- ☐ e. Consumers and their Advocates
- ☐ f. Employers
- ☐ g. Other – Please describe: ☐

29. Looking back at the initiative described above, what was its most significant challenge, concern or issue?
Please describe: ☐

30. What would you identify as the most important lessons learned that other states should know about the initiative you listed? Please describe: ☐

SECTION 3: YOUR STATE'S NEXT EHEALTH ACTIVITY

31. What is another eHealth activity that you regard as "significant?" you do not have an initiative to report, list "None" and proceed to Section 4.
Please describe: ☐

32. What were your criteria for listing the above eHealth activity?
Please describe: ☐

33. Is this eHealth activity integrated into electronic Health Information Exchange?
(Please indicate only one)

☐ a. Yes ☐ b. No ☐ c. Don't Know

34. Indicate which categories below best describe this activity.
(Please indicate only one)

- ☐ a. Telecommunication Infrastructure, e.g., Internet, Broadband, Central Repository, Federated Model
- ☐ b. Architecture Interoperability
- ☐ c. eHealth Privacy and Security
- ☐ d. Standardized Data
- ☐ e. Other – Describe: ☐

35. In reference to the initiative above, please describe the type of initiative.
(Please check all that apply)

- ☐ a. Regional within a state
- ☐ b. Statewide
- ☐ c. Multi-state
- ☐ d. Other, please describe: ☐

36. Which stage is your initiative currently in?
(Please indicate only one)

- ☐ a. Stage 1 – Initiation and Planning
- ☐ b. Stage 2 – Design and Development
- ☐ c. Stage 3 – Implementation in Progress
- ☐ d. Stage 4 – Fully Implemented

37. If the initiative has been fully implemented, please list the year of its implementation. Year: ☐

38. How did you promulgate this initiative?
(Please check all that apply)

- ☐ a. State Law
- ☐ b. State Regulations (or Administrative Rules)
- ☐ c. Executive Order
- ☐ d. Governor Established Advisory Council
- ☐ e. Privately Initiated State-Level Council or Task Force
- ☐ f. Leveraging Medicaid Purchasing – (Initiative mandated contractually)
- ☐ g. Leveraging State Employee Purchasing – (Initiative mandated contractually)
- ☐ h. Court Action
- ☐ i. Other, please describe: ☐

39. Please indicate the funding sources for this initiative.
(Please check all that apply)

- ☐ a. State General Funds
- ☐ b. Federal Grant or Contract
- ☐ c. Medicaid
- ☐ d. Foundation Grant – Please list source: ☐
- ☐ e. Private
- ☐ f. Private - Public
- ☐ g. Other – Please describe: ☐

40. What incentives did you use during adoption of this initiative to encourage its implementation?
(Please check all that apply)

- ☐ a. Tax credits to healthcare organizations (HMOs, hospital systems, etc.)
- ☐ b. Tax credits to individual healthcare practitioners
- ☐ c. Tax credits to employers
- ☐ d. Direct grants to electronic health information exchanges
- ☐ e. Direct grants to healthcare provider groups
- ☐ f. Other – Please describe: ☐
- ☐ g. None used

41. Who are your stakeholders?
(Please check all that apply)

- ☐ a. Physicians and Hospitals (and their associations)
- ☐ b. Long-Term Care Providers
- ☐ c. Consumers and their Advocates
- ☐ d. Managed Care Organizations (MCOs) and Health Maintenance Organizations (HMOs)
- ☐ e. Private Insurers
- ☐ f. Employers
- ☐ g. Other – Please describe: ☐

42. Looking back at the initiative described above, what was its most significant challenge, concern or issue?
Please describe: ☐

43. What would you identify as the most important lessons learned that other states should know about the initiative you listed? Please describe: ☐

SECTION 4: STATE PRIVACY LAWS AND OTHER PROTECTIONS FOR EHEALTH INFORMATION

As eHealth evolves, questions are surfacing on the privacy of healthcare data. Within this section, we are interested in learning about your state laws that ensure privacy of protected health information (PHI).

44. Does your state have privacy protection laws (in addition to federal laws) applicable to eHealth?

☐ a. Yes ☐ b. No ☐ c. Don't Know

45. Does your state inform consumers when their healthcare information held by state programs is accessed?

☐ a. Yes ☐ b. No ☐ c. Don't Know

If yes, please describe: ☐

46. Has your state established policy and protocol to address data privacy or security breaches should they occur – including patient notification and state or federal reporting protocols?

☐ a. Yes ☐ b. No ☐ c. Don't Know

If yes, please describe: ☐

47. Are there issues relating to the release of health data that are considered to be obstacles to electronic Health Information Exchange (eHIE) activities in your state? Please indicate instances where these issues are impeding eHIE activities.

(Please check all that apply.)

Healthcare Services		(1) Implementation of Consent Process	(2) Lack of Authorization and Authentication Standards	(3) Lack of Access Control & Audit Standards	(4) Federal Privacy Requirements	(5) Don't Know
a.	Mental Health Services	☐	☐	☐	☐	☐
b.	Substance Abuse Services	☐	☐	☐	☐	☐
c.	HIV/AIDS Services	☐	☐	☐	☐	☐
d.	Communicable Disease Services	☐	☐	☐	☐	☐
e.	Genetic Testing	☐	☐	☐	☐	☐
f.	General Health Services	☐	☐	☐	☐	☐
g.	Adolescent Services	☐	☐	☐	☐	☐
h.	School-Based Services	☐	☐	☐	☐	☐
i.	Disability Services	☐	☐	☐	☐	☐

48. Does your state have *separate* consent policies or procedures for electronic Health Information Exchange (eHIE)?

☐ a. Yes ☐ b. No ☐ c. Don't Know

49. If yes to the above question, which transactions are included?

(Please check all that apply)

☐ a. Treatment
☐ b. Payment
☐ c. Operations
☐ d. Public Health
☐ e. All transactions, including Public Health
☐ f. Treatment, Payment, and Operations (TPO), but not Public Health
☐ g. Other – Please describe: ☐

50. Describe specific issues, obstacles, or legal implications that you have encountered related to the electronic release of health information. ☐

51. Describe remedies for these issues that you believe should be initiated at the state or at the federal level.

☐

52. Which of the following security protocols are required for *external* systems interfacing with state systems?
(***Please check all that apply)***

- ☐ a. Encryption
- ☐ b. Audit Trail
- ☐ c. Security Policy
- ☐ d. Synchronize Data and Back-Up
- ☐ e. User Authentication
- ☐ f. Other – Please describe: ☐

SECTION 5: CONSUMER AND PROVIDER ENGAGEMENT

53. Has your state initiated any educational efforts about eHealth specifically intended to inform consumers from culturally and linguistically diverse communities and their healthcare providers?

☐ a. Yes ☐ b. No ☐ c. Don't Know

If yes, please describe: ☐

54. Has your state assessed the number of providers that engage in electronic Health Information Exchange (eHIE) or Electronic Medical Records (EMRs) activities including issues related to geographic (urban and rural) access?

☐ a. Yes ☐ b. No ☐ c. Don't Know

If yes, please describe: ☐

55. Has your state assessed whether the Medicaid population has access to computers and the Internet?

☐ a. Yes ☐ b. No ☐ c. Don't Know

If yes, please describe: ☐

SECTION 6: STANDARDIZED DATA AND EHEALTH

56. Does your state use electronic technology to track standardized data sets of quality performance?

☐ a. Yes ☐ b. No ☐ c. Don't Know

57. Indicate which standardized measures of utilization and performance are used within your state for the following payers or state programs.

Multiple standards may be used in combination for a program; please check all that apply. For example, if Medicaid Fee-For-Services uses a combination of indicators from both HEDIS and CAHPS, check both.

(Please indicate all that apply)

Standard Measures[2]	(1) Medicaid Fee-For-Service	(2) Medicaid Managed Care	(3) State Health Benefit Plans	(4) Comments
a. HEDIS®	☐	☐	☐	
b. NQF Measures	☐	☐	☐	
c. CAHPS®	☐	☐	☐	
d. Medicare Measures	☐	☐	☐	
e. State Designed	☐	☐	☐	
f. Other – Explain in Comments	☐	☐	☐	

58. For the standard measures indicated in the above questions, please indicate which payers make reports (such as plan report cards on a state's website) available to the public.

(Please indicate all that apply)

☐ a. Medicaid (Fee for Service)
☐ b. Medicaid (Managed Care)
☐ c. State Health Benefit Plans

59. In your state, is there a consortium of public and private payers that have agreed upon standardized measures of utilization and performance?

☐ a. Yes ☐ b. No ☐ c. Don't Know

If yes, please describe: ☐

SECTION 7: EHEALTH CLINICAL APPLICATIONS

60. Please describe the eHealth activities being undertaken or implemented by state operated facilities, e.g., Personal Health Records, Electronic Medical Records, Electronic Health Records, ePrescribing, telehealth, etc.

State-Operated Facilities	Comments
a. Mental Health Facilities	
b. Hospitals	
c. Prisons	
d. Juvenile Justice Facilities	
e. Nursing Homes	
f. Veterans Facilities	
g. Intermediate Care Facility for the Mentally Retarded (ICF/MRs)	
h. Public Health Clinics	

[2] HEDIS®= Health plan Employer Data and Information Set; CAHPS® = Consumer Assessment of Healthcare Providers and Systems; and NQF= National Quality Forum

61. Indicate if the following programs provide "special" reimbursement for healthcare services via telehealth?
(Please check all that apply)

- ☐ a. Medicaid
- ☐ b. State Children's Health Insurance Plan (SCHIP)
- ☐ c. State health benefits for employees and retirees

62. Indicate which of the following standards have been implemented in your state.
(Please check all that apply)

- ☐ a. Markup Standards (Structure and nomenclature, such as address vocabulary, birth date, software, data interoperability, etc.)
- ☐ b. Network Interaction Protocols (inter-application communication and software interoperability).
- ☐ c. Enterprise Architecture

SECTION 8: STATE ALIGNMENT WITH FEDERAL INITIATIVES

63. Is your state proactively seeking to align its Health Information Technology (HIT) activities with federal-level initiatives?

☐ a. Yes ☐ b. No ☐ c. Don't Know

64. Please indicate which federal-level initiative your state's HIT activities are seeking to align with.
(Please check all that apply)

- ☐ a. Value-Based Purchasing
- ☐ b. Linking quality and performance measures to Health Information Technology
- ☐ c. Personal Health Records for publicly funded individuals
- ☐ d. Relationship to Nationwide Health Information Network (NHIN) functional requirements
- ☐ e. Standard harmonization by Health Information Technology Standards Panel (HITSP)
- ☐ f. Comments: ☐

SECTION 9: OTHER COMMENTS ON EHEALTH

65. Lastly please provide any comments you believe may be useful for our report on eHealth activities. ☐

We appreciate your assistance and cooperation with this effort.