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December 19, 2007

The Honorable Martin O'Malley, Governor
Members of the General Assembly
100 State Circle
Annapolis, MD 21401-1925

Dear Governor O'Malley and Honorable Members of the General Assembly:

I am submitting for your consideration this report and recommendations from the Task Force to Study Electronic Health Records (Task Force). The Task Force, created by Senate Bill 251 of the 2005 Maryland General Assembly, was composed of 26 representatives from a broad spectrum of stakeholders in the health care delivery system. This report is the result of the hard work and dedication of these individuals and others who assisted them in carrying out their responsibilities to study electronic health records and the current and potential expansion of electronic health record utilization in the State.

The Task Force's report presents an overview of the current landscape surrounding the adoption of electronic health records. This report also presents a review of recommendations that pertain to electronic health records, and the current and potential expansion of electronic health record utilization in the State, including: electronic transfer; electronic prescribing; computerized physician order entry; the cost of implementing these items in the State; the impact of the current and potential expansion on school health records; and the impact of the current and potential expansion on patient safety and privacy.

On behalf of the Task Force, I am pleased to submit to you and the General Assembly the final report as directed by Senate Bill 251. If you have any questions or would like to discuss the report in more detail, please feel free to contact me at (202) 546-4504, extension 1731.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Peter Basch'.

Peter Basch, M.D., F.A.C.P.
Chair

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Executive Summary

Overview

As part of the 2005 session, the Maryland Legislature enacted Senate Bill 251,¹ which created the Governor's Task Force to Study Electronic Health Records (Task Force). The bill was subsequently signed into law on May 10, 2005. The Task Force consisted of 26 volunteer members and included representation from a diverse group of individuals with a broad range of interests in health care and health information technology (HIT).

The directive to the Task Force was to study electronic health record systems (EHR or EHR-S, as defined by the Task Force); the current and potential expansion of their utilization in Maryland, including electronic transfer, e-prescribing, computerized provider order entry (CPOE); and the cost of implementing these functions. It was also tasked to study the impact of the current and potential expansion on school health records and patient safety and privacy. Over the last 18 months, Task Force members have worked collaboratively to explore each area of the mandate, conduct a thorough literature review, and develop concrete, realistic recommendations.

Drivers for Health Information Technology (HIT)

The cost of health care continues to increase at a rate greater than the inflation rates of other sectors of the United States economy, and is greater than health care cost increases in other countries. In 2005 the level of health care spending had grown to 16 percent of the GDP and its growth continues to outpace the rate of inflation. Total spending on health care in the United States was projected to reach \$2.1 trillion in 2006 and \$4.1 trillion by 2016.² The rise in insurance premiums resulting from these increased costs has led to increases in Maryland's uninsured population, with nearly 750,000 residents living without health care coverage in 2004.³

However, increases in health care costs do not necessarily equate to better quality health care or fewer errors. The United States lags behind other developed countries on

¹ Maryland General Assembly. (2005). Senate Bill 251.

² Poisal J.A., Truffer C., Smith S., Sisko A., Cowan K., Keehan S., Dickensheets B. & the National Health Expenditure Accounts Projections Team. (2/27/2007). Health Spending Projections Through 2016: Modest Changes Obscure Part D's Impact. [Health Affairs](#) Web Exclusive.

³ Maryland Health Care Commission. (1/2006). State Health Care Expenditures Experience from 2004. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

indicators of health outcomes, quality, and efficiency.⁴ The consequences of preventable errors cost the United States health care system more than \$4 billion annually. HIT has the potential to improve the quality of care by enhancing the information available to treating providers and patients.

Catalysts and Barriers to HIT

The Task Force identified several key barriers and catalysts to the adoption of EHR-S. Identified barriers include the high initial financial investment; the high initial amount of physician time investment; slow and uncertain return on investment; uncertainty regarding liability; and product immaturity. Catalysts include programs such as the “Bridges to Excellence” program which is an example of a private sector initiative sponsored by a local health care payer. Payers are also beginning to experiment with new payment models that reimburse e-care, in which providers communicate with patients via email.⁵ A leading public sector initiative is the “Healthcare Modernization Act,” which mandates CMS to fund approximately 100 practices in four states to adopt and use HIT to improve the quality of care for Medicare recipients with certain chronic conditions.⁶

Laws and Regulations

The Health Insurance Portability and Accountability Act (HIPAA) became federal law in 1996 and may be considered one of the most widely recognized statutes regarding the privacy and security of electronic information. However, the laws and principles pertaining to the protection of personal information stored electronically were established over 30 years ago in the United States, and nearly 20 years ago in Maryland. This report describes many of the applicable state and federal laws relating to health information exchange. In addition to HIPAA other laws and regulations include:

- Fair Information Practices Principles
- Medicare Prescription Drug, Improvement, and Modernization Act of 2003
- Several State of Maryland statutes

State and National Initiatives

The United States federal government has recognized the importance of moving the country toward adoption of EHR-S and HIE. In support of this recognition, the Task Force studied several federally sponsored initiatives that have been launched. These initiatives are led primarily by agencies within HHS, although there are other departments, such as the DoD and VHA, which also are promoting the use of EHR-S. Some of the more significant initiatives include:

- Office of the National Coordinator for Health Information Technology

⁴ Schoen C., Davis K., How S.K. & Schoenbaum S.C. (2/20/2006). U.S. Health System Performance: A National Score Card. [Health Affairs](#) Web Exclusive.

⁵ Freudenheim M. (5/2/2005). Digital RX: Take Two Aspirins and E-Mail me in the Morning. New York Times.

⁶ Social Security Administration. (2007). The Medicare Prescription Drug, Improvement, and Modernization Act of 2003. P.L. 108-173. Enacted December 8, 2003. Washington, DC.

- State Alliance for e-Health
- American Health Information Community
- Nationwide Health Information Network projects
- Health Information Standards Panel
- Certification Commission for Healthcare Information Technology

Adopting and optimally using HIT presents a number of significant challenges. The Task Force has found that HIT can improve health care – but it serves mainly as an enabling infrastructure that supports health system change. The Task Force believes that widespread adoption and optimal use of HIT can only be achieved by solving the perceived threat to privacy and security, building consumer trust, and reforming the provider reimbursement system to provide the necessary incentives for patient management, care coordination, chronic care delivery, and non-visit based care.

Without significant reformation of payment policy, insufficient financial incentives exist for the types of care improvement HIT can provide, and no financial incentives exist for the transformative services that HIT creates. The Task Force believes that absent a dramatic change, patients and the society at large are unlikely to realize the full potential that HIT has to offer. Establishing timeframes for technology adoption hinges on resolving issues related to privacy and security, consumer trust, and payment reform.

Recommendations

The recommendations outlined in this report address the requirements set forth in the enabling legislation. The recommendations also propose ways to increase the use of HIT in Maryland and can act as a resource for the Governor and General Assembly as they consider how to move HIT forward in the State. The Task Force recommends that the State of Maryland address the following:

Financial

- Balance the relationship of HIT costs and benefits in each sector through a system of payments and subsidies;
- Include HIT adoption in private payer Pay-for-Performance programs;
- Identify incentives for e-prescribing; and
- Identify funding sources for EHR-S adoption.

Technology

- Encourage Physician implementation of EHR-S;

- Encourage Hospital implementation of EHR-S and CPOE;
- Develop statewide privacy and security policies for health information exchange;
- Implement a statewide health information exchange; and
- Allow market forces to drive consumer adoption of personal health records.

Legal / Regulatory

- Modify existing statutes to resolve conflicts between statutes, and develop new legislation where necessary.

HIT / HIE Consumer Education

- Develop a statewide outreach and education program;

School Health Records

- Resolve differences between State privacy and security laws, HIPAA, and FERPA; and
- Encourage EHR-S adoption in school-based health centers.

Acknowledgements

The work would not have been possible without the collaboration and contributions of each member of the Task Force. In addition, the Task Force appreciates the significant contribution made by a dedicated group of individuals that participated along side of Task Force members in the Workgroup activities. A special thanks goes to the Maryland Health Care Commission for providing support to the work and in developing the final report. The Task Force also recognizes Mosaica Partners, a consulting firm who provided assistance to the Maryland Health Care Commission. The knowledge and dedication of everyone involved were essential in the completion of this document.

Section 1 - Introduction

Background

On May 10, 2005, the Governor signed into law Senate Bill 251,⁷ which created the Governor's Task Force to Study Electronic Health Records (Task Force). The Task Force consisted of 26 volunteer members and included representation from the legislature, state schools of medicine, health care payers, state agencies involved with health care, public and private health care providers, Health Information Technology (HIT) experts, and two consumer members.⁸ A list of the Task Force members and other stakeholders that provided support to this initiative is located in Appendix A of this report. The Maryland Health Care Commission (MHCC), at the request of the Department of Health and Mental Hygiene, provided support to the Task Force.

The directive of the Task Force was to study electronic health record systems (EHR-S, as defined by the Task Force), and the current and potential expansion of their utilization in Maryland, including electronic transfer, e-prescribing, computerized provider order entry (CPOE), and the cost of implementing these functions. It was also tasked to study the impact of the current and potential expansion on school health records and patient safety. In support of these efforts, the Task Force established three workgroups. The specific areas of study for each workgroup are listed below.

1. **The Electronic Patient Information & Policy Development Workgroup** explored current practices and potential expansion of EHR-S and health information exchange. The information available in school health records and the impact on patient safety were specific points of focus.
2. **The Computerized Prescribing & Policy Development Workgroup** explored current and near-term future practices in electronic prescribing and computerized physician order entry. This group focused on lessons learned from the use of EHR-S and how to apply those lessons for the successful expansion of HIT and Health Information Exchange (HIE).
3. **The Infrastructure Management & Policy Development Workgroup** explored current and emerging infrastructure models as well as the related governance and financial issues.

⁷ Maryland General Assembly. (2005). Senate Bill 251.

⁸ Ibid.

Drivers for HIT and HIE

Cost

Health care costs in the United States have reached alarming levels. Since 2001, the annual rate of increase in national health expenditures has averaged eight percent. During this time, the health care industry has accounted for increasingly larger shares of the nation's gross domestic product (GDP). In 2001, health care expenditures were 14.5 percent of the GDP and by 2005, the level had grown to 16 percent – outpacing the rate of inflation.^{9,10} By contrast, health care expenditures in Canada, France, Germany, and Switzerland consumed between 9.1 percent and 10.7 percent of the national GDPs of those countries.¹¹ Total spending on health care in the United States was projected to reach \$2.1 trillion in 2006 and \$4.1 trillion by 2016.¹²

Similar to national estimates, Maryland's total health care spending has experienced an average increase of eight percent per year since 2001, with Maryland residents spending an estimated \$30.2 billion for health care services in 2005.¹³ The majority of this increase was due to hospital outpatient care (13 percent) and prescription drugs (eight percent), as opposed to physician services, which increased by only four percent. The rise in insurance premiums resulting from these increased costs has led to increases in Maryland's uninsured population, with nearly 750,000 residents living without health care coverage in 2004.¹⁴

Quality and Medical Errors

Higher health care costs, however, do not necessarily equate to better quality health care or fewer errors.^{15,16,17,18,19} A recent Commonwealth Fund report found that the United

⁹ Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group. (1/2007). Prescription Drug Spending, National Health Accounts, 1960-2015. United States Department of Health and Human Services. Washington, DC.

¹⁰ InflationData.com. (2007). Current Inflation Data. Available:

http://www.inflationdata.com/Inflation/Inflation_Rate/CurrentInflation.asp

¹¹ Anderson G.F., Frogner B.K., Johns R.A. & Reinhardt U.E. (2006). Health Care Spending and Use of Information Technology in OECD Countries. *Health Affairs*, 25(3): pp. 819-831.

¹² Poisal J.A., Truffer C., Smith S., Sisko A., Cowan K., Keehan S., Dickensheets B. & the National Health Expenditure Accounts Projections Team. (2/27/2007). Health Spending Projections Through 2016: Modest Changes Obscure Part D's Impact. *Health Affairs* Web Exclusive.

¹³ Maryland Health Care Commission. Health Care Spending Increased to \$30.2 Billion in 2005 [Press Release]. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

¹⁴ Maryland Health Care Commission. State Health Care Expenditures Experience from 2004. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

¹⁵ Fisher E.S. (2006). Variations In The Costs And Quality Of Medical Care: Is More Always Better? United Health Foundation. Minnetonka, MN.

¹⁶ Center for the Evaluative Clinical Sciences. (2006). The Care of Patients with Severe Chronic Illness: A Report on the Medicare Program by the Dartmouth Atlas Project. The Dartmouth Institute for Health Policy and Clinical Practice. Lebanon, NH. Available: http://www.dartmouthatlas.org/atlas/2006_Atlas_Exec_Summary.pdf

States lags behind other developed countries on indicators of health outcomes, quality, and efficiency.²⁰ A well-known study by the Institute of Medicine (IOM), found that the consequences of preventable errors cost the United States health care system more than \$4 billion annually. Translating this in terms of human lives, the IOM estimated that medical errors contribute to between 44,000 and 98,000 deaths annually.²¹ Other studies have nearly doubled those estimates.²²

Outcomes

When looking at “mortality from conditions amenable to health care,” which refers to deaths before age 75 that probably would have been prevented with timely and effective care, the United States ranked 15th out of 19 industrialized countries.²³ In addition to international differences, the results of a recent study by the Center for Evaluative Clinical Sciences, published in the “Dartmouth Atlas of Health Care,” revealed dramatic variations in the treatment of Medicare beneficiaries with severe chronic illness across the United States.

Efficiency

“An efficient care system seeks to maximize the quality of care and outcomes for the resources committed to health care, and it focuses on strategies that produce greater net value over time.”²⁴ In a study by Schoen, et al., efficiency in a health care system was measured across five clusters of efficiency indicators:

- 1) evidence of overuse, inappropriate care, duplication, or waste;
- 2) inefficient use of resources associated with poor access;
- 3) regional variations in quality and costs;

¹⁷ Fisher E.S., Wennberg D.E., Stukel T.A., Gottlieb D.J., Lucas F.L. & Pinder, E.L. (2003). The Implications of Regional Variations in Medicare Spending. Part 1: The Content, Quality, and Accessibility of Care. *Annals of Internal Medicine*, 138(4): pp. 273-287.

¹⁸ Fisher E.S., Wennberg D.E., Stukel T.A., Gottlieb D.J., Lucas F.L. & Pinder E.L. (2003). The Implications of Regional Variations in Medicare Spending. Part 2: Health Outcomes and Satisfaction with Care. *Annals of Internal Medicine*, 138(4): pp. 288-298.

¹⁹ Fisher E.S., Wennberg D.E., Stukel T.A. & Gottlieb D.J. (10/11/2004). Variations In The Longitudinal Efficiency Of Academic Medical Centers. *Health Affairs* Web Exclusive.

²⁰ Schoen C., Davis K., How S.K. & Schoenbaum S.C. (9/20/2006). U.S. Health System Performance: A National Score Card. *Health Affairs* Web Exclusive.

²¹ Kohn L., Corrigan J. & Donaldson M. (2000). To Err Is Human: Building a Safer Health System. Committee of Health Care in America. Institute of Medicine of the National Academies. Washington, DC.

²² HealthGrades. (7/27/2004). In-Hospital Deaths from Medical Errors at 195,000 per Year, Health Grades Study Finds.

²³ Center for the Evaluative Clinical Sciences. (2006). The Care of Patients with Severe Chronic Illness: A Report on the Medicare Program by the Dartmouth Atlas Project. The Dartmouth Institute for Health Policy and Clinical Practice. Lebanon, NH.

²⁴ Schoen C., Davis K., How S.K. & Schoenbaum S.C. (9/20/2006). U.S. health system performance: a national score card. *Health Affairs* Web Exclusive.

- 4) percentage of health care expenditures on insurance administrative costs; and
- 5) lack of information systems that foster efficiency.

The United States consistently rated low on all indicators.²⁵ This is due in part to the low incidence and use of EHR-S and the high costs of administration and insurance.²⁶

Health Care and Health Information Technology

Health care is seen as one of the most significant sectors of the United States economy, yet it continues to lag behind other sectors in its use of technology. Today, evidence suggests that the use of secure, standards-based EHR-S can improve patient care, increase efficiency, and may result in:

- Higher quality care through adherence to treatment protocols and guidelines;
- Reduction in Adverse Drug Events (ADEs);
- Fewer duplicative treatments and tests;
- Administrative efficiencies through decreased paperwork;
- Improved coordination of treatment through constant access to health information;
- Early detection of infectious disease outbreaks around the country;
- Disease management tracking; and
- More complete data sources for use in research.^{27,28}

Studies are beginning to show that the use of HIT can improve patient safety and the quality of care. For example, Partners Healthcare found in one trial that the use of computerized physician order entry systems alone reduced medication-related errors by 55 percent. Another study found that improvements in decision support that automatically evaluate a drug's risk to an individual patient – based on his or her age, kidney function, other drugs, and medical conditions – led to an 83 percent reduction in the overall rate of ADEs.²⁹ In another study, it was found that “the major effect of health information technology on quality of care was its role in increasing adherence to

²⁵ Ibid.

²⁶ Anderson G.F., Frogner B.K., Johns R.A. & Reinhardt U.E. (2006). Health Care Spending and Use of Information Technology in OECD Countries. *Health Affairs*, 25(3): 819-831.

²⁷ Walker J., Pan E., Johnston D., Adler-Milstein J., Bates D.W. & Middleton B. (2/19/2005). The Value Of Health Care Information Exchange And Interoperability, *Health Affairs*, Web Exclusive.

²⁸ United States Department of Health and Human Resources. (2007). Health Information Technology Initiative: Major Accomplishments, 2004-2006. Washington, D.C.

²⁹ Partners Healthcare System, Inc. (2007). High Performance Medicine: Partners expands efforts to improve quality, safety, and efficiency. Needham, MA.

guidelines or protocol-based care.”³⁰ This improvement is due to enhanced levels of information available to providers at the point of care, providing them with a better base from which to make informed decisions.^{31,32}

While there are many studies and much published literature touting the benefits of HIE, it is also understood that the inefficiencies and expenses in our health care system cannot be solved with technology alone. Studies have shown that the implementation of EHR-S often initially leads to higher billings and declines in provider productivity. As we move more towards consumer-centric health care with shared-decision making, telemedicine, and a team approach to health care delivery, EHR-S may be more accurately viewed as insufficient but necessary ingredients to health care improvement. Therefore, absent other fundamental interventions that alter medical practice, it is unlikely that the United States health care bill will decline as a result of EHR-S alone.³³

Improving health care in the United States requires a societal commitment at all levels – a systematic and structural reengineering so that public health and health care entities can synergistically work together; and an alignment of incentives for all stakeholders, including government, private payers (e.g., employers and insurers), health care delivery organizations (e.g., managed care organizations, pharmacy benefits managers, nursing homes), patients, and consumers.³⁴

State and National Initiatives

In 2004, the President issued an Executive Order that provided leadership for the development and implementation of a nationwide HIT infrastructure intended to improve health care quality and efficiency.³⁵ This executive order created the Office of the National Coordinator for Health Information Technology (ONC). As a result of ONC’s efforts, a number of initiatives have been created to address HIT issues. In 2005, nine

³⁰ Chaudhry B., Wang J., Wu S., Maglione M., Mojica W., Roth E., Morton S.C. & Shekelle P.G. (2006). Systematic Review: Impact of Health Information Technology on Quality, Efficiency, and Costs of Medical Care [online]. *Annals of Internal Medicine*, 742-752.

³¹ California Health Care Foundation. (2006). California can lead the way in health information technology. Oakland, CA.

³² Jha A.K., Ferris T.G., Donelan K., DesRoches C., Shields A., Rosenbaum S. & Blumenthal D. (10/11/2006). How common are electronic health records in the United States? A summary of the evidence. *Health Affairs* Web Exclusive.

³³ Sidorov J. (2006). It Ain't Necessarily So: The Electronic Health Record And The Unlikely Prospect Of Reducing Health Care Costs. *Health Affairs*, July/August, 25(4): 1079-1085.

³⁴ Lubetkin E.I., Sofaer S., Gold M., Berger M.L., Murray J.F. & Teutsch S.M. (2003). Performance measurement to maximize individual and population health: is that where we are going? *American Journal of Public Health*, 93:406-411.

³⁵ The White House Office of the Press Secretary. (4/27/2004). Executive Order: Incentives for the Use of Health Information Technology and Establishing the Position of the National Health Information Technology Coordinator. Washington, DC.

major contracts were awarded by the United States Department of Health and Human Services (HHS) to initiate work in the following key areas:³⁶

- **Health Information Technology Standards Panel (HITSP)**
To harmonize industry-wide health IT standards.
- **Certification Commission for Healthcare Information Technology (CCHIT)**
To develop a certification process to accelerate the adoption of health information technology by creating an efficient, credible, and sustainable certification program.
- **Healthcare Information Security and Privacy Collaboration (HISPC)**
To enhance safety of health information by addressing variations in policies and State laws affecting privacy and security practices.
- **Anti-Fraud for Electronic Health Records**
To identify ways to enhance health care anti-fraud activities with the use of health information technology.
- **Nationwide Health Information Network (NHIN)**
To create prototype architectures for widespread health information exchange. The next step in this process is to integrate the results of the four prototype NHIN projects, taking the best of each and work with state and regional health information exchanges to create a network of networks, a true NHIN.³⁷
- **Adoption of Electronic Health Records**
To develop a standardized way to measure adoption of electronic health records.
- **Clinical Decision Support**
To form a group of qualified experts to advise federal activities concerning clinical decision support.
- **Health Information Exchange**
To develop consensus for best-practice guidelines from existing, state-level efforts to exchange health information.
- **Hurricane Katrina Information Network and Digital Health Information Recovery Project**
To foster widespread use of interoperable health IT in Gulf Coast regions affected by hurricanes in 2005.

Additional details on each of these initiatives can be found later in this report in Section 4, “Federal Initiatives.”

³⁶ United States Department of Health and Human Services. (2007). Health Information Technology Home. Washington, DC. Available: <http://www.dhhs.gov/healthit/>.

³⁷ Ibid.

Although ONC has been tasked with promoting HIT across the nation, it does not oversee programs that actually fund or provide health care. Much of the provision of health care services falls to other areas within HHS.³⁸ The level of technology and its use varies across these areas.

The Centers for Medicare and Medicaid Services (CMS)

CMS administers the Medicare and Medicaid programs, which provide health care to about one in every four Americans. With a budget of approximately \$650 billion annually, CMS plays a key role in the overall direction of the health care system. As the nation's single largest payer, CMS promotes the use of HIT to support states in their efforts to achieve safe, effective, efficient, patient-centered, timely, and equitable care. CMS seeks to share information on the effectiveness of HIT to help physicians and patients use treatments more effectively. Medicare provides health insurance for more than 43 million elderly and disabled Americans. Medicaid, a joint federal-state program, provides health coverage nationally for some 51.6 million low-income persons, including 25.1 million children, and nursing home coverage for low-income elderly. CMS also administers the State Children's Health Insurance Program that covers more than 4.6 million children.

The Agency for Healthcare Research and Quality (AHRQ)

AHRQ supports the nation's 10-year strategy to bring health care into the 21st century by advancing the use of information technology research on health care systems, health care quality and cost issues, access to health care, and effectiveness of medical treatments. AHRQ's recent initiatives include more than \$166 million in grants and contracts in 41 states to support and stimulate investment in HIT, especially in rural and underserved areas. AHRQ is focused on identifying challenges to the adoption, the solutions, and the best practices that will help providers successfully implement technology.

The National Institutes of Health (NIH)

NIH is considered by many to be the world's premier medical research organization, supporting over 38,000 research projects nationwide in diseases including cancer, Alzheimer's, diabetes, arthritis, heart ailments, and AIDS. NIH includes 27 separate health institutes and centers. HIT plays a critical role in NIH's efforts to lead medical and behavioral research for the nation. NIH uses HIT to provide, coordinate, and advance computational science in pursuit of knowledge about the behavior of living systems, and in the application of that knowledge to extend healthy life styles and reduce the burdens of illness and disability.

³⁸ United States Department of Health and Human Services. (2007). HHS What We Do. Washington, DC.

The Health Resources and Services Administration (HRSA)

HRSA provides access to essential health care services for people with low-income, who are uninsured or who live in rural areas or urban neighborhoods where health care is scarce. HRSA-funded health centers provide medical care to an estimated 14 million patients at more than 3,700 sites nationwide. HRSA promotes HIT to improve access to health care services for people who are uninsured, isolated, or medically vulnerable. In addition to providing access to health care, the agency helps prepare the nation's health care system and providers to respond to bioterrorism and other public health emergencies, maintains the National Health Service Corps, and helps build the health care workforce through training and education programs. HRSA administers a variety of programs to improve the health of mothers and children, and serves people living with HIV/AIDS through the Ryan White CARE Act programs. HRSA also oversees the nation's organ transplantation system.

The Indian Health Service (IHS)

Working with tribes, the IHS provides health services to 1.6 million American Indians and Alaskan Natives who represent more than 550 federally recognized tribes. The IHS provides care for nearly two million American Indians and Alaskan Natives across the United States. The IHS captures clinical and public health data through a variety of systems that allow providers to manage all aspects of patient care electronically, starting before the patient is ever seen and continuing through follow-up care. The Indian Health System includes 49 hospitals, 247 health centers, 348 health stations, numerous satellite clinics, residential substance abuse treatment centers, Alaskan Native village clinics, and 34 urban Indian health programs.

Department of Defense (DoD)

The DoD serves an important role in the United States and around the world in the area of security, humanitarian aid, peacekeeping, and disaster relief. The DoD recently achieved a major milestone using HIT. It launched global EHR-S to serve more than nine million service members, retirees, and their families worldwide. About 60,000 military health care professionals at DoD medical facilities in the United States and 11 other countries connect to the system.

Department of Veterans Affairs

The Veterans Health Administration (VHA) is a division of the U.S. Department of Veterans Affairs, and provides care for over five million veterans of the United States Armed Services. Approximately 70 million veterans, about one quarter of the nation's population, are potentially eligible for VA benefits and services because they are veterans, family members, or survivors of veterans. The VHA uses HIT to empower individuals to take a more active role in managing their health and health care. Through its "My HealtheVet" system, users can build their own personal health record (PHR); veterans receiving health care at a VA Medical Center can order prescription refills

online; veterans or family members can apply for VA benefits and services; users can access free of charge Medline Plus, the VA Health Education Library, and Healthwise, an Internet health information source; and users can learn about online computer and Internet training.

Federal HIT Accomplishments

In 2006, the cumulative efforts of the federal initiatives listed above resulted in a number of accomplishments that advanced HIT adoption.³⁹ Some of these accomplishments include:

- The American Health Information Community (AHIC) recommended that HIT efforts begin by focusing on consumer empowerment, chronic care monitoring, adoption of EHR-S, and incorporation of biosurveillance into HIT systems;
- A Presidential Executive Order was issued requiring federal agencies purchasing or delivering health care to use HIT based on interoperable standards;
- The Certification Commission for Healthcare Information Technology began certifying ambulatory care software;
- Changes were made to the Stark laws,⁴⁰ which would allow hospitals to provide more HIT resources and assistance to ambulatory care providers; and
- The four NHIN prototype health information networks have been developed and were demonstrated in Washington D.C. in January, 2007.

Privacy Protection Legislation

In addition to the above-described HIT initiatives promoting HIE, a number of statutes exist that impact the ability of various health care providers to share health information. These laws address the privacy protections afforded to health information regardless of whether that information resides within or outside of traditional medical records.

Examples include:

- The Family Educational Rights and Privacy Act of 1974 (FERPA);
- The Protection of Pupil Rights Amendment (PPRA) of 1998 (amended 2001);
- The 1975 Individuals with Disabilities Act (IDEA), reauthorized as the Individuals with Disabilities Education Improvement Act (IDEIA), addressed access to school records which include health information; and⁴¹

³⁹ United States Department of Health and Human Resources. (2007). Health Information Technology Initiative: Major Accomplishments, 2004-2006. Washington, DC.

⁴⁰ United States Department of Health and Human Services. (3/29/2004). "42 CFR parts 411 and 424 Medicare Program: Physicians' Referrals to Health Care Entities With Which They Have Financial Relationships (Phase II); Interim Final Rule." Federal Register, 69: 16054-16146.

- The Health Insurance Portability and Accountability Act of 1996 (HIPAA) established rules to improve access to health benefits under Title I. Privacy and security protection for personal health information and streamlined health care administration was established under Title II.⁴²

These laws, and the associated issues that arise relative to EHR-S adoption in Maryland, are discussed more fully in Section 3, Laws and Principles Guiding Adoption and Use of HIT/HIE.

In addition to the national efforts to promote HIT, at least 38 states, including Maryland, have introduced legislation addressing the promotion of HIT.⁴³ The governors of an additional 10 states have issued executive orders which called for the development and adoption of HIT strategies. State-level promotional activities involve creating commissions to develop plans for action, building quality into the proposed strategies, increasing HIT funding, and driving change through target-setting.⁴⁴

Maryland Legislative Activity

In recent years, the Maryland legislature proposed a number of bills that included aspects related to HIT. While most of the legislation lacked the necessary support for passage, it suggests that legislators are becoming increasingly aware of the potential risks and benefits that pertain to the increased use of technology. As a result, the Task Force predicts that future legislation will include aspects that relate to the privacy and security of electronic patient information. The following bills represent recent attempts to pass legislation with a technology component:

- 2006 – HB 1040 Task Force to Study Uncompensated Care in Maryland – failed;
- 2006 – HB 749 Medical Records – Permitted Disclosures – failed;
- 2006 – HB 626 Prescription Safety Act – failed;
- 2007 – SB 149 Maryland Health Care Access Act of 2007 – failed; and
- 2007 – HB 979 Health Information Exchange Pilot Project – passed.

⁴¹ Task Force to Study Electronic Health Records. Issues Raised by Expansion of the Use of Electronic Health Records in School Health Services. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

⁴² United States Department of Health and Human Services. (2002). General Overview of Standards for Privacy of Individually Identifiable Health Information. Washington, DC.

⁴³ Foundation for eHealth Initiative. (8/16/2006). State policy makers taking action to drive improvements in healthcare quality and safety through information technology. Washington, DC.

⁴⁴ Ibid.

In considering changes to the law, the Task Force believes that the legislature will seek to balance the privacy protections provided to consumers by existing statutes, against the consumer benefits that could result from the more widespread use of HIT.

EHR-S and HIE Initiatives across Maryland

Most hospitals in Maryland have plans in place to implement technology within the next few years. Many hospitals are in the planning stages of establishing a service area health information exchange (SAHIE). Connecting physicians and other health care providers with hospitals is a necessary step for implementing a statewide HIE.

An early attempt – the Maryland/D.C. Collaborative for Health Information Technology

The Maryland/D.C. Collaborative for Health Information Technology was established in May, 2004 with the goal of establishing a regional health information organization (RHIO) infrastructure linking all components in the Maryland/D.C. health care delivery area – physician offices, hospitals, clinics, labs, imaging centers, nursing homes, payers and patients – for secure and appropriate exchange of health information. Significant progress was made in forming this non-profit entity. Its accomplishments included an agreed-upon governance structure and the support of over 35 major health care organizations in the region, including community physicians, community hospitals, Johns Hopkins Medicine, University of Maryland Medical System, CareFirst BlueCross BlueShield, and Aetna. In June 2007, members of the Collaborative voted to disband the organization, as members felt that connecting disparate systems within their own organizations had greater value than sharing patient information with other hospitals.

The Metro DC Health Information Exchange

The Metro DC Health Information Exchange (MeDHIX) was established in 2004 with a one-year planning grant followed by a three-year implementation grant for the purpose of linking safety net providers regionally. Both grants were funded by AHRQ. The grant-funded efforts to establish a multi-jurisdictional regional HIE in Maryland, the District of Columbia, and Northern Virginia. The focus of the work was to link safety net providers caring for low income uninsured and under-insured patients for sharing electronic health information.

MeDHIX's lessons learned provide valuable insight into the required technology, funding mechanism, governance structure, legal support, staff training, and return on investment challenges. Participants of MeDHIX acknowledge efficiencies in cost and quality regarding caring for safety net patients, a group with typically fragmented and episodic care across multiple providers.

This Report

This Task Force report represents an aggregation of the Workgroup activities and a review of the relevant literature in order to understand the issues surrounding the current and potential expansion of EHR-S utilization in Maryland. The report addresses the role that EHR-S and HIE should play in improving the quality, safety, and costs of health care in Maryland, as well as the issues associated with electronic health information exchange.

Privacy and security are at the forefront of concerns when it comes to sharing health care information. This report examines the issues and policies relating to HIE: privacy and security, access, authorization, authentication, and auditing. Finally, this report presents a set of recommendations that are the result of the extensive research, discussion, and analysis performed by this Task Force.

Section 2 - Current Health Care Practices and Challenges for the Future

Drivers for Health Care Transformation

As noted in the introduction to this report, the cost of health care continues to increase at a rate greater than the inflation rates of other sectors of the United States economy, and is greater than health care cost increases in other countries. However, increases in health care costs do not necessarily equate to better quality health care. HIT has the potential to improve the quality of care by enhancing the information available to treating providers and patients. The Task Force identified barriers as well as catalysts to HIT adoption. The information in this section addresses catalysts to the implementation of new technologies, leading barriers in implementing HIT, and includes a brief discussion of the financing opportunities for community-based HIE initiatives.

Informational Sources and Needs in Medical Practice

For more than a decade, the IOM, a nonprofit organization with an honorific membership that produces documents focused on biomedical science, medicine, and health topics of interest to organizations funding its studies,⁴⁵ has been working to identify the issues, barriers, and potential strategies for promoting improvements in health care. In 1996, the IOM launched a project focused on assessing and improving the nation's quality of care. The IOM approach to addressing growing health care issues involved three phases. Phase One was a review of the literature, which concluded that the burden of harm stemming from system inadequacies was staggering. Phase Two outlined a vision for how the system should be changed in order to close the gap between what is known to be good quality care and what actually exists in practice. Phase Three focused on how to make the envisioned future health system operational, as described in the vision from Phase Two.

The IOM released two reports during Phase Two. These reports, "To Err is Human: Building a Safer Health System" ("To Err is Human"), released in 1999, and, "Crossing the Quality Chasm: A New Health System for the 21st Century" ("Quality Chasm"), released in 2001, stressed that reform around the margins of health care is inadequate to address system ills.⁴⁶ As mentioned earlier in this report, "To Err is Human" highlighted

⁴⁵ Institute of Medicine of the National Academies. (2006). Website Home page. Washington, DC. Available: <http://www.iom.edu/CMS/3239.aspx>.

⁴⁶ Institute of Medicine of the National Academies. (3/1/2001). Crossing the Quality Chasm: A New Health System for the 21st Century. Washington, DC.

the extent to which medical errors impact the nation's health. The second report, "Quality Chasm," described broader quality issues and identified six aims for care delivery redesign. These six aims, sometimes referred to as the **STEEEP** model, advocate that health care should be:

Safe	Avoid injuries to patients from the care that is intended to help.
Timely	Reduce the waits and sometimes harmful delays for both those who receive and those who give care.
Effective	Provide services based on scientific knowledge to all who could benefit and refrain from providing services to those not likely to benefit (avoiding under use and over use, respectively).
Efficient	Avoid waste, including waste of equipment, supplies, ideas, and energy.
Equitable	Provide care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.
Patient - centered	Provide care that is respectful of and responsive to individual patient preferences, needs, and values – ensuring that patient values guide all clinical decisions. ⁴⁷

The third phase of the IOM approach focused on how to make the envisioned future health system described in the "Quality Chasm" report operational. Several IOM reports have been used by a variety of public and private organizations to spur changes in the health care system. Examples of the reports produced by the IOM regarding health care quality include:

- Review of NASA's Space Flight Health Standards: Letter Report;
- Rewarding Provider Performance: Aligning Incentives in Medicare, Preventing Medication Errors: Quality Chasm Series;
- Emergency Care for Children: Growing Pains Emergency Medical Services At the Crossroads;
- Hospital-Based Emergency Care: At the Breaking Point;
- Medicare's Quality Improvement Organization Program;
- Performance Measurement: Accelerating Improvement;
- Insuring America's Health: Principles and Recommendations; and

⁴⁷ Baylor Health Care System Institute for Health Care Research and Improvement. (2007). STEEEP. Dallas, TX. Available: <http://www.baylorhealth.edu/bestcare/ihcri/steep.htm>.

- Patient Safety: Achieving a New Standard for Care.

The Task Force found that the push for a more consumer-responsive 21st century health system extends not only to the IOM, but to the federal government and many other organizations representing clinicians, health insurance plans, employers, consumers, foundations, academics, and quality improvement organizations.⁴⁸ These improvement efforts address three levels of system reform: environmental, health care organization, and the clinician-patient interface. The IOM Quality Chasm report acknowledged the potential value of information technology in this process to improve quality, safety, and accountability in health care. The Task Force believes that HIT use will improve the quality of care by reducing medical errors, in part by allowing for a more comprehensive medical record to drive informed decisions.^{49,50,51,52,53} The Task Force believes that promoting health care improvements using HIT in Maryland is consistent with other states' efforts to improve health care.

Gaps in Informational Systems

As mentioned earlier in this report, the Task Force identified several driving forces for the adoption of EHR-S and the progression toward HIE. Some of the driving forces identified are: the high costs of health care; the disparity in the quality of health care delivery; and issues regarding patient safety. Significant gaps exist between the current state of health information technology in the United States, and how it needs to function in order to realize the predicted benefits. For example, the Task Force found that the latest data from the National Ambulatory Medical Care Survey (NAMCS) indicate that only one-quarter of office-based physicians report using electronic medical record systems.⁵⁴ In the meantime, avoidable morbidity and mortality, such as that resulting from medication errors, is still occurring; access to health information is not always available when needed; and individuals do not have all the necessary tools to actively participate in managing their own health care.

⁴⁸ Institute of Medicine of the National Academies. (2007). Links to Related Organizations. Washington, DC.

⁴⁹ Adams B., Mann A.M. & Bauchner H. (2003). Use of electronic medical record improves the quality of urban pediatric primary care. *Pediatrics*, 111(3): 626-632.

⁵⁰ California Health Care Foundation. (10/2006). California can lead the way in health information technology. Oakland, CA.

⁵¹ Jha A.K., Ferris T.G., Donelan K., DesRoches C., Shields A., Rosenbaum S. & Blumenthal D. (10/11/2006). How common are electronic health records in the United States? A summary of the evidence. *Health Affairs* Web Exclusive.

⁵² Leape L.L. & Berwick D.M. (5/18/2005). Five years after to err is human: what have we learned? *JAMA*, 293(19): 2384-2390.

⁵³ Centers for Medicare and Medicaid Services. (2006). HIPPA Overview. United States Department of Health and Human Services. Washington, DC.

⁵⁴ Burt C.W., Hing E. & Woodwell D. (2006). Electronic Medical Record Use by Office-Based Physicians: United States, 2005. National Center for Health Care Statistics, Centers for Disease Control and Prevention. Atlanta, GA.

Future Vision of HIT / HIE Functionality

In a 2005 paper, Kaushal, et al., described their vision for a national health information network. The Task Force recognizes that there are gaps between this ideal system and the current state of health information.⁵⁵ This paper also identified seven critical functional capabilities for a national health information network:

- Electronic result viewing – the ability to access test results electronically;
- Electronic health records;
- Computerized physician order entry;
- Electronic claims submission;
- Electronic eligibility verification;
- Secure electronic patient communication; and
- Electronic prescription acceptance by pharmacies.

Kaushal, et al., also noted that not all health care stakeholders will have the need to access the same data elements. However, each stakeholder will need to have the necessary functionality to share health information effectively. For example, result viewing will likely be a requirement for physician offices, hospitals, skilled nursing facilities, home health agencies, and laboratories, but somewhat less critical for pharmacies.

Current Electronic Health Information Functionality

Research by the Robert Wood Johnson Foundation and the California Health Care Foundation suggests that the most developed capabilities of current HIE systems are electronic claim submission and eligibility checking.^{56,57} The Task Force found that adoption of electronic claims submission is high in Maryland. According to a 2006 MHCC report,⁵⁸ in 2005, the top six private payers in the state collectively received about 67 percent – 82 percent of their claims electronically; for Medicaid and Medicare, the percentages increased to roughly 90 percent and 93 percent, respectively.

⁵⁵ Kaushal R., Bates D.W., Poon E.G., Jha A.K. & Blumenthal D. (2005). Functional gaps in attaining a national health information network. *Health Affairs*, 24(5): 1281–1289.

⁵⁶ Robert Wood Johnson Foundation. (2006). *Health Information Technology in the United States: The Information Base for Progress*.

⁵⁷ California Health Care Foundation. (2006). *California can lead the way in health information technology*. Available: www.chcf.org.

⁵⁸ Electronic Data Interchange. (2006). *2006 Practitioner and Hospital EDI Health Information Exchange Review*. Maryland Health Care Commission. Baltimore, MD.

The Robert Wood Johnson Foundation⁵⁹ study projected that the most prevalent clinical capability for many stakeholders was the ability to access their own ordered test results electronically. In its projections of future adoption of technology, the research predicted that one-half to two-thirds of office practices would have this capability by 2010.

CPOE systems automate the ordering process, thereby ensuring standardized, legible, and complete orders. In contrast to office settings, the study estimated that CPOE would become more prevalent than EHR-S in inpatient settings.

Eliminating Barriers and Promoting Accelerants to HIT Adoption

The Task Force identified several key barriers to the adoption of EHR-S. These barriers include the high initial financial investment; the high initial amount of physician time investment; slow and uncertain return on investment; uncertainty regarding liability; and product immaturity.

The Task Force developed a number of documents that outlined issues and barriers across a variety of HIT, patient safety, and health care quality issues. These barriers were classified into seven categories: Financial; Legal; Privacy and Security; Technology; Workflow; Organizational; and Physician and Consumer Trust and Acceptance.

Financial Barriers

According to the AHRQ report, “Costs and Benefits of Health Information Technology,” “HIT has the potential to enable a dramatic transformation in the delivery of health care, making it safer, more effective, and more efficient. Some organizations have already realized major gains through the implementation of multifunctional, interoperable HIT systems built around EHR-S. However, widespread implementation of HIT has been limited by a lack of generalized knowledge about what types of HIT and implementation methods will improve care and manage costs for specific health organizations.” The AHRQ report also added that, “The quantifiable benefits of HIT are projected to outweigh the investment costs. However, the predicted time needed to break even varied from three to as many as 13 years.”⁶⁰

The Task Force found that HIT dissemination has not occurred rapidly due in part to the high costs of EHR-S for providers. These costs often include the initial capital investment for the purchase of the software and hardware, staff training, temporary decrease in productivity while the system is being implemented,^{61,62} and ongoing

⁵⁹ Robert Wood Johnson Foundation. (2006). Health Information Technology in the United States: The Information Base for Progress. Princeton, NJ.

⁶⁰ Costs and Benefits of Health Information Technology. 4/2006). AHRQ Publication No. 06-E006. United States Department of Health and Human Services. Washington, DC.

⁶¹ Hackbarth G. & Milgate K. (2005). Using quality incentives to drive physician adoption of health information technology. *Health Affairs*, 24(5): 1147-9.

⁶² Agency for Health Care Administration. (2006). First interim report to Governor Jeb Bush: Governor’s health information infrastructure advisory board. Tallahassee, FL.

maintenance. Because efforts to implement HIT within various parts of the health care system are relatively new, the knowledge base for the true impact of HIT adoption is limited from a cost/benefit perspective.⁶³ The Task Force agreed that the costs and benefits of adopting HIT are misaligned. High software costs usually fall to providers, while the anticipated cost savings from improved quality, safety, and efficiency, as well as a decrease in redundant tests and a reduction in costly care for preventable illnesses, are generally realized by payers and purchasers. It is estimated that health care purchasers could realize about 80 percent of the savings, which are estimated at between \$77 billion and \$140 billion annually, as a result of lower premiums and higher worker productivity.

While a great deal of work has been done to demonstrate the impact of clinical information systems on clinical decision making and the quality of care, little work has been done to demonstrate the impact of HIT on economic outcomes. Several studies^{64,65,66,67,68} suggest that there should be a long-term positive return on investment in EHR-S in the ambulatory care environment, and that a business case exists for implementation of standardized interoperability between EHR-S, but much more work needs to be done to solidly quantify the anticipated financial benefit. Providers are understandably cautious in adopting EHR-S due to the disruption in workflow and the resulting projected negative impact on revenue that transitioning to EHR-S would cause.

Legal Barriers

The Task Force believes that today's health care environment is overly litigious and, as a result, it can both speed and impede HIT adoption. Mandates imposed through regulations, accreditation standards, or as the result of judicial liability rulings, can push providers to adopt new treatment modalities and patient safety techniques that are based in HIT.⁶⁹

⁶³ Agency for Healthcare Research and Quality. (12/1/2006). Barriers to HIT implementation. United States Department of Health and Human Services. Washington, DC.

⁶⁴ Middleton B., Hammond W.E., Brennan P.F. & Cooper G.F. (2003). Accelerating U.S. EHR Adoption Boston, MA: Center for Information Technology Leadership. Journal of the American Informatics Association 12:13-19. DOI 10.1197.

⁶⁵ Pan E., Johnston D., Walker J.D., Adler-Milstein J., Bates D.W. & Middleton B. (2004). The Value of Healthcare Information Exchange and Interoperability. Boston, MA: Center for Information Technology Leadership, Partners Health Care System.

⁶⁶ Wang S.J., Middleton B., Prosser L.A., et al. (2003). A cost-benefit analysis of electronic medical records in primary care. American Journal of Medicine, 114(5):397-403.

⁶⁷ Birkmeyer C.M., Lee J., Bates D.W. & Birkmeyer J.D. (2002). Will electronic order entry reduce health care costs? Eff Clin Pract., 5(2): 67-74.

⁶⁸ Zdon L. & Middleton B. (1999). Ambulatory electronic records implementation cost benefit: an enterprise case study. Proc Hlth Infor Mgmt Sys Soc, 4:97-117.

⁶⁹ Rosenblatt R., Law S. & Rosenbaum S. (1997). Law and the American Health Care System. New York: Foundation Press.

In its 2006 report, “Health Information Technology in the United States: The Information Base for Progress,” the Robert Wood Johnson Foundation identified three categories into which legal issues concerning HIT can be grouped:⁷⁰

- **Concern over the actual or perceived legal burden of compliance** – For example, provider beliefs that HIPAA privacy restrictions might be violated or that HIT adoption would add burden and cost to the practice;
- **Concern regarding actual or perceived legal exposures associated with the disclosure of information** – For example, increased likelihood of unintentional release of information; and
- **Concern about newly created legal exposures** – For example, violations of legal standards, such as the Stark law, as discussed in Section 3, “Laws and Principles Guiding Adoption and Use of HIT.”

New issues created through the adoption of EHR-S and e-prescribing have yet to be addressed. There is general agreement by the physicians on the Task Force that pop-up alerts are triggered too easily in most e-prescribing software applications, even when these systems are set to the most severe threshold. As a result, physicians typically override them.⁷¹ Failure to follow a pre-programmed set of clinical decision support procedures could leave a provider vulnerable to malpractice litigation, as many malpractice claims are the result of misdiagnosis and medication errors.⁷² Conversely, the use of EHR-S and other HIT solutions may help reduce these claims by providing necessary documentation of the health care services provided in a legible format.

Technology Barriers

Technology itself can be seen as a barrier to its adoption. The Task Force noted three leading causes of HIT non-adoption:

- **Lack of Interoperability:** The Task Force identified the lack of interoperability as one of the main technical hindrances to the implementation of HIE. To achieve the promise of EHR-S and HIE, information must be able to be shared among disparate systems, a characteristic which is commonly referred to as interoperability. Today, electronic systems have many technological variations in how they operate and communicate. There are many proprietary (vendor-specific) systems and multiple standards in HIT. This has led to a fragmented infrastructure that lacks the ability to exchange information across different software applications.^{73,74,75}

⁷⁰ Robert Wood Johnson Foundation. (2006). Information Technology in the United States: The information Base for Progress. Princeton, NJ.

⁷¹ Grossman J.M., Gerland A., Reed M.C. & Fahlman C. (4/3/2007). Physicians’ Experiences Using Commercial E-Prescribing Systems. [Health Affairs](#) Web Exclusive.

⁷² Wrong Diagnosis.com. (2007). Wrong Diagnosis? See for Yourself.

⁷³ Kemper A., Uren R., Moseley K. & Clark S. (2006). Primary Care Physicians’ Attitudes Regarding Follow-up Care for Children With Positive Newborn Screening Results. [Pediatrics](#), 118(5): 1836-1841.

- **Software Immaturity:** The Task Force found in its study of EHR-S that many systems do not provide all the capabilities required for using electronic health information to improve care. This finding is supported by testimony to the AHIC Workgroup on Electronic Health Records, which stated that, “many tools are characterized by a lack of: actionable clinical decision support robust tools for determining, aggregating, and reporting performance measures; forms/structure for following episodes of care over time; forms for care coordination; interoperability sufficient to share information with colleagues, patients, payers, and quality monitoring organizations. Often, extensive software modifications are required to accommodate established workflows.”⁷⁶
- **Obsolescence:** Due in part to the immaturity of the software supporting HIE, continually evolving technologies prompt concern about purchasing technologies that will quickly become out of date. For example, the Task Force found that providers who independently adopt EHR-S early in a vendor’s development cycle might essentially be punished by needing to update or replace their existing systems as new EHR-S and standards are developed. In addition, the population of system vendors is changing as the market evolves, increasing the risk that a vendor could go out of business, or that software could become obsolete quickly.

Physician Concerns

In addition to concerns about technology, another leading barrier to HIT adoption is provider resistance.^{77,78} The Task Force believes that provider concerns are legitimate and must be adequately addressed in order to increase the rate of adoption. Some of these concerns are financial. Other causes of concern among the provider community include:

- **Disruptions to Workflow:** The transition requires workflow changes which, in the short-term, decrease productivity and thereby reduce revenue for the provider.^{79,80} Workflow disruption not only reduces income, but may lead patients to develop negative perceptions of the provider if the transition results in

⁷⁴ Health Policy Institute of Ohio. (2005). Assessing health information technology in Ohio. Columbus, OH.

⁷⁵ Sujansky W. & Chang S. (2006). The California clinical data project: a case study in adoption of clinical data standards for quality improvement. *Journal of Health Information Management* v2(3): 71-78.

⁷⁶ American Health Information Community Workgroup on Electronic Health Records. (2006). Summary of the Web Conference Held Tuesday, August 15, 2006, Testimony regarding EHRs, Dr. Peter Basch. United States Department of Health and Human Services. Washington, DC.

⁷⁷ Health Policy Institute of Ohio. (2005). Assessing health information technology in Ohio. Columbus, OH.

⁷⁸ Kemper A., Uren R., Moseley K. & Clark S. (2006). Primary Care Physicians' Attitudes Regarding Follow-up Care for Children With Positive Newborn Screening Results. *Pediatrics*, 118(5): 1836-1841.

⁷⁹ Hackbarth G. & Milgate K. (2005). Using quality incentives to drive physician adoption of health information technology. *Health Affairs*, 24(5): 1147-9.

⁸⁰ Agency for Health Care Administration. (2006). First interim report to Governor Jeb Bush: Governor’s health information infrastructure advisory board. Tallahassee, FL.

excessive wait times. There is also concern regarding the impact of HIT in the examination room. Physicians want to interact with patients, not computers.⁸¹

- **New Workflows:** The Task Force recognizes that EHR-S create an opportunity to provide new modalities of care that might be highly efficient and effective (such as care coordination, chronic care management, and proactive care), but are currently not subject to reimbursement under most payer plans. Providers are concerned that this may further exacerbate the existing negative business case for HIT adoption.
- **Provider Skills:** Medicine as it is practiced today is primarily a reactive medical model⁸² because most providers treat patients after they become ill, rather than keeping them healthy. With the implementation of electronic tools, there is a need to train/retrain physicians to provide proactive/population-based care. Providers also need to train themselves and their staff to use new technology.
- **Organizational Barriers:** Attributes of the organizations in which care is provided also influence HIT adoption. For example, evidence suggests that large provider practices are more likely to adopt HIT than small practices.^{83,84} This finding also holds true for hospital adoption of CPOE, and likely is a reflection of access to both capital and human resources.⁸⁵

Consumer Trust and Acceptance

The Task Force firmly believes that consumers are key to the acceptance of HIT. Generally speaking, consumers will accept the use of HIT to improve their health care, but they have a great deal of concern over the misuse or inappropriate access to medical information, which could result in the loss of employment or insurance.⁸⁶ Patients and providers alike are concerned about the potential for the improper use of patient information.⁸⁷ The Task Force is particularly concerned about the irreversible damage information misuse might have on patients. Trust, privacy, security, and consumer control of their information are key issues that need to be addressed if HIT is to gain broad consumer acceptance.

⁸¹ Huchinson J. & DeLorimier A. (2006). Five lessons learned with electronic military medical records. COCITNEWS Fall, 4(2): 6.

⁸² Agency for Healthcare Research and Quality. (2006). Barriers to HIT implementation. United States Department of Health and Human Services. Washington, DC.

⁸³ Audet A.M., Doty M., Peugh J., Shamasdin J., Zapert K & Schoenbaum S. (12/7/2004). Information Technologies: When will they make it into physicians' black bags? Medscape General Medicine.

⁸⁴ Burt C.W. & Sisk J.E. (2005). Which physicians and practices are using Electronic Medical Records? Health Affairs, 24(5): 1334-1343.

⁸⁵ Ash J.S., Gorman P.H., Seshadri V. & Hersh W.R. 2004). Computerized Physician Order Entry in US Hospitals: Results of a 2002 Survey. Journal of American Medical Informatics Association, 11(2):95-99.

⁸⁶ Neville R.G., Green A.C. & Lewis S. (2006). Patient and health care professional views and experiences of computer agent-supported health care. Information Primary Care, 14(1): 11-5.

⁸⁷ Strategies for Tomorrow, Inc. (2007). An Assessment of Hospital Privacy and Security Policies and Business Practices and Their Impact on Electronic Health Information Exchange. Indianapolis, IN.

Consumers have been noticeably absent to date in the development of policies concerning the exchange of and access to their personal health information, and particularly true for privacy and security policies. Consumers have not been engaged in technology policy development for a variety of reasons, including the difficulty in identifying representative or knowledgeable consumers, the limited resources available to conduct consumer outreach and education, and the lack of consumer understanding or belief in the benefits of technology. The diversity of the consumer population, and the differences in ethnicity, race, socio-economic status, disability, health status, and insurance status, are the primary challenges to effective consumer participation in technology policy-making.

ONC's efforts to include consumers as participants in technology development illustrates a shift from a provider-centric system, to one that places the consumer in a more central role which empowers them to use and control access to their own personal health information. The Task Force believes that there is a need for consumer rights to be defined and incorporated into policy and legislation that supports affordable, easy, and timely access to personal health information.⁸⁸

Accelerants to HIT Adoption

Incentives for HIT adoption need to be identified, as well as the barriers. The Task Force identified a need to develop pilot initiatives in both the public and private sector. The "Bridges to Excellence" program is an example of a private sector initiative sponsored by a local health care payer. This program provides financial incentives to providers for demonstrated quality improvements using HIT.⁸⁹ Payers are also beginning to experiment with new payment models that reimburse e-care, in which providers communicate with patients via email.⁹⁰ For example, some Blue Cross plans across the country, including California, Colorado, New Hampshire, Florida, Massachusetts, and Tennessee, are beginning to reimburse providers for e-care services. A leading public sector initiative is the "Healthcare Modernization Act," which mandates CMS to fund approximately 100 practices in four states to adopt and use HIT to improve the quality of care for Medicare recipients with certain chronic conditions.⁹¹

⁸⁸ California Health Care Foundation. (10/2006). California can lead the way in health information technology. Oakland, CA.

⁸⁹ Bridges to Excellence. (2007). For Physicians & Providers. Washington, DC. Available: <http://www.bridgestoexcellence.org/Content/ContentDisplay.aspx?ContentID=4>.

⁹⁰ Freudenheim, M. (5/2/2005). Digital RX: Take Two Aspirins and E-Mail me in the Morning. New York Times.

⁹¹ Social Security Administration. (2007). The Medicare Prescription Drug, Improvement, and Modernization Act of 2003. P.L. 108-173. Enacted December 8, 2003. Washington, DC.

Privacy Issues – Decreasing/Eliminating Information Gaps

Appropriate privacy and security safeguards are key to the successful adoption of EHR-S. The Task Force acknowledged the importance of ensuring that privacy and security policies keep pace with rapid changes in technology. To be a relevant and guiding force, privacy and security policies must reflect current health care electronic capabilities. The Task Force supports an effective integration of adequate privacy and security safeguards of patient information and appropriate use and disclosure.

Federal and state privacy and security statutes, relating to HIE have emerged in a variety of legislative actions including infectious disease reporting, fraud and abuse investigations, parental notification for receipt of health care in schools, and health care professional licensure regulations.^{92,93} Additionally, legislation has been enacted regarding electronic signatures, authentication and retention of medical records, the use of telemedicine, antitrust pricing protections, and the Stark laws that address fraud and abuse.⁹⁴ These laws were have been enacted when health care information technologies were different or nonexistent. These laws are often focused on populations with specific issues, i.e., minors, persons with sexually transmitted diseases, or mental health issues. The Task Force identified instances where these laws compete, or at a minimum, introduce confusion when EHR-S are implemented.

Contextual-Based Access

Contextual-based access to protected information, as opposed to role-based or user-based access, was discussed by the Task Force as a way to increase existing privacy and security protections. Patient health records contain a variety of information, from demographics to HIV status. Not everyone who has a need to look at a health record needs to access all of the information in the record. Established protocols and procedures for sharing patient information exist for paper records; these procedures usually require human judgment for information to be released. Electronic information sharing removes the human element, and the judgment to release information could conceivably reside in the system itself. The Task Force favored contextual access for protecting health information. Current laws provide for these protections,⁹⁵ but the programming to incorporate them into a computerized system has not been fully implemented, especially when data is electronically shared between organizations.

⁹² Benson K. (2006). eHealth Initiative: an organization at work for you! *COCITNEWS* Fall, 4(2): 6.

⁹³ Health Policy Institute of Ohio. (2005). *Assessing health information technology in Ohio*. Columbus, OH.

⁹⁴ *Ibid.*

⁹⁵ HIPAA Administrative Simplification, Regulation Text, 45 CFR Parts 160,162,164, (Unofficial Version as amended through February 16, 2006), Pages 36-84. United States Department of Health and Human Services. Washington, DC.

Electronic Tools for Storing, Managing, and Sharing Health Care Information

Electronic Medical Records

An electronic medical record (EMR) is commonly defined as a medical record in an electronic format. The American Health Information Management Association (AHIMA) defines an EMR as, “the computerization of health record content and associated processes usually referring to an electronic medical health record in a physician office setting or a computerized system of files.”⁹⁶ The Task Force expanded this definition to include all digital information about a patient that is stored in EHR-S, which is discussed in more detail in the next section.

The information presented in Figure 1 provides a basis for understanding national technology adoption.⁹⁷

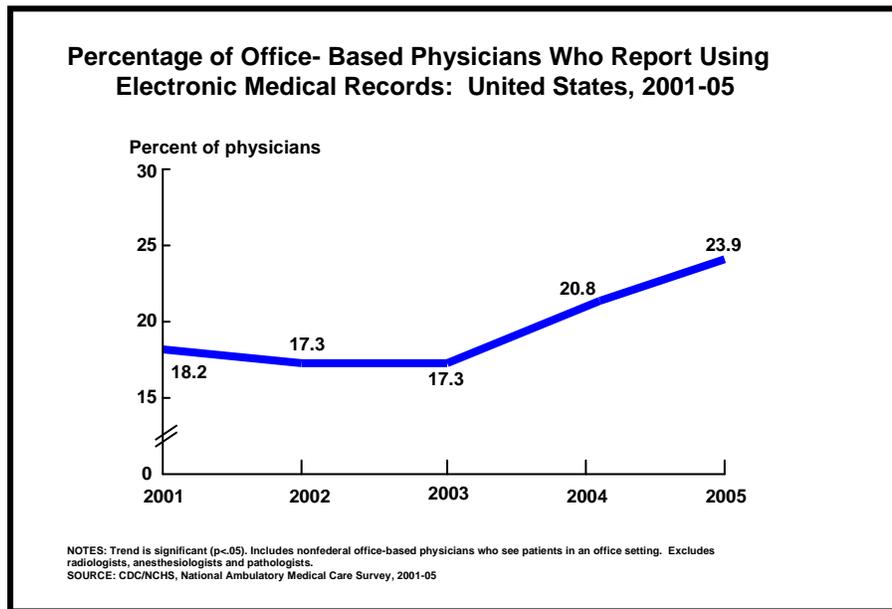


Figure 1 Overall percentage of physicians who report using EMR⁹⁸

The rate of adoption of EMRs by physicians seems to correspond closely to the size of the practice. The adoption rate across providers, however, is widely variable. Larger practices have a much greater rate of EMR adoption than smaller practices. While

⁹⁶ American Health Information Management Association (AHIMA). (2005). Definition of Electronic medical record. Chicago, IL.

⁹⁷ Burt C., Hing E. & Woodwell D. (2005). Electronic Medical Record Use by Office-Based Physicians: United States. National Center for Health Statistics. Atlanta, GA.

⁹⁸ National Center for Health Statistics. (2006). National Ambulatory Medical Care Survey 2005. Centers for Disease Control and Prevention. Atlanta, GA.

23.9 percent of physicians overall reported using an EMR, only 16 percent – 20 percent of physicians in small practices used EMRs. This contrasts widely with the 46 percent of physicians in practices of 11 or more physicians who reported using EMR's. Smaller practices, which provide the majority of health care services, lag behind. This indicates that current incentives are driving larger practices to implement EMRs, but they do not effectively promote similar adoption patterns in smaller practices; new strategies will need to be developed to drive adoption in small physician practices.

Electronic Health Record Systems

The Task Force supports the use of the term EHR-S, rather than EMRs, as the preferred term for provider HIT. The five leading characteristics of EHR-S identified by the Task Force include:

- Longitudinal collection of electronic health information for and about individuals;
- EHR-S are part of a unified, host system which maintains the health information of multiple individuals;
- Immediate electronic access to individual level information by only authorized users;
- Serves as the individual's legal medical record; and
- Individual medical providers (e.g., physicians and other caregivers, hospitals, nursing homes, ambulatory settings) maintain EHR-S.

The Task Force defined EHR-S as capable of:

- Providing knowledge and decision support to enhance the quality, safety, and efficiency of patient care; and
- Supporting efficient processes for health care delivery.

The shared hope among providers is that EHR-S can improve the quality of patient care by reducing medical errors, eliminating problems caused by illegible handwriting, providing clinical decision support, and enabling providers to share and merge data from multiple sources.⁹⁹ For example, electronic sharing of information could allow an emergency department physician to obtain information on existing medical conditions, allergies, and current medications for a patient who may be unable to communicate this information.

⁹⁹ Huchinson J. & DeLorimier A. (2006). Five lessons learned with electronic military medical records. COCITNEWS Fall, 4(2): 6.

Personal Health Records

Although EHR-S offer a number of potential benefits, it also has limitations in making data accessible to the consumer. As a result, interest in PHRs has been increasing. The Task Force acknowledged the growing interest in PHRs among consumers, payers, and employers. AHIMA defines a PHR as, “an electronic, universally available, lifelong resource of health information needed by individuals to make health decisions.” PHRs aggregate health information into one location that is controlled by the consumer.¹⁰⁰ Consumers also control access and management of the information stored in the PHR. PHRs utilize electronic resources that are password protected, so that only people who are authorized by the individual can access the information.¹⁰¹

A number of payers have begun to offer free PHRs to subscribers with pre-populated information based on prescriptions filled and diagnostic codes for services received. However, the Task Force could not identify any payers that allow subscribers to transfer information from one payer-based PHR to another. The ability to transfer PHR information is important, because it allows an individual’s health information to be continuous over time. Because of the value behind a continuous record, payers such as Blue Cross and Blue Shield and Humana, are beginning to explore PHR to PHR transferability.

Even though PHRs are patient-centric, the Task Force believes that the health care system as a whole may benefit from their use. Over time, PHRs have the potential to improve data access, documentation, and medication compliance, as well as improve provider communication with patients.¹⁰² If providers have access to PHRs, health care decisions may be made based on a broader set of information than is currently available. Payers may use PHRs to support wellness and preventive care, improve customer service, and promote medical record portability. Employers may support wellness and preventive care at the individual and company level. In order for PHRs to be accepted and used, there must be clearly defined data ownership rights, privacy obligations, and identification of potential liabilities for all stakeholders.

Expanding PHR use by consumers will take a concerted effort on the part of the health care community. According to a survey released in May 2006,¹⁰³ 83 percent of 1,095 consumers surveyed had no experience with PHRs. Approximately 90 percent of those who created a PHR did so using paper or common computer applications, such as a word processing application; they did not use a specific PHR software product. Four percent of respondents said they planned to use a PHR within the next year or two, and 3 percent

¹⁰⁰ Brune B. (9/6/2006). Personal health records pull patient’s history into one file. Houston Chronicle. Houston, TX.

¹⁰¹ American Health Information Management Association. (2007). The Role of the Personal Health Record in the EHR. Chicago, IL.

¹⁰² National Committee on Health and Vital Statistics. (2/2006). Personal health records and personal health record systems. Department of Health and Human Services. Washington, DC.

¹⁰³ Health Industry Insights. (2006). Health Industry Insights Consumer Survey 2006. Framingham, MA. Available: http://www.idc.com/downloads/HIIconsumersurveyPHRs_Q&A.pdf.

said they would use a PHR in the next one to six months. Two percent of respondents said they planned to use a PHR in six to 12 months, 1 percent said they planned to use a PHR within the next 30 days, and eight percent of respondents had no plans to use a PHR. In addition, 82 percent of respondents were uncertain if they would ever use a PHR. About half of respondents were unaware of the concept of a PHR, but 18 percent said they would consider using a PHR, if a physician recommended it.¹⁰⁴

Health Information Exchange

The Task Force found that the lack of a national system for sharing health information creates results in inefficient and redundant health care. The federal government estimates that effective digital record keeping could lead to \$140 billion savings in health care costs annually.¹⁰⁵ However, most experts agree that exchanging health information effectively is extremely complicated, and will take more than simply having a working model to be successful.

HIE is defined as, “the mobilization of health care information electronically across organizations.”¹⁰⁶ It provides the capability to move clinical information electronically between disparate health care information systems while maintaining the meaning of the information being exchanged. HIE is an electronic means to facilitate access to and retrieval of clinical data in order to provide safer, more timely, efficient, effective, and equitable patient care.

Formal organizations have emerged in many regions and states over recent years to provide both technology and governance support for HIE efforts. These organizations, often called Regional Health Information Organizations or “RHIOs,” are usually geographically-defined entities which develop and manage a set of contractual conventions and terms, arrange for the means of electronic exchange of information, and develop and maintain HIE standards.

The Task Force evaluated many HIE efforts across the country and identified some areas of commonality among successful efforts. Although HIE initiatives differ in many ways, survey results of states, regions, and communities indicate that those who are experiencing the most success share the following characteristics:¹⁰⁷

- Governance by a diverse and broad set of community stakeholders;

¹⁰⁴ Ibid.

¹⁰⁵ California Health Care Foundation. (3/2005). *iHealth & Technology*. Oakland, CA.

¹⁰⁶ eHealth Initiative. (2005). *eHealth Initiative Foundation's Second Annual Survey of State, Regional and Community-Based Health Information Exchange Initiative and Organizations - Release August, 2005 Definition and Select Characteristics of HIE Initiatives*. Washington, DC.

¹⁰⁷ eHealth Initiative. (2007). *eHealth Initiative Foundation's Second Annual Survey of State, Regional and Community-Based Health Information Exchange Initiative and Organizations - Release August, 2005*. Washington, DC.

- Development and assured adherence to a common set of principles and standards for the technical and policy aspects of information sharing that address the needs of every stakeholder;
- Development and implementation of a technical infrastructure based on national standards to facilitate interoperability;
- Development and maintenance of a model for sustainability that aligns the costs with the benefits related to HIE; and
- Use of metrics to measure performance from the perspective of patient care, public health, provider value, and economic value.

Key Operational Challenges

The Task Force believes that implementing HIE and protecting patient privacy is more complex than just installing hardware and software. The HIE must be a source of trusted health information and medical records. Protecting patient privacy involves implementing robust security policies and procedures to ensure that patient information is accurate, timely, and accessed only by those who need to know the information when they need to know it. The Task Force carefully reviewed the following security considerations:

- **User Identify Proofing and User Authentication:** Establishing that the user is who he or she claims to be, and assuring that the logged-on user is the user who was identify-proofed.
- **User Authorization:** Assuring that the user is authorized to access the requested information.
- **Audit Capabilities:** Tracking all access to and use of information. HIPAA requires a covered entity to provide information to consumers regarding access to their information, and applies to both paper and electronic record access.
- **User Access Privileges:** Defining what information the user is authorized to access.
- **Patient Record Matching:** The United States does not have a master patient identifier that can be used to uniquely identify all of the medical records belonging to an individual throughout their lifetime. It is important to assure that the records provided to care givers contain the records for an individual, but do not contain information belonging to any other individual. The process of making this assurance is referred to as patient record matching through a master person index (MPI). In an MPI, individuals are uniquely identified by specific data, such as name, date of birth, address, telephone, and other criteria.
- **Patient Record Locator Service (RLS):** In addition to uniquely identifying patients and matching their records, the HIE should also be able to locate all the sources of

health care information about a person. Throughout one's lifetime, a person may be known by multiple names and seen by many different health care providers in many different locations. The job of an RLS is to identify all records that are a potential match for an individual patient, and then present them to the MPI for verification and final matching.

HIE Architecture

Four common HIE architecture models exist today, and include the centralized model, the distributed model, the consumer-centric hybrid/federated model, and the health record bank. The Task Force widely supports a consumer-centric hybrid federated model for HIE. This model allows providers to share patient information while maintaining efficiency and security.

The following describes each of these models:

- **Centralized Model:** Health information is transmitted from the provider who generated the information to a central database. Requests for information are made to a centralized database.
- **Distributed Model:** Very little information about patients is stored centrally – only enough to identify the patient and those provider sites that contain information about that patient. Each request for information generates a query to each provider-housed database in the exchange.
- **Consumer-Centric Hybrid-Federated Model:** Limited patient information is stored centrally, such as patient demographic information, drug and other allergies, current medications and current problem lists or diagnoses. Additional information is retrieved from other sources if needed.
- **Health Record Bank:** A central electronic health records repository or bank, where consumers elect to store key elements of their health records. A health record bank would in turn share the aggregated consumer health information when and where needed, with the consumer's consent.

The structure, funding, mission, and technology of HIEs are ultimately determined by the needs, opportunities, and challenges inherent to each region. Factors determining the model upon which an HIE is based include the types of participating institutions, their size and technological sophistication, the driving forces and leadership behind the HIE, and the geographic area. Whichever model is chosen, security and privacy policies must be addressed early in the planning process.

Governance

Forming an organizational infrastructure and establishing a governance board is often the first, and one of the most important, tasks a multi-stakeholder group faces when forming an HIE. Without an effective organization, efforts to promote HIE will likely fail.

Governance of an HIE should reinforce the mission of the HIE as a trusted, neutral convener of health information providers. The Task Force believes that HIE governance should represent all stakeholders. Several considerations were identified that should be addressed in the formation of HIE governance policies, and include defining the source of authority or power; the choice of legal entity (e.g., government agency or not-for-profit entity); the governing structure (e.g., Board or decision-making group); and an approach to maintaining transparency in the decision-making process.

The responsibility of building and managing an HIE within a community is a very difficult task. A multi-stakeholder group formed to develop an HIE must align both practical considerations and political forces to gain stakeholder support and deliver expected results. The balance required to achieve this varies from one community to another. The Task Force identified some basic questions for communities to consider when developing an HIE:

- What is the overall mission of the HIE?
- What is the recommended scope and role of the HIE?
- What stakeholders will participate in the organization, and what rights will each stakeholder group have?
- What resource support would the HIE seek?
- Will a new organization be formed, or will an existing organization take responsibility for the HIE?
- Will the organization be for-profit or not-for-profit?

Answers to these questions are based on community needs and preferences. The Task Force believes that addressing these questions is crucial to identifying multi-stakeholder groups to take the lead in planning and promoting HIE.

School Health Records

Several factors are driving efforts to involve schools in the improvement of children's health status and increasing access to care for the underserved. The "No Child Left Behind" legislation, with its required testing and demonstrated annual yearly progress requirements, is compelling school districts to acquire new tools that help children learn. Addressing untreated or inadequately treated health problems among students is one of many strategies being pursued.¹⁰⁸

School systems across the country are increasingly adopting and implementing student information systems with health record functionality, but health record functionality typically represents a small segment of the capability of these systems. The Task Force

¹⁰⁸ Lear J.G. (2007). Health At School: A Hidden Health Care System Emerges From The Shadows, Julia Graham Lear. *Health Affairs* 26(2): 409–419; 10.1377/hlthaff.26.2.409.

discovered that most of the functionality of these systems is devoted to student demographic information, academic assessment information, grades, transportation management, library management, cafeteria management, and parent access via the Internet, as well as the functions that support the data aggregation and reporting to school districts, state departments of education, and education authorities.

e-Prescribing

In recent years, advances in web technologies have enabled vendors to develop products that improve the prescribing process. Hand-held devices with user-friendly interfaces and wireless network technologies offer new approaches to the traditional way of prescribing medications. The Task Force defined e-prescribing as "the use of an electronic system to generate and transmit prescriptions to a pharmacy for filling. The basic e-prescribing process includes: an embedded drug reference program at the point of prescribing (to assess mechanisms of action, recommended dosages, drug interactions, and side effects), supporting data (demographics, allergies, list of drugs the patient is taking, and formulary information); and decision support functions to monitor drug/drug, drug/allergy, and drug/disease interactions. A more advanced electronic prescribing system is integrated with electronic health and personal health record systems."¹⁰⁹

In recent years, the benefits of e-prescribing to consumers have gained recognition by consumer organizations. The National Consumers League, a consumer advocacy group, is one example of a national coalition promoting the safe use of medications through e-prescribing. CMS reported that in 2005, between five percent and 18 percent of physicians had e-prescribing capabilities.¹¹⁰ e-Prescribing technology allows providers to prescribe medications and electronically submit prescriptions to a pharmacy designated by the patient.¹¹¹ e-Prescribing can reduce some medication errors compared to handwritten prescriptions, which are often illegible. Additionally, the ability to add clinical decision support by providing information regarding allergies and other contraindications helps prevent errors. e-Prescribing also helps providers choose medications that are covered under the patient's health care prescription drug plan.¹¹²

New regulations that support adoption of e-Prescribing and EHR-S were announced on October 5, 2005 by HHS Secretary Mike Leavitt. These proposals will speed adoption of HIT by hospitals, physicians, and other health care providers.

¹⁰⁹ Task Force to Study Electronic Health Records E-prescribing Subgroup. (2007). Definition of Electronic Prescribing. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

¹¹⁰ Ferris N. (11/2/2005). CMS finalizes e-prescribing rules. Government Health IT. Available: <http://www.govhealthit.com/online/news/91285-1.html>.

¹¹¹ Office of the National Coordinator for Health Information Technology. (2006). E-Prescribing. United States Department of Health and Human Services. Washington, DC.

¹¹² Cronin K. & Daniel J. (2006). E-Prescribing Discussion. Office of the National Coordinator Office for Health Information Technology for Technology.

The Economics/Financing of Health Care Delivery and HIE

The Task Force concluded that identifying an appropriate funding mechanism is a critical first step in establishing an HIE. According to a 2005 eHealth Initiative survey,¹¹³ funding is the greatest challenge for all HIE efforts. Ninety-one percent of all respondents cited “securing upfront funding” as either a very difficult or moderately difficult challenge. Survey respondents viewed state agencies, foundations, and philanthropic organizations as sources of funding opportunities for HIEs. Founding members and other stakeholders of HIEs often provide start-up assistance with both monetary and in-kind contributions. In addition, a number of major corporations, including vendors and payers, have provided start-up funding and technical assistance.

The Task Force expressed concern about the financial viability of HIEs around the nation. HIE initiatives must consider funding sources for both initial implementation and ongoing operations. Listed below are the results from the above-mentioned 2005 eHealth Initiative survey, which asked respondents to list the current revenue sources for upfront and ongoing funding of their HIE initiatives:¹¹⁴

- Ninety-one percent of all respondents cited “securing upfront funding” as either a very difficult or moderately difficult challenge.
- Just under half (46 percent) of all persons responding to the survey reported using federal government grants and contracts as a current revenue source for their upfront funding, while 48 percent of advanced stage initiatives cited this same source of funding as the source for maintaining their ongoing operations.
- Approximately one-quarter of all respondents cited advance payments from hospitals, 12 percent from purchasers, 12 percent from private sector investments, 11 percent from payers, 6 percent from labs, and twenty-one percent cited philanthropic grants as revenue sources for upfront development costs.
- Alternative funding sources to maintain ongoing operations included advance payments from data sources; with 38 percent of these HIE efforts receiving advance payments from hospitals, and 33 percent receiving advance payments from physician practices. A smaller number of advanced HIE efforts received advance payments from other stakeholders, including public health (19 percent), laboratories (15 percent), payers (15 percent), and purchasers (nine percent) to support ongoing operations.¹¹⁵

¹¹³ eHealth Initiative. (2005). eHealth Initiative Foundation's Second Annual Survey of State, Regional and Community-Based Health Information Exchange Initiative and Organizations - Release August, 2005 Definition and Select Characteristics of HIE Initiatives. United States Department of Health and Human Services. Washington, DC.

¹¹⁴ Ibid, pp. 30-31.

¹¹⁵ Ibid.

These results can be seen graphically in Figure 2.

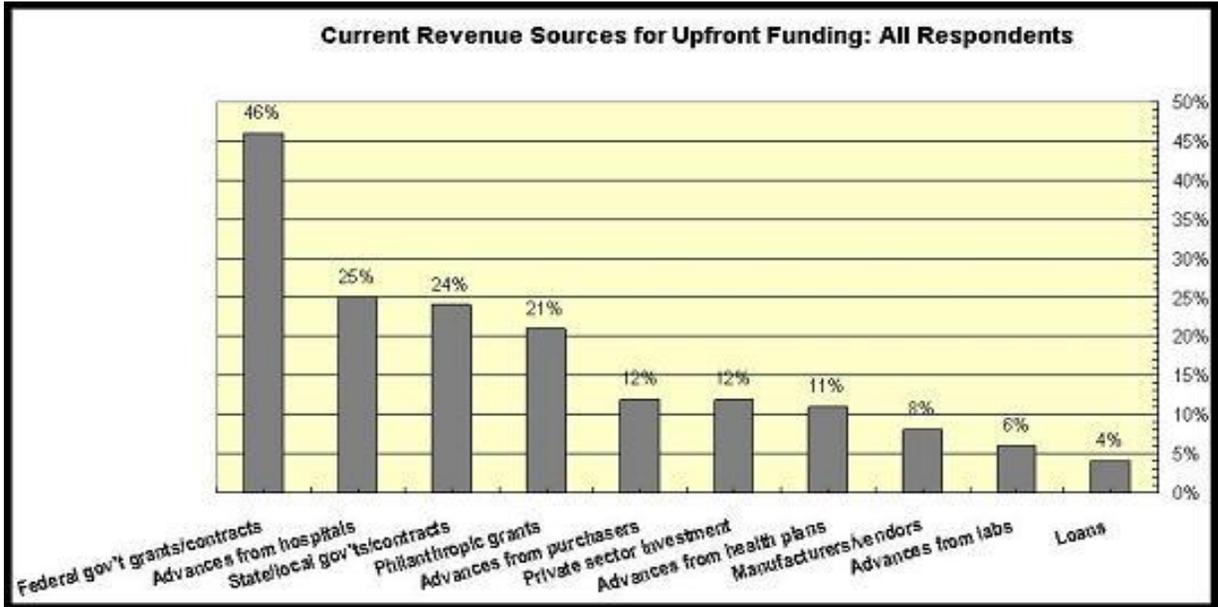


Figure 2 Current Revenue Sources for Upfront Funding: All Respondents¹¹⁶

The Task Force agreed that significant opportunities exist for an HIE to positively impact the health and well-being of Marylanders.

Misalignment of Costs/Benefits

Misaligned Incentives

The Task Force supports the widely held opinion that HIT adoption is lagging due to a misalignment of incentives between providers who are responsible for purchasing technology, and payers and purchasers who benefit from its use.¹¹⁷ According to a recent report by the MedStar Health e-Health Initiative, “HIT has been stymied by a misalignment of costs and benefits associated with investment in technology, particularly in small and medium-size practices where 80 percent of medicine is practiced.”¹¹⁸

A number of studies concluded that the benefits of technology do not accrue to those who make the investment. Under fee-for-service reimbursement models, providers have little

¹¹⁶ Ibid.

¹¹⁷ Berner E., Detmer D.E. & Simborg D. (2005). Will the wave finally break? A brief view of the adoption of electronic medical records in the United States. *Journal of the American Medicine Informatics Association*, 12:3–7.

¹¹⁸ Medstar eHealth Initiative. (3/2005). At A Tipping Point: transforming Medicine with Health Information Technology: A Guide for Consumers. Washington, DC.

incentive to adopt EHR-S, as there is no incentive for the provider to invest in the high up-front costs required for implementation.¹¹⁹

As mentioned earlier, while the initial investment and ongoing costs of HIT are borne by medical providers, the benefits, at least in the outpatient setting, are mostly realized by payers, who will see costs decline because of fewer errors, greater formulary compliance, better disease management, and reductions in duplicative and unnecessary care.¹²⁰ While the evidence shows that hospitals and large health care systems should be able to realize at least a modest return on investment,¹²¹ it has been more difficult for many medical providers to develop a business case that demonstrates a return on investment, at least in the near term. Task Force members agree that providers will also experience a reduction in income in the early stages of technology adoption due to a decrease in productivity.

Generally speaking, providers realize that there are benefits associated with quality and patient safety through the use of technology. Unfortunately, the current payment regime in health care neither provides incentives nor rewards quality improvement.¹²² A recent study for the Foundation for eHealth Initiative concluded that, “Policies are complex and contradictory and often do not create incentives for or reward quality improvements such as reduced medical errors and increased patient safety.”¹²³

The health care reimbursement system today is designed to pay providers for procedures and episodic clinical care, but not to reimburse for health care coordination or information management, which leads to quality improvement. The Task Force finds that payment reform that is oriented to support quality outcomes, as well as emerging modalities of care, will likely be the most effective in successfully promoting HIT adoption and healthcare transformation.¹²⁴

HIPAA, the Legal Record

The HIPAA privacy rule requires that organizations identify their “designated record set,” which is defined as, “a group of records maintained by or for a covered entity that is: (i) the medical records and billing records about individuals maintained by or for a

¹¹⁹ Middleton B, Hammond E., Brennan P.F. & Cooper G.F. (2005). Accelerating U.S. EHR Adoption: How to Get There From Here. Recommendations Based on the 2004 ACMI Retreat JAMIA, Jan/Feb, (12):1, pp. 13-19.

¹²⁰ Rosenfeld S., Zeitler E, & Mendelson E. (2004). Financial Incentives: Innovative Payment for Health Information Technology. The Leapfrog Group. Washington, DC.

¹²¹ Price Waterhouse Coopers. (3/2005). Reactive to Adaptive: Transforming Hospitals with Digital Technology. Available: <http://www.pwc.com/extweb/pwcpublishations.nsf/docid/50431A53E98C492385256FB900597378>.

¹²² Institute of Medicine of the National Academies. (3/1/2001). Crossing the Quality Chasm: A New Health System for the 21st Century. Washington, DC.

¹²³ Rosenfeld S, Zeitler E. & Mendelson D. (3/2004). Financial Incentives: Innovative Payment for Health Information Technology. Foundation for eHealth Initiative. Health Strategies Consultancy. Washington, DC.

¹²⁴ Ibid.

covered health care provider; (ii) the enrollment, payment, claims adjudication or case or medical management record systems maintained by or for a health plan; or (iii) used, in whole or part, by or for the covered entity to make decisions about individuals.”¹²⁵ Providers are required to define the data or documents that meet this definition. The legal health record is a subset of this designated record set, and meets the requirements for a business record used for legal purposes. Organizations must list those specific data elements and documents within the designated record set that comprise its legal health record.

As health records become increasingly digitized, they can be more easily transmitted between different providers at different locations. In its study, the Task Force discovered that the security of electronic health information is sometimes inadequate. Digitized health records give rise to a number of legal issues. Data security and other legal issues pose enormous challenges to technology adoption; these barriers can potentially inhibit its diffusion. Some Task Force members expressed concern regarding the legal liability involved with the use of EHR-S, which generally centers around how much and what parts of EHR-S constitute a legal medical record, and what is the potential provider liability that may result from treatment decisions that are based on information included or not included in EHR-S.

The Task Force found that there is not a one-size-fits-all definition of the legal health record. Laws and regulations governing the content often vary by provider and state.¹²⁶ The 2001 practice brief, “Definition of the Health Record for Legal Purposes,” defines the legal paper-based health record as, “the legal business record generated at or for a health care organization. This record would be released upon request.”¹²⁷ According to the American Health Information Management Association, the legal health record is generated by a health care organization as its business record, and is the record that will be disclosed upon request.¹²⁸ This documentation allows the record to serve as the legal record substantiating health care services provided to the patient. In Maryland, the laws pertaining to health records can be found in the Maryland Confidentiality of Medical Records Act.¹²⁹

¹²⁵ U.S. Department of Health and Human Services Office for Civil Rights. (2003). Standards for Privacy of Individually Identifiable Health Information; Final Rule. 45 CFR Parts 160 and 164. Federal Register 65, no. 250 (2000).

¹²⁶ American Health Information Management Association. (2007). Update: Guidelines for Defining the Legal Health Record for Disclosure Purposes. Chicago, IL.

¹²⁷ AHIMA e-HIM Work Group on the Legal Health Record. (9/2005). Update: Guidelines for Defining the Legal Health Record for Disclosure Purposes. Journal of AHIMA 76, no.8: 64A-G.

¹²⁸ American Health Information Management Association. (2007). Update: Guidelines for Defining the Legal Health Record for Disclosure Purposes. Chicago, IL.

¹²⁹ Department of Mental Health and Hygiene. Confidentiality of Medical Records Under Maryland Law and the Federal Health Insurance Portability and Accountability Act of 1996 (HIPAA). Office of the Attorney General.

Section 3 - Laws and Principles Guiding Adoption and Use of HIT / HIE

The Health Insurance Portability and Accountability Act (HIPAA), became federal law in 1996, and may be considered one of the most widely recognized statutes regarding the privacy and security of electronic information. However, the laws and principles pertaining to the protection of personal information stored electronically were established over 30 years ago in the United States, and nearly 20 years ago in Maryland.

Federal and National

Fair Information Practices Principles

The privacy laws and regulations that have been adopted in the United States over the last few decades have all been based on a commonly accepted set of fair information practices. The earliest public documentation of this concept was the Richardson Report on "Records, Computers and the Rights of Citizens," published in 1973, which introduced Fair Information Practices Principles (FIPPs).¹³⁰ These principles were first codified into law in the Privacy Act of 1974 §552a.¹³¹ This act can generally be characterized as a code of fair information practices that attempts to regulate the collection, maintenance, use, and dissemination of personal information by federal executive branch agencies. The four FIPPs are:

1. **Notice:** There must be no personal data record-keeping systems whose very existence is secret.¹³² Data collectors must disclose their data collection. The existence and purpose of record-keeping systems must be known to the individuals whose data is contained therein.
2. **Choice:** There must be a way for a person to find out what information about the person is in a record and how it is used. There must be a way for a person to prevent information about the person that was obtained for one purpose, from being used or made available for other purposes without the person's consent.¹³³

¹³⁰ U.S. Department of Health and Human Services. (7/1973). Secretary's Advisory Committee on Automated Personal Data Systems, Records, Computers, and the Rights of Citizens viii (1973). Washington, DC.

¹³¹ United States Department of Justice. (2007). Overview of the Privacy Act of 1974. Washington, DC. Available: http://www.usdoj.gov/oip/04_7_1.html.

¹³² Electronic Privacy Information Center. The Code of Fair Information Practices. Washington, DC. Available: http://www.epic.org/privacy/consumer/code_fair_info.html.

¹³³ Ibid.

Data subjects should have rights to opt out of uses and disclosures of their data. Information must be collected only with the knowledge and implicit or explicit permission of the subject, used only in ways relevant to the purpose for which the data was collected, and disclosed only with permission of the subject or in accordance with overriding legal authority (such as a public health law that requires reporting of a serious contagious disease).

3. **Access:** There must be a way for a person to correct or amend a record of identifiable information about the person.¹³⁴ Data subjects should be able to view their information and have it corrected if necessary. Individuals must have the right to see records of information about them and to assure the quality of that information (accuracy, completeness, and timeliness).
4. **Security:** Any organization creating, maintaining, using, or disseminating records of identifiable personal data must assure the reliability of the data for their intended use, and must take precautions to prevent misuses of the data.¹³⁵ Reasonable safeguards must be in place for the confidentiality, integrity, and availability of information.

Health Insurance Portability and Accountability Act of 1996 (HIPAA)

In the 1990's, the increasing use of HIT brought the issue of protecting personal health information from disclosure or misuse to the forefront, prompting legislative actions. Grounded by FIPPs, Public Law 104-191, known as HIPAA,¹³⁶ outlined a series of health care regulations, which included improving the portability of health insurance coverage, promoting the use of medical savings accounts, and fighting waste, fraud, and abuse in health care systems. The Administrative Simplification provisions of HIPAA, Title II Part C,¹³⁷ address the "security standards for the protection of electronic health information" and the "privacy of identifiable health information." These provisions address in detail the security and privacy of health information. The Security regulation requires compliance with a comprehensive set of requirements for the security of electronic health information, and specifies that covered entities must implement administrative, physical, and technical safeguards for protecting electronic health information. The rule states that covered entities, which include payers, providers, and claims clearinghouses, must do the following:

- Ensure the confidentiality, integrity, and availability of all electronic protected health information the covered entity creates, receives, maintains or transmits;

¹³⁴ Ibid.

¹³⁵ Ibid.

¹³⁶ 104th Congress. (8/21 1996). Public Law 104-191: Health Insurance Portability and Accountability Act of 1996. United States Department of Health and Human Services. Washington, DC.

¹³⁷ Department of Health and Human Services. (2/2006). HIPAA Administrative Simplification, Regulation Text, 45 CFR Parts 160,162,164, (Unofficial Version as amended through February 16, 2006), pp. 36-84. Washington, DC.

- Protect against any reasonable anticipated threats or hazards to the security or integrity of such information;
- Protect against any reasonably anticipated use or disclosure of such information that is not permitted or required under subpart E; and
- Ensure compliance with this subpart by its workforce.

The Privacy regulation specifies requirements related to the use and disclosure of health information, the types of authorization required for its release, and defines when an individual should have the opportunity to approve or object to the release of their information. It also specifies the right of the individual to be notified how their information is used and disclosed, to request and amend health information, and outlines how entities must account for disclosures of an individual's health information, as well as the administrative policies and procedures required to implement the standards.

Section 1173(d) of HIPAA recognizes the need to develop health information system architectures that ensure the confidentiality and privacy of individual health records.¹³⁸ HIPAA requirements put forth minimum protections for patient information that policy makers use to build upon when bolstering protections of patient information. Some of these requirements include isolating the activities of a clearinghouse, if it is part of a larger organization, so that processing information is protected from unauthorized access to health information; maintaining reasonable and appropriate administrative, physical, and technical safeguards to ensure the integrity and confidentiality of health information; protecting against any reasonably anticipated threats or hazards to the security or integrity of the information; and unauthorized use or disclosure of the information.

HIPAA Transaction and Code Set Regulations

In addition to standards safeguarding personal health information, HIPAA also has specified transaction standards and code sets for HIE. The Standards for Electronic Transactions¹³⁹ regulation defines standards for eight health care transactions, as well as code sets and identifiers. This rule states that covered entities which exchange electronic health care transactions with other covered entities must use the standards and code sets defined by the regulation. Standards were established for health care claims or encounters, payment and remittance advice, health claim status, and health plan eligibility, referral certification and authorization, enrollment/disenrollment in a health plan, and health plan premium payments. Standards established for code sets include the Healthcare Common Procedure Coding System (HCPCS), Current Procedural Terminology version 4 (CPT-4), and International Classification of Diseases version 9 (ICD-9). The National Provider Identifier (NPI) established a standard identifier for

¹³⁸ U.S. Department of Health and Human Services. (2/20/2003). Part II: Department of Health and Human Services Office of the Secretary 45 CFR Parts 160, 162, and 164 Health Insurance Reform: Security Standards; Federal Register Final Rule.

¹³⁹ Centers for Medicare and Medicaid Services. (2007). Transaction and Code Set Standards: Overview. United States Department of Health and Human Services. Washington, DC.

health care providers, which must be used by covered entities when conducting electronic transactions. The adherence to these standards enables administrative health information to be exchanged in a consistent and predictable manner.

Although HIPAA established extensive standards and guidelines for exchanging health information, the Task Force noted that exceptions to the law have led to confusion regarding which regulations apply. For example, Section 1178 of HIPAA states that in most cases HIPAA supersedes state laws except when a determination is made by the Secretary of HHS that the provision of State law:

1. Is necessary:
 - a. To prevent fraud and abuse;
 - b. To prevent fraud and abuse related to the provision of or payment for health care;
 - c. To ensure appropriate State regulation of insurance and health plans to the extent expressly authorized by statute or regulation;
 - d. For State reporting on health care delivery or costs; and
 - e. For purposes of serving a compelling need related to public health safety or welfare, the Secretary determines that the intrusion into privacy is warranted when balanced against the need to be served.
2. Has as its principle purpose the regulation of controlled substances;
3. Addresses issues of privacy of individually identifiable health information [Section 264(c)(2)];
4. Limits the authority of public health; and
5. Limits state regulatory reporting by health plans for monitoring and certification purposes.¹⁴⁰

This broad set of exceptions has led to confusion regarding whether state or federal regulations should be followed for unique instances of information sharing.¹⁴¹ The Task Force believes that this confusion, as well as concerns about breaching privacy and security laws, has caused many providers to resist sharing information even under allowable circumstances.

Medicare Prescription Drug, Improvement, and Modernization Act of 2003

In addition to HIPAA, the Task Force identified other federal government actions that are also impacting the exchange of electronic health information. In 2003, the Medicare Prescription Drug, Improvement, and Modernization Act (MMA) provided enhanced

¹⁴⁰ 104th Congress. (8/21/1996). Public Law 104-191 Health Insurance Portability and Accountability Act of 1996. United States Department of Health and Human Services. Washington, DC.

¹⁴¹ Task Force to Study Electronic Health Records. Issues Raised by Expansion of the use of Electronic Health Records in School Health Services. Maryland Health Care Commission. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

prescription drug coverage to seniors under the Medicare program.¹⁴² The MMA requires CMS to develop a uniform set of e-prescribing standards to be used in ambulatory care settings.¹⁴³ These standards will be able to support a database of prescribing histories from which information can be obtained and used for evaluation and research. The intent is for e-prescribing to act as a catalyst for significant improvements in patient safety, quality of care, and cost effectiveness.¹⁴⁴ In addition to meeting MMA requirements, e-prescribing standards must be compatible with all other state and federal laws regulating prescribing.

Maryland Privacy Laws

Maryland and at least 37 other states have introduced legislation regarding the promotion of HIT.¹⁴⁵ Additionally, governors in at least 10 states have issued executive orders calling for the promotion and adoption of HIT strategies. These state-level activities often involve the creation of commissions, task forces, councils, and advisory groups to study the issues and develop recommendations to improve health care through the use of HIT.

In 1991, the Maryland Confidentiality of Medical Records Act (MCMRA) was passed into law.¹⁴⁶ It addressed many of the same issues as HIPAA, but as it preceded HIPAA, the specifics of the guidelines and restrictions are different, and often inconsistent, with the federal law. In an effort to identify the specific discrepancies, State agencies collaborated to develop a document that compared the MCMRA with the HIPAA Privacy Statute and Regulations.¹⁴⁷ The Task Force noted and agreed with this comparative analysis, which highlighted the need to ensure that future legislation is written so that state and federal regulations are more consistent with each other. Examples where the MCMRA and HIPAA laws differ include:

- **Definition of identifying information and de-identification criteria:** HIPAA refers to protected health information as being “individually identifiable health information maintained or transmitted in any form or medium.” MCMRA uses the term medical record, defining it as “any oral, written or other transmission in any form which is entered into the record of and relates to the health care of the patient and which identifies or can readily be associated with the patient.”

¹⁴² Department of Health and Human Services. (2007). Medicare Prescription Drug, Improvement, and Modernization Act. Washington, DC.

¹⁴³ National Committee on Vital Health Statistics. (9/2/2004). Letter to Tommy Thompson: E-prescribing Standards. United States Department of Health and Human Services. Washington, DC.

¹⁴⁴ Department of Health and Human Services. (2007). Medicare Prescription Drug, Improvement, and Modernization Act Section 1013.A.2.c.i. Washington, DC.

¹⁴⁵ eHealth Initiative. (8/16/2006). State policy makers taking action to drive improvements in health care quality and safety through information technology. Washington, DC.

¹⁴⁶ Maryland Department of Health and Mental Hygiene. (March, 2003). Maryland Confidentiality of Medical Records Act Compared with HIPAA Privacy Statute & Regulations. Available: <http://www.dhmd.state.md.us/hipaa/pdf/MCMRAcomp.pdf>.

¹⁴⁷ Ibid.

Although the terms are similar, the meaning by which individual identification is addressed differs, with HIPAA being more clearly defined. For example, to de-identify personal health data to be used for research, the identifiers for individuals, their relatives, employers, and household members are removed. However, exceptions can be made based if approved by an Institutional Review Board, which adheres to federal guidelines. Some examples of information that must be removed to de-identify data include: names; all geographical subdivisions smaller than a state; all elements of dates (except year) for dates directly related to an individual; telephone numbers; fax numbers; email addresses; social security numbers; medical record numbers; health plan beneficiary numbers; account numbers; and other identifiers.¹⁴⁸

- **Rules of confidentiality for uses of information in treatment, payment, and health care operations:** Although the rules for HIPAA and MCMRA are similar, HIPAA rules require more explicit disclosure to patients regarding health care information disclosures and privacy protections.¹⁴⁹ These HIPAA provisions place additional administrative burdens on providers.
- **Disclosures Requiring Authorization:** Although HIPAA and MCMRA rules regarding disclosure are similar, HIPAA requires that a patient be consulted about preferences regarding what information may be given out about their medical condition (i.e., Jane Doe is in stable condition), while MCMRA permits such disclosure unless the patient declines in writing.¹⁵⁰
- **Permissive Disclosures without Authorization:** HIPAA and MCMRA both allow for the disclosure of health information by covered entities for certain purposes. Most HIPAA provisions are permissive, while disclosure under MCMRA or other state laws are often mandatory, such as for disclosures related to abuse and neglect, or other legally-compelled activities.
- **Patient Remedies:** HIPAA violations can result in administrative fines, while persons violating MCMRA laws may be sued in state court for actual damages. No comparable private right of action exists under HIPAA. Additionally, MCMRA “grants broad immunity from suit to health care providers who disclose or fail to disclose a medical record if acting in good faith. HIPAA contains a somewhat less generous exculpatory clause that prohibits imposition of a civil penalty if the person, acting with reasonable diligence, did not know that the action violated federal law.”¹⁵¹

¹⁴⁸ University of South Florida. (2007). Use and Disclosure of De-Identified Data For Research Purposes. Tampa, FL. Available: http://www.research.usf.edu/cs/hipaa_forms/sopdeidentified.doc.

¹⁴⁹ Maryland Department of Health and Mental Hygiene. (March, 2003). Maryland Confidentiality of Medical Records Act Compared with HIPAA Privacy Statute & Regulations. Baltimore, MD. Available: <http://www.dhmd.state.md.us/hipaa/pdf/MCMRAcomp.pdf>.

¹⁵⁰ Ibid.

¹⁵¹ Ibid.

- **Un-emancipated Minor Disclosure Rights:** HIPAA defers to state law in regard to disclosure rights for un-emancipated minors. In Maryland, these rights are tied to a minor’s capacity to consent to treatment. Maryland law allows a minor the right to “consent to treatment for drug abuse, alcoholism, venereal disease, pregnancy, contraception, injuries from rape or sexual offense, and initial media screening of the minor into a detention center.¹⁵² Older minors (at least 16 year of age) may also consent to treatment for mental or emotional disorders. With regards to mental health and abortion services, physician judgment plays a key role in whether disclosure is made to parents. The issue in including personal health information in a school record is that information protected by HIPAA would become visible by parents and guardians as part of the (unprotected) school record.
- **Overview of Administrative Procedures and Forms:** HIPAA supersedes MCMRA regarding administrative requirements. These include designation of the entity, designation of a privacy official, and training of personnel. The entity also must have appropriate administrative, technical, and physical safeguards in place to protect personal health information security and sanctions for violators.

The growth of HIT and the discrepancies between MCMRA and HIPAA were areas of concern among Task Force members. In the past, the legislature has worked to balance the protection of personal health information with the use of information sharing to benefit individual, State and public health needs. For example, Senate Bill 690 (2005) clarified the compulsory process and procedures for authorized disclosures of specified health records under specific circumstances. This statute specifically addresses disclosure of a medical record without the patient’s authorization, if that disclosure is a result of being served with a subpoena or other court order.¹⁵³ In addition, House Bill 1020 (2005), which did not pass would have required health care practices who were closing to provide patients with 30 days notice regarding how they could retrieve their health care records.¹⁵⁴

Prescription Drugs

Monitoring and identifying the misuse of controlled prescription drugs is another area of focus for the General Assembly, which relates to HIE and patient safety. Maryland has passed a series of laws that address the contents of prescription orders, monitor for Schedule II controlled substances, and define specifications for transferring and outsourcing prescriptions.^{155,156} There are also regulations regarding the scope, definitions, records, and validity requirements for prescriptions. The Prescription Drug

¹⁵² Ibid.

¹⁵³ Maryland General Assembly. (2005). Senate Bill 690.

¹⁵⁴ Maryland General Assembly. (2005). House Bill 1020.

¹⁵⁵ Maryland Health Care Commission. Maryland Laws Pertaining to Prescriptions. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

¹⁵⁶ Code of Federal Regulations. (4/1/2006). Title 21-Food and Drugs.

Safety Act (House Bill 433) of 2004 mandated a workgroup to study prescription legibility and patient safety issues.^{157,158}

In 2006, there was an attempt to establish a system to monitor prescription drug usage in the state. Senate Bill 333/House Bill 1287 passed both houses but was vetoed by the Governor. Reasons for the veto included concerns over the impact of the system on adequate treatment of pain management, inadequacies in patient security and confidentiality, and an overemphasis on law enforcement rather than treatment.^{159, 160, 161}

COMAR 10.19.03.07¹⁶² states that all prescriptions for drugs listed under Schedule II of the Controlled Substances Act must, among other requirements, “be written with ink, indelible pencil, typewriter, or computer and shall be manually signed by the practitioner.” In addition, COMAR 10.19.03.08 specifically states that a prescription for a Schedule II controlled substance may be transmitted by the practitioner or the practitioner's agent to a pharmacy by facsimile equipment, if the original written, signed prescription is presented to the pharmacist for review before the actual dispensing of a controlled substance.” The Task Force is concerned that there is no mention of e-prescribing being allowable for this class of drugs or how electronic signatures would be addressed.

School Records

The previous discussions addressed legislation focused specifically on the protection of personal health information contained within a health record, such as those found in a hospital or doctor’s office. However, health information is also included in school records. These records may fall under the jurisdiction of educational laws regarding disclosure, can be governed under HIPAA protections, or both. The Task Force reviewed the three primary federal legislative actions that govern the privacy of student academic records in addition to potential HIPAA protections.

Family Educational Rights and Privacy Act of 1974

A cornerstone law that protects students’ rights to privacy is the Family Educational Rights and Privacy Act of 1974 (FERPA, or the Buckley Amendment). Generally, FERPA requires parental or student consent to release information from a student’s

¹⁵⁷ Task Force to Study Electronic Health Records. E-Prescribing and the Role of Electronic Health Networks. Maryland Health Care Commission. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

¹⁵⁸ Maryland General Assembly. (2004). House Bill 433.

¹⁵⁹ eHealth Initiative. (2005). eHealth Initiative’s Analysis of Maryland Legislation. Washington, DC.

¹⁶⁰ Maryland General Assembly. (2006). Senate Bill 333.

¹⁶¹ Ehrlich, R. (2006). Veto Letter to the Speaker of the House. Maryland General Assembly.

¹⁶² Department of Health and Mental Hygiene. Title 10 Department of Health and Mental Hygiene Subtitle 19 Dangerous Devices and Substances Chapter 03 Controlled Dangerous Substances.

educational record.¹⁶³ There are exceptions to this requirement, which allow disclosure without consent, including:

- School officials with legitimate educational interest;
- Other schools to which a student is transferring;
- Specified officials for audit or evaluation purposes;
- Appropriate parties in connection with financial aid to a student;
- Organizations conducting certain studies for or on behalf of the school;
- Accrediting organizations;
- Compliance with a judicial order or lawfully issued subpoena;
- Appropriate officials in cases of health and safety emergencies; and
- State and local authorities, within a juvenile justice system, pursuant to specific State law.

Additionally, if schools provide ample notification and time to parents and students to express objections, schools may disclose certain directory information without consent, such as a student's name, address, telephone number, date and place of birth, honors and awards, and dates of attendance. Schools must notify parents and eligible students annually of their rights under FERPA, although the means by which notification occurs is left to the discretion of each school (i.e., special letter, PTA bulletin, student handbook, or newspaper article).

Protection of Pupil Rights Amendment

Other legislation, the Protection of Pupil Rights Amendment of 1998 (PPRA, or the Hatch Amendment, 20 U.S.C. §1232h (amended again in 2001), requires that schools make instructional materials available to parents if records are being used in conjunction with an education-funded survey, analysis, or evaluation involving participation of their children. PPRA also requires prior parental consent if information is sought from pupils regarding specific topics, including some sensitive health information.¹⁶⁴ More specifically, schools must obtain written parental consent when information is collected concerning:

- Political affiliations or beliefs of the student or family;

¹⁶³ U.S. Department of Education. (2007). Family Educational Rights and Privacy Act. Washington, DC. Available: <http://www.ed.gov/policy/gen/guid/fpco/ferpa/index.html>.

¹⁶⁴ U.S. Department of Education. (2007). Protection of Pupil Rights Amendment. Washington, DC. Available: <http://www.ed.gov/policy/gen/guid/fpco/ppra/index.html>.

- Mental and psychological problems potentially embarrassing to the student and his/her family;
- Sex behavior and attitudes;
- Illegal, anti-social, self-incriminating and demeaning behavior;
- Critical appraisals of other individuals with whom respondents have close family relationships;
- Legally recognized privileged or analogous relationships, such as those of lawyers, physicians, and ministers; and
- Income (other than that required by law to determine eligibility for participation in a program or for receiving financial assistance under such program).

Individuals with Disabilities Act

Finally, the Individuals with Disabilities Education Improvement Act (IDEIA), Public Law 105-17, (formerly referred to as the Individuals with Disabilities Act) expands FERPA protections. Regulations issued by the Department of Education to implement IDEA provide for protection of personally identifiable information contained in educational records.”¹⁶⁵ For example, the IDEIA requires that the educational entity make reasonable efforts to obtain parental consent, and that consent must be obtained to conduct student evaluations to determine whether the child has a physical, mental or emotional disability.¹⁶⁶

Maryland Student Records System Manual

In addition to the federal regulations, the Task Force identified state policies that dictate the process and content for disclosing school records, including health information contained within them. For example, the Maryland Student Records System Manual (MSRSM) 2007¹⁶⁷ specifies guidelines to comply with state regulations Education Article 2-205; the Annotated Code of Maryland; 16 separate regulations under Title 13A, State Board of Education; and two regulations under the Department of Health and Mental Hygiene’s Title 10 governing immunizations and lead screening.

Special Issues with School Records

As noted earlier, the inclusion of health information within school records can cloud jurisdictional boundaries. There are two types of health information found in school

¹⁶⁵ United States Department of Education. (2006). Department of Education 34 CFR Parts 300 and 30- Assistance to States for the Education of Children With Disabilities and Preschool Grants for Children With Disabilities; Federal Register Final Rule.

¹⁶⁶ Ibid.

¹⁶⁷ Maryland State Department of Education. (2007). Maryland Student Records System Manual.

records. The first type of school-based health information found in a school record includes documentation of traditional student health office services. This health information may include immunization monitoring, first aid, and periodic health screenings that are documented in the record, but may have been provided at other locations, such as a doctor's office. The movement of this information from HIPAA protected records in physician offices to school records may unintentionally make confidential information vulnerable to privacy breaches. This may happen even though the information is considered part of the school record and is governed by FERPA and other well established education laws and protections, which are meant to guard the privacy rights of students.¹⁶⁸

School-Based Health Centers

The second type of health information found in educational settings involves referrals and the use of school-based health centers (SBHCs), of which there are 61 in the State of Maryland.¹⁶⁹ The intent of the legislatively-mandated SBHCs is to provide prevention and early intervention to health problems that interfere with a child's ability to learn. SBHC services may include medical health, mental health, and dental services on-site or through other providers by referral. SBHCs also serve as safety net providers for under- and uninsured families.

The federal and state statutory, regulatory, and policy directives regarding privacy and confidentiality, which apply to health information gathered in SBHCs, differ from those for general student records.¹⁷⁰ For example, services provided through non-traditional settings, such as SBHCs, can lead to protections under HIPAA if data is transmitted electronically in connection with a HIPAA standard transaction. If the data being transferred falls under HIPAA's standard transactions, including billing third-party payers such as a health plan or Medicaid, this places SBHCs under the category of HIPAA covered entities. Covered entities must comply with the requirements of the Transaction Standard and Code Set Rule, such as using specified data elements and transaction codes. Therefore, when school health programs transmit electronic health information for billing, even if this service is provided by a third party, SBHCs must comply with HIPAA.¹⁷¹ Beyond the Transaction Standard and Code Set Rule, however, the HIPAA statute is silent on the subject of SBHCs. Given the increasing number of children with physical and emotional conditions, clarification and awareness of how to

¹⁶⁸ Task Force to Study Electronic Health Records. Issues Raised by Expansion of the Use of Electronic Health Records in School Health Services. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

¹⁶⁹ Maryland Assembly on School-Based Health Care. (2007). SBHC Center Fact Sheet. Available: <http://www.masbhc.org/SBHCcenterFacts.html>.

¹⁷⁰ Task Force to Study Electronic Health Records. Issues Raised by Expansion of the Use of Electronic Health Records in School Health Services. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

¹⁷¹ The Commonwealth of Massachusetts. (2007). Memorandum: HIPAA and FERPA. Office of Health and Human Services. Boston, MA. Available: http://www.mass.gov/dph/fch/schoolhealth/hipaa_ferpa.htm.

handle confidential health information is even more important.¹⁷² While information in the SBHC record is covered under HIPAA or FERPA, the health information in the traditional education record (i.e., first aid), is not. Where there is a lack of clarity on whether SBHCs need to comply with HIPAA, the policy of the Maryland State Department of Education (MSDE) is to treat all SBHC records and transactions as covered by HIPAA rules for privacy, security, and disclosure when they fall outside of the boundaries of FERPA. SBHCs receiving federal funding are required to comply with FERPA.¹⁷³

Minor’s Consent to Treatment

Another extremely important and sensitive issue raised by SBHCs relates to the individual state laws governing the right of minors to consent to treatment, and whether parental notification or consent is required. Until these complex issues are resolved, school systems have generally adopted common-sense and ethical approaches to the privacy of SBHC records, such as the policies already in place in Maryland and measures recommended by many national school health associations and policy centers.¹⁷⁴

This position is consistent with the eight “Guidelines for Protecting Confidential Student Health Information” developed by the National Task Force on Confidential Student Health Information and published in 2000:¹⁷⁵

- **Guideline I:** Distinguish student health information from other types of school records.
- **Guideline II:** Extend to school health records the same protections granted to medical records by federal and state law.
- **Guideline III:** Establish uniform standards for collecting and recording student health information.
- **Guideline IV:** Establish district policies and standard procedures for protecting confidentiality during the creation, storage, transfer, and destruction of student health records;
- **Guideline V:** Require written, informed consent from the parent and, when appropriate, the student, to release medical and psychiatric diagnoses to other school personnel;

¹⁷² National Task Force on Confidential Student Health Information, *Guidelines for Protecting Confidential Student Health Information* (Kent, Ohio: American School Health Association, 2000), p. 34. Kent OH.

¹⁷³ Task Force to Study Electronic Health Records. *Issues Raised by Expansion of the Use of Electronic Health Records in School Health Services*. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

¹⁷⁴ *Ibid.*

¹⁷⁵ National Task Force on Confidential Student Health Information, *Guidelines for Protecting Confidential Student Health Information* (Kent, Ohio: American School Health Association, 2000), p. 34. Kent OH.

- **Guideline VI:** Limit the disclosure of confidential health information within the school to information necessary to benefit students' health or education;
- **Guideline VII:** Establish policies and standard procedures for requesting needed health information from outside sources and for releasing confidential health information, with parental consent, to outside agencies and individuals; and
- **Guideline VIII:** Provide regular, periodic training for all new school staff, contracted service providers, substitute teachers, and school volunteers concerning the district's policies and procedures for protecting confidentiality.

Several factors make it more difficult to determine when and how this information may be shared without compromising privacy: conflicts between the policies and practices of schools with the legal and ethical obligations of health care providers; inadequate preparation of staff; difficulties in communicating medical terms and cultural responses; and, especially, the inconsistencies between the federal and state laws that govern health and those related to education. These difficulties exist for traditional school health records, but are magnified for medical records generated by school-based health centers.

Section 4 - Federal and National Initiatives

The United States federal government has recognized the importance of moving the country toward adoption of EHR-S and HIE. In support of this recognition, the Task Force studied several federally-sponsored initiatives that have been launched. These initiatives are led primarily by agencies within HHS, although there are other departments, such as the DoD and VHA, which also are promoting the use of EHR-S. While there are many ongoing activities, this section describes some of the more significant initiatives.

Office of the National Coordinator for Health Information Technology

As briefly mentioned earlier in this report, the ONC was created in 2004 by Executive Order to provide national leadership for developing a nationwide HIT infrastructure. More specifically, the responsibilities of ONC include:

- Providing leadership for the development and implementation of the nationwide health IT infrastructure;
- Advising the Secretary of HHS on HIT policies and initiatives; and
- Coordinating the efforts of HHS to meet the goal of making an electronic medical record available for most Americans by 2014.¹⁷⁶

Since its formation, ONC has led or co-led several national initiatives. Some of these initiatives are discussed below.

Health IT Strategic Framework

Among the directives and responsibilities outlined for the ONC was the requirement to “develop, maintain, and direct the implementation of a strategic plan to guide the nationwide implementation of interoperable health information technology in both the public and private health care sectors that will reduce medical errors, improve quality, and produce greater value for health care expenditures.”¹⁷⁷ In order to meet this goal, the ONC developed “The Health IT Strategic Framework”¹⁷⁸ in 2004.

¹⁷⁶ Department of Health and Human Services. (2007). Department of Health and Human Services Home Page. Washington, DC.

¹⁷⁷ White House. (2004). Executive Order: incentives for the use of health information technology and establishing the position of the national health information technology coordinator. Washington, DC.

¹⁷⁸ U.S. Department of Health and Human Services. (2007). The Health IT Strategic Framework. Washington, DC.

On July 21, 2004, during the HHS Health IT Summit, ONC published the “Strategic Framework: The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care,” (The Framework). The Framework outlined an approach toward nationwide implementation of interoperable EHR-S. It identified four major goals, each of which is supported by three major strategies.¹⁷⁹ The goals and their associated strategies include:

1. Inform clinical practice
 - Incentivize the adoption of EHR-S
 - Reduce the risk of investment in EHR-S
 - Promote the diffusion of EHR-S in rural and underserved areas
2. Interconnect clinicians
 - Foster regional collaborations
 - Develop a national health information network
 - Coordinate federal health information systems
3. Personalize care
 - Encourage the use of PHRs
 - Enhance informed consumer choice
 - Promote the use of telehealth systems
4. Improve population health
 - Unify public health surveillance architectures
 - Streamline quality and health status monitoring
 - Accelerate research and the dissemination of evidence

State Alliance for e-Health

The National Governors Association’s Center for Best Practices, under contract with the ONC, created the State Alliance for e-Health in October 2006. This initiative is designed to improve the nation's health care system through the formation of a collaborative body that enables states to increase the efficiency and effectiveness of the HIT initiatives they develop. The primary goal of this initiative is to work with Governors and Governor-named high-level executives of states and U.S. territories to establish a high-level HIT advisory board to identify, assess and, through the formation of consensus solutions, map ways to resolve state-level HIT issues that affect multiple states and pose challenges to interoperable electronic health information exchange.¹⁸⁰

¹⁷⁹ U.S. Department of Health and Human Services. (2007). Office of the National Coordinator for Health Information Technology (ONC) Health IT Strategic Framework. Washington, DC.

¹⁸⁰ State Alliance for e-Health. (2007). State Alliance of e-Health Home Page. National Governor’s Association. Washington, DC.

Adoption of Electronic Health Records

In October 2005, ONC partnered with the George Washington University, Partners / Massachusetts General Hospital Institute for Health Policy, and Brigham and Women's Hospital, through a contract on the Health IT Adoption Initiative, to develop a standardized way to measure adoption of EHR-S.¹⁸¹ This initiative is aimed at better characterizing and measuring the state of adoption of EHR-S and determining the effectiveness of policies aimed at accelerating adoption of EHR-S and interoperability.¹⁸²

Development of State Level Health Information Exchange Initiatives

Under contract with the ONC, the Foundation of Research and Education of the American Health Information Management Association undertook a project to inform and advance State-level HIE initiatives.¹⁸³ The purpose of this project was to gather information from existing state-level HIEs, and develop guidance for advancing state-level initiatives. The guidance developed for states was to be coordinated and aligned with federal initiatives. The resulting report, "Development of State Level Information Exchange Initiatives," was released in 2006.

In addition to the initiatives discussed above, ONC is partnering with other agencies and contracted organizations to further the development and implementation of the components of the Strategic Framework. Many of those efforts are discussed in the following sections of this report.

American Health Information Community

The American Health Information Community (AHIC or Community) is a federal advisory body chartered to make recommendations to the Secretary of HHS on how to accelerate the development and adoption of HIT. The Task Force found that prior to the formation of AHIC, there was no agreed upon standards in place to enable the electronic sharing of health information.¹⁸⁴

AHIC was formed in 2005 to develop strategies for making digital health records interoperable, secure, and private.¹⁸⁵ Since its formation, the AHIC initially identified four areas with potential for early breakthroughs to advance the development of standards

¹⁸¹ U.S. Department of Health and Human Services. (2007). Health IT Adoption Initiative. Washington, DC.

¹⁸² Health Information Technology Adoption Initiative. (2007). Health Information Technology Adoption Initiative Home Page. Washington, DC.

¹⁸³ State RHIO Consensus Project. (2007). State RHIO Consensus Project Home Page. American Health Information Management Association. Washington, DC.

¹⁸⁴ Institute of Electrical and Electronics Engineers. (1990). IEEE Standard Computer Dictionary: A Compilation of IEEE Standard Computer Glossaries. New York, NY.

¹⁸⁵ U.S. Department of Health and Human Services. (2007). American Health Information Community: Background. Washington, DC.

for interoperability.¹⁸⁶ The following are breakthrough areas and their respective charges.

Consumer Empowerment

Make recommendations to AHIC so that within one year, a pre-populated, consumer-directed and secure electronic registration summary is available to targeted populations. Make additional recommendations to the Community so that within one year, a widely available pre-populated medication history linked to the registration summary is deployed. A set of recommendations to Secretary Leavitt was issued in a letter dated January 23, 2007.¹⁸⁷

Chronic Care

Make recommendations to AHIC so that within one year, widespread use of secure messaging, as appropriate, is fostered as a means of communication between clinicians and patients about care delivery.

Biosurveillance

Make recommendations to AHIC so that within one year, essential ambulatory care and emergency department visit, utilization, and lab result data from electronically enabled health care delivery and public health systems can be transmitted in standardized and anonymous format to authorized public health agencies within 24 hours. A final set of recommendations was issued to Secretary Leavitt in a letter dated October 31, 2006.¹⁸⁸ (Note: The name of this group was changed to Population Health and Clinical Care Connections in January 2007.)

Electronic Health Records

Make recommendations to AHIC so that within one year, standardized, widely-available and secure solutions for accessing current and historical laboratory results and interpretations are deployed for clinical care by authorized parties.

More recently, additional workgroups were formed to address a wider range of issues. These groups are expected to deliver recommendations to the Secretary by the end of 2007. The additional workgroups and their charges are:

Confidentiality, Privacy, and Security Workgroup

Make actionable confidentiality, privacy, and security recommendations to the Community on specific policies that best balance the needs between appropriate information protection and access to support, and accelerate the implementation of the consumer empowerment, chronic care, and electronic health record related breakthroughs.

¹⁸⁶ Ibid.

¹⁸⁷ American Health Information Community. (1/23/2007). Final AHIC Recommendations Letter. United States Department of Health and Human Services. Washington, DC.

¹⁸⁸ Ibid.

Quality Workgroup

Make recommendations to AHIC that specify how certified health information technology should capture, aggregate and report data for a core set of ambulatory and inpatient quality measures.

Personalized Healthcare Workgroup

To plan for standardized integration of genomic test information into EHR-S and to make recommendations to AHIC to consider a means to establish standards for reporting and incorporation of common medical genomic test data into EHR-S, and provide incentives for adoption across the country, including federal government agencies.

Population Health and Clinical Care Connections Data Steering Group

This group was formed as a sub-group within the Population Health and Clinical Care Connections Workgroup. Its charge is to identify the requirements for data from ambulatory care, emergency departments, and laboratories necessary for multi-jurisdictional biosurveillance programs.

Privacy and Security

As discussed in Section 3, “Laws and Principles Guiding Adoption and Use of HIT/HIE,” a multitude of privacy and security laws protecting personal health information exchange have been developed by the federal government and by individual states. Some of these laws address all citizens in the jurisdiction, while others target specific populations (i.e., HIV infected, developmentally delayed or mentally ill).^{189,190} Most of the laws the Task Force identified and reviewed were created to address the privacy and security issues encountered with paper-based records.

To address conflicting privacy and security regulations, the Privacy and Security Solutions for Interoperable Health Information Exchange Project (Privacy and Security Project) was launched in 2006, managed by AHRQ and ONC. As part of the Privacy and Security Project, the Health Information Security and Privacy Collaboration (HISPC), contracted with RTI International (RTI).¹⁹¹ In turn, RTI subcontracted with approximately 40 states and one territory. The State of Maryland was not a direct participant in the project; MHCC conducted a similar, yet more expansive, privacy and security study over the last 14 months. The work focused on business policies and practices in general, and security policies and practices in particular, that may hinder the development of effective local, regional, and national systems for electronic health information exchange. The results of MHCC’s work have been shared with HISPC

¹⁸⁹ Benson K. (2006). eHealth Initiative: an organization at work for you! *COCITNEWS* Fall, 4(2): 6.

¹⁹⁰ Health Policy Institute of Ohio. (2005). *Assessing health information technology in Ohio*. Columbus, OH.

¹⁹¹ RTI International (3/31/2007). *Health Information Security and Privacy Collaboration (HISPC)*. Research Triangle, NC.

participants.¹⁹² The complete list of HISPC participants can be found in Appendix B of this report. The goals of HISPC were to identify barriers and solutions to the privacy and security of electronic health information exchange:¹⁹³

1. Identify best practices;
2. Identify challenges;
3. Develop consensus-based solutions for interoperable HIE that protect the privacy and security of health information; and
4. Develop detailed implementation plans to implement solutions.

HISPC members have leveraged input from state leadership and a broad range of stakeholders to assess the variations that exist at the organization level with respect to privacy and security practices and policies, and the legal basis for such practices and policies. The final report from this project was released in August 2007.

Nationwide Health Information Network

The long-term goal of HHS and ONC is to develop a nationwide health information network (NHIN). The NHIN will enable patients, physicians, hospitals, community health centers, public health agencies, laboratories, imaging centers, and other health care entities to share clinical information in a secure environment.¹⁹⁴

In November 2005, ONC awarded contracts to four vendors, totaling \$18.6 million, to develop and demonstrate a prototype NHIN.¹⁹⁵ In January 2007, all four contract awardees demonstrated their prototypes at a conference in Washington DC.^{196,197}

A critical component of the NHIN prototype deliverables was the development of security models that directly address system architecture needs for securing and maintaining the confidentiality of health data, while allowing the data to be shared among multiple entities. Participants were required to comply with security requirements established by HHS to ensure proper and confidential handling of data and information. The capabilities of each NHIN prototype will be incorporated in the subsequent development of the NHIN, and will address the complex issues of authentication,

¹⁹² An Assessment of Privacy and Security Policies and Business Practices. Maryland Health Care Commission. Available on the Maryland Health Care Commission website: mhcc.maryland.gov.

¹⁹³ Agency for Health Care Research and Quality. (2007). Health Information Privacy and Security Collaboration. United States Department of Health and Human Services. Washington, DC.

¹⁹⁴ U.S. Department of Health and Human Services. (2006). Health Information Technology. Washington, DC.

¹⁹⁵ U.S. Department of Health and Human Services. (2005). HHS Awards Contracts to Develop Nationwide Health Information Network. Washington, DC.

¹⁹⁶ U.S. Department of Health and Human Services. (2005). Third Nationwide Health Information Network Forum: Prototypes and Business Models. Washington, DC.

¹⁹⁷ U.S. Department of Health and Human Services. (1/25/2007). Third Nationwide Health Information Network Forum: Prototype Demonstrations and Business Models. Washington, DC.

authorization, data access restrictions, auditing and logging, and consumer controls of information access.

Additionally, all four consortia were to work together to ensure that information can move seamlessly between each of the four networks developed, thus establishing a single infrastructure for the sharing of electronic health information. The four consortia selected included Accenture, Computer Science Corporation (CSC), International Business Machines (IBM), and Northrop Grumman. Each consortium is a partnership between technology developers and health care providers that transmit health care data in three local health care markets.

The goal of these prototype projects was to demonstrate technical capabilities for sharing information across wide geographic and technical environments. The technical goal was met; however, there remain many open issues still to be addressed outside of the technical domain. There are open issues relating to privacy and security, consumer and provider acceptance of HIE, funding, and overall governance of HIE. The Task Force considered many of these issues, which are discussed later in this report.

A brief description of the approach taken by each of the consortium members is included below.

Accenture

The Accenture prototype is a large-scale standards-based network. This solution works with legacy clinical systems, and shows that patient data can be extracted from disparate information systems and converted to a common format that enables sharing among physician offices, medical laboratories, hospitals and other clinical settings. This prototype enables a single view of a patient's medical information, which is drawn from multiple databases but is seen as one combined electronic health record. Accenture developed its prototype network working with three health care communities: West Virginia Medical Institute, the Commonwealth of Kentucky's Eastern Region Health Community, and CareSpark in Tennessee. This region has a wide variety of clinical systems among the 15 provider organizations that participated in the NHIN prototype.

Northrop Grumman

The prototype developed by the consortium led by Northrop Grumman required no specific portal to the NHIN system. Instead, participant organizations were able to use their own existing applications. Northrop Grumman's model had no central patient registry or data repository. It employs an RLS to provide an easy gateway to connect to consortium participants. This consortium developed a new concept, the "permission registry" service, within the NHIN that allows patients to control information moving within the HIE. This consortium worked with

three communities: the Santa Cruz RHIO, HealthBridge in Cincinnati, and the University Hospitals Health System in Cleveland.¹⁹⁸

Computer Sciences Corporation

The Computer Sciences Corporation team built its model based on the Markle Foundation's "Common Framework for Health Information Exchange" (Common Framework). The approach emphasizes a "network of networks," with few barriers for the regional organizations to participate. It leverages existing health industry and Internet infrastructures without requiring new networks, specific applications or hardware, central databases or a central operator.¹⁹⁹ The team securely transferred health care data between MA-SHARE in Massachusetts, the Indiana Health Information Exchange, the Mendocino Health Records Exchange in California, as well as local public health departments in Boston, Indianapolis, and Mendocino County.

IBM

The IBM prototype enables secure access to health care data and real-time information sharing and exchange of health care data among physicians, patients, hospitals, laboratories, and pharmacies, regardless of where the medical data is located. IBM's NHIN prototype is installed and operating in three health care marketplaces including Research Triangle Park/Pinehurst, North Carolina.; Guilford and Rockingham Counties, North Carolina and Danville, Virginia; and Mid-Hudson Valley, New York. Participating hospitals within the respective regions include Duke University Health System, FirstHealth of the Carolinas, Morehead Memorial Hospital, Moses Cone Health System, Vassar Brothers Medical Center, Kingston Hospital, and St. Francis Hospital.²⁰⁰

Public Health Information Network (PHIN)

Parallel to the development of the NHIN, the Centers for Disease Control and Prevention is focused on developing an infrastructure to capture and monitor population health data. The Public Health Information Network (PHIN) is a business and technical architecture for the nation's public health information system. It is intended to advance the capacity and interoperability of public HIT systems. The initiative "targets the systems for disease surveillance, national health status indicators, data analysis, public health decision support, information resources and knowledge management, alerting and communication

¹⁹⁸ HealthCareIT News. (2007). HealthCareIT News Home Page. New Gloucester, ME.

¹⁹⁹ CSC (2/14/2007). CSC and 'Connecting for Health' team successfully demonstrate nationwide health information network prototype. El Segundo, CA.

²⁰⁰ IBM. (1/23/2007). IBM propels Nationwide Health Information Network Secure and interoperable system poised to deliver high-quality healthcare for consumers, clinicians and move the nation toward electronic health records. Washington, DC. Available: <http://www-03.ibm.com/industries/healthcare/doc/content/news/pressrelease/2025373105.html>.

and the management of public health response.”²⁰¹ The major goal of this initiative is to connect the many organizations and functions involved in public health to create a reliable information network capable of supporting the current and emerging needs of public health.

Standards Development

During its study of the environment of EHR-S, the Task Force found that the array of health care information systems developed over the years still operate today almost totally independently of each other; they have little or no capability to share data across systems.^{202,203,204} Today, there are many standards for health information exchange, and there are variations and gaps in these standards that hinder interoperability and the widespread adoption of HIT. The Task Force agreed that bringing the various versions of data standards into alignment is fundamental to the success of the widespread, seamless, and secure exchange of electronic patient information.

Health Information Standards Panel

In October 2005, HHS awarded a \$3.3 million contract to the American National Standards Institute (ANSI), a non-profit organization that administers and coordinates U.S. voluntary standardization activities, to convene the Health Information Technology Standards Panel (HITSP). HITSP is a multi-disciplinary coordinating body charged with identifying the technical standards necessary to enable electronic health care data interoperability. It is sponsored by ANSI, in cooperation with strategic partners including the Healthcare Information and Management Systems Society (HIMSS), the Advanced Technology Institute, and Booz Allen Hamilton. The charge of HITSP was to develop, prototype, and evaluate a harmonization process for achieving a widely accepted and useful set of health IT standards that will support interoperability among health care software applications, particularly EHR-S.²⁰⁵

Since its formation, the 200+ private and public sector HITSP members have completed standards harmonization in the following areas:

- Electronic health records relating to the electronic delivery of lab results to a physician;

²⁰¹ Centers for Disease Control and Prevention. (2006). 2006 PHIN Conference. Atlanta, GA.

²⁰² Health Policy Institute of Ohio. (2005). Assessing health information technology in Ohio. Columbus, OH.

²⁰³ Kemper A., Uren R., Moseley K. & Clark S. (2006). Primary Care Physicians' Attitudes Regarding Follow-up Care for Children With Positive Newborn Screening Results. *Pediatrics*, 118(5): 1836-1841.

²⁰⁴ Sujansky W. & Chang S. (2006). The California clinical data project: a case study in adoption of clinical data standards for quality improvement. *Journal of Health Information Management* v2(3): 71-78.

²⁰⁵ American National Standards Institute. (2007). Healthcare Information Standards Panel. Washington, DC.

- Biosurveillance relating to data networks supporting the rapid alert to a disease outbreak; and
- Consumer empowerment by providing patients the ability to manage and control access to their registration and medication histories.

In October 2006, HITSP delivered its recommendations and summary reports to AHIC, which then recommended that Secretary Leavitt accept the standards. On January 23, 2007, Secretary Leavitt announced his acceptance of 30 consensus standards recommended by the HITSP.²⁰⁶ He also accepted AHIC's recommendation that federal health care delivery systems providing direct patient care develop an adoption plan to integrate these standards into their software systems by December 2007. The Task Force carefully considered the work of HITSP as part of its work.

Certification Commission for Healthcare Information Technology

The Certification Commission for Healthcare Information Technology (CCHIT) is a private, non-profit organization with a mission to develop a certification process to accelerate the adoption of health information technology by creating an efficient, credible, and sustainable certification program. There are more than 200 EHR-S on the market today, but until recently there were no criteria for objectively evaluating their capabilities. As mentioned earlier in this report, the Task Force found that criteria and standards to enable interoperability between different vendor products are non-existent. This lack of criteria and standards limits widespread investment in HIT and hinders informed purchasing decisions. Until the formation of CCHIT, there was no national organization that could establish objective criteria by which vendor products could be evaluated. HHS awarded a \$2.7 million contract to CCHIT to develop criteria and standards for certifying EHR-S and the network components through which they interoperate.²⁰⁷

An important part of CCHIT's work is to certify health information systems. CCHIT certification provides assurance to purchasers that these products meet basic criteria for functionality, interoperability, and security. CCHIT certification involves assessing the product's compliance with current criteria for functionality, interoperability, and security. The CCHIT criteria were developed using available and widely-accepted industry standards, which were refined with input from a wide range of stakeholders. Test scripts are used to demonstrate compliance.

The CCHIT inspection process uses a combination of documentation review, self-attestation, jury-observed demonstrations, and interoperability testing. If a vendor is able to demonstrate that its product meets all the criteria, the product will become "CCHIT

²⁰⁶ U.S. Department of Health and Human Services. (1/25/2007). HHS Secretary Leavitt Accepts Recommendations from Healthcare Information Technology Standards Panel (HITSP), Data Standards to Support Nationwide Health Information Network, Washington, DC.

²⁰⁷ U.S. Department of Health and Human Services. (10/6/2005). HHS Awards Contracts to Advance Nationwide Interoperable Health Information Technology. Washington, DC.

Certified” for a specific certification domain and year (e.g., a CCHIT Certified Ambulatory EHR for 2007).²⁰⁸ The Task Force concluded that certification of EHR-S by a national standards organization is a critical for product evaluation and development of standards for exchanging electronic health information.

The Call for Interoperability

In 2006, the current administration issued an Executive Order to ensure “that health care programs administered or sponsored by the federal government promote quality and efficient delivery of health care through the use of health information technology, transparency regarding health care quality and price, and better incentives for program beneficiaries, enrollees, and providers.” The Executive Order also wanted to make relevant information available to the consumers of the services, in collaboration with similar initiatives in the private sector and non- public sector. This order committed federal departments and agencies that purchase and deliver health care to migrate to HIT that is based on recognized interoperability standards, as they upgrade or implement new systems.²⁰⁹

Anti-Fraud for Electronic Health Records

In 2005, ONC contracted with AHIMA’s Foundation of Research and Education (FORE) for two complementary projects. The initial project examined the state of automated coding software and its development and use to enhance antifraud activities. The subsequent project was to study how the use of HIT could enhance and expand fraud management. Towards that end, FORE convened a multi-stakeholder group of experts, which formed the National Executive Committee (NEC), to identify the best opportunities to strengthen fraud management capabilities with a nationwide interoperable HIT infrastructure, and develop model anti-fraud requirements for EHR-S based on the guiding principles set forth in the initial project. FORE plans to submit its model anti-fraud requirements to CCHIT as potential anti-fraud certification criteria for EHR-S.

EHR-S – Leading Initiatives

In addition to the broad efforts previously discussed, the federal government has sponsored some specifically targeted efforts to promote the implementation and use of EHR-S. These efforts are discussed below.

²⁰⁸ Certification Commission for Health Information Technology. (5/2007). CCHIT Certification Handbook, Ambulatory EHR Products. United States Department of Health and Human Services. Washington, DC.

²⁰⁹ White House. (2006). Executive Order: Promoting Quality and Efficient Health Care in Federal Government Administered or Sponsored Health Care Programs. Washington, DC.

Hurricane Katrina Information Network and Digital Health Information Recovery Project for the State of Louisiana

To aid physicians, hospitals, and other facilities resume operations following Hurricane Katrina, HHS established a task force of local and national experts to help area providers use HIT to rebuild patient medical records. This task force helped to implement, support, and disseminate state-of-the-art information technology to create an infrastructure that supports interoperable health care information exchange. Agreements were signed with:

- The Southern Governors' Association, to host the Gulf Coast Health Information Task Force, which brought together local and national resources and coordinate the planning for a digital health information recovery; and
- The State of Louisiana Department of Health and Hospitals, to develop a prototype to support health information sharing and EHR-S that can be replicated throughout the region.²¹⁰

These agreements brought together local and national resources, coordinate the planning for a digital health information recovery, and develop a prototype of health information sharing and electronic health record support that can be replicated throughout the region.²¹¹

Doctor's Office Quality IT

One of the physician-focused quality initiatives sponsored by the CMS is the Doctor's Office Quality – Information Technology (DOQ-IT) project.²¹² The DOQ-IT program is designed to use EHR-S and other HIT systems to improve health outcomes for patients with chronic illnesses.²¹³ It promotes greater availability of high quality affordable health information technology by providing assistance to physician offices in adopting and using such technology. In Maryland, the Delmarva Foundation, which functions as the Maryland Quality Improvement Organization (QIO), operates the DOQ-IT program.

Department of Defense (DoD)

Currently, thousands of military medical providers have access to the DoD's EHR-S, known as the Armed Forces Health Longitudinal Technology Application (AHLTA).²¹⁴ DoD's vision is to provide each patient with a continuously updated digital medical record from the point of injury or care on the battlefield, to discharge from military

²¹⁰ U.S. Department of Health and Human Services. (11/17/2005). HHS Enters Into Agreements to Support Digital Health Recovery for the Gulf Coast. Washington, DC.

²¹¹ Office of the National Coordinator for Health Information Technology. (2007). Programmatic Contract Summary. United States Department of Health and Human Services. Washington, DC.

²¹² U.S. Department of Health and Human Services. (2007). Doctor's Office Quality – Information Technology (DOQ-IT). Washington, DC.

²¹³ National Health Information Infrastructure. (2006). HHS agencies' responsibilities related to the NHII. United States Department of Health and Human Services. Washington, DC.

²¹⁴ Department of Defense. (2006). AHLTA home page. Washington, DC.

clinics and hospitals in the United States. These records would be electronically transferable to the VHA as part of the Joint Patient Electronic Health Record (JPEHR).²¹⁵ This system gives health care providers access to beneficiary health data (i.e., conditions, prescriptions, diagnostic tests) and additional information essential to providing quality care. The goal is to have the AHLTA system fully implemented for all services members, retirees, and their families by 2011.

Department of Veterans Affairs (DVA) – Veterans Health Administration

The DVA developed and implemented the Veterans Health Information Systems and Technology Architecture (VistA) to support the day-to-day operations of its hundreds of hospital, clinics, and nursing homes across the country.²¹⁶ VistA is a comprehensive, integrated health care information system for clinicians.

A parallel PHR system, My HealthVet, was established to interface with VistA. The PHR contains key components of an individual's medical records for easy access.²¹⁷ The goal of the DVA web-based PHR is to empower patients to participate in their own health care. This demonstration project is intended to show that personal electronic health data can be provided to veterans while maintaining the safety, security, and privacy of the information.

²¹⁵ Military.com. (2006). Military.com: All the benefits of service. Washington, DC.

²¹⁶ Kolodner R., Groen P., Tirmizi S. & Wine M. (2007). Department of Veterans Affairs, Veterans Health Administration, Veterans Health Information Systems and Technology Architecture. Washington, DC.

²¹⁷ Veteran's Administration. (2006). MY HEALTHEVET Pilot. Washington, DC.

Section 5 - Task Force Recommendations

The Task Force applauds the Governor and the Maryland General Assembly on their intent to make better use of health information technology (HIT) in Maryland. Like a number of states, Maryland has embarked on a journey to identify solutions that address cost, quality, access, and safety in health care delivery using HIT.

Background

From January 2006 through December 2007, the Task Force studied the current use and potential expansion of electronic health record systems (EHR or EHR-S, as defined by the Task Force) in Maryland. This study encompassed a wide range of issues including privacy and security, barriers to adoption, legal and regulatory matters, national and state initiatives, technology, and costs and funding sources. Specific emphasis was placed on studying electronic transfer, electronic prescribing (e-prescribing), computerized physician order entry (CPOE), and the impact of EHR-S on school health records and patient safety.

The Task Force concludes that the benefits of HIT can be far reaching. Consumers should benefit from a system that enhances quality, safety, access, and efficiency, as well as one that allows health information to follow them. Employers and payers should benefit from a system that encourages high-quality, evidence-based medicine, cost-effective therapies, and a reduction in duplicative services. Physicians and other providers should benefit from a system that promotes operational efficiencies and clinical decision support tools.

Three fundamental barriers need to be resolved before widespread adoption and optimal use of HIT can occur:

- Identifying financial incentives to encourage adoption, and resolving existing reimbursement barriers that discourage optimal use;
- Addressing the perceived threat to privacy and security, and the resulting lack of consumer trust; and
- Resolving legal and regulatory barriers.

Recommendations

The Task Force is pleased to submit the following recommendations to assist the Governor and General Assembly with this initiative. These recommendations are the result of extensive work by the Task Force over the last 18 months:

Financial

- Balance the relationship of HIT costs and benefits in each sector through a system of payments and subsidies;
- Include HIT adoption in private payer Pay-for-Performance programs;
- Identify incentives for e-prescribing; and
- Identify funding sources for adoption of EHR-S.

Technology

- Encourage Physician implementation of EHR-S;
- Encourage Hospital implementation of EHR-S and CPOE;
- Develop statewide privacy and security policies for health information exchange;
- Implement a statewide health information exchange;
- Allow market forces to drive consumer adoption of personal health records;

Legal / Regulatory

- Modify existing statutes to resolve conflicts between statutes, and develop new legislation where necessary.

HIT / HIE Consumer Education

- Develop a statewide outreach and education program.

School Health Records

- Resolve differences between State privacy and security laws, HIPAA, and FERPA; and
- Encourage adoption of EHR-S in school-based health centers.

Discussion

Financial Incentives

Balance the relationship of HIT costs and benefits in each sector through a system of payments and subsidies

The health care system currently compensates physicians and other providers for procedures and episodes of care. There is usually no compensation for care coordination, management of chronic diseases, better outcomes, or for non-visit based care (e.g., via email). There is inadequate compensation for preventive care and other services designed to keep people healthy. These management, non-visit based, and wellness services are enabled by HIT.

Absent reimbursement reform, there is a poor, or even a negative, incentive for physician investment in HIT. Studies have shown that while providers assume the high cost of HIT acquisition and implementation, the majority of cost savings from improved efficiencies are generally realized by payers and purchasers.²¹⁸ Providers who are able to increase their productivity using HIT may find a positive return on their investment. On the other hand, providers who invest in HIT and experience an increase in the volume of non-reimbursable services may view HIT adoption as a burden.

On August 8, 2007, Governor Martin O'Malley appointed six individuals to participate on the Task Force on Health Care Access and Reimbursement (TFHCAR). Enacted by legislation in 2007, TFHCAR is charged with examining physician and health care reimbursement trends in the State, and developing recommendations for presentation to the Governor and the General Assembly. The Task Force believes that the newly established TFHCAR will address the above issues as part of their work.²¹⁹

Include HIT adoption in private payer Pay-for-Performance programs

The Task Force recommends considering adoption of meaningful and transparent Pay-for-Performance programs as a means of providing additional financial incentives for health care improvement and transformation. Pay-for-Performance programs can indirectly promote technology adoption as HIT provides the necessary infrastructure to promote point-of-care technology and generate actionable reports regarding quality improvement strategies.²²⁰ The Task Force believes that a performance measuring system needs to be transparent, objective, well validated, and should take into consideration clinically-determined and relevant measures of quality.

²¹⁸ Health Policy Institute of Ohio. (October 2005). Assessing health information technology in Ohio. Columbus, OH.

²¹⁹ Maryland General Assembly. Senate Bill 107, P4.

²²⁰ Williams T.R., Raube K., Damberg C.L. & Mardon, R.E. (2006). Pay for performance: its influence on the use of IT in physician organizations. Journal of Medical Practice Management. Mar-Apr; 21(5): 301-6.

Pay-for-Performance programs should provide a useful financial incentive to promote HIT adoption. However, these programs should not be viewed as a substitute for reimbursement reform. The Task Force agrees that broader reimbursement reform is required to ensure more widespread adoption of HIT.²²¹ As it stands today, the current health care payment structure does not support technology adoption, and in many ways is at odds with the public interest.

Identify incentives for e-prescribing

The Task Force believes that some level of financial incentive is needed to promote the optimal use of e-prescribing as part of a full electronic system. An integrated system can help providers choose the appropriate drug and dosage for patients using data contained within EHR-S; it can also provide patient medication history. e-Prescribing:

- Enables providers to manage multiple formularies;
- Prevents medication errors caused by illegible handwriting;
- Provides alerts to potentially harmful drug interactions;
- Promotes the use of generic drugs;
- Enhances efficiency by producing electronically transmittable prescriptions;
- Augments patient safety; and
- Improves quality through the provision of clinical guidelines.

Nevertheless, the adoption of e-prescribing has been slow. The Task Force found that a number of providers tried various standalone e-prescribing systems in the past, but abandoned their use for a variety of reasons. These include long-term duplicative workflow, a lack of broadband access, difficulties in managing the e-prescribing application in a client/server environment, undercapitalized e-prescribing vendors, the lack of incentives for providers to adopt the technology, and the lack of access to formulary, eligibility, and/or medication history information.

Identify funding sources for EHR-S adoption

The Task Force is concerned about the lack of clear financial incentives in the current payment system that will promote the adoption of EHR-S,²²² and its members view funding as essential to facilitating widespread adoption.²²³ Incentive vehicles discussed include tax credits, grants, small business loans, and increased third-party reimbursement. The cost of implementing EHR-S varies widely. These systems can cost physician

²²¹ Rosenfeld S, Zeitler E., & Mendelson D. (March 2004). Financial Incentives: Innovative Payment for Health Information Technology. Foundation for eHealth Initiative. Washington, DC.

²²² Institute of Medicine of the National Academies. (March 1, 2001). Crossing the Quality Chasm: A New Health System for the 21st Century. Washington, DC.

²²³ Rosenfeld S, Zeitler E., & Mendelson D. (March 2004). Financial Incentives: Innovative Payment for Health Information Technology . Foundation for eHealth Initiative. Washington, DC.

practices between \$30,000 - \$50,000 per physician, and upwards of several million dollars for hospitals. System implementation can take a year or longer, and can significantly reduce provider productivity during that time.

The Task Force believes that funding incentives are needed to help defray the initial acquisition and implementation costs of EHR-S, and to assist with the subsequent costs related to integrating these system with a statewide HIE. If properly funded and carefully implemented, the adoption of EHR-S can be accelerated. This will enable the transformation of health care delivery while maintaining the integrity and privacy of patient information.²²⁴

Technology Adoption

Task Force members believe that the issues discussed above are prerequisites to HIT implementation, and must be resolved prior to consideration of implementation timeframes. The Task Force agrees that long range goals for provider adoption of technology should be consistent with national goals. Establishing timeframes for technology adoption hinges on resolving issues related to privacy and security, consumer trust, and payment reform. It is important that the legislature consider funding alternatives as part of any decision that mandates the use of technology.

Encourage physician implementation of EHR-S

The Task Force agrees that physicians should adopt EHR-S; however, members have mixed views on whether physicians should be required or encouraged to implement an EHR-S. Participants recognize that a business case exists for implementing HIT, but could not reach consensus regarding voluntary or mandatory adoption of EHR-S. Task Force members agree that it is essential to transition to a health care system that places the needs of patients first, while at the same time enabling providers to access the information they need to make the best clinical and economic decisions.

The White House and HHS have called for most Americans to have an electronic health record by 2014. To further this objective, the Task Force believes that the State should provide guidance to health care providers as they evaluate, purchase, and implement HIT. A requirement that physicians implement EHR-S that are certified by CCHIT was widely supported by the Task Force.²²⁵

Hospital implementation of EHR-S and CPOE systems

The Task Force considered statewide adoption of inpatient EHR-S and CPOE as necessary for achieving the promise of HIT. Task Force members strongly encouraged

²²⁴ Middleton B, Hammond W.E., Brennan P.F. & Cooper G.F. (2005). Accelerating U.S. EHR Adoption: How to Get There From Here. Recommendations Based on the 2004 ACMI Retreat. Journal of the American Medical Informatics Association. 2005;12:13-19. DOI: 10.1197/jamia.M1669.

²²⁵ Three leading HIT industry associations – the American Health Information Management Association (AHIMA), the Healthcare Information and Management Systems Society (HIMSS) and The National Alliance for Health Information Technology (Alliance) – joined forces in July 2004 to launch CCHIT as a voluntary, private-sector organization that certified HIT products.

hospitals to implement EHR-S and CPOE but could not agree on an adoption date. Participants agree that these systems should include functionality that relates to decision support, public health, and secure access to patient information by authorized individuals.

The use of CPOE impacts many areas, but the most important is patient safety. In recent years, the ability of CPOE systems to improve the quality of patient care has become more apparent. Studies have shown that CPOE systems are effective in reducing medication errors and adverse drug events.^{226, 227} Most hospitals in Maryland have existing technology plans that call for the implementation of EHR-S and CPOE within the next five years. The Task Force also believes that hospitals should only implement EHR-S and CPOE systems certified by CCHIT.

Develop statewide privacy and security policies for health information exchange

Questions about privacy and security will continue to arise as health care moves from processing and storing millions of reams of paper records, to a network of private, secure interconnected electronic systems.²²⁸ The Task Force recommends a multi-stakeholder approach to developing statewide privacy and security policies that foster consumer trust.

Task Force participants were divided on the actual principles that could provide the basis for these policies, but agree that some combination of those outlined in the proposed amendments to H.R. 4157 Health Information Technology Promotion Act of 2006,²²⁹ and in the Markle Foundation's Connecting for Health Common Framework,²³⁰ could form the foundation for developing statewide policies. The Basic Privacy Principles for Quality Health Care, included in the proposed amendments to H.R. 4157, are widely supported by many professional groups, including the Coalition for Patient Privacy (a coalition of more than 40 organizations). The Markle Foundation's Connecting for Health Common Framework was developed by experts in information technology, health privacy law, and policy.

Without strong privacy and security policies in place, HIT adoption could be limited to a digital system that keeps information locked in electronic silos, or a system that permits unfettered electronic exchange of information under HIPAA's treatment, payment, and health care operations exception. This could ultimately produce significant privacy breaches, with the undesirable result of failing to realize the full potential of HIT.

²²⁶ Bates D.W., Leape L.L., Cullen D.J., et al. (1998). Effect of Computerized Physician Order Entry and a Team Intervention on Prevention of Serious Medication Errors. *JAMA*; 280: 1311-1316.

²²⁷ Evan R.S., Pestontnik S.L., Classen D.C., et al. (1998). A Computer-Assisted Management Program for Antibiotics and other Antiinfective Agents. *NEJM*; 338: 232-8.

²²⁸ Rosenfelt S., Koss S., et al., (June 2007). Privacy and Security Regional Health Information Exchange, p. 20. California HealthCare Foundation. Oakland, CA.

²²⁹ This bill never became law and was proposed in a previous session of Congress. GovTrack.us. H.R. 4157--109th Congress (2005): Health Information Technology Promotion Act of 2006, GovTrack.us. (database of federal legislation), (Available: Oct 19, 2007). Amendments to H.R. 4157, as reported by The Subcommittee on Health, offered by Mr. Markey.

²³⁰ Markle Foundation, Connecting For Health, Resources for Implementing Private and Secure Health Information Exchange. (April 2006). New York, NY.

Implement a statewide health information exchange

The Task Force supports the State's efforts to implement an HIE, and agrees that the State should allocate funding for development costs. The MHCC and Health Services Cost Review Commission (HSCRC) have initiated a two-phase strategic plan to implement an exchange, which includes several parallel planning projects, followed by a single implementation project. MHCC and HSCRC expect to fund planning projects for a total of up to \$750,000 through hospital rate adjustments. As part of the implementation phase, MHCC and HSCRC will use the ideas developed in the proposed planning projects to craft a Request for Application (RFA) to implement a statewide HIE. Project specifications will be developed through extensive consultation with health care stakeholders and technology experts.

The HSCRC anticipates that up to \$10 million will be available for project implementation through adjustments in rates paid to hospitals. The Task Force believes that hospitals and other health care providers are willing to participate in an HIE and support the State's role in facilitating the development of an HIE through a public/private partnership.

Allow market forces to drive consumer adoption of personal health records

The Task Force believes that the State should not mandate personal health records (PHRs), but should allow the marketplace to drive adoption. PHRs have the potential to develop into a secure, reliable communications platform that enables consumers and health care providers to improve coordination of health care decisions and promote positive health behaviors. Technology that supports the integration of the information that consumers enter into PHRs, with the information providers and payers maintain about the patient, is expected to be available within the next five years. However, at this time, PHRs lack the functionality to handle complex health information, integrate with provider systems, and promote informed decision making.

Project HealthDesign, an initiative funded by the Robert Wood Johnson Foundation, is one of many projects underway to design PHRs that can reflect and respond to what is happening in a user's daily life, rather than being a static repository of consumer health information.²³¹ The Task Force agrees that at some point in the future, EHR-S should integrate with PHRs.

Legal/Regulatory

Modify existing statutes to resolve conflicts between statutes, and develop new legislation where necessary

The Task Force realizes that more work is required to address the legal issues related to the use of technology in health care. The resolution of conflicting privacy and security laws within the State, with other states, or with laws and regulations, is critical for the

²³¹ Robert Wood Johnson Foundation Press Release. (February 2007). Rethinking the Power and Potential of Personal Health Records. Princeton, NJ.

free flow of information within and across jurisdictions. The Task Force identified instances in which laws may conflict or, at a minimum, introduce confusion when HIE is implemented.

The Task Force recommends that the State conduct a review of Maryland statutes related to the exchange of health care information and appropriately align them with federal law. This review should also include the current regulations on the creation, retention, disclosure, and destruction of medical records to ensure that the statutes permit EHR-S and sharing of electronic patient information.

The General Assembly should amend the Maryland Self-Referral Law, Title 1, Subtitle 3 of the Health Occupations Article, to expressly provide an exception for support provided by health care facilities to health care providers to assist health care providers in the adoption of electronic health records systems. The Task Force recommends that any such amendment be consistent with the federal exceptions to the so-called “Stark” Law set forth in 42 CFR Chapter IV Sections 411.357 (u) and (v). In addition, the Task Force recommends that legislation clarify that support provided by health care facilities to health care providers that complies with an exception to the Maryland Self-Referral Law will not be construed as a “fee-splitting” or a “kickback” under various professional licensure statutes and regulations, such as the Health Occupations Section 14-404 (a) (15).²³² Such amendments would encourage the broad and early adoption of electronic health records across the continuum of patient care in Maryland.

The Task Force is concerned about the potential for HIE to increase provider liability, and believes that the following key points should be reflected in any new legislation:

- EHR-S, in and of themselves, do not elevate the standard of care. Rather, EHR-S expand the information available to physicians. This additional information may expand or complicate the workflow for the provider, which in turn could lead to errors and an increased risk of liability.
- Clinical decision support systems (CDSS) do not create or alter the standard of care. They may, however, make adherence to the standard of care more likely, or make non-adherence more visible. They provide better documentation of the adherence to standards and the rationale for non-adherence. Physicians have an obligation to review the integrity of the information presented in the CDSS.
- While there is no obligation to purchase or use any particular technology, the physician’s duty is expanded by the existence of readily available electronic health information.

²³² As of October 2007, Health Occupations Section 14-404 (15) applies to Physicians and provides, in pertinent part, that the licensing Board may take action, including licensure revocation, against a Physician who: “Pays or agrees to pay any sum to any person for bringing or referring a patient or accepts or agrees to accept any sum from any person for bringing or referring a patient.”

HIT/HIE Consumer Education

Develop a statewide outreach and education program

The Task Force recommends that the State develop programs aimed at educating consumers on the various aspects of electronic health information and the many ways HIT can be used to improve health care. The implementation and success of HIE, both economically and politically, depends on appropriately addressing the information needs of consumers. Task Force members observed that most information reported in the press focuses on the negative aspects of electronic health information, e.g., breaches in privacy and security. The Task Force views education as critical to shaping consumer acceptance of electronic health information exchange and building consumer trust.

Stakeholder engagement and commitment have been key success factors in electronic health information initiatives nationwide.²³³ According to a survey conducted in 2005, consumers ranked privacy, security, and confidentiality as the major hurdles to accepting electronic health exchange.²³⁴ Given the pervasive concerns expressed by the public about any unauthorized disclosure and use of their health information, it is critical to build a foundation of public trust in the early phases of health information exchange.

School Health Records

Resolve differences between State privacy and security laws, HIPAA, and FERPA

The Task Force believes that existing State and federal laws regarding the privacy and confidentiality of school health records create confusion for school-based providers that manage health records. Typically, school health records document students' functional health problems rather than medical diagnoses. School health records can contain information regarding immunizations, first aid and injury treatment, and periodic health screenings. Maryland's 61 school-based health centers (SBHCs)²³⁵ provide a wide range of medical, mental, and dental health services, either on-site or off-site. These records include medication administration, as well as referrals to other providers for care. Records of care at SBHCs often contain information regarding reproductive health, behavioral health, and abuse or violence issues.

²³³ Frisse M. E. "State and Community-based Efforts to Foster Interoperability," Health Affairs, Volume 24, Number 5 (September/October 2005): 1196.

²³⁴ Connecting for Health Survey Public Opinion Strategies September 2005. Markel Foundation. New York, NY.

²³⁵ SBHCs are located in 22 elementary schools, 3 elementary/middle schools, 13 middle schools, 19 high schools, and 4 special schools. They are found in all regions of the State, including Baltimore City (19), and the following counties: Baltimore (15), Caroline (5), Cecil (2), Dorchester (4), Harford (5), Montgomery (3), Prince George's (3), Talbot (3), Washington (1), and Wicomico (1). Comprehensive information on the 61 SBHCs, including statistical reports on each jurisdiction's centers, may be found on the SBHC page at the MSDE website, http://www.marylandpublicschools.org/MSDE/divisions/studentschoolsvcs/student_services_alt/school_based_health_centers/.

The Task Force believes that certain elements of the school health record clearly qualify as a health record, and are concerned about including them as part of students' educational records. At public schools, the Family Educational Rights and Privacy Act of 1974 (FERPA or the Buckley Amendment), protects the privacy rights of students by requiring parental consent to access student records.²³⁶ However, exceptions to this requirement exist for students who have reached 18 years of age, and for school officials with a legitimate educational interest, which is defined by the individual school districts.

Encourage the adoption of EHR-S in school-based health centers

The Task Force believes that electronic health record adoption should occur in all 61 SBHCs in Maryland. The Task Force was undecided on whether SBHCs' adoption of EHR-S should be mandatory or voluntary, but agrees that their use will improve patient care and workflow management within SBHCs. Services offered by SBHCs are determined by the local school boards, and funding for school health programs inevitably competes with academic agendas. Both local governments and the State need to consider funding EHR-S in SBHCs.

The National Task Force on Confidential Student Health Information stated that it is extremely important for school-based providers and administrators to know how to handle confidential student health information, particularly given the presence of students with chronic physical and emotional conditions, and behavioral or learning disorders.²³⁷ Task Force members recognize that difficulties exist for managing traditional school health records, but note even greater difficulties for medical records generated by school-based health centers.

²³⁶ "The FERPA-HIPAA Interface," in E-Journal of the GWU Center for Health and Health Care in Schools, June 2003.

²³⁷ National Task Force on Confidential Student Health Information, *Guidelines for Protecting Confidential Student Health Information* (Kent, Ohio: American School Health Association, 2000), p. 34. Kent OH.

APPENDIX A

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APPENDIX B

Members of the Health Information Security and Privacy Collaboration (HISPC)

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Arizona	Maine	Oklahoma
Arkansas	Massachusetts	Oregon
California	Michigan	Rhode Island
Colorado	Minnesota	Utah
Connecticut	Mississippi	Vermont
Florida	New Hampshire	Washington
Illinois	New Jersey	West Virginia
Indiana	New Mexico	Wisconsin
Iowa	New York	Wyoming
Kansas	North Carolina	Territory of Puerto Rico
Kentucky		

APPENDIX C

Examples of State Funding Initiatives

California

In California, “the Governor instructed the agencies and the Department of Managed Health Care to ‘devise financing strategies to allocate at least \$200 million in investment funds and \$40 million in grant monies previously secured from California health plans’ for health IT for rural areas, safety-net providers and medical groups.”²³⁸

Florida

In 2005, the Florida legislature appropriated \$1.5 million for the Florida Health Information Network grants program and another \$2 million in 2006.²³⁹

Michigan

The Michigan legislature approved \$9 million for pilot projects to develop or implement local HIEs.²⁴⁰

Minnesota

The Minnesota legislature, as part of the Governor’s 2006 e-Health initiative, has made \$1.3 million in grants available to support the adoption and use of interoperable electronic health records in rural and underserved areas.²⁴¹

Missouri

Missouri’s fiscal year 2007 budget includes \$25 million for a new Healthcare Technology Fund to support EHR-S, in addition to other projects that can improve the delivery of care, reduce administrative burdens, and address fraud, waste, and abuse.²⁴²

New York

On May 24, 2006, Gov. George E. Pataki announced that 26 regional health care networks across the state were provided \$52.9 million in grant awards as part of New York's Health Information

²³⁸ National Association of State Chief Information Officers (NASCIO). (11/2006). Profiles of Progress: State Health IT Initiatives, p. 8. Lexington, KY.

²³⁹ Florida Agency for Health Care Administration. (2006). Florida Health Information Network Timeline of Accomplishments. Tallahassee, FL.

²⁴⁰ National Association of State Chief Information Officers (NASCIO). (11/2006). Profiles of Progress: State Health IT Initiatives, p. 25. Lexington, KY.

²⁴¹ Minnesota e-Health Initiative. (2006). Minnesota e-Health Initiative 2006-2007 Grant Program. Minnesota Department of Health. St. Paul, MN.

²⁴² iHealthBeat. (7/6/2007). Missouri to Build Statewide EHR Network for Patient Data. California Healthcare Foundation. Oakland, CA.

technology initiative. These projects will help expand the use of technology in New York's health care system and improve the quality of care for patients.²⁴³

Rhode Island

The Rhode Island legislature approved a \$20 million revenue bond to support the building of an HIE.²⁴⁴

²⁴³ e-Health Initiative. (7/2/2006). Health Information Technology Evaluation Collaborative (HITEC): A Key Resource for HEAL New York Evaluations.

²⁴⁴ National Association of State Chief Information Officers (NASCIO). (11/2006). Profiles of Progress: State Health IT Initiatives, p. 41. Lexington, KY.

APPENDIX D

List of Acronyms

AHIC:	American Health Information Community
AHIMA:	American Health Information Management Association
AHLTA:	Armed Forces Health Longitudinal Technology Application
AHRQ:	Agency for Healthcare Research and Quality
ANSI:	American National Standards Institute
ATI:	Advanced Technology Institute
CCHIT:	Certification Commission for Healthcare Information Technology
CMS:	The Centers for Medicare and Medicaid Services
CPOE:	Computerized Physician Order Entry
DoD:	Department of Defense
DOQ-IT:	Doctor's Office Quality – Information Technology
DVA:	Department of Veterans Affairs
EHR:	Electronic Health Record
EHR-S:	Electronic Health Record Systems
EMR:	Electronic Medical Record
FERPA:	Family Educational Rights and Privacy Act of 1974
HHS:	United States Department of Health and Human Services
HIE:	Health Information Exchange
HIMSS:	Health Information Management and Systems Society
HIPAA:	Health Insurance Portability and Accountability Act of 1996
HISPC:	Health Information Security and Privacy Collaboration
HIT:	Health Information Technology
HITSP:	Health Information Technology Standards Panel
HRSA:	Health Resources and Services Administration
HSCRC:	Health Services Cost Review Commission
IOM:	Institute of Medicine
JPEHR:	Joint Patient Electronic Health Record
MCMRA:	Maryland Confidentiality of Medical Records Act
MeDHIX:	Metro DC Health Information eXchange

MHCC:	Maryland Health Care Commission
MMA:	Medicare Prescription Drug, Improvement, and Modernization Act
MPI:	Master Patient Index
MSDE:	Maryland State Department of Education (MSDE)
MSRSM:	Maryland Student Records System Manual
NIH:	National Institutes of Health
NHIN:	Nationwide Health Information Network
NEC:	National Executive Committee (NEC)
ONC:	Office of the National Coordinator for Health Information Technology
PHIN:	Public Health Information Network
PHR:	Personal Health Record
PPRA:	Protection of Pupil Rights Amendment of 1998 (amended 2001).
RHIO:	Regional Health Information Organization
RLS:	Record Locator Service
VHA:	Department of Veterans Affairs
VistA:	Veterans Health Information Systems and Technology Architecture

APPENDIX E

Glossary of Terms²⁴⁵

- **Access:** The process of obtaining data from, or placing data into a computer system or storage device. It refers to such actions by any individual or entity that has the appropriate authorization for such actions.
- **American National Standards Institute (ANSI):** ANSI is a broad based agency charged with overseeing voluntary standards development for everything from computers to household products. ANSI accredits standards development organizations (SDO) based on their consensus process, then reviews and officially approves the SDO recommendations.
- **American Society for Testing and Materials (ASTM):** ASTM develops standards on characteristics and performance of materials, products, systems, and services. There are numerous standards-writing technical committees. E31 is the Committee on Computerized Systems and E31.28 is the subcommittee on Healthcare Informatics responsible for the Continuity of Care (CCR) standard.
- **Annual Support & Maintenance:** Costs that are typically 15-20% of the software license costs. Where the actual license is normally a one-time fee, the support and maintenance costs are renewed on a yearly basis. This yearly fee covers two areas: 1) any upgrades or new releases, and 2) customer service and support. It should be noted that both vendor and third party software for EHR-S would need support, so it is important to determine which components the support costs cover. In addition, some vendors might have more than one service level agreement, representing different support options at different costs.
- **Architecture:** The orderly arrangement of parts or structure.
- **ASTM:** See American Society for Testing and Materials.
- **Asymmetric Key System:** A system that uses different keys for encryption and decryption. Within such a system, it is computationally infeasible to determine the decryption key (which is kept private) from the encryption key (which is made publicly available).
- **Attribute:** A characteristic or property.
- **Audit trail:** Chronological record of system activity which enables the reconstruction of information regarding the creation, distribution, modification, and deletion of data.
- **Authentication:** Verification of the identity of a person or process.

²⁴⁵ eHealth Initiative Connecting Communities Toolkit. Washington, DC.

- **Authorization:** The role or set of permissions for information system activity assigned to an individual.
- **Biometric Authentication Technology:** Technology that uses some human biological feature (e.g., fingerprint, voice pattern, retina scan, or signature dynamics) to uniquely identify an individual.
- **CA (certification authority):** The entity providing third-party trust within PKI.
- **Certification/Conformance Testing:** Testing a product for the existence of specific features, functions, or characteristics required by a standard in order to determine the extent to which that product satisfies the standard requirements.
- **Chief Complaint Mapper:** A software product that maps chief complaints, captured as text, and transforms them into useful digital data that can be used in functions such as public health outbreak surveillance.
- **Clinical Classification:** A method of grouping clinical concepts in order to represent classes that support the generation of indicators of health status and health statistics.
- **Clinical Data Repository:** The data warehouse that contains clinical data (HL7 messages) centrally.
- **Clinical Messaging:** The communication among providers involved in the care process that can range from real-time communication (for example, fulfillment of an injection while the patient is in the exam room), to asynchronous communication (for example, consult reports between physicians). *Reference:* Health Level Seven, Inc. "HL7 EHR Functional Model and Standard." July 2004. (<http://www.hl7.org/ehr/downloads/index.asp>)
- **Clinical Messaging #1:** Continuity of Care Data Exchanges (Inter-Provider Communication): Communication among providers involved in the care process can range from real time communication (for example, fulfillment of an injection while the patient is in the exam room), to asynchronous communication (for example, consult reports between physicians). Some forms of inter-practitioner communication will be paper-based and EHR-S must be able to produce appropriate documents. *Reference:* Health Level Seven, Inc. "HL7 EHR Functional Model and Standard." July 2004. (<http://www.hl7.org/ehr/downloads/index.asp>)
- **Clinical Messaging #2:** Secure Patient/Physician email (Provider and Patient or Family Communication): Trigger or respond to electronic communication (inbound and outbound) between providers and patients or patient representatives with pertinent actions in the care process. *Reference:* Health Level Seven, Inc. "HL7 EHR Functional Model and Standard." July 2004.
- **Clinical Reminders (Clinical Guideline Prompts):** The ability to remind clinicians to consider certain actions at a particular point in time, such as prompts to ask the patient appropriate preventive medicine questions, notifications that ordered tests have not produced results when expected, and suggestions for certain therapeutic actions, such as giving a tetanus shot if one has not been given for 10 years. *Reference:* eHealth Initiative Foundation. "Second Annual Survey of State, Regional and Community-based

Health Information Exchange Initiatives and Organizations." Washington: eHealth Initiative Foundation, 2005.

- **Clinical User Authentication:** The process used by the HIE to determine the identity of the person accessing the system, with adequate certainty to maintain security and confidentiality of personal health information and to administer, with certainty of identity a regulated process, such as e-prescribing and chart signing.
- **Computerized Provider Order Entry (CPOE):** A computer application that allows a physician's orders for diagnostic and treatment services (such as medications, laboratory, and other tests) to be entered electronically instead of being recorded on order sheets or prescription pads. The computer compares the order against standards for dosing, checks for allergies or interactions with other medications, and warns the physician about potential problems. *Reference:* United States Department of Health and Human Services. Office of the National Coordinator for Health Information Technology (ONC) Glossary: (<http://www.hhs.gov/healthit/glossary.html>)
- **Confidentiality:** A third party's obligation to protect the personal information with which it has been entrusted.
- **Controlled Clinical Vocabulary:** A system of standardizing the terms used in describing client-centered health and health service-related concepts.
- **Conversion Services:** Consulting services offered by the vendor. These services will take your original data, either in paper or electronic form, and transfer the data into the database.
- **Data Center:** The physical space and hardware used by the HIE to house its operations, if these assets are kept within the HIE.
- **Data Integrity:** The accuracy and completeness of data, to be maintained by appropriate security measures and controls. Preservation of the original quality and accuracy of data, in written or in electronic form.
- **Data Recovery Services:** A mechanism and process to safely store duplicate databases and recreate the data should a disaster occur.
- **Decision Support:** Computerized functions that assist users in making decisions in their job functions. In the practice of medicine, these functions include providing electronic access to medical literature, alerting the user to potential adverse drug interactions, and suggesting alternative treatment plans for a certain diagnosis.
- **Decryption:** The technique of using mathematical procedures to "unscramble" data so that an unintelligible (encrypted) message becomes intelligible.
- **Demographics:** Information about name, address, age, gender, and role used to link patient records from multiple sources in the absence of a unique patient identifier.
- **DICOM (Digital Imaging Communications in Medicine):** A standard which defines protocols for the exchange of medical images and associated information (such as patient identification details and technique information) between instruments, information

systems, and health care providers. It establishes a common language that enables medical images produced on one system to be processed and displayed on another.

- **Digital Signature:** A string of binary digits which is computed using an encryption algorithm. Digital signatures enable signatory authentication, confirmation of data integrity, and non-repudiation of messages.
- **Doctor Matching:** The process of cross-linking the multiple provider identifiers in a community from a variety of provider identifier sources, and creating a master doctor identifier with a key for cross-referencing the various community identifiers.
- **Document Review, Edit, Sign:** A software process that allows for secure review, editing, and signature through electronic, distributed technology of electronic health record components, such as operative reports, discharge summaries, and consultations.
- **eLaboratory:** The electronic delivery of laboratory results to practices so that such data may be integrated into electronic patient records in full EHR-S, or used by a dedicated application to view structured, context-rich, and/or longitudinal laboratory results on a patient. eLaboratory includes closing the orders loop, documenting the review of results by clinicians, and documenting that the results have been communicated to the patient. The full benefits of eLaboratory are not achieved until the results are used as input into clinical decision support systems (CDSS).
- **Electronic Billing (Claims, Eligibility, and Remittance):** The ability to contact the payer before the patient is seen, and get a response that indicates whether or not the services to be rendered will be covered by the payer. *Reference:* eHealth Initiative Foundation. "Second Annual Survey of State, Regional and Community-based Health Information Exchange Initiatives and Organizations." Washington: eHealth Initiative, 2005.
- **Electronic Billing Support:** The ability to contact the payer before the patient is seen and get a response that indicates whether or not the services to be rendered will be covered by the payer. *Reference:* eHealth Initiative Foundation. "Second Annual Survey of State, Regional and Community-based HIE Initiatives and Organizations." Washington: eHealth Initiative Foundation, 2005.
- **Electronic Health Record:** Electronically maintained information about an individual's lifetime health status and health care.
- **Electronic Imaging Results Delivery:** The ability to accept messages from radiology sources and integrate the data for presentation to a clinician. *Reference:* eHealth Initiative Foundation. "Second Annual Survey of State, Regional and Community-based Health Information Exchange Initiatives and Organizations." Washington: eHealth Initiative Foundation, 2005.
- **Electronic Prescribing (Pharmacy Communication):** Provides features to enable secure bidirectional communication of information electronically between practitioners and pharmacies or between practitioner and intended recipient of pharmacy orders. *Reference:* Health Level Seven, Inc. "HL7 EHR Functional Model and Standard." July 2004. (<http://www.hl7.org/ehr/downloads/index.asp>)

- **Electronic Referral Management:** The ability to generate and/or receive summaries of relevant clinical information on a patient that are typically transferred between healthcare providers when a patient is referred to a specialist or admitted or discharged from a hospital. *Reference:* eHealth Initiative Foundation. "Second Annual Survey of State, Regional and Community-based Health Information Exchange Initiatives and Organizations." Washington: eHealth Initiative Foundation, 2005.
- **Electronic Referrals and Authorizations:** The ability to generate and/or receive summaries of relevant clinical information on a patient that are typically transferred between healthcare providers when a patient is referred to a specialist or admitted or discharged from a hospital. *Reference:* eHI Foundation. "Second Annual Survey of State, Regional and Community-based HIE Initiatives and Organizations." Washington: eHealth Initiative Foundation, 2005.
- **Electronic Signature:** A digital signature, which serves as a unique identifier for an individual.
- **Encryption:** The process of enciphering or encoding a message so as to render it unintelligible without a key to decrypt (unscramble) the message.
- **e -Prescribing:** Provides features to enable secure bidirectional communication of information electronically between practitioners and pharmacies or between practitioner and intended recipient of pharmacy orders. *Reference:* Health Level Seven, Inc. "HL7 EHR Functional Model and Standard." July 2004. (<http://www.hl7.org/ehr/downloads/index.asp>)
- **Health Information Exchange (HIE):** The mobilization of healthcare information electronically across organizations within a region or community.
 - HIE provides the capability to electronically move clinical information between disparate healthcare information systems while maintaining the meaning of the information being exchanged. The goal of HIE is to facilitate access to and retrieval of clinical data to provide safer, more timely, efficient, effective, equitable, patient-centered care.
 - Formal organizations are now emerging to provide both form and function for health information exchange efforts. These organizations (often called Regional Health Information Organizations, or RHIOs) are ordinarily geographically-defined entities which develop and manage a set of contractual conventions and terms, arrange for the means of electronic exchange of information, and develop and maintain HIE standards.
 - Although HIE initiatives differ in many ways, survey results and eHI experiences with states, regions and communities indicate that those who are experiencing the most success share the following characteristics:
 - Governed by a diverse and broad set of community stakeholders;
 - Develop and assure adherence to a common set of principles and standards for the technical and policy aspects of information sharing, addressing the needs of every stakeholder;

- Develop and implement a technical infrastructure based on national standards to facilitate interoperability;
- Develop and maintain a model for sustainability that aligns the costs with the benefits related to HIE; and
- Use metrics to measure performance from the perspective of: patient care, public health, provider value, and economic value.

Reference: eHealth Initiative. "Second Annual Survey of State, Regional and Community-based Health Information Exchange Initiatives and Organizations." Washington: eHealth Initiative, 2005.

- **Health Care Interoperability:** Assures the clear and reliable communication of meaning by providing the correct context and exact meaning of the shared information as approved by designated communities of practice. This adds value by allowing the information to be accurately linked to related information, further developed and applied by computer systems and by care providers for the real-time delivery of optimal patient care.
- **Health Level Seven (HL7):** An ANSI approved American National Standard for electronic data exchange in health care. It enables disparate computer applications to exchange key sets of clinical and administrative information.
- **ICD-10 (International Statistical Classification of Diseases and Related Health Problems, 10th Revision):** The 1992 revision of the international disease classification system developed by the World Health Organization.
- **ICD-10-CM (International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Clinical Modification):** The American modification of the ICD-10 classification system, for field review release in 1998.
- **ICD-10-PCS (International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Procedural Classification System):** A classification system for reporting clinical procedures, to accompany ICD-10-CM, developed in the US, for 1998 field review release.
- **ICD-9 (International Classification of Disease, 9th Revision):** The 1972 revision of the international disease classification system developed by the World Health Organization.
- **ICD-9-CM (International Classification of Disease, 9th Revision, Clinical Modification):** The American modification of the ICD-9 classification system for both diagnoses and procedures.
- **Implementation Services:** Consulting services offered by the vendor. These services will provide planning and actual implementation of EHR-S. It is important when comparing quoted implementation costs that physicians understand which detailed cost line items a particular vendor will be supplying. Also, make sure and look at their project plans.
- **Informatics:** The application of computer science and information science to the management and processing of data, information, and knowledge.

- **Interface:** Shared boundary between two functional units defined by various characteristics pertaining to the functions, physical interconnections, signal changes, and other characteristics as appropriate.
- **Interface to ADT System:** The interface between an HIE and the systems that are sources for admission, discharge and transfer (ADT) of patients in the care delivery setting, and that are resident within the care delivery institution.
- **Interface to ASP EHR-S:** The interface between an HIE and EHR-S that are maintained on ASP platforms (i.e., NexGen, AllScripts).
- **Interface to Claims System:** The interface between an HIE and the systems that are sources or routing pathways for claims data that are resident within health plans and claims clearinghouses.
- **Interface to EKG System:** The interface between an HIE and the systems that are sources for EKG results that are resident within dispensing physician offices and hospitals.
- **Interface to Eligibility System:** The interface between an HIE and the source data of which people have eligibility for which type of benefits that are resident within health plans and are not infrequently web-enabled.
- **Interface to Formulary System:** The interface between an HIE and the systems that are sources for formulary status of specific drugs for specific health benefit designs and that are resident within pharmacy benefit management companies and hospitals.
- **Interface to Laboratory System:** The interface between an HIE and systems that are sources of laboratory data.
- **Interface to Pharmacy System:** The interface between an HIE and the systems that are sources for prescription data or that are resident within dispensing pharmacies, pharmacy benefit management companies, and hospitals.
- **Interface to Practice Management System:** The interface between an HIE and the systems that are sources for the financial management systems of physician practices.
- **Interface to Provider List System:** The interface between an HIE and the systems that track the multiple providers and their identifying data that are resident within health plans, dispensing pharmacies, pharmacy benefit management companies, laboratories, physician practices, and hospitals.
- **Interface to Provider Office EHR-S:** The interface between an HIE and EHR-S that are maintained in practice-specific systems (e.g., EPIC).
- **Interface to Radiology System:** The interface between an HIE and systems that are sources for radiological data.
- **Interface to Transcribed Reports System:** The interface between an HIE and the systems that are sources for transcribed reports. Typically these systems are based at a transcription service or at a hospital and contain admission and discharge notes and consultations, operative reports, and pathology and radiology results.

- **Interoperability:** The ability of two or more systems or components to exchange information and to use the information that has been exchanged accurately, securely, and verifiably, when and where needed.
- **The International Organization for Standardization (ISO):** A worldwide federation of national standards bodies from some 130 countries, one from each country. ISO's work results in international agreements which are published as International Standards.
- **Key Certificate:** A data record that authenticates the owner of a public key for an asymmetric algorithm. It is issued by a certification authority and is protected by a digital signature allowing the certificate to be verified widely. The certificate may also contain other fields besides the value to the key and the name of the owner, for example an expiration date.
- **Keys:** A sequence of symbols that controls the operations of encryption and decryption.
- **LOINC (Logical Observation Identifiers, Names, and Codes):** The LOINC databases provide sets of universal names and ID codes for identifying laboratory and clinical test results. The purpose is to facilitate the exchange and pooling of results, such as blood hemoglobin, serum potassium, or vital signs, for clinical care, outcomes management, and research.
- **Medication Matching:** The process of cross-linking the multiple possible medication identifier naming conventions in a community from a variety of systems housing medication information, and creating a master medication identifier with a key for cross-referencing the various community identifiers. For example, there are hundreds of NDC codes for identical drugs, as well as HCPCS codes that identify the same drug as NDC codes.
- **Medication Reconciliation:** Alerts providers in real-time to potential administration errors such as wrong patient, wrong drug, wrong dose, wrong route and wrong time in support of medication administration or pharmacy dispense/supply management and workflow. *Reference:* Health Level Seven, Inc. "HL7 EHR Functional Model and Standard." July 2004. (<http://www.hl7.org/ehr/downloads/index.asp>)
- **Message Integrity:** Protecting a message against its unauthorized modification, often by the originator of the message generating a digital signature.
- **Messaging to Pharmacies:** The process of communicating electronically with pharmacies. This typically includes the cost of communication lines and processes between the HIE and pharmacies. This is necessary to support the e-prescribing function when that function includes the process of electronically sending a digital prescription to the pharmacy.
- **Messaging to Providers:** The process of communicating electronically with providers. This typically includes the cost of communication lines and processes between the HIE and provider terminals.
- **Nationwide Health Information Network:** An interoperable, standards-based network across the nation for the secure exchange of health care information. *Reference:* HHS Awards Contracts to Develop Nationwide Health Information Network. 2005.

- **Network Connectivity:** The process used for maintaining connection for communication between the HIE and a data source (laboratory, radiology practice, physician practice, or hospital) and data user (physician practice or hospital).
- **Network:** A set of connected elements. For computers, any collection of computers connected together so that they are able to communicate, permitting the sharing of data or programs.
- **Order Entry:** The process of communicating health care provider orders through electronic, computerized processes.
- **OSI (Open Systems Interconnection):** An international standard for networking adopted by the ISO (International Organization for Standardization). This 7-layer model offers the widest range of capabilities for networking.
- **Outbreak Surveillance:** Support clinical health state monitoring of aggregate patient data for use in identifying health risks from the environment and/or population.
Reference: Health Level Seven, Inc. "HL7 EHR Functional Model and Standard." July 2004. (<http://www.hl7.org/ehr/downloads/index.asp>)
- **Participant Roles:** Examples of roles that may be recognized by the health systems that participate in events affecting the health of people:
 - Provider
 - Governor
 - Manager
 - Recipient
 - Researcher
 - Educator
 - Worker
 - Family Member
 - Roles may be used to authorize an individual's access to information system functionality
- **Patient Matching:** The process of cross-linking the multiple patient identifiers in a community from a variety of patient identifier sources, creating a master patient identifier with a key for cross-referencing the various community identifiers. This is also referred to as a record locator service.
- **Pay-for-Performance/Quality Data Reporting:** Supports the capture and reporting of quality, performance, and accountability measures to which providers/facilities/delivery systems/communities are held accountable, including measures related to process, outcomes, and/or costs of care; may be used in 'pay for performance' monitoring and adherence to best practice guidelines. *Reference:* Health Level Seven, Inc. "HL7 EHR Functional Model and Standard." July 2004. (<http://www.hl7.org/ehr/downloads/index.asp>)
- **Personal Health Record (PHR):** An electronic application through which individuals can maintain and manage their health information (and that of others for whom they are authorized) in a private, secure, and confidential environment. *Reference:* United States Department of Health and Human Services. Office of the National Coordinator for Health

Information Technology (ONC) Glossary: (<http://www.hhs.gov/healthit/glossary.html>. 2005)

- **Public Key Infrastruct**, and electronic "signing" of data transmissions in a secure fashion within an open network environment.
- **Privacy:** Right of an individual to control the circulation of information about him/herself within social relationships; freedom from unreasonable interference in an individual's private life; an individual's right to protection of data regarding him/her against misuse or unjustified publication.
- **Private Key:** In asymmetric cryptography, the key which is held only by the user for signing and decrypting messages.
- **Public Health Processor:** A software product that processes extracted data from health care provider systems for the purpose of tracking, trending, and reporting for public health reasons.
- **Public Key Certificate:** A data record that authenticates the owner of a public key for an asymmetrical key system. It is issued by a CA and is protected by a digital signature, allowing the certificate to be verified widely.
- **Public Key:** In asymmetric cryptography, the key which is published by the user to encrypt messages so that others may verify his/her signature.
- **Recommend Treatment and Monitoring:** The basis of cost, local formularies or therapeutic guidelines and protocols. *Reference:* Health Level Seven, Inc. "HL7 EHR Functional Model and Standard." July 2004. (<http://www.hl7.org/ehr/downloads/index.asp>)
- **Registration Authority:** An entity (group or agency) that has been delegated by a CA to perform a specific set of 'trusted authority' functions within PKI.
- **Results Answer Matching:** The process of cross-linking the multiple possible answers to asking for a given result. For instance, asking for the results of a chest x-ray could yield a dictated report or a digital image of an x-ray. In any case, the case received must be matched across the type of result to a term identifying a common result.
- **Results Name Matching:** The process of cross-linking the multiple possible names of data results that can contain the same information. For instance, a blood glucose reading can be called up by a blood glucose test, an SMA panel, or a glucometer result.
- **Results Review (Alerts to Providers):** The ability to interpret the clinical data that is entered about a patient using a set of rules or algorithms which will generate warnings or alerts at various levels of severity to a clinician. These are intended to make the clinician aware of potentially harmful events, such as drug interactions, patient allergies, and abnormal results that may affect how a patient is treated, with the intention of speeding the clinical decision process while reducing medical errors. *Reference:* eHealth Initiative Foundation. "Second Annual Survey of State, Regional and Community-based Health Information Exchange Initiatives and Organizations." Washington: eHealth Initiative Foundation, 2005.

- **Results Review:** The ability to interpret the clinical data that is entered about a patient using a set of rules or algorithms which will generate warnings or alerts at various levels of severity to a clinician. These are intended to make the clinician aware of potentially harmful events, such as drug interactions, patient allergies, and abnormal results, which may affect how a patient is treated, with the intention of speeding the clinical decision process while reducing medical errors.
- **Risk Assessment:** An evaluation of the chance of vulnerabilities being exploited based on the effectiveness of existing or proposed safeguards or countermeasures.
- **Risk:** The chance of a vulnerability being exploited.
- **Rules Engine:** A set of rules defined within a software process that converts clinical and administrative data streams into a meaningful representation of clinical quality markers to be used in functions such as pay for performance/quality data reporting.
- **Security:** In information systems, the degree to which data, databases, or other assets are protected from exposure to accidental or malicious disclosure, interruption, unauthorized access, modification, removal, or destruction.
- **Service Level Agreement-Compliance:** A documented track record of how well the vendor is meeting its customer support commitments.
- **Service Level Agreement-Customer Responsibilities and Duties:** The steps that the customer needs to take in order to ensure that the vendor has all the information they need to resolve an issue.
- **Service Level Agreement-Hours of Support:** Methods that will be used for communicating and resolving issues. Typical methods are email, phone, and online chat. Ask whether remote diagnostics and/or on site visits by support analysts are available.
- **Service Level Agreement-Methods of Support:** Will be used for communicating and resolving issues. Typical methods are email, phone, and online chat. Remote diagnostics can be available and, in some instances, it might be necessary to have a support analyst come on site.
- **Service Level Agreement-Problem Escalation & Triage:** The mechanism that defines how a problem migrates through the support system, and the different resources that get involved along the way. If a problem can't be resolved in a certain amount of time, then it escalates until it is resolved.
- **Service Level Agreement-Response Times:** Different functions of the system might warrant different response times based on severity level. There should be a schedule of response times for different types of problems, and the service level agreement should define this accountability.
- **Service Level Agreement-Severity/Priority Classification:** Different types of problems have different levels of urgency and importance. The severity level of a problem is usually noted when a support ticket is opened up. Resolution guarantees are based on severity levels. For example, CPOE down would be a high severity level while a patient education database not working might be a lower level of severity.

- **SNOMED International:** A nomenclature for use by all health services professionals developed in the US and updated at least semi-annually.
- **Stages of Health Information Exchange Development:**
 - **Stage One:** Recognition of the need for HIE among multiple stakeholders in your state, region, or community.
 - **Stage Two:** Getting organized by defining shared vision, goals, & objectives, identifying funding sources, and setting up legal & governance structures.
 - **Stage Three:** Transferring vision, goals, & objectives to tactics and business plans, defining needs and requirements and securing funding.
 - **Stage Four:** Well under-way with implementation – technical, financial, and legal.
 - **Stage Five:** Fully operational health information organization. Transmitting data that is being used by health care stakeholders. Sustainable business model.
 - **Stage Six:** Demonstration of organization expansion to encompass a broader coalition of stakeholders than present in the initial operational model.
- **Standard:** Documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics to ensure that materials, products, processes, and services are fit for their purpose. A standard specifies a well defined approach that supports a business process and:
 - Has been agreed upon by a group of experts;
 - Has been publicly vetted;
 - Provides rules, guidelines, or characteristics;
 - Helps to ensure that materials, products, processes and services are fit for their intended purpose;
 - Available in an accessible format;
 - Subject to ongoing review and revision process;
 - This differs from the healthcare industry's traditional definition of "standard of care."
- **Statistical Deviation Detector:** Identifies variances from patient-specific and standard care plans, guidelines, and protocols.
- **Third Party-EHR-S Specific:** Applications that are essential to the basic infrastructure of the system. They are the building blocks, such as the technical platform upon which EHR-S are built (e.g., Windows, Linux, or MacIntosh, etc.) Also, the kind of database structure that controls the system (e.g., SQL, Oracle, etc.).
- **Third Party-General System:** Applications that are essential to the basic infrastructure of the system. They are the building blocks, such as the technical platform EHR-S are built on, e.g., Windows, Linux, or MacIntosh, etc. Also, the kind of database structure controls the system, e.g., SQL, Oracle, etc.

- **Training Services:** Consulting services offered by the vendor. They provide hands on training for all aspects of the system.
- **UMLS (Unified Medical Language System):** A long-term research project developed by the US National Library of Medicine to assist health professionals and researchers to retrieve and integrate clinical vocabularies from a wide variety of information sources. The goal is to link information from scientific literature, patient records, factual databases, knowledge-based expert systems, and directories of institutions and individuals in health and health services.
- **Vendor Software Licenses:** License cost of various modules. Typically, modules will be licensed on a concurrent or name user basis.
- **X12:** A committee chartered by the American National Standards Institute (ANSI) to develop uniform standards for inter-industry electronic interchange of business transactions—electronic data interchange (EDI).
- **X12N:** The principle responsibilities of ASC X12N Insurance Subcommittee are development and maintenance of X12 standards, standards interpretations, and guidelines for the insurance industry, including health insurance. Most electronic transactions regarding health insurance claims are conducted using these standards, many of which are mandated by HIPAA.

APPENDIX F

Maryland Laws and Regulations Applicable to EHR-S

Statutes

The Confidential Medical Records Act

Maryland's Confidential Medical Records Act ("CMRA") requires that, with some exceptions, health care providers keep patients' medical records confidential. Records may only be disclosed without patient consent in certain circumstances and patient consents, when provided, are limited and must include certain items to be effective. A recent Attorney General Opinion (92 Op. Att'y Gen. 107) opined that the current CMRA does not prohibit the creation of an HIE so long as that HIE conforms to the "electronic index model." The law should be examined for changes that might be required to accommodate alternate HIE models.

Mental Health Records

Maryland's CMRA separately addresses mental health records. Currently, a "medical record developed in connection with the provision of mental health services" is subject to special rules governing confidentiality and consent, including, importantly, a restriction which prohibits the disclosure of any information beyond "the information in the record relevant to the purpose for which disclosure is sought..." Health Gen. §4-307(c). Whether these provisions are amenable to a centralized HIE should be examined.

Pharmacies and Pharmacists

Under Maryland law, The Board of Pharmacy may:

...deny a license to any applicant, reprimand any licensee, place any licensee on probation, or suspend or revoke a license if the applicant or licensee:

(27) Provides or causes to be provided confidential patient information to any person without first having obtained the patient's consent, as required by §12-403(b)(13) of this title and Title 4, Subtitle 3 of the Health – General Article...

Health Occ. § 12-313 (b)(27). Section 12-403(b)(13) provides, in relevant part, that pharmacies shall:

- (i) Make and keep on file for at least 5 years a record of each prescription prepared or dispensed in the pharmacy;
- (ii) Disclose the records and files maintained of prescriptions for drugs or devices that identify or may be readily associated with the identity of a patient only in accordance with the provisions of Title 4, Subtitle 3 of the Health-General Article; and

- (iii) Keep additional records as required by the rules and regulations adopted by the Board...

Health Occ. § 12-403(b)(13).

Physicians

Health Occ. § 14-404(40) requires that physicians keep adequate records, “as determined by appropriate peer review.” Specific classes of practitioners, however, are sometimes subject to more specific requirements. Health Occ. § 14-5A-17(12), for instance, provides that respiratory care professionals may face discipline where they “breach...patient confidentiality.” The same prohibition applies under §14-5B-14(12) to physicians and technologists engaging in nuclear medicine (including radiation oncologists, radiation therapists, practitioners of medical radiation and nuclear medicine technologists) and, under §14-5C-17(12), to polysomnographic technologists.

Health Occ. § 14-506 imposes certain confidentiality requirements on records obtained by MIEMSS and others:

The following records and other information are confidential records:

- (1) Any record and other information obtained by the Faculty,²⁴⁶ a component society of the Faculty, the Maryland Institute for emergency Medical Services Systems, a hospital staff committee, or a national medical society or group organized for research, if that record or information identifies any person; and
- (2) Any record of a proceeding or transaction before the Faculty or one of its committees that relates to any investigation or report under §14-401 of this title as to an allegation of grounds for discipline or any other action.

Health Occ. §14-506(b).

Laboratories

...If the results of a laboratory examination are contained in or will be filed in a medical record as defined in §4-301 of this article, the request for a copy of the results shall be made to the facility pursuant to the provisions of §4-302 of this article...

Health Gen. §17-202.1.

Comprehensive Care Facilities

Under Maryland law, residents in a comprehensive or extended care facility (“CCF”) have the right to both “privacy” and “...to receive respect and privacy in a medical care program.” Health Gen. §19-343. Further, the relevant Maryland statutes note that in regard to care provided to residents of CCFs:

²⁴⁶ “Faculty” is defined to mean “the Medical and Chirurgical Faculty of the State of Maryland.” Health Occ. §14-101(d).

- (1) Any case discussion, consultation, examination, or treatment of a resident of a facility:
 - (i) Is confidential;
 - (ii) Is to be done discreetly; and
 - (iii) Is not open to an individual who is not involved directly in the care of the resident, unless the resident permits the individual to be present.
- (2) Except as necessary for the transfer of a resident from the facility to another health care institution or as required by law or a third-party payment contract, the personal and medical records of a resident are confidential and may not be released without the consent of the resident to any individual who:
 - (a) Is not associated with the facility; or
 - (b) Is associated with the facility, but does not have a demonstrated need for the information.

Health Gen. §19-344(g).

Drug and Alcohol Treatment Records

Maryland law regarding alcohol and drug treatment records essentially references the federal confidentiality provisions. Under Health Gen. §8-601,

...the oral or written statements that the individual [seeking treatment] makes and the observations and conclusions that the health professional, hospital, or other person derives or the results of an examination to determine the existence of an illegal or prohibited drug in the body of an individual are not admissible in any proceeding against the individual, other than and subject to the federal regulations concerning the confidentiality of alcohol and drug abuse patient records...

Id. The statute also notes that “the disclosure and use of the records of individuals served by alcohol and drug abuse treatment programs shall be governed by the federal regulations on the confidentiality of alcohol and drug abuse patient records, 42 CFR Part 2.” *Id.*

Developmental Disabilities Records Law

Under Health Gen. Title 7, Subtitle 10, “licensees” are required to keep complete records for each individual served under Title 7. There is no specific requirement, however, that records be kept on-site.²⁴⁷ The statute does require that records be kept “in a secure area and available for the inspection by any person with the right of access to the records under this title.” Health Gen. § 7-1008. The statute also provides that “except as otherwise provided in this section, a licensee may not disclose any record that the licensee keeps on an individual who has been served by the licensee, unless the individual gives written, informed consent to the disclosure.” Health Gen. §7-1010.

²⁴⁷ Other statutes do require that records be kept on site; for instance, Health Gen. §10-713, which applies to facilities caring for the mentally ill, requires that, “A facility shall keep the records in a separate and secure area at the facility.”

Hereditary and Congenital Disorders Record Law

Section 13-109 of the Health General Article provides that Department of Health and Mental Hygiene (“DHMH”) “may adopt rules, regulations and standards for the detection and management of hereditary and congenital disorders.” Health Gen. §13-109. As part of that authorization, the statute provides certain required elements for those regulations:

The rules, regulations, and standards of the Department shall require the Department and each person who conducts a hereditary and congenital disorders program to keep in code and treat as a confidential medical record all information that is gathered in the program and identifies an individual.

Id. The statute goes on to note that this provision does not require that information be kept confidential where either the subject or their authorized representative is informed of the scope of the information to be released and the purpose of the release and consents.

General Maintenance and Destruction of Records

Under Subtitle 4 of Title 4 of the Health General Article, “health care providers,” are prohibited from destroying medical records within a certain time frame. The statute also provides that

After consulting with the Association of Maryland Hospitals and Health Systems, the Maryland State Medical Society, and other interested parties, including consumers and payors, **the Secretary shall adopt regulations governing the destruction of medical records.**

Health Gen. §4-403(f) (emphasis added). Those regulations, according to the statute, must provide for the manner in which a health care provider shall maintain and store medical records so as to ensure confidentiality and provide limited access until the records are destroyed and ensure that the method of destruction renders the records unreadable. Violations of the statutory provisions can result in actions for actual damages and substantial administrative fines.

Child Welfare, Medical Assistance and other Social Services

Md. Code Art. 88A §6²⁴⁸ provides that:

...it shall be unlawful for any person or persons to make known in any manner any information concerning any applicant for or recipient of social services, child welfare services, cash assistance, food stamps, or medical assistance, directly or indirectly derived from the records, papers, files, investigations or communications of the State, county or city, or subdivisions or agencies thereof, or acquired in the course of the performance of official duties.

Id. The statute also provides that:

²⁴⁸ This statutory section has recently been revised, and a new version will be effective October 1, 2007. There are no changes, however, to the provisions and prohibitions that are quoted above.

Except as otherwise provided in Title 5, Subtitles 7 and 12 of the Family Law Article²⁴⁹ and §6A of this subtitle,²⁵⁰ and this section, all records and reports concerning child abuse or neglect are confidential, and their unauthorized disclosure is a criminal offense subject to the penalty set out in subsection (e) of this section.

Id.

The statute goes on to note that “[t]he Department of Human Resources shall issue regulations governing access to and use of confidential information which is in the possession of the Department or local departments of social services.” Similarly, a statutory provision notes that the Baltimore City Health department shall be liable for any unauthorized release of its records. Accordingly, the statute appears to be targeted to state and local agencies, but, as noted above, its broadly worded prohibition is worthy of consideration in terms of social services information that may find its way into patients’ medical records.

Regulations

Comprehensive Care Facilities

COMAR 10.07.02.20 provides:

F. Retention and Preservation of Records. Medical records shall be retained for a period of not less than 5 years from the date of discharge or, in the case of a minor, 3 years after the patient becomes of age or 5 years, whichever is longer.

G. Current Records--Location and Facilities. The facility shall maintain adequate space and equipment, conveniently located, to provide for efficient processing of medical records (reviewing, indexing, filing, and prompt retrieval).

H. Closed or Inactive Records. Closed or inactive records shall be filed and stored in a safe place (free from fire hazards) which provides for confidentiality and, when necessary, retrieval.

COMAR 10.07.09.08 provides that CCF residents have the right to:

(15) Approve or refuse the release of personal and clinical records to an individual outside the nursing facility unless:

(a) Otherwise provided by Health-General Article, § 4-301 et seq., Annotated Code of Maryland; or

(b) The release is required by law;

(16) Personal privacy, including:

(a) Confidentiality of personal records; and

(b) Privacy in:

(i) Medical treatment, and

(ii) Personal care.

²⁴⁹ Addressing the State Council on Child Abuse and Neglect and The Integration of Child Welfare and Substance Abuse Treatments, respectively.

²⁵⁰ Which describes the Department’s authority to disclose information regarding child abuse or neglect.

Assisted Living Programs

COMAR 10.07.14.26, which provides that residents have a right to “confidentiality,” also provides:

- (1) Any case discussion, consultation, examination, or treatment of a resident is:
 - (a) Confidential;
 - (b) To be done discreetly; and
 - (c) Not open to an individual who is not involved directly in the care of the resident, unless the resident or resident's representative permits the individual to be present.
- (2) Except as necessary for the transfer of a resident from the assisted living program to another facility, or as otherwise required by law, the personal and medical records of a resident are confidential and may not be released without the consent of the resident or resident's representative, to any individual who is:
 - (a) Not associated with the assisted living program; or
 - (b) Associated with the assisted living program, but does not have a demonstrated need for the information.
- (3) The assisted living manager shall share resident information with the Department as necessary to administer this chapter.

Physical Therapy Providers

The physical therapist Code of Ethics, which is codified at COMAR 10.38.02.01, provides,

The physical therapist and physical therapist assistant shall protect the patient's right to privacy by not divulging confidential information without consent of the patient or guardian unless required by law.

COMAR 10.38.02.01. The same regulation also provides,

The physical therapist and physical therapist assistant shall provide and maintain medical records in accordance with Health-General Article, §§ 4-301-- 4-402, Annotated Code of Maryland.

Speech Language Pathology Providers

The Code of Ethics, which is codified at COMAR 10.41.02.02, provides,

The licensee may not reveal to unauthorized persons professional or personal information about the individual professionally served without appropriate permission from that individual, unless required by law.

COMAR 10.41.02.02. The same regulations notes that providers may not exploit their patients by, *inter alia*,

Failing to obtain informed consent to use the individual served for research or as subjects of teaching demonstrations.

Hospice Providers

The applicable regulations provide that,

Access to or release of a patient's medical record by the hospice care program is permitted only with the consent of the patient or the patient's representative, or as required by law.

COMAR 10.07.21.19. Similarly, hospice patients have the right to “privacy” and “Confidentiality in all aspects of service or treatment.” COMAR 10.07.21.21.

The regulations also provide that:

If services are not provided directly by the hospice care program, the hospice care program shall obtain a copy of the applicable medical record or written summary of services provided and maintain it in the hospice care program's medical record.

COMAR 10.07.21.19 (D).

Maryland Health Care Commission

The Maryland Health Care Commission (MHCC) is a public, regulatory commission whose mission is to plan for health system needs, promote informed decision making, increase accountability, and improve access in a rapidly changing health care environment by providing timely and accurate information on availability, cost, and quality of services to policymakers, purchasers, providers, and the public. The MHCC is administratively located within the Maryland Department of Health and Mental Hygiene, and is composed of 15 members appointed by the Governor, with advice and consent from the Senate, for a term of four years.

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