

House Bill 706

Electronic Health Records Regulation and Reimbursement

Legislative Update

December 2009

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Legislative Update

HB 706 – Leading Requirements

The Maryland General Assembly passed House Bill 706 (HB 706), *Electronic Health Records – Regulation and Reimbursement* (Appendix A), during the 2009 legislative session and Governor Martin O’Malley signed it into law on May 19th. The law aims to expand the adoption of electronic health records (EHRs) through incentives from state-regulated payers to providers who use certified EHRs capable of connecting to a health information exchange (HIE). The two state agencies named in the bill are the Maryland Health Care Commission (MHCC or Commission) and the Health Services Cost Review Commission (HSCRC or Commission). The law requires the MHCC and HSCRC to complete a number of support activities.

Prior to October of 2009, the Commissions were required to designate a statewide HIE for the private and secure exchange of electronic health information. The law requires the MHCC to submit a report to the Senate Finance and the House Health and Government Operations Committees by January 1, 2010. The report will: provide an update of the progress in developing regulations that require state-regulated payers to provide incentives to providers to promote the adoption and meaningful use of EHRs; include recommendations for legislation specifying how these incentives take into account existing carrier EHR adoption incentives; and include an update on the progress in establishing the HIE. Prior to September 1, 2011, the MHCC in consultation with the Department, payers, and health care providers must adopt regulations.

The MHCC is required to post a report for public comment on its website before January 1, 2011, and to submit a report to the Governor, the Senate Finance Committee, and the House Health and Government Operations Committee on the development of a coordinated public-private approach that improves the state’s health information infrastructure; any changes in state laws that are necessary to protect the privacy and security of health information stored in EHRs or exchanged through the HIE; any changes in state laws that are necessary to provide for the effective operation of an HIE in the state; any actions that are necessary to align funding opportunities under the *American Recovery and Reinvestment Act of 2009* (ARRA) with other state and private sector initiatives related to health information technology; and the recommended language for the EHR adoption incentive regulations.

The law also requires the MHCC to designate one or more Management Services Organizations (MSOs) by October 1, 2012. MSOs provide an alternative to traditional client-server EHRs whereby the software is accessed via the Internet and information is hosted offsite in secure network operating centers. MHCC is authorized to use federal grants and loans to help subsidize the use of MSOs by health care providers.

EHR Adoption and Meaningful Use Regulations

The MHCC must adopt regulations that require state-regulated payers to provide incentives for EHR adoption and meaningful use to providers by September 1, 2011. Almost 91 percent of the premium volume for health care in Maryland is attributed to six large payers: Care First, United Healthcare, Kaiser, Aetna, Coventry, and Cigna. The remaining 40 payer’s share of the premium volume is about one percent or less (see Appendix B for a listing of all payers doing business in Maryland). The regulations will be aimed at the larger payers whose premium volume is within the 90th percentile.

In September, the large payers were invited to participate in a preliminary discussion on EHR incentives and to explore other incentive alternatives. Payers agreed that EHR adoption incentives should be related to consequential efforts to improve quality, the use of nationally certified EHRs, and compliance with the meaningful use requirements under ARRA.

In November, the MHCC asked the large payers to submit a proposed compliance plan that identifies specific monetary incentives that will promote the adoption and meaningful use of EHRs beginning in 2011. Payers were asked to describe how these incentives would be determined, the payment mechanism, and the total available incentive amount per physician. MHCC also asked that the payers suggest other reasonable monetary incentives they would be willing to consider for inclusion in the regulations, such as increased reimbursement for specific services, lump sum payments, gain-sharing arrangements, etc. Payers indicated their support for EHR adoption regulations that utilized monetary incentives based on achieving defined quality metrics, and indicated that more consideration on their part was required prior to MHCC drafting the EHR adoption incentive regulations.

The regulations will support national payer efforts to offer incentives for EHR adoption of certified EHRs with clinical decision support features, electronic prescribing, and order entry. The national payers indicated that they do not have an existing EHR adoption incentive program at the present time. These payers plan to assess the impact of the Maryland requirements on EHR adoption before deciding on expanding this incentive program to providers in other states.

The MHCC plans to convene additional meetings with the large payers over the next six months to develop the draft regulations. These regulations will be broad enough to allow for payer uniqueness in incentivizing EHR adoption, and will take into account existing EHR adoption incentives, thus eliminating the need for additional legislation at this time. In addition to the payers, other stakeholders will be invited to comment on draft versions of the regulations.

The new law is expected to increase EHR adoption statewide. Several initiatives are currently underway to expand EHR adoption across the state.

- Maryland is one of four states participating in the *CMS Electronic Health Record Demonstration Project*. The CMS project is studying EHR adoption in small to medium size primary care physician practices. Maryland was selected based in part on our success in outreach and recruitment of physician practices.
- MHCC has developed an EHR product portfolio that includes information of certified vendors for evaluative and comparative purposes. *MHCC has negotiated discounts with these vendors* for Maryland physicians and plans to assess user satisfaction.
- *MHCC and CareFirst have facilitated the development of a collaborative among safety-net providers* to host EHR systems for its members. Over a two year period CareFirst has contributed nearly \$1 million to the initiative.

Designate a Health Information Exchange

Through a competitive process last summer, *the Commissions selected the Chesapeake Regional Information System for our Patients (CRISP), a non-profit organization, to build the statewide HIE.* The multi-stakeholder group consists of Johns Hopkins Medicine, MedStar Health, University of Maryland Medical System, Erickson Retirement Communities, and more than two dozen other

stakeholder groups. In August 2009, the HSCRC awarded \$10 million through its unique all-payor rate setting system as initial funding of the HIE. The statewide HIE will support high quality, safe, and effective health care; make certain that data is exchanged privately and securely; ensure transparency and stakeholder inclusion; support connectivity regionally and nationally; achieve and maintain financial sustainability; and serve as the foundation for transforming health care in Maryland.

The statewide HIE will enable critical information to be shared between providers of different organizations and different regions in real-time; support the use of evidence-based medicine; contribute to public health initiatives in biosurveillance and disease tracking; and prepare for emergency preparedness efforts that will positively impact health outcomes by providing greater access to secure and accurate health information. The HIE hybrid architecture will have the capability of connecting stakeholders, including approximately 47 acute care hospitals and 7,907 physician practices throughout Maryland. The infrastructure will support the meaningful use requirements and eventually connect with other HIEs regionally and nationally.

The MHCC developed a comprehensive State Health Information Technology Plan (plan) with broad goals, specific purposes, and operational plans (Appendix D). The MHCC's plan for advancing health information technology balances the need for information sharing with the need for strong privacy and security policies, while maintaining a judicious approach to funding the HIE. While the detailed implementation of the statewide HIE is entrusted to the knowledgeable experts and informed by a broad range of stakeholder input; the governance, policy, and technical infrastructure outlined in the plan makes certain that the general public has a strong role in the development of fundamental policies governing the information exchange.

Three years ago, the MHCC began the process of planning for a statewide HIE by engaging numerous stakeholders who would address fundamental policy issues and plan a course of action.

- *Building trust and consensus on key policy issues - particularly privacy, security, and data uses that need to precede the development of a statewide HIE.* The MHCC has brought together a series of multi-stakeholder groups to discuss a range of policy issues and has published a number of major policy reports based on these consensus-building deliberations (see Appendix C for a list of these reports). These deliberations formed the foundation for subsequent actions directed towards planning and implementing a statewide HIE.
- *Development of design specifications for the Maryland HIE.* Two independent multi-stakeholder groups were competitively selected in 2008 to develop two different approaches for the governance, architecture, privacy and security, access and authentication, financing, and establishment of a sustainable business model. These planning reports were evaluated, and the best ideas from those reports and from a study of HIEs were consolidated into a Request for Applications (RFA) to build *A Consumer-Centric Health Information Exchange for Maryland* that was released on April 15, 2009.
- *Establishing a Policy Board with Strong Representation of the General Public.* While a collaborative with strong provider representation will develop and operate the statewide HIE, the Policy Board associated with the MHCC will establish the policies governing data sharing. This separation of responsibilities assures a strong role for the public in both policy development and operational oversight. Members of the Policy Board have been

selected to assure expertise, breadth of stakeholder representation, and a strong consumer voice in establishing the policies essential to building trust.

Management Services Organizations

In November, the MHCC convened an initial stakeholder meeting to develop criteria for state designated MSOs. The *MHCC is required to designate one or more MSOs by October 2012*. MSOs are capable of supporting multiple EHR products at reduced costs through economies of scale and bulk purchasing. Technical support usually extends beyond the standard business hours and in some instances is available on a 24/7 basis. EHRs are safeguarded through a network operating center that, by design, ensures high quality and uninterrupted service. MSOs enable physicians to access patient records wherever access to the Internet exists. EHRs maintained outside of the physician practice enables physicians to focus on practicing medicine rather than dedicating staff to support the application.

Over the next five months, the MHCC plans to convene additional stakeholder meetings to develop the evaluation criteria for MSOs that seek a state designation. Key components for consideration of state designation include: accreditation; EHR implementation and support; performance measurements; and collaboration with the statewide HIE.

Appendix A

House Bill 706: Electronic Health Records Regulation and Reimbursement

J1, C3

9lr2923
CF SB 744

By: ~~Delegate Pena-Melnyk~~ Delegates Pena-Melnyk, Hammen, Benson, Costa, Elliott, Hubbard, Kipke, Kullen, McDonough, Montgomery, Morhaim, Nathan-Pulliam, Oaks, Pendergrass, Reznik, Riley, Tarrant, V. Turner, and Weldon

Introduced and read first time: February 9, 2009
Assigned to: Health and Government Operations

Committee Report: Favorable with amendments
House action: Adopted with floor amendments
Read second time: April 4, 2009

CHAPTER _____

1 AN ACT concerning

2 **Electronic Health Records – Regulation and Reimbursement**

3 FOR the purpose of requiring the Maryland Medical Assistance Program to reimburse
4 certain health care providers in accordance with certain provisions of this Act;
5 ~~requiring the Maryland Health Care Commission, in consultation with the~~
6 ~~Department of Health and Mental Hygiene and the Maryland Insurance~~
7 ~~Administration, to adopt certain regulations on or before a certain date~~
8 ~~requiring certain payors to include certain costs in a certain reimbursement~~
9 ~~structure; requiring the Commission to designate a certain health information~~
10 ~~exchange on or before a certain date; requiring the Commission to determine~~
11 ~~the appropriate level of additional reimbursement in a certain manner;~~
12 ~~providing that certain regulations shall apply to certain entities under certain~~
13 ~~circumstances; requiring the Commission, in consultation with the Department~~
14 ~~and the Administration, to adopt certain regulations that specify certain~~
15 ~~certification requirements on or before a certain date; requiring the Maryland~~
16 ~~Health Care Commission and the Health Services Cost Review Commission to~~
17 ~~designate a health information exchange for the State on or before a certain~~
18 ~~date; requiring the Maryland Health Care Commission, on or before a certain~~
19 ~~date, to report on progress in implementing certain provisions of this Act;~~
20 ~~requiring, on or before a certain date, the Maryland Health Care Commission,~~
21 ~~following consultation with certain stakeholders, to post on its website for a~~
22 ~~public comment and submit to the Governor and certain legislative committees,~~
23 ~~a report on certain aspects of health information technology; requiring the~~

EXPLANATION: CAPITALS INDICATE MATTER ADDED TO EXISTING LAW.

[Brackets] indicate matter deleted from existing law.

Underlining indicates amendments to bill.

~~Strike out~~ indicates matter stricken from the bill by amendment or deleted from the law by amendment.



HOUSE BILL 706

1 committees to have a certain period of time for review and comment; requiring,
 2 on or before a certain date, the Maryland Health Care Commission, in
 3 consultation with the Department of Health and Mental Hygiene and others, to
 4 adopt regulations that require certain payors to provide incentives to health
 5 care providers to promote the adoption and certain use of electronic health
 6 records; establishing certain requirements for the incentives; providing that the
 7 incentives may include certain items and services; specifying that the
 8 regulations need not require incentives for certain types of health care
 9 providers; requiring the regulations to apply to certain entities under certain
 10 circumstances; requiring the Health Services Cost Review Commission and the
 11 Department, in consultation with certain other entities, to take certain actions
 12 that relate to the American Recovery and Reinvestment Act of 2009 and certain
 13 rules and regulations; requiring the Maryland Health Care Commission, on or
 14 before a certain date, to report to the Governor and the General Assembly on
 15 certain progress achieved and recommendations for changes that may be
 16 necessary for certain adoption and use of electronic health records; requiring the
 17 Maryland Health Care Commission to designate a certain management service
 18 organization organizations on or before a certain date; authorizing the
 19 Maryland Health Care Commission to use certain grants and loans in a certain
 20 manner; requiring certain health care providers to use certain electronic health
 21 records on ~~or~~ and after a certain date; ~~prohibiting certain payors from~~
 22 ~~reimbursing certain health care providers on or after a certain date under~~
 23 ~~certain circumstances; providing that certain provisions of this Act shall apply~~
 24 ~~to certain entities under certain circumstances; providing that certain~~
 25 ~~provisions of this Act apply to health maintenance organizations; requiring~~
 26 ~~certain carriers State-regulated payors to reimburse~~ provide incentives to
 27 certain health care providers in accordance with certain provisions of this Act;
 28 requiring the Secretary of Budget and Management to ensure that the State
 29 Employee and Retiree Health and Welfare Benefits Program complies with
 30 certain provisions of this Act; defining certain terms; and generally relating to
 31 the regulation of and reimbursement for the use of electronic health records.

32 BY repealing and reenacting, without amendments,
 33 Article – Health – General
 34 Section 1–101(a) and (c), 15–101(a) and (h), and 19–101
 35 Annotated Code of Maryland
 36 (2005 Replacement Volume and 2008 Supplement)

37 BY adding to
 38 Article – Health – General
 39 Section 15–105.2; 19–142 ~~through 19–145~~ and 19–143 to be under the new part
 40 “Part IV. Electronic Health Records – Regulation and Reimbursement”;
 41 and 19–706(ttt)
 42 Annotated Code of Maryland
 43 (2005 Replacement Volume and 2008 Supplement)

44 BY adding to
 45 Article – Insurance

1 Section 15-132
2 Annotated Code of Maryland
3 (2006 Replacement Volume and 2008 Supplement)

4 BY repealing and reenacting, without amendments,
5 Article – State Personnel and Pensions
6 Section 2-501(a) and (b)
7 Annotated Code of Maryland
8 (2004 Replacement Volume and 2008 Supplement)

9 BY repealing and reenacting, with amendments,
10 Article – State Personnel and Pensions
11 Section 2-503(a)
12 Annotated Code of Maryland
13 (2004 Replacement Volume and 2008 Supplement)

14 SECTION 1. BE IT ENACTED BY THE GENERAL ASSEMBLY OF
15 MARYLAND, That the Laws of Maryland read as follows:

16 **Article – Health – General**

17 1-101.

18 (a) In this article the following words have the meanings indicated.

19 (c) “Department” means the Department of Health and Mental Hygiene.

20 15-101.

21 (a) In this title the following words have the meanings indicated.

22 (h) “Program” means the Maryland Medical Assistance Program.

23 **15-105.2.**

24 **THE PROGRAM SHALL REIMBURSE HEALTH CARE PROVIDERS IN**
25 **ACCORDANCE WITH THE REQUIREMENTS OF TITLE 19, SUBTITLE 1, PART IV OF**
26 **THIS ARTICLE.**

27 19-101.

28 In this subtitle, “Commission” means the Maryland Health Care Commission.

29 **PART IV. ELECTRONIC HEALTH RECORDS – REGULATION AND**
30 **REIMBURSEMENT.**

31 **19-142.**

1 (A) IN THIS PART IV OF THIS SUBTITLE THE FOLLOWING WORDS HAVE
2 THE MEANINGS INDICATED.

3 (B) "CARRIER" MEANS:

4 (1) AN INSURER;

5 (2) A NONPROFIT HEALTH SERVICE PLAN;

6 (3) A HEALTH MAINTENANCE ORGANIZATION; OR

7 (4) ~~A DENTAL PLAN ORGANIZATION; OR~~

8 ~~(5)~~ ANY OTHER PERSON THAT PROVIDES HEALTH BENEFIT PLANS
9 SUBJECT TO REGULATION BY THE STATE.

10 (C) "ELECTRONIC HEALTH RECORD" MEANS AN ELECTRONIC RECORD
11 OF HEALTH-RELATED INFORMATION ON AN INDIVIDUAL THAT:

12 (1) INCLUDES PATIENT DEMOGRAPHIC AND CLINICAL HEALTH
13 INFORMATION; AND

14 (2) HAS THE CAPACITY TO:

15 (I) PROVIDE CLINICAL DECISION SUPPORT;

16 (II) SUPPORT PHYSICIAN ORDER ENTRY;

17 (III) CAPTURE AND QUERY INFORMATION RELEVANT TO
18 HEALTH CARE QUALITY; AND

19 (IV) EXCHANGE ELECTRONIC HEALTH INFORMATION WITH
20 AND INTEGRATE THE INFORMATION FROM OTHER SOURCES.

21 (D) (1) "HEALTH BENEFIT PLAN" MEANS A HOSPITAL OR MEDICAL
22 POLICY, CONTRACT, OR CERTIFICATE ISSUED BY A CARRIER.

23 (2) "HEALTH BENEFIT PLAN" DOES NOT INCLUDE:

24 (I) COVERAGE FOR ACCIDENT OR DISABILITY INCOME
25 INSURANCE;

26 (II) COVERAGE ISSUED AS A SUPPLEMENT TO LIABILITY
27 INSURANCE;

1 (III) LIABILITY INSURANCE, INCLUDING GENERAL LIABILITY
2 INSURANCE AND AUTOMOBILE LIABILITY INSURANCE;

3 (IV) WORKERS' COMPENSATION OR SIMILAR INSURANCE;

4 (V) AUTOMOBILE OR PROPERTY MEDICAL PAYMENT
5 INSURANCE;

6 (VI) CREDIT-ONLY INSURANCE;

7 (VII) COVERAGE FOR ON-SITE MEDICAL CLINICS;

8 (VIII) DENTAL OR VISION INSURANCE;

9 (IX) LONG-TERM CARE INSURANCE OR BENEFITS FOR
10 NURSING HOME CARE, HOME HEALTH CARE, COMMUNITY-BASED CARE, OR ANY
11 COMBINATION OF THESE;

12 (X) COVERAGE ONLY FOR A SPECIFIED DISEASE OR
13 ILLNESS;

14 (XI) HOSPITAL INDEMNITY OR OTHER FIXED INDEMNITY
15 INSURANCE; OR

16 (XII) THE FOLLOWING BENEFITS IF OFFERED AS A SEPARATE
17 INSURANCE POLICY:

18 1. MEDICARE SUPPLEMENTAL HEALTH INSURANCE,
19 AS DEFINED IN § 1882(G)(1) OF THE SOCIAL SECURITY ACT;

20 2. COVERAGE SUPPLEMENTAL TO THE COVERAGE
21 PROVIDED UNDER CHAPTER 55 OF TITLE 10, U.S.C.; OR

22 3. SIMILAR SUPPLEMENTAL COVERAGE PROVIDED
23 TO COVERAGE UNDER AN EMPLOYER-SPONSORED PLAN.

24 ~~(D)~~ (E) (1) "HEALTH CARE PROVIDER" MEANS:

25 (I) A PERSON WHO IS LICENSED, CERTIFIED, OR
26 OTHERWISE AUTHORIZED UNDER THE HEALTH OCCUPATIONS ARTICLE TO
27 PROVIDE HEALTH CARE IN THE ORDINARY COURSE OF BUSINESS OR PRACTICE
28 OF A PROFESSION OR IN AN APPROVED EDUCATION OR TRAINING PROGRAM; OR

1 (II) A FACILITY WHERE HEALTH CARE IS PROVIDED TO
2 PATIENTS OR RECIPIENTS, INCLUDING:

3 1. A FACILITY, AS DEFINED IN § 10-101(E) OF THIS
4 ARTICLE;

5 2. A HOSPITAL, AS DEFINED IN § 19-301 OF THIS
6 TITLE;

7 3. A RELATED INSTITUTION, AS DEFINED IN
8 § 19-301 OF THIS TITLE;

9 4. AN OUTPATIENT CLINIC;

10 5. A FREESTANDING MEDICAL FACILITY, AS
11 DEFINED IN § 19-3A-01 OF THIS TITLE;

12 6. AN AMBULATORY SURGICAL FACILITY, AS
13 DEFINED IN § 19-3B-01 OF THIS TITLE; AND

14 7. A NURSING HOME, AS DEFINED IN § 19-1401 OF
15 THIS TITLE.

16 (2) "HEALTH CARE PROVIDER" DOES NOT INCLUDE A HEALTH
17 MAINTENANCE ORGANIZATION AS DEFINED IN § 19-701 OF THIS TITLE.

18 ~~(E)~~ (F) "HEALTH INFORMATION EXCHANGE" MEANS A STATEWIDE
19 INFRASTRUCTURE THAT PROVIDES ORGANIZATIONAL AND TECHNICAL
20 CAPABILITIES TO ENABLE THE ELECTRONIC EXCHANGE OF HEALTH
21 INFORMATION BETWEEN HEALTH CARE PROVIDERS AND OTHER HEALTH
22 SERVICES ORGANIZATIONS AUTHORIZED BY THE COMMISSION.

23 ~~(F)~~ (G) "MANAGEMENT SERVICE ORGANIZATION" MEANS AN
24 ORGANIZATION THAT OFFERS ~~MULTIPLE~~ ONE OR MORE HOSTED ELECTRONIC
25 HEALTH RECORD SOLUTIONS AND OTHER MANAGEMENT SERVICES TO
26 MULTIPLE HEALTH CARE PROVIDERS.

27 ~~(G) "MEDICARE" MEANS THE HEALTH INSURANCE FOR THE AGED ACT,~~
28 ~~TITLE XVIII OF THE SOCIAL SECURITY AMENDMENTS OF 1965, AS AMENDED.~~

29 (H) (1) "STATE-REGULATED PAYOR" MEANS:

30 ~~(1) THE MARYLAND MEDICAL ASSISTANCE PROGRAM;~~

1 ~~(2)~~ (1) THE STATE EMPLOYEE AND RETIREE HEALTH AND
2 WELFARE BENEFITS PROGRAM; AND

3 ~~(3)~~ (II) A CARRIER ISSUING OR DELIVERING HEALTH BENEFIT
4 PLANS IN THE STATE.

5 (2) "STATE-REGULATED PAYOR" DOES NOT INCLUDE A MANAGED
6 CARE ORGANIZATION AS DEFINED IN TITLE 15, SUBTITLE 1 OF THIS ARTICLE.

7 ~~19-143.~~

8 ~~(A) ON OR BEFORE OCTOBER 1, 2010, THE COMMISSION, IN~~
9 ~~CONSULTATION WITH THE DEPARTMENT AND THE MARYLAND INSURANCE~~
10 ~~ADMINISTRATION, SHALL:~~

11 ~~(1) ADOPT REGULATIONS THAT REQUIRE STATE REGULATED~~
12 ~~PAYORS TO INCLUDE IN THEIR REIMBURSEMENT STRUCTURE FOR HEALTH~~
13 ~~CARE PROVIDERS THE COST OF THE ADOPTION OF ELECTRONIC HEALTH~~
14 ~~RECORDS BY HEALTH CARE PROVIDERS; AND~~

15 ~~(2) DESIGNATE A HEALTH INFORMATION EXCHANGE FOR THE~~
16 ~~STATE THAT:~~

17 ~~(i) INCORPORATES PRIVACY RULES THAT ARE CONSISTENT~~
18 ~~WITH EXISTING FEDERAL AND STATE LAWS AND REGULATIONS; AND~~

19 ~~(ii) MAKES ITS SERVICES AVAILABLE TO HEALTH CARE~~
20 ~~PROVIDERS, STATE REGULATED PAYORS AND OTHER HEALTH CARE SERVICES~~
21 ~~ORGANIZATIONS AS AUTHORIZED BY THE COMMISSION.~~

22 ~~(B) (1) THE COMMISSION SHALL DETERMINE THE APPROPRIATE~~
23 ~~LEVEL OF ADDITIONAL REIMBURSEMENT TO BE REQUIRED UNDER THIS~~
24 ~~SECTION, TAKING INTO ACCOUNT ANY GRANTS OR LOANS THAT ARE AVAILABLE~~
25 ~~TO HEALTH CARE PROVIDERS FROM THE FEDERAL GOVERNMENT.~~

26 ~~(2) THE COMMISSION MAY NOT REQUIRE ADDITIONAL~~
27 ~~REIMBURSEMENT UNDER THIS SECTION FOR A HOSPITAL THAT IS REGULATED~~
28 ~~BY THE HEALTH SERVICES COST REVIEW COMMISSION.~~

29 ~~(C) IF FEDERAL LAW IS AMENDED TO ALLOW THE STATE TO REGULATE~~
30 ~~SELF-INSURED ENTITIES AND MEDICARE, REGULATIONS ADOPTED UNDER THIS~~
31 ~~SECTION SHALL APPLY TO REIMBURSEMENT BY SELF-INSURED ENTITIES AND~~
32 ~~MEDICARE.~~

33 ~~19-144.~~

1 ~~(A) (1) ON OR BEFORE OCTOBER 1, 2012, THE COMMISSION, IN~~
 2 ~~CONSULTATION WITH THE DEPARTMENT AND THE MARYLAND INSURANCE~~
 3 ~~ADMINISTRATION, SHALL ADOPT REGULATIONS THAT SPECIFY CERTIFICATION~~
 4 ~~REQUIREMENTS FOR ELECTRONIC HEALTH RECORDS.~~

5 ~~(2) THE COMMISSION SHALL INCLUDE IN REGULATIONS~~
 6 ~~ADOPTED UNDER THIS SUBSECTION A REQUIREMENT THAT ELECTRONIC~~
 7 ~~HEALTH RECORDS MUST MEET ANY STANDARDS FOR ELECTRONIC HEALTH~~
 8 ~~RECORDS THAT ARE PROVIDED FOR IN FEDERAL LAW.~~

9 ~~(B) (1) ON OR BEFORE OCTOBER 1, 2012, THE COMMISSION SHALL~~
 10 ~~DESIGNATE A MANAGEMENT SERVICE ORGANIZATION TO OFFER HOSTED~~
 11 ~~ELECTRONIC HEALTH RECORDS AND OTHER MANAGEMENT SERVICES~~
 12 ~~THROUGHOUT THE STATE.~~

13 ~~(2) THE COMMISSION MAY USE AVAILABLE GRANTS AND LOANS~~
 14 ~~FROM THE FEDERAL GOVERNMENT TO HELP SUBSIDIZE THE USE OF THE~~
 15 ~~MANAGEMENT SERVICE ORGANIZATION BY HEALTH CARE PROVIDERS.~~

16 ~~10-145.~~

17 ~~(A) ON OR AFTER OCTOBER 1, 2014, EVERY HEALTH CARE PROVIDER IN~~
 18 ~~THE STATE SHALL USE ELECTRONIC HEALTH RECORDS THAT ARE:~~

19 ~~(1) CERTIFIED IN ACCORDANCE WITH STANDARDS ADOPTED BY~~
 20 ~~THE COMMISSION; AND~~

21 ~~(2) HAVE INTEROPERABILITY WITH, ARE CONNECTED TO, AND~~
 22 ~~EXCHANGING DATA WITH THE HEALTH INFORMATION EXCHANGE DESIGNATED~~
 23 ~~BY THE COMMISSION UNDER § 10-143 OF THIS SUBTITLE.~~

24 ~~(B) (1) ON OR AFTER OCTOBER 1, 2014, A STATE-REGULATED PAYOR~~
 25 ~~MAY NOT REIMBURSE A HEALTH CARE PROVIDER THAT DOES NOT MEET THE~~
 26 ~~REQUIREMENTS OF SUBSECTION (A) OF THIS SECTION FOR HEALTH CARE~~
 27 ~~SERVICES.~~

28 ~~(2) IF FEDERAL LAW IS AMENDED TO ALLOW THE STATE TO~~
 29 ~~REGULATE SELF-INSURED ENTITIES AND MEDICARE, THIS SUBSECTION SHALL~~
 30 ~~APPLY TO REIMBURSEMENT BY SELF-INSURED ENTITIES AND MEDICARE.~~

31 ~~(C) ON OR AFTER OCTOBER 1, 2014, A HOSPITAL THAT IS REGULATED~~
 32 ~~BY THE HEALTH SERVICES COST REVIEW COMMISSION THAT DOES NOT MEET~~
 33 ~~THE REQUIREMENTS OF SUBSECTION (A) OF THIS SECTION MAY NOT BE~~
 34 ~~REIMBURSED BY ANY PAYOR FOR HEALTH CARE SERVICES.~~

1 (A) ON OR BEFORE OCTOBER 1, 2009, THE COMMISSION AND THE
2 HEALTH SERVICES COST REVIEW COMMISSION SHALL DESIGNATE A HEALTH
3 INFORMATION EXCHANGE FOR THE STATE.

4 (B) ON OR BEFORE JANUARY 1, 2010, THE COMMISSION SHALL:

5 (1) REPORT, IN ACCORDANCE WITH § 2-1246 OF THE STATE
6 GOVERNMENT ARTICLE, TO THE SENATE FINANCE COMMITTEE AND THE
7 HOUSE HEALTH AND GOVERNMENT OPERATIONS COMMITTEE ON PROGRESS
8 IN IMPLEMENTING THE REQUIREMENTS OF SUBSECTIONS (A) AND (D) OF THIS
9 SECTION; AND

10 (2) INCLUDE IN THE REPORT RECOMMENDATIONS FOR
11 LEGISLATION SPECIFYING HOW INCENTIVES REQUIRED FOR
12 STATE-REGULATED PAYORS THAT ARE NATIONAL CARRIERS SHALL TAKE INTO
13 ACCOUNT EXISTING CARRIER ACTIVITIES THAT PROMOTE THE ADOPTION AND
14 MEANINGFUL USE OF ELECTRONIC HEALTH RECORDS.

15 (C) (1) ON OR BEFORE JANUARY 1, 2011, FOLLOWING
16 CONSULTATIONS WITH APPROPRIATE STAKEHOLDERS, THE COMMISSION SHALL
17 POST ON ITS WEBSITE FOR PUBLIC COMMENT AND SUBMIT TO THE GOVERNOR
18 AND, IN ACCORDANCE WITH § 2-1246 OF THE STATE GOVERNMENT ARTICLE,
19 THE SENATE FINANCE COMMITTEE AND THE HOUSE HEALTH AND
20 GOVERNMENT OPERATIONS COMMITTEE A REPORT ON:

21 (I) THE DEVELOPMENT OF A COORDINATED
22 PUBLIC-PRIVATE APPROACH TO IMPROVE THE STATE'S HEALTH INFORMATION
23 INFRASTRUCTURE;

24 (II) ANY CHANGES IN STATE LAWS THAT ARE NECESSARY TO
25 PROTECT THE PRIVACY AND SECURITY OF HEALTH INFORMATION STORED IN
26 ELECTRONIC HEALTH RECORDS OR EXCHANGED THROUGH A HEALTH
27 INFORMATION EXCHANGE IN THE STATE;

28 (III) ANY CHANGES IN STATE LAWS THAT ARE NECESSARY TO
29 PROVIDE FOR THE EFFECTIVE OPERATION OF A HEALTH INFORMATION
30 EXCHANGE;

31 (IV) ANY ACTIONS THAT ARE NECESSARY TO ALIGN FUNDING
32 OPPORTUNITIES UNDER THE FEDERAL AMERICAN RECOVERY AND
33 REINVESTMENT ACT OF 2009 WITH OTHER STATE AND PRIVATE SECTOR
34 INITIATIVES RELATED TO HEALTH INFORMATION TECHNOLOGY, INCLUDING:

35 1. THE PATIENT-CENTERED MEDICAL HOME;

1 **2. THE ELECTRONIC HEALTH RECORD**
 2 **DEMONSTRATION PROJECT SUPPORTED BY THE FEDERAL CENTERS FOR**
 3 **MEDICARE AND MEDICAID SERVICES;**

4 **3. THE HEALTH INFORMATION EXCHANGE; AND**

5 **4. THE MEDICAID INFORMATION TECHNOLOGY**
 6 **ARCHITECTURE INITIATIVE; AND**

7 **(V) RECOMMENDED LANGUAGE FOR THE REGULATIONS**
 8 **REQUIRED UNDER SUBSECTION (D) OF THIS SECTION.**

9 **(2) THE SENATE FINANCE COMMITTEE AND THE HOUSE HEALTH**
 10 **AND GOVERNMENT OPERATIONS COMMITTEE SHALL HAVE 60 DAYS FROM**
 11 **RECEIPT OF THE REPORT FOR REVIEW AND COMMENT.**

12 **(D) (1) ON OR BEFORE SEPTEMBER 1, 2011, THE COMMISSION, IN**
 13 **CONSULTATION WITH THE DEPARTMENT, PAYORS, AND HEALTH CARE**
 14 **PROVIDERS, SHALL ADOPT REGULATIONS THAT REQUIRE STATE-REGULATED**
 15 **PAYORS TO PROVIDE INCENTIVES TO HEALTH CARE PROVIDERS TO PROMOTE**
 16 **THE ADOPTION AND MEANINGFUL USE OF ELECTRONIC HEALTH RECORDS.**

17 **(2) INCENTIVES REQUIRED UNDER THE REGULATIONS:**

18 **(I) SHALL HAVE MONETARY VALUE;**

19 **(II) SHALL FACILITATE THE USE OF ELECTRONIC HEALTH**
 20 **RECORDS BY HEALTH CARE PROVIDERS IN THE STATE;**

21 **(III) TO THE EXTENT FEASIBLE, SHALL RECOGNIZE AND BE**
 22 **CONSISTENT WITH EXISTING PAYOR INCENTIVES THAT PROMOTE THE**
 23 **ADOPTION AND MEANINGFUL USE OF ELECTRONIC HEALTH RECORDS;**

24 **(IV) SHALL TAKE INTO ACCOUNT:**

25 **1. INCENTIVES PROVIDED TO HEALTH CARE**
 26 **PROVIDERS UNDER MEDICARE AND MEDICAID; AND**

27 **2. ANY GRANTS OR LOANS THAT ARE AVAILABLE TO**
 28 **HEALTH CARE PROVIDERS FROM THE FEDERAL GOVERNMENT; AND**

29 **(V) MAY INCLUDE:**

- 1 **1. INCREASED REIMBURSEMENT FOR SPECIFIC**
 2 **SERVICES;**
- 3 **2. LUMP SUM PAYMENTS;**
- 4 **3. GAIN-SHARING ARRANGEMENTS;**
- 5 **4. REWARDS FOR QUALITY AND EFFICIENCY;**
- 6 **5. IN-KIND PAYMENTS; AND**
- 7 **6. OTHER ITEMS OR SERVICES TO WHICH A SPECIFIC**
 8 **MONETARY VALUE CAN BE ASSIGNED.**

9 **(3) THE REGULATIONS NEED NOT REQUIRE INCENTIVES FOR THE**
 10 **ADOPTION AND MEANINGFUL USE OF ELECTRONIC HEALTH RECORDS, FOR**
 11 **EACH TYPE OF HEALTH CARE PROVIDER LISTED IN § 19-142(E) OF THIS**
 12 **SUBTITLE.**

13 **(4) IF FEDERAL LAW IS AMENDED TO ALLOW THE STATE TO**
 14 **REGULATE PAYMENTS MADE BY ENTITIES THAT SELF-INSURE THEIR HEALTH**
 15 **BENEFIT PLANS, REGULATIONS ADOPTED UNDER THIS SECTION SHALL APPLY**
 16 **TO THOSE ENTITIES TO THE SAME EXTENT TO WHICH THEY APPLY TO**
 17 **STATE-REGULATED PAYORS.**

18 **(E) THE HEALTH SERVICES COST REVIEW COMMISSION, IN**
 19 **CONSULTATION WITH HOSPITALS, PAYORS, AND THE FEDERAL CENTERS FOR**
 20 **MEDICARE AND MEDICAID SERVICES, SHALL TAKE THE ACTIONS NECESSARY**
 21 **TO:**

22 **(1) ASSURE THAT HOSPITALS IN THE STATE RECEIVE THE**
 23 **PAYMENTS PROVIDED UNDER § 4102 OF THE FEDERAL AMERICAN RECOVERY**
 24 **AND REINVESTMENT ACT OF 2009 AND ANY SUBSEQUENT FEDERAL RULES AND**
 25 **REGULATIONS; AND**

26 **(2) IMPLEMENT ANY CHANGES IN HOSPITAL RATES REQUIRED BY**
 27 **THE FEDERAL CENTERS FOR MEDICARE AND MEDICAID SERVICES TO ENSURE**
 28 **COMPLIANCE WITH § 4102 OF THE FEDERAL AMERICAN RECOVERY AND**
 29 **REINVESTMENT ACT OF 2009 AND ANY SUBSEQUENT FEDERAL RULES AND**
 30 **REGULATIONS.**

31 **(F) THE DEPARTMENT, IN CONSULTATION WITH THE COMMISSION,**
 32 **SHALL DEVELOP A MECHANISM TO ASSURE THAT HEALTH CARE PROVIDERS**
 33 **THAT PARTICIPATE IN THE MARYLAND MEDICAL ASSISTANCE PROGRAM**
 34 **RECEIVE THE PAYMENTS PROVIDED FOR ADOPTION AND USE OF ELECTRONIC**

1 HEALTH RECORDS TECHNOLOGY UNDER § 4201 OF THE FEDERAL AMERICAN
 2 RECOVERY AND REINVESTMENT ACT OF 2009 AND ANY SUBSEQUENT FEDERAL
 3 RULES AND REGULATIONS.

4 (G) ON OR BEFORE OCTOBER 1, 2012, THE COMMISSION SHALL
 5 REPORT TO THE GOVERNOR AND, IN ACCORDANCE WITH § 2-1246 OF THE
 6 STATE GOVERNMENT ARTICLE, THE GENERAL ASSEMBLY ON PROGRESS
 7 ACHIEVED TOWARD ADOPTION AND MEANINGFUL USE OF ELECTRONIC HEALTH
 8 RECORDS BY HEALTH CARE PROVIDERS IN THE STATE AND RECOMMENDATIONS
 9 FOR ANY CHANGES IN STATE LAWS THAT MAY BE NECESSARY TO ACHIEVE
 10 OPTIMAL ADOPTION AND USE.

11 (H) (1) ON OR BEFORE OCTOBER 1, 2012, THE COMMISSION SHALL
 12 DESIGNATE ONE OR MORE MANAGEMENT SERVICE ORGANIZATIONS TO OFFER
 13 SERVICES THROUGHOUT THE STATE.

14 (2) THE COMMISSION MAY USE FEDERAL GRANTS AND LOANS TO
 15 HELP SUBSIDIZE THE USE OF THE DESIGNATED MANAGEMENT SERVICE
 16 ORGANIZATIONS BY HEALTH CARE PROVIDERS.

17 (I) ON AND AFTER THE LATER OF JANUARY 1, 2015, OR THE DATE
 18 ESTABLISHED FOR THE IMPOSITION OF PENALTIES UNDER § 4102 OF THE
 19 FEDERAL AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009:

20 (1) EACH HEALTH CARE PROVIDER USING AN ELECTRONIC
 21 HEALTH RECORD THAT SEEKS PAYMENT FROM A ~~STATE-DESIGNATED~~
 22 STATE-REGULATED PAYOR SHALL USE ELECTRONIC HEALTH RECORDS THAT
 23 ARE:

24 (I) CERTIFIED BY A NATIONAL CERTIFICATION
 25 ORGANIZATION DESIGNATED BY THE COMMISSION; AND

26 (II) CAPABLE OF CONNECTING TO AND EXCHANGING DATA
 27 WITH THE HEALTH INFORMATION EXCHANGE DESIGNATED BY THE COMMISSION
 28 UNDER SUBSECTION (A) OF THIS SECTION; AND

29 (2) THE INCENTIVES REQUIRED UNDER SUBSECTION ~~(C)~~ (D) OF
 30 THIS SECTION MAY INCLUDE REDUCTIONS IN PAYMENTS TO A HEALTH CARE
 31 PROVIDER THAT DOES NOT USE ELECTRONIC HEALTH RECORDS THAT MEET
 32 THE REQUIREMENTS OF PARAGRAPH (1) OF THIS SUBSECTION.

33 19-706.

34 (TTT) THE PROVISIONS OF § 15-132 OF THE INSURANCE ARTICLE APPLY
 35 TO HEALTH MAINTENANCE ORGANIZATIONS.

1 **Article - Insurance**

2 **15-132.**

3 ~~(A) IN THIS SECTION, "CARRIER" MEANS:~~

4 ~~(1) AN INSURER;~~

5 ~~(2) A NONPROFIT HEALTH SERVICE PLAN;~~

6 ~~(3) A HEALTH MAINTENANCE ORGANIZATION;~~

7 ~~(4) A DENTAL PLAN ORGANIZATION; OR~~

8 ~~(5) ANY OTHER PERSON THAT PROVIDES HEALTH BENEFIT PLANS~~
 9 ~~SUBJECT TO REGULATION BY THE STATE.~~

10 ~~(B) A CARRIER SHALL REIMBURSE HEALTH CARE PROVIDERS IN~~
 11 ~~ACCORDANCE WITH THE REQUIREMENTS OF TITLE 19, SUBTITLE 1, PART IV OF~~
 12 ~~THE HEALTH - GENERAL ARTICLE.~~

13 (A) IN THIS SECTION, "CARRIER" HAS THE MEANING STATED IN §
 14 19-142 OF THE HEALTH - GENERAL ARTICLE.

15 (B) A CARRIER SHALL PROVIDE INCENTIVES TO HEALTH CARE
 16 PROVIDERS IN ACCORDANCE WITH THE REQUIREMENTS OF TITLE 19, SUBTITLE
 17 1, PART IV OF THE HEALTH - GENERAL ARTICLE.

18 **Article - State Personnel and Pensions**

19 2-501.

20 (a) In this subtitle the following terms have the meanings indicated.

21 (b) "Program" means the State Employee and Retiree Health and Welfare
 22 Benefits Program.

23 2-503.

24 (a) The Secretary shall:

25 (1) adopt regulations for the administration of the Program;

26 (2) ensure that the Program complies with all federal and State laws
 27 governing employee benefit plans; [and]

1 (3) each year, recommend to the Governor the State share of the costs
2 of the Program; AND

3 (4) ENSURE THAT THE PROGRAM COMPLIES WITH TITLE 19,
4 SUBTITLE 1, PART IV OF THE HEALTH – GENERAL ARTICLE.

5 SECTION 2. AND BE IT FURTHER ENACTED, That this Act shall take effect
6 ~~October~~ July 1, 2009.

Approved:

Governor.

Speaker of the House of Delegates.

President of the Senate.

Appendix B

2008 Payers Doing Business in Maryland

Sorted by Premium Volume

Count	Name	Premium Volume	Percent of Premiums	Cummulative Total
1	CareFirst	\$ 2,295,442,495	47.84%	47.84%
2	United HealthCare	\$ 969,270,314	20.20%	68.04%
3	Kaiser	\$ 471,075,540	9.82%	77.86%
4	Aetna	\$ 245,573,424	5.12%	82.98%
5	Coventry	\$ 207,382,934	4.32%	87.30%
6	CIGNA	\$ 158,177,405	3.30%	90.60%
7	Guardian Life Insurance Company of America	\$ 72,562,423	1.51%	92.11%
8	Metropolitan Life Insurance Co	\$ 53,383,552	1.11%	93.23%
9	United Concordia	\$ 46,111,285	0.96%	94.19%
10	Unicare Life & Health Insurance Company	\$ 44,705,978	0.93%	95.12%
11	Golden Rule Insurance Co	\$ 24,484,317	0.51%	95.63%
12	MEGA Life & Health Insurance Company	\$ 23,021,582	0.48%	96.11%
13	Group Dental Service of Maryland	\$ 20,323,355	0.42%	96.53%
14	Fidelity Security Life Insurance Co	\$ 18,999,155	0.40%	96.93%
15	Mid-Atlantic Vision Service Plan Inc	\$ 16,486,689	0.34%	97.27%
16	Graphic Arts Benefit Corp	\$ 14,681,000	0.31%	97.58%
17	Assurant	\$ 14,044,384	0.29%	97.87%
18	Delta Dental of Pennsylvania	\$ 13,670,937	0.28%	98.16%
19	DentaQuest Mid-Atlantic, Inc.	\$ 13,064,317	0.27%	98.43%
20	Great-West Life & Annuity Insurance Co	\$ 12,029,679	0.25%	98.68%
21	Reliastar Life Insurance Co	\$ 7,029,851	0.15%	98.82%
22	State Farm Mutual Automobile Insurance Co	\$ 5,784,732	0.12%	98.95%
23	Union Labor Life Insurance Co	\$ 5,717,540	0.12%	99.06%
24	Lincoln National Life Insurance Company (the)	\$ 4,652,031	0.10%	99.16%
25	Principal Mutual Life Insurance Co	\$ 4,256,522	0.09%	99.25%
26	Delta Dental Insurance Company	\$ 3,884,901	0.08%	99.33%
27	Union Security Insurance Company	\$ 4,005,535	0.08%	99.41%
28	HumanaDental Insurance Company	\$ 2,671,222	0.06%	99.47%
29	New York Life Insurance Co	\$ 3,026,173	0.06%	99.53%
30	Penn Treaty Network America Insurance Co	\$ 2,527,089	0.05%	99.59%
31	American Family Life Asr Company of Columbus	\$ 2,377,462	0.05%	99.64%
32	American Republic Insurance Co	\$ 2,528,823	0.05%	99.69%
33	Ameritas Life Insurance Corp	\$ 2,222,206	0.05%	99.73%
34	Sun Life and Health Insurance Company (U.S.)	\$ 1,983,116	0.04%	99.78%
35	Sierra Health & Life Insurance Co. Inc.	\$ 2,037,471	0.04%	99.82%
36	Unimerica Insurance Company	\$ 1,492,802	0.03%	99.85%
37	United States Fire Insurance Company	\$ 1,418,748	0.03%	99.88%
38	Eastern Life and Health Insurance Company	\$ 1,351,370	0.03%	99.91%
39	Monumental Life Insurance Co	\$ 1,342,330	0.03%	99.94%
40	Canada Life Assurance Company	\$ 1,023,689	0.02%	99.96%
41	Companion Life Insurance Co	\$ 1,036,761	0.02%	99.98%
42	National Guardian Life Insurance Co	\$ 1,038,025	0.02%	100.00%
	Total	\$ 4,797,899,164	100.00%	100.00%

Appendix C

Health IT Policy Reports

Report Title	Web Link (URL)
<i>Task Force to Study Electronic Health Records: Final Report</i>	http://mhcc.maryland.gov/electronichealth/presentations/ehr_finalrpt0308.pdf
<i>Review of the Task Force to Study Electronic Health Records 2007 Final Report Recommendations</i>	http://mhcc.maryland.gov/electronichealth/EHRTaskForceSummaryFinal061909.pdf
<i>Assessment of Privacy and Security Policies and Business Practices</i>	http://mhcc.maryland.gov/electronichealth/assess_privacy_security.pdf
<i>Privacy and Security Solutions and Implementation Report</i>	http://mhcc.maryland.gov/electronichealth/solutions_implementation_rpt0908.pdf
<i>Service Area Health Information Exchange: A Hospital Data Sharing Community Resource Guide</i>	http://mhcc.maryland.gov/electronichealth/SAHIE_03-06-09-WEBFinal.pdf
<i>Health Information Technology: An Assessment of Maryland Hospitals</i>	http://mhcc.maryland.gov/electronichealth/HospitalHITSurveyReportFINAL.pdf
<i>Management Services Organizations: A Vision of State Designated Organizations for Physician Practices</i>	http://mhcc.maryland.gov/electronichealth/MSOPRINT.pdf
<i>CRISP Planning Report</i>	http://mhcc.maryland.gov/electronichealth/CRISP_FinalReport.pdf
<i>MCHIE Planning Report</i>	http://mhcc.maryland.gov/electronichealth/MCHIE_Final_Report.pdf
<i>CRISP Response to the Request for Application for a Consumer-Centric Health Information Exchange for Maryland</i>	http://mhcc.maryland.gov/electronichealth/CRISP.pdf

Appendix D

Health Information Technology State Plan

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Health Information Technology State Plan

FY 2010 – FY 2013



Commissioners

Marilyn Moon, Ph.D., Chair

Vice President and Director, Health Program
American Institutes for Research

Garret A. Falcone, Vice Chair
Executive Director
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Calvert County Public School System

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Cardiothoracic and General Surgery
Peninsula Regional Medical Center

Robert Lyles, Jr., M.D.
Medical Director
LifeStream Health Center

Randall P. Worthington, Sr.
President/Owner
York Insurance Services, Inc.

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Introduction

The Maryland Health Care Commission (MHCC) is pleased to submit its State Plan for review by the Office of the National Coordinator for Health Information Technology (ONC) under the *State Grants to Promote Health Information Technology Planning and Implementation Projects*. MHCC believes that its State Plan accurately reflects a strategic and operational plan that is consistent with the planning guidance. Efforts are currently underway to implement a private and secure statewide health information exchange (HIE) in Maryland. This ambitious plan for advancing health information technology (HIT) balances the need for information sharing with the need for strong privacy and security policies, while maintaining a judicious approach to funding the HIE. Establishing an HIE with sound interoperability will ensure that all health information is securely delivered electronically in real-time to individuals and their providers when needed, and that this information is available for analysis for continuous improvement in the delivery of care and research. The statewide HIE will also allow providers to maximize incentive funding under the *American Recovery and Reinvestment Act of 2009* (ARRA).

Maryland has moved into the implementation phase for the statewide HIE after several years of planning. The strategic approach consisted of the following key activities:

- ***Building trust and consensus.*** Maryland believes that broad agreement on key policy issues – particularly privacy, security, and data use – should precede the development of an HIE. MHCC brought together a series of multi-stakeholder groups to discuss a range of policy issues and published a number of major policy reports based on these consensus-building deliberations. These deliberations formed the foundation for subsequent actions directed towards planning and implementing a statewide HIE.
- ***Planning the statewide HIE.*** MHCC funded two independent multi-stakeholder groups in 2008 to develop two competing approaches for the governance, architecture, privacy and security, access and authentication, financing, and establishment of a sustainable business model. These reports were evaluated and the best ideas from the two groups, and from a study of HIEs in various stages of development nationwide, were consolidated into a Request for Applications (RFA) released on April 15th of this year.
- ***Designating and funding Maryland's statewide HIE.*** The MHCC received four responses to the RFA. A technical panel consisting of internal and external reviewers recommended that the Chesapeake Regional Information System for our Patients (CRISP) receive \$10 million in funding from Maryland's all-payor rate setting system to implement a statewide HIE. The Maryland Health Services Cost Review Commission approved the funding on August 5th. CRISP is a particularly strong not-for-profit collaborative effort among the Johns Hopkins Health System, MedStar Health, University of Maryland Medical System, Erickson Retirement Communities, and Erickson Foundation, with notable support from two dozen major stakeholders across the state, including minority and safety net provider interests.
- ***Establishing a Policy Board with Strong Representation from the General Public.*** While a collaborative with strong provider representation will develop and operate the HIE, the Policy Board associated with the MHCC will establish the policies governing the exchange. This separation of responsibilities assures a strong role for the public in both policy development

and operational oversight. Members of the Policy Board have been selected to assure expertise, breadth of stakeholder representation, and a strong consumer voice in establishing the policies essential to building trust.

The statewide HIE is designed to deliver essential patient information to authorized providers at the time and place of care to help assure appropriate, safe, and cost-effective care; store and transmit sensitive health information privately and securely; provide patient access to important elements of an individual's clinical record to help engage patients in their own care; provide a means for the patient to exercise appropriate control over the flow of private health information, both as a matter of right and as a means of assuring trust; provide a secure method of transmitting administrative health care transactions; and gather information from the health care system to research efficiency and cost-effectiveness of care, to measure quality and outcomes of care, and to conduct biosurveillance and post-marketing surveillance of drugs and devices.

The State Plan appropriately reflects the high priority that Maryland places on advancing HIE and expanding the adoption of electronic health records (EHRs) while ensuring that the interest of consumers and the general public are protected. Maryland's planning efforts led to the development of a comprehensive design to facilitate and expand the secure, electronic movement and use of health information among providers according to nationally recognized standards. While the detailed implementation of the statewide HIE is entrusted to the knowledgeable experts and informed by a broad range of stakeholder input, the governance, policy, and technical infrastructure outlined in the State Plan make certain that the general public and the federal government have strong roles in the development of fundamental policies governing the information exchange. ARRA funding and collaboration with the ONC will accelerate and enhance the state's implementation of the statewide HIE, assuring more rapid dissemination of a broader range of Use Cases.

Strategic Plan for a Statewide HIE

General Topic Guidance

Environmental Scan

Maryland has a strong foundation and a number of special advantages above and beyond its convenient location for implementing a statewide HIE in collaboration with ONC. In 2008, the U.S. Census Bureau reported Maryland's population at roughly 5.6 million. The state's diverse population and size have made it relatively easy for stakeholders from around the state to meet regularly to plan a single statewide HIE. Maryland is rich in geographic and cultural diversity that includes rural and inner city areas and diverse minority populations. The state has a long tradition of hospital-hospital and hospital-government collaboration on projects, including the award-winning Maryland Patient Safety Center. Located in the state are three prominent regional medical systems (Johns Hopkins, MedStar, and the University of Maryland), several local hospitals belonging to national hospital systems, and a number of independent community hospitals.

Hospital reimbursement is through the all-payor rate setting system that effectively shares the financial burden of uncompensated care across all hospitals. This system funds projects that are in the financial interest of the overall health care system, including the initial development of an HIE. Maryland has an extensive record of participation in numerous pilot projects; the most recent and relevant is that Maryland was selected as one of four states to participate in the Centers for Medicare and Medicaid Services' (CMS) Demonstration Project for EHR adoption in priority primary care provider practices. The state has renowned academic programs in clinical, public health, and health services research, and has state health care leaders with experience at the national level in health care foundations, federal agencies (including NIH, AHRQ, CMS, CEA, CBO, and NEC), and more specifically in national groups involved with health information technology (HIT), including ONC and the Markle Foundation's Connecting for Health Steering Group.

Market Readiness Assessment

Maryland has approximately 47 acute care hospitals. EHR adoption is reported in around 80 percent of the hospitals. Nearly 60 percent have computerized physician order entry (CPOE). About 17 percent are actively implementing technology to enable some electronic data sharing with appropriate authorized users outside the hospital. Maryland has roughly 13,795 physicians in active practice. These physicians treat patients in approximately 7,907 practices. The number of primary care physicians is nearly 5,035 and the number of primary care practices is around 2,325. Physician EHR adoption parallels the nation, at approximately 20 percent. However, many of these EHRs do not have clinical decision support, CPOE, e-prescribing, or results receipt and delivery functionalities.

The number of service area health information exchanges (SAHIEs), or community data exchanges where a hospital acts as the technology hub, are increasing in numbers throughout the state. Last year, the MHCC convened stakeholders to develop standard policies that will enable the exchange of data among SAHIEs. SAHIEs have the ability to expand data sharing to providers within their service area. Under the Stark Law revisions, hospitals statewide are closely exploring options that enable them to

provide technology to providers in their service area. Many SAHIEs utilize these guidelines to establish policies with community providers located in bordering states.

Management Services Organizations (MSOs) provide an alternative to expanding EHR adoption. The software is accessed via the Internet and data is hosted offsite in secure network operating centers (NOCs). For the most part, providers need access to a high speed Internet connection. Maryland has taken steps to promote the MSO arrangement as an alternative to the traditional stand-alone model where the client-server is maintained in the physician's office. Under recent legislation, the MHCC is required to designate one or more MSOs by the fall of 2012. The MHCC envisions that these MSOs will offer a variety of certified EHR products for physicians to choose from, assist with the integration to the statewide HIE, and ensure that the technology is compliant with the standards for meaningful use.

Technology adoption is widespread throughout nursing homes, although their readiness for EHR adoption is variable. Most nursing homes in Maryland use computers to support billing and other related administrative functions that tie to reimbursement and certification requirements.

Approximately one-half of nursing homes use limited technology for clinical applications (e.g., resident assessments, progress notes, and care planning), and about one-quarter use EHRs for clinical charting. This is fairly consistent with other states that have assessed clinical charting in nursing homes.

Medication administration is reported nationally at roughly 38 percent, and around 12 percent of nursing homes in Maryland use this technology.

The MHCC has assessed community readiness for HIE based on market structure, project leadership, and provider readiness to adopt. The MHCC used the eHealth Initiative's Market Readiness Assessment Tool and determined that Maryland's market readiness index was about 56 percent. Generally speaking, conditions in Maryland are relatively favorable for building a statewide HIE where significant interest from participants exists.

The environmental scan also revealed the importance of ensuring perceived fairness in the prices that providers are asked to pay for participation in the HIE. An HIE based on subscription fees that are appropriately priced by stakeholder value was a more appealing alternative than a one-size-fits-all pricing model. A transaction-fee based HIE was determined not to be a favorable option as it places the most burden on those who use the system frequently. The transaction fee approach encourages participants to carefully monitor and perhaps budget their use of the HIE, and such self-restriction contradicts the larger objectives of the HIE.

Statewide Readiness

After several years of planning and building stakeholder trust, Maryland has moved into the implementation phase for a statewide HIE. Through a competitive process, the MHCC selected CRISP to implement the statewide HIE in August 2009. The following table provides an organizational overview of the MHCC Policy Board, which has oversight of the statewide HIE, the CRISP organization, and those involved in the development of the HIE.

Maryland HIE Stakeholder Participants

Maryland Health Information Exchange Policy Board

ACLU of Maryland
 AIDS Legislative Council
 Anne Arundel Medical Center
 British American Auto Care
 CareFirst Blue Cross Blue Shield of Maryland
 Community Health Integrated Partnership
 Genesis Healthcare
 Hebrew Home of Greater Washington
 Higher Ground, Inc.

Koss on Care
 M&T Bank
 Planned Parenthood of Maryland
 Primary Care Coalition of Montgomery County
 Sinai Hospital of Baltimore
 Washington County Health System
 Maryland Health Care Commission (*ex-officio*)
 CRISP (*ex-officio*)

Chesapeake Regional Information System for Our Patients (CRISP)

Founding Board Members:

Erickson Retirement Communities, LLC
 Johns Hopkins Health System Corporation
 MedStar Health, Inc.
 University of Maryland Medical System, Inc.
 Erickson Health Information Exchange

Advisory Board Members:

To Be Named

Institutional Affiliations of Additional Participants in the Maryland Planning Process

APPTIS
 AARP of Maryland
 Access Carroll
 Advanced Radiology
 Adventist HealthCare
 Advocates for Children and Youth
 Aetna
 AIDS Legislative Council
 American Cancer Society
 American Heart Association of Maryland
 American Medical Informatics Association
 American Society of Consultant Pharmacists
 Anne Arundel Medical Center
 Atlantic General Hospital
 Audacious Inquiry
 Baltimore City Medical System
 Baltimore Medical System
 Baltimore Washington Medical Center
 Bon Secours Hospital
 Braddock Hospital
 Bravo Health
 British American Auto Care, Inc.
 Calvert Memorial Hospital
 CareFirst Blue Cross Blue Shield of Maryland
 Carroll Hospital Center
 Catonsville Diagnostic Imaging
 Center for Health Information and Decision Support,
 University of Maryland
 Chesapeake Eye Center
 Chester River Hospital Center
 Civista Medical Center
 Clinical Information Systems
 CMS - State Programs
 Columbia Medical Practice
 Community Health Integrated Partnership
 Constellation Energy Group
 CVS
 Darnell Associates, Inc.
 Delmarva Foundation
 Delta Dental Plans Association
 Dimensions Health System
 Doctors Community Hospital
 Dorchester General Hospital
 Edward W. McCready Memorial Hospital
 Emdeon Business Services
 EPIC Pharmacies and EPIC Pharmacy Network, Inc.
 The Erickson Foundation
 Erickson Retirement Communities
 Former Senator of Maryland & Privacy Advocate
 Franklin Square Hospital
 Frederick County Public Schools

Frederick Memorial Healthcare System
 Garrett County Memorial Hospital
 Genesis HealthCare
 Ginger Cove Retirement Community
 Good Samaritan Hospital of Maryland
 Greater Baltimore Medical Center
 Harbor Hospital
 Harford County Medical Society
 Harford Memorial Hospital
 Health Care Information Consultants
 Health Improvement Network
 Healthcare for All
 Healthcare for the Homeless
 Hebrew Home of Greater Washington
 Holy Cross Hospital
 Howard County General Hospital
 HR Anew, Inc.
 James Lawrence Kernan Hospital
 Johns Hopkins Bayview Medical Center
 Johns Hopkins Community Physicians
 The Johns Hopkins HIPAA Office
 Johns Hopkins Medical Institutions
 Johns Hopkins University & School of Medicine
 Johns Hopkins Urban Health Institute
 Kelly and Associates
 Kennedy Krieger Institute
 Kodak Dental Systems
 Laboratory Corporation of America
 Laurel Regional Hospital
 Legal Aid Bureau
 LifeBridge Health
 Maryland Community Health Resources Commission
 Maryland General Hospital
 Maryland Hospital Association
 Maryland Medicaid
 Maryland State Board of Pharmacy
 Maryland State Delegate
 Matria Health Care
 MedChi, The Maryland State Medical Society
 MedStar Health
 MedStar Health VNA
 Memorial Hospital & Medical Center of Cumberland
 Memorial Hospital at Easton
 Mercy Medical Center
 Mid-Atlantic LifeSpan
 Montgomery County Medical Society
 Montgomery Family Practice
 Montgomery General Hospital
 Montgomery Internal Medicine Association
 Mount Vernon Pharmacy

Nachimson Advisors, LLC
 NAMI of Maryland
 National Institutes of Health
 Neighborhoodcare/NHS
 Network Health Services
 Northwest Hospital Center
 Ober/Kaler
 Office of the Attorney General of Maryland
 Payerpath, Inc.
 Peninsula Regional Medical Center
 Personal Touch Home Care
 Practising Psychiatrist
 Primary Care Coalition of Montgomery County
 Prince George's Health Department
 Prince George's Hospital Center
 Provider Synergies
 Quest Diagnostics
 RxNT
 Shady Grove Adventist Hospital
 Shepherd's Clinic
 Shepherd Pratt Health System
 Sinai Hospital of Baltimore
 Southern Maryland Hospital Center
 Spiro Consulting, Inc.
 St. Agnes Healthcare
 St. Agnes Hospital
 St. Agnes OB/GYN Associates
 St. Joseph Medical Center
 St. Mary's Hospital
 Suburban Hospital
 Summerville at Westminster
 Summit Health Institute for Research and Education,
 Inc.
 The Neurology Center
 Union Hospital of Cecil County
 Union Memorial Hospital
 United Healthcare Mid-Atlantic
 University of Maryland Medical System
 University Physicians, Inc.
 Upper Chesapeake Medical Center
 VA Maryland Health Care System
 Vermont Information Technology Leaders
 Vindobona Nursing Home
 Vulcan Enterprises, LLC
 Walter Reed Army Medical Center
 Washington Adventist Hospital
 Washington County Health System
 William Hill Manor
 Xavier Health Care Service

HIE Development and Adoption

Vision, Goals, and Objectives

Three years ago the MHCC began the process of planning the implementation of a statewide HIE by engaging numerous stakeholders to address the fundamental policy issues and plan a course of action. State legislation passed in 2009 required the MHCC to designate a multi-stakeholder group to implement the statewide HIE; CRISP was selected based upon the breadth of stakeholders and their response to the state's RFA. The statewide HIE makes possible the appropriate and secure exchange of data, facilitates and integrates care, creates efficiencies, and improves outcomes. MHCC's efforts are targeted towards developing a widespread and sustainable HIE that supports the meaningful use definition that qualifies providers for CMS incentive payments. This strategy also supports state public health programs to ensure that public health stakeholders prepare for HIE and mobilize clinical data needed for consumer engagement and health reform in Maryland.

The statewide HIE will support high quality, safe, and effective health care; make certain that data is exchanged privately and securely; ensure transparency and stakeholder inclusion; support connectivity regionally and nationally; achieve financial sustainability; and serve as the foundation for transforming health care in Maryland. The HIE architecture will be capable of connecting approximately 47 acute care hospitals and 7,914 physician practices throughout Maryland. The infrastructure will support the meaningful use requirements and eventually connect with other HIEs regionally and nationally. The governance of the statewide HIE will guide the development of the five domains that support the grant program, establish the policies governing the exchange, and determine Use Case implementation. The statewide HIE will provide a mechanism for authorized individuals to perform sophisticated analytics and reporting for public health, biosurveillance, and other appropriate secondary uses of data.

Statewide HIE Design Characteristics

The statewide HIE will utilize a hybrid technology approach, maintaining confidential health care data at the participating facilities and providers, with consumers having an option to request that their information be held in a Health Record Bank (HRB) or Personal Health Record (PHR) account that they control. The HIE will perform as a secure and trusted conduit rather than a centralized repository.

The statewide HIE will consist of a hybrid approach that combines a federated or distributed model, keeps the data at its source facilities or with providers, and uses the HIE as the conduit for sharing. In general, the HIE provides a roadmap for properly routing information to the appropriate location. The HIE will maintain a central master patient index (MPI) and a separate registry (Registry) of the record's location within the system. The design also includes the use of a HRB/PHR that is controlled by the consumer, which does not use MPI or Registry. The hybrid model also allows the centralization of records when directed by consumers. This does not constitute a centralized record, but rather directory information that allows records to be identified and located throughout the distributed system. The hybrid model used in Maryland is less threatening to participants and individual consumers because it is less disruptive to existing, trusted relationships between individuals and their care providers, and raises fewer regulatory issues in today's privacy and security focused regulatory environment. A disadvantage of a hybrid approach is the absence of a single database that can be queried for a variety of health services research, public health reporting, and post marketing surveillance

purposes. This disadvantage can be minimized by efficient queries to the statewide HIE, long retention times on edge servers, and special purpose databases with privacy protections suspect to the statewide HIEs controls and data sharing policies. A single HRB associated with the statewide HIE can also deliver robust resource to monitoring capability together with consumer control.

The statewide HIE will allow consumers to have access to and control over their health information through an HRB/PHR application.

The statewide HIE will integrate with HRB/PHR applications that meet appropriate technology standards. Information in a PHR may be generated directly from the records of health care providers or entered by the patient. While records from a PHR may not be assigned the same value by providers as either a hospital or physician-generated record since consumers may add information to the record, PHRs allow individuals virtually complete control over their own information and how to share it. For many consumers, this will likely be an attractive option.

The statewide HIE will allow individuals the freedom to participate or not participate in the HIE.

The statewide HIE will enable individuals to have the right to be informed of their provider's access to and use of the HIE to access their data. Consumers will have the capability to opt-out of participation entirely. If a consumer elects to opt-out, providers will not have the ability to exchange that consumer's information. The HIE will inform individuals of their right not to participate through an intensive public awareness campaign and the consumer's rights related to it. A simple and visible opt-out process will be included at each point of care within the HIE.

The statewide HIE will use standards consistent with emerging national technology standards.

The statewide HIE will use federally-endorsed standards and integration protocols that bridge proprietary boundaries. Making this a core HIE principle will not only ensure that the HIE is not vulnerable to vendor selection issues and risks, but also compatible with HIEs developed by other states and the federal initiative.

The statewide HIE will act now but build incrementally.

Growth of the statewide HIE will be based on an incremental strategy, building from individual Use Cases, with individual HIE services that have a demonstrated need and evident clinical value to consumers and care providers. The alternative, which is the implementation of an HIE that immediately seeks to provide widespread exchange of all health information to care providers, imposes significant challenges. The leading challenge is setting such high initial technological and user acceptance thresholds that the HIE misses the current window of opportunity. The HIEs incremental approach is already underway with the first Use Case, the provision of medication information to the emergency departments of participating facilities.

The statewide HIE will ensure focus on the medically underserved.

Amid the inherent challenges of HIE, underserved populations must not be overlooked. The MHCC will ensure that resources and focus remain directed to this particular component of the overall HIE effort, as it represents an important part of the solution and a key part of the quality, access, and cost challenges in health care. The success of the HIE will ultimately require that all constituents using the exchange engage in its development.

HIE Policy Development

MHCC completed a series of policy reports that relate to implementing a statewide HIE. These policy reports provided the foundation for the multi-stakeholder group to implement an HIE in Maryland. The policy reports focused in part on formulating solutions and developing implementation plans that address organizational-level business practices affecting privacy and security policies, planning and implementing a statewide HIE, and developing community data sharing policies.

An Assessment of Privacy and Security Policies and Business Practices: Their Impact on Electronic Health Information Exchange

A workgroup that consisted of eight health care sector groups was convened to assess business policies and practices in general, and security policies and practices in particular that could impede the development of an effective statewide HIE. This assessment included an examination of each sector group's perception of HIE; concerns regarding the benefits, risks, and challenges impacting each group; and various alternatives to address these issues. The report is located at:

http://mhcc.maryland.gov/electronichealth/assess_privacy_security.pdf.

Privacy and Security Solutions and Implementation Activities for a Statewide Health Information Exchange

The MHCC assembled a multi-stakeholder workgroup to develop solutions and recommend activities to develop guiding principles and evaluate the privacy and security barriers for HIE implementation. The workgroup proposed a number of solutions that would guide efforts to establish a statewide HIE. They also assembled a list of implementation activities that they believed would guide HIE to a desired future state in Maryland. This report is located at:

http://mhcc.maryland.gov/electronichealth/solutions_implement_rpt0908.pdf.

Planning for a Statewide Health Information Exchange

Building a successful HIE requires considerable planning in order to implement a business model that creates incentives for use, and recognizes the need for funding from those stakeholders that derive value and benefits for using technology to share health information. The MHCC brought together two distinct groups of diverse stakeholders to address complex policy and technology issues from somewhat different perspectives. The two multi-stakeholder groups selected to participate in the planning phase were: the *CRISP* and the *Montgomery County Health Information Exchange Collaborative (MCHIE)*. These teams focused specifically on addressing issues related to governance; privacy and security; role-based access; user authentication and trust hierarchies; architecture of the exchange; hardware and software solutions; costs of implementation; alternative sustainable business models; and strategies to assure appropriate consumer engagement, access, and control over the information exchange. Final reports, submitted by each group on February 20, 2009, are located at:

<http://mhcc.maryland.gov/electronichealth/statehie.html>.

Service Area Health Information Exchange

Providers throughout the state are beginning to exchange limited amounts of electronic patient information. SAHIEs are emerging and are typically made up of providers in a select geographic area that share the same patients across practices and settings. These providers must address challenges related to privacy and security, business practices, and technology. The MHCC convened a workgroup

of chief information officers, privacy officers, and various other health care stakeholders to develop a resource guide that includes the policies relating to patient rights to their health information and control of this information; range of business practices for access, authentication, authorization, and audit; technical requirements for standards and process workflows; communication mechanisms and outreach initiatives; key community-level financial, organizational, and policy challenges; and alternate community data uses. The *Service Area Health Information Exchange: A Hospital Data Sharing Community Resource Guide* is located at: http://mhcc.maryland.gov/electronichealth/SAHIE_03-06-09-WEBFinal.pdf.

HIT Adoption

MHCC has implemented a number of strategic initiatives to bolster the adoption of EHRs in Maryland. MHCC's strategy has been to accelerate the adoption of EHRs in the state. These efforts focused on increasing the provider's use of this technology. Among other things, the strategy has focused on increasing adoption through education and awareness activities. For the last several years, the MHCC has conducted presentations on HIT at annual practice administrator meetings, professional society conferences, and has engaged providers on a one to one basis. Effective data sharing depends largely on the ability of providers to access and maintain patient information electronically. MHCC expects to modify its HIT adoption activities based on the future release of meaningful use standards by ONC. Key HIT adoption initiatives include the following.

Task Force to Study Electronic Health Records

The legislatively established Task Force to Study Electronic Health Records (Task Force) consisted of 26 members, including 20 appointees of the Governor. The Task Force was formed in 2005 and charged with studying EHRs; 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. The Task Force also studied the impact of the current and potential expansion on school health records and patient safety and privacy. The Task Force presented 13 recommendations to facilitate EHR adoption among providers. The Final Report was released in 2007 and is located at: http://mhcc.maryland.gov/electronichealth/presentations/ehr_finalrpt0308.pdf.

The Task Force reconvened in April of 2009 to review the impact of The American Recovery and Reinvestment Act (ARRA) of 2009 on the original recommendations. The Task Force proposed modest updates to the original recommendations. The report of the proposed modifications is located at: <http://mhcc.maryland.gov/electronichealth/EHRTaskForceSummaryFinal061909.pdf>

EHR Product Portfolio

MHCC developed an EHR Product Portfolio (Portfolio) to provide physicians with evaluation and comparison information on EHRs. The Portfolio contains a core set of product information to assist physicians in assessing EHRs and includes only those vendors that have met the most stringent and recent certification standards from the Certification Commission for Health Information Technology (CCHIT) relating to functionality, interoperability, and security. Vendors that have offered discounts to Maryland providers are included in the Portfolio and have provided details regarding product information, pricing, privacy and security policies, and user references that were developed into a consumer reference report. The Portfolio is located at: <http://mhcc.maryland.gov/electronichealth/ehr/cchitehrvendors.html>.

The MHCC expects to develop additional Portfolios for other health care sectors, such as long term care. The Portfolios are updated semi-annually to ensure that providers have state-of-the-market information available. Future enhancements will include information related to navigation and usability. MHCC plans to work with the statewide HIE to develop a more robust Portfolio, if awarded a *Health Information Technology Extension Program: Regional Centers Cooperative Agreement Program* grant.

Centers for Medicare & Medicaid Services EHR Demonstration Project

Maryland is one of four states participating in the CMS five year demonstration project to encourage small to medium sized primary care physician practices to use EHRs. The project aims to improve the quality of patient care by improving the way health care information is managed. The Maryland/DC Physician EHR Demonstration Collaborative (EHR Collaborative) was formed to assist CMS in its efforts to increase EHR adoption. The EHR Collaborative is comprised of MedChi (The Maryland State Medical Society), the MHCC, the Medical Society of the District of Columbia, and other stakeholders. Over 250 physician practices in the Maryland/DC area were selected to participate in either a control or treatment group. The EHR Collaborative promotes EHR adoption and will educate providers in becoming meaningful users of EHRs. Details of this initiative can be found at:

<http://mhcc.maryland.gov/electronichealth/cmsdemo/index.html>.

Electronic Health Records – Regulation and Reimbursement

The Maryland General Assembly passed (HB 706) legislation titled *Electronic Health Records – Regulation and Reimbursement*, which was signed into law on May 19th of this year by Governor Martin O'Malley. The law aims at expanding the adoption of EHRs through incentives from state-regulated payers to providers who use certified EHRs that are capable of connecting to an HIE. The law requires the MHCC to complete a number of support activities specifically aimed at fostering the adoption of HIT, including the development of the reimbursement regulations. Developing these regulations will require the involvement of stakeholders in the discussions. MHCC will use the feedback from these discussions to develop the regulations.

Management Services Organizations

MSOs are considered a viable alternative to the traditional stand-alone EHR client-server model, which requires practices to individually negotiate pricing and maintain the technology required to support the software. MSOs are capable of supporting multiple EHR products at reduced costs through economies of scale and bulk purchasing. The MSO approach uses the Application Service Provider (ASP) model to host one or more EHR systems through the Internet. MSOs often provide (24/7/365) product support through a Network Operation Center (NOC).

In accordance with legislation, the MHCC is required to designate one or more MSOs. The MHCC's vision of designated MSOs is one that offers choices of EHR products, meets national certification requirements, and uses an NOC that, at a minimum, complies with the *Health Insurance Portability and Accountability Act of 1996* (HIPAA), Administrative Simplification Provisions. The MHCC will designate these MSOs by October 2012.

School Health Records

The Task Force included school health records in its study of EHRs and recommended the encouragement of EHR adoption in school-based health centers. The MHCC is acting upon this recommendation and has completed a market scan on the use of EHRs in public schools, and has identified EHR vendors in the industry that may be helpful in the adoption of EHRs in public schools. The Task Force noted that the laws governing protect health information and the laws governing education records are not always consistent and need further attention. The MHCC intends to convene a workgroup of stakeholders, such as school officials and vendors, to develop an outreach and education program to help increase the adoption of EHRs in Maryland's public schools. MHCC will engage these stakeholders to assist in the development of a Portfolio that assists schools in the assessment and selection of EHRs.

Medicaid Coordination

The Maryland Department of Health & Mental Hygiene, Office of Systems, Operations, and Pharmacy (DHMH OSOP) assessed the current State of the Maryland Medicaid Management Information System (MMIS) along with the current Medicaid processes used by the State of Maryland and developed a transition plan to align with the federally mandated Medicaid Information Technology Architecture (MITA) requirements and state HIT and HIE initiatives. The new system will modernize existing system functions and significantly enhance the goals of the MMIS ensuring that eligible individuals receive the health care benefits to which they are entitled, and that providers are reimbursed promptly and efficiently. Coordination between DHMH and the MHCC is in place to ensure that opportunities for data sharing and the HIE are maximized.

DHMH intends to replace its legacy MMIS claims processing system with a new MMIS system based on MITA 2.0 principles that will include imaging and workflow management, and a robust business rules engine to aide in creating and managing flexible benefit plans. The new MMIS will process all Medicaid claims and eliminate the duplicative adjudication of the Mental Hygiene Administration (MHA), Developmental Disabilities Administration (DDA), and dental claims. The new MMIS system will also support coordination of benefits, surveillance and utilization review, federal and management reporting, case management, and the statewide HIE. In conjunction with the MMIS replacement, DHMH intends to add a Decision Support System (DSS); implement a Service Oriented Architecture (SOA) Integration Framework to provide a platform for the system that will enable better interoperability with existing legacy applications; and develop a Member and Care Management portal. These enhancements will help eliminate manual processes and will improve general population health by targeting individuals by cultural, diagnostic, or other demographic indicators to ensure that appropriate and cost-effective medical or medically-related social and behavioral health services are identified, planned, obtained, and monitored for individuals identified as eligible for care management services under programs such as:

- Medicaid Waiver Program Case Management;
- Home and Community-Based Services;
- Employed Individuals with Disabilities (EID);
- Primary Adult Care (PAC);
- Breast and Cervical Cancer;

- Rare and Expensive Case Management (REM);
- Traumatic Brain Injury (TBI);
- Disease Management;
- Catastrophic Cases; and
- Healthy Start Program.

The SOA Integration Framework will enable a bi-directional real-time interface with the State's Client Automated Resources Eligibility System (CARES) and the statewide HIE to facilitate better access to the complete eligibility record, resolve data integrity issues across systems, improve claims payment accuracy by capturing the most current eligibility information, and support inter-agency coordination to provide appropriate and cost effective medically necessary care management services. The SOA Integration framework will eventually support an evolutionary approach to information sharing and integration for the Medicaid enterprise and the statewide HIE to allow the creation of a single source of a recipient's demographic, financial, socio-economic, and health status information.

The desired system will have the ability to support EHR initiatives and provide enough flexibility to respond to the changing needs of these initiatives. The system will also allow for required system modifications made by the HIE and to access and utilize data from other state HIEs, EHRs, and PHRs, as permissible. The desired system will also have an indicator mechanism on the electronic claim to measure provider participation in the statewide HIE.

Coordination of Medicare and Federally Funded, State Based Programs

The successful development and implementation of the statewide HIE will be defined by how beneficial health information is in improving quality, reducing health care costs, and improving health outcomes. Achieving these benefits is dependent on much more than just technology. The statewide HIE will work collaboratively with DHMH to develop reporting capabilities that will allow DHMH to report required data to the Centers for Disease Control. Discussions with DHMH are already underway to develop a Use Case for testing in 2010. Data from the Medicaid long term care population will be made available through the HIE as part of the collaboration with DHMH on the MITA initiative.

Demonstrated improvements in public health require access to clinical information from the Medicaid program. The statewide HIE will utilize many of the resources and tools developed by the Agency for Healthcare Research and Quality to assist Medicaid and the Children's Health Insurance Program in improving the delivery and coordination of care through exchanging electronic patient information. Maryland's goal is to maximize coordination efforts with Medicaid and Medicare on relevant federally-funded state programs to advance robust interoperable HIE as quickly and strategically as possible.

Participation with Federal Care Delivery Organizations

The Veterans Affairs (VA) Maryland Health Care System is a dynamic and progressive health care organization dedicated to providing quality, compassionate, and accessible care and service to Maryland's veterans. The Baltimore and Perry Point VA Medical Centers, in addition to the Baltimore VA Rehabilitation & Extended Care Center, and five community-based outpatient clinics all work together to form this comprehensive health care delivery system. The VA has successfully implemented a system-wide EHR in a health care system that serves nearly 6 million patients in more

than 1,400 hospitals, clinics, and nursing homes (Department of Veterans Affairs, 2008). Connecting the statewide HIE with the VA is of high importance to the MHCC. The statewide HIE will explore data sharing with the VA in 2010. Implementation is expected to occur on a Use Case basis.

Most of the physicians who work for the VA hold dual appointments at the University of Maryland, School of Medicine. The University of Maryland, School of Medicine is part of the University of Maryland Medical System, which is an active participant in the planning and implementation of the statewide HIE. The MHCC plans to reach out to the VA in Maryland for guidance in implementing EHRs.

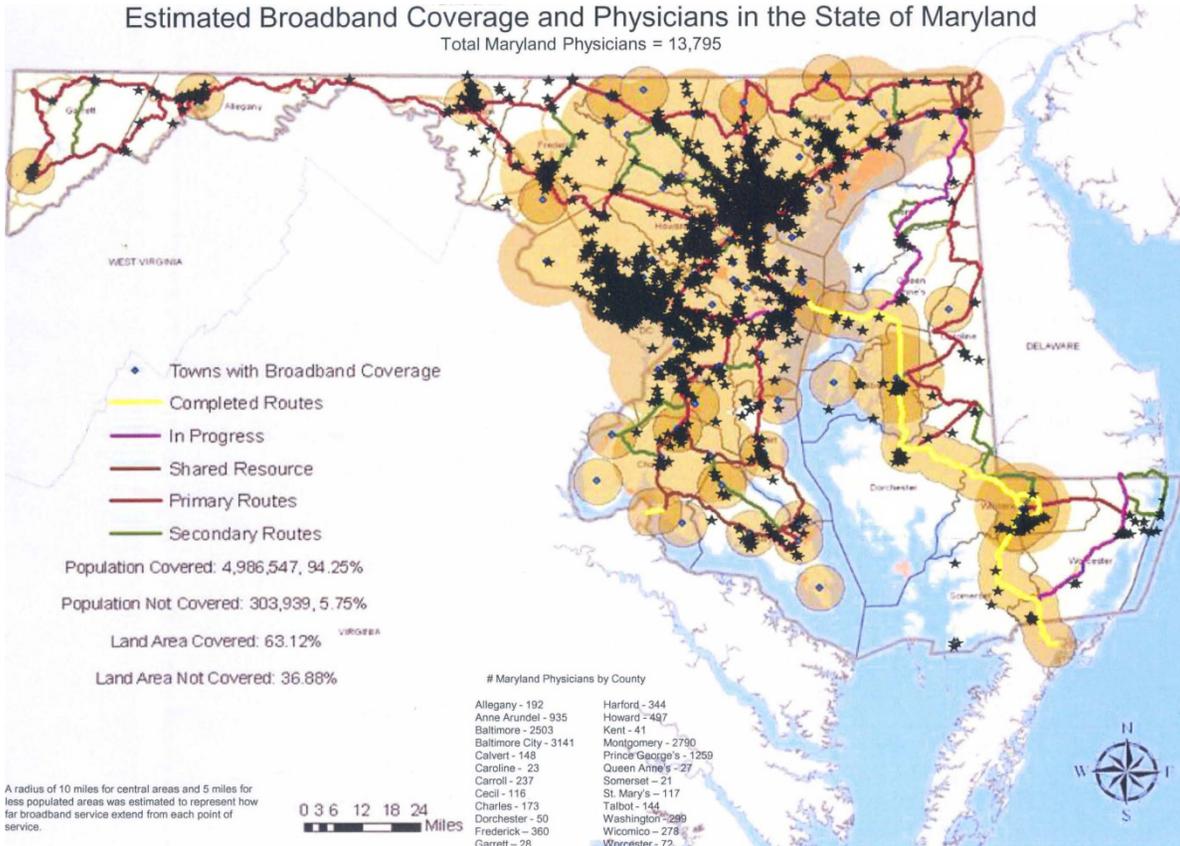
Coordination of Other ARRA Programs

The statewide HIE has submitted a preliminary application for approval as it relates to funding for the *Health Information Technology Extension Program: Regional Centers Cooperative Agreement Program*. The application submitted depicts a Regional Center for the State of Maryland. Many of the required activities of this program are aimed at assisting providers in becoming meaningful users of certified EHR technology, which is consistent with MHCC's existing outreach and education strategy to facilitate EHR adoption by physician offices and the development of an MSO model program to install and support EHRs in Federally Qualified Health Centers (FHQCs) in Maryland. MHCC will provide strategic guidance to the statewide HIE in executing the deliverables of the grant, if it is awarded. The statewide HIE will function as the primary contact and engage a number of non-profit organizations to participate as subcontractors to complete the work. Subcontractors assisting in the work effort will be required to use physician champions and professionals from workforce development programs under ARRA.

The approach will vary based upon geographic location, provider type, and current users of EHRs. The focus is on expanding EHR adoption and meaningful use to ensure that providers take advantage of the Medicare and Medicaid incentives under ARRA, and qualify for incentives under the new legislation in Maryland that also incentivizes for adoption and meaningful use. Initially, the broadband service areas will be targeted for education, awareness, and technical assistance. Emphasis will be placed upon expanding the adoption and meaningful use for priority primary care providers within a 5 to 10 mile radius of towns with broadband coverage. A more customized approach is required for providers in remote areas of the state. The following state maps depict the broadband coverage and the physician practice locations that will be used in fully developing the Regional Center strategy. The Regional Center will coordinate with the Maryland Department of Natural Resources, Office for a Sustainable Future, which is the state entity that will facilitate the *National Telecommunications and Information Administration State Broadband Data and Development Grant* under ARRA.

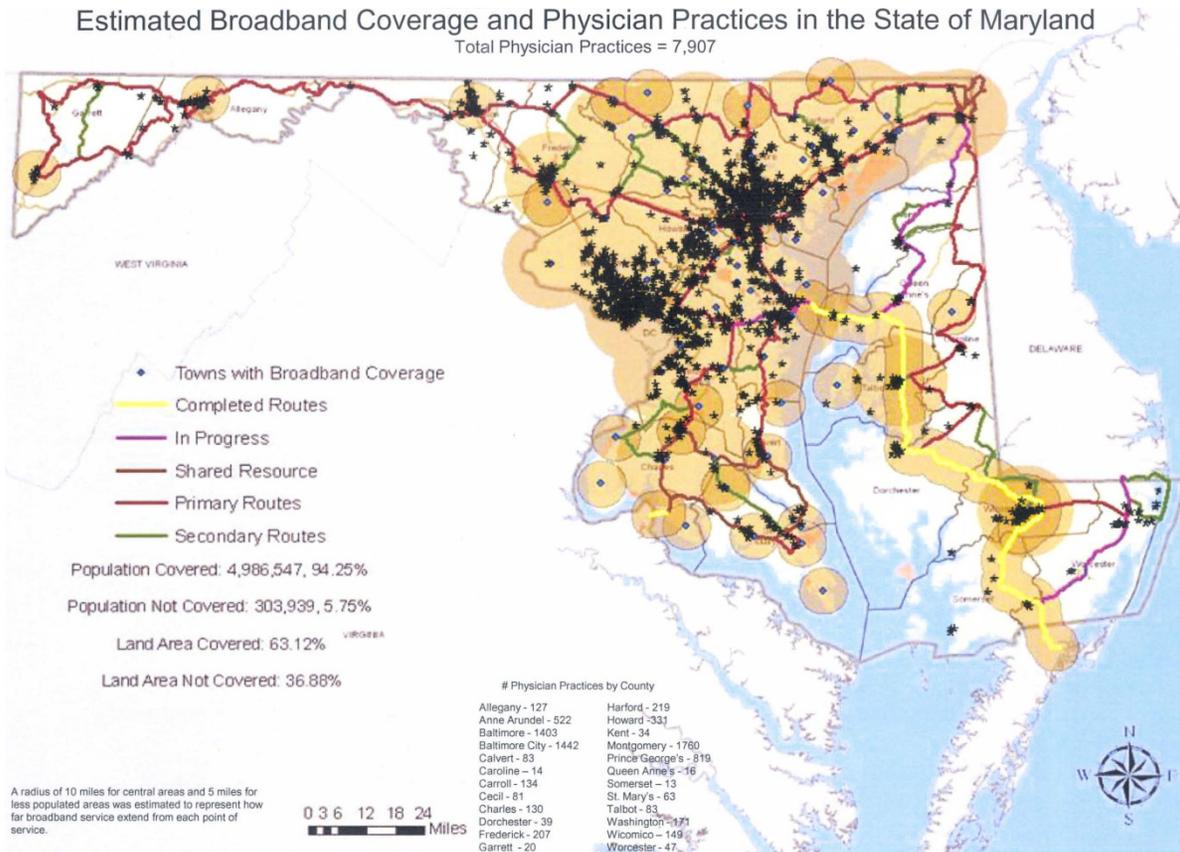
Estimated Broadband Coverage and Physicians in the State of Maryland

Total Maryland Physicians = 13,795



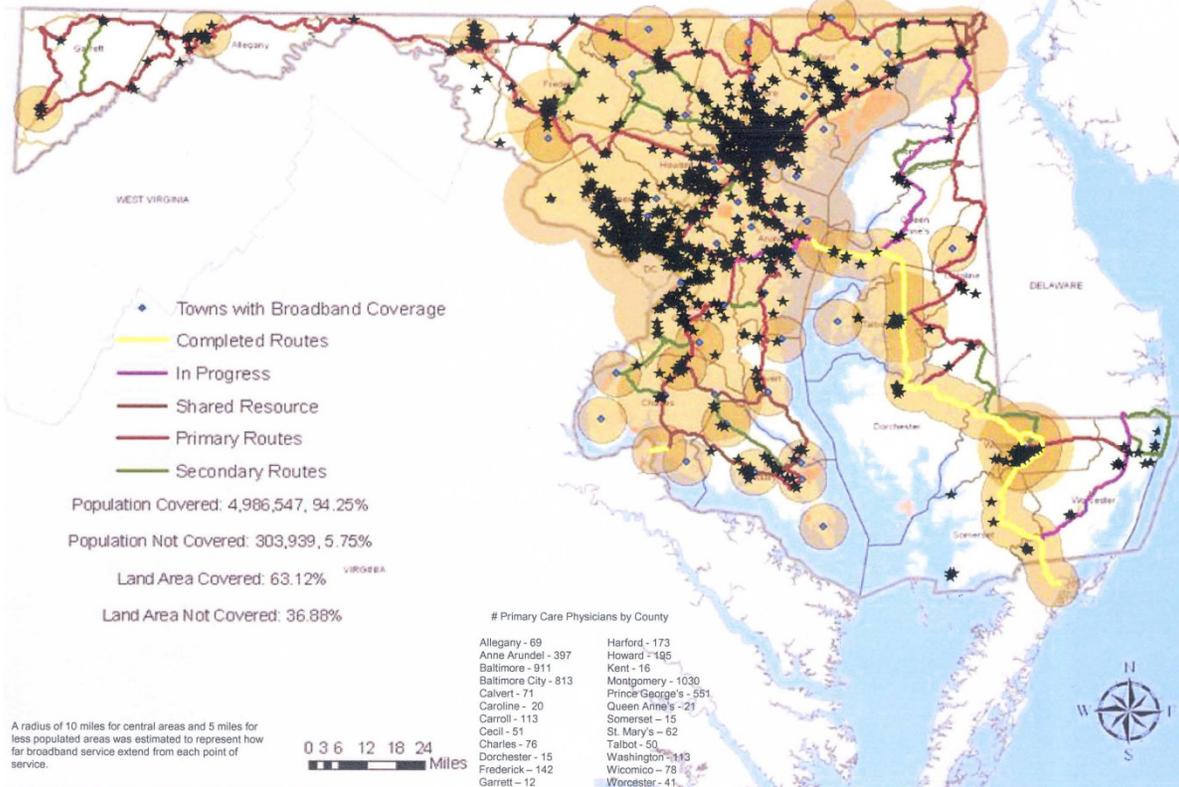
Estimated Broadband Coverage and Physician Practices in the State of Maryland

Total Physician Practices = 7,907



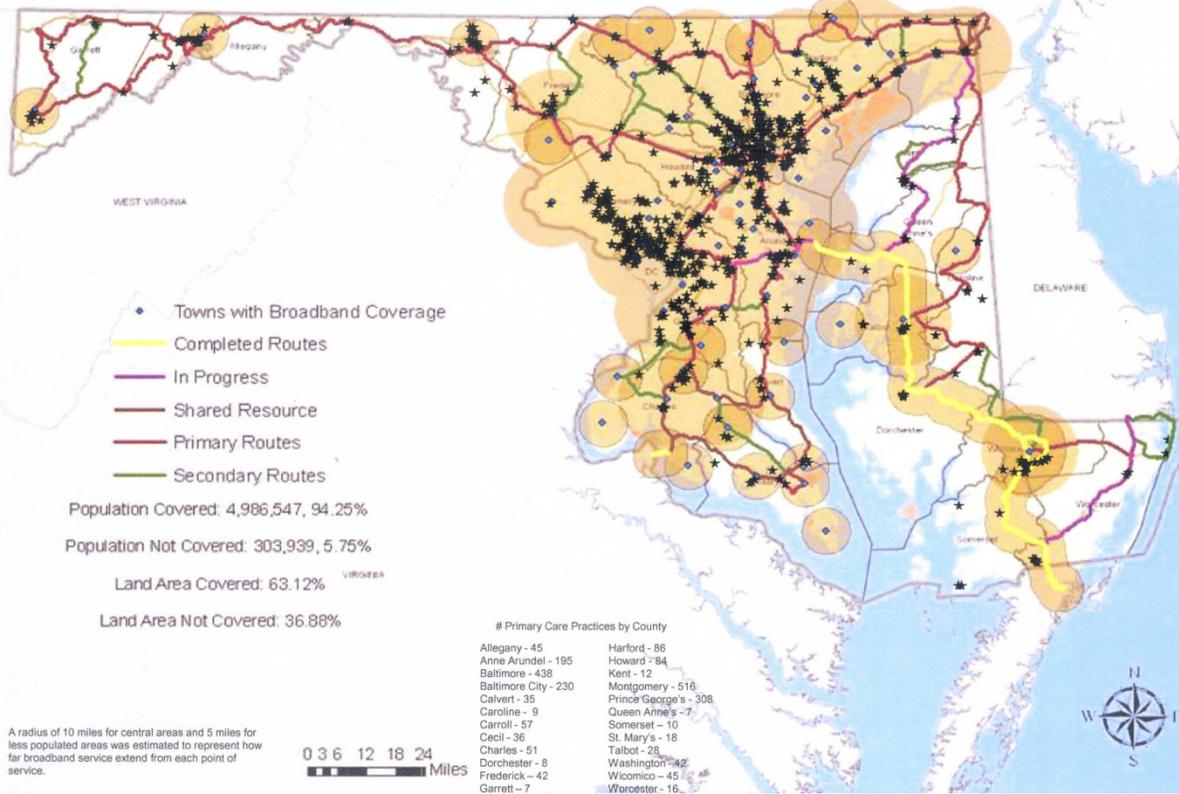
Estimated Broadband Coverage and Primary Care Physicians in the State of Maryland

Total Primary Care Physicians = 5,035



Estimated Broadband Coverage and Primary Care Practices in the State of Maryland

Total Primary Care Practices = 2,325



Domain Requirements

Governance

Collaborative Governance Model

The HIE consists of a diverse governance structure that promotes transparency and addresses the needs of various stakeholders. The governance is comprised of the MHCC Policy Board, Board of Directors, and the Advisory Board. The Policy Board that consists of approximately 25 diverse members weighted largely to participants with a consumer background will provide oversight to the HIE, develop the policies related to privacy and security, and represent the public's interests. The Board of Directors consists of 9 individuals with overall management and governance responsibilities. The Advisory Board is comprised of approximately 30 members who are divided into three committees: the Exchange Technology Committee, the Clinical Excellence and Exchange Services Committee, and the Finance Committee.

The Board of Directors is the authoritative entity overseeing the operations of the statewide HIE and consists of representatives from Johns Hopkins Health System, University of Maryland Medical System, MedStar Health, and Erickson Retirement Communities. The Board of Directors will ensure that the policies developed by the Policy Board are implemented and will take the recommendations from the Advisory Board under consideration. The governance model is designed to be flexible to ensure the organization can respond to market changes and eventually support data sharing with the Nationwide Health Information Network (NHIN).

State Government HIT Coordinator

The MHCC's Center for Health Information Technology (Center) Director, David Sharp, will serve as the Maryland Government HIT Coordinator. The Center Director is actively involved in HIT and HIE in Maryland and previously participated on the national Health Information Security and Privacy Collaboration, Adoption of Standard Policies Collaborative. The Center Director is currently working with Medicaid to explore data sharing opportunities under the MITA transformation project and is actively involved with CMS as part of its EHR Demonstration Project. As the HIT Coordinator for Maryland, the Center Director also sits on the Steering Committee for the Community Health Integrated Partnership's (CHIP) Electronic Patient Record System Implementation project. CHIP provides roughly nine community health centers with the business expertise to achieve the shared goal of quality improvement in the care they deliver, and is a recipient of HIT funding from the Health Resources and Services Administration. The Center Director is an ex-officio member on the CRISP Advisory Board, a participant on the state Policy Board, and is actively involved with the state's medical society and hospital association.

Accountability and Transparency

The basic framework for building consumer trust, collaboration with stakeholders, and transparency necessary to achieve HIE sustainability is attributed to the vast policy discussions that have occurred over the last several years. MHCC required the statewide HIE to have a diverse governance structure. A group of core members representing the major stakeholders, consisting of hospitals, health systems, government entities, and large ancillary service providers, with rotating membership among other ancillary stakeholders and the public, are important components of the statewide HIE. The statewide

HIE formulated bylaws that avoid domination or coercive pressure by any one stakeholder. All members have real input and influence over policy formation. All Advisory Board and Policy Board meetings are open to the public. The statewide HIE will maintain a website where essential information will be posted. The MHCC will post the monthly progress reports submitted from the statewide HIE on its website. The \$10 million in funding through Maryland’s all-payor rate setting system is based on the statewide HIE meeting specific deliverables identified in MHCC’s specifications for a statewide HIE and also in the Memorandum of Understanding. MHCC has entered into a three year agreement with CRISP to implement the statewide HIE.

Finance

Potential funding from the ARRA is expected to speed implementation of the statewide HIE. These funds will be used in conjunction with the funding approved through Maryland’s all-payor rate setting system to expand the number of Use Cases implemented over the four year performance period. Initial funding by the state is limited and is not expected to enable full deployment of the statewide HIE. The incremental approach to building the statewide HIE ensures sustainability within about five years. Key to the development of this cost model are a series of assumptions about the fees that various participants would be willing to pay for services offered through the statewide HIE, and how fast those services could be deployed and subsequently adopted by the user community. The following table depicts those assumptions:

Model Assumptions	Adoption Rates					
	Subscription/ Month	Assessment Unit	2010	2011	2012	2013
National Laboratory Results Delivery	\$10	Per doc	30%	50%	70%	90%
Hospital Laboratory Results Delivery	\$2	Per doc	10%	30%	50%	70%
Local Laboratory Results Delivery	\$3	Per doc	10%	30%	50%	70%
ED/Hospital Discharge Summaries to Physicians/Clinics	\$10	Per doc	10%	30%	50%	70%
ED/Hospital Discharge Summaries to ED/Hospital	\$2,000	Per facility	10%	30%	50%	70%
Clinical Summary to EDs	\$2,000	Per facility	0%	0%	30%	50%
Clinical Summary to Physicians/Clinics	\$10	Per doc	0%	0%	10%	30%
National Radiology Results Delivery	\$5	Per doc	0%	30%	50%	70%
National Radiology Results History	\$1,000	Per facility	0%	30%	50%	70%
Hospital Radiology Results Delivery	\$1	Per doc	0%	0%	10%	30%
Hospital Radiology Results History	\$350	Per facility	0%	0%	10%	30%
Local Radiology Results Delivery	\$2	Per doc	0%	0%	10%	30%
Local Radiology Results History	\$650	Per facility	0%	0%	10%	30%
Max Subscription – All Services	\$43	Per doc				
Max Subscription – All Services	\$6,000	Per facility				

The strategy for identifying revenue sources was formed by considering a number of factors, including:

- State monies should be leveraged to achieve a sustainable business model;
- The participants in the statewide HIE will be willing to pay fees relative to the value they gain from using the exchange;
- The value of EHR adoption and HIE participation by physicians has been markedly increased by the Medicare and Medicaid payment incentives for meaningful use;

- The financial model should not rely on grant funding, even though grants may be available for future projects and expansions;
- Revenue should not be sought disproportionately from any one stakeholder or group of stakeholders; and
- Properly developed subscription fee models that incentivize higher utilization of HIE services can provide stability in revenue planning.

To arrive at reasonable revenue estimates that meet all of these criteria, the statewide HIE followed a model established by eHealth Initiative (eHI) entitled *Health Information Exchange: From Startup to Sustainability* and the accompanying toolset released by the U.S. Department of Health and Human Services and Health Resources and Services Administration on May 22, 2007. These materials, developed under a grant from the Office for the Advancement of Telehealth, provide a template for planning and implementing HIEs that includes sustainability over the long-term. The eHI report draws on the experience of several organizations and projects, including:

- Health Bridge of Cincinnati, Ohio, which implemented an HIE for order entry, eligibility verification, portal services, and clinical messaging;
- IHIE of Indiana, which implemented an HIE for clinical messaging; and
- THINC of the Hudson Valley in New York, which implemented an HIE for hosted EHRs.

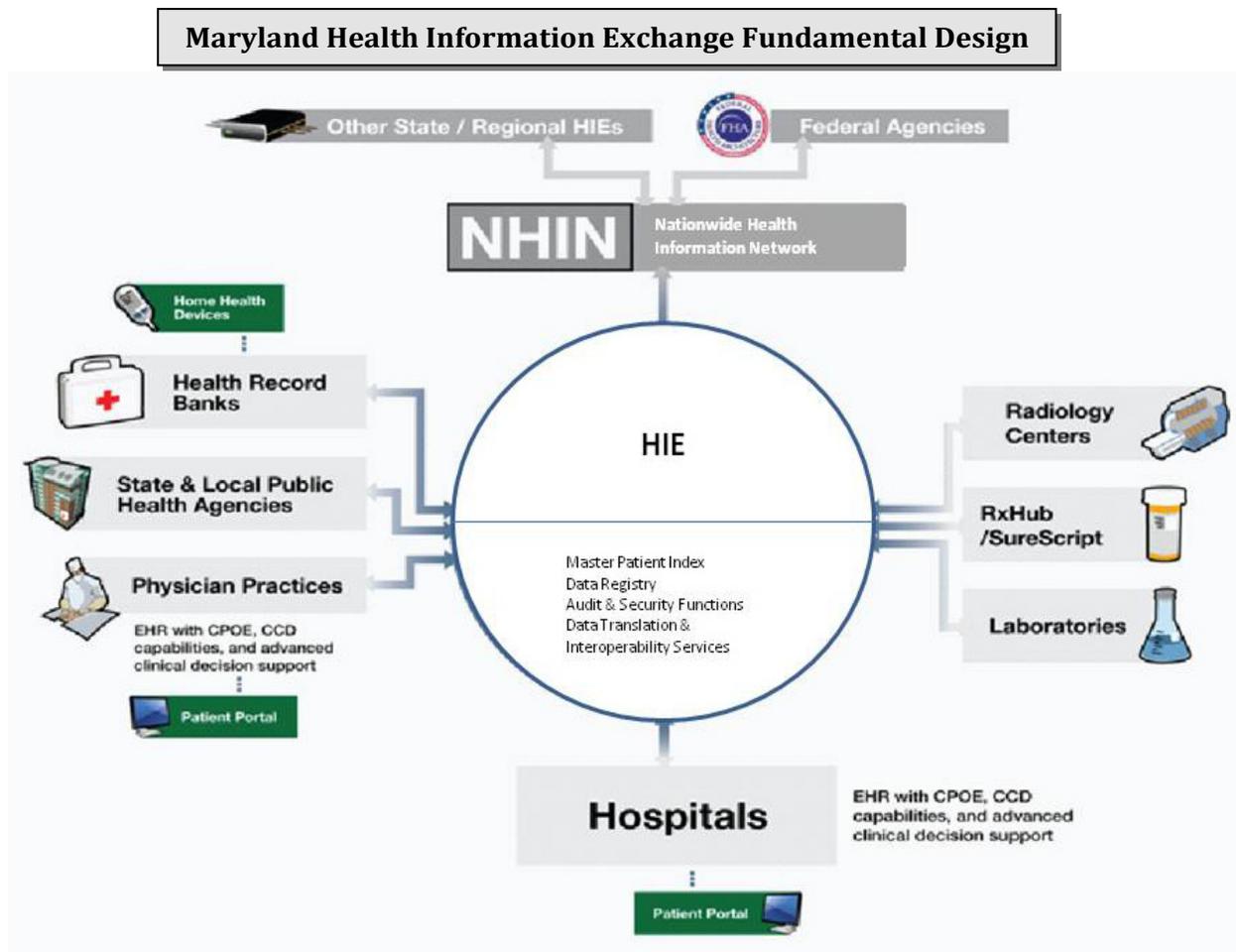
Technical Infrastructure

The statewide HIE was designed for sufficient flexibility and the capability of growing and adapting over time. Attracting and retaining both private and public stakeholders, creating a level playing field, and caring for the needs of those with limited resources are critical elements to a statewide HIE. The architecture was specifically developed using national standards. Implementation of a standards-based solution will offer immediate value that supports connectivity to the NHIN. MHCC anticipates that eventually meaningful use will require providers to exchange information among each other and work cooperatively with providers across state borders to coordinate patient care.

The statewide HIE will be a hybrid, standards-based model. The exchange will operate using Healthcare Information Technology Standards Panel (HITSP)-endorsed XDS (cross-enterprise document sharing) infrastructure that is appropriate for supporting both distributed data and HRB. This flexible approach will accommodate the planned distributed data model, such as envisioned by the Markle Foundation, with an MPI and Registry. The distributed model ensures that data will be held where it is created, which avoids the negative perceptions and potential privacy and security consequences of storing all patient information in a centralized health information repository. The statewide HIE will support health records to ensure that consumers have the ability to create an HRB account where they will have control over the flow of their health information within the HIE. The statewide HIE will be developed to support viable services and entrepreneurial innovation.

The flexible, standards-based, hybrid infrastructure will allow for the secure transfer of a defined set of clinical information between participating entities. The core infrastructure will leverage a distributed model developed in adherence to generally accepted specifications and standards. The design will ultimately drive towards the technical capability to include distributed repositories of consumer-controlled health information where it is deemed appropriate or in the interest of the consumer. The fiscally sound incremental approach to implementing the statewide HIE represents the vision for what

the exchange will aim to achieve. In the near-term, clinical data sharing will leverage portions of the functionality that will be deployed in the full-scale HIE. The conceptual diagram below illustrates foresight by positioning Maryland’s HIE infrastructure to account for market development in either a distributed or HRB driven model.



Integrating the Healthcare Enterprise Overview

Integrating the Healthcare Enterprise (IHE) represents an approach to developing a statewide HIE that is standards-based, which will allow Maryland to achieve cross-organizational interoperability. IHE has defined specific profiles aimed at constraining existing standards to define implementation guides. IHE profiles organize and leverage the integration capabilities achieved by coordinated deployment of communication and security standards. They provide precise definitions of how standards can be implemented to meet specific clinical needs. HITSP has endorsed a number of the IHE profiles that will enable broad HIE implementation. In addition, many EHR vendors have begun to build functionality into their products that can enable interoperability from the native EHR system, in some cases negating the requirement for the installation of an edge device that would allow a participant to trade data with the HIE.

Master Patient Indexing

For an HIE to function, providers need a reliable way of matching their patients with available records in the network. This is no trivial task, and even within a single enterprise, matching a person with his or her past records is not always easy. The statewide HIE will follow the IHE Patient Identity Cross-Reference (PIX) approach to patient matching. At a high level, the PIX manager is a layer on an MPI that is operated within the exchange. Each record in the PIX contains cross-references to medical record numbers (MRN) located at participating institutions. In essence, the PIX can translate the MRN of one provider to the MRN of another provider. The initial link of an MRN to an existing PIX record is initiated through statistical matching. That matching will be tuned to avoid errors and final linking can be resolved through either probabilistic or deterministic matching.

The statewide HIE Use Cases will not require providers who are consuming/receiving data to write PIX feeds to the exchange MPI. Instead, receiving providers will send demographic data to the exchange that is matched probabilistically to the MPIs of data suppliers/senders (e.g., RxHub's Initiate Systems MPI) to obtain available data. It is only when an institution becomes a supplier/sender of data to the HIE that their MPI will need to be linked to the PIX.

MPI Discussion

The objective of the MPI strategy is to maximize the positive identification of subject patients while minimizing both false positives and false negatives. The recommended approach will use the IHE PIX Manager integration profile accounting for demographic data variation (i.e., first name John vs. Jonathan) and human data entry error (e.g., zip code or birthday number transposition) with weighted scoring assignments to each data element based on those variations. The MPI will run algorithms against the existing demographic information to preprocess the database to determine the frequency of every attribute and score the match according to the discriminating ability of the specific attributes of that database. The limits of acceptance and rejection will be tailored to the size of the population and the risk tolerance of both false negatives and false positives.

Comparing Probabilistic and Deterministic PIX Record Linking

Significant challenges and risks are inherent in maintaining an accurate MPI rooted in statistical matching techniques. Effectively mitigating those risks is possible. An understanding of the difference between probabilistic and deterministic record linking within a PIX/MPI is critical in evaluating the overall risk of false-positive and false-negative linking. Relying on a completely automated probabilistic record matching and linking approach requires an extremely high threshold for accuracy to limit the potential for false-positives, thereby increasing false-negative outcomes.

An effective PIX/MPI solution will require some degree of manual intervention and ongoing attention to linking. Deterministic matching includes manual intervention by escalating MPI matching events that do not meet the threshold requirements set by the exchange operators. A resource in the HIE support center would then look at the records and try to determine whether or not they in fact refer to the same person. They will use a combination of intelligence, common sense, and investigation to make this determination. The support resource will determine that the records match and that the numbers were likely transposed. The resource will then manually merge the records. If the matching issue is not as straightforward as a transposition, the resource may need to do some more investigation by perhaps calling the organization where the record originated to see if it has more information on the

patient that could help them make a determination. The statewide HIE will implement a deterministic matching approach in an effort to build trust in the accuracy and effectiveness of the exchange MPI.

Business and Technical Operations

The statewide HIE will require that EHRs connecting to the utility meet the technical requirements for certification. Among other things, EHR systems will need to be able to report on quality measures, and providers will need to demonstrate that they are fully utilizing the functionality of the system.

Providers connected to the statewide HIE will need to complete an attestation to use the system in a manner that is consistent with the meaningful use standards. Compliance with the meaningful use standards serves the public interest by transforming a largely paper-based system into a private and secure electronic, interconnected system that is transparent, earns public trust, and helps address health challenges facing Maryland, including preventable medical errors, disparities in the quality of care, high costs, administrative inefficiencies, and the lack of care coordination among providers.

Maryland's ambitious plan for advancing HIE balances the need for information sharing with the need for strong privacy and security policies, and includes a judicious approach to funding. Today, Maryland is home to approximately 5,035 primary care providers that provide care in about 2,325 practices. The statewide HIE will eventually be capable of computable semantic interoperability; thus ensuring that all health information is securely delivered electronically in real-time to individuals and their providers when needed, and that this information is available for analysis for continuous improvement in care delivery and research. The strategy to implement HIE in physician practices will initially target priority primary care practices located in central Maryland. These practices are in established broadband service areas and provide care to the majority of the state's residents.

Statewide, approximately 17 percent of acute care hospitals have initiatives in place to share some data electronically with providers in their service area. These hospitals typically host the technology that enables a one-way transfer of a limited amount of data with a high speed Internet connection. Last year, MHCC convened a meeting of hospital chief information officers and various other stakeholders to reach consensus on a range of standards and policies to ensure that hospitals that embark on data sharing initiatives implement similar policies. Acute care hospitals are also well positioned to operate as MSOs and host one or more EHR solutions. They are appropriately situated to provide a consistent way of managing privacy and security and ensuring the existence of robust physical and technical safeguards of electronic health information. MSOs are of particular interest to priority primary care providers related to the benefits of bulk purchasing and dedicated technical support.

The statewide HIE will work closely with the Maryland Hospital Association (MHA) to target hospitals in urban and suburban areas of the state for HIT awareness and education initiatives aimed at increasing EHR adoption among providers in their service area and conveying the advantages of implementing data sharing technology. Hospitals in urban and suburban areas are typically smaller in scale and with the least amount of dollars to invest in HIT. The statewide HIE expects to be compatible with the standards deployed in the NHIN and capable of connection once the infrastructure for the NHIN is in place.

Legal/Policy

Privacy and Security

Maryland's ambitious plan for implementing a statewide HIE balances the need for information sharing with the need for strong privacy and security policies. The HIE is designed to deliver essential patient information to authorized providers at the time and place of care to help assure appropriate, safe, and cost-effective care; store and transmit sensitive health information privately and securely; provide patient access to important elements of an individual's clinical record to help engage patients in their own care; provide a means for the patient to exercise appropriate control over the flow of private health information, both as a matter of right and as a means of assuring trust; provide a secure method of transmitting administrative health care transactions; and gather information from the health care system to research efficiency and cost-effectiveness of care, to measure quality and outcomes of care, and to conduct biosurveillance and post-marketing surveillance of drugs and devices.

Health Insurance Portability and Accountability Act

The Health Insurance Portability and Accountability Act of 1996 (HIPAA) was used as a guide for the design of the statewide HIE. It is clear that HIPAA does not require any patient consent or authorization for the exchange of an individual patient's health information among health care providers for treatment purposes. A patient's consent to such exchanges is viewed as implicit in the patient's consent to receive medical care. Certain other exchanges are also permitted without either consent or authorization under both HIPAA and the Maryland Confidentiality of Medical Records Act (MCMRA), generally for payment purposes and for certain health care operations constituting quality assurance, reviewing provider qualifications, and fraud and abuse monitoring or response. HIPAA does permit disclosures to government agencies for a number of lawful purposes, including public health surveillance without patient consent or authorization. The consensus among the legal community is that other disclosures, as further Use Cases are adopted, will require patient specific authorization, which the patient can withhold, in a form that meets the requirements of HIPAA.

In December of 2008, the Office of Civil Rights under the Department of Health and Human Services (HHS) and HHS' HIPAA civil enforcement arm, issued a series of related papers on the HIPAA Privacy Rule and Health Information Technology (the Guidance). The Guidance constitutes an overview of HHS positions on the application of the HIPAA Privacy Rule to HIEs. In general the Guidance is consistent with, and supportive of, the type of HIE under construction in Maryland. The Guidance deals with a model of HIE that is, in operational terms, the same as the Maryland model for the statewide HIE. While recognizing that patients' consent to the exchange of their information among health care providers for treatment purposes is implied in the general consent to be treated and does not require specific affirmation by the patient, the Guidance favors allowing individuals the opportunity to opt-in or to opt-out of having their information flow through the HIE. The Guidance refers in this regard to the option providers are given in the HIPAA Privacy Rule to seek patient consent for treatment uses and disclosures, even in the absence of a requirement that providers do so. The Guidance affirms that an HIE, as a business associate, can maintain a MPI and a registry for patients of participating providers, in advance of any actual treatment communications for those patients.

State Laws

The MCMRA is substantively consistent with HIPAA with regards to implicit consent and the other HIPAA issues discussed in the preceding section. Under the Act, an individual's health information may be exchanged among healthcare providers with only implicit consent for treatment purposes. In 2007, the Maryland Attorney General issued an opinion related to the MCMRA which addressed the requirement of a patient opt-in versus opt-out policy in an electronic health records system. According to the opinion, a patient does not have a right under the Act to opt-out of an HIE, to receive services from a health care provider while insisting that the medical records related to that service be excluded from the HIE. The Attorney General went on to conclude that the disclosure of medical record information solely for purposes of clinical care and payment and to the technical personnel needed to keep the system operational, as discussed above, is permitted without the authorization of the patient. The MCMRA does not prohibit an HIE from operating on the basis that participating health care providers must make all of a patient's medical records available through the HIE. However, because the law does not dictate appropriate policy, an important caveat to the interpreted allowance is that making a patient's medical records available does not imply those records are stored within the exchange.

In the opinion, the Attorney General concluded that the MCMRA would permit an HIE in which medical records are held by certain providers and referenced in the MPI facilitating other providers' access to the records as needed without the authorization of the patient. This indexing function is a critical element of the approach in Maryland. Provider workflow considerations and management of a patient's right to participate or to not participate are also of considerable concern in creating a consent policy. If patient participation rights were managed on a provider-by-provider, encounter-by-encounter basis, then providers would bear a significant, and potentially prohibitive, technical and workflow burden establishing processes for obtaining and tracking consent of their patients.

Policies and Procedures

The policies governing the exchange will be established by the Policy Board associated with the MHCC. This separation of responsibilities assures a strong role for the public in both policy development and operational oversight. Members of the Policy Board have been selected to assure expertise, breadth of stakeholder representation, and a strong consumer voice in establishing the policies essential to building trust. Policies developed by the Policy Board will enable and foster information sharing with the state and eventually across state borders.

Service delivery of the statewide HIE will operate under the guidance of the Advisory Board. In general, services are rendered with the agreement, amounting to the consent of the patient whose information is being exchanged. As a baseline process, consumers will be notified about the existence of the HIE and their ability to opt-out of all exchange participation, meaning they will have a choice to disallow their health information from being transmitted to an authorized recipient. The notice will describe the HIE, its purpose, and its functions. In effect, opting out will be the equivalent of being placed on a do not call or global suppression list. For certain other Use Cases and associated data, opt-in patient consent protocols will be required in addition to the consent implied by not opting out.

In practice, this means all patients will be in the exchange by default, unless they request not to be included. For those consumers that participate, the exchange will be available for a variety of purposes, some of which will require additional patient consent or authorization under HIPAA and the

MCMRA, and some of which will operate without explicit patient approvals. By way of example, specific consent would be required to provide identifiable patient information to a longitudinal research study of the natural cause for an illness in the community and the effects of treatment. On the other hand, a laboratory will not seek any additional patient consent before transmitting lab results across the HIE to an ordering physician.

Opt-Out as the Baseline Consent Process

The statewide HIE will function on an opt-out principle. By default, demographic information from any patient treated at a participating provider organization could be included in a MPI hosted by the exchange. Basic personal information such as name, gender, address, and birth date would be transmitted, captured, and stored in secure computers owned or contracted for use by the statewide HIE. A separate registry database, which is core component of the HIE technology, will house information or metadata for what type of health information about a particular patient is in the exchange and where that information can be found. Both technical and privacy justifications drive the need for separate MPI and registry databases, which is the preferable method, instead of keeping all patient identifying and record locating information in one database. A consumer's health information will not be captured and stored by the statewide HIE, and will remain with the participating entities. The statewide HIE will only serve as the roadmap and transport mechanism to find and retrieve records.

Hospitals and other providers will allow patients greater control over which of their records are published to the statewide HIE, only at the local hospital or provider level, by limiting the information that is made available to the participants by that local hospital or provider. In most cases, consumers will either be all-in or all-out of the statewide HIE.

Trust Agreements

Any health information exchange will require the development of a participation agreement that will codify the relationship between the HIE organization and the various participants. The statewide HIE will enter into a Data Use and Reciprocal Support Agreement (DURSA) with the participants of the statewide HIE. The statewide HIE DURSA will be developed using the work from HITSP and will be used for harmonizing data sharing efforts with bordering states and the NHIN. One of the challenges in creating such an agreement is that multiple participants, each of whom may have its own in-house legal counsel, will have to agree on the components and structure of the document. The logic behind arriving at a consistent participation agreement that is entered into by each participant without substantial or material modification is to ensure that transitive trust can be achieved and maintained across the statewide HIE.

Oversight of Information Exchange and Enforcement

The appropriate use policy is a document that will be included in the participation agreement defining specific appropriate and inappropriate uses of the statewide HIE by individuals who have been granted access. The participation agreement will also articulate the consequence of misuse. It is impossible to completely eliminate the possibility of breaches and misuse of information. Though the statewide HIE itself is not necessarily a HIPAA-covered entity, any related business associate agreements would render the business associate responsible for adequately safeguarding protected health information. The Policy Board and the governance of the statewide HIE will mitigate the probability of breaches and

misuse through appropriate policies, systems monitoring, and established security, training, and reporting procedures.

Pre-emptive measures must be taken to reduce the likelihood that health information is used for purposes other than those for which it was intended. Establishing policies and procedures and training personnel are two important actions that should be taken. All policies and procedures should be clearly written to enforce privacy standards and communicated to staff accordingly. As part of the anticipated work to be performed under the Regional Center grant by CRISP, physician practices will receive information related to best practices for workforce members with access to protected health information. The education material will focus on education to better understand privacy and security standards.

In the event that a breach does occur, appropriate sanctions will be in place and enforced against any workforce member who violated proper procedures. Additionally, attempts must be made to rectify the extent of harm caused. For example, the individual whose data was compromised will be informed of the breach so that he or she can take necessary protective precautions. However, excellent design coupled with breach reporting is not sufficient protections for personal health information. The statewide HIE will also employ employee penetration testing to assure that the robust security features function as designed and that other potential vulnerabilities are actively tested.

Operational Plan for a Statewide HIE

General Topic Requirements

Coordinate with ARRA Programs

The MHCC will use funds from the *State Health Information Exchange Cooperative Agreement Program* to advance Use Case implementation throughout the statewide HIE. The statewide HIE will explore opportunities to collaborate with the recipients of ARRA funding related to workforce development initiatives, wellness and prevention programs, comparative effectiveness research, and grants to community health centers. Under the current operational plan, the statewide HIE will also be the recipient of the potential Regional Center grant.

Regional Center

The statewide HIE will implement outreach, education, and technical assistance programs within Maryland's 23 Counties and Baltimore City consistent with the meaningful use criteria. The Baltimore metropolitan area is initially targeted for program development based upon the high volume of priority primary care providers and the availability of the Internet. Program development efforts initially will focus on priority primary care providers, although all providers are expected to receive some guidance from the Regional Center. MHCC maintains a physician licensure database that contains practice level information that is updated annually through the state's physician licensure process. The data includes information related to HIT adoption, among other things, that will be used in developing specific initiatives for the Regional Center. Although the statewide HIE will be involved broadly in education and support, the ARRA funded activities will focus specifically on improving and expanding HIE services to reach all health care providers in an effort to improve the quality and efficiency of health care.

Education and Outreach to Providers

The statewide HIE will contract with a faith-based organization, a safety net organization, the state medical society, and the hospital association to complete the work of the Regional Center. Specific outreach, education, and technical assistance initiatives will be developed using the physician database should the statewide HIE receive a formal request from ONC to submit a full application for Maryland. The statewide HIE will provide select assistance to providers in conducting an appropriate needs assessment, selecting and negotiating with system vendors or resellers, implementing project management, and instituting workflow changes to ultimately improve clinical performance and outcomes. More granular activities will be identified as the supporting organizations begin their field work.

The statewide HIE will coordinate with the Health Information Technology Research Center (HITRC) to participate in regional and national activities. Representatives of the statewide HIE will evaluate information from the HITRC and incorporate selected information into the Regional Center's outreach, education, and technical assistance plan. Maryland plans to host regional meetings, as appropriate.

EHR Implementation

The statewide HIE will assist providers in assessing their HIT needs, and in the selection and negotiation of EHR systems, hardware, and software contracts with vendors or resellers. The MHCC currently has negotiated EHR system pricing with roughly 27 EHR vendors that have received 2008 certification from the CCHIT. This program was developed in an effort to leverage volume discounts and assure a high level of service for all providers. The statewide HIE will build upon the MHCC bulk purchasing program, which offers discount pricing of EHR software, to include technical support services. The use of MSOs that offer hosted EHRs through the Internet will provide a suitable alternative to providers. Maryland is taking steps to designate MSOs that meet certain performance standards related to technology and policy.

The statewide HIE will provide project management support for EHR implementations, including on-site coaching, consultation, troubleshooting, and other-related activities. These activities will assure that providers are able to assess and enhance organizational readiness for HIT, configure the software to meet practice needs and enable meaningful use, ensure adequate software training for all staff, and track and adhere to implementation timelines. The statewide HIE will also provide consultative support for workflow redesign necessary to achieve meaningful use and assist providers in connecting to the statewide HIE, and NHIN as available.

Privacy and Security Best Practices

While a collaborative with strong provider representation will develop and operate the HIE, the MHCC Policy Board will be established as part of the governance to develop the policies governing the exchange of patient information. The policies will focus on consumer authorization and consent, minimum criteria for user authentication, minimum requirements for role-based authorization, security requirements, and audit trail requirements. The Policy Board will also review and comment on standard Business Associate trust agreements used by the statewide HIE.

Progress towards Meaningful Use

The statewide HIE will participate in program training offered by the HITRC and make available to providers effective assistance in attaining meaningful use. Through collaboration with other states and the HITRC, the statewide HIE will implement programs that are not duplicative of other meaningful use efforts. Information related to HIT adoption will be used from the physician licensure database each year to assess the level of adoption and use of clinical support features essential for meaningful use.

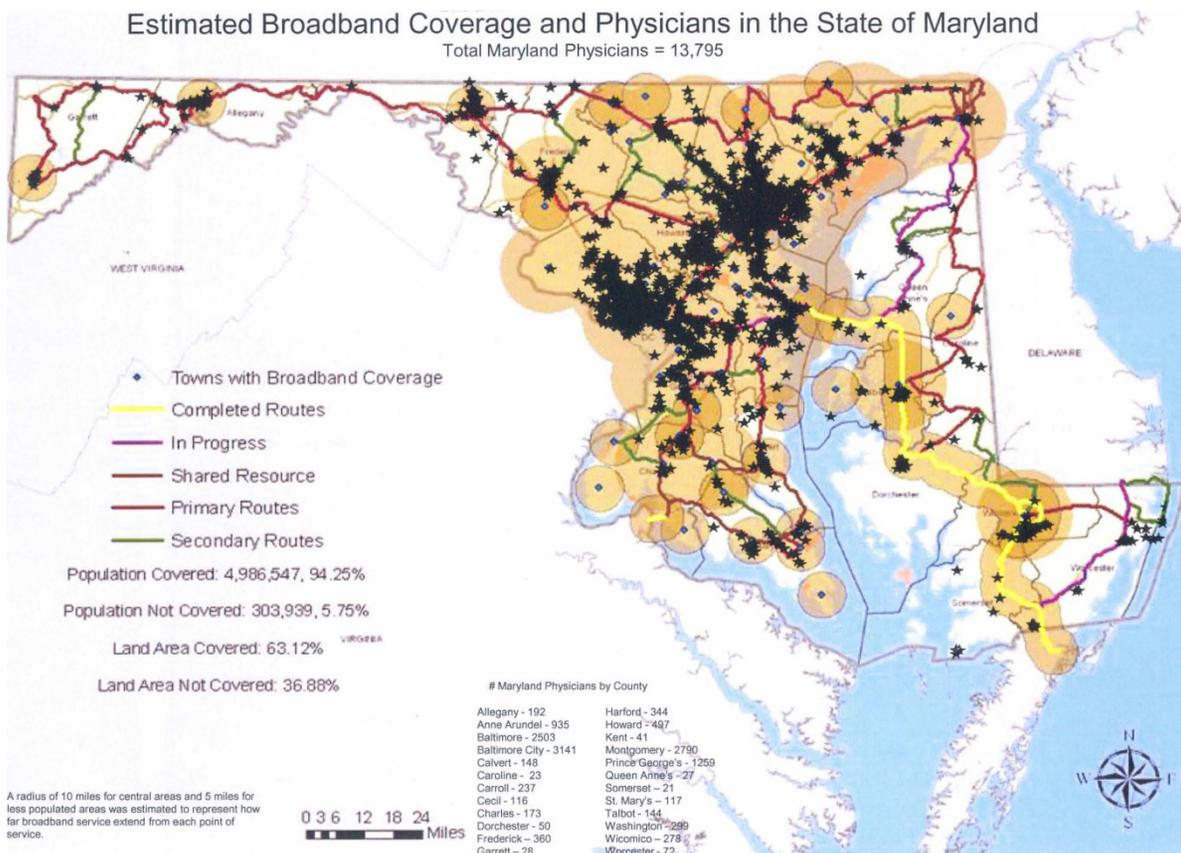
Workforce Development

The statewide HIE will work with academic institutions to promote integration of HIT into the training of health professionals and support staff. MHCC has already entered into discussions with The Johns Hopkins Bloomberg School of Public Health. The Maryland Association of Community Colleges (MACC) will be contacted to discuss the state's practical needs with regard to implementing an HIE. Each year, nearly 500,000 individuals attend one of Maryland's 16 community colleges, in both credit programs and in continuing education and workforce development courses. The statewide HIE will seek to employ trained professionals from workforce development programs under ARRA when available.

Broadband Mapping and Access

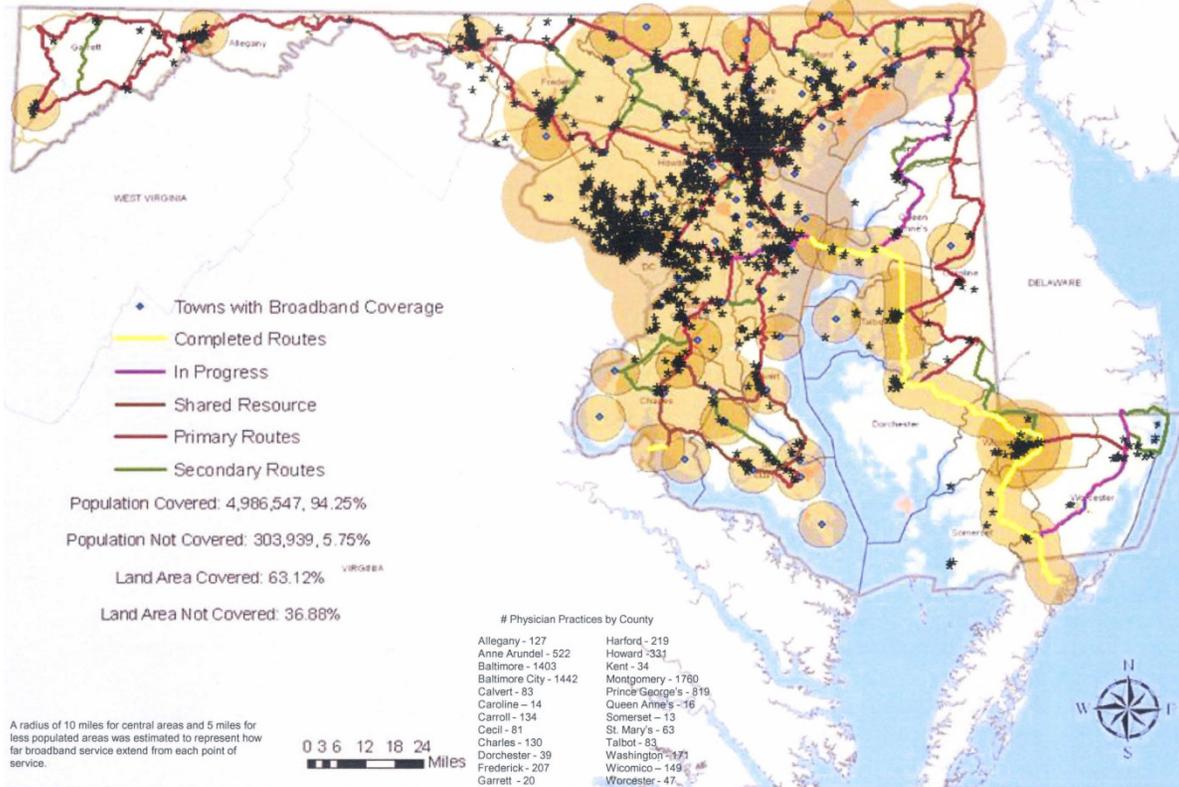
The statewide HIE will use broadband mapping data that includes physician and practice level locations in determining target areas for connecting providers to the HIE. Maryland is home to approximately 5,035 primary care providers in about 2,325 practices that provide care. The statewide HIE will be implemented across the state on an incremental basis. Eventually, data sharing will be on the level of computable semantic interoperability, which will ensure that all health information is securely delivered electronically in real-time to individuals and their providers when needed. All 47 acute care hospitals in Maryland have access to a high speed Internet connection. Statewide, approximately 17 percent of hospitals have implemented electronic data sharing initiatives with providers in their service area. These hospitals typically host the technology that enables a one-way transfer of a limited amount of data with a high speed Internet connection.

The statewide HIE will initially connect and offer some form of technical assistance to priority primary care providers located in Central Maryland, which has broadband coverage. This part of the state accounts for approximately 85 percent of the providers in Maryland. By the end of the second year, all providers will be familiar with where they can find resource information regarding the HIE and additional information related to HIT. Connection will occur incrementally with roughly 25 percent targeted for the first year, and similar increments in subsequent years. The statewide HIE will work with the Maryland Department of Natural Resources, Office of a Sustainable Future to facilitate provider connections to statewide HIE in Western Maryland, Southern Maryland, and the Eastern Shore. It is anticipated that connections in these areas will begin in 2011.



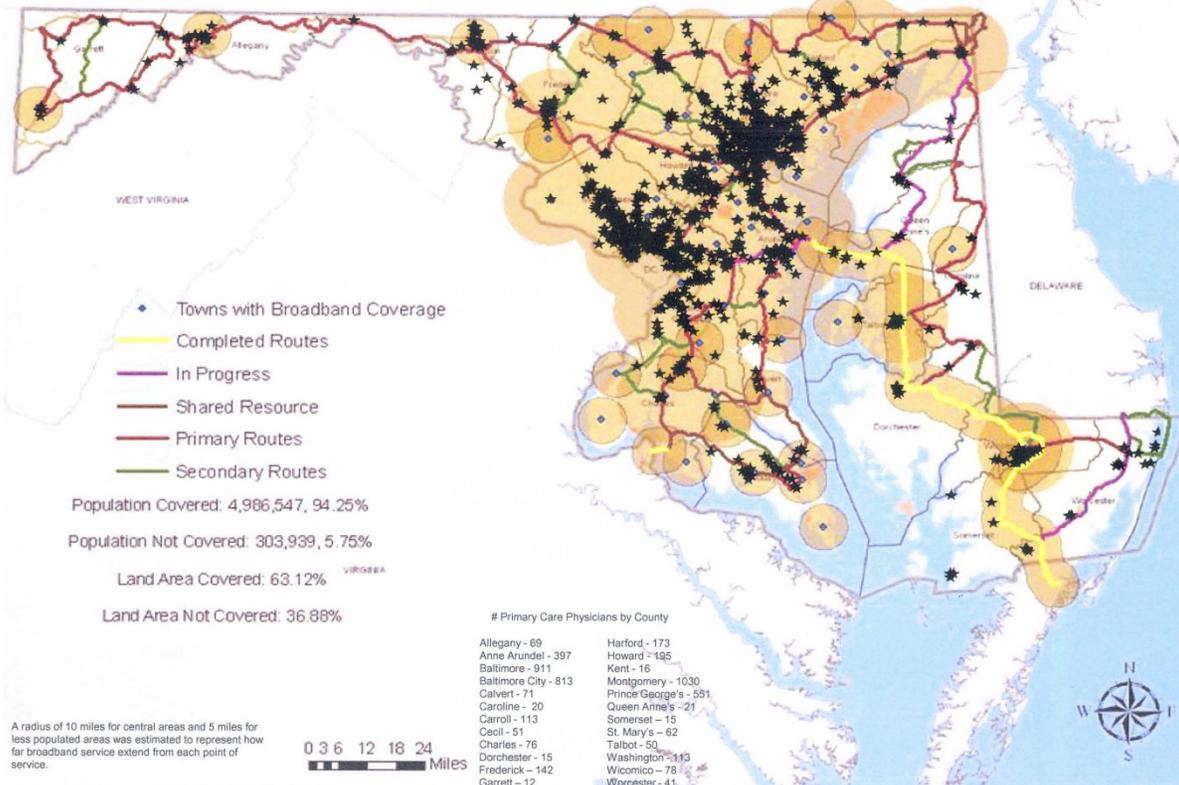
Estimated Broadband Coverage and Physician Practices in the State of Maryland

Total Physician Practices = 7,907



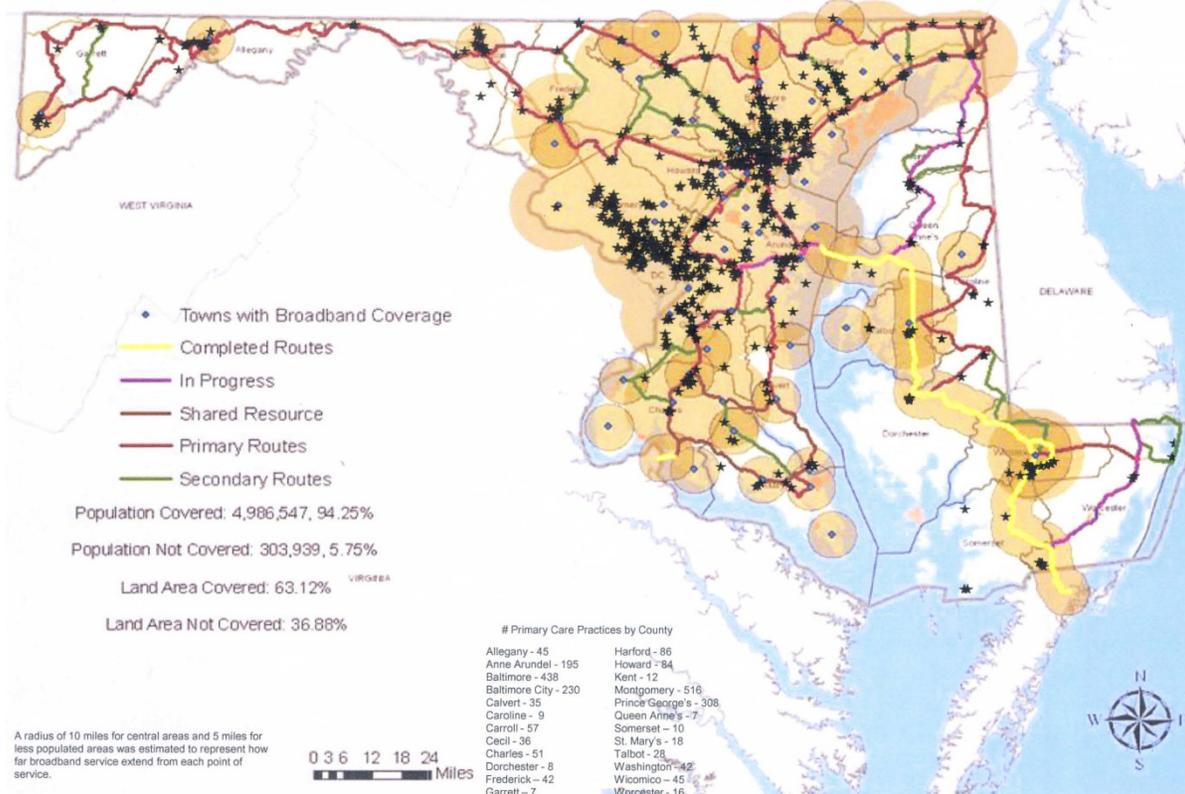
Estimated Broadband Coverage and Primary Care Physicians in the State of Maryland

Total Primary Care Physicians = 5,035



Estimated Broadband Coverage and Primary Care Practices in the State of Maryland

Total Primary Care Practices = 2,325



Coordinate with Other States

MHCC has been in communication with the District of Columbia, Virginia, Delaware, Pennsylvania, and West Virginia to discuss the strategies they have used for implementing their HIEs. This collaboration has provided a mechanism for Maryland to share lessons learned, identify the challenges, and discuss various unique policy-related issues. Discussions around technology evaluation, selection, and implementation have also occurred. Most recently, MHCC participated in the National Governors Association Center for Best Practices State Alliance for e-Health Regional IT Consultation meeting. Participating states explored challenges related to implementing HIE and established information sharing networks with other states. MHCC expects to continue building communications with other states over the next year and exploring opportunities to share lessons learned as it moves forward with implementing the statewide HIE. Beginning in 2010, MHCC will participate in quarterly meetings with representatives from bordering states to discuss interstate HIE connectivity.

Domain Requirements

Governance

The statewide HIE has established a governance structure that is inclusive of all stakeholders. The governance structure consists of the MHCC Policy Board, Board of Directors, and an Advisory Board with three committees: the Exchange Technology Committee, the Clinical Excellence and Exchange Services Committee, and the Finance Committee. Each committee has a specific set of objectives that

they are charged with accomplishing. Policy recommendations that emerge from the Advisory Board will be forwarded to the Policy Board for deliberation. The Policy Board is convened by the MHCC and acts as an oversight body to ensure that public interests remain at the forefront in all decision-making. Policies developed by the Policy Board are forwarded to the Board of Directors for implementation. The Board of Directors provides oversight to the implementation of policies and operational activities. The Board of Directors is accountable for all aspects of the statewide HIE. The Advisory Board, Policy Board, and Board of Directors meet regularly.

The MHCC Policy Board

The Policy Board represents roughly 25 stakeholders, with the majority of members representing consumers and broad public interest, as opposed to individuals representing health care interests. The statewide HIE is required to implement the Policy Board decisions, which has primary responsibility for developing policies pertaining to privacy and security, among other things. MHCC and the Policy Board have ex-officio representation on the Advisory Board.

Board of Directors

The statewide HIE Board of Directors consists of nine members and is critical to the strategic and operational effectiveness of the statewide HIE. The Governance bylaws provide a mechanism for the addition of member organizations to the statewide HIE; and with agreement of the members of the Board of Directors, its composition can change as long as these revisions do not have an untoward impact on common governance best practices and legal considerations, including those for tax-exempt organizations.

Advisory Board

The statewide HIE operates under the oversight of an Advisory Board. This Advisory Board is broad based to ensure that a breadth of interested organizations can make certain that the interests and perspectives of their respective constituencies are heard with respect to the statewide HIE's services. The mission statement affirms that the HIE will serve the entire Maryland health care community. The Advisory Board assists the Board of Directors and the Policy Board of the statewide HIE to ensure that this mission is fulfilled. Certain members of the Advisory Board sit on multiple committees, but most individuals are only in one. A single committee is comprised of approximately 10 people. Individuals selected by the Board of Directors by a nomination process were chosen on the basis of deep subject matter expertise. The Advisory Board's responsibilities include, though are not limited to:

- Provide strategic guidance on the adoption of evolving technology standards;
- Make recommendations for procurement and management of technology solutions, through RFP response scoring and performance evaluation;
- Evaluate the development of implementation project plans and methodologies;
- Recommend prioritization for clinical Use Case deployment;
- Provide input for the evaluation of clinical effectiveness of HIE services;
- Build community trust through effective implementation of policies established by the Policy Board;
- Expand provider awareness and participation in the HIE;

- Aid in the development of patient education and outreach materials;
- Help balance the interests of the many stakeholders in the state;
- Evaluate business plans, and particularly the impact of service fees;
- Assist in the pursuit of funding to further the aims of the HIE;
- Ensure that the plans for specific Use Cases will preserve the financial health of the HIE; and
- Promote transparency in the operation of the HIE, ensuring that the general public has ready access to the operational policies and information about the HIE.

Financial Model and Sustainability

Cost Estimates and Staffing Plans

Revenue Sources

The state has committed \$10 million in funding through its all-payor rate setting system for the implementation of a statewide HIE. These funds will be disbursed annually based upon a budget that reflects findings from an independent review and a defined set of deliverables. An incremental approach to Use Case implementation and provider connectivity balances the use of state funding along with revenue generated by the statewide HIE. Potential funding from the *State Health Information Exchange Cooperative Agreement Program* will not be used to supplant state funding. Instead, these funds will be used to expand Use Case implementation and accelerate connectivity of priority primary care providers. The \$10 million in all-payor funding will provide the matching funds required by ARRA.

The development of a secure HIE poses special challenges. Trusted HIE requires the involvement of a broad range of stakeholders – patients, providers, payers, purchasers, and health agencies – and the consideration of a broad range of policies, principles, and designs. Identifying solutions to the following specific series of issues is essential: governance; privacy and security; role-based access; user authentication and trust hierarchies; architecture of the exchange; hardware and software solutions; cost of implementation; alternative sustainable business models; and strategies to assure appropriate patient engagement, access, and control over information exchange. Establishing an appropriate funding mechanism to support the development costs of the exchange and the daily operations until it becomes sustainable is a key issue related to the deliverable. States that have implemented an exchange continue to grapple with funding issues.

Budget

The budget is comprised of core infrastructure costs that include hardware and software costs that are not unique to a specific function but are required to support the statewide HIE as a whole, such as the cost of the data sharing platform and portal license, and the Enterprise Master Patient Index. The budget also includes the cost of human resources to implement and maintain the statewide HIE. The Board of Directors provides oversight to the budget and will resolve issues related to the budget and determine appropriate financial risks. A combination of implementation resources and maintenance staff will be utilized in years one and two with three full-time employees as permanent staff. Implementation resources are expected to incrementally decrease as full-time staff assumes the maintenance responsibilities for the statewide HIE.

The total for the core infrastructure and Use Case costs are approximately \$8.2 million for the first and second years of operation, with a slight increase to around \$9.0 million in the third year and decrease to roughly \$7.0 million in year four. In the first couple of years the core costs are higher than Use Case costs related to the implementation of the statewide HIE. In years three and four, the cost of Use Cases exceeds core costs related to the increase in the implementation of the Use Cases. Revenue increases as Use Case deployment expands and net income becomes sustainable in year four.

Core Infrastructure	Number	Unit Cost	2010	2011	2012	2013
Exchange Platform and Portal License	1	(\$2,500,000)	(\$1,500,000)	(\$1,000,000)	(\$600,000)	(\$621,000)
EMPI	1	(\$350,000)	(\$350,000)	(\$140,000)	(\$140,000)	(\$140,000)
Hardware/Supporting Software	1	(\$500,000)	(\$500,000)	(\$166,667)	(\$172,500)	(\$178,538)
Implementation Resources	16	(\$230,000)	(\$3,680,000)	(\$3,680,000)	(\$1,840,000)	(\$1,840,000)
Permanent Resources (incl. Benefits)	3	(142,000)	(\$425,000)	(\$439,875)	(\$455,271)	(\$471,205)
Overhead (10% of resources)			<u>(\$410,957)</u>	<u>(\$425,341)</u>	<u>(\$229,527)</u>	<u>(\$237,560)</u>
Total Core Costs			(\$6,865,957)	(\$5,851,883)	(\$3,437,298)	(\$3,488,303)
Total Use Case Costs			<u>(\$1,344,000)</u>	<u>(\$2,418,000)</u>	<u>(\$5,584,050)</u>	<u>(\$3,610,732)</u>
Total HIE Costs			(\$8,209,957)	(\$8,269,883)	(\$9,021,348)	(\$7,099,035)
Maryland State Funding			\$5,000,000	\$2,000,000	\$2,000,000	\$1,000,000
ONC Funding			\$3,350,000	\$3,313,924	\$2,000,000	\$750,000
Total Use Case Revenues			<u>\$1,018,800</u>	<u>\$2,487,600</u>	<u>\$4,362,000</u>	<u>\$5,937,200</u>
Net Income			\$1,158,843	(\$468,359)	(\$659,348)	\$588,165

Software purchase and maintenance

Software licenses are calculated at \$1,500,000 in the first year; \$1,000,000 for licenses in the second year; and \$600,000 for the third year, with an anticipated increase of 3.5 percent in each successive year. The budget will be adjusted if open source software, such as that provided by the ONC’s Federal Health Architecture group, is incorporated into the technology infrastructure.

Hardware purchase and maintenance

In the event that the statewide HIE must acquire computer hardware and incur installation and maintenance costs, a Maryland organization will be contracted for these services. Hardware will likely be leased through an agreement with the service provider. Approximately \$500,000 has been budgeted in the first year for the contract to provide all hardware and supporting software for the exchange. The hardware and supporting software projected for the second year is \$166,700, with an anticipated increase of 3.5 percent for each successive year.

Key to the development of this cost model is a series of assumptions about the fees that various participants are willing to pay for services offered through the statewide HIE, and how fast those services could be deployed and subsequently adopted by the user community. The following table depicts those assumptions:

Model Assumptions	Adoption Rates					
Use Cases	Subscription/ Month	Assessment Unit	2010	2011	2012	2013
National Laboratory Results Delivery	\$10	Per doc	30%	50%	70%	90%
Hospital Laboratory Results Delivery	\$2	Per doc	10%	30%	50%	70%
Local Laboratory Results Delivery	\$3	Per doc	10%	30%	50%	70%
ED/Hospital Discharge Summaries to Physicians/Clinics	\$10	Per doc	10%	30%	50%	70%
ED/Hospital Discharge Summaries to ED/Hospital	\$2,000	Per facility	10%	30%	50%	70%
Clinical Summary to EDs	\$2,000	Per facility	0%	0%	30%	50%
Clinical Summary to Physicians/Clinics	\$10	Per doc	0%	0%	10%	30%
National Radiology Results Delivery	\$5	Per doc	0%	30%	50%	70%
National Radiology Results History	\$1,000	Per facility	0%	30%	50%	70%
Hospital Radiology Results Delivery	\$1	Per doc	0%	0%	10%	30%
Hospital Radiology Results History	\$350	Per facility	0%	0%	10%	30%
Local Radiology Results Delivery	\$2	Per doc	0%	0%	10%	30%
Local Radiology Results History	\$650	Per facility	0%	0%	10%	30%
Max Subscription – All Services	\$43	Per doc				
Max Subscription – All Services	\$6,000	Per facility				

Operating Costs Statement

Salaries

The statewide HIE will staff three positions with permanent/non-contractor resources at the outset of the implementation project: the President, the Director of Outreach, and an Administrative Assistant. The Board of Directors will negotiate with the candidate for the President's position. Compensation for the other positions will be negotiated by the President in consultation with the Board of Directors. It is anticipated that the average salary of permanent resources will be approximately \$113,000 in the first year; with an increase of 3.5 percent assumed for successive years. The implementation and integration resources will be procured from Maryland-based businesses and contracted at an average billable rate of approximately \$115 per hour.

Benefits & Taxes

Benefits for permanent resources will include family medical insurance coverage. Benefits and taxes for permanent resources will amount to 25 percent of payroll or roughly \$28,000 per resource in the first year, with an anticipated increase of 3.5 percent in each successive year. Payroll taxes borne by the HIE are estimated at approximately 9 percent of payroll. The statewide HIE expects to receive not-for-profit status by August 2011. As a not-for-profit organization, the statewide HIE does not expect to have any obligation for income taxes. Contract positions are not eligible for benefits and taxes will be the responsibility of the individual contractor.

Overhead

Rent, Utilities, Office Expenses, and General Overhead

The budget for office expenses, rent, utilities, and other overhead expenses amounts to approximately 10 percent of human capital costs. The overhead budget is further broken down as follows:

Overhead Items	2010	2011	2012	2013
Rent	\$36,000	\$37,260	\$38,564	\$39,914
Utilities	\$24,000	\$24,840	\$25,709	\$26,609
Outreach and Communication	\$60,000	\$60,000	\$7,500	\$7,763
Legal Services	\$85,000	\$85,000	\$8,000	\$8,280
Liability Insurance	\$12,000	\$12,420	\$12,855	\$13,305
Office Expenses/Other SG&A*	\$193,957	\$192,940	\$137,388	\$135,757
Total Overhead	\$410,957	\$412,460	\$230,016	\$231,628

*SG&A = Selling, General, and Administrative Expenses

Outreach and Communication Activities

Absent funding from the *State Health Information Exchange Cooperative Agreement Program*, the approximate budget for outreach, education, and technical services is anticipated at \$60,000 for years one and two, and roughly \$7,500 in year three, with a projected increase of 3.5 percent per year forecasted for subsequent years. This amount could significantly increase with grant funding under the ARRA. The statewide HIE outreach, education, and technical assistance plan will:

- Position Maryland as a leader nationally with regard to state HIE efforts;
- Coordinate effectively with the constituents' marketing and communication departments to maximize exposure and streamline outbound messaging;
- Articulate the mission, vision, and value proposition to providers and consumers in simple, compelling terms through a range of channels;
- Provide transparency into the organization;
- Build public and constituent trust;
- Leverage grassroots support of champions among target providers and the consumer population; and
- Coordinate public-facing and provider outreach strategies.

Legal Fees

Legal counsel has been retained by the statewide HIE to provide support to the policy development framework, privacy and security requirements for system development and use, data sharing agreements, evaluation of existing laws and regulations, and assistance in multi-state policy harmonization activities. Approximately \$85,000 has been budgeted per year in years one and two for legal services and \$8,000 in year three, with an anticipated increase of 3.5 percent per year for subsequent years.

Liability insurance

The statewide HIE has procured directors, officers, general liability, and workers compensation insurance. A budget of \$12,000 per year for insurance is estimated for the first year of operation with an anticipated increase of 3.5 percent per year in successive years.

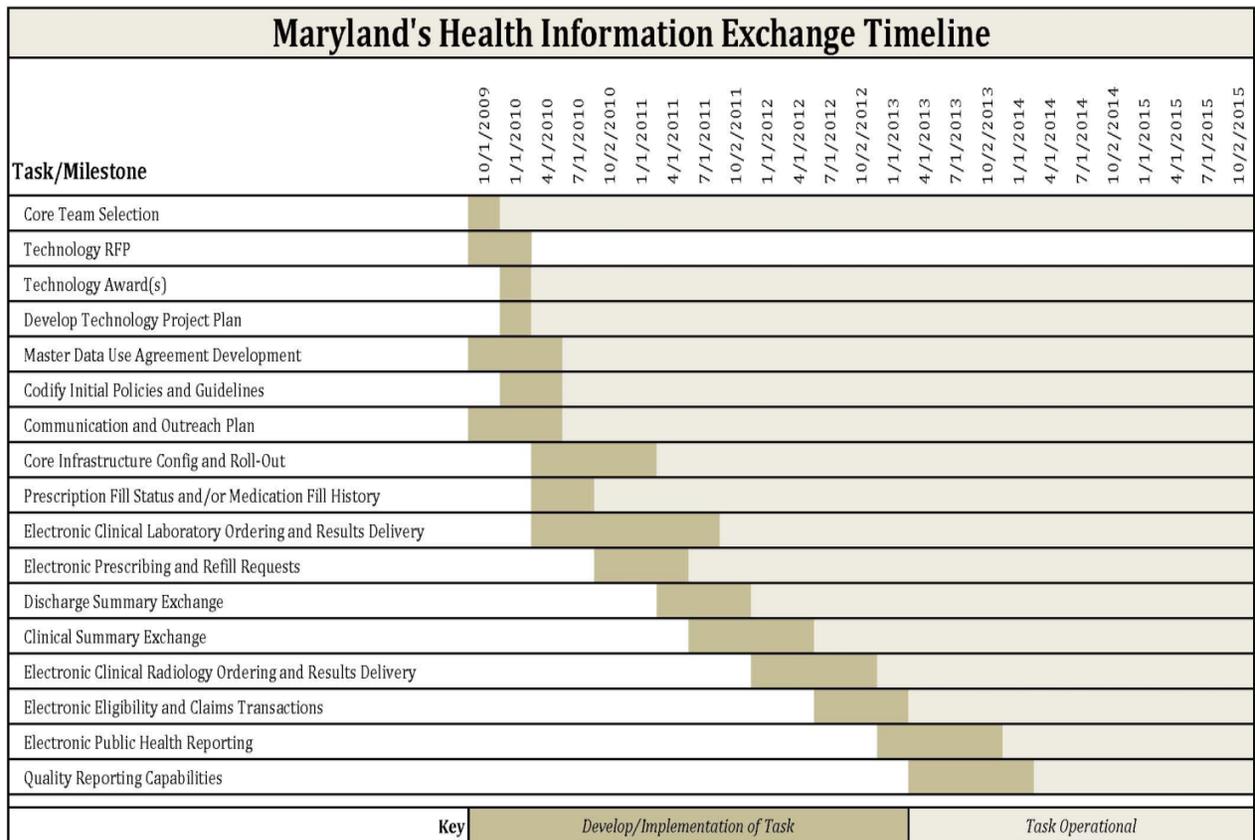
Statement of Cash Flows

The model assumes that all of the services and infrastructure required to build the exchange are not acquired as assets, but rather leased or sourced as a service. The statewide HIE will consider lines of

credit to fund certain aspects of the operations. This is not anticipated but, should it occur, there will be minor impact to this cash flow statement.

Cash Flow from Operations	2010	2011	2012	2013
Beginning Cash	\$0	\$1,058,843	\$590,484	(\$68,864)
Additions to Cash				
Maryland State Funding	\$5,000,000	\$2,000,000	\$2,000,000	\$1,000,000
ONC Grant	\$3,250,000	\$3,313,924	\$2,000,000	\$750,000
Total Use Case Revenues	\$1,018,800	\$2,487,600	\$4,362,000	\$5,937,200
Subtractions from Cash				
Total HIE Costs	(\$8,209,957)	(\$8,269,883)	(\$9,021,348)	(\$7,099,035)
Cash Flow Per Year	\$1,058,843	\$590,484	(\$68,864)	\$519,301

Project Timeline



Gantt Chart

Health Information Exchange Use Case Project Plan			
ID	Task	Duration	Predecessor
1	Use Case	169 days	
2	Conceptual Agreement	46 days	
3	Presentation to Stakeholder	1 day	
4	Stakeholder Question and Answer Period	21 days	
5	Stakeholder Letter of Support	1 day	
6	Identify Initial Locations	36 days	
7	Identify Number of Sites	1 day	
8	Identify Current Technical Infrastructure of Sites	5 days	
9	Vendor Analysis	110 days	
10	Assess Vendor Options	2 days	
11	Obtain Participant Mix	1 day	
12	Get Commitment from 75% Participants	1 day	11
13	Vendor Connectivity	30 days	
14	Legal Analysis	88 days	
15	Review of Federal Law	15 days	
16	Review of MD State Law	15 days	
17	Memo Interpreting Fed and State Law	1 day	15, 16
18	Contracting	62 days	
19	Terms and Conditions	45 days	
20	Scope of Work	7 days	
21	HIE Organization Review	7 days	19, 20
22	Contract Executed	1 day	21
23	Contracts with Participating Hospitals	50 days	
24	Industry Assessment	5 days	
25	Transaction Price Negotiations	10 days	
26	Contract Development	21 days	
27	Contract Execution	1 day	25, 26
28	Project team development	15 days	
29	Assign team (sites, vendor, consultants)	15 days	
30	Determine hospital resource availability	1 day	27
31	Technical	14 days	30
32	Privacy/Legal	14 days	27
33	Education/Training	14 days	27
34	Kickoff for all Stakeholders	26 days	
35	Executives	1 day	
36	Staff	1 day	
37	Requirements Gathering	14 days	35
38	Outbound ADT Triggers	7 days	
39	Inbound Report	7 days	
40	Consent Process	14 days	
41	Provider Workflow	3 days	
42	Reporting and Quality Measures	7 days	
43	Establish Acceptance Criteria	3 days	
44	Design	7 days	37
45	Outbound ADT Triggers	7 days	38
46	Inbound Report	7 days	39
47	Consent Process	7 days	40
48	Provider Workflow	2 days	41
49	Reporting and Quality Measures	3 days	42
50	Create Test Plan	3 days	
51	Build	7 days	44
52	Outbound ADT Triggers	7 days	45
53	Inbound Report	7 days	46
54	Consent Process	7 days	
55	Opt-in Language Agreed Upon Between Sites	7 days	47
56	Provider Workflow	1 day	48
57	Reporting and Quality Measures	1 day	49
58	Training and Education	31 days	
59	Training Material Development	4 days	
60	Patient Education Material Development	7 days	
61	Location Sign-Off on Materials	1 day	60
62	Staff Training Session	6 days	
63	Support training	2 days	

Controls and Reporting

The statewide HIE will use generally accepted accounting principles to prepare, present, and report financial statements. Each month the statewide HIE will provide the Board of Directors and the MHCC a report on its financial status and provide information related to the activities of the Advisory Board and the progress of implementation based on the established timeline. The statewide HIE will undergo an independent audit performed by a state designated auditor. The audit Letter of Recommendation will be issued to the MHCC and Board of Directors. The statewide HIE will respond to the audit letter within 45 days.

The Board of Directors is responsible for ensuring that appropriate financial controls are in place and that all relevant Office of Management and Budget circulars are addressed pertaining to potential funding under the *State Health Information Exchange Cooperative Agreement Program*. The Board of Directors will also provide oversight in the completion of reports due to ONC as it relates to the progress of the statewide HIE and use of any funding.

Technical Infrastructure

Standards and Certifications

The Advisory Board serves as the multi-stakeholder group for the purpose of identifying a widely accepted and useful set of standards for the statewide HIE. All standards deployed by the statewide HIE have already been accepted by HHS and will support widespread interoperability among providers in Maryland and with the NHIN. Standards used by the statewide HIE infrastructure include: Health Level 7 (HL7), Digital Imaging and Communications in Medicine (DICOM), IHE, Electronic Data Interchange X12 (EDI X12), National Council on Prescription Drug Plans (NCPDP), Standard Object Access Protocol (SOAP), electronic business Extensible Mark-up Language (ebXML), Secure Socket Layer (SSL), and Transport Layer Security (TLS). DICOM and NCPDP provide for messaging standards around imaging and medication information, respectively. The statewide HIE has defined two Use Cases that will leverage these standards for the delivery of image and drug information. The American National Standards Institute Accredited Standards Committee X12 (ANSI ASC X12) is a standard that will be used in the exchange of administrative health care transactions.

The statewide HIE plans to use the Continuity of Care (CCD) C32 as a document standard with the recognition that further definition and constraints within that document will need to be applied. The use of the CCD standard is built upon and reinforced by the CCHIT identifying the CCD as a document standard in its 2008 certification criteria. The Advisory Board views some standards as having more relevance to the early phases of the HIE implementation than others.

A condition of connectivity for providers is that they use an EHR that meets national certification standards and other meaningful use requirements. Technology deployed by the statewide HIE will use existing standards recognized by the Secretary of HHS. The approach leverages a number of HITSP-endorsed IHE profiles, as well as ensuring emerging standards and interoperability specifications that have been endorsed by the appropriate oversight committee.

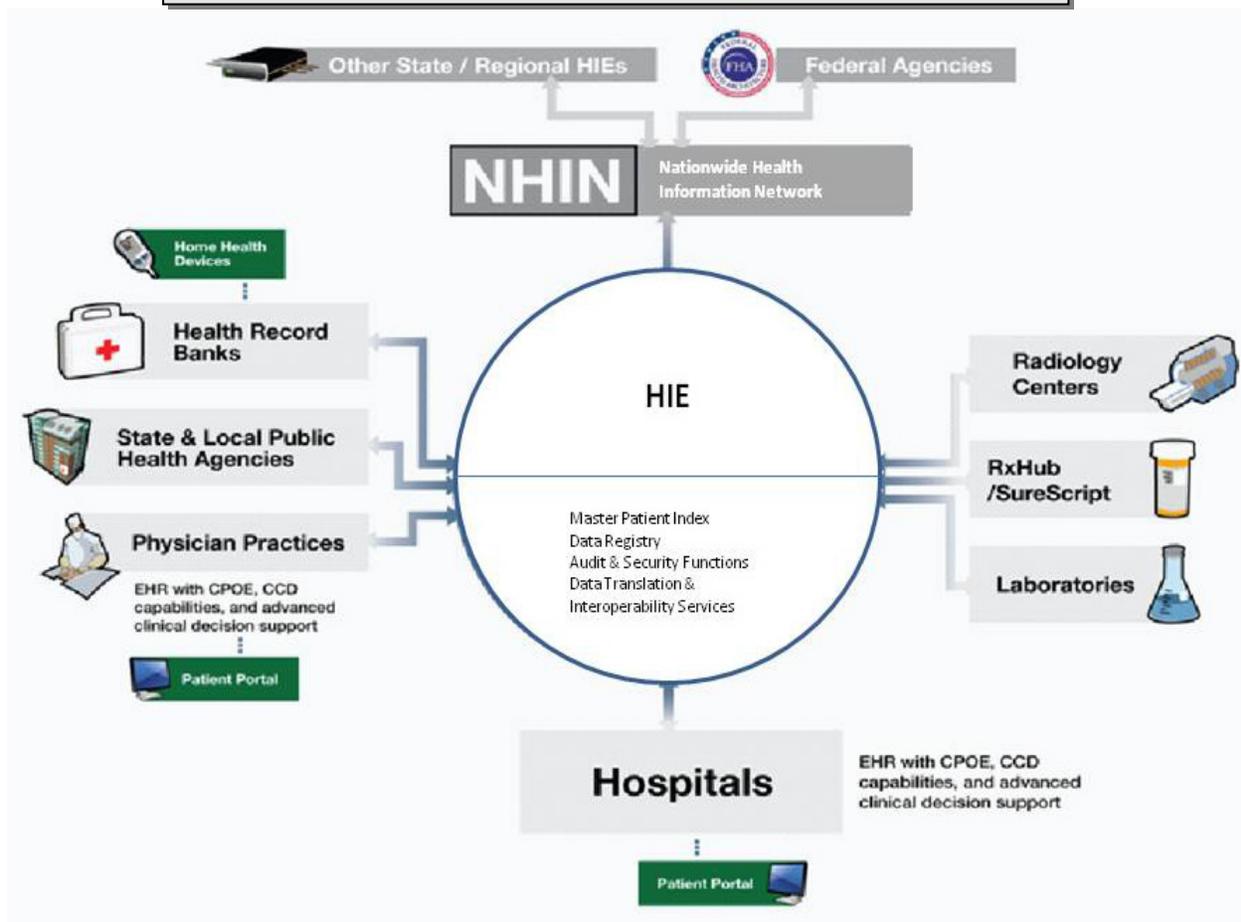
Technical Architecture

The statewide HIE is a standards-based, decentralized, hybrid model that supports both distributed data and PHRs and HRBs that will allow statewide availability for the secure transfer of a defined set of

clinical information between appropriate participating entities. The infrastructure is flexible to allow for market development in either a distributed or HRB driven model and will accommodate a MPI and Registry to locate records within the HIE. The distributed model ensures that data is held where it is created, therefore avoiding the negative perceptions and potential privacy and security consequences of storing all patient information in a large centralized HIE repository. In some cases such as laboratory results, radiology reports, pathology reports, and medication histories, clinical data will not be held in edge servers, but rather routed from the laboratory or imaging center to the ordering provider. The statewide HIE fosters a market in which consumers utilize PHRs/HRBs, which function as a node in the statewide HIE. Data from the statewide HIE will be available for public health and other approved secondary uses. The architecture of the statewide HIE is compatible with NHIN core services.

The State of Maryland currently owns and operates the existing MMIS. The system is a direct descendant of the original MMIS applications based upon the Federal Blue Book specifications and technical architecture of the 1970's. Maryland has opted to proceed in pursuing a replacement MMIS with fiscal agent services and program operations through the MITA. Coordination with Medicaid is underway to ensure integration of the statewide HIE with MITA.

Maryland Health Information Exchange Fundamental Design



Storage of Clinical Information

Each node on the statewide HIE will store data locally in either their own, or shared, edge devices that are in turn made available to the requestor via the statewide HIE if an allowable request is received. Since the current level of EHR adoption is currently at around 20 percent, to address this challenge, the statewide HIE will offer a provider portal to allow for early access to the HIE. HRBs will connect to the statewide HIE in a manner similar to any other provider, enabling consumers the ability to control data in consumer oriented edge devices separate from the central exchange infrastructure.

Registering Clinical Information with the Exchange

The central registry will capture the metadata of any information being stored locally on an edge device. The intent of the document registry is to maintain information about the location and type of documents that exist on the network. When a participant saves a document to the statewide HIE edge device, a standard transaction is initiated to register the document and sends the necessary document identification information to the centralized registry.

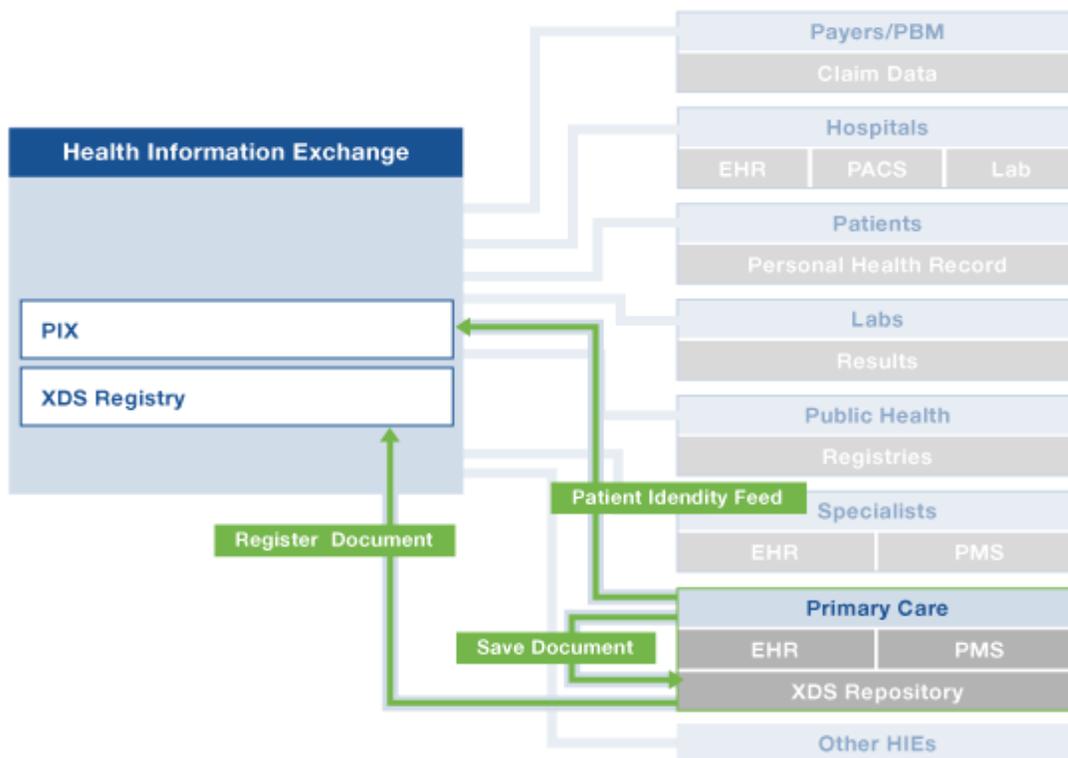
Data Request, Exchange, and Publishing

The statewide HIE operates with an agreement, amounting to the consent, of the consumer whose information is being exchanged. As a baseline process, consumers will be notified about the existence of the statewide HIE and will have a choice to opt-out of all exchange participation, whereby they will be able to choose to disallow any of their health information from flowing through the statewide HIE. The consumer notification describes the statewide HIE, its purpose, and its functions. In effect, opting-out is the equivalent of being placed on a do-not-call or global suppression list. Depending upon the Use Case and associated data, additional opt-in patient consent protocols are employed over and above the opportunity to opt-out completely. In practice this means all patients will be included in the statewide HIE by default, unless they ask not to be. For those consumers that participate, the statewide HIE is available for a variety of purposes, some of which will require additional consumer consent or authorization under HIPAA and Maryland law, and some of which will operate without explicit consumer approvals.

Persistence of information in edge devices highlights the concept of control over health information and the ability for the information to be updated or deleted. Information in edge servers does not necessarily need an expiration/auto-delete date. If data were to be deleted from an edge device, the data in the originating system will still exist, and all logs of access to the previous data will persist in the statewide HIE audit log.

For primary clinical uses of the information, ancillary data will be routed from the processing facility (i.e., laboratory or imaging center) through the statewide HIE to the ordering physician. The statewide HIE will initially leverage SureScripts/RxHub as a source of medication information derived from both pharmacy data (SureScripts) and claims data (RxHub). This data will be accessed by routing provider requests through the HIE to SureScripts/RxHub and locating the patient using that company's MPI service. As the statewide HIE evolves, the ability for consumers to maintain medication history information in their own PHR/HRB will be possible.

The figure below illustrates the high-level process by which the statewide HIE participant will submit, store, and register patient health information privately and securely with the HIE.



The Health Record Bank and Personal Health Record Exception

Consumers have the option of exclusion from the statewide HIE for all other data transfer, while still allowing information to flow from an HRB to a health care provider. This feature of the statewide HIE is designed for consumers desiring more granularity than an all-out option. As consumer access applications become more available, user controls within those applications allow consumers to manage the flow of their personal health information within the statewide HIE, as long as those applications adhere to the technical and privacy standards established by the statewide HIE. When a query is initiated, the transaction process flow includes a reference to consumer-defined configurations for access to health information. The patient has the ability to change those controls in real-time or near real-time to modify which providers have access to his or her information, what information they have access to, and the duration of access for a given provider. By creating an HRB account, consumers can opt-out of the full treatment, payment, and health care operations (TPO) exchange of their data and exercise greater control over what elements of their health records are shared through the statewide HIE.

The statewide HIE will allow PHRs, HRBs, and other consumer access applications to act as nodes on the statewide HIE, similar to any other provider participant. Consumer access will not be enabled in the early phases of the statewide HIE, but rather after early phase functionality has been deployed and is in use. In practice, this implies that PHRs/HRBs will adhere to similar IHE integration standards supporting the standardized transactions. The statewide HIE includes minimum integration standards that HRB vendors can build against and then engage the exchange to implement the product. These standards may leverage the IHE profiles, but may also look to deploy the XPRH IHE integration profile, the purpose of which is to support interoperability between PHR systems used by patients and the information systems used by healthcare providers. The statewide HIE will publish minimum

authentication standards and will determine patient authentication to ensure the accurate delivery of patient records in HRB accounts in 2010.

The statewide HIE will provide a consumer access portal into the HIE, similar to the provider portal, which will allow consumers to view their health information and exert control over how it flows through the system. Encouraging consumer engagement by offering a standardized consumer portal solution will act as a catalyst for broader adoption of consumer health management tools.

Electronic Health Records

The statewide HIE includes a provider portal solution that can act as a mechanism to drive the adoption of robust EHR solutions as the statewide HIE grows and its value is realized. The concept is that less intrusive HIT solutions, such as portal access to the exchange, can allow providers to participate and use external health information during patient treatment without having to deploy intensive EHR solutions locally or significantly to modify clinical workflows.

Underserved Populations

The statewide HIE will include communities facing health, and health care, disparities. The statewide HIE will engage safety net clinics, federally qualified health centers, and underserved advocacy groups. A number of safety net clinics, federally qualified health centers, and underserved advocacy groups are already involved in the statewide HIE efforts. The statewide HIE is currently working with the Summit Health Institute for Research and Education, Baltimore Medical System, Community Health Integrated Partners, and the Shepherd's Clinic.

Analytics/Reporting

Public Health, Care Management, and Quality Improvement

The public health opportunities associated with the statewide HIE are immense. Databases of anonymized health information can create powerful quality improvement initiatives aimed at identifying best practices, defining evidence-based practices, and developing care management plans. The concerns related to privacy are of comparable significance. Some public health needs also do not require immediate or any reference of having to trace back to a particular individual.

Many providers in Maryland are already required to submit multiple files for secondary uses by public health officials for monitoring and reporting purposes. The statewide HIE will serve as a conduit to facilitate this existing reporting requirement, easing the burden on the provider community. However, the standards for identified, de-identified, or anonymized data will be clearly defined by the Policy Board, communicated accurately, and understood widely when health information is used for these purposes.

Other Secondary Use Opportunities

The statewide HIE will use secondary data, as approved by the Policy Board, to provide clear societal benefits and benefits to various local, state, and national public health agencies for the purposes of early identification of communicable diseases and acute or long-term population health threats. The communications between the appropriate parties during such public health events, as well as on-going and real-time monitoring of public health threats, are vital functions of a mature statewide HIE. The mechanism that will be implemented for collecting and analyzing health data from the HIE will enable

public-health professionals to analyze and respond in real-time, which will significantly improve the responsiveness and efficacy of public-health risk remediation and response.

Technology Deployment

The deployment of the statewide HIE is planned incrementally to ensure that the HIE meets the requirements of meaningful use. This incremental strategy is rooted in the knowledge that moving too quickly in an environment as nascent as the HIE field could lead to unintended consequences for the statewide HIE and the HIE participants. However, incrementalism does not negate the statewide HIE's ability to be progressive, forward thinking, and to produce results at a faster rate than previously observed in other efforts. Efforts to align functionality of the statewide HIE will closely parallel the planned activity of the NHIN. The statewide HIE expects to begin sharing select electronic patient information with HIEs in the region within two years and will be ready to connect with the NHIN for select data as services become available. The statewide HIE will test against the implementation specification on a Use Case basis to assure compliance with the meaningful use requirements.

The statewide HIE is currently developing a preliminary set of questions for technology vendors. The questions are related to infrastructure capabilities, data and security standards, use of IHE Integration Profiles, and ability to support specific Use Cases. These questions will be posted on the statewide HIE website and sent by email directly to a group of approximately 30 vendors chosen based on their role in the market. These vendors represent a spectrum of HIT companies, ranging from off-the-shelf product vendors, component vendors, to systems integrators that can meet the challenges of data sharing in the private and public sectors and enable appropriate secondary uses of data.

Service Oriented Architecture

The statewide HIE embraces a SOA approach, which is necessary for the long-term viability of the HIE. The statewide HIE infrastructure is comprised of numerous services that will run on an enterprise service layer and enable the core functions of the HIE. By incorporating an SOA approach into the design, the statewide HIE will ensure that the exchange takes advantage of developing and advancing services and not rely upon a single service provider for all services. They include:

- Master Patient Indexing;
- Provider Identity Management Services;
- Registry Services;
- Repository Services;
- Authentication Services;
- Audit Services;
- Nomenclature Normalization Services;
- Consent/Authorization Management Services; and
- Network Monitoring Services.

Locating and Retrieving Records

Reading the Master Patient Index

When a participant in the statewide HIE is attempting to locate a patient in the HIE, that participant will send a request to the MPI PIX manager by submitting a standardized PIX Query. The PIX Query transaction carries the local medical record number (MRN) and locates that MRN within the PIX manager. Once found, the PIX Manager, as the name suggests, cross-references the submitted MRN with the other record numbers that have been associated with that MRN when the original PIX feeds were submitted to the exchange. Providers also have the ability to query the statewide HIE using demographic information for those patient encounters for which no MRN has previously been established or communicated with the PIX manager for cross-referencing. The Patient Demographic Query transaction will allow basic patient demographic information to be submitted to the MPI for patient location by leveraging statistical matching.

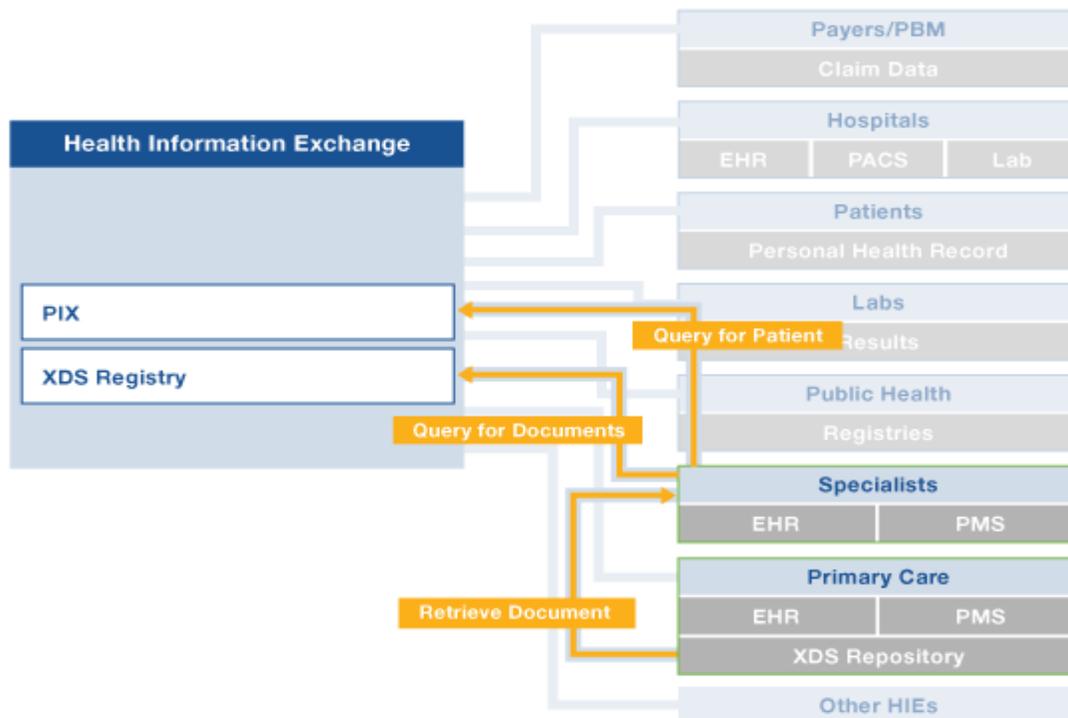
Locating Clinical Information

After successfully locating the patient, a transaction will be executed to locate records for that patient within the centralized registry. Data housed in the registry is not clinical data and is only metadata about the location and type of information available on edge devices and other repositories connected to the statewide HIE. Information in the registry will then be presented to the provider as a list of clinical documents available in the statewide HIE, or normalized and compiled into a single clinical summary. The list of documents presented to the provider is dependent upon the access rights defined for that provider within the statewide HIE. Data will be presented to the provider as a list, but other data delivery options exist.

Retrieving Clinical Information from the Exchange

Following the initial PIX Query and the subsequent query and response of the statewide HIE registry, the provider will have the option to select a document from the registry that they wish to exchange, again dependent upon their access rights to view that document. When a provider selects a document from the registry list, a Retrieve Document transaction will be initiated that will send a request to the edge device storing the clinical information. When the request is accepted, that clinical document will be presented to the requesting provider.

This process for the retrieval of clinical information implies a pause in the location of patient records at the exchange registry level for review of available documents. However, scenarios exist whereby a provider may prefer to receive core clinical data about a patient without the additional workflow of selecting clinical documents from a list of all available documents. In this scenario, the statewide HIE will identify, locate, and deliver a core document, defined by the document type, to be delivered to the requesting provider.

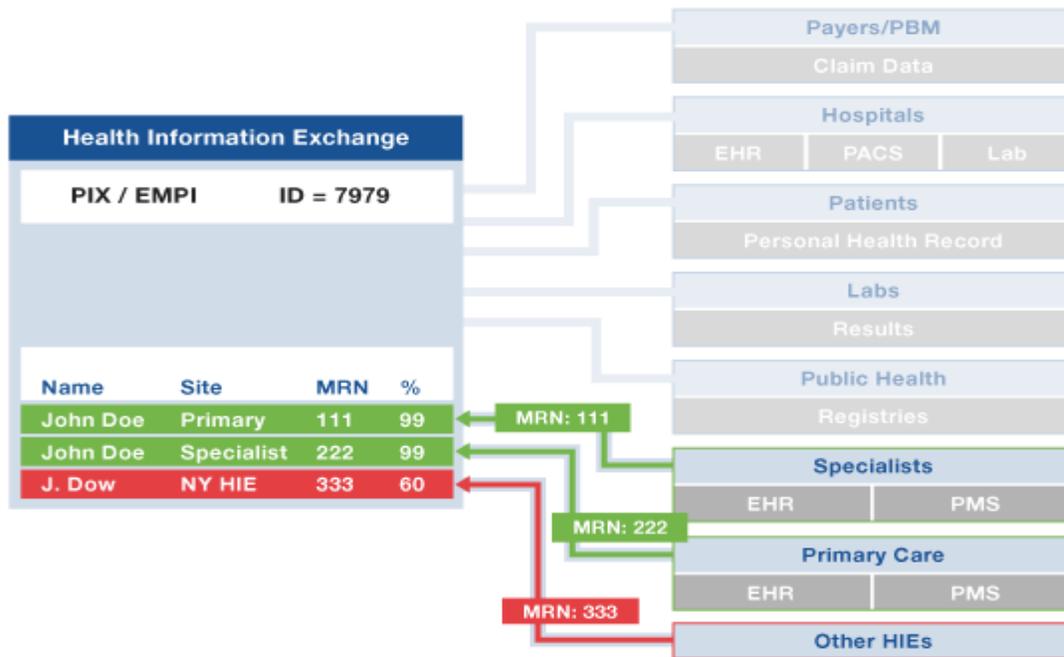


Master Patient Indexing

The statewide HIE will deploy the IHE PIX approach to patient matching to minimize both false positives and false negatives. The PIX manager is a layer on an MPI that is operated within the exchange and each record in the PIX contains cross references to the MRN located at participating institutions, which translates the MRN of one provider to the MRN of another provider. The initial link between a provider MRN and an existing PIX record is accomplished through statistical matching. Errors are mitigated through probabilistic or deterministic matching. This approach is similar to deploying a record locator service; however, it leverages an independent MPI and independent registry to separate the functions in pursuit of an SOA approach.

The early statewide HIE Use Cases require that a supplier/sender will need to feed their MPI into the PIX, and receiving/consuming providers can send demographic data to the statewide HIE to be matched probabilistically to the MPIs of data suppliers/senders to obtain available data. The MPI will run algorithms against the existing demographic information to preprocess the database to determine the frequency of every attribute and will score the match according to the discriminating ability of the specific attributes of that database. The limits of acceptance and rejection will be tailored to the size of the population and the risk tolerance of both false negative and false positives.

The diagram below illustrates an HIE participant submitting a standardized patient identity feed to populate the centralized MPI. Based on a centrally defined set of non-clinical patient information, a standard message will be sent to the central exchange MPI. If the subject patient already exists, the inbound transaction will be cross-referenced with the new record.



Business and Technical Operations

Current HIE Capacities

Approximately 17 percent of Maryland's acute care hospitals have initiatives underway to share limited patient information electronically with providers outside the hospital. In an effort to increase efficiency and quality of care, hospitals are implementing data sharing initiatives unique to their geographic area although consistent with existing standards and statewide policy. These hospitals will function as a single node on the statewide HIE and will manage connectivity with providers in their service area. The statewide HIE intends to make available to acute care hospitals connectivity to the HIE on a Use Case basis beginning in 2010. Connectivity depends largely on the readiness of each hospital. The statewide HIE is particularly interested in connecting the nearly seven percent of acute care hospitals that have an affiliation to a hospital in another state. Connecting these hospitals to the statewide HIE will allow for the identification and harmonization of technology and policy beyond those identified during the planning phase for the statewide HIE. The statewide HIE will assess hospital readiness for connecting to the HIE and, based on Use Cases, establish connectivity with one hospital at a time. Connectivity with acute care hospitals that have an affiliation with an out of state hospital is anticipated around the fourth quarter of 2010.

State-Level Shared Services and Repositories

The statewide HIE's Advisory Board will explore opportunities for shared services and repositories with acute care hospitals that exchange some limited electronic patient information in their service area. These services include, but are not limited to: Patient Locator Service, Data/Document Locator Service, and Terminology Service. Over time, other services may be developed that comply with the standards and certification criteria adopted by HHS in an effort to expand participation in HIE. Currently, data sharing initiatives of acute hospitals is fairly limited. The Advisory Board's Exchange

Technology Committee will work with acute care hospitals to identify opportunities for leveraging services from the statewide HIE. The Exchange Technology Committee is also expected to work with Medicaid as they move forward with implementing MITA. Coordination with Medicaid will eliminate redundancies in technology implementation and ensure that technology implemented by the statewide HIE is appropriately deployed. The MHCC is currently in discussion with Medicaid as they continue to plan for MITA implementation.

Standard Operating Procedures for Statewide HIE

HIE services are defined by Use Cases, which are services that provide benefits to patients, providers, and other stakeholders. Ultimately, the selection and prioritization of Use Cases is largely market driven. Market assessment by the Advisory Board's Clinical Excellence and Exchange Services Committee is ongoing. The statewide HIE website is one source for stakeholders to recommend Use Cases. The Board of Directors has the final decision on the implementation of new Use Cases. The Board of Directors will consider the Use Case recommendations from the Advisory Board's Clinical Excellence and Exchange Services Committee. Those approved will be forwarded to the staff of the statewide HIE to operationalize the Use Case. Prioritization will be based on existing workflows, resources, and potential revenue. At startup, in the absence of market feedback, the statewide HIE developed a list of Use Cases based on results from the two statewide HIE multi-stakeholder groups nine month planning project.

Legal/Policy

Establish Requirements

The statewide HIE has retained Ober|Kaler, a Baltimore-based legal firm, with expertise in health care law and specializing in HIT and HIE matters. Legal counsel has been retained to ensure compliance with all applicable federal and state legal and policy requirements. Thus far, legal counsel has assisted in the development of participation agreements for the statewide HIE and has been instrumental in the Privacy and Community Interaction workgroup for one of the multi-stakeholder groups' HIE planning projects. Expert legal counsel has also provided substantial services to the Board of Directors of the statewide HIE. The Chair and the Secretary of the statewide HIE Board of Directors both bring a health care oriented legal background to the leadership team. Ober|Kaler reviewed the statewide HIE's work and provided guidance to the Board of Directors as it relates to compliance with HIPAA and MCMRA.

The input of legal counsel shapes the evolving policy regarding secure HIE consistent with existing laws. The statewide HIE recognizes that the regulatory environment in which the HIE operates will be significantly changed as the various HIPAA amendments and new requirements of the HITECH Act section of ARRA become effective. The statewide HIE's legal counsel has reviewed those requirements and assessed them on a high level basis and is confident that, directly and through appropriate vendor selection, the statewide HIE will be in compliance. Other requirements, such as the need to support accounting for disclosures on behalf of TPOs for a rolling three year period, will not be required for several years and the statewide HIE will ensure that selected vendors can support these requirements.

Legal counsel views HIPAA and the MCMRA as consistent with, and in fact supportive of, the type of HIE that Maryland intends to implement. Both Acts support the transfer of more data earlier in the life of the exchange, for treatment purposes at least, which could lead to greater adoption of both EHRs and in entity participation in the HIE due to the fact that one measure of the value of the statewide HIE will

be the amount of data available. The growth rate will accelerate as more data becomes available, and an opt-out policy fosters use of the HIE.

Privacy and Security Harmonization

Working with legal counsel, the statewide HIE will harmonize privacy and security requirements and compliance across Maryland and its bordering states relative to access, audit, authentication, and authorization. Harmonization of privacy and security requirements will be addressed through convening meetings with bordering states. These policies specify how participants in the statewide HIE are defined as individual users of the system; how the usage of the system is governed; how users are accurately and appropriately identified; and how records of that usage are captured, stored, and used for various audit purposes. Statewide policy development will initially focus on the four A's of HIPAA (access, audit, authentication, and authorization).

Access

The statewide HIE will use role-based access to allow participating entities to control access levels for the various resources within their organizations. Providers who currently utilize health information systems will likely have experience with assigning roles that dictate access level. In considering how role-based identity management is controlled, the statewide HIE must determine what entity defines those roles. Varying levels of identity management complexities exist, dependent upon whether participants access the statewide HIE through local integrated systems or through a specific client or web-based application.

The inclusion of an additional application, usernames, and passwords into a participating entity's operations imposes a number of challenges; however, the statewide HIE intends to pursue this approach because it is more realistic for near term clinical data exchange. Role types will be established and assigned because the statewide HIE will offer a physician portal to access the HIE. Administrators of the statewide HIE will have privileges to the appropriate user within participating entities who will then have the ability to assign usernames and passwords to individuals within that entity.

Participants will enter into participation agreements that are developed by the governance, approved by legal counsel, with a consistent approach to role assignment in order for the exchange to be successful. The Advisory Board will define the assignment of roles and access protocols in a common statewide HIE policy guide and codify that definition in a contractual agreement allowing for the trust that is a prerequisite for clinical data exchange.

Audit

Audit logs will be stored centrally at the statewide HIE level and will include detailed information about the type of data accessed, by whom, and when, but will not store the actual health information in the audit log. The statewide HIE includes providers that vary in size and have different audit and logging capabilities, the statewide HIE will avoid specific or complex audit requirements at the participant level and account for transactions flowing through the HIE in a centralized auditing log. The statewide HIE will conduct random auditing of logs based on specific rules that trigger audit events, including:

- Audits of all VIP records;

- Procedures for follow-ups on suspicious activity, such as indications of possible privacy or security breaches;
- Review of network intrusion detection system activity logs;
- Review of system administrator authorizations and activities;
- Review of physical access to data centers; and
- Review of other technical, physical, and administrative safeguards as established by the policies of the HIE.

Audit policies will include system event and mechanisms to disseminate incident reports and breach notifications. The Policy Board will define accountability actions to handle breaches, investigate complaints, and provide resolution or enforcement activities when such incidents occur. The Board of Directors will develop sanctions for any participant violating appropriate use of data.

The statewide HIE will at a minimum conduct annual penetration testing to exploit the vulnerabilities to determine whether unauthorized access or other malicious activity is possible. Penetration testing will include all applications, controls, and processes within the statewide HIE. Penetration testing will occur from both outside and inside the statewide HIE.

Authorization

The granularity that the Policy Board deems appropriate is a balance between complexity, usability, and administrative overhead of the exchange and will be arrived at in consultation with the statewide HIE participants. The statewide HIE will enable providers to view and save data for the purposes of treatment. The statewide HIE will verify which functions a user is authorized to perform.

Authorization can range from the ability to view, contribute, and save data. These functions could be as simple as distinguishing between the ability to view data or view and contribute data, or they may involve more complex functions such as defining to the ability to see specific types of data and filtering various health data elements.

Authentication

A username and strong password will be the basis of authentication for access to the statewide HIE. When accessing the statewide HIE through a web-based application, participants will be required to have additional security measures deployed. The Policy Board will determine an appropriate balance between usability, security, and cost.

Federal Requirements

The statewide HIE anticipates exchanging health information with federal care delivery organizations. Discussions with the VA Maryland Health Care System are scheduled to occur during the fourth quarter of 2010. Planning meetings with representatives with the Maryland VA are essential to identify barriers and discuss challenges that relate to data sharing. Actual data sharing is not expected until late 2011.

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