Maryland State Medicaid HIT Plan

Version 9.0

Submission Date – November 2, 2020

VERSION CONTROL

Version Number	Date Submitted to CMS	Date Approved by CMS
1	July, 2011	Contingent Approval: September 19, 2011
1.2	October 19, 2011	December 20, 2011
2	October 3, 2012	January 24, 2013
3	November 22, 2013	February 4, 2014
4	February 3, 2015	May 4, 2015
5	May 3, 2016	July 6, 2016
6	July 3, 2017	August 9, 2017
7	July 24, 2018	September 26, 2018
8	September 25, 2019	November 6, 2019
9	November 2, 2020	TBD

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Introduction

1. Purpose

The State Medicaid Health Information Technology Plan (SMHP) describes the activities Maryland will be engaged in, relative to implementing Section 4201 Medicaid provisions of the American Recovery and Reinvestment Act (ARRA). These activities will fall into three main areas:

1. *Administer Electronic Health Record incentive payments* to eligible professionals (EPs) and eligible hospitals (EHs);
2. *Conduct adequate oversight of the program*, including tracking Meaningful Use by providers; and
3. *Pursue initiatives to encourage the adoption of Certified Electronic Health Record (EHR) Technology (CEHRT)* to promote health care quality and the exchange of health care information.

This document will describe how Maryland intends to:

- Administer the EHR incentive payments to eligible providers;
- Monitor EHR incentive payments to eligible providers; and
- Coordinate all ongoing health IT (HIT) initiatives including: the Medicaid EHR Incentive Program, statewide Health Information Exchange (HIE) initiatives and Regional Extension Centers (REC) supported by the Office of the National Coordinator for Health Information Technology (ONC) and other programs.

The SMHP consists of the following main sections:

- Section A: Maryland's "As-Is" HIT Landscape
- Section B: Maryland's "To-Be" HIT Landscape
- Section C: Maryland's Medicaid EHR Incentive Program Implementation Plan
- Section D: Maryland's Audit Strategy
- Section E: Maryland's HIT Roadmap

1.1 Overview of the SMHP

The Maryland Department of Health (MDH), formerly the Department of Health and Mental Hygiene (DHMH), will administer the State's Medicaid EHR Incentive Program. MDH developed this State Medicaid Health IT Plan (SMHP) and is also responsible for the development of the Implementation Advanced Planning Document (IAPD). This SMHP describes Maryland's approach to administering and monitoring the EHR Incentive Program.

MDH convened an EHR Planning and Implementation Committee (the "Committee") to begin planning for the EHR Incentive Program. These meetings began in January 2010 when the Committee aided in the completion of Maryland's Planning – Advanced Planning Document (P-APD). The Committee has made significant progress in developing its processes for administering and overseeing the EHR Incentive Program. The Committee has reviewed and attempted to address every question posed by CMS in its SMHP template.

Further, the Committee expanded its membership to include auditing and implementation expertise from MDH's Office of Health Services (now Office of Provider Services) in May of 2011. Sub-committee meetings have also been established to address functional areas as the need arises, such as Health Information Exchange (HIE) administrative funding coordination with the expertise of the Maryland Health Care Commission (MHCC), Maryland's HIE and Regional Extension Center (REC), the Chesapeake Regional Information System for our Patients (CRISP).

This document describes Maryland's vision and process for implementing, administering, and overseeing key aspects of the program and describes the Roadmap that will take Maryland from the present, or prior EHR Incentive Program ("As-Is") to the future HIT vision ("To-Be").

The sections of the SMHP are structured as follows:

Section A, the State's HIT "As-Is" Landscape, describes the baseline prior to implementation of the EHR Incentive Program, and the current extent of EHR adoption by professionals and hospitals and their readiness and willingness to participate in the EHR Incentive Program. This section also describes other aspects of the State's HIT landscape including coordination with other organizations on HIT. Additionally, this section provides updated information on Medicaid providers adopting, implementing, and upgrading certified EHR systems.

Section B, the State's HIT "To-Be" Landscape, describes Maryland's vision for HIT and HIE. Medicaid works closely with the MHCC and CRISP to align HIT plans. In this section, MDH also discusses plans for the Maryland Medicaid Information System (MMIS), Medicaid IT

Architecture (MITA), and Health Information Exchange (HIE) system changes as they relate to administering the incentive program, making payments, collecting, analyzing, and aggregating Meaningful Use-related data as it becomes available, *e.g.*, Clinical Quality Measures.

Section C, the State's Implementation Plan, describes the processes MDH will employ to ensure that eligible professionals and eligible hospitals have met Federal and State statutory and regulatory requirements for the EHR Incentive Program. MDH created a process flow for providers through every stage of the EHR incentive program process. The flow starts with provider education about the program, registration with the Medicare and Medicaid EHR Incentive Program Registration and Attestation System (R&A), and application via Maryland's Registration and Attestation System (R&A), also known as Electronic Health Record Medicaid Incentive Payment Program (eMIPP). The process flow also describes how providers are approved and receive payments. Finally, oversight mechanisms and the process for receiving future payments are described along with the process for educating, informing, and providing technical assistance to providers to ensure they remain in the incentive program and become meaningful users.

Section D, the State's Audit Strategy, describes the preliminary audit, controls, and oversight strategy for the State's Medicaid EHR Incentive Program. Many of the pre-payment controls employed are based on system edits and checks within eMIPP. The eMIPP system allows providers to apply for the incentive program and submit all required attestations. The system edits and checks will generate lists of providers approved and denied for the incentive payment. For the initial years of the Program, Maryland leveraged existing Medicaid program integrity resources and other program integrity agencies and offices around the State to address fraud and abuse. In Calendar Year 2015, Maryland procured the services of Myers & Stauffer LC (MSLC) to perform all post-payment auditing of Meaningful Use (MU) and Adopt, Implement, and Update (AIU) attestations.

Section E, the State's HIT Roadmap, describes the strategic plan and tactical steps MDH will take to successfully implement the EHR Incentive Program and its related HIT and HIE goals and objectives. This includes updates to previous years' annual benchmarks and results. These benchmarks measure each programmatic goal related to provider adoption, quality, and the administrative processes. This section describes the measures, benchmarks, and targets that will serve as indicators of progress in achieving overall program goals.

1.2 About this Document

The SMHP is a "living" document and will be reviewed and updated annually. Revisions will be submitted to the Centers for Medicare and Medicaid Services (CMS) for approval. The most

current approved version will be available at the Maryland Medicaid EHR Incentive Program website: https://mmcp.health.maryland.gov/ehr/Pages/Resources.aspx

1.3 Public Input

The State has solicited public input and stakeholder engagement on the development of the Medicaid EHR Incentive Program as part of discussions related to HIE and HIT in Maryland and as part of the regularly scheduled Medicaid meetings with stakeholders and advocates. Comments are accepted on an ongoing basis. Comments should be directed to mdh.marylandehr@maryland.gov with the subject of "*SMHP Comment*." Since the SMHP is a living document, comments will be addressed and potentially incorporated into subsequent versions of the SMHP, or as part of Medicaid operations as appropriate.

Section A: Maryland "As-Is" HIT Landscape

Figure A.1 – Section A Questions from the CMS State Medicaid HIT Plan (SMHP) Template

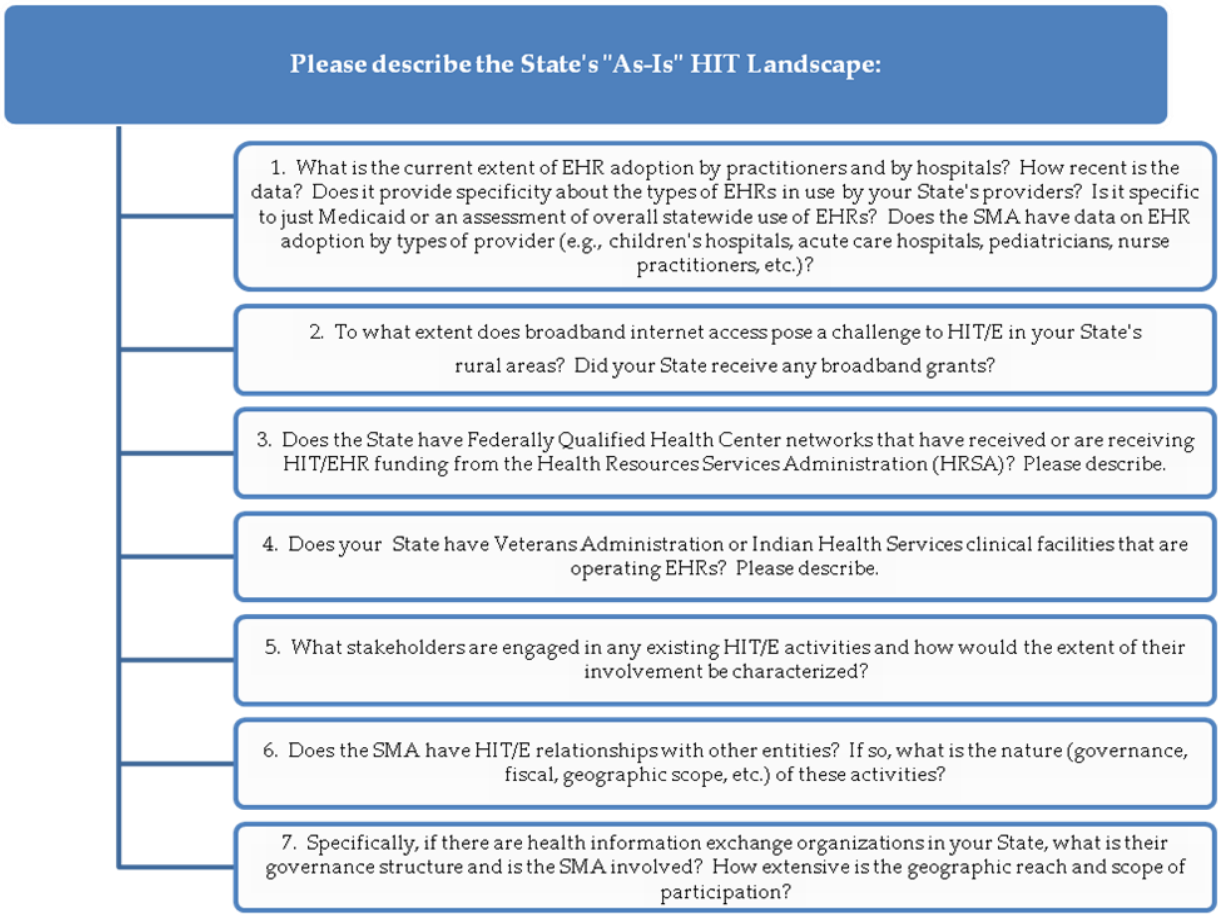
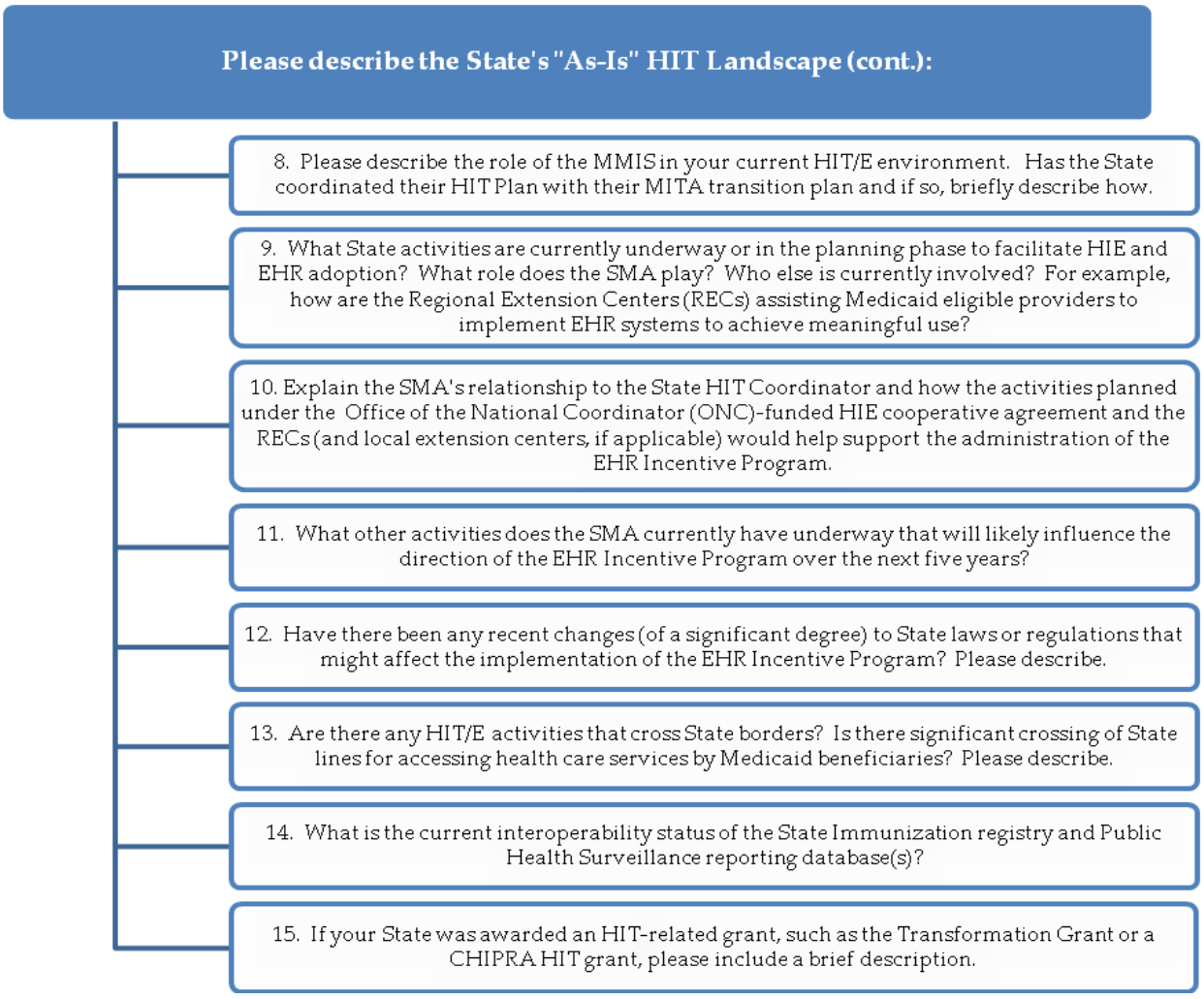


Figure A.1 – Section A Questions from the CMS State Medicaid HIT Plan (SMHP) Template (continued)



Overview

Maryland has a number of advantages for implementing HIT, such as the presence of early innovators, strong state leadership in the Health Information Exchange (HIE), and the creation of a State-Regulated Payor EHR Adoption Incentive Program.[1] Hospitals and other health care providers actively engage in efforts to expand HIT throughout Maryland. The State's collaborative nature, diverse population, and relatively small size (roughly 6 million in 2016 according to the U.S. Census Bureau estimates) make it convenient for stakeholders from across the State to meet regularly to explore options for expanding HIT, and to develop policies to protect the exchange of electronic health information. Maryland is rich in geographic and cultural diversity that includes rural and inner city areas and varying minority populations. Maryland is also home to a diverse health care community; including three Veteran Affairs (VA) medical centers; five VA clinics; and numerous nursing homes, long term care facilities, and Federally Qualified Health Centers (FQHC).

Maryland is considered a leader in adopting HIT. Over the last seven years, the State has placed considerable emphasis on advancing HIT and engaging stakeholders in planning and implementation activities. The State has a long tradition of hospital-to-hospital and hospital-to-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. The three regional medical systems of Johns Hopkins, MedStar, and the University of Maryland are the founding organizations of the Chesapeake Regional Information System for our Patients (CRISP), which is a not-for-profit organization that serves as the state-designated entity in partnership with the State of Maryland for the statewide health information exchange (HIE). CRISP also serves as the Regional Extension Center (REC) in Maryland.

A.1.a What is the current extent of EHR adoption by practitioners and by hospitals?

Practitioners

To understand the pre-EHR Incentive Program environment, Maryland conducted two environmental scans in 2010: (1) a preliminary survey done by selecting current Medicaid providers with patient volumes close to that required for EHR Incentive Program participation (*see* Appendix A) and, (2) one performed with Planning – Advanced Planning Document (P-APD) funds by a vendor to achieve more detailed estimates (*see* Appendix B).

[1] Electronic Health Records - Regulation and Reimbursement. HB 706. 19 May 2009. COMAR, 2009. See: http://mlis.state.md.us/2009rs/billfile/hb0706.htm.

Before implementation of the EHR Incentive Program, Maryland had roughly 16,141 physicians in active practice according to 2009 Board of Physicians licensure data. These physicians treated patients in approximately 5,965 practices. The number of primary care physicians was nearly 3,796 and the number of primary care practices was around 2,012. In 2010, physician EHR adoption in Maryland paralleled the nation at approximately 22 percent. Approximately 29 percent of active physicians accepted Medicaid patients and about 20 percent of those physicians adopted an EHR. However, at the time, many of the EHRs in use by Medicaid providers did not have clinical decision support, computerized physician order entry (CPOE), e-prescribing, or results receipt and delivery functionalities.

The primary purpose of the environmental scan conducted as part of the HIT P-APD activities was to assess EHR adoption, likeliness providers will apply for the Medicaid EHR Incentive Program, and support needed to achieve Meaningful Use. MDH designed the environmental scan to identify the number of providers who might apply for the incentive; the extent of current and future EHR use among responding practices; and the concerns about EHR implementation among practices that were without an EHR system at that time. For the 2010 environmental scan, Medicaid sent surveys to 297 Medicaid physicians and received responses from 103 physicians – a response rate of 35 percent.

A full copy of the survey findings is available in Appendix B. Physicians responding to the 2010 P-APD environmental scan reported an EHR adoption rate of approximately 37 percent. Environmental scan results indicated about 50 percent of physicians that adopted an EHR also reported using the EHR for three or more years. The environmental scan findings indicated approximately 52 percent of physicians had not adopted EHR, and planned to adopt EHR within two years. Approximately 45 percent of physicians in the 2010 environmental scan were undecided about EHR adoption.

EHR use has grown substantially since Maryland implemented the EHR Incentive Program. Table A.1 shows program participation trends from 2011 through 2019. For Program Year 2013, Medicaid approved 574 provider AIU attestations and 503 MU, Stage 1 attestations. For Program Year 2014, Medicaid approved attestations for 1,097 providers, 690 of which were for MU Stage 1. For Program Year 2015, Maryland approved 467 AIU payments and 1,052 MU payments for EPs. Maryland approved 471 AIU payments and 764 MU payments for EPs for Program Year 2016. Since inception, 62 percent of eligible Maryland Medicare and Medicaid providers have participated and been paid by an EHR Incentive Program.[2]

[2] Using ONC's eligible healthcare provider number—14,307 in June 2013.

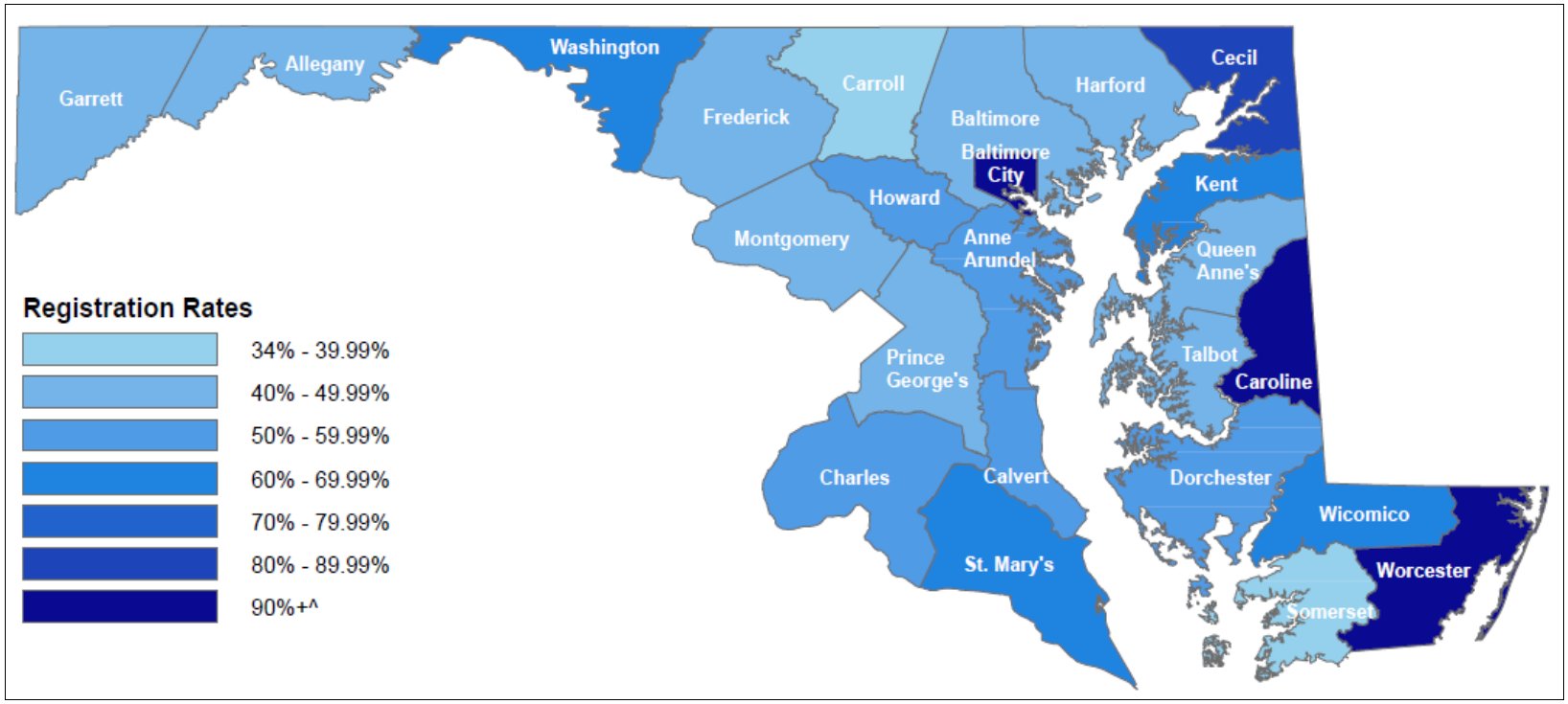
Table A.1 – EP EHR Incentive Program Payments, Years 2011-2019[3]

Year	Medicare	Medicaid	
	MU	AIU	MU
2011	892	691	0
2012	3,529	744	47
2013	5,007	710	648
2014	5,446	692	851
2015	4,343	467	1056
2016	3,682	464	763
2017	-	-	563
2018	-	-	292
2019	-	-	106

To better understand the distribution of EHR use across the State, in 2013, Medicaid used CMS' Business Intelligence Registration and Payment reports ("BI Reports") to create two county-level maps to analyze eligible providers' participation in Maryland's EHR Incentive Program. As Figure A.2 shows, in 2013, Baltimore City and two rural counties, Caroline and Worcester, had the highest registration rates. The high participation rate in Baltimore City was expected given the high concentration of providers and Medicaid participants. The high registration rates in the two rural counties may have resulted from the relatively low number of eligible providers.

[3] The Incentive Payments data are extracted from CMS Business Intelligence Portal as of March 24, 2016

Figure A.2 – Registration Rates for the EHR Incentive Program by Eligible Professional* in Maryland as of 2013** (by County)[4]



*SK&A may define some hospital-based physicians as "Eligible Professionals" for the EHR Incentive Programs; the EHR Incentive Programs distinguish between "Eligible Professionals" and "Eligible Hospitals."

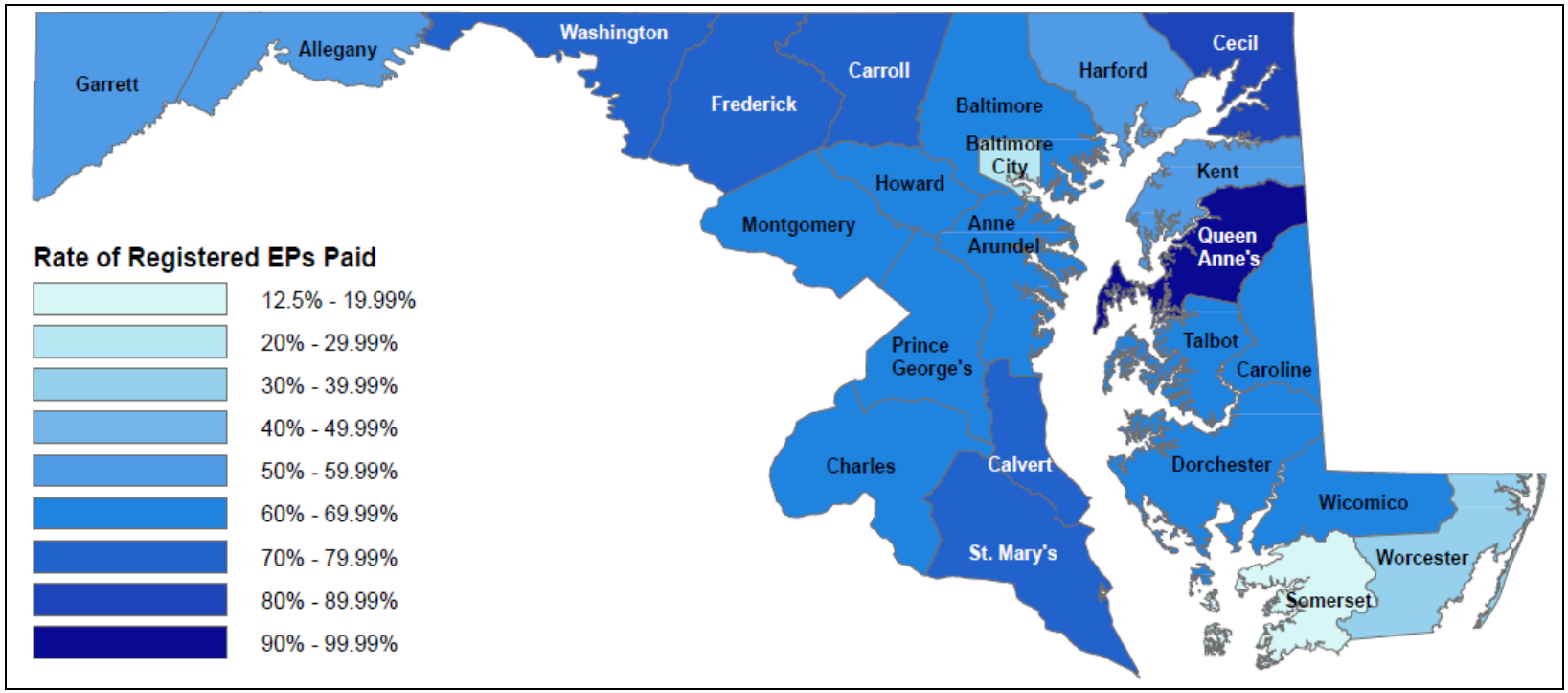
**Data limitations required calculations that mixed 2012 and 2013 data. Adjusting the 2012 health care provider data to 2013 levels—by a factor derived from Young, Chaudry, Thomas, and Dugan (2013)—creates little change in the calculated results. *See* Appendix H.

^Due to limitations of the data (*e.g.* perhaps limited sample size), overestimations in some counties may be possible. *See* Appendix H

[4] Author's calculations based on EP and EH EHR registration report (Centers for Medicaid & Medicare Services, 2013a), and SK&A 2012 data in the Health IT Dashboard (Office of the National Coordinator, 2013). Detail methodology is in Appendix H.

Figure A.3 shows the 2013 percent of registered providers receiving incentive payments. Less than 30 percent of registered providers have received an incentive for Baltimore City and Worcester County. On average, almost 50 percent of providers who have registered in the State have received an incentive payment.

Figure A.3 – Rates of Registered EPs in Maryland Paid by the EHR Incentive Program as of 2013 (by County)[5]



[5] Author's calculations based on EP and EH EHR registration report (Centers for Medicaid & Medicare Services, 2013a). Detail methodology is in Appendix H.

In 2014, Maryland conducted another environmental scan to reassess the EHR adoption and MU rate among two populations—providers that were likely eligible but had not yet participated in Maryland's EHR Incentive Program and providers who had attested for AIU with Medicaid, but had not attested for Meaningful Use.

Medicaid's survey for the 2013 environmental scan revealed that the majority of EHR adopters were members of group practices. These practices tend to be large and either private or hospital-related. Medicaid also learned that the top three barriers to implementation among non-adopters were: (1) lack of capital resources, (2) uncertainty over product selection, and (3) perceived disruption of clinical and business work flows.

In 2017, Maryland contracted with Audacious Inquiry (Ai) to complete an additional environmental scan. Ai conducted the scan to assess the HIT landscape throughout the State by focusing on adoption and use of HIT, challenges to maximizing use of HIT, and plans for future adoption and program participation. Ai surveyed over 7,000 providers to understand how HIT is used within their practice. A full copy of the survey findings is available in Appendix U.

EHR Adoption

Maryland Medicaid plans to conduct a final environmental scan in 2021 to assess EHR adoption. The most recent environmental scan conducted was in 2017. A total of 606 respondents completed the online survey on behalf of 3,602 providers for the 2017 scan. Solo practitioners represented 61 percent (n=367) of survey respondents, while health care providers employed at group practices represented 39 percent (n=239) of respondents. The 2017 scan revealed that overall, 61 percent (n=370) of providers in Maryland use an EHR in their practice. Fifty percent (n=301) of all providers indicated they use an EHR certified by the Office of the National Coordinator for Health IT (ONC), or Certified Electronic Health Record Technology (CEHRT).

According to results from past Maryland HIT environmental scans, EHR adoption increased at a nine percent compound annual growth rate since 2010, and at a six percent growth rate since 2013. Between 2010 and 2013, EHR adoption grew faster, at a compound annual growth rate of 11 percent. Prior environmental scans covered more limited provider types and had smaller sample sizes compared to the most recent scan.[6]

Maryland providers' EHR adoption rates and certified EHR technology (CEHRT) adoption rates fell below national averages. However, overall EHR adoption rates in Maryland were higher than basic system adoption nationwide. The final environmental scan will determine if these

[6] The 2010 scan sampled included 103 physicians. The 2013 scan surveyed 521 providers that were potentially eligible for the Maryland Medicaid EHR Incentive Program. The 2016 data included 606 providers that were representative of the Maryland provider distribution throughout the state. Therefore, reported adoption rates are not directly comparable.

rates have changed. According to the 2015 National Electronic Health Records Survey, 87 percent of office-based physicians in the US adopted EHRs (of any type), 54 percent adopted a basic system, and 78 percent adopted a certified system. [7,8] As the Medicaid EHR incentive program began in 2011, it is not surprising to see that the majority of respondents that reported using an EHR, have been using it for three or more years.

[7] A basic system is a system that has all of the following functionalities: patient history and demographics, patient problem lists, physician clinical notes, comprehensive lists of patients' medications and allergies, computerized orders for prescriptions, and the ability to view laboratory and imaging results electronically. A certified system was defined by physicians answering "yes" to having a current system that "meets meaningful use criteria defined by the Department of Health and Human Services."

[8] NCHS, *National Electronic Health Records Survey: 2015 Specialty and Overall Physicians Electronic Health Record Adoption Summary Tables,* 2017. Available at: https://www.cdc.gov/nchs/data/ahcd/nehrs/2015_nehrs_ehr_by_specialty.pdf

Figure A.4 – EHR Adoption in Maryland

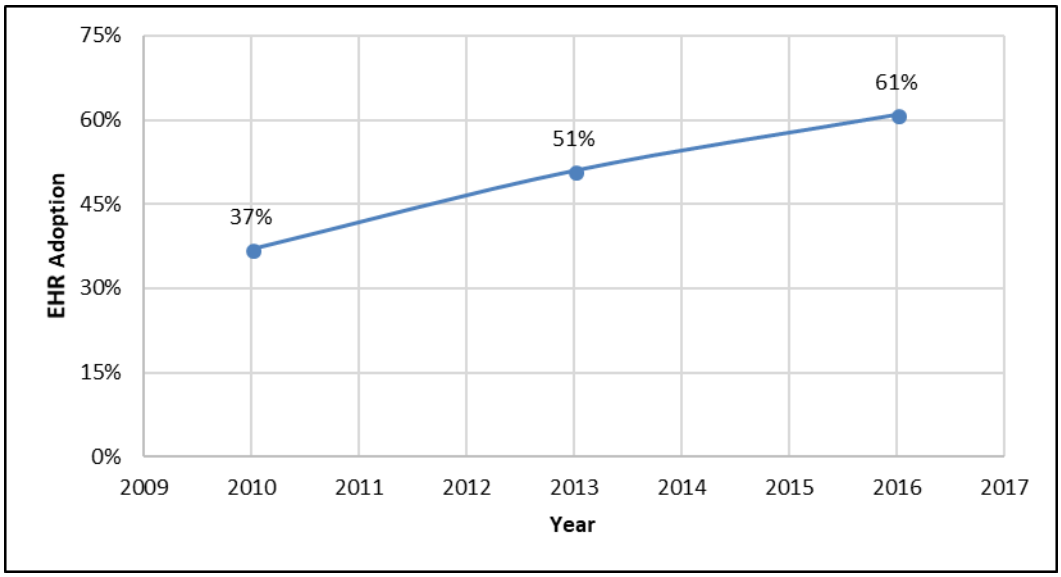
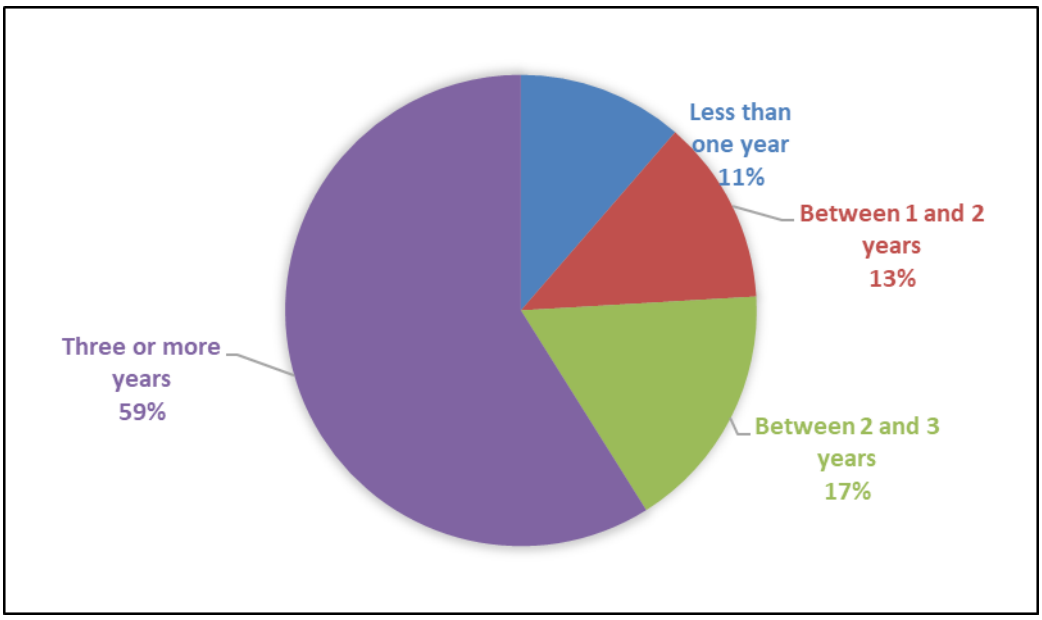


Figure A.5 – EHR Length of Use



Of the 39 percent (n=233) of respondents that indicated they did not use an EHR in their practice, only 28 percent (n=64) indicated that they would adopt CEHRT in the future. Thirty-eight percent of these respondents were still unsure when they would adopt CEHRT (n=24). Practices that operated without an EHR cited the following top three barriers to adopting an

EHR: 1) lack of capital resources to invest in an EHR; 2) not confident EHR will lower costs or improve quality and/or safety; and 3) disruption to office business processes.

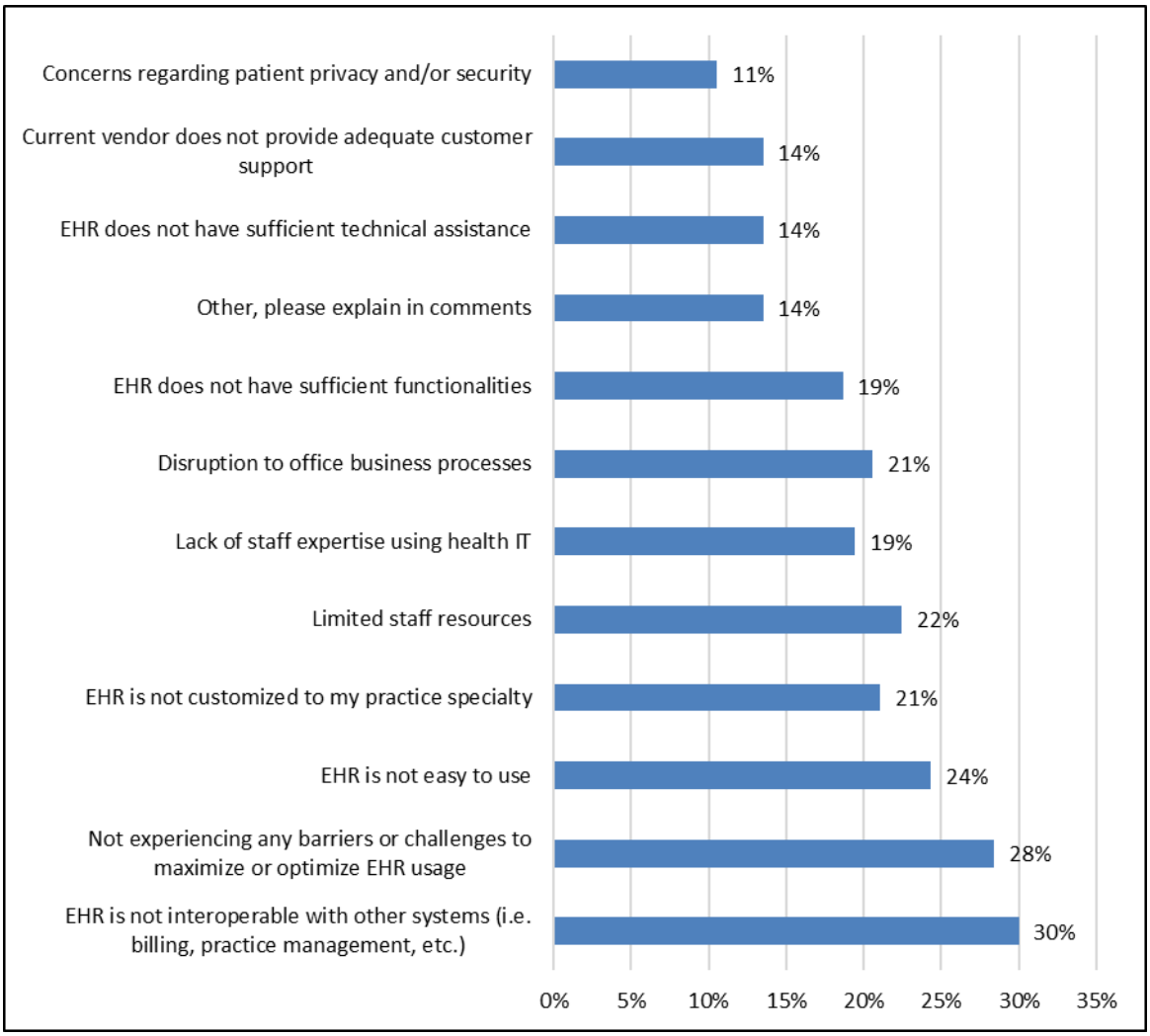
Ai assessed whether planned retirement influenced providers who indicated they did not plan to adopt an EHR. According to the Physicians Foundation's 2012 survey of 20,000 physicians, over 13 percent of physicians across the US plan to retire within the next three years.[9] Approximately seven percent (n=12) of physicians surveyed that had not adopted EHR cited planned retirement as part of their reason for continuing to rely on manual processes for health data management. Therefore, Ai's findings indicated that reasons other than planned retirement were, in part, driving practices' decisions to avoid adopting EHR.

Maximizing and Optimizing EHR Usage

Maryland sought to understand the barriers to optimizing EHR usage among providers in the State and if provider subgroups experience specific challenges. Survey respondents selected three primary barriers that lessen maximum and optimal EHR usage within their practice from a list of options. The three most frequently selected options were: 1) EHR is not interoperable with other systems (i.e. billing, practice management, etc.); 2) not experiencing any barriers or challenges to maximize or optimize EHR use; and 3) EHR is not easy to use. The least selected barriers were: 1) concerns regarding patient privacy and/or security; 2) current vendor does not provide adequate customer support; and 3) EHR does not have sufficient technical assistance. Respondents whose patient population included at least 30 percent Medicaid participants responded similarly to the overall rankings but were slightly more likely to report a lack of staff expertise using HIT as the third greatest barrier they experienced.

[9]The Physicians Foundation, *A Survey of America's Physicians: Practice Patterns and Perspectives*, September 2012. Available at: http://www.physiciansfoundation.org/uploads/default/Physicians_Foundation_2012_Biennial_Survey.pdf

Figure A.6 – Barriers to Maximizing EHR Use among EHR Adopters



Ai further analyzed the group of respondents who reported they were not experiencing any barriers to maximizing their EHR usage. Individuals in this group most frequently reported they were solo practitioners (54 percent, n=57), followed by providers practicing in privately-owned group practices or partnerships (25 percent, n=26) and hospital-owned group practices (11 percent, n=11). Of respondents that reported they did not experience any barriers, the majority indicated that they had been using their EHR for three or more years (62 percent, n=65). Since this group referenced more than 60 different EHR products, ease of using one product over another cannot be deduced from this cohort.

Readiness to Meet Federal Requirements

MACRA incentivizes more sophisticated use of HIT to improve health care delivery, quality, and outcomes. To determine providers' readiness to participate in the Merit-Based Incentive Payment System (MIPS) and Alternative Payment Models (APMs), Ai asked survey respondents about HIT modules they have adopted in order to perform quality improvement activities required for participation. Ai asked respondents to report the ways they use HIT to conduct those activities and the challenges they experience using HIT for quality improvement activities.

Less than half of all respondents that adopted an EHR indicated they adopted certified HIT modules, in addition to their EHR, to support their patient portal (49 percent, n=177), clinical quality measurement (39 percent, n=137), or direct secure messaging (38 percent, n=137). Respondents reported using a wide variety of HIT modules to support these capabilities but most frequently reported using eClinicalWorks, Epic, and athenahealth products.

Ai asked survey respondents to report the methods by which they perform care management, patient engagement, and population health analytics activities in their practices. Respondents were able to select more than one method per activity. For example, a provider may have selected that they use both manual processes and certified HIT to document care plans.

Care Management

The majority of respondents either uses a manual process to perform care management activities or does not perform these activities at all. Documentation of care plans is the activity for which providers most often report using certified HIT. Only 20 percent (n=115) of practices indicated that they had a hired resource to assist with care management activities.

Table A.2 – Care Management Activities

Care Management Activities (n=579)	Manual Process	Non-Certified Health IT	Certified Health IT	Activity Not Performed
Documentation of care plans	46% (n=266)	9% (n=50)	35% (n=202)	15% (n=84)
Receiving hospital or emergency room event/encounter notifications on current patient panel	37% (n=229)	4% (n=21)	19% (n=109)	42% (n=244)
Creating, sending, and receiving referrals (i.e. Transitions of Care)	58% (n=337)	6% (n=37)	25% (n=145)	17% (n=98)

Care Management Activities (n=579)	Manual Process	Non-Certified Health IT	Certified Health IT	Activity Not Performed
Closing the referral loop (i.e. receiving conformation that the patient was seen by the provider they were referred to)	57% (n=331)	5% (n=28)	15% (n=90)	28% (n=161)

Many respondents who reportedly adopted CEHRT continue to perform care management activities manually. The majority of CEHRT adopters (63 percent, n=189) indicated that they use their EHR to document care plans. Thirty-four percent (n=101) of adopters leverage their CEHRT for receiving hospital or emergency room encounter notifications. Forty-four percent (n=131) of CEHRT adopters create, send, and receive transitions of care electronically.[10] Only 27 percent (n=82) use their CEHRT to close the referral loop. Fifty-two percent (n=155) of CEHRT adopters use manual processes to close the referral loop, and nearly a quarter of adopters still manually document care plans. The limited number of respondents using HIT for care management activities highlights a key opportunity for providers to maximize the use of HIT.

Patient Engagement

Patient engagement activities include communicating with patients and providing them with medical information. Thirty-nine percent (n=229) of respondents provided patients access to their medical information through HIT, while 57 percent (n=327) still provided access to medical records manually. Eighteen percent (n=104) of respondents had a hired resource to perform patient engagement activities.

Table A.3 – Patient Engagement Activities

Patient Engagement Activities (n=577)	Manual Process	Non-Certified Health IT	Certified Health IT	Activity Not Performed
Providing patients access to their medical information	57% (n=327)	5% (n=31)	34% (n=198)	12% (n=67)
Secure messaging between patients and clinical team about their care	13% (n=74)	11% (n=65)	37% (n=215)	42% (n=242)
Patient reminders	41% (n=234)	13% (n=74)	27% (n=155)	24% (n=137)

[10] Statistical significance was achieved for respondents sending transitions of care electronically through CEHRT compared to all respondents.

Patient Engagement Activities (n=577)	Manual Process	Non-Certified Health IT	Certified Health IT	Activity Not Performed
Text messaging with patients	5% (n=31)	15% (n=87)	14% (n=79)	66% (n=382)
Sending patient education resources	42% (n=241)	11% (n=62)	25% (n=145)	29% (n=166)

Most providers that adopted CEHRT in their practices provided patients online access to their medical information (63 percent, n=189) and sent patients secure messages (62 percent, n=187). However, 37 percent (n=112) of these providers still used manual processes to provide patients access to their medical information. Just over 20 percent (n=61) of CEHRT adopters used health IT to text message patients. CEHRT adopters used certified health IT for patient reminders and sending patient education resources more often, when compared to the overall survey sample.[11]

Population Health Analytics

Population health analytics includes activities that examine a providers' patient population to gain a better understanding of patient needs, and improve quality of care. Fewer providers performed population analytics activities than those that performed patient engagement or care management activities. Nearly 28 percent (n=160) relied on HIT to identify high-risk patients within their practice, but manual processes were the most common approach (46 percent, n=267) respondents reported. Respondents most frequently reported HIT (43 percent, n=246) as their method used to calculate quality measures. Twenty-eight percent (n=164) of respondents relied on CEHRT for ad hoc analytics and reporting. Eleven percent (n=65) of respondents had a hired resource to support population health analytics.

Table A.4 – Population Analytics Activities

Population Analytics Activities (n=578)	Manual Process	Non-Certified Health IT	Certified Health IT	Activity Not Performed
Identifying high-risk patients among a provider's population	46% (n=267)	4% (n=22)	24% (n=138)	31% (n=178)

[11] Responses stratified by CEHRT adopters and non-CEHRT adopters for patient engagement activities are statistically significant.

Population Analytics Activities (n=578)	Manual Process	Non-Certified Health IT	Certified Health IT	Activity Not Performed
Calculating quality measures	30% (n=173)	6% (n=32)	37% (n=214)	32% (n=184)
Ad hoc analytics and reporting	27% (n=157)	6% (n=33)	28% (n=164)	43% (n=248)

Sixty-five percent (n=197) of CEHRT adopters reported using CEHRT for calculating clinical quality measures, whereas 17 percent still used manual processes. Forty-two percent (n=127) of CEHRT adopters used certified HIT to identify high-risk patients. Just over 50 percent (n=152) of CEHRT adopters used their certified HIT for ad hoc analytics and reporting. Nearly 20 percent (n=55) of CEHRT adopters still used manual processes for both calculating clinical quality measures and ad hoc analytics and reporting.

Sophisticated Health IT Users

To identify common characteristics of sophisticated users of HIT, Ai further examined individuals that reportedly used certified HIT for all care management and population health analytics activities. Only 53 survey respondents indicated they used CEHRT for documentation of care plans, hospital/ER encounter notifications, referring patients, and closing referral loops. The majority of these individuals (66 percent, n=35) practices in group practices that are either privately owned (49 percent, n=17) or hospital-owned (34 percent, n=12). Additionally, over 75 percent (n=40) of these sophisticated users treated Medicaid patients. A larger proportion of respondents (107) indicated that they used CEHRT for all population analytics activities. The majority of these providers belonged to group practices (66 percent, n=71) that were privately (52 percent, n=37) or hospital (27 percent, n=19) owned. Seventy-two percent (n=75) of these providers had been using their EHR for over three years.

Barriers

Respondents chose the following top three choices as the greatest barriers to performing care management, patient engagement and population health analytics activities: 1) lack of capital resources to invest in technology; 2) lack of funding to hire new resources; and 3) staff resources currently limited. Write-in responses alluded to providers planning to retire, not currently treating patients, or working in small practices. These responses highlighted the need for increased outreach about resources available to assist providers in quality improvement activities for their practices.

EHR Incentive and Value-Based Programs

The majority of survey respondents (56 percent, n=340) indicated that they were not currently participating in any EHR incentive or value-based payment programs. The top three programs in which Maryland providers participated are the Medicare EHR Incentive Program (20 percent, n=121), the Maryland Medicaid EHR Incentive Program (13 percent, n=77), and Patient Centered Medical Homes (10 percent, n=61). Approximately 41 percent (n=251) of all respondents met the provider type and patient population criteria (over 30 percent Medicaid) to participate in the Maryland Medicaid EHR Incentive Program. However, only 31 percent (n=77) of individuals in this group reported participating. Of respondents that indicated they had adopted CEHRT in their practice (n=301), approximately 24 percent (n=72) were taking advantage of incentive payments provided through the Maryland Medicaid EHR Incentive Program. Table A.5 depicts the EHR Incentive Program and value-based programs that were available at the time and level or provider participation and interest in each.

Table A.5 – EHR Incentive and Value-Based Program Participation and Interest

Program Name	Program Description	Percent Participation by All Providers	Percent Participation by CEHRT Adopters	Percent of Respondents Interested in Program Information
Maryland Medicaid EHR Incentive Program	The Maryland Medicaid EHR Incentive program provides financial incentives to providers and hospitals that adopt and demonstrate Meaningful Use of EHRs. Eligible provider types including physicians, dentists, certified nurse-midwives, nurse practitioners and physician assistants must have a minimum of 30 percent Medicaid patient volume.	13% (n=77)	24% (n=72)	20% (n=123)

Section A: The Maryland "As-Is" HIT Landscape

Program Name	Program Description	Percent Participation by All Providers	Percent Participation by CEHRT Adopters	Percent of Respondents Interested in Program Information
Medicare EHR Incentive Program	The Medicare EHR Incentive program provides financial incentives to providers and hospitals who adopt and demonstrate Meaningful Use of EHRs. Eligible provider types including doctors of medicine, osteopathy, dental survey, dental medicine, podiatry, optometry, and chiropractors.	20% (n=121)	40% (n=120)	16% (n=95)
State Regulated EHR Adoption Incentive Program	Maryland House Bill 706 created the program, whereby primary care providers can apply to the six largest private payors in Maryland for incentive payments, for the adoption of an ONC-ATCB certified EHR.	3% (n=19)	6% (n=19)	12% (n=73)
Accountable Care Organization (ACO)	Accountable Care Organizations are groups of doctors, hospitals, and other healthcare providers, who come together voluntarily to give coordinated high quality care to their Medicare patients.	8% (n=46)	14% (n=43)	10% (n=62)
Patient-Centered Medical Home (PCMH)	The Patient Centered Medical Home is a care delivery model whereby patient treatment is coordinated through the patient's primary care physician to ensure the patient receives the necessary care when and where they need it, in a manner they can understand.	10% (n=61)	19% (n=57)	10% (n=59)

Program Name	Program Description	Percent Participation by All Providers	Percent Participation by CEHRT Adopters	Percent of Respondents Interested in Program Information
Bundled Payments	Bundled Payments for Care Improvement Initiative (BPCI) is composed of four broadly defined care models, which bundle payments for multiple services beneficiaries received during an episode of care. Under the initiative, organizations enter into payment arrangements that include financial and performance accountability for an entire episode.	2% (n=13)	3% (n=9)	9% (n=56)
Merit-Based Incentive Payment System (MIPS)	MIPS combines aspects of the Physician Quality Reporting System (PQRS), Value-based Payment Modifier, and the Medicare EHR Incentive Program into one single program in which Eligible Clinicians (ECs) are measured on: quality, cost, improvement activities, and advancing care information.	N/A	N/A	19% (n=117)

The vast majority of respondents participating in current value-based payment and the Medicare or Medicaid EHR Incentive Programs will likely be required to participate in MIPS and, as such, should be targeted for program outreach. In considering outreach to these individuals, it is necessary to examine current challenges of participating in the Maryland Medicaid EHR Incentive Program.

Providers most frequently reported the following barriers to participation in the Maryland Medicaid EHR Incentive Program: 1) lack of familiarity with the Program (34 percent, n=206), 2) ineligibility due to Medicaid patient volume requirements (27 percent, n=161), and 3) lack of staffing resources required to meet program requirements (23 percent, n=139). Providers eligible to participate in the Medicaid EHR Incentive Program most frequently cited lack of familiarity with the program as a top barrier, followed by Meaningful Use requirements are too

confusing and/or burdensome to meet. These findings speak to the importance of ensuring outreach materials clearly explain the requirements of MIPS and APMs.

Clinical Data Exchange

Electronic clinical data exchange is essential for streamlining information exchange between different types of providers and between providers and their patients. Only 19 percent (n=105) of survey respondents indicated that they were sending transitions of care and/or referral summaries to other providers electronically. Only 31 percent (n=92) of CEHRT users were sending transitions of care or referrals electronically. Fifteen percent (n=51) of solo practitioners indicated that they were sending transitions of care electronically versus 25 percent (n=54) of group practices. Of the providers that were sending patient health information electronically, 78 percent (n=80) are using Direct secure messaging through their EHR to do so.[12] Almost 16 percent (n=16) relied on CRISP for electronically sending health information.

Ai asked providers to estimate the percentage of transitions of care and referral care summaries that they sent electronically, by fax and by mail. Responses varied greatly across providers. Only 38 percent (n=40) of individuals that were sending transitions of care electronically were sending the majority electronically. Overall, 40 percent (n=42) of respondents indicated that they did not send any transitions of care by mail. Another 40 percent (n=42) of respondents indicated that they sent between one and 25 percent of their transitions of care by mail. In addition, 20 percent (n=21) of providers that sent transitions of care electronically were sending over 75 percent by fax. While this data trends toward increased use of electronic clinical data exchange, there were still many providers that were unwilling or unable to send or receive this information electronically.

Ai analyzed which health IT resources providers use to send, receive, or query patient data. Respondents most frequently indicated they did not use health IT to send, receive, or query patient data. The most frequently used HIT resource across all data types was the provider's EHR vendor. About a quarter of respondents reported using EHR to send, receive, or query for summaries of care (26 percent, n=159), laboratory results (25 percent, n=154), and medication histories (23 percent, n=141). Fewer providers use their EHR for radiology reports (20 percent, n=118), care plans (19 percent, n=112), and radiology images (11 percent, n=66). CRISP services are most frequently used for sending, receiving or querying summaries of care (12 percent, n=75) and medication histories (10 percent, n=60). Overall, respondents most often used a health IT resources such as their EHR, Health IT vendor, or CRISP for summaries of care. Among all patient data types, respondents used health IT the least for radiology images.

[12]Survey respondents were able to select multiple methods by which they electronically send health information.

Providers were asked whether their practice shared claims and/or administrative data with electronic health networks (EHNs) or medical care electronic claims clearinghouses. The largest cohort of respondents did not use these methods to share data (35 percent, n=195) or did not know if they did (30 percent, n=166). The limited number of providers that shared data, most frequently did so through NaviNet (8 percent, n=45), Optum (6 percent, n=33), and Availity (5 percent, n=30).

e-Prescribing

More than half (61 percent, n=365) of survey respondents indicated they could prescribe schedule II-V drugs. Of this number, only 18 percent (n=68) were using a certified product to e-prescribe these drugs. Only 11 percent (n=68) of all survey respondents were using a certified product to e-prescribe schedule II-V drugs. Of this number, the largest proportion (18 percent, n=12) are using DrFirst, followed by Practice Fusion (13 percent, n=9), and eClinicalWorks (10 percent, n=7). Most providers still used paper prescription pads to prescribe controlled substances.

Health Information Exchange

The majority of Maryland's providers represented in the 2017 environmental scan were not participating with health information organizations (HIOs) for the following services: hospital/ER admission alerts, querying for clinical information, hospital readmissions, and sending clinical data electronically to the HIO. Of the limited number of providers that were using HIO services, CRISP services were used three times more than any other HIO in Maryland. Around 29 percent (n=177) of providers used an HIE for Hospital ER Admission alerts, but under 13 percent (n=77) receive readmission reports.

Telemedicine

In total, nine percent (n=53) of survey respondents indicated that they had adopted HIT for telemedicine services, and only seven percent (n=41) indicated that they were providing telemedicine services to patients. Of respondents that indicated they had adopted HIT for telemedicine, 27 are solo practitioners, and 26 belong to group practices. Of the 90 percent (n=508) of providers that indicated they had not adopted HIT for telemedicine, 61 percent (n=317) of respondents had no plans to adopt HIT for telemedicine and another 30 percent (n=160) were unsure when it would be a possibility. Four percent (n=22) indicated that they planned to adopt HIT for telemedicine within the next one or two years, and another four percent (n=20) planned to do so within one year.

Hospitals

To estimate the use of HIT among Maryland hospitals in 2010, the Maryland Health Care Commission (MHCC) conducted a series of surveys. At the time, Maryland had 47 acute care hospitals, with most hospitals possessing some level of HIT in their facility. This varies from a fully functional EHR to a limited EHR that may only be used in a few departments. According to the survey conducted in 2010, Maryland hospitals reported an adoption rate of around 81 percent with varying functionality:[13]

- Fifty-five percent possessed fully implemented EHR systems.
- Nearly 68 percent had Computerized Physician Order Entry (CPOE).
- Roughly 79 percent had electronic medication administration record systems.
- Approximately 57 percent had bar code medication administration.
- Nearly 43 percent used infection surveillance software.
- Almost 28 percent e-prescribed to a community pharmacy.

Since the implementation of EHR Incentive Programs, the use of EHR and its core components among hospitals has grown dramatically. All 45[14] acute care hospitals in Maryland have implemented a certified EHR.

MHCC's annual report, *Health Information Technology, An Assessment of Maryland Acute Care Hospitals*, provides information on the implementation of HIT among all acute care hospitals in Maryland including: EHRs, computerized physician order entry, medication administration systems, e-prescribing, patient portals, HIE, and telehealth.[15,16] Due to the COVID-19 pandemic, the report has not yet been published for this year. Maryland Medicaid will include information in the next rendition of the SMHP.

In their 2014 assessment, MHCC found that patient portal adoption increased at a compound annual growth rate of 90 percent from 2012 to 2014, and this increase was attributed to Meaningful Use Stage 2. Their 2015 assessment indicated patient portal adoption among

[13] Survey coders grouped functionality into these general bins based on responses, thus percentages represent estimates of functionality.

[15] MHCC, *Summary: Health Information Technology, An Assessment of Maryland Acute Care Hospitals,* October 2014. Available at: http://mhcc.maryland.gov/mhcc/pages/hit/hit/documents/HIT_Hosp_HealthIT_Assess_MD_Sum_Rpt_20141016.pdf

[16] MHCC, *Health Information Technology, An Assessment of Maryland Acute Care Hospital,* January 2017. Available at: http://mhcc.maryland.gov/mhcc/pages/hit/hit/documents/HIT_2015_Hosp_HealthIT_Assess_MD_Rpt_20170127.pdf

Maryland hospitals reached 100 percent in 2015, at a 59 percent growth rate from 2012 to 2015. MHCC notes that driving patient portal utilization among consumers is still a challenge. The majority of hospitals statewide and nationally provide information to patients on how to access their portal. However, according to MHCC's most recent assessment, Maryland hospitals reported that less than 10 percent of patients use the technology.[17]MHCC focused on additional technology adoption among hospitals, including automated surveillance technology (AST), and technologies that support radiology image exchange, analytics, and telehealth. Approximately 65 percent of hospitals implemented AST in 2015, and almost 75 percent of the hospitals integrated AST within their EHR. As of 2015, 39 hospitals use electronic systems to exchange radiology images, and 79 percent of these systems are integrated with their EHRs. Thirty-seven hospitals adopted data analytics technology, and 35 percent of these report using 3 or more tools. Maryland hospital telehealth adoption reached 77 percent in 2015 and expanded 21 percent since 2012.[18]

As shown in Table A.6, not only have hospitals continued to adopt EHRs and other HIT modules, but they have also increased their connections with and functions stemming from the HIE.

Table A.6 – HIE Key Metrics as of 2020

Area	2020
Hospitals Connected*	59
Live Labs and Radiology Centers	18
Live Hospital Clinical Data Feeds	199
Identities in the Master Patient Index[19]	23.2 M

[17] See: *Health Information Technology, An Assessment of Maryland Acute Care Hospitals,* March 2018. Access at: http://mhcc.maryland.gov/mhcc/pages/hit/hit/documents/HIT_2016_Hosp_HealthIT_Assess_MD_Rpt_20180315.pdf

[18] MHCC, *Health Information Technology, An Assessment of Maryland Acute Care Hospitals,* January 2017. Access at: http://mhcc.maryland.gov/mhcc/pages/hit/hit/documents/HIT_2015_Hosp_HealthIT_Assess_MD_Rpt_20170127.pdf

[19] Identities in the Master Patient Index include patients from Maryland and District of Columbia and non-residential patients who receive care in either territory. The number may also be inflated by duplicate records resulting from incomplete data matching. The matching algorithm is less accurate when there are missing data elements, such as phone numbers.

*Seven state-owned behavioral health hospitals executed a CRISP participation agreement in FY2019 and are sharing patient panels. Because those panels contain sensitive data and are masked from other participants, these hospitals are not represented in table A.6's metrics.

A total of ten HIEs that meet the statutory definition of HIE are registered with MHCC (Table A.7).

Table A.7 – Registered HIEs as of August 2020

	Registered HIE
1	Adventist HealthCare*
2	Allscripts
3	Cerner
4	Children's IQ Network*
5	CRISP (State Designated)
6	eClinicalWorks
7	Epic
8	NextGen Healthcare
9	Peninsula Regional Medical Center*
10	Surescripts

*Hospital-owned

A.1.c Types of EHRs in Use by the State's Physicians

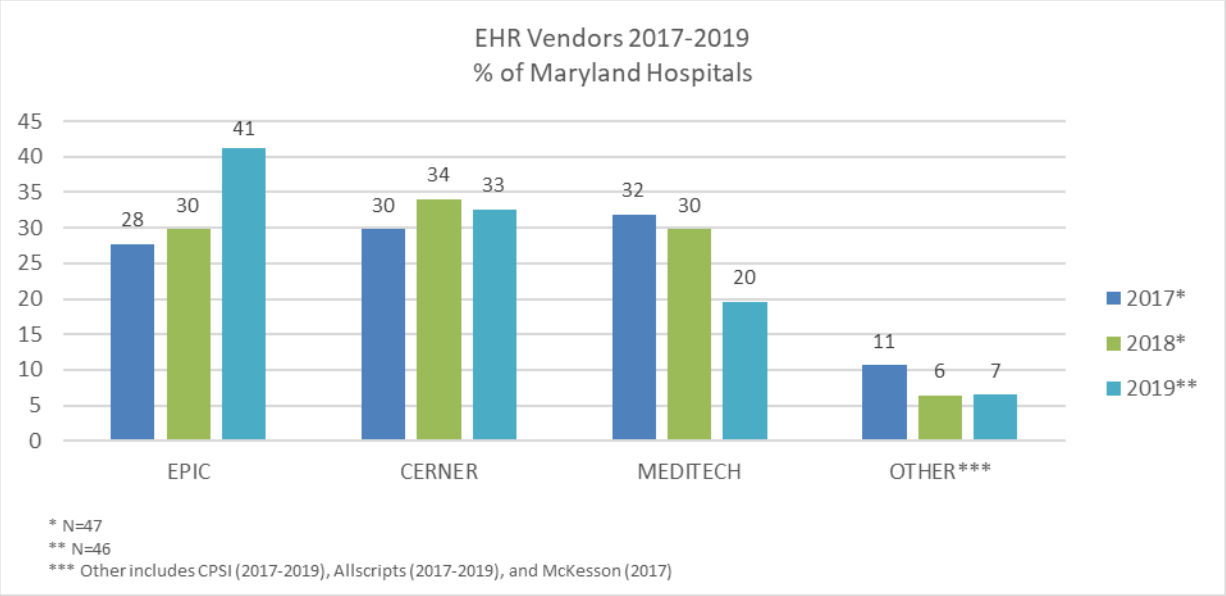
Based on results from a survey conducted in 2009-2010 (*see* Appendix A), no EHR vendor dominated the Maryland market. However, GE Centricity was the most frequently cited vendor from which providers purchased their EHR systems (38 percent, n=5). Other frequently cited companies included Allscripts and eClinicalWorks. An estimated 83 percent of providers reported a unique vendor implemented their EHR. The most common vendor, Allscripts, implemented systems in seven (24 percent) practices.

Similar to the previous environmental scan findings, the Year 2 survey (for the 2013 environmental scan) results indicated no single dominant EHR product adopted among Medicaid providers. Among EPs that had not participated in the EHR Incentive Program (n=254), Allscripts, eClinicalWorks, and Practice Fusion each had 9 percent of the market share. Among the 118 providers surveyed, who had participated in the Medicaid EHR Incentive

Program for at least one year, the most frequently cited company was eClinicalWorks (24 percent, n=28). Epic (13 percent, n=15) and Amazing Charts (9 percent, n=11) rounded out the top three vendors in the State.

The 2017 scan indicated providers in Maryland continued to use EHR products from a wide variety of HIT developers. Survey respondents reported using EHR products from 93 different vendors. The largest cohort (11 percent, n=34) indicated that they used Epic within their practice, followed by eClinicalWorks (8 percent, n=25), NextGen (8 percent, n=23), and Practice Fusion (8 percent, n=23). According to Maryland Medicaid EHR Incentive Program attestation data, eligible professionals most frequently report using Epic, followed by eClinicalWorks, Cerner, athenahealth, and GE Healthcare EHR products.[20]

There were slight shifts in EHR vendor diffusion between 2014 and 2017 based on data collected through MHCC's annual assessment, as noted in the final report, Health Information Technology, An Assessment of Maryland Acute Care Hospitals, published June 2019.[21] Epic, Cerner and MEDITECH are predominantly used by hospitals in Maryland (94 percent). The graphic below illustrates the largest increase in Epic's market share from 2017-2019.



[20] Top EHRs reported among unique providers with attestations for Program Year 2014 and beyond, based on a June 2018 data pull.

[21] MHCC, Health Information Technology, An Assessment of Maryland Acute Care Hospitals, June 2019. Available at: http://mhcc.maryland.gov/mhcc/pages/hit/hit/documents/HIT_Hosp_HealthIT_Assess_Rpt_20190620.pdf.

A.1.d Is it specific to just Medicaid or an assessment of overall statewide use of EHRs?

When estimating EHR adoption rates, the 2010 environmental scan data on EHR use focused on the Medicaid and hospital population. However, a Maryland Board of Physicians licensure survey conducted by the MHCC in 2008-2009 found that roughly 23 percent of providers in the State had adopted an EHR.[22]

The Year 2 environmental scan (completed in 2013) focused on two groups of Medicaid eligible providers—providers who have not participated in the EHR Incentive Programs and providers who have at least attested for AIU with Medicaid. However, among surveyed non-participating providers, 30 percent of them were interested in participating with Medicare's EHR Incentive Program rather than Medicaid's.

Maryland's 2017 environmental scan focused on the overall landscape of HIT in Maryland including:

1. Statewide EHR adoption;
2. Readiness to meet federal meaningful use requirements;
3. Utilization of and interests in HIE services;
4. Interests and participation in other quality improvement programs; and
5. Difficulties with participating in the EHR Incentive Programs, HIE, and other HIT initiatives and quality improvement programs.

These topics were assessed for all practitioners in Maryland, not exclusively Medicaid providers.

A.1.e Data and estimates on eligible providers broken out by types of provider

According to the 2010 scan results for providers potentially eligible to participate in the EHR Incentive Program, community health centers were the practice type that most frequently reported plans to implement EHR (26 percent, n=39). However, when stratifying by non-urban community health centers, this percentage drops to about eight percent (n=26). Only about 11 percent of non-hospital dental providers (n=18), 33 percent of non-hospital based pediatricians (n=48), and 43 percent of non-hospital based physicians (n=75) had plans to implement an EHR.[23]

[22] MHCC, *Maryland Health Information Technology State Plan FY 2011- FY2014*. Available at: http://mhcc.maryland.gov/mhcc/pages/hit/hit/documents/HIT_State_Plan_FY2011_FY2014_Rpt_20110101.pdf
[23] See Appendix A.

The 2013 environmental scan found that physicians, other than pediatricians and family practitioners, had the highest adoption rate at 34 percent. Of all non-EHR adopters, dentists made up the largest percentage (47 percent across solo and group practices).

Table A.8 shows the EHR adoption estimates for solo and group practitioners for each provider type, based on the 2017 environmental scan results.

Table A.8 – Estimated EHR Adoption Rates for Solo and Group Practitioners, by Provider Type

Provider Type	EHR Adoption Rate
Behavioral Health	
Solo	33% (n=96)
Group	77% (n=77)
Total	53% (n=173)
Physician, Pediatrician	
Solo	68% (n=22)
Group	92% (n=39)
Total	84% (n=61)
Physician, Family Practice	
Solo	90% (n=21)
Group	96% (n=47)
Total	94% (n=68)
Physician, Other	
Solo	70% (n=88)
Group	91% (n=85)
Total	80% (n=173)
Dentist	
Solo	17% (n=64)
Group	72% (n=47)
Total	41% (n=111)
Certified Nurse Midwife	

Provider Type	EHR Adoption Rate
Solo	0
Group	100% (n=23)
Total	100% (n=23)
Chiropractor	
Solo	54% (n=13)
Group	64% (n=14)
Total	59% (n=27)
Optometrist	
Solo	43% (n=7)
Group	96% (n=27)
Total	85% (n=34)
Certified Registered Nurse Practitioner	
Solo	83% (n=24)
Group	95% (n=92)
Total	92% (n=116)
Other Provider Type	
Solo	50% (n=30)
Group	0
Total	50% (n=30)
Physician Assistant	
Solo	0
Group	96% (n=70)
Total	96% (n=70)
Certified Registered Nurse Anesthetist	
Solo	0
Group	100% (n=13)
Total	100% (n=13)
Physician, OB/GYN	
Solo	0

Provider Type	EHR Adoption Rate
Group	96% (n=26)
Total	96% (n=26)
Physician, General Practice or Internal Medicine	
Solo	0
Group	94% (n=63)
Total	94% (n=63)

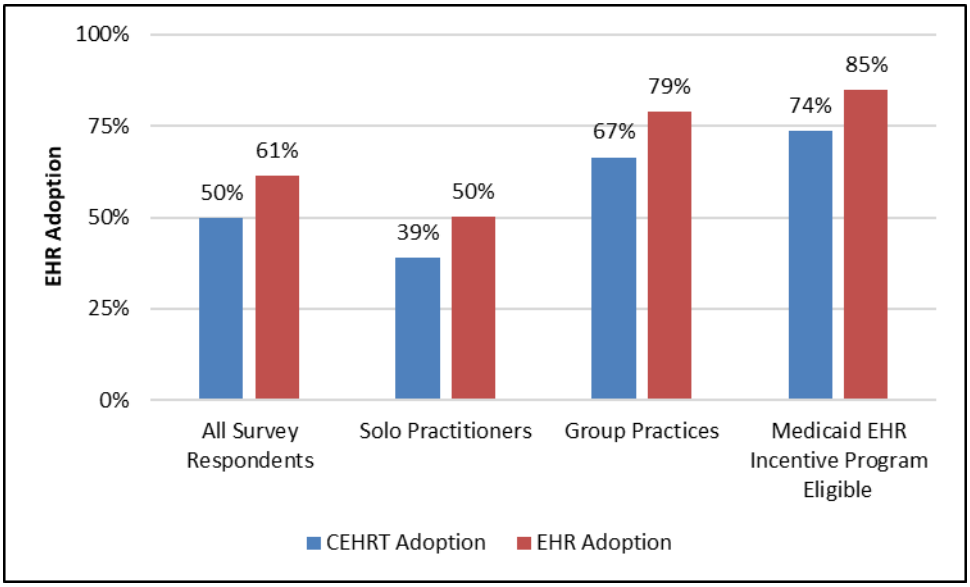
The 2017 scan indicated Medicaid EHR Incentive Program eligible providers (n=251) were more likely to report using an EHR within their practice (85 percent, n=213) than survey respondents, overall (61 percent, n=370).[24] Seventy-four percent (n=185) of Medicaid EHR Incentive Program eligible professionals had adopted CEHRT, while 50 percent (n=301) had adopted CEHRT, overall.[25]

In addition, Ai compared CEHRT adoption and overall EHR adoption stratified by all survey respondents, solo practitioners, group practices and Maryland Medicaid EHR Incentive Program eligible providers. CEHRT adoption was highest for group practices (79 percent, n=186) and EHR Incentive Program eligible providers (85 percent, n=213).

[24] Statistical significance was achieved for Maryland EHR Incentive Program eligible providers that have adopted CEHRT and are solo practitioners. Statistical significance could not be deduced for those employed by group practices with multiple provider types.

[25] Statistical significance was achieved for responses stratified by EHR adoption by Maryland Medicaid EHR Incentive Program eligible providers employed in solo practices compared to all providers. Statistical significance for eligible provider types employed by group practices could not be determined because group practices employ multiple provider types that are potentially ineligible for the EHR Incentive Program.

Figure A.7 – EHR Adoption by Practice Type 2016



A.1.f Does the SMA have data on EHR adoption by types of provider (e.g. children's hospitals, acute care hospitals, pediatricians, nurse practitioners, etc.)?

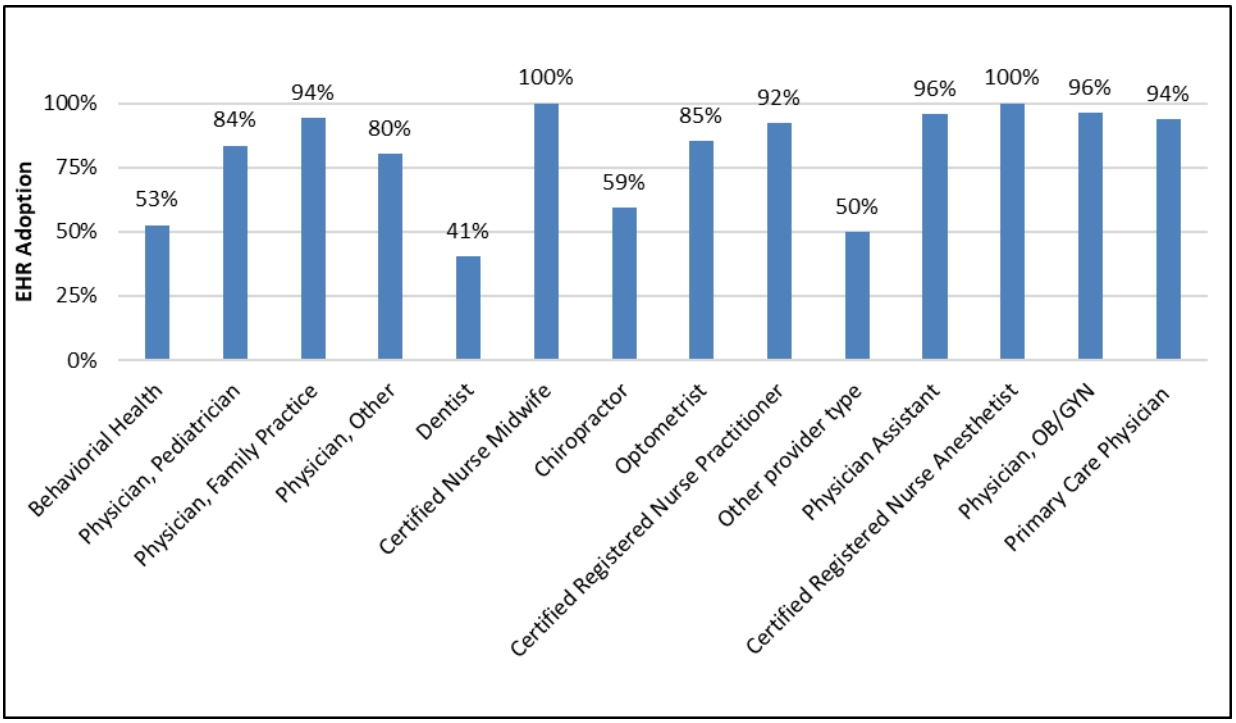
To estimate baseline EHR adoption rates by provider types in 2009, MDH performed an MMIS query of Medicaid providers who may have met the federal criteria for EHR incentives as defined by the American Recovery and Reinvestment Act (ARRA). Providers deemed potentially eligible, based on patient volume estimates, received a survey and the full results of the survey are available in Appendix A.

The 2009 environmental scan indicated the FQHCs had the highest percentage of practices within their provider type using an EHR. At the time of the survey, the Certification Commission for Health Information Technology (CCHIT) was the only EHR certifying body. Most practices with EHRs had CCHIT certified technology.

In the 2013 environmental scan, MDH surveyed 5,179 non-participating providers and received valid responses from 521 solo and group providers. Among the valid sample respondents, 51 percent (n=264) were using a certified EHR system in their practice. If aggregated by provider type, family practice physicians had the highest percentage of EHR use within their provider type. The results also show that over 80 percent of pediatricians, nurse practitioners, and midwives within their provider types had adopted an EHR. The overall 50.8 percent adoption rate across Maryland was statistically significant ($P<0.05$); however, due to low response rates, the survey did not produce statistically significant results within provider type subgroups. Thus, the results of adoption prevalence by provider types only accounted for the survey respondent population.

The 2017 environmental scan results indicated that the provider types eligible for the Maryland Medicaid EHR Incentive program reported high EHR adoption rates and were significantly more likely to have adopted an EHR than provider types that are not eligible.[26] Ninety-six percent (n=25) of OB/GYNs and physician assistants indicated that they have adopted an EHR, and 94 percent (n=64) of family practices had adopted an EHR. Dentists had the lowest EHR adoption rate at 41 percent (n=45), followed by behavioral health providers (53 percent, n=91), and chiropractors (59 percent, n=16). One hundred percent of certified nurse midwives (n=23) and certified registered nurse anesthetists (n=13) indicated that their practice adopted an EHR, however, it should be noted that the sample size was limited for these two groups.

Figure A.8 – EHR Adoption by Provider Type 2016



Group practices in Maryland achieved a higher rate of EHR adoption than solo practitioners (79 percent, n=186 versus 50 percent, n=184), yet CEHRT adoption rates varied greatly by group practice type. The majority of hospital-owned group practices (91 percent, n=42), FQHCs (86 percent, n=6), and privately-owned group practices (61 percent, n=84) indicated that they had adopted CEHRT. On the other hand, only 33 percent (n=1) of respondents that practiced in Local Health Departments (LHDs), 56 percent (n=5) of outpatient mental health clinics, and 58

[26] Statistical significance for provider types could only be determined by those working in solo practices.

percent (n=7) of Long Term Post-Acute Care (LTPAC)/Skilled Nursing Facilities (SNFs) reported adopting CEHRT.[27]

A.2.a To what extent does broadband Internet access pose a challenge to HIT/E in the State's rural areas?

Broadband access is essential to achieving increased EHR adoption and connecting practices to the statewide HIE. Relative to most states, Maryland has an extensive broadband infrastructure. Approximately 97 percent of Marylanders have access to wired broadband with speeds of 25 Mbps or faster. However, 201,000 people in Maryland do not have access to a wired connection capable of the same speeds, and another 130,000 people do not have access to a wired internet connection at all. Further, 249,000 people in Maryland only have access to one wired internet provider at their place of residence, although there are 132 internet providers currently operating within the state.

Recommendations for bandwidth speed to support an EHR vary depending on the size and type of the practice. For large physician practices (5 to 25 providers) the Federal Communications Commission (FCC) recommends a bandwidth of 25 mbps.[28] For standard consumer activities, the FCC recommends 10 mbps.[29] As previously noted, ninety-seven percent of Marylanders have access to wired broadband 25 mbps or faster. Additional information from the Maryland Broadband Cooperative, including a detailed map, is located at: https://mdbc.us/coverage-map.[30]

On April 24, 2018, Governor Larry Hogan signed into law two bills that issues related to broadband connectivity in Maryland. House Bill 243 – Task Force on Rural Internet, Broadband, Wireless and Cellular Service – Study and Extension[31] expands the scope of the Task Force

[27] Responses stratified by practice type and CEHRT adoption are statistically significant.

[28] HealthIT.gov, What is recommended bandwidth for different types of health care providers. Available at: https://www.healthit.gov/faq/what-recommended-bandwidth-different-types-health-care-providers.

[29] General usage activities include browsing, accessing email, and file downloading among others. More information is available from the Federal Communications Commission at: https://www.fcc.gov/research-reports/guides/broadband-service-home-consumers-guide.

[30] An updated map that can be zoomed in to look at specific areas can be found at: http://geodata.md.gov/ombn/ More Maps and a 2014 update on the Maryland Broadband Cooperative Network can be found at: https://agresearch.umd.edu/sites/default/files/_docs/Michael%20Scott%20Presentation.pdf

[31] Task Force on Rural Internet, Broadband, Wireless and Cellular Service: House Bill 243 – Task Force on Rural Internet, Broadband, Wireless and Cellular Service – Study and Extension, Task Force Report, January 2, 2019. Available at: https://rural.maryland.gov/wp-content/uploads/sites/4/2019/01/2018_MSAR11544_Task-Force-for-Rural-Internet-Broadband-Wireless-and-Cellular-Service-Report-1.pdf.

established by House Bill 717 – Connecting Rural Maryland Act of 2017 and extends activities for one year.[32] House Bill 961 – Rural Broadband Communication Services, Chapter 176, in part requires the Department of Housing and Community Development to map State and local resources to assist expansion of services by June 2020.[33]

A.2.b Did the State receive any Broadband grants?

In November 2009, the Department of Commerce's National Telecommunications and Information Administration announced Maryland as one of seven states to receive funding under HITECH. Maryland received about $1.5 million for broadband data collection and mapping activities over a two-year period and almost $480,000 for broadband planning activities over a five-year period, bringing the total grant award to approximately $2 million.

Starting in 2010, the Maryland Broadband Initiative, aimed at expanding broadband access to areas with low coverage has been awarded $4,755,768 in federal grants for Maryland's Broadband Initiative. Another $115,240,581, accounting for 3.3 percent of all federal infrastructure grants, was awarded to broadband infrastructure projects in Maryland. Since 2011, access to a wired connection of at least 10 mbps has improved from 90.2 percent to 97.1 percent of Marylanders.[34]

In November 2018, the U.S. Department of Agriculture announced $91 million in funding for telecommunications programs to expand rural broadband access. While Maryland was not a recipient of this funding, one grantee, Eastern Shore Communications LLC, served customers in three states including Maryland. The Eastern Shore Communications project applied the $1.8 million to building a high-speed network and improving access to free internet available at local community centers.[35]

A.3 Does the State have Federally-Qualified Health Center networks that have received or are receiving HIT/EHR funding from the Health Resources Services Administration (HRSA)? Please describe.

The Mid-Atlantic Association of Community Health Centers (MAC-HC) is the federally designated Primary Care Association for Delaware and Maryland Community Health Centers.

[32] Ibid.

[33] Ibid.

[35] U.S. Department of Agriculture, USDA Partners with Communities to Bring High-Speed Broadband e-Connectivity Infrastructure to Rural Areas. Available at: https://www.usda.gov/media/press-releases/2018/11/13/usda-partners-communities-bring-high-speed-broadband-e-connectivity.

MAC-HC is built on helping their members deliver accessible, affordable, cost effective, and quality primary health care to those in need. Their current membership consists of 15 community health centers (CHC) located in Maryland and two located Delaware.

In 2018, Health Resources Services Administration (HRSA) awarded $70,000 in funding to fourteen Maryland CHCs for employing EHRs to report on all clinical quality measures (CQM) data, and $83,000 to 17 CHCs for using health IT systems to increase access to care and improve quality.[36] These awards are two of nine categories awarded under HRSA's Quality Improvement Awards meant to improve access and quality of health care, and to advance value-based payment structures.[37]

A.4 Does the State have Veterans Administration (VA) or Indian Health Service (IHS) clinical facilities that are operating EHRs? Please describe.

The VA in Maryland has deployed VistA as their EHR solution. 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 a comprehensive health care delivery system for Maryland veterans. Connecting public programs to the statewide HIE is an essential part of demonstrating the vision and future of Meaningful Use to achieve measurable improvements in health care quality, safety, and efficiency. Discussions of VA connectivity with the statewide HIE will result in Use Case development in the near future. The strategy that will be deployed consists of utilizing the statewide HIE's system architecture team and equivalent individuals connected with VA clinics to perform a detailed evaluation of the technology that is in place and required to support data sharing. Currently, Maryland does not have any IHS clinical facilities.

A.5 What stakeholders are engaged in any existing HIT/E activities and how would the extent of their involvement be characterized?

In 2006, Maryland began the process of planning for HIT/E by engaging numerous stakeholders to address fundamental policy and technology issues. The support and broad collaboration among the stakeholders was an essential first step in enabling the state to implement HIT/E and continues to be crucial to implement HIT/E in Maryland. Stakeholder engagement includes support from payors, providers, consumers, and employers. Figure A.9, a list of HIE Policy Board

[36] HRSA, Health Center Quality Improvement FY 2018 Grant Awards (August 2018). More information is available at: https://bphc.hrsa.gov/programopportunities/qualityimprovement/awards.aspx?state=MD.

[37] HRSA, Quality Improvement Awards. Available at: https://bphc.hrsa.gov/programopportunities/fundingopportunities/quality/index.html.

Workgroup Participants, represents the wide-range of stakeholders that have supported Maryland's HIT/E efforts.

The Maryland Health Care Commission (MHCC) assembled the HIE Policy Board in 2009 and held meetings regularly to discuss issues related to the following subjects: 1) maximize the benefit of HIE for health care consumers and providers, 2) mitigate potential privacy and security concerns for consumers, 3) promote consumer control over the use of and access to consumer health information, to the extent technically feasible, 4) support current law, 5) minimize overall costs to the health care system, and 6) facilitate public health and appropriate research uses. The MHCC will consider the recommendations of the Policy Board and adopt regulations for HIEs to implement. The HIE Policy Board has not convened since 2018. The MHCC is planning to reconvene the HIE Policy Board in early 2021.

Figure A.9 – HIE Policy Board Workgroup Participants 2018

	Name	Organization
1	Ray Adkins	Peninsula Regional Medical Center
2	Salliann Alborn	Maryland Community Health Center
3	Kimberly Alston	Genesis HealthCare
4	Jennifer Anthony	Lorien Health Services
5	Amanda Batdorf	Pharmacist
6	Vanessa Benavent	Maryland State Dental Association
7	Alyssa Brown	Maryland Department of Health, Medicaid
8	Hans Buitendijk	Cerner Corporation
9	Kelly Bundy	Surescripts
10	Leigh Burchell	Allscripts
11	Sonya Burroughs	Children's National Health System
12	Yvette Butler	League of United Latin American Citizens of MD (LULAC)
13	Bill Byers	Western Maryland Regional Medical Center
14	Kimberly Cammarata	Office of the Attorney General
15	Jean-Pierre Cardenas	Maryland Health Benefits Exchange (MHBE)
16	Patrick Carlson	Johns Hopkins University, Government Relations
17	Cathleen Casagrande	Frederick Regional Health
18	Jennifer Cohen	Maryland Optometric Association
19	Rev. Sandra Conner	Maryland Citizens' Health Initiative
20	Joseph Daniels	The Jase Group LLC
21	Sara Daneshpour	Maryland Department of Health, Medicaid
22	Charity Dorazio	Adventist HealthCare
23	Erin Dorrien	Maryland Hospital Association
24	Damien Doyle	Johns Hopkins HealthCare LLC
25	Michael Dullum	Surescripts
26	Adrienne Ellis	Chesapeake Regional Information System for our Patients (CRISP)
27	Lindsey Ferris	CRISP
28	Mike Fried	Baltimore City Health Department
29	Cary Gates	University of Maryland Medical System
30	Spencer Gear	Behavioral Health Administration

	Name	Organization
31	Parabh Gill	AAMG Annapolis OB-GYN
32	Kate Gillespie	AARP
33	David Haltiwanger	Free State Justice
34	Lee Hopkins	CASA de Maryland (CASA)
35	Clay House	CareFirst, Inc.
36	Mariana Izraelson	Ashley Addiction Treatment (referred by MADC)
37	Deanne Kasim	Change Healthcare
38	Shannah Koss	Koss on Care LLC / Connected Health Resources
39	Eileen Lane	Johns Hopkins University
40	Luigi Leblanc	Zane Networks, LLC
41	David Lehr	Anne Arundel Medical Center
42	Dixie Leikach	Finksburg Pharmacy/Owner
43	Tom Lewis	Primary Care Coalition of Montgomery County
44	Jeff Linton	NextGen
45	Monty Magee	Maryland Institute for Emergency Medical Services Systems
46	Molly Marra	Maryland Department of Health
47	Dan Martin	Mental Health Association of Maryland
48	Jeremy Maxwell	Allscripts
49	Mayur Mody	American Diversity Group
50	Mutanu Mutuvi-Thomas	Office of Corporate Business Integrity / MedStar Health
51	Brandon Neiswander	CRISP
52	Patricia O'Conner	Office of the Attorney General
53	Peggy Oehlmann	Health Quality Innovators
54	Jessica Pappas	UnitedHealthcare
55	Matt Peeling	Mosaic Community Services, Inc.
56	Shelly Pezella	Health Harford, Healthy Cecil
57	Shahid Rafiq	United Maryland Muslim Council
58	Pamela Rayne	Johns Hopkins Health System
59	Matthew Reber	MedStar Post Acute Care
60	Farah Saeed	eClinicalWorks
61	Tim Santoni	University of Maryland
62	Martina Sedlak	University of Maryland Medical System

	Name	Organization
63	Stephane Selby	University of Maryland Medical System Health Plans
64	Linda Smith	Independent, Provider
65	Paul Taylor	Mayor's Office of Minority and Women-Owned Business Development
66	Kathleen Tully	CRISP
67	Allison Viola	Kaiser Foundation Health Plan of the Mid-Atlantic States, Inc.
68	Colin Ward	University of Maryland Upper Chesapeake Health
69	Mike Warner	Cerner Corporation
70	Kathryn Whitmore	STS Consulting Group, LLC
71	Jim Wieland	Baker, Donelson, Bearman, Caldwell & Berkowitz
72	Caroline Wight	Surescripts
73	Claudine Williams	HSCRC
74	Amy Woodrum	Maryland Department of Health

A.6 Does the SMA have HIT/E relationships with other entities? If so, what is the nature (governance, fiscal, geographic scope, etc.) of these activities?

MDH works closely with the state-designated HIE and the REC, both of which are overseen by CRISP, and the State's public health office, the Infectious Disease and Environmental Health Administration (IDEHA).

The Director of the Office of Innovation, Research, and Development is on the Board of Directors for the HIE and participates on an HIE Advisory Board. The Division Chief for Health IT Policy within Medicaid Provider Services (MPS) is also a member of an HIE Advisory Board and a Policy Board Member. The responsibilities of HIE Policy Board members include the development and recommendation of policies for privacy and security of protected information exchanged through an HIE operating in Maryland.

Both Medicare and Medicaid professionals and hospitals participating in the EHR Incentive Program must work through Public Health to fulfill Public Health Meaningful Use reporting requirements. MPS is in constant communication with Public Health and the Office of Enterprise Technology (OET) to monitor and assist with scheduling testing and continuous data submission. To help prepare the Public Health Agency for the production of submitted public health data, MDH has built funding into the State's HIT IAPD.

The partnership with Public Health and OET led to the development of a web-based tool to capture physician and hospital intent to submit public health data to meet Meaningful Use. In addition, the web tool records the status of the submission and whether the physician or hospital submitted a test file, claimed an exclusion, or is in production (continuous submission). Medicaid validates the provider's status and sends acknowledgement letters through the web-based tool.

MDH updated the portal to facilitate user workflow in order to reduce the administrative burden of compliance with the MU requirement. The enhancement enables providers and hospitals to test public health data submission with the use of a state-specific validation tool, facilitate the Active Engagement process, and expedite the onboarding process by allowing providers and hospitals to access the portal, track their own onboarding status, view and update their own information, and download any relevant MU documentation.

A.7 Specifically, if there are health information exchange organizations in the State, what is their governance structure and is the SMA involved? ** How extensive is their geographic reach and scope of participation?

In 2006, the MHCC began the process of planning the implementation of a statewide HIE by engaging 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. Based upon their response to the State's Request for Application (RFA), MHCC selected CRISP to build and maintain the State's HIE.

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 supports high quality, safe, and effective health care; makes certain that data is exchanged privately and securely; ensures transparency and stakeholder inclusion; supports connectivity regionally and nationally; achieves financial sustainability; and serves as the foundation for transforming health care in Maryland. The HIE architecture has already succeeded in connecting 48 hospitals and 5,862 ambulatory practices. The infrastructure is intended to 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, bio-surveillance, and other appropriate secondary uses of data.

The statewide HIE utilizes 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 information. In general, the HIE provides a roadmap for properly routing information to the appropriate location. The HIE maintains a central Master Patient Index (MPI) and a separate registry of the record's location within the system. 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 than a central repository model 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, single-sign on (SSO), long retention times on edge servers, and special purpose databases with privacy protections subject to the statewide HIE's controls and data sharing policies.

As the number of use cases for the HIE grow, the HIE is exploring the viability and benefit of performing more of a centralized approach to data storage. For example, accurate and reliable quality measurement depends upon both collecting and storing clinical data and marrying this data with supplemental data sources, such as claims. Creating repositories of data for quality analysis is a more efficient solution than querying federated sources.

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. The infrastructure of the statewide HIE ensures flexibility so that the organization can respond to market changes and eventually connect providers throughout the State. The technological design of the statewide HIE is based on federally endorsed standards and integration protocols that bridge proprietary boundaries. The incremental approach to building the statewide HIE ensures sustainability for a core set of services within five years. Should the stakeholder community or the legislature identify additional services beyond the core services, the need for additional funding to support the development of these services would be required. In order to tip the scales of sustainability, the HIE and Medicaid are collaborating on a plan to incorporate the enhanced federal fiscal participation for administrative costs associated with the EHR Incentive Program.

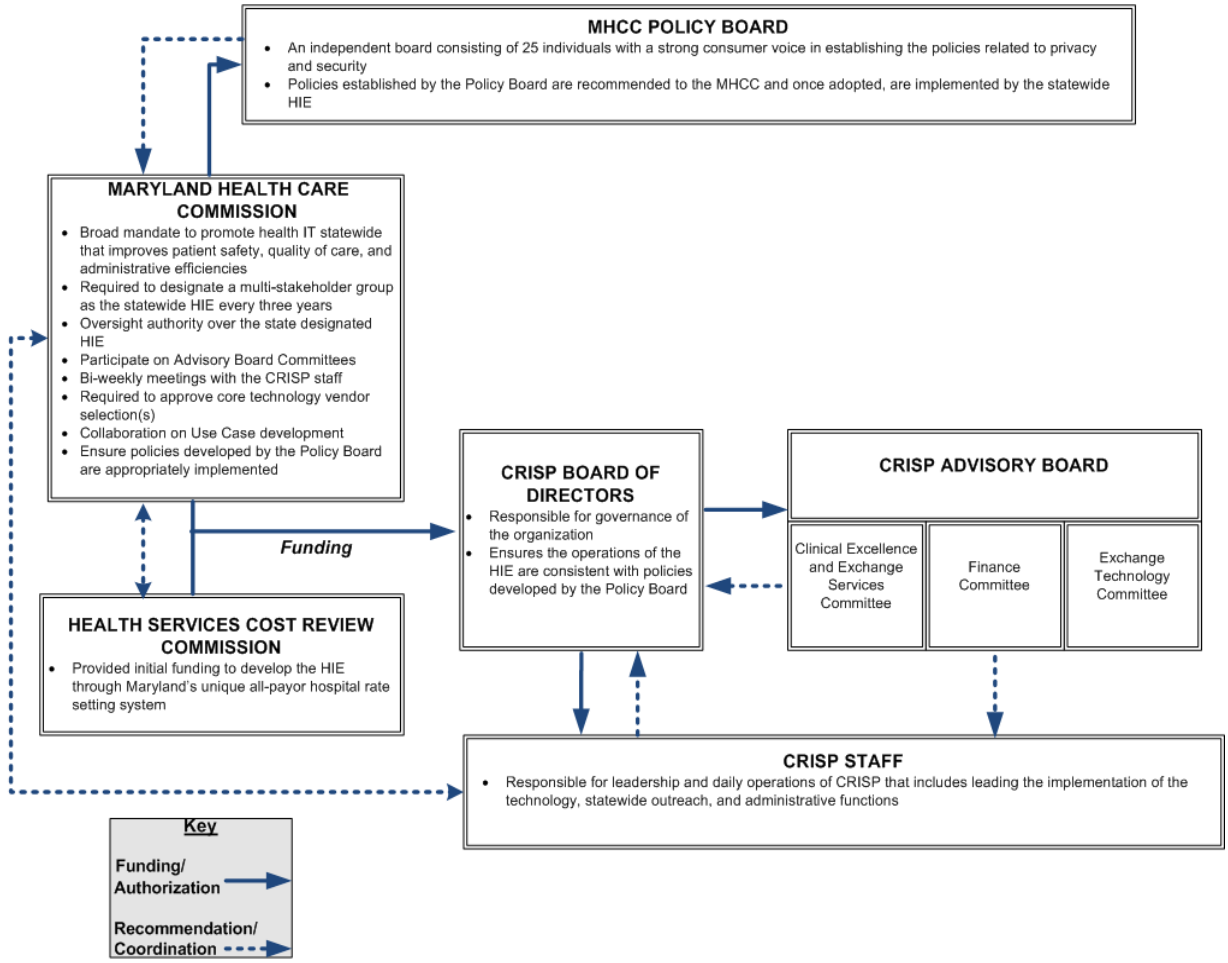
Medicaid submits a yearly plan in Appendix D of the IAPD to provide a package of HIE-related services, including onboarding assistance, public health reporting assistance, single sign on and context passing, electronic quality reporting for those providers who are eligible for participation in the EHR Incentive Program, image exchange, and data warehouse. Medicaid will continue to request funding to build on this plan. Details on progress are available in the HITECH IAPD, Appendix D. Components of the state-designated HIE also recently became certified.

In 2019, Maryland Medicaid submitted an OAPD to certify HIE technologies that were previously under Appendix D of the IAPD. CMS officially certified three components of the HIE on May 20, 2020. The three categories of technology approved were Care Coordination, Population Health, and Critical Supportive Infrastructure. Maryland requests HIE certification approval for two additional categories of technology (Prescription Drug Monitoring Program (PDMP), and Image Exchange). Operations in the OAPD submitted for Federal Fiscal Years 2021-2022. Certification is pending.

The existing governance structure of the statewide HIE, diagramed in Figure A.10, represents a sound model for ensuring that all providers meet the Meaningful Use requirements. The statewide HIE developed an integrated governance approach involving key stakeholders in addressing clinical, technical, and financial aspects of the HIE. The governance model includes a

Board of Directors; an Advisory Board, which is organized into four committees; and an independent Policy Board.

Figure A.10 – HIE Governance Model



Maryland law (Health-General Article §§4-301 and 4-302), effective October 1, 2011, required MHCC to adopt regulations for the privacy and security of protected health information (PHI) exchanged through an HIE. In collaboration with stakeholders, draft regulations were developed. COMAR 10.25.18, *Health Information Exchanges: Privacy and Security of Protected Health Information,* was adopted in 2014. The regulations balance the need for increased data sharing with the need for enhanced protection of electronic PHI and expand upon privacy and security protections established by the Health Insurance Portability and Accountability Act of 1996 (HIPAA), as amended by the Health Information Technology for Economic and Clinical Health Act (HITECH) Act in 2009. The MHCC has engaged a contractor (Post & Schell, P.C.) to conduct an in-depth review and propose changes that are needed to modernize the regulations and align them with evolving national electronic health information policies. Over the next

year, the contractor will recommend modifications to the regulations based on consumer preferences around privacy and security of electronic health information and existing technology capability.

HIE Connectivity

In July 2010, the Health Information Technology Forum ("Forum") brought together elected officials, media, and more than 200 hospital representatives to discuss information sharing and care coordination. The Forum included then-Governor Martin O'Malley, Lieutenant Governor Anthony Brown, and then Secretary of the Department of Health John Colmers, along with representatives from Sinai Hospital in Baltimore, hospital Chief Executive Officers (CEO) and other senior-level executives from Maryland's acute care hospitals. State leaders stressed the value of the HIE and the significance of sharing information between places of care and coordinating efforts among different providers. They also mentioned that electronic health information would become even more important in an era of personalized medicine and accountable care. The then-Governor, Lieutenant Governor, and Secretary encouraged the CEOs to sign a Letter of Intent (LOI) conveying their hospital's willingness to connect to the statewide HIE. The statewide HIE received a signed LOI from each of the acute care hospitals in September of the same year. Hospitals selected one of four timeframes for connecting (see Table A.9 for hospital timeframes and statuses).

Table A.9 –Timeframes Specified by Hospitals for Connecting to the HIE

Timeframe for HIE Connectivity (Beginning in 2010)	Percent of Hospitals	Completed?
Early (6 months)	38%	Yes
Mainstream (6-12 months)	23%	Yes
Deferred (12-18 months)	22%	Yes
Late (18-24 months)	17%	Yes

Efforts to connect providers to the statewide HIE have, primarily, centered on hospitals, since they are considered large suppliers of data. The Montgomery County hospitals were the first to begin connecting to the statewide HIE; most of these hospitals as well as Quest Diagnostics, LabCorp, RadNet, and American Radiology are connected to the HIE.

In MHCC's latest hospital HIT assessment, the MHCC indicates that all acute care hospitals in Maryland hospitals submit admission, discharge, and transfer (ADT) information to CRISP, and the hospitals are at various stages of data submission for laboratory results, radiology reports, transcribed documents, and continuity of care documents (CCDs). In April 2014, hospitals began sending CCDs to CRISP.[38] All hospitals have authorized users that search for clinical information using the CRISP Query Portal.[39] The table below shows the percentage of hospitals contributing data to the HIE.

[38] CCD is an electronic document exchange standard that allows for the sharing of patient summary information, such as diagnosis and conditions, by health information systems (e.g. EHRs).

[39] The CRISP Query Portal allows authorized users the ability to query, via a web-based application, information such as patient demographics, laboratory results, radiology reports, discharge summaries, operative and consult notes, and prescription drug fill history.

Table A.10 – Hospital Data Submission to CRISP

Type of Data	2013	2014	2015	2016	2017	2018	2019	2020
ADT	100%	100%	100%	100%	100%	100%	100%	100%
Radiology	74%	94%	94%	94%	98%	96%	98%	99%
Transcribed	70%	92%	90%	92%	98%	94%	98%	99%
Laboratory	68%	85%	88%	92%	96%	94%	98%	100%
CCDs	N/A	8%	29%	38%	38%	48%	50%	68%

MDH hopes to use the ease of the HIE to encourage providers to connect in order to submit public health data to the State. Currently, MDH is accepting immunization information from hospitals via the HIE. Maryland has also worked with the HIE to expand the use of Direct Messaging, Encounter Notification Services (ENS), Clinical Document Architecture (CDA), and images. Many ambulatory providers and long-term care facilities contribute data to the HIE.[40] As shown in Table A.11, the HIE has over 1,376 users with Direct accounts and 761 users enrolled in ENS.

Table A.11 – HIE Participation as of April 2020

HIE Category	Total
Ambulatory Practice Data Consumption (n=5,862)*	
Signed participation agreements - CRISP Portal	43% (n=2,508)
CRISP portal live	30% (n=1,764)
Direct message accounts live	22% (n=1,376)
Encounter notification service live	12% (n=761)
Long Term Care Data Consumption (n=238)**	
Signed participation agreements - CRISP Portal	100% (n=238)
CRISP portal live	54% (n=128)
Encounter notification service live	68% (n=161)
CRISP Portal Participation and Usage	
Single-sign on live in Maryland hospitals	63% (n=30)
Users in Prescription Drug Monitoring Program	(n=62,200)

[40] See current HIE Participants at https://crisphealth.org/FOR-PROVIDERS/Participating-Organizations

NOTE: Totals represent counts organizations since the HIE services became available
* 2014-2015 Maryland Board of Physicians Licensure Data file, Practice Level
** 2015 Annual Long Term Care Survey data

A.8 Please describe the role of the MMIS in the SMA's current HIT/E environment. Has the State coordinated their HIT Plan with their MITA transition plans and if so, briefly describe how.

The State of Maryland uses several IT systems to manage the health care environment. Primarily, these systems do not communicate with each other.

The primary Medicaid IT system is the State's Medicaid Management Information System II (MMIS). The MMIS plays a key role in the current HIT environment as the system of record for all Medicaid transactions. The MMIS provides Medicaid data to support the validation of provider attestations. Specifically, the MMIS supports the validation of patient volume and electronic clinical quality measures.

Currently the state provides this data via an external database that can be queried by the program. As the state continues down its path to transform MMIS from a monolithic system to a modular enterprise this data, will be supplied by other modules of the MMIS including the decision support system. The future state of the MMIS enterprise will be integrated across a service integration layer. This will both expand the data available to the program and make it more readily accessible. The State intends to use the HITECH IAPD process and the HITECH to MMIS OAPD process to fund relevant projects to bridge the gap between now and when future MMIS modules are procured by the State.

The State Immunization registry – ImmuNet – and public health surveillance reporting database – the Electronic Surveillance System for Early Notification of Community-based Epidemics (ESSENCE) – receive numerous data submissions. Both systems, as well as electronic lab reporting, are capable of receiving and in some cases do receive data through the HIE. Maryland's immunization registry, ImmuNet, is operated by the Center for Immunization at the MDH. ESSENCE is a web-based syndromic surveillance system designed for the early detection of disease outbreaks, suspicious patterns of illness, and public health emergencies.

With the help of IAPD funding, Maryland integrated ImmuNet data into the statewide HIE. Data in the Immunization registry and ESSENCE is transferred through a push model from the provider to Medicaid. The long-term goal is to centralize the flow of these data through the statewide HIE; a Use Case has been created; and public health officials and HIE representatives are working on data standardization and reporting to facilitate transactions between providers, the HIE, and ImmuNet.

MITA Transition Planning

Medicaid IT Systems

In June 2010, the State of Maryland began an initiative to replace its over 20-year-old MMIS system. Maryland Medicaid obtained the legacy system as a transfer system from Florida in 1992 and used it for the claims processing needs of the State of Maryland with large batch operations running on a mainframe processor. Initially, Medicaid intended to replace the whole legacy system with a new MMIS system based on MITA 3.0 principles that includes imaging and workflow management and a robust business rules engine to aid in creating and managing flexible benefit plans. The new MMIS would have had the ability to process all Medicaid claims and eliminate the duplicative adjudication of the Developmental Disabilities Administration, Behavioral Health, Dental, and Pharmacy claims. In addition, the new MMIS would have supported coordination of benefits, surveillance and utilization review, Federal and management reporting, and case management that supports commercial off-the-shelf solutions, call center, document management, and customer relationship management activities.

On March 1, 2012, MDH began working with a vendor on implementing a new MMIS. However in 2015, due to various issues, Maryland cancelled the contract with the MMIS vendor. After the October 2015 cancellation of the MMIS replacement contract, Maryland began assessing the legacy MMIS to identify enhancements that will address the most critical operational needs and maintain compliance with recent Federal Regulations. Maryland continues to submit a Planning Advance Planning Document Update on an annual basis (PAPD-U), and works with the MMIS Region III CMS coordinator to submit Implementation Advanced Planning Documents (IAPD) for each enhancement.[41]

In addition to the State Medicaid Health IT Plan (SMHP) and the accompanying HITECH IAPD and HITECH to MMIS OAPD, Maryland maintains a host of Health Information Technology (HIT) documents, including our MITA transition plan, Statewide Health Information Exchange policy documents and working papers, and a Health Information Technology State Plan (HITSP).[42] The current SMHP draws from the HITSP and the MITA transition plan. The State's ultimate HIT goal is to use the HIE to push, pull, and query health information among the disparate State health systems and to have the capabilities to do advanced analytics on these data. The State is also continuing work on certifying more components of its HIE.

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[41] Addressed Section C Question # 20: "Does the SMA anticipate modifications to the MMIS and if so, when does the SMA anticipate submitting an MMIS IAPD?"

[42] The Maryland Health Care Commission (MHCC) prepares and hosts the State's HIE policy papers and implementation plans as well as the Health Information Technology State Plan at http://mhcc.maryland.gov/mhcc/pages/hit/hit/hit_archives.aspx

In 2019, MDH received approval for its MMIS Modular Transformation (MMT) implementation APD along with a recently completed MITA 3.0 state self-assessment. The MMT APD outlines the state's plan to move from a monolithic system to a service-oriented architecture with multiple modules integrated across the enterprise. The MMT IAPD identifies the various components necessary to accomplish the state's transformation including integration technologies, service modules, and program resources.

The state is currently working on implementing several initial modules including the pharmacy point of sale electronic claims processing system and a behavioral health administrative services organization program. In addition, the State is working on procuring a provider management module and working with MD THINK to identify opportunities to leverage potential solutions for the data warehouse, decision support system, and enterprise service system integration.

A.9.a What State activities are currently underway or in the planning phase to facilitate HIE and EHR adoption? What role does the SMA play?

Facilitating the HIE

Maryland's approach to governance is to facilitate a coordinated governance model that emphasizes public/private partnerships. The HIE governance structure consists of the CRISP Board of Directors, the Advisory Board, and an independent Policy Board convened by the MHCC. The Board of Directors is comprised of members appointed by the respective founding member organizations. The Advisory Board is divided into four committees. While a strong provider representation on the Advisory Board guides the CRISP Board of Directors on the development and operation of the statewide HIE, a consumer-focused Policy Board establishes the policies governing data sharing. This separation of responsibilities assures that policies governing the exchange of electronic health information are consumer oriented (see Figure A.10 for an illustration of the Maryland HIE Governance Structure).

Regarding MDH specifically, MDH worked with the HIE to design an HIE-specific plan for use of IAPD approved administrative funds. This collaboration resulted in the requested items for HIE-related services explained in Appendix D. These services do not include Meaningful Use auditing activities.

Collectively, MDH, MHCC, and CRISP want the HIE to provide benefits to both Medicaid providers and MDH. Enhanced 90/10 administrative funds could continue to be used to fulfill the following goals:

1. Develop and maintain a Medicaid provider directory;

2. Connect eligible Medicaid providers and their most-frequent referral and discharge networks to the statewide HIE;
3. Develop an approach for health care providers to electronically submit Clinical Quality Measures to Medicaid using the HIE, via CCDAs, QRDAs, and APIs;
4. Enable Medicaid providers to submit data to various public health registries;
5. Enable secure electronic messaging for Medicaid providers to communicate with patients;
6. Increase Medicaid provider awareness and education of Meaningful Use requirements related to electronic Health Information Exchange, particularly through a Management Service Organization (MSO) incentive- and milestone-based program; and
7. Provide Medicaid patients with the ability to view online, download, and electronically transmit their health information, through the creation of patient portals or Personal Health Records (PHR).

Medicaid discussed these options with CRISP and developed the funding and scope plan outlined in Appendix D of the IAPD. Our most recent approved IAPD-U included funding to increase ENS, HIE-portal queries, CDA, all public health reporting, development of a Clinical Quality Measure repository through the open source popHealth tool, and the creation of an MSO incentive program to bring providers onto CEHRT and to gauge their ability to connect and fully-utilize HIE services.

As a result of the recent State Medicaid Directors (SMD) letter,[43] and based on our continued understanding of the EHR/HIT landscape, Medicaid is continuing to expand the scope of IAPD activities to include: (1) analyzing the referral and discharge patterns of eligible providers and hospitals to expand HIE connectivity, (2) developing innovative ways to trigger the release of EHR data for quality reporting and information sharing, and (3) creating an HIE-level data structure to standardize and aggregate data for quality reporting. Starting FFY 2020, Maryland transitioned several operational components from the HITECH IAPD to the HITECH to MMIS OAPD. A representation of the portions of the HITECH IAPD that were moved to the MMIS OAPD submission is attached (*see* Appendix V).

Board of Directors

The statewide HIE (CRISP) Board of Directors is the authoritative entity overseeing the operations of the statewide HIE. The Board of Directors considers the recommendations of the Advisory Board and ensures that the policies developed by the Policy Board are implemented. The governance structure of the statewide HIE is fairly consistent with those implemented by

[43] "Availability of HITECH Administrative Match Funds to Help Professionals and Hospitals Eligible for the Medicaid EHR Incentive Program Connect to Other Medicaid Providers" SMD#16-003, February 29, 2016.

other HIEs nationally. The statewide HIE bylaws provide a mechanism to support changing the composition of the Board of Directors as long as these revisions do not have a significant impact on governance, best practices, or legal considerations, such as those for tax-exempt organizations.

Advisory Board

The statewide HIE operates under the guidance of an Advisory Board. The statewide HIE Advisory Board is organized into the following four committees: technology, finance, clinical excellence and exchange services, and small practice. Each committee is comprised of approximately 10 to 15 members. Members are identified through a nomination process and appointed by the Board of Directors. Most of the work done by the Advisory Board is accomplished at the committee level. The Advisory Board is tasked with making recommendations on matters such as the technology to support the core infrastructure, early Use Case implementation, and sustainability models.

The Policy Board

The Policy Board was comprised of approximately 25 members selected based upon their expertise, the breadth of stakeholder representation, and a strong consumer voice, which is essential to building trust among stakeholders. Ex-officio members of the Policy Board consist of representatives from CRISP and state government including Medicaid, MHCC, and the Health Services Cost Review Commission (HSCRC). The Board no longer follows a formal membership nomination and accepts participation by any interested party or person. The responsibilities of this Policy Board primarily include the development of policies for privacy and security. The MHCC will consider the policies developed by the Policy Board; the statewide HIE is required to implement policies adopted by the MHCC.

Facilitating EHR Adoption

To facilitate EHR adoption, MDH partnered with the REC (CRISP) to provide education and outreach to Medicaid providers. Medicaid's Year 1 IAPD listed the REC as a contractor to provide these services; Year 2 of the IAPD formalized this relationship through a CMS-approved Grant Agreement.

As Medicaid increased the staff dedicated to the implementation of the EHR Incentive Program, new staff has worked closely with the REC to measure the effectiveness of outreach and to use data provided by Maryland's Registration and Attestation System (eMIPP) and the Office of the National Coordinator (ONC) to monitor provider interest in the program and identify common barriers to adoption and use of certified EHR technology.

As 2016 was the last year for providers to begin participation in the Medicaid EHR Incentive Program, Medicaid worked with the REC to develop an extensive outreach and education campaign. The campaign focused on three areas. The first area targeted specific counties with low adoption rates but potentially high EHR Incentive Program technical assistance resources. These counties included Allegany County, Carroll County, Washington County, Baltimore City, Montgomery County, and Prince George's County.

The second area targeted providers who expressed interest in participating in the EHR Incentive Program by registering with the CMS Registration and Attestation System (R&A) but failed to attest or receive an EHR incentive.

The last area targeted providers who initiated contact with MDH or the REC to receive one-on-one assistance with participating in the Program. The REC and MDH tracked the status of these providers' EHR Incentive Program activities as they moved from initial attestation through to payment.

This outreach approach resulted in 114 providers participating in the EHR Incentive Program. Medicaid learned from this outreach approach that the REC alone does not have the resources necessary to fully engage and support providers who, at that stage in the EHR Incentive Program, make up the "hard to reach" providers.

Thus, for calendar year 2016 and via the approved FFY16 IAPD, Maryland revamped the highly successful REC Program, described in more detail in A.9.b and in Attachment G of the HITECH IAPD.

A.9.b Who else is currently involved? For example, how are the regional extension centers (RECs) assisting Medicaid eligible providers to implement EHR systems and achieve meaningful use?

In Maryland, Management Service Organizations (MSO) promoted provider adoption of EHRs and achievement of Meaningful Use requirements. Maryland developed the MSO model as a result of HB 706: Electronic Health Records – Regulation and Reimbursement which requires MHCC to designate one or more MSOs to offer EHRs throughout the State.[44] An MSO is defined in COMAR 10.25.15.02B(5) as "an entity that provides technology and consultative services to health care providers, and makes available one or more hosted EHR systems and other health IT solutions".

[44] See: http://mlis.state.md.us/2009rs/chapters_noln/Ch_689_hb0706T.pdf.

State Designated MSOs can help practices maximize the use of technology and provide assistance in achieving practice transformation, which is essential to participating in new models of care delivery. MSOs are well-positioned to help practices achieve optimal use of health IT, which is required under many value-based care delivery models. Practices—especially those not affiliated with a hospital, in rural or underserved areas, and small practices—continue to require technical support and guidance to transform their practice. MSOs continue to provide valuable resources to practices in adopting an EHR. More information about MSOs is available at: https://mhcc.maryland.gov/mhcc/pages/hit/hit_mso/hit_mso.aspx.

In April 2020, three State Designated MSOs were awarded a grant to support diffusion of telehealth in Maryland ambulatory practices during the COVID-19 public health emergency. The MSOs are providing technical guidance to practices in completing a telehealth readiness assessment, prioritizing areas of improvement, redesigning workflows to support use of the technology, and educating practice staff on payer reimbursement policies.

A.10 Explain the SMA's relationship to the State HIT Coordinator and how the activities planned under the ONC-funded HIE cooperative agreement and the Regional Extension Centers (and Local Extension Centers, if applicable) would help support the administration of the EHR Incentive Program.

The MHCC's Center for Health Information Technology ("the Center") Director, David Sharp, is the Maryland Government HIT Coordinator. MHCC is an independent regulatory agency whose mission is to plan for health system needs, promote informed decision-making, increase accountability, and improve access in a rapidly changing health care environment by providing timely and accurate information on availability, cost, and quality of services to policy makers, purchasers, providers and the public. The Center reports to the Maryland Secretary of Health. The Center Director also oversees CRISP, Maryland's HIE.

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 has worked with Medicaid in creating initial drafts of the SMHP and IAPD, is currently working with Medicaid to explore data sharing opportunities under the MITA transformation project, and was actively involved with CMS as part of its now-expired EHR Demonstration Project. 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.

A.11.a What other activities does the SMA currently have underway that will likely influence the direction of the EHR Incentive Program over the next five years?

ARRA Related Projects

Maryland has been successful in obtaining funding under American Recovery and Reinvestment Act (ARRA). These funds are intended to provide the necessary technical assistance for providers to become meaningful users of EHRs, coordinate the State's efforts with regard to the electronic exchange of health information, and provide the needed training and education to increase the HIT workforce. Table A.12 below describes the funding that has been received in Maryland.

Table A.12 – Maryland ARRA Funding

Project	Amount	Awardee	Purpose
State HIE Cooperative Agreement Grant Program	$9.3M	*Maryland Health Care Commission*	Build capacity for exchanging health information across the health care system
HIT Extension Program: Regional Centers Cooperative Agreement Program	$5.5M	*Chesapeake Regional Information System for our Patients*	A regional extension center established in Maryland for EHR adoption assistance to physicians
Program of Assistance for University-Based Training	$3.7M	*Johns Hopkins University School of Medicine*	Offer training programs for highly specialized HIT roles
Expand HIT Capacity	$2.9M	*Community Health Integrated Partnership, Inc.*	Expand EHR technology in Federally Qualified Health Centers
Curriculum Development Centers Program	$1.8M	*Johns Hopkins University School of Nursing*	Development of graduate level programs for HIT
HIT Planning-Advanced Planning Document	$1.3M	*Maryland Medical Assistance Program (Medicaid)*	An award from CMS for state planning activities to implement the EHR incentive
Community College Consortia Program	$325K	*Baltimore County Community College*	Create non-degree HIT training programs with completion in six months or less
Total	$24.8M	--	--

Additional Funding Opportunities

Transforming Clinical Practice Initiative Grant

The Centers for Medicare & Medicaid Services (CMS) Transforming Clinical Practice Initiative (TCPI), began in September 2015 and concluded in September 2019. TCPI provided hands-on support to practices for developing skills and tools needed to improve care delivery and transition to alternative payment models (APMs). TCPI grantees formed practice transformation networks (PTNs) to support primary care and specialty practices through peer-based learning to achieve health care transformation, prepare to successfully participate in value-based payment arrangements, and improve care quality.

In 2015, the New Jersey Innovation Institute (NJII) was awarded a four-year $50M PTN cooperative agreement from CMS. NJII formed the Garden Practice Transformation Network (GPTN). The Maryland Health Care Commission, MedChi, The Maryland State Medical Society, and the University of Maryland School of Medicine Department of Family and Community Medicine partnered with NJII in 2016 to complete the CMS defined practice transformation activities in Maryland. The GPTN enrolled 836 providers, representing 109 practices. At program closeout, 593 providers were engaged, representing 47 practices. Key outcomes included:

- A majority of practices (91 percent) met at least three of six patient and family engagement measures (PFE); practices that met three or more PFEs were more likely to be in the graduation phase of the program (2 percent as compared to 50 percent)
- More than a third of practices (34 percent) improved on at least three of the targeted quality measures.
- More than a quarter of practices (28 percent) provided transitional care management services.
- Nearly all (98 percent) of Maryland practices engaged in the GPTN achieved benchmark status or above.

A.11.b Medicaid Activities Influencing the EHR Incentive Program

Medicaid supports the vision of using HIT to improve patient care, increase efficiency, and reduce health care costs. With the implementation of our Registration and Attestation System, eMIPP, we were better able to process Meaningful Use attestations, support live data exchange between providers, the HIE, MDH, and move closer to payment reform. Medicaid's 2009 and 2010 environmental scans of Medicaid physicians' use of EHRs has aided in our ability to identify implementation barriers. These barriers have helped us to design the outreach strategies and provider assistance implemented in Year 2 of the EHR Incentive Program.

Medicaid also completed a feasibility assessment of the EHR Incentive Program. Available in Appendix C, the Assessment found that the EHR Incentive Program aligns with current HIT, MMIS, and MITA expansions within the State.

Based on our 2013 Environmental Scan, for the providers who had not adopted any EHR system, their top three barriers included: lack of capital resources to invest in EHR, uncertainty about which EHR to purchase, and disruption to office business processes. In 2013, Medicaid also partnered with MHCC to develop an ambulatory provider EHR outreach strategy. The strategy helped to inform the creation of our single point of contact for all HIT assistance for providers across the State. For Medicaid providers in particular, the single point of contact facilitates easy passing of provider issues from the REC to Medicaid and vice versa. This strategy was being applied to the REC and the HIE's developing plan to connect ambulatory providers to the HIE.

In 2015, Medicaid performed a case study by interviewing eighteen Medicaid primary care practices that have successfully implemented EHR technology. Maryland engaged the case study to identify correlates and barriers to successful EHR implementation. Other study objectives included evaluating the effectiveness and utilization of EHR and HIT resources, such as the REC, Medicaid, EHR vendors, MSOs, and others.

The study found that providers may experience a more successful EHR implementation if they use resources such as the HIE, REC, and state-designated MSOs, and if they are connected with a greater professional or health system network. Other best practices for EHR implementation identified by the study include: engaging variety of staff roles, especially physicians, in decision making with EHR selection; before purchasing, obtaining experience with EHR through product demos, simulations, and visits to other practices; attaining sufficient technical support and training through EHR vendors or third-party IT consultants; integrating EHR with other systems, such as billing and practice management; improving care coordination with use of the HIE or interfacing with other health system portals; performing structured data migration; automating processes such as clinical decision support interventions and communications to patients; and continuing to optimize EHR capabilities after implementation.

Based on the study's findings and recommendations, Maryland, in partnership with CRISP, established a HIE Readiness Assessment in 2016 to gauge a practice's likelihood of leveraging HIE to improve patient care. Maryland also used this study to develop training and guidance on Meaningful Use reporting, structured data migration, clinical decision support enhancement, and opportunities to connect with other health care systems and providers via HIE.

A.12 Have there been any recent changes (of a significant degree) to State laws or regulations that might affect the implementation of the EHR Incentive Program? Please describe.

On May 15, 2018, Senate Bill 17, *Health Information Exchanges – Definitions and Regulations*, was signed into law, changing the definition of an HIE. Effective October 1, 2018, HIE means "an entity that provides or governs organizational and technical processes for the maintenance, transmittal, access, or disclosure of electronic health care information between or among health care providers or entities through an interoperable system." In addition, an HIE does not include an entity composed of health care providers under common ownership; or, if the organization and technical processes it provides or governs are certain transactions, carriers, carriers' business associates, or an administrator.

From June 8 to July 9, 2018, the State sought public comment on proposed amendments to COMAR 10.25.18: *Health Information Exchanges: Privacy and Security of Protected Health Information* (HIE regulations). The changes were intended to facilitate electronic transmission of sensitive health information (SHI) through an HIE, other than by point-to-point (i.e., secure email). SHI includes subsets of protected health information considered to be of particularly high risk in the event of disclosure and is subject to specific legal protections, such as those required under Confidentiality of Substance Use Disorder Patient Records regulations found in 42 CFR Part 2. The final effective date for the amended regulations was October 22, 2018.

A.13.a Are there any HIT/E activities that cross state borders?

Six national health IT companies providing HIE solutions (Allscripts, Cerner, eClinicalWorks, Epic, NextGen, and Surescripts) are currently registered with MHCC. These companies provide HIE services to customers in geographic locations both in Maryland and across the United States.

The State Designated HIE, CRISP, offers regional HIE services in Colorado, Delaware, District of Columbia, Kentucky, Louisiana, Massachusetts, New Jersey, Ohio, Virginia, and West Virginia. On average, CRISP sends nearly 1.2 million Encounter Notification Service (ENS) alerts weekly (as of April 2020). Maryland's Prescription Drug Monitoring Program (PDMP) is sharing data with DC, Delaware, Pennsylvania, Virginia, and West Virginia. Additional connected states include Arkansas, Connecticut, Kentucky, Maine, Minnesota, New Jersey, New York, North Carolina and Washington. Maryland Prescription Drug Monitoring Program (PDMP) is sharing data with Virginia, West Virginia, DC, Pennsylvania, Connecticut, Delaware, Minnesota, and Arkansas through the PDMP interstate sharing hub.

A.13.b Is there significant crossing of State lines for accessing health care services by Medicaid beneficiaries? Please describe.

Due in large part to its relatively small size and its shared contiguous borders with Pennsylvania, Delaware, Washington DC, Virginia, and West Virginia, Maryland experiences a significant crossing of State lines by Medicaid beneficiaries to access health services. The Health Services Cost Review Commission (HSCRC) estimates that in CY 2010 around two percent of all Maryland Hospital visits (inpatient and outpatient) were provided for Medicaid beneficiaries with primary addresses from surrounding states. And in the same calendar year, 7.4 percent of all hospital visits by Maryland Medicaid patients were provided in out-of-state hospitals. Further, Maryland has issued a number of EHR incentive payments to providers who see both Maryland Medicaid beneficiaries and one or more Medicaid beneficiaries from the District of Columbia, Virginia, or Delaware.

A.14 What is the current interoperability status of the State Immunization registry and Public Health Surveillance reporting database(s)?

MDH and CRISP are in an ongoing process of assessing the feasibility of EHR provider connection with public health systems and the impact this may have on increasing the adoption of the HIE. Currently, Maryland can accept point-to-point electronic submission of public health immunization data via a secure file transfer protocol (sFTP) or in real-time via Simple Object Access Protocol (SOAP) web services. While Maryland will accept public health measures from providers via these methods, we hope to encourage the use of the HIE for public health data

submission via web services. Most hospitals use a virtual private network (VPN) to connect to the HIE and submit immunization data which is then routed to MDH via sFTP.

Public Health Systems

Since at least 2005, Maryland has used HIT to improve public health issues. Maryland employs the National Electronic Disease Surveillance System (NEDSS) for legally mandated infectious disease reporting, recently including electronic reporting from laboratories. In addition, Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE) is a syndromic surveillance system developed for early detection of disease outbreaks, suspicious patterns of illness, and public health emergencies. Finally, Maryland employs an electronic immunization registry known as ImmuNet. These systems have been continually improved over the years and provide an excellent base on which to build the new Meaningful Use requirements. Data in NEDSS, ESSENCE, and ImmuNet are currently transferred through a push model from the provider to MDH. The goal is to centralize the flow of these data through the statewide HIE.

MDH continues exploring the feasibility of offering public health reporting for specialized registries including cancer, case reporting, and Prescription Drug Monitoring Program (PDMP). In 2014, MDH started accepting cancer registry submissions via HTTPS. Implemented in 2013, the Maryland PDMP is administered by MDH and the Behavioral Health Administration (BHA) and the reported information is collected by and stored at the statewide HIE. In 2016, in partnership with the HIE, MDH is offering electronic case reporting via the export of Consolidated Clinical Document Architecture (C-CDA).

NEDSS

The Maryland Code Annotated, Health-General § 18-201, § 18-202 and § 18-205 and Code of Maryland Regulations (COMAR) 10.06.01 mandate that certain infections and other conditions be reported to local health departments and to MDH. Since 2007, most of those reports have been entered into and maintained in NEDSS. For these purposes, Maryland uses the NEDSS Base System (NBS), which was developed by CDC and is employed by 25 other states and U.S. territories. NBS is a secure, web-based system that serves to support the electronic processes involved in notifiable disease surveillance and analysis as well as transmission of surveillance data securely between local health departments, MDH, and CDC. NBS version 5.4.6 is currently in production. NEDSS is capable of and receives electronic reports directly from clinical laboratory information systems ("electronic laboratory reporting"). While the Department prefers Logical Observation Identifiers Names and Codes (LOINC), there is no Electronic Lab Reporting (ELR) regulation requiring it, unless submissions follow Meaningful Use guidelines. Over time, the Department expects submissions to standardize.

Currently, Maryland NEDSS receives electronic reports from four major national laboratories (BioReference Laboratories, LabCorp, Mayo Medical Laboratories, and Quest Diagnostics), the Maryland public health laboratory, and forty-three hospital laboratories. Two more hospital laboratories are in the Test/Quality Assurance phase. Two additional hospitals will also be added once a hospital system undergoes upgrades. Much of existing electronic laboratory reporting from laboratories is through the statewide HIE to MDH, and one of the primary milestones of the HIE was its connection with the hospital labs in the State. CRISP and MDH continue to work push electronic lab reporting to the State's NEDSS system. In addition, Maryland has completed interstate exchange of ELR with the Virginia and the District of Columbia health departments for ELRs received with an out-of-state patient address. MDH is in the process of setting up interstate exchange of ELR with West Virginia.

ESSENCE

Biosurveillance (or syndromic surveillance) involves monitoring measures of pre-diagnostic activity for the purpose of finding early indications of disease outbreaks and other public health threats. By providing early notification of potential outbreaks and public health threats, biosurveillance provides public health officials the opportunity to respond earlier and thus more effectively.

MDH uses ESSENCE to conduct syndromic surveillance on a daily basis. Initially, 15 acute care hospitals in the National Capital Region and Baltimore Metro Region of the state were sending emergency department data to ESSENCE. In 2007, Maryland Governor Martin O'Malley introduced a homeland security initiative that outlined 12 "Core Goals for A Prepared Maryland." Core goal #5 is to improve biosurveillance so that every region in Maryland has access to a real-time, 24/7 statewide biosurveillance system.

To accomplish this goal, MDH began the expansion of ESSENCE to incorporate data from all acute care hospitals in the State. ESSENCE has incrementally expanded its capabilities through a series of targeted project implementations, adding the following traditional and non-traditional data sources: hospital emergency department (ED) visits (January 2006 - present), poison control center data (January 2009 - present), over-the-counter medication, and thermometer sales (March 2004 - present), prescription antibacterial sales (January 2006 - March 2012), school absenteeism data (January 2012 - present), and select urgent care center data (September 2018 - present). The current data sources in the ESSENCE system provide coverage for all 24 Maryland jurisdictions.

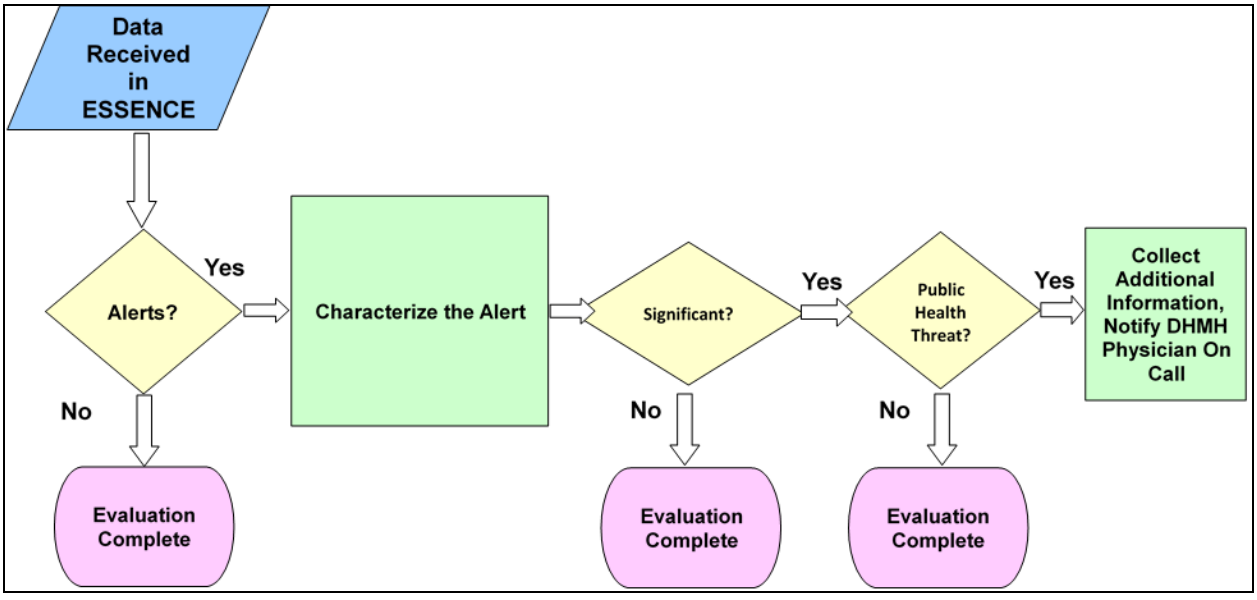
All forty-five (45) acute care hospital EDs and the four (4) free standing EDs in Maryland participate in the state's ESSENCE system. They have converted their data format to be compliant with Meaningful Use. Maryland is the first U.S. state to achieve 100 percent

participation of its EDs in the ESSENCE program. Moreover, 100 percent of Maryland's public school systems also participate in its ESSENCE program. NEDSS reportable disease data has also been incorporated into the ESSENCE system, allowing users to view this surveillance data with analytical and graphical tools that are unavailable in the NBS.

In September of 2018, MDH began receiving syndromic data from twenty-two (22) urgent care centers in Maryland. Accepting syndromic data from urgent care centers ensures that ESSENCE data are fully representative of our resident population as particular demographics use urgent care centers rather than ED's for their health care needs. MDH will continue pursuing the integration of data from additional urgent care centers into ESSENCE (as of August 2020 the system includes data from twenty-three [23] urgent care centers)/. MDH is also in the process of integrating emergency medical services (EMS) data into ESSENCE, which will provide another rich data source for monitoring known health threats and for identifying possible health events even more quickly than current system data and capabilities allow.

ESSENCE utilizes a secure, automated process for transfer of hospital data to the system that is consistent with Federal standards for electronic disease surveillance. Data is categorized into syndromes to detect aberrations in the expected level of disease. Automated statistical algorithms are run on each syndrome and alerts are generated when the observed counts are higher than expected. ESSENCE allows for situational awareness, identification of disease clusters, early identification of cases related to outbreaks, and early indication of influenza season and assessing disease burden. The flowchart displayed in Figure A.11 depicts the process for the investigation of alerts.

Figure A.11 – ESSENCE Investigation of Alerts



The ESSENCE program incorporated new data variables into the hospital ED data feeds such as discharge diagnosis, discharge disposition, race, ethnicity, clinical impression, triage notes, etc. in addition to the chief complaint field. This greatly enhanced the surveillance capabilities of the system as well as given new insight into other public health activities carried out through utilization of the ESSENCE system. The additional data variables provide a more complete picture of illness and ED utilization than is provided by the chief complaint alone. The introduction of triage notes, provider diagnosis, discharge disposition and discharge diagnosis to the surveillance system has decreased the need to contact hospitals for additional information, decreased response time to potential threats, and made it possible for epidemiologists to rule out cases with less margin of error, thus mitigating the spread of disease within the state of Maryland.

ImmuNet

ImmuNet is Maryland's Immunization Information System (IIS), a secure computer database designed to collect and maintain accurate, confidential, and current vaccination records of children and adults residing in Maryland. ImmuNet promotes effective and cost-efficient disease prevention and control that will improve the health of Maryland's children. In 2001, Senate Bill 626 was passed and established guidelines for creating and implementing ImmuNet. ImmuNet has proven to be extremely effective as a centralized repository for immunizations administered in the state.

To date, ImmuNet contains nearly 6.5 million clients and over 58 million immunizations. In addition to tracking patients in need of vaccination, ImmuNet assists in vaccine management; provides completed school immunization certificates; consolidates immunization records; and provides offices with the capability to identify patients overdue for vaccination and print reminders. ImmuNet is compliant with HL7 version 2.5.1 release 1.5. The majority of hospitals in Maryland are currently using the HIE to submit immunization data. To accept incoming data messages from EHRs or other data systems, the program offers an sFTP transport method primarily for testing and a SOAP web services option that allows for real-time, bi-directional data exchange.

The Maryland Childhood Immunization Partnership (MCIP) has functioned as the advisory committee for ImmuNet. The Maryland Chapter of the American Academy of Pediatrics and MDH established MCIP. The partnership has worked closely with the MDH Center for Immunization to identify the pertinent issues relevant to implementation of an immunization registry. MCIP is composed of public and private organizations, which are concerned with the issues of childhood immunization and registry development.

Public Health Systems Collaboration with Medicaid

The Public Health program areas for ESSENCE, ImmuNet and NEDSS have a history of collaboration with Medicaid. In addition to informing policy decisions, data from public health systems is being used to help develop a Maryland State Health Improvement Process (SHIP). SHIP sets forth measurable objectives and targets in key areas of health, with a special focus on health equity. The process to develop the SHIP involved meetings with many health-related agencies, including public health, to better understand current objectives, measures, and data and then to develop additional objectives and data sources. On a regular basis, Medicaid participates with the Public Health program areas on the Center for Disease Control Meaningful Use Nationwide calls for the purposes of aligning EHR Incentive Program public health objectives with Medicaid planning. Medicaid also attends internal meetings between the Public Health Program areas and CRISP over connecting public health data reporting systems with the HIE.

Through Medicaid's collaboration with the Public Health Program areas, we have been able to successfully test with and move to production eligible providers and hospitals participating in both the Medicare and Medicaid EHR Incentive Program. Table A.13 shows Medicaid's progress towards collecting public health data.

Table A.13 – Public Health Data Submissions by Public Health Registry Type, Program, and Program Year

	2011		2012		2013		2014		2015		2016		2017		2018		2019	
	EH	EP	EH	EP	EH	EP	EH	EP	EH	EP	EH	EP	EH	EP	EH	EP	EP	EH
Medicaid																		
Laboratory Reporting	0	-	4	-	19	-	43	-	7	-	3	-	0	-	6	-	1	-
Immunization Registry Reporting	1	15	10	69	21	201	34	185	8	236	3	133	0	19	2	37	0	28
Specialized Registry - Cancer Reporting	-	0	-	0	-	0	-	2	-	10	-	5	-	3	-	1	-	0
Specialized Registry - Case Reporting	-	-	-	-	-	-	-	-	-	2	-	35	-	29	-	12	-	4
Specialized Registry - PDMP Reporting	-	-	-	-	-	-	-	-	-	0	-	23	-	21	-	21	-	8
Syndromic Surveillance	2	-	14	-	14	-	40	-	6	-	3	-	0	-	1	1	0	0
Medicare																		
Laboratory Reporting	0	-	7	-	16	-	46	-	7	-	3	-	0	-	5	-	2	-
Immunization Registry Reporting	4	60	14	211	19	310	34	342	8	380	5	109	0	11	1	39	0	31
Specialized Registry - Cancer Reporting	-	0	-	0	-	0	-	20	-	68	-	31	-	4	-	3	-	3
Specialized Registry - Case Reporting	-	-	-	-	-	-	-	-	-	0	-	54	-	13	-	2	-	6
Specialized Registry - PDMP Reporting	-	-	-	-	-	-	-	-	-	0	-	49	-	18	-	13	-	7
Syndromic Surveillance	2	-	16	-	14	-	42	-	6	-	3	-	0	-	1	2	0	0

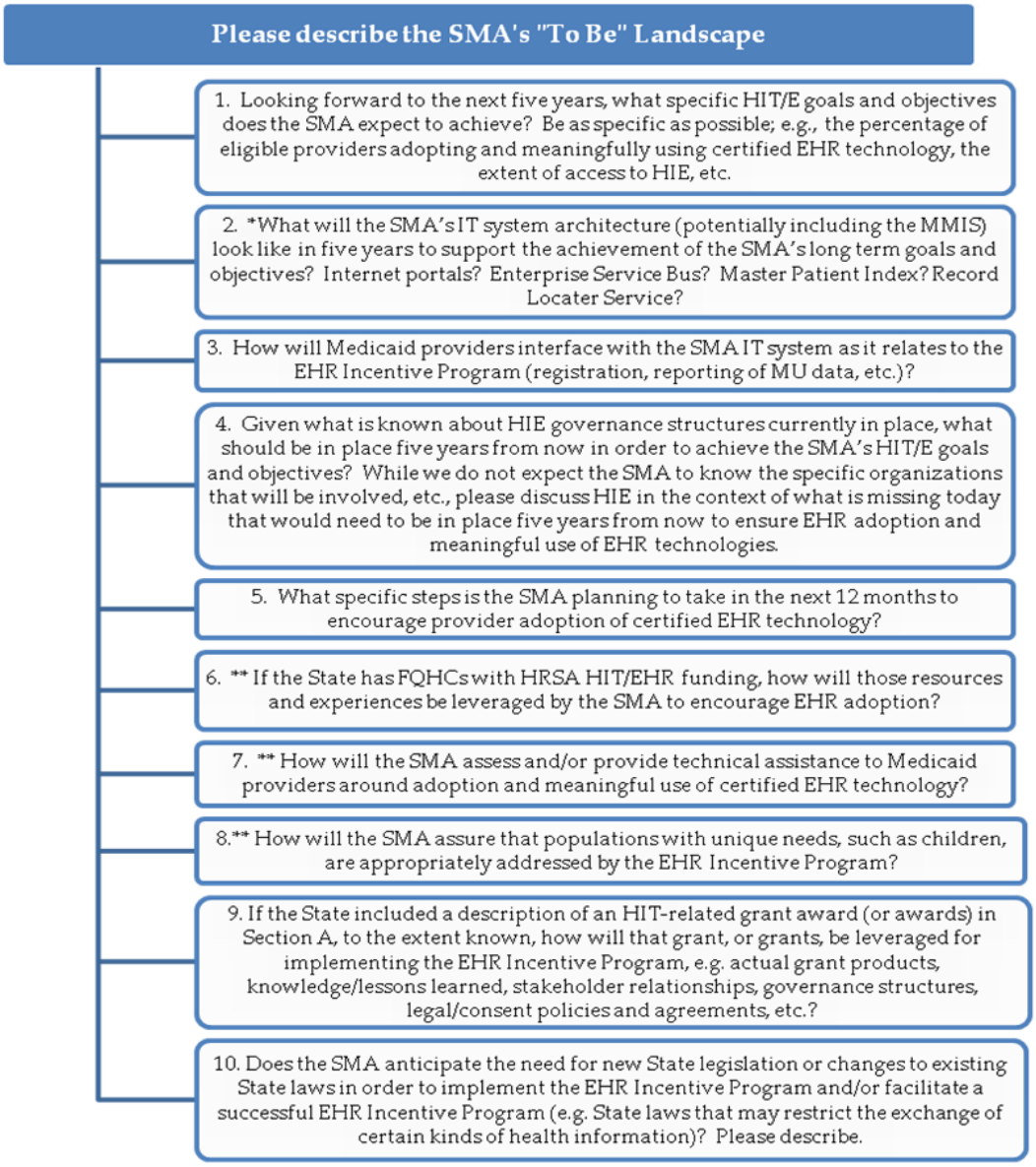
*Some Eligible Hospitals participate in both the Medicare and Medicaid EHR Incentive Programs. Totals include providers that registered, responded to prompts to testing, and those who are in production.

A.15 If the State was awarded an HIT-related grant, such as a Transformation Grant or a CHIPRA HIT grant, please include a brief description.

Although Maryland was a co-recipient of a CHIPRA Quality Demonstration Grant, the multi-state collaborative proposal does not focus on HIT. Rather, the proposal focused on Category C: "Provider Based Models Which Improve the Delivery of Children's Health Care." All participating states were committed to improving the health and social outcomes for children with serious behavioral health needs. In regards to this grant, Maryland was interested in learning from any implementation efforts around Electronic Health Records and HIT to see how we can integrate and incorporate with our Medicaid Management Information Systems (MMIS) for the Care Management Entities (CME).

Section B: Maryland's "To-Be" HIT Landscape

Figure B.1 – Section B Questions from the CMS State Medicaid HIT Plan (SMHP) Template



B.1 Looking forward to the next five years, what specific HIT/E goals and objectives does the SMA expect to achieve? Be as specific as possible.

General Medicaid HIT/E Goals

In earlier editions of our SMHP, Medicaid has hoped to:

(1) Establish a fully-enabled framework for bi-directional, real-time interface with the State's Client Automated Resources Eligibility System (CARES);
(2) Support existing and new EHR initiatives, and provide enough flexibility to respond to the changing needs of EHRs and HIT;
(3) Accommodate system modifications made to the statewide HIE to facilitate its use; and
(4) Access and utilize data from other state HIEs.

To date, Maryland has made progress on many of our goals. We launched a stand-alone Health Benefits Exchange (HBX) that facilitates file transfer with the existing CARES and Maryland Medicaid Information System (MMIS), which has improved data exchange between systems, but not to the fullest extent possible.

Medicaid continues to focus on laying the foundation for data exchange and connectivity among eligible professionals, hospitals, and Medicaid providers. To encourage participation in the HIE, Medicaid created a popHealth-like tool for Meaningful Use (MU) electronic Clinical Quality Measure (eCQM) reporting for Medicaid eligible providers (EPs) through the submission of Consolidated Clinical Data Architecture (CCDA). The popHealth-like tool, CAliPR (formerly CAliPHR), is connected to the HIE and facilitates quality calculation and measure authoring through CCDA, Quality Reporting Data Architecture (QRDA) Categories I and III. CAliPR is a certified modular EHR product for capture and export, import and calculation, and electronic submission. The ambulatory clinical data collected is stored in a Clinical Data Repository within the HIE and available to Medicaid for analytical purposes.

This year, Medicaid is focusing more on interoperability and connectivity. Using HITECH and MMIS funding, we are increasing the functionality of the HIE by creating a consent manager that will allow for the secure exchange of somatic and behavioral health and substance use disorder clinical data; upgrading the HIE infrastructure to leverage Encounter Notification Services (ENS) and sophisticated rules engine for data parsing, linking, and sending; facilitating the creation of a bi-directional public health infrastructure to support Meaningful Use; and exploring the ability of the HIE to facilitate a learning health system. From an MMIS perspective, we are moving towards integrating clinical data by developing a data warehouse and decision support system within the MMIS modular framework. Medicaid's specific goals for the next five years are available in Section E.

EHR Incentive Administrative Goals and Outcomes

Medicaid will work to increase HIT adoption and use, as well as ensure that current Medicaid EHR Incentive Program participants return to participate in Meaningful Use. Medicaid will continue to accomplish this goal by continuing minimizing the barriers to participation, streamlining the attestation process, and providing HIE onboarding assistance and HIT workflow optimization.

Each year, MDH calculates and adjusts its estimate participation goals by taking into account the following factors: environmental scan results, actual participation numbers in the previous years, regulation changes, and direct feedback from the provider community.

To estimate the number of EPs who completely dropped out of the program, we used the number of providers who have received at least one payment from Medicaid and switched to the Medicare Incentive Program. Because EPs can only switch between programs once after they received at least one payment, these providers are deemed "dropped out" of the Medicaid EHR Incentive Program completely. Since EHR Incentive Program inception, the total number of "dropped out" providers is 333.

For this year's SMHP Update, Medicaid is updating our participation goal from 2019. The formula to calculate Meaningful Use participation goals for Program Years 2016 and prior was:

{[(Total AIU to date) + (Total MU to date)]*(75%)*(70%)}

Table B.1 shows the history of payment goals and should be read as follows:

(1) Maryland lists each year's goal under the column "AIU Goal" or "MU Goal."
(2) Each SMHP version adjusts the next year's goals based on actual AIU or MU attestations as of the date of the updated SMHP. For example, in Program Year 2011, Medicaid listed 100 attestations as its goal for AIU. In Program Year 2011, we exceeded that goal by 590 percent. As a result, we increased our AIU goal for future years.

Table B.1 – EP Participation Goals

Year	AIU Goal	AIU Actual	Difference	MU Goal	MU Actual	Difference
2011	100	687	590%	--	--	--
2012	410	750	83%	190	47	-75%
2013	617	710	15%	185	647	250%
2014	617	692	12%	462	843	82%
2015	617	467	-24%	409	1053	157%
2016	282	468	--	474	763	--
2017	N/A	N/A	N/A	646	563	--
2018	N/A	N/A	N/A	646	327	--
2019	N/A	N/A	N/A	344	106	--
2020	N/A	N/A	N/A	151	TBD	--
2021	N/A	N/A	N/A	100	TBD	--

Note: Medicaid calculated the percent difference by comparing the actual values to the past SMHP's stated goal.

As 2014 was the last year to participate in the Medicare EHR Incentive Program, most dual eligible hospitals (43) had attested with either program.[45] As of 2016, all but one of the 48 acute care hospitals in Maryland attested with Medicaid. As shown in Table B.2, we reached the goal that 44 hospitals have started participating with Medicaid. Forty-seven hospitals have participated in the Maryland Medicaid EHR Incentive Program, including two children's hospitals. Two hospitals were eligible to continue participation in PY2019, as the others either did not attest for Program Year 2016 or had completed four years of participation. No additional hospitals will be attesting in Program Year(s) 2020 and 2021.

[45] Both Medicaid-only children's hospitals have attested with Medicaid.

Table B.2 – EH Participation Goals

EH Participation Goal By SMHP Version					
Year	**SMHP V.1**	**SMHP V.2**	**SMHP V.3**	**SMHP V.4**	**SMHP V.5+**
2011	18 (15)	--	--	--	--
2012	25	25	25	25	25
2013	28	28	37	37	37
2014	35	35	39	40	40
2015	35	42	42	44	44
2016	--	--	--	44	44
2017	--	--	--	44	44

Once a provider registered and has successfully adopted, implemented, or upgraded to a certified EHR (achieving AIU), the next major goal is to achieve MU.

Medicaid had hoped to move 50 percent of AIU providers to MU within their first year of eligibility for a MU incentive payment, 60 percent within their next year, and 90 percent within three years. However, through Program Year 2015, only 60 percent of providers achieved MU within 3 years. Medicaid has paid a total of 3,863 unique EPs. Two thousand two-hundred and four have either switched to the Medicare EHR Incentive Program or have not returned to attest after meeting AIU.

In order to ease the transition from AIU to MU for providers, Medicaid, in coordination with its partners, provided education, training, and outreach activities. Previously, Medicaid implemented an EHR Acceleration Plan, which combined biannual MU registration and attestation webinars, engaging hospitals in outreach activities, and providing technical support through a virtual resource center and central point of contact. Building on this approach, Medicaid continued to consolidate technical assistance in our IAPD for FFY 2017 and 2018 by creating the Ambulatory Integration Project.

The Ambulatory Integration Project consolidated two previously approved projects and introduced a new Data Exchange Support Program (DESP). The two projects that were being integrated into a single outreach, education, and technical integration project were the EHR Integration and Ambulatory Network Connectivity Project. The EHR Integration project dealt with the costs to technically integrate an EHR to the HIE. The Ambulatory Network Connectivity project dealt with the outreach and education necessary to sign up providers for future onboarding to the HIE. DESP offset the onboarding cost to providers – both traditional EHR Incentive Program eligible providers, and those that were eligible under the State Medicaid Directors' Letter (SMD#16-003) – to connect to the HIE and encouraged the submission of quality clinical data.

Table B.3 provides a rolling list of Medicaid's specific administrative goals for the EHR Incentive Program.

Table B.3 – Administrative Goals for the EHR Incentive Program

Administrative Goals	Status
Year 1	
Complete R&A testing on August 15, 2011	Completed
EP and EH registration go-live in October – November 2011	Completed
First EP payment on November – December 2011	Delayed until January 2012
First EH payment in December 2012	Completed
Year 2	
eMIPP Project Plan for Year 2, Stage 2 – Sept 28, 2012	Submitted on Oct 2, 2013
Requirement Design Document – November 12, 2013	Completed
Unit Tests for Functionality – Nov 19, 2013	Completed
Release Stage 2 Guidance – December 1, 2013	Completed
UAT – Dec 7-14, 2013	Completed
Go-Live – Dec 21, 2013	Completed
First payments – Jan 2014	Completed
Begin AIU audits (2011 and 2012) – November 2013	90% Completed
Year 3	
Begin AIU audits (2013) – October 2014	Started, and ongoing
MU audit RFP Draft – February 2013 (est.)	Completed
MU auditor onboard	Started in October, 2015
CEHRT Flexibility Rule Implementation	Completed
popHealth Project Kickoff – November 2014	Completed
Year 4	
popHealth Project Pilot Go-Live – December 2015	Delayed – March 20, 2016
Meet HIE Project Metrics in IAPD Appendix D	Met 10 of 27 goals (FFY16)
Evaluate eMIPP Hosting, Maintenance, and Updating Contract	Completed
Year 5	
899 number of providers achieve AIU by close of PY 2016	Exceeded
883 number of providers achieve modified Stage 2 by close of PY 2016	Exceeded
Connect 5 of the top 10 EHR vendors in Maryland to the HIE by close of FFY 2016	Delayed (4 connected)
Successfully trigger PH cases via CCDAs by close of CY 2016	Delayed – First file sent in April 2017
Year 6	
Complete DDI for Stage 3 enhancements of the SLR	Completed
Onboard technical assistance for public health integration with HIE (see IAPD, Table 8, page 19)	Completed
Connect at least two additional EHR vendors to HIE	Completed
By close of PY 2017, pay MU incentive to 683 providers	Delayed – Did not open PY 2017 until February 2018
Meet HIE Project Metrics in IAPD Appendix D	See Appendix F IAPD v8
Year 7	
Pay 646 providers for PY 2017	Completed 1/3 of Goal
Complete requirements gathering for new public health infrastructure to facilitate bidirectional reporting	Completed
Meet HIE Project Metrics in IAPD Appendix D for FFY 2018	Completed
Meet HIE Project Metrics in IAPD Appendix D for FFY 2019	Completed
Year 8	
Meet HIE Project Metrics in IAPD Appendix D for FFY 2020	In Progress

Administrative Goals	Status
Pay 646 providers for PY 2018	Closed - Greenway Issue for PY 2018
Year 9	
Pay 200 providers for PY 2019	Closed – Greenway issue for PY 2019
Meet HIE Project Metrics in IAPD Appendix D for FFY21	In Progress
Certify PDMP and Image Exchange technology of HIE	In Progress
Year 10	
Pay 150 providers for PY 2020	In Progress
Meet HIE Project Metrics in IAPD Appendix D for FFY22	In Progress
Year 11	
Pay 150 providers for PY 2021	In Progress

EHR Incentive Oversight Goals and Outcomes

Medicaid will provide oversight in all aspects of the EHR Incentive Program including areas in which Maryland is contracting out for support such as with eMIPP, the REC, and the monitoring and oversight contractor (described in Section D). This includes, but is not limited to, administering the incentive payments, tracking MU by providers, and pursuing initiatives to encourage the adoption and use of certified EHR technology.

Medicaid developed an AIU post-payment auditing protocol during Year 2 and began auditing in late 2012. In 2015, Medicaid procured the services of a vendor, Myers and Stauffer, to perform EP AIU and MU audits. The contractor selected to administer areas of the incentive program is required to meet established performance measures. Medicaid requires the contractor to propose performance standards related to all aspects of the contractor's work, develop a disaster recovery plan, and establish a business continuity plan.

Medicaid recognizes the importance of thoughtful planning around key benchmarks. The following list represents those considered to date in the strategic and operational planning for the administration of the incentive program:

Item	Description
Develop and maintain a core infrastructure	A robust web based solution
Achieve all established performance goals	Meet annual goals established by Medicaid
Conduct select program audits	Routine monthly, quarterly, and annual
Implement a comprehensive and user friendly web based portal	An easy to navigate application
Build and sustain a financial reporting interface into MMIS	Accurate and consistent data feed to MMIS
Maintain all aspects of program administration	Maintain all aspects of the operations
Establish an outreach and communication initiative	An effective program communication strategy
Implement program policies established by Medicaid	Policies governing application and payment process
Implement a mechanism to manage provider disputes	An eligibility and payment mitigation process
Meet reporting and audit requirements of Medicaid	Submit timely reports and recommendations to Medicaid
Manage all aspects of a fraud and abuse program	Minimize and resolve program misuse

Calculate incentive payments	Adjudicate incentive payment requests

At the end of Year 1, Medicaid had only engaged the services of contractors for planning purposes. In Year 2, we solidified a Grant Agreement with the REC to expand outreach and education to Medicaid-specific providers.

During Year 2, Medicaid also increased its staff to meet projected levels in the SMHP and IAPD, increased the organization and administration of the program by creating an Access database to maintain all records of the incentive program and to query the MMIS to validate provider patient volume, and continued to draft an RFP for MU auditing support.

In Year 3, Medicaid upgraded our Access Database to record post-payment audit records and to query the MMIS to validate provider hospital-based status. We also posted the auditing RFP to the bid board and onboarded the contractor by the end of Year 4.

During Years 5 and 6, Medicaid worked with our auditing vendor to complete both AIU and MU audits through Program Year 2016. Program Year 2017 audits have been completed and Program Year 2018 audits are in process. Throughout the Medicaid EHR Incentive Program, Medicaid conducted 1,222 post-payment audits, identifying adverse findings for less than 10 percent of providers.

HIT/E Goals and Outcomes

Medicaid is an active participant in the statewide HIE efforts and is a member on the Policy Board. The Policy Board has general oversight of the statewide HIE, including the authority to evaluate and recommend to the MHCC the policies that will govern the exchange. Medicaid expected to connect with the statewide HIE as part of the implementation process of the new MMIS and to facilitate public health reporting. However, since Medicaid cancelled its contract with its MMIS vendor, Medicaid is now exploring a completely modular approach to MMIS enhancement.

To help take advantage of enhanced administrative funding opportunities under HITECH and MMIS, Medicaid hired a contractor to help develop the planning and implementation document to be used for a HITECH IAPD update. Medicaid continues to include the HIE in discussions for HIT development and interoperability planning.

Since EHR Incentive Program inception, Medicaid has succeeded in connecting all hospitals to the HIE and continues to deliver exchange services to providers across Maryland. Details about our successes, goals, and outcomes are described in the IAPD and HITECH to MMIS OAPD.

B.2 *What will the SMA's IT system architecture (potentially including the MMIS) look like in five years to support the achievement of the SMA's long term goals and objectives?

Providers interested in participating in the EHR Incentive Program must register through eMedicaid, Maryland's electronic, web-based provider management system. This registration will function as the link to the payment subsystem in MMIS.

To simplify interoperability between the current MMIS and any modular enhancements made to the legacy system, Medicaid uses a stand-alone State Level Repository (SLR) system that utilizes interfaces to connect to the MMIS and our user-authentication system, eMedicaid. The secure servers store the new registration and attestation information along with other administrative data. This information is combined with MMIS data on eligibility and claims to accept or deny participation in the program. Gross adjustments in MMIS are used to make payments.

Initially, Medicaid used Client Network Services, Inc. (CNSI) eMIPP system as our SLR. CNSI's eMIPP was a web-based solution used by Washington, Michigan, and other states.

For Year 2, Medicaid upgraded the eMIPP system for Meaningful Use Stage 1 changes. CNSI implemented the same changes in Michigan and Washington. The base system screen shots were approved by CMS. Functional and aesthetic changes to the base system in Year 1 were carried over into Year 2. Further, Year 2 functionality was expanded to not only include Meaningful Use data submissions, but also included a document upload feature available to providers who need additional supporting documentation to verify eligibility.

For Year 3, Stage 2 enhancements, CNSI submitted a proposal to the State, which was approved by CMS in October of 2013. These enhancements allow Maryland to meet program requirements for Stage 2. Screenshots are included in Appendix J.

Since Year 6, Medicaid has continued to use the eMIPP solution and periodically makes federally required and workflow optimizing enhancements. However, leveraging the modularity of the eMIPP system, we changed vendors from CNSI to Towson University. Medicaid ported the eMIPP code and created enhancements to meet Modified Stage 2 requirements. To facilitate eCQM reporting, Medicaid modified the open-source code for popHealth to create CAliPR, a robust measure engine and repository with the scalability to accommodate statewide quality reporting. For Program Year 2017, Medicaid integrated CAliPR with eMIPP to facilitate eCQM reporting via QRDA Cat I or II and Clinical Document Architecture (CDA) files. Maryland contracts with University of Maryland, Baltimore County technical assistance with assessing the safety and security of the SLR, reviewing cost-estimates for SLR enhancements, and facilitating MMIS data integrity for payment processing and program compliance.

In the next two years Medicaid will be focused on identifying and implementing the underlying technical infrastructure to enable a service-oriented architecture, a decision support system, and an enterprise-wide CRM solution. These technologies will serve as the core of the Medicaid environment.

Over the subsequent three years, Medicaid will focus on integrating various service modules into the enterprise service integration layer and begin exchanging data/services between them. This architecture helps the state enforce data governance, enhance data integrity, and facilitate real-time data exchange. All these features will help MDH better manage and operate the EHR incentive program and ultimately support better health outcomes for Maryland citizens.

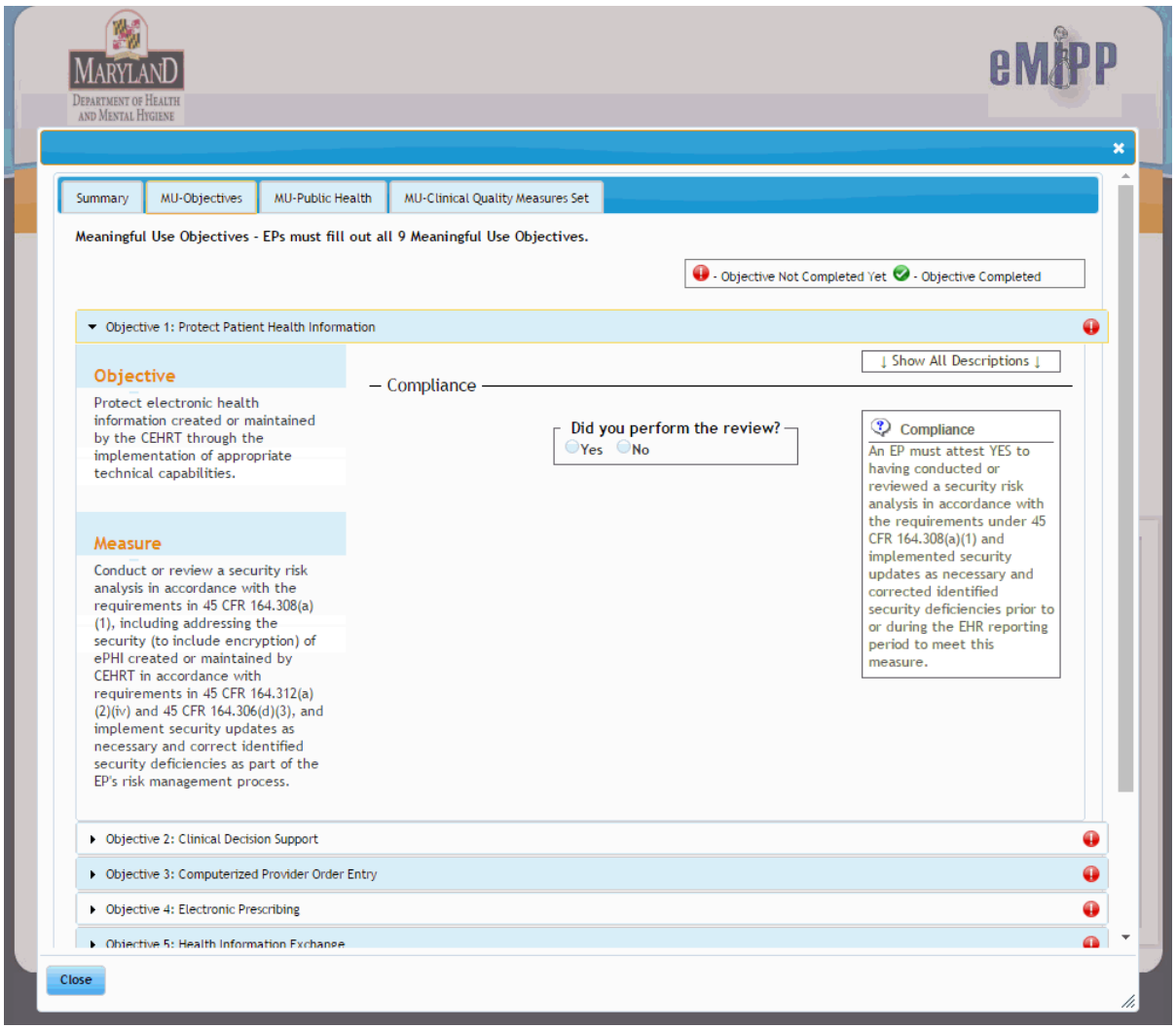
B.3 How will Medicaid providers interface with the SMA IT system as it relates to the EHR Incentive Program (registration, reporting of MU data, etc.)?

Using a web-based internet portal, eMIPP, Medicaid-enrolled providers register for the Maryland Medicaid EHR Incentive Program. eMIPP facilitates the registration, eligibility verification, attestation, and payment process.

The general process flow for provider participation in the Medicaid EHR Incentive Program is as follows. Prior to registering at the State level, all providers must register with the CMS Registration and Attestation System (R&A) and obtain an R&A Registration ID. R&A notifies the State about each registered provider via one of the dedicated CMS R&A interfaces. Once a provider has selected "Maryland" as their Medicaid participation state and eMIPP loads the eligibility file from the R&A, eMIPP sends an electronic welcome letter with instructions that confirms the provider's registration ID. To enter eMIPP, providers need an eMedicaid system ID. eMedicaid is Maryland's electronic provider portal for claims and provider self-service. As part of the Medicaid EHR Incentive Program registration process, the system collects the provider's EHR "certification" information. For EPs, the system collects their Medicaid patient and total encounter volume for the stipulated reporting period to confirm their eligibility. For EHs, the State uses existing cost report and discharge data submitted by the hospitals to the Heath Services Cost Review Commission (HSCRC) to confirm eligibility and calculate payments.

For providers attesting to Year 2 and beyond, the eMIPP online functionality also collects MU information as stipulated by CMS. The eMIPP system lists MU objectives and Clinical Quality Measures (CQMs). EPs are required to report on a certain number of objectives and measures based on the Stage they have attested to. Medicaid-only EHs are required to select and enter data for required MU objectives and CQMs. Dual Medicare and Medicaid EHs provide their MU information at the Medicare level. Figure B.2 provides a screenshot of the MU Objectives screen encountered by providers.

Figure B.2 – eMIPP Provider Compliance Screen for Meaningful Use Submission



B.4 Given what is known about HIE governance structures currently in place, what should be in place five years from now in order to achieve the SMA's HIT/e goals and objectives?

Most of the State's systems will need enhancements before they can support both MU and HIE. Maryland's approach is to establish interoperability to the statewide HIE for all State systems, including ImmuNet, ESSENCE, and MMIS. To date, Maryland has integrated ImmuNet and many labs into the HIE.

The HIE is strategically connecting large health systems and ambulatory providers. Many ancillary data providers are already connected to the HIE and exchanging information. The HIE is also working to build interfaces with EHR vendors. MDH and the HIE leveraged 90/10 HITECH administrative funding to increase the uptake of EHRs and connectivity to the HIE.

Since program inception, Medicaid has partnered with CRISP, the MHCC, and others to explore means to increase HIE uptake using enhanced HITECH funding. Among the projects currently underway are: expanding the connection of the HIE to public health reporting systems; capturing and storing clinical quality data through an open-source tool, CAliPR, which sits on the HIE; and enabling data exchange among hospitals and ambulatory providers to improve care coordination. Through IAPD funding, the HIE has been able to successfully develop highly utilized services that are enabled mostly by hospital connectivity. Additional progress is documented in Section E and in Maryland's HITECH IAPD and HITECH to MMIS OAPD.

As to the particular HIE governance structure, the stakeholders present are significant and interests are broad enough to ensure the HIE's continued growth. The enhanced federal funding listed above will eventually be used to increase infrastructure and increase participation until the HIE becomes self-sustaining.

B.5 What specific steps is the SMA planning to take in the next 12 months to encourage provider adoption of certified EHR technology?

Since program inception, Maryland Medicaid has leveraged the outreach strategy provided by the State-Designated Regional Extension Center, CRISP. The REC's continuous outreach strategy has focused on the provider and payor side, using medical and hospital organizations such as the Maryland State Medical Society (MedChi), as well as the Maryland chapters of the American Medical Association, the Pediatric Association, and the Hospital Association. In addition, through the use of State-Designated Management Service Organizations (MSO), funded by ONC, the REC program has assisted over 1,100 primary care providers with Meaningful Use in Maryland.

Medicaid has utilized and will continue to leverage the REC to perform general EHR Incentive Program and HIE-based outreach and education. Outreach activities related to the REC program have been decreasing as the number of eligible participants for Meaningful Use declined. As we enter the last year(s) of eligibility for the program, fewer practices qualify and of those, fewer are in need of assistance. The outreach activities conducted by the REC for the next 12 months are listed in Tables B.4 and B.5.

Table B.4 – REC Education and Outreach Activities

Activity	Description	Proposed Number/Hours
Medicaid Meaningful Use Incentive CME Events	In partnership with MedChi, provides CME events to providers	0
Monthly Outreach via Email and Newsletter	Information about CMS EHR incentive payments, Testimonial from recipient, MD EHR registration and attestation System information	0
Monthly Outreach via Fax or Paper Mailings	MDH Bulletin/ Medicaid Newsletter	0
Promotion Material Creation	Informational Materials created for Fax and Newsletter	Varies
SalesForce Client Record Creation	Case records created to track provider interest in and progression along HIE onboarding.	100

Table B.5 – REC Meaningful Use Attestation Support

Activity	Description	2018 Proposed Number/Hour
E-mail and phone support	Email and Phone support via CRISP 1-877-952-7477 and support@crisphealth.org	20 hrs
Eligible Professionals and Hospitals In-person Support	Individual support to EPs and EHs via phone or in person	20 hrs
Website technical and content maintenance	Manage and maintain the Maryland Meaningful Use Resource Center https://meaningfuluse.crisphealth.org/	Varies

As Program Year 2016 was the last year that EPs could begin participation in the Medicaid Incentive Program, Maryland Medicaid partnered with MHCC and the REC to launch a new incentive program utilizing MSOs to provide direct assistance to practices to adopt certified EHR and attest to AIU (see IAPD-U, Attachment G). This program contributed to the additional participation of 75 providers.

To assist providers with onboarding to the HIE and optimizing HIT, Medicaid launched a Data Exchange Support Program (DESP). Approved in our FFY 2017 and 2018 IAPD, the DESP program offset the onboarding cost to provider for connecting to the HIE and submitting quality data, from HL7 Admit, Discharge, and Transfer (ADT) messages to full clinical data via Consolidated Document Architecture (CDA).

Through Program Year 2021, Medicaid will focus on assisting providers with achieving Meaningful Use and fully integrating HIT into their workflow.

B.6 **If the State has FQHCs with HRSA HIT/EHR funding, how will those resources and experiences be leveraged by the SMA to encourage EHR adoption?

During our 2011 Environmental Scan, MDH established a strong relationship with the State's FQHCs. Particularly, MDH hoped to work closely with Community Health Integrated Partnership, Inc. (CHIP), a not-for profit 501(c)(3) Health Center Controlled Network (HCCN) under the Health Resources and Services Administration (HRSA), whose mission it was to provide management services to FQHCs. While the overall EHR adoption rate among FQHCs is high, the rate within the CHIP network is exceptionally so.

Drawing from the experiences of HCCN and other FQHCs – who, as a group represent the highest in-provider group adoption rate percentage within the surveyed Medicaid population – acted as a model to help push adoption among other provider groups.

Since CHIP dissolved in 2014, the Mid-Atlantic Association of Community Health Centers (MACHC) has been working to develop its own reporting/data repository (connecting with FQHC EHR systems) for participating FQHCs to support clinical decision-making and reporting. Medicaid hopes to work with MACHC to encourage FQHCs to connect with the HIE to report and exchange clinical data. No FQHCs received HRSA funding after CHIP dissolved.

B.7 **How will the SMA assess and/or provide technical assistance to Medicaid providers around adoption and meaningful use of certified EHR technology?

See Section B.3 and Section B.5 above.

B.8 **How will the SMA assure that populations with unique needs, such as children, are appropriately addressed by the EHR Incentive Program?

Medicaid recognizes the significance of better understanding the needs of providers serving populations with unique needs. Encouraging these providers to adopt and meaningfully use EHRs is essential to improving care for children, elderly, disabled, and chronically ill consumers in the Medicaid program. As part of the environmental scan for Year 1, a contractor convened four focus group discussions with providers to identify EHR adoption and support opportunities of providers treating populations with unique needs. One focus group was dedicated to Early Periodic Screening, Diagnosis, and Treatment (EPSDT) providers. The contractor's report describes its findings and includes recommendations. Medicaid reviewed these recommendations during the development of its activities for EHR technical assistance.

We expect enhanced coordination of care using HIT to improve outcomes for everyone, but vulnerable populations will especially benefit from initiatives such as Maryland Multi-Payor Patient Centered Medical Home (PCMH) Program (MMPP). In the State's PCMH pilot project, Maryland selected 16 quality measures from the Meaningful Use program to determine changes in the health of patients in the program.[46] By wrapping these measures into the incentive payments for the practices participating in PCMH, Maryland encourages their use and makes it easier for providers who participate in PCMH to also benefit from the EHR incentive payments.

After the first year of the PCMH program, the MHCC conducted an evaluation of the 52 participating practices throughout the State.[47] Most respondents determined and managed their caseload by targeting patients with unique needs, such as high blood pressure, frequent emergency department visits, and the uninsured or underinsured. They also cited implementation and improvement of EHR systems as an important aspect of improved care coordination within the practice or when collaborating with other practices. Many of them also used reports generated from the EHR system for MU and NCQA requirements to internally monitor quality metrics and outcomes. Before the MMPP PCMH pilot ended in June of 2016, MHCC released another evaluation with more information about its impact in partnership with IMPAQ International, University of Maryland, and Johns Hopkins University.[48]

B.9 If the State included a description of an HIT-related grant award (or awards) in Section A, to the extent known, how will that grant (or grants) be leveraged for implementing the EHR Incentive program?

Not applicable. Our CHIPRA grant is not HIT-related.

B.10 Does the SMA anticipate a need for new state legislation or changes to existing State laws in order to implement the EHR Incentive Program and/or facilitate a successful EHR Incentive Program? Please describe.

See Section A.12.

[46] MHCC, *Maryland Patient Centered Medical Home: An Assessment of Practices that Achieved Pilot Goals,* 2014. Available at: http://mhcc.maryland.gov/mhcc/pages/plr/plr_pcmh/documents/PCMH_Practice_Evaluation.pdf

[47] MHCC, *Maryland Multi-Payor Patient Centered Medical Home, First Annual Report*, December 2013. Available at http://mhcc.maryland.gov/pcmh/documents/PCMH_EvaluationYear1_Report%20FINAL.pdf

[48] *Evaluation of the Maryland Multi-Payor Patient Centered Medical Home Program, Final Repor,* July 2015. Available at: http://mhcc.maryland.gov/mhcc/pages/apc/apc/documents/MMPP_Evaluation_Final_Report_073115.pdf

Section C: Maryland's Implementation Plan

Figure C.1 – Section C Questions from the CMS State Medicaid HIT Plan (SMHP) Template

Describe the methods OMAP employs and what activities OMAP will undertake to administer and oversee the Medicaid EHR Incentive Program:

1. How will the SMA verify that providers are not sanctioned, are properly licensed/qualified providers?
2. How will the SMA verify whether EPs are hospital-based or not?
3. How will the SMA verify the overall content of provider attestations?
4. How will the SMA communicate to its providers regarding their eligibility, payments, etc?
5. What methodology will the SMA use to calculate patient volume?
6. What data sources will the SMA use to verify patient volume for EPs and acute care hospitals?
7. How will the SMA verify that EPs at FQHCs/RHCs meet the practices predominately requirement?
8. How will the SMA verify adopt, implement or upgrade of certified electronic health record technology by providers?
9. How will the SMA verify meaningful use of certified electronic health record technology for providers' second-year participation?
10. Will the SMA be proposing any changes to the MU definition as permissible per rule-making? If so, please provide details about how the SMA assessed the issue of additional provider reporting and financial burden.
11. How will the SMA verify providers' use of certified electronic health record technology?
12. How will the SMA collect providers' MU data, including the reporting of clinical quality measures? Does the State envision different approaches for the short-term versus the longer-term?
13. How will this data collection and analysis process align with the collection of other clinical quality measures data, such as CHIPRA?
14. What IT, fiscal and communication systems will be used to implement the EHR Incentive Program?
15. What IT systems changes are needed by the SMA to implement the EHR Incentive Program?

Figure C.1 – Section C Questions from the CMS State Medicaid HIT Plan (SMHP) Template (continued)

Introduction

Maryland Medicaid ("Maryland" or "Medicaid") created a process flow for Medicaid EHR Incentive payments that includes Medicaid, eligible professionals, eligible hospitals, the MMIS system, and an EHR provider attestation and enrollment subsystem known as the Electronic Health Record Medicaid Incentive Payment Program (eMIPP). Maryland continues to use the same base system in Year 9 (Stage 3) as Years 1-8. The screenshot for previous years are available in Appendices D, E (a), E (b), and J.

For Year 1, Maryland followed the initial time frame for Design, Development, and Implementation (DDI) submitted with our first version of the State Medicaid Health IT Plan (SMHP): five to six months; resulting in a go-live date around October/November 2011. MDH developed the business requirements for eMIPP and modified an existing contract with Computer Sciences Corporation (CSC) for the build. Because other states already used the eMIPP systems for their Medicaid EHR Incentive Program, Maryland leveraged current technology, customizing the "off the shelf" product to fit the State's needs. Each year additional funding for system modifications is required for capturing and tracking new Meaningful Use (MU) objectives, for potential changes in Registration and Attestation System (R&A) interfaces, for upgrades that may need to be performed for better provider experience, as well as additional monitoring, reporting, and outreach capabilities.

As has been done each year of the SMHP, Medicaid is submitting HITECH sections of the IAPD for the eMIPP implementation costs. In this section, as with the other sections, Medicaid is requesting enhanced 90/10 match for all activities unless otherwise noted. Please see the IAPD for estimated amounts.

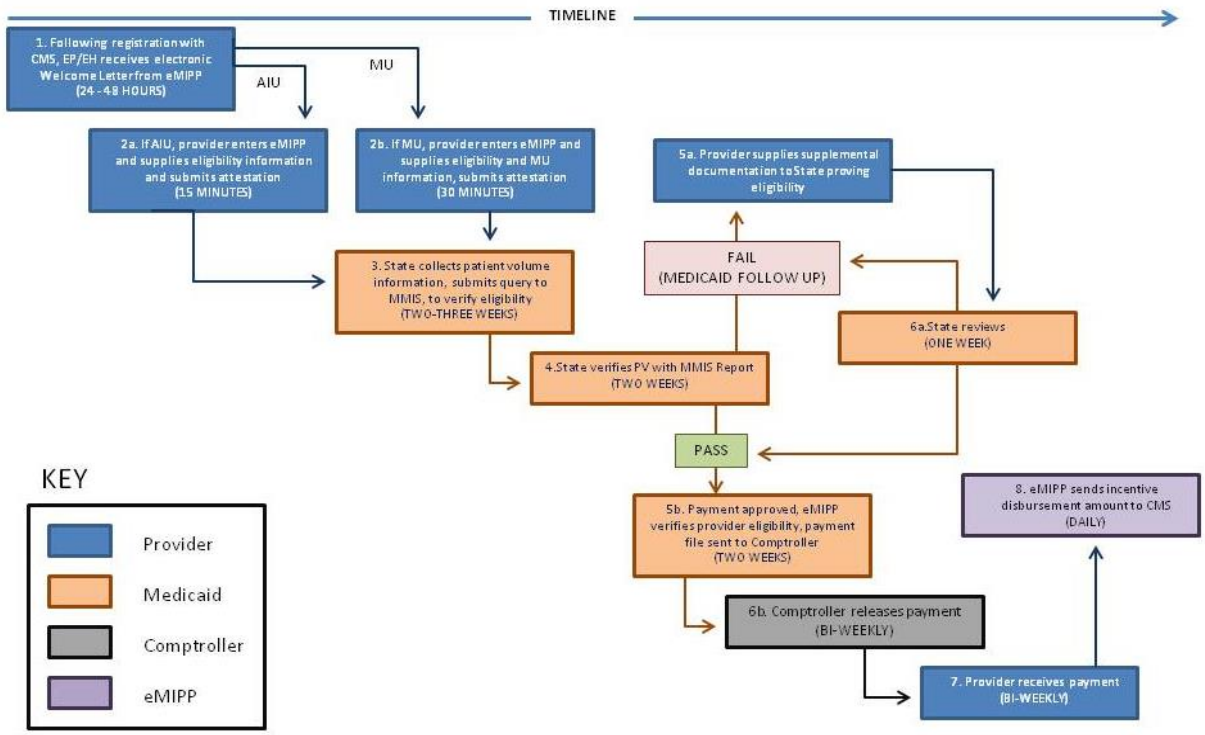
The process flow in Figure C.2 outlines Medicaid's proposed process for administering the Medicaid EHR incentive payment program. In the narrative below, Medicaid describes each step and indicates which steps of the process flow address each CMS template question. The term "providers" is used to refer to both eligible professionals (EPs) and eligible hospitals (EHs) unless otherwise noted.

The registration and attestation process was nearly the same for Years 1-4. For Year 5, Maryland changed its program to accommodate the 2015-2017 Modification Rule. Maryland made changes to its 1) provider and hospital attestation tail; (2) public health objectives; (3) State Level Repository (SLR), eMIPP; (3) standard operating procedures (SOP) for attestation review (pre-payment auditing); and (4) post-payment auditing strategy. These changes are in Appendix S, the 2015-2017 MU Modification Addendum. For Year 6, Maryland changed its SLR again in order to accommodate the final rule that changed the Meaningful Use reporting period to 90 days for all Meaningful Users. For Year 7, Maryland updated its SLR and attestation

process to enable providers to attest for Stage 3 of Meaningful Use, as specified by the 2015 EHR Incentive Programs Final Rule and the 2017 OPPS/ASC final rule.

More details about the modifications can be found in the 2017 Maryland SMHP Addendum (Appendix T). Maryland implemented Stage 3 in February 2018.

Figure C.2 – Maryland EHR Incentive Program Process Flow Diagram



Step 1: Medicaid conducts education and outreach strategy for providers and stakeholders (Response to Questions #4, 14, 19, 21, 26, 27, 29, and 30)

Medicaid is responsible for communicating with providers about enrolling in the Medicaid EHR Incentive Program. We continue to:

- Inform providers of the EHR Incentive Program and the requirements for participation.
- Coordinate with the Regional Extension Center (REC) and the State's Health Information Exchange (HIE), Chesapeake Regional Information System for Our Patients (CRISP), and other stakeholders, such as Management Service Organizations (MSO) and the State's Medical Society, MedChi, to provide technical assistance and information related to EHR adoption, implementation, upgrade (AIU), and Meaningful Use (MU) of EHRs.
- Inform providers about the enrollment process with the CMS Registration and Attestation System (R&A).

- Inform providers that, to be eligible and participate in the Medicaid EHR Incentive Program, they must be participating Medicaid fee-for-service providers. Medicaid cannot conduct proper oversight, or reclaim overpayments, if providers are not enrolled in the fee-for-service (FFS) program. Providers not currently enrolled in Medicaid include some Medicaid managed care providers, some physician assistants, and providers that practice in Federally Qualified Health Centers (FQHC). Although no new providers may begin participating in the Medicaid EHR Incentive Program beginning in Program Year 2017, all providers who have already participated and intend to attest for Meaningful Use, must continue to be actively enrolled in the FFS program. MDH will continue to conduct outreach to encourage providers to sign up for Medicaid if they are not already. The outreach document posted on our website is attached in Appendix K.

In order to communicate information to providers, Medicaid developed a communications strategy, which includes: identifying events, communication channels, materials, content, and audiences. Medicaid released provider transmittals describing Maryland's EHR Incentive Program including program requirements, eligible provider types, the R&A, program oversight, and the application and attestation process. To reach hospitals, Medicaid used the contact information stored in the R&A. Medicaid now uses information stored in the SLR and the REC's distribution list to send newsletters via email to address such topics as:

- Steps to prepare for the Medicaid attestation, including R&A registration, NPI attainment, Medicaid enrollment, and Maryland Medicaid's provider portal registration
- Application for EHR Incentives via Maryland's Registration and Attestation System, eMIPP
- Details on Meaningful Use Objective requirements and exclusions
- Updates to length of EHR reporting period
- A series of electronic newsletters that provide updates on the program.

As part of its communications process and strategy, Medicaid continues to discuss the Medicaid EHR Incentive Program with provider groups, particularly the Managed Care Organization (MCO) Liaisons, The Maryland State Medical Society (MedChi), the Local Health Officers Round Table, Maryland Medicaid Advisory Committee (MMAC) the Maryland Chapter of the American Academy of Pediatrics, and the Hospital Association of Maryland. Medicaid expects these discussions to occur on an as-needed or as-requested basis.

To ensure that all educational materials are accurate and communicate a uniform message, Medicaid will continue to develop and/or approve three types of provider education and outreach materials in coordination with the other bureaus and offices in Medicaid, the MHCC, the REC, CMS, and Office of the National Coordinator (ONC), and others:

1. Materials that explain the Medicaid EHR Incentive Program;

2. Educational and technical assistance materials on the adoption, implementation, upgrade (AIU), and Meaningful Use (MU) of EHRs; and
3. Material about the connection between HIE functionality and MU.

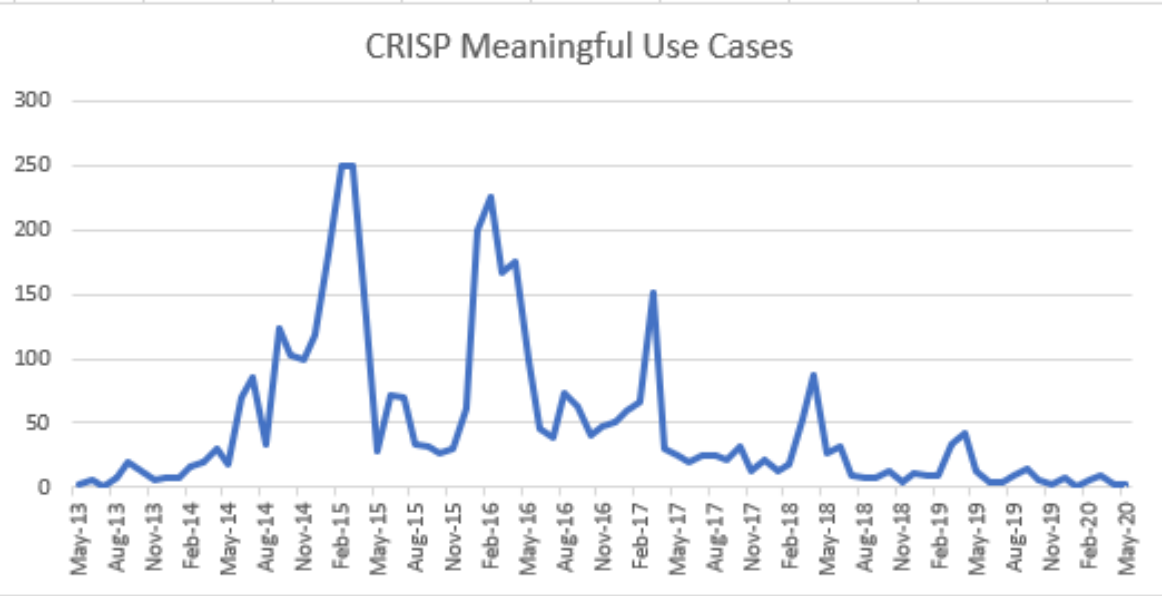
In terms of materials related to EHR adoption, Medicaid works with its partners, particularly the REC and CMS, to gather existing materials and tools that describe model practices and provide background and technical assistance on attesting to AIU and MU. Maryland also works with the REC on provider outreach and engagement through in-person meetings, webcasts, newsletters, and fax blasts. Maryland coordinates with the REC to answer questions from providers on the Medicaid EHR incentive program. Additionally, Medicaid continues to leverage an existing agreement between MHCC and the REC, which is described in more detail in the IAPD.

For Years 1 and 2, Medicaid took a federated approach to providing EHR-Incentive Program information to potentially eligible providers. After an internal review of Program participation and barriers to participation, Medicaid, MHCC, and the REC agreed to work towards creating a central website and call-center to host the major information related to the EHR Incentive Program and act as a triage point for calls or emailed questions.

The REC now serves as a single point of contact for technical support through its virtual Meaningful Use resource center. The REC assists Medicaid with technical support and fielding additional programmatic questions. This approach is both cost-effective and less confusing to the potential EHR applicant. In Year 3, the REC added MU assistance and build-out of the hotline and EHR-specific informational website. Table B.4 describes the education and outreach activities the REC conducted in Year 5. Because this approach has been effective and because the remaining years of the Medicaid EHR Incentive Program are focused on MU and HIE-based interoperability, Medicaid continued to leverage this approach into Year 8, and will continue to leverage this approach into the remainder of the program. Costs for this partnership are described in the IAPD.

The REC provides technical and help-desk support via support cases through its EHR/HIT Help Center ticketing system based on the Salesforce platform. The central Meaningful Use resource center's launched in May of 2014. Figure C.3 depicts the average monthly MU case volume through May 2020. Outreach activities related to the REC program have been decreasing as the number of eligible participants for Meaningful Use declined. As we enter the last year(s) of eligibility for the program, fewer practices qualify and of those, fewer are in need of assistance.

Figure C.3 – Maryland Regional Extension Center (REC) Support Service Monthly MU Case Volume Metrics



Note: The central Meaningful Use Resource Center launched May of 2014

Table C.1 – Monthly Averages for REC Activities

Activity	May 2013 - April 2014	May 2014 - April 2015	May 2015 - April 2016	May 2016 - March 2017	April 2017- May 2018	June 2018- May 2019	June 2019- May 2020
Phone cases	6	47	39	33	15	14	3
Email cases	4	35	28	25	16	10	5
CRISP Meaningful Use Cases	10	83	67	58	31	24	5
Sessions with Website	-	348	388	417	142	118	91
Website Page Views	-	875	880	767	326	268	171

Medicaid will continue to rely on its REC as the Program sunsets, which continues to educate providers about the EHR Incentive Program and how to access REC technical support. Medicaid is collaborating with the REC to perform Medicaid provider outreach about eligibility requirements and registration and participation instructions. The Medicaid EHR Incentive Program web page links to web-based FAQs, created in coordination with the REC, which is

hosted on the REC webpage. Further, Medicaid hosts "how-to" guides for providers registering and attesting through eMIPP, fact sheets, and video tutorials.

Although about 85 percent of Medicaid participants enroll with an MCO through the HealthChoice program, Medicaid did not establish fiscal arrangements with MCOs (response to question 27). However, Medicaid is continuing to think of ways to leverage MCOs to support the EHR Incentive Program. Medicaid has issued instructions for MCO-based provider enrollment and posted it to its website. These instructions, as well as a step-by-step user guide are hosted on our web page.

On October 6, 2015, CMS released the 2015-2017 Modifications and Stage 3 Final Rule. The rule creates a single set of objectives and measures; sets the calendar year as the program year for Eligible Professionals (EPs) and Eligible Hospitals (EHs); limits the MU reporting period to 90 days in 2015 only; and provides a transitional approach to meeting MU. Within a few weeks of the Modification Rule's release, Maryland initiated an enhancement process to our State Level Repository (SLR) to meet the 2015-2017 criteria. Around this time, Maryland temporarily inactivated the production SLR, and then brought it back online in February 2016.

To mitigate confusion about participation in the EHR Incentive Program for Program Year 2015, Medicaid partnered with the REC to create and release a five-issue series of e-newsletters from December 2015 - January 2016 about how to meet each of the Modified Stage 2 objectives and the required supporting documentation. Maryland also updated the Meaningful Use Resource Center hosted by the REC and Medicaid website with changes for 2015-2017. Medicaid created an updated user guide for eMIPP, as well. Webinars and one-on-one assistance were available to assist providers with reporting MU between January and March 2016. Other changes to Maryland's outreach and education strategy are detailed in Appendix S, the 2015-2017 MU Modification Addendum.

A CMS Final Rule[49] released in November 2016 changed the Program Year 2016 and 2017 Meaningful Use reporting period for all EPs and EHs to 90 days, regardless of their participation year. Maryland implemented this change to the SLR so all providers could report Meaningful Use for 90 days starting January 1, 2017.

A CMS Final Rule[50] released in August 2017 lowered thresholds for patient engagement objectives, changed EHR reporting periods to 90 days, and gave providers flexibility to use 2014, 2015 CEHRT for both 2017 and 2018. The rule also overhauled CQM reporting requirements.

[49] 81 FR 79562

[50] 82 FR 37990

Maryland completed Stage 3 enhancements and other changes to align with the 2017 IPPS FR from October 2017 through February 2018.

In August 2018, CMS released a Final Rule[51] which requires EPs and EHs to use 2015 Edition CEHRT for Program Years 2019-2021. The rule also reduced the number of Meaningful Use Objectives from 10 Objectives to 8 for Program Year 2019, and eliminated a few CQMs for Program Year 2020. However, the Meaningful Use reporting period remained a continuous 90 day reporting period for Program Years 2019 and 2020. To comply with these changes, Maryland conducted eMIPP enhancements from October 2018 through February 2019.

Step 2: Providers will enroll in the Registration and Attestation System (R&A) (Response to Questions #1, 16, 17, 30)

Before the provider can apply to participate in the Program, the provider must enroll in the R&A. The R&A ensures that there are no duplicate or improper payments resulting from providers switching among state Medicaid EHR Incentive Programs or between Medicaid and Medicare (applies only to eligible professionals, hospitals can receive both Medicaid and Medicare incentive payments).

The eMIPP system serves as the interface between the R&A and Maryland's Medicaid Management Information System (MMIS) and acts as the registration and attestation portal for Medicaid providers applying to Maryland's Medicaid EHR Incentive Program. Medicaid tested the interface with CMS's R&A in the second CMS group test (group 4) in September 2011. eMIPP also interfaces with other sources of provider information, including the Medicare Exclusions Database and the ONC's Certified Health IT Product List (CHPL), which will help to identify providers who are ineligible due to exclusions or sanctions and to verify certified EHR technology.

Medicaid continues to operate under the understanding that the R&A will collect from providers the information listed below:

- National Provider Identifier (NPI): where the source system is National Plan and Provider Enumeration System (NPPES)
- CMS Certification Number (CCN): Provider number (for hospitals)
- Payee NPI: National Provider Identifier of the entity receiving payment
- Payee Taxpayor Identification Number (TIN): TIN that is to be used for payment
- Personal TIN: Personal Taxpayor Identification Number
- Record Number: A unique identifier for each record on the interface file

[51] 83 FR 41144

- Program Option: Choice of incentive program in which to participate
    - Valid values include Medicare or Medicaid
    - For hospitals, a selection of Dually Eligible will be available
- State: The selected state for Medicaid participation
- Provider Type: Differentiates types of providers eligible to participate in the Program
- Registration ID: Unique number created by the R&A and used by the State to confirm the provider's identity for registration
- Providers will indicate whether they wish to assign their incentive payment (and, if so, to whom) in the R&A
- Email address of applicant

Step 3: The R&A will provide information to Medicaid through eMIPP interfaces about providers who have applied for the incentive program (Response to Questions #14, 18, 20, 29)

The provider applicant begins the application process by entering information at the CMS R&A, which then sends the provider's information to the State in a daily batch file. Once the file of Maryland applicants is received by the R&A, it is loaded into the State's R&A, eMIPP. eMIPP is an application that interfaces with the MMIS Enterprise architecture. This application provides for a user-interface web portal. The web portal interfaces with Maryland's MMIS system to validate provider information received from the R&A and insures the integrity of the payment process.

Once the provider is validated as an enrolled provider via eMIPP's interface with the MMIS, the eMIPP system emails the provider to inform them that they may visit eMIPP, to begin registration at the State level.

To help inform providers of the additional registration steps, Medicaid EHR Incentive Program analysts reach out to providers. Until the implementation of Maryland's electronic Provider Revalidation and Enrollment Portal (ePREP) in December 2017, the process of enrolling providers through eMedicaid and directing providers who need additional assistance to Provider Relations representatives succeeded in preparing MCO-based providers for enrollment in the Medicaid EHR Incentive Program. Medicaid also made changes so that Federally Qualified Health Center (FQHC), Outpatient Mental Health Clinic (OMHC), and Local Health Department- (LHD) based providers are allowed to enroll through eMedicaid. Providers who only participate in Medicaid as an MCO network provider are informed that, although they must register as a Medicaid provider to participate, they are not required to see FFS patients. Since ePREP's implementation for EHR Incentive Program eligible providers, analysts adapted the process to enroll providers through ePREP and direct providers who need additional

assistance to the ePREP call center. All providers are able to use ePREP for any provider enrollment, re-enrollment, revalidation, information updates and demographic changes.

In addition to verifying participation eligibility through its interfaces with the CMS R&A and Maryland's MMIS, eMIPP is instrumental in most other aspects of processing provider applications for the Program. Medicaid utilizes eMIPP to:

- Verify components of the application;
- Help to determine eligibility;
- Accept applicant attestations;
- Accept reported Meaningful Use information;
- Accept confirmation of applications and digital signature;
- Determine payment amounts; and
- Send message to MMIS to make payment (including confirmation).[52]

An additional benefit of eMIPP is its portability/modularity: with Maryland engaged in MMIS modular upgrades, a portable system will allow for a smooth transition between the existing and future MMIS.

Step 4: eMIPP runs edits on info from R&A to determine which providers to contact for the application process (Response to Questions #1, 15, 16, 29)

Not all applications transferred to eMIPP by the R&A will meet Medicaid's requirements. eMIPP's initial edit is based on an active provider batch file sent from MMIS to eMIPP. This file contains all active, non-sanctioned, provider-type eligible professionals and hospitals. Providers who do not meet program requirements are unable to access eMIPP. Providers who are not allowed access to eMIPP can send messages to a Department-designated email address to inquire about their difficulties accessing eMIPP. This email address is included in the initial "Welcome Letter" sent to the provider from Medicaid upon successful enrollment with CMS's R&A.

Other providers may be valid provider types for participation in the EHR Incentive Program, but may not initially meet other Program requirements. These applicants will be in a "pending" state. The pending process allows the State to notify a provider that additional steps are required before registration can occur at the State. Some may be denied, and some applicants may be referred back to the R&A to correct previously submitted information. Information on Medicaid's website provides a list of federal and state-based program participation requirements.

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payments to the provider's designated Tax Identification Number (TIN) or SSN, if applicable.

Upon receiving information from the R&A, eMIPP performs format edits (*e.g.,* Tax ID is numeric and nine digits, CMS Certification Number is six digits, State code is MD, program type is Medicaid/Medicare, duplicate checking) in addition to determining whether the provider is on the active MMIS provider file.

All Eligible Providers (EPs) and Eligible Hospitals (EHs) will enter eMIPP using their eMedicaid username and password ("logon ID"). eMedicaid is Medicaid's electronic web-service portal for reviewing such information as claims and remittance advice details. If the enrolled provider has a valid login ID and provider type, eMIPP will perform an automated check based on the NPI number associated with the logon ID or any service locations associated with that login ID to find a match on a R&A record. If a match is found, the provider has been verified and will begin the application process, but if no match is found then the provider will be notified that there is not a match with a record from the R&A and that the provider should contact Medicaid.

If a provider does not pass the eMIPP edits, the record is suspended in eMIPP and Medicaid:

- Refers providers back to the R&A for errors on data provided at the R&A (*e.g*., incorrect Payee Tax-ID);
- Refers non-participating Medicaid providers to Provider Enrollment for assistance with program enrollment;
- Resolves discrepancies between the provider type entered at the R&A and the provider type stored in the MMIS, *i.e.,* non-EHR eligible provider type in MMIS; and
- Suspends and refers applicants sent from the R&A with exclusions for investigation by the Program Integrity Unit at Medicaid.

If edits are passed, then the provider proceeds to Step 5. If edits are not passed, Medicaid contacts the provider explaining the reason for the suspension (*e.g.,* provider not enrolled, etc.). Medicaid works with providers whose applications have been suspended to make every effort to resolve inconsistencies and errors before denying the application.

After the provider passes the eMIPP edits and checks in Step 4 and after the 24 hour verification process is complete, the applicants are able to return to the eMIPP portal to attest.

Step 5: Providers submit application and attestation form in eMIPP and eMIPP concurrently runs system edits (Response to Questions #1 – 8, 11, 14, 25, 26, 28, and 30)

Providers may obtain information about the application process via the Medicaid website and the REC. The Medicaid website hosts a User Guide on the login and application steps. The User Guide provides the basic scenarios available to the provider. Each scenario presents its own workflow in the eMIPP application process, and Maryland has ensured that every combination is explained to the provider.

eMIPP's provider interface gathers complete information required for a successful application in a manner that reduces burden for the applicant. An eMIPP user guide and "hover bubbles" within the application provide additional instructions regarding the information that the provider applicant is being asked to provide or confirm. Appendix D shows the provider interface slides but does not show additional informational "hover bubbles" or "question box icons" to provide real-time assistance for providers, which are a feature of the product. For example, there will be a hover button over the patient volume questions to describe the requirement and how to complete this section. See Appendix D for the eMIPP provider application and attestation screens.

eMIPP captures the information submitted during the application and attestation process.

The system applies real-time edits to verify that values entered are valid and that required fields are completed. Pop-up windows appear to warn providers if they enter invalid values in a field or do not complete a required field. The eMIPP web-based form allows providers to save a partially completed application, exit the system, and return later to complete the form. The following steps outline the information that providers will need to enter to apply and attest.

1. Providers are asked to first enter their eMedicaid username and password and their R&A Registration ID number. Once this has been entered, the provider encounters a screen with data obtained from R&A. Before moving forward, the provider is asked to verify information obtained from the R&A including the National Provider Identifier, CMS Certification Number (for hospitals), legal name, business name, address, phone number, personal tax ID, payee tax ID, R&A confirmation number, and email address (if provided).

2. If information is not confirmed, the applicant will be directed to the R&A to fix the information. The eMIPP record will be stored as is in the eMIPP system until the provider makes a change to their R&A file with CMS. Otherwise, the provider will be unable to proceed to next steps. Once the data is corrected in the R&A, the provider will be able to re-enter eMIPP to resume the application process, normally within two days. The exact time depends on the CMS R&A processing.

3. Applicant may be required to indicate type of individual provider or type of hospital: physician, dentist, midwife, nurse practitioner, physician assistants practicing in FQHCs/RHCs "so led" by an FQHC/RHC, and pediatrician (to determine required volume threshold) for eligible professionals. Generally, eMIPP uses the provider type distinction at this stage only if the patient volume threshold or calculation method is unique. For instance, the system will automatically distinguish between an EP and an EH at Step 1, but the system will need the EP to declare whether they are a physician or a pediatrician

or a provider who practices at an FQHC/RHC (see Step 5). The latter provider types have unique patient volume requirements or methodologies.

4. Providers are asked if they are a "hospital-based provider." A "hospital-based provider" is an eligible provider (EP) who furnishes 90 percent or more of their covered professional services in either the inpatient (Place of Service 21) or emergency department (Place of Service 23) of a hospital. The percentage determination is made based on the total number of paid Medicaid Fee for Service (FFS) or Managed Care encounters across locations during the full calendar year preceding the payment year.

   According to Stage 2 Final Rule § 495.5, if the EP can demonstrate that the EP funds the acquisition, implementation, and maintenance of Certified EHR Technology, including supporting hardware and any interfaces necessary to meet Meaningful Use (MU) without reimbursement from an eligible hospital or Critical Access Hospital (CAH); and uses such Certified EHR Technology (CEHRT) in the inpatient or emergency department of a hospital (instead of the hospital's CEHRT), they would be deemed non-hospital based. Medicaid EPs practicing predominantly in an FQHC or rural health clinic (RHC) are not subject to the hospital-based exclusion.

   If the threshold is not reached, then the applicant is directed to proceed to the next question. If Medicaid's records show that hospital encounters account for 88 percent or more of a provider's Medicaid encounters for their chosen attestation period, then data is pulled for the entire year to determine if the EP is hospital-based. If the provider's total Medicaid encounters for the year preceding the attestation year are at least 88 percent hospital-based, Medicaid requests supporting documentation, including place of service information.

5. Each applicant is asked if s/he "practices predominantly" in an FQHC or RHC. An EP "practices predominantly" at an FQHC or RHC when over 50 percent of the provider's total patient encounters over a period of 6 months in the Calendar Year preceding their attestation date occurred at an FQHC or RHC. [53] If the applicant responds, "Yes" then the applicant will complete the patient volume table including, numerator (consisting of Medicaid and "needy individuals") and denominator. A "needy individual" is anyone who meets any of the following criteria: (1) they are receiving medical assistance from Medicaid or the Children's Health Insurance Program (CHIP); (2) they are furnished

[53] According to 42 CFR 495.302, "practices predominantly means an EP for whom the clinical location for over 50 percent of his or her total patient encounters over a period of 6 months in the most recent calendar year occurs at a federally qualified health center or rural health clinic."

uncompensated care by the provider; or (3) they are furnished services at either no cost or reduced cost based on a sliding fee scale determined by an individual's ability to pay.

If an applicant does not practice predominantly in an FQHC or did not meet the 30 percent patient volume requirement based on FQHC entry, provider will complete a separate patient volume table including numerator (Medicaid encounters only) and denominator). The system will calculate Medicaid patient volume (including if a provider practices in an FQHC and/or other locations) and pend applications for review and approval.

6. Providers are asked to report their Medicaid and total encounters for the calendar year preceding the program year for their selected reporting period in eMIPP.

Eligible Professional Patient Volume

EPs are asked to select how s/he will calculate their patient volume when completing their application in eMIPP. Physicians, dentists, certified nurse midwives, nurse practitioners, and physician assistants must meet a 30 percent patient volume threshold, further clarified below. Maryland allows providers to count Fee-for-Service (FFS) patients and Managed Care patient encounters towards their patient volume. Further, applicants can choose between calculating their patient volume through either a group proxy methodology or by using their own individual encounters. Maryland verifies patient volume through an encounter and claims query within MMIS.

Although Medicaid leverages a separate database to obtain provider patient volume from MMIS, providers may submit documentation that supports their reported encounter numbers by email, fax, sFTP, or mail. Beginning in Year 2, Medicaid augmented the eMIPP system to include an upload documentation feature.

Pediatricians must meet a 20 percent Medicaid patient volume threshold (in exchange for 2/3 the amount in incentives). All pediatricians enrolled in Medicaid carry a specialty code of 016 in MMIS. Providers submit proof of their specialty in pediatrics such as documentation of three years of experience, completion of a fellowship, or American Board of Pediatrics certification, in order to be enrolled as a pediatrician with Maryland Medicaid. To be considered a pediatrician for the EHR Incentive Program, Medicaid requires these providers to submit the required documentation to Provider Enrollment before their attestations are reviewed. Nurse practitioners do not have pediatric specialty designations with Medicaid, so they can only attest as pediatricians if they use pediatric practice group patient volume.

Before the Stage 2 Final Rule, EPs not practicing predominantly in an FQHC or RHC could not include CHIP patients in their Medicaid patient volume calculations. Maryland now has a CHIP Medicaid Expansion program. Children enrolled in this program receive Medicaid services and Medicaid receives enhanced match for providing this coverage. Before 2013, Medicaid used the CMS-approved formula for removing encounters from these patients from patient volume calculations for EPs not practicing predominantly in an FQHC or RHC. Because providers could not identify CHIP beneficiaries, Medicaid had calculated the proportion of encounters reimbursed by CMS at the enhanced CHIP rate, which is described in Appendix E. Medicaid used this proportion to make sure that EPs not practicing predominantly in an FQHC or RHC did not qualify using these encounters. Effective January 2013, EPs attesting for Program Year 2013 and later can include CHIP encounters in their patient volume and are not subject to the exclusion calculation described above. Further, as described above, zero-pay encounters/claims are also valid encounters for the EHR Incentive Program.

When reporting Medicaid encounters in the patient volume numerator, applicants report in-state Medicaid as well as out-of-state Medicaid encounters. Medicaid validates in-state patient volume using Maryland MMIS claim and encounter volume data.

Applicants are instructed that the encounters must meet the CMS definition of an encounter in the Stage 2 final rule (discussed below) in order to be included as part of the patient volume calculation. For EPs, patient volume is based on any representative, continuous 90-day period in the calendar year preceding the Program Year. Medicaid does not allow providers to select their patient volume period from the previous 12 months. The rationale behind this requirement is that timely billing and data lags with encounter reporting would make it very difficult for Medicaid to validate patient volume within that time frame. Further, Medicaid will not allow the use of patient panels because of the difficulty associated with verifying eligibility.

Medicaid works with practices that receive global payments from Medicaid MCOs to list out visits and associate them with global payments in order to ensure provider eligibility. These cases notwithstanding, Medicaid follows the below formula for establishing patient volume:

> {[Total (Medicaid managed care) encounters in a 90 day period] + [Unduplicated (Medicaid) fee for service encounters in the same 90-day period]/[Total patient encounters] + [All unduplicated encounters in that same 90-day period]} * 100

If an EP practices predominately in a FQHC, their patient volume is based on "needy individuals." To calculate patient volume using the "needy individual" criteria, providers use the formula below.

> {[Total ("needy individual") patients encounters in any representative continuous 90-day period in the preceding calendar year] + [Unduplicated ("needy individual") encounters in the same 90-day period]/[Total patients in that same 90-day period,]} * 100

Individual Patient Volume (EPs)

EPs use the formula above to calculate their patient volume for a selected reporting period in the year preceding the Program Year. EPs attesting with their individual patient volume (not by group proxy) only include encounters attributed to themselves in the calculation. EPs attesting with their individual patient volume who work at multiple locations do not need to calculate their encounters across all of their sites of practice. However, at least one of the locations equipped with certified EHR technology (CEHRT) must be included in the patient volume calculation.

Group Proxy Patient Volume (EPs)

Maryland allows clinics and group practices to use the practice or clinic Medicaid patient volume (or needy individual patient volume, insofar as it applies) and apply it to all EPs in their practice under three conditions: (1) the clinic or group practice's patient volume is appropriate as a patient volume methodology calculation for the EP (e.g., it would not be appropriate for EPs who only see Medicare, commercial, or self-pay patients); (2) there is an auditable data source to support the clinic's patient volume determination; and (3) all members of the group attesting for the same Program Year use the same methodology to report their patient volume (i.e., clinics or groups could not have one EP choose to count his or her clinic or group patient volume for his or her individual patient volume, while the others use the group- or clinic-level data).

The patient volume formula for EPs using the group proxy method is the same as the one used to calculate individual encounters. EPs reporting patient encounters by group proxy use the formula to calculate the Medicaid patient volume based on the entire group's patient encounters during their selected reporting period.

When using the group proxy method, EPs are required to enter the Group NPI (for verification purposes) to which their reported encounters are attributed. EPs reporting encounters by group proxy are only able to limit reported encounters by Group NPI. If a provider is utilizing group proxy, all encounters billed under the Group NPI must be

included in the group's reported encounters, aside from hospital-based encounters. If a Group NPI covers multiple locations, the group is not able to limit their encounters by location. Some organizations in Maryland prefer to report patient encounters at the tax ID level, across multiple group NPIs, which is permissible as long as all encounters attributed to that tax ID are reported.

For pediatric groups, Medicaid will consider the group a "pediatrician group" if the group is designated as a pediatrician group based on their specialty code and if all physicians within the practice are designated as pediatricians in MMIS. We assume Nurse Practitioners (NPs) and other eligible providers are pediatricians for the purposes of the Program if they participate in a practice that is designated as a pediatrics group and has supervising physicians that are pediatricians. Maryland Medicaid is allowing this option because we have no specialization field in our MMIS to designate a NP as a pediatrician or pediatrics-based provider type.

For groups who include out-of-state Medicaid encounters in their patient volume calculation, at least one provider in the group must have at least one Maryland Medicaid encounter during the patient encounter reporting period. All providers in the group must see Medicaid patients (in or out-of-state) to meet eligibility requirements.

Eligible Hospital Patient Volume

Medicaid calculates patient volume and payments for all Acute Care Hospitals (including critical access hospitals) using information submitted by applying hospitals and the Health Services Cost Review Commission (HSCRC) Hospital Inpatient Discharge Data and the Disclosure of Hospital Financial and Statistical Information. Acute care hospitals' patient volume is based off of the previous fiscal year. The Medicaid patient volume methodology is shown below and includes only inpatient and emergency room discharges (Places of Service 21 and 23):

Medicaid Discharges/ Total discharges = % Medicaid Patient

Volume (to qualify must be 10 percent; no threshold for Children's Hospitals)

7. Only hospitals that are dually eligible for Medicare and Medicaid were able to attest to Meaningful Use in the first year of the program. Hospitals that meet Meaningful Use criteria under Medicare will be deemed meaningful users under Medicaid. The State will verify hospital Medicaid eligibility before payment.

8. Applicant must complete remaining attestation items including:

- Confirmation of voluntarily assigning payment to the entity indicated on the info from the R&A (payee TIN). According to the Final Rule, an eligible professional may reassign their payments to an employer or entity with which the eligible professional has a valid contractual arrangement allowing the entity to bill for the professional's services. Medicaid safeguards that such reassignment occurs by matching the NPI number of the EP enrolled at the R&A with all other viable payee IDs, including social security numbers. These relationships are established within MMIS through the legacy Medical Assistance number and will be uploaded to eMIPP nightly via batch file transfer and overwrite. This means that all current NPI-to-payee relationships will be stored and then recreated in eMIPP nightly to allow providers registering for the EHR Incentive Program to choose the most up-to-date payee information on file with the State.
- Confirmation that foregoing information is true, accurate, and complete. The application will reinforce that the applicant is technically the professional or hospital, not the preparer, and the applicant will be held responsible for inaccurate or false information and overpayments.

9. Program Year 2016 was the last year for providers to receive payment for their first year of participation with the EHR Incentive Program by demonstrating AIU. For providers participating in their second year and beyond (Meaningful Use [MU]), additional slides are added to the attestation. The MU slides provide for the input and storage of the following information:

Stage 1 (Prior to October 2015)

In Years 1-4, there were a total of 23 MU objectives for EPs. To qualify for an incentive payment, EP had to meet 18 of these 23 objectives, including:

- Thirteen (13) required core objectives; and
- Five (5) menu set objectives chosen from a list of 10, including one of two public health objectives.

Beginning in 2014, meeting an exclusion for a menu set objective did not count towards the number of menu set objectives that must be satisfied to meet Meaningful Use. Providers exempt from both public health objectives were still required to contact Medicaid and request an exemption, even though the exemption did not count toward their completed menu set objectives.

For EHs and critical access hospitals (CAH), there were a total of 23 MU objectives. To qualify for an incentive payment, EHs and CAHs had to meet 18 of these 23 objectives, including:

- Thirteen (13) required core objectives; and
- Five (5) menu set objectives that may be chosen from a list of 10.

Beginning in 2014, meeting an exclusion for a menu set objective does not count towards the number of menu set objectives that must be satisfied to meet MU.

Stage 2 (Prior to October 2015)

Medicaid began implementing all required changes to Meaningful Use enacted in the Final Rule for Stage 2. Under the Stage 2 Final Rule, there were a total of 23 MU objectives for EPs. To qualify for an incentive payment, EPs had to meet 20 of these 23 objectives, including:

- Seventeen (17) required core objectives; and
- Three (3) menu set objectives that may be chosen from a list of 6

For EHs and CAH there were a total of 22 MU objectives. To qualify for an incentive payment, EHs and CAHs had to meet 19 of these 22 objectives, including:

- Sixteen (16) required core objectives; and
- Three (3) menu set objectives that may be chosen from a list of 6; or a total of 19 core objectives.

Modified Stage 2 (Effective October 2015)

Under the Meaningful Use 2015-17 modifications Final Rule released in October 2015, there are a total of 10 Meaningful Use objectives for EPs and 9 for EHs. The changes Maryland made in its SLR to accommodate this change are detailed in the 2015 - 2017 MU Modification Addendum.

To qualify for an incentive payment, all of the objectives, including one public health objective, must be met. For Program Years 2015 and 2016, providers scheduled to meet Stage 1 are able to claim alternate exclusions or meet lower thresholds for certain objective measures. No alternate exclusions are available to EPs or EHs in Stage 2 in Program Years 2015-17. Providers must provide documentation for every exclusion they claim.

In 2015, EPs scheduled for Stage 1 are required to report for one public health measure, and EHs are required to report for two measures. EPs scheduled for Stage 1 in Program Year 2016 and EPs scheduled for Stage 2 in Program Years 2015-17 are required to report for two, and EHs are required to report for three public health reporting measures. For both EPs and EHs, claiming an exclusion for a public health measure does not count towards meeting the public health objective. Providers must submit requests to Maryland in order to claim exclusions for public health measures from which they are exempt.

To assist providers with registering for and submitting public health data, Maryland launched an improved public health web tool to facilitate onboarding, workflow management, and active engagement status validation in 2016. Providers create accounts and register to initiate active engagement with Maryland's public health registries. The web tool enables providers to log in, check their status, and print documentation of active engagement. Maryland Medicaid staff will be able to query the web-tool to validate public health submission status.

Stage 3 (Effective February 2018)

The Stage 3 Final Rule, effective December 2015, outlines 8 required Meaningful Use Objectives for EPs and EHs. Providers were able to start attesting to Stage 3 of Meaningful Use in Program Year 2017. The enhancements made to Maryland's SLR to reflect Stage 3 requirements are outlined in the 2015 - 2017 MU Modification Addendum.

To receive payment for demonstration of Stage 3 Meaningful Use, EPs and EHs must satisfy requirements for all MU objectives, including one public health objective. No alternate exclusions are available to EPs or EHs in Stage 3. Stage 3 does allow for some flexibility within certain measures, however, which enables providers to select measures most relevant to their own practice. These measures and flexibility specifications are as follows:

- Coordination of Care through Patient Engagement-Providers must attest to all three measures, and exceed the threshold for two or more in order to satisfy requirements for this objective.
- Health Information Exchange-Providers must attest to all three measures, and exceed the threshold for two or more in order to satisfy requirements for this objective.
- Public Health Reporting-EPs must report on 2 measures, and EHs must report on 4 measures. For EPs and EHs, claiming an exclusion does not count towards meeting the public health objective.

Providers attesting to Stage 3 are still able to use the State's public health web tool to register for active engagement with Maryland's public health registries or claim exclusions. Maryland Medicaid staff query the web tool for validation of providers' public health registration status.

Clinical Quality Measure (CQM) Reporting

In addition to the MU objectives, providers will also be required to provide Clinical Quality Measure (CQM) data. In Program Year 2017, all providers regardless of their stage of Meaningful Use will report CQMs by attestation, or electronically if they have access to CAliPR.

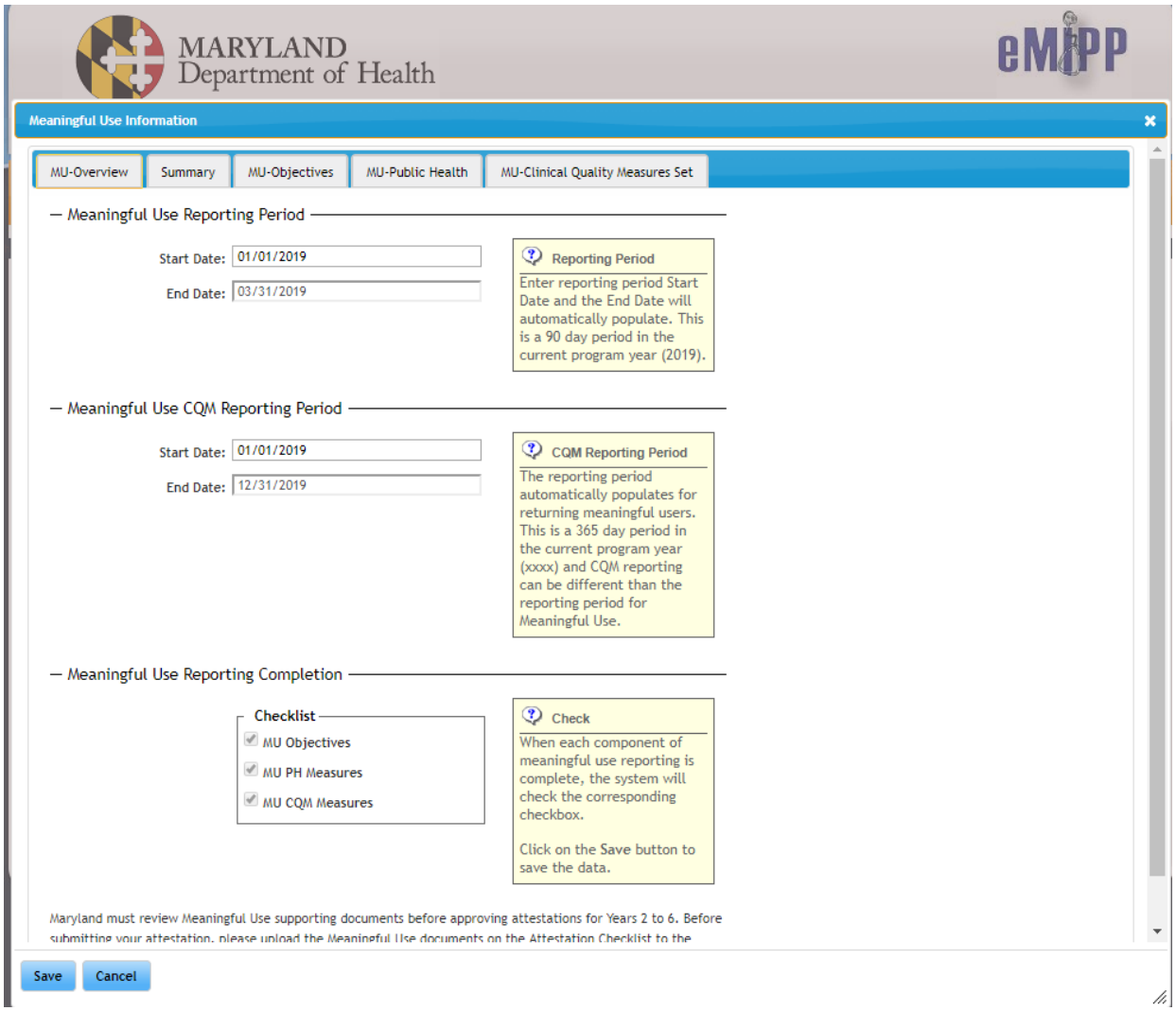
- EPs must report on 6 out of 53 total CQMs, across any key health care policy domains
- EHs must report on 4 out of 16 total CQMs, across any key health care policy domains if reporting electronically, and 16 out of 16 total CQMs if reporting via attestation

For Program Year 2017, providers' CQM reporting period could be different from their chosen 90 day Meaningful Use reporting period. EPs were able to select any continuous 90 day reporting period, regardless of whether they reported electronically or via attestation. EHs were able to report for any continuous 90 day reporting period if reporting electronically, and a full calendar year if reporting via attestation. If the EH was a first time meaningful user reporting via attestation, they could select any continuous 90 day reporting period. Dually eligible EHs filled out all MU and CQM information in Quality Net (QNet) for Program Year 2017. Only seven EHs in Maryland were eligible to participate from Program Year 2017. Therefore, Maryland will ask that EHs send MU and CQM summary reports from QNet as part of the pre-payment review process (as well as the MU and CQM reports generated from their EHR), rather than build the C5 interface, for Program Years 2018 and beyond.

In Program Year 2019, first-time EPs (i.e. first time Meaningful Users) will be required to submit 6 CQMs either electronically or through attestation for any continuous 90-day reporting period. Returning EPs will be expected to report 6 CQMs either electronically or through attestation for a full calendar year. However, EHs will report 16 CQMs if reporting via attestation and 4, if reporting electronically. If an EH chooses to attest via attestation, they will have to report for a full calendar year. If an EH attests electronically, they will select any 90-day reporting period.

Figure C.4 identifies the overview MU and CQM screen for provider input for an EP scheduled for 2019.

Figure C.4 – eMIPP Meaningful Use Overview Screen for Eligible Providers



eMIPP will present the entire application to the applicant for final confirmation. At this point, the system will allow changes. If changes are made, eMIPP will perform edits based on the changes and process the application accordingly. If the application is error free, then a prompt appears for the applicant to "FINISH" and to indicate that no further changes will be permitted. eMIPP will also allow applicants to download their Meaningful Use Attestation Report, displaying all the information they entered into the system. This report is also automatically uploaded as an attachment to the eMIPP system. Applicants will need to contact Medicaid if they wish to make additional changes after the application has been submitted. The application and attestation form will require both the applicant and preparer (if different) to digitally sign the form and the preparer will need to disclose their

relationship with the provider. Medicaid will require hospital applicants to attest that the applicant understands the program and is authorized to attest to the information.

Step 6: Medicaid reviews pended provider application and attestation and determines eligibility or addresses reasons for suspension (Response to Questions 22 and 28)

The eMIPP system has a series of system features to help applicants submit a complete and accurate application. These tools supply definitions and guidance on the application questions and warnings will flash for incomplete submissions and responses that will terminate the application process. The eMIPP vendor will modify existing user guides based on Maryland's system to provide additional instructions.

Once the provider has completed the application and attestation, eMIPP provides a state-level approval attestation module that allows certain Medicaid staff members access to provider attestation information. Providers will be able to enter eMIPP to check on the status of their attestation. Once Medicaid staff members open an attestation to review, the System changes the provider's status from "Provider Submission Complete" to "Reviewer Initiated." Based on the level of security clearance afforded to individuals at the State, a provider's application can be reviewed for accuracy, given clearance for payment (resulting in an information exchange with the R&A), or suspended.

In the majority of cases, Medicaid will work directly with the applicant to resolve any issues with an attestation before denying an application. After working with the provider to resolve any issues, and the information entered during attestation does not match with State information, the State will "reject" the application. This allows the provider to re-enter eMIPP and modify any issues the State identified and resolved with the provider.

Medicaid reviews 100 percent of the EP and EH applications based on information provided in the applications prior to making a payment. Medicaid verifies reported patient encounters through an Access database that directly queries MMIS. Further, because eMIPP maintains a directory of provider information, Medicaid will periodically review this information to assure data integrity.

The system allows Medicaid to sort by, and/or generate reports, on provider type, Adoption, Implementation, Upgrade (AIU), or Meaningful Use (MU), patient volume, and other information fields submitted in eMIPP so that it can prioritize reviews. eMIPP is designed to be interactive, so that Medicaid staff can update eMIPP with their determinations after reviewing the application and enter notes.

Before going live, Medicaid developed a review process/workflow that identifies staffing and follows guidance provided by CMS on auditing elements (pre- versus post-payment), and how approval will be communicated to providers. The auditing requirements are specified as part of the agreement with the Division of Policy and Compliance within the Office of Provider Services that will perform these functions. In 2015, Medicaid entered into contract with a Meaningful Use auditing vendor, Myers & Stauffer, who prepared an audit strategy that accommodates the requirements for Modified Stage 2 in 2015 through 2018; and Stage 3 for Program Year 2019 and beyond. Under this contract, staff will use new reasonableness tests and consider additional risk factors, based on national trends in audit findings, starting in 2016.

Starting February 1, 2016, EPs, as well as Medicaid-only and children's hospitals, submitting MU attestations are required to upload to eMIPP a copy of the EHR system-generated report showing the performance metrics used in the attestation, a copy of the Security Risk Assessment, screenshots to substantiate "Yes/No" Clinical Decision Support measures, and supporting documentation for exclusions. Maryland also requires providers to supply documentation showing they met the Public Health Objective during pre-payment review. Maryland encourages providers to upload the active engagement letters from the public health web tool to eMIPP. Staff use a pre-payment checklist to verify these items during pre-payment review, and any discrepancies will prompt follow-up requests for additional information. More details about these strategies are detailed in Section D and in Appendix S, the 2015-2017 MU Modification Addendum.

Medicaid follows up with providers when they require clarification, but eMIPP has been designed to reduce the need for manual intervention, since it allows Medicaid to assure that all fields are completed with acceptable values before the application/attestation form is finalized. Review for some eligible providers/hospitals may take longer than others due to difficulties associated with their attestation. For instance, the State anticipates that out-of-state provider patient volume verification, group patient volumes, and very large MCO-based patient volumes whose 90 day period is less than 6 months old, will require additional time by State staff to verify eligibility.

All applications are "pended" in eMIPP in order for a designated staff member to double-check all eligibility requirements and then allow payments. In most cases, this is a "sign off" process, since patient volume has already been checked through an MMIS claims and encounter query.

Once Medicaid has reviewed the application and gathered additional information, the provider will either receive notification that his/her application has been approved and proceed to step 10 or move to step 7 in the case of a denial.

Step 7: Medicaid denies provider's application (Response to Questions #1, 20, 22)

Once the review is complete, Medicaid will send email correspondence to providers who do not appear to be eligible for the Medicaid EHR Incentive Program indicating a "preliminary finding" of not eligible. This message will describe the reason why the provider does not seem eligible and will then request additional information. Providers will have up to two weeks to respond to this preliminary finding. If a provider does not respond to this correspondence or is otherwise determined not eligible, then Medicaid will reject the application. This triggers the release of a system-generated final determination letter and information about the appeal process.

Medicaid's goal is to review applications and any additional information, and make a decision about the applicant's eligibility within three weeks of receiving an application. Resulting from process improvements, Medicaid is now able to review attestations in an average of ten business days. However, the process of working with providers on suspended applications may take longer. Providers have the option to appeal a "not eligible" determination. The Department will handle such appeals the same way that it currently addresses provider appeals on other matters as defined in COMAR 10.01.03.

Overview of Appeals Process

According to COMAR 10.01.03, an individual may request an appeal hearing by giving a clear statement, in writing, to any financial agent of the Division of Reimbursements of the Department of Health that he/she desires an opportunity to present for review their grievance. For the EHR Incentive Program, providers or their representatives will be able to submit this letter after Medicaid has notified them of its official stance on an eligibility or attestation determination.

The request for an appeal must be made within 30 days following the conclusion of the action or inaction that is the subject of the appeal. This statement shall be forwarded immediately to the Chief of Reimbursements. When the Division receives a request for a hearing, it shall assist the appellant in submitting and processing the request. Medicaid will follow the pre-trial hearing and hearing procedures outline in COMAR 10.01.03, and, in the event the provider or hospital appeals the administrative law judge's decision, they may appeal to the Board of Review as provided by law in Health-General Article, §2-207, Annotated Code of Maryland.

Step 8: Provider application clears eMIPP system edits and eMIPP generates approval email with program information to provider (Response to Question #4)

eMIPP will display the entire completed application and instructions for printing the summary information along with a "Contact Us" button that allows an email to be sent to Medicaid for inquiries and information about how to track the status of the application. The system will send

correspondence to the provider applicant notifying the provider that the application has been approved, and an EHR incentive payment will be issued to the provider or assignee.

Step 9: eMIPP interfaces list of providers who pass edits to R&A for final confirmation (Response to Question #1)

Payments cannot be made until the application is error free and submitted to the R&A for final duplicate and sanction/exclusion editing. Medicaid's proposed approach assumes that when the state informs the R&A that a payment is ready to be made and the R&A has approved payment, the R&A will "lock" the record so that the provider cannot switch programs or States until after the provider receives the payment from Medicaid. Medicaid will submit required information from interface D-16.

Step 10: MMIS issues payment and eMIPP submits payment information to the R&A (Response to Questions #24, 25)

Once a provider incentive application is approved for payment, the payment is generated through the current MMIS financial system. This allows Medicaid to leverage current financial transactions, including payment via check or Electronic Funds Transfer (EFT), remittance advice notifying the provider of payment, and 1099 processing.

Medicaid will issue a remittance advice and make the incentive payment using a gross adjustment. A unique gross adjustment reason code will be generated and payments will be processed with the weekly Medicaid Financial Cycle. The payment method (paper check or EFT) will be driven by the information used for claims payment on the provider enrollment file. A remittance advice will provide information on the incentive payment that has been made.

Upon completion of the payment cycle, the MMIS will return payment data to eMIPP for financial management. eMIPP will generate a payment transaction including pay information to the R&A through D-18 interface. The provider applicant/payee (to whom the payment is assigned) combination must be valid in the MMIS in order to make payment. MCO providers will receive incentive payments like fee-for-service providers to reduce complexity.

Medicaid established a schedule for making payments.

- For eligible professionals, payments are spaced out over six payment years (not necessarily consecutive years). EPs will receive $21,250 for the first year of participation, followed by payments of $8,500 for each subsequent year of participation. Pediatricians that have at least 20 percent but less than 30 percent Medicaid patient volume will receive $14,167 for the first year of participation and $5,667 for subsequent years of participation.

- For eligible hospitals, payments are made over four years: 50 percent in the first year, 30 percent in the second year, and 10 percent in the third and fourth years. Payments are again based on the calculations described in the CMS regulations. Appendix F is an Excel spreadsheet that demonstrates how Medicaid will calculate hospital payments. The hospital payments may take longer to release since all hospital payments will suspend for pre-payment review. Due to Maryland's All-Payor Waiver with CMS, Medicaid pre-qualifies and pre-calculates hospital patient volume and incentives for the Medicaid EHR Incentive Program. The initial hospital attestation and payment process may take longer as Medicaid and each hospital come to an agreement about incentive calculations based on data submitted by the hospital to the Health Service Cost Review Commission (HSCRC) required under Maryland's All-Payor Waiver. See the attached hospital calculator for a description of how we will calculate hospital payments.

Using the eMIPP system in combination with establishing processes for reviewing suspended applications and attestations and generating reports/work lists showing the status of a given application will allow Medicaid to make timely provider incentive payments. In the best case scenario (no missing, incomplete, or inaccurate information), Medicaid anticipates making payments to EPs within 10-14 days of their application completion date and within three weeks of the application completion date for hospitals.

Step 11: Post-payment oversight and outreach activities (Response to Questions #3, 6 – 8, 26)

As described in the above steps, the eMIPP system contains numerous checks and edits that will help Medicaid to conduct payment oversight at the point of application and attestation. Section D describes Medicaid's proposed post-payment oversight activities in detail, but, in short, Medicaid will focus on three areas: provider eligibility, reviewing attestations, and payment reviews.

Medicaid will identify areas of risk in the eligibility determination and payment processes to design studies and reviews that will mitigate the risk of overlooking an improper payment. For example, Medicaid intends to use a tiered approach based on fraud risk and a random sample to audit information submitted in attestation forms and from other areas, *e.g.,* MU information, patient volume, out of state providers, OMHC and FQHC predominantly practice attestations, and assignment of payments. Medicaid understands the programmatic risks of improper payments and will develop measures and studies to mitigate these risks.

Step 12: Ongoing technical assistance for adoption, implementation, upgrade and Meaningful Use of EHR (Response to Questions #8, 9)

Medicaid is aware that the incentive payments may motivate providers to begin the adoption process, but the incentive payments alone will not be sufficient for successful AIU and MU. Using the same communication strategy as described in Step 1, Medicaid collaborates with the REC, MSOs, HealthChoice MCOs, Scion, and vendors who provide technical assistance and other resources to educate providers about the incentive program and also to provide technical assistance and information on EHR adoption, implementation, upgrade, and Meaningful Use of EHRs.

In addition to reviewing providers who return for additional payments, Medicaid, with help from the REC, will generate reports of providers paid for Year 1 who do not apply for Year 2 and beyond incentive payments and target these providers for technical assistance through the REC or other means. Encouraging providers to return for future payments and thus become Meaningful Users is an important goal for Medicaid and will be included as a program evaluation metric in Section E. In Year 3, we periodically monitored NLR records and paid special attention to providers that have registered but not yet completed the attestations with eMIPP. With assistance from the MHCC and REC, we started outreach to this population and provided technical assistance in completing the attestation process. In Year 4, Medicaid focused on improving the program and expanding Meaningful Use achievement among providers. Medicaid used contract staff to help with public health reporting, outreach, administration, and attestations. Medicaid also developed new policies and programming to increase HIE connectivity and adoption of CEHRT.

In Year 5, Medicaid launched a new Management Services Organization (MSO) incentive program, which focuses on helping providers adopt, implement, or upgrade their CEHRT, receive AIU payment, and perform an HIE Readiness Assessment. Under this program, MSOs assist practices using EHRs with the aim of improving patient experience and improving the health of the patient population, while reducing health care cost. The detailed proposal is in the Attachment G of the IAPD.

The program targets providers identified by Medicaid as potentially eligible providers for the EHR incentive program with fax, emails, phone calls, and in person meetings. MSOs reach out to practices to begin initial engagement and have the organization sign the MSO and Provider Agreement. The REC will track agreements and update the provider list regularly.

Although Medicaid had hoped to receive 200 AIU attestations and 150 HIE Connectivity Readiness Assessments, Medicaid only increased AIU attestations through this program by 47 and obtained nearly the same amount of HIE Connectivity Readiness Assessments.

Step 13: Notification of Meaningful Use requirements for Year 2 and beyond (Response to Questions #10 – 12)

CMS approved Maryland to modify the Public Health Reporting Objective requirements under the 2015-17 Modifications Rule.[54] To increase the likelihood that providers submit data to the State's public health registries, Maryland established an order of precedence for public health reporting, which is detailed in the 2015-17 MU Modification Addendum. As of January 1, 2016, providers must report for each of the public health measures in an order of precedence. They need to either attest to the measure, or claim an exclusion for each measure before proceeding to the next. The order of precedence is outlined below, for EPs and EHs.

Eligible Professionals (EPs) 2015-2018, Stages 1-2 (Modified Stage 2)

1. Immunization Registry Reporting
2. Specialized registry administered by the Public Health Agency (PHA)
    a. Cancer
    b. PDMP (for EPs that dispense controlled substances)
    c. Case Reporting (C-CDA)
3. Syndromic Surveillance (Urgent Care Center only)
4. Any remaining measure

Eligible Professionals (EPs), Stage 3

1. Immunization Registry Reporting
2. Electronic Case Reporting to PHA (C-CDA)
3. Public Health Registry (includes PHA specialized registries)
4. Syndromic Surveillance (Urgent Care Center only)
5. Any remaining measure

Eligible Hospitals (EHs) 2015-2017, Stages 1-2 (Modified Stage 2)

1. Immunization Registry Reporting
2. Syndromic Surveillance
3. Electronic Lab Results
4. Specialized registry administered by the PHA (Cancer or PDMP)
5. Any remaining measure

Eligible Hospitals (EHs) 2017, Stage 3

1. Immunization Registry Reporting
2. Syndromic Surveillance
3. Electronic Lab Results
4. Electronic Case Reporting to PHA (C-CDA)

[54] The detailed proposal for Public Health Reporting Objective requirements under the Stage 3 and 2015-17 Modifications Rule is available in Appendix S.

5. Public Health Registry (includes PHA specialized registries)
6. Any remaining measure

Using the same communications strategy as described above in Step 1, Medicaid will collaborate with the HealthChoice MCOs, Scion, and the RECs to the extent possible to educate providers about the MU requirements in their second payment year and also to provide technical assistance about meaningful use of EHRs in Year 5. The Department also anticipates that there will be provider education materials available through the CMS and ONC communications and outreach activities. As the program evolves and Medicaid is able to assess a provider's ability to meet the MU requirements, Medicaid's strategies will also evolve to continue to help providers to achieve MU.

Step 14: Meaningful Use payment request or renewal (Response to Questions #9, 12, 13, 23, 30)

Medicaid accepts attestations from hospitals deemed as meaningful users by CMS in their second payment year and beyond. Medicaid negotiated with our vendor to update eMIPP, create new eligibility screens, and establish a review process during which eMIPP validates the continued eligibility of each participating provider and that the MU requirements are met. The renewal process incorporates oversight reviews of continuing provider eligibility (*e.g.,* patient volume); checks against new information in the R&A, MU criteria; and a review to ensure that provider information such as practice sites have not changed.

To ensure that all Federal funding, both for the 100 percent incentive payments, as well as the 90 percent HIT Administrative match, is accounted for separately for the HITECH provisions and not reported in a commingled manner with the enhanced MMIS FFP, Maryland created separate cost centers within our accounts management system. Maryland maintains a separate cost center for incentive payments, HITECH administrative activities, and any MMIS activities. In turn, these expenditures roll up in to our projected costs for the CMS-37 and claimed expenditures in the CMS-64.

During the lifetime of the incentive program, Medicaid anticipates that eMIPP will continue to be sufficient to collect and store the information needed to process eligibility and make payments. Our vendor will provide secure, off-site storage during the lifetime of the program. Medicaid's decision to host information off-site will benefit us greatly in the future, as we prepare for the MMIS system in the coming years.

As eMIPP and the State's MMIS develop, Medicaid looks forward to leveraging and integrating the ongoing success of the statewide HIE to facilitate live data reporting and other features helpful to providers to fulfill Meaningful Use. Some of these items will be explained in Appendix D of the IAPD and will be subject to CMS approval.

For example, to facilitate eCQM reporting, Medicaid and the HIE have created a popHealth-like tool, CAliPR (formerly CAliPHR), a robust measure engine and repository, to accommodate statewide quality reporting. The tool is able to receive Quality Reporting Data Architecture (QRDA) category 1 and Consolidated Clinical Document Architecture (CCDA) files, translate them into QRDA category 3 data, and transmit the aggregated data to CRISP, Maryland's HIE, for eCQM reporting under the Meaningful Use Program. The path and timing of rolling out the tool heavily depended on certified EHR technology's ability to generate QRDA category 1 files, EPs connectivity to the HIE, and their adoption of the certified EHR with this capacity.

Efforts to connect providers to the statewide HIE have centered on hospitals, since they are considered large suppliers of data. At this point, Medicaid is in the process of working with the HIE to roll out an ambulatory connectivity strategy. Achievements to this end are described in Section A.

Certain MU measures as defined by CMS were core measures for the Maryland Multi-Payor Patient Centered Medical Home (PCMH) Program (MMPP) pilot. By wrapping these measures into the incentive payments for the practices participating in PCMH, Maryland encouraged their use and made it easier for providers who participated in PCMH to also benefit from the EHR incentive payments. Fifty-two primary care practices were selected for participation in the MMPP pilot. Nine participating practices consistently achieved MMPP pilot goals over the first two years.[55] In their assessment of these practices, MHCC identified three key practice initiatives that likely contributed to goal achievement. These include incorporating a care manager into the practice, tracking patient outcomes, and providing improved access for patients outside of normal office hours. The practices reported three additional notable responses: leadership, care coordination, and use of an EHR. Eight of the high-performing participating practices have achieved Stage 1 of MU and 7 of the 9 offer a patient portal. As many MU objectives align with required activities under the MMPP pilot, most of these practices observed their MMPP participation timing aligned with efforts to achieve MU.

[55] MHCC, *Maryland Patient Centered Medical Home: An Assessment of Practices that Achieved Pilot Goals*, October 2014. Available at: http://mhcc.maryland.gov/mhcc/pages/plr/plr_pcmh/documents/PCMH_Practice_Evaluation.pdf.

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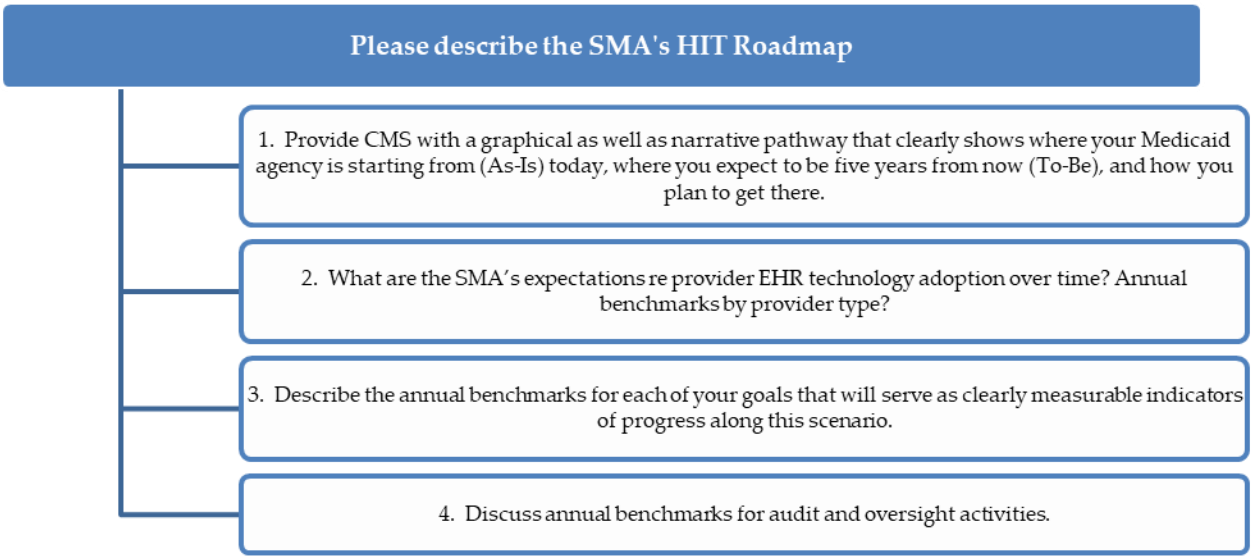
Section E: Maryland's HIT Roadmap

Figure E.1 –Section E Questions from the CMS State Medicaid HIT Plan (SMHP) Template



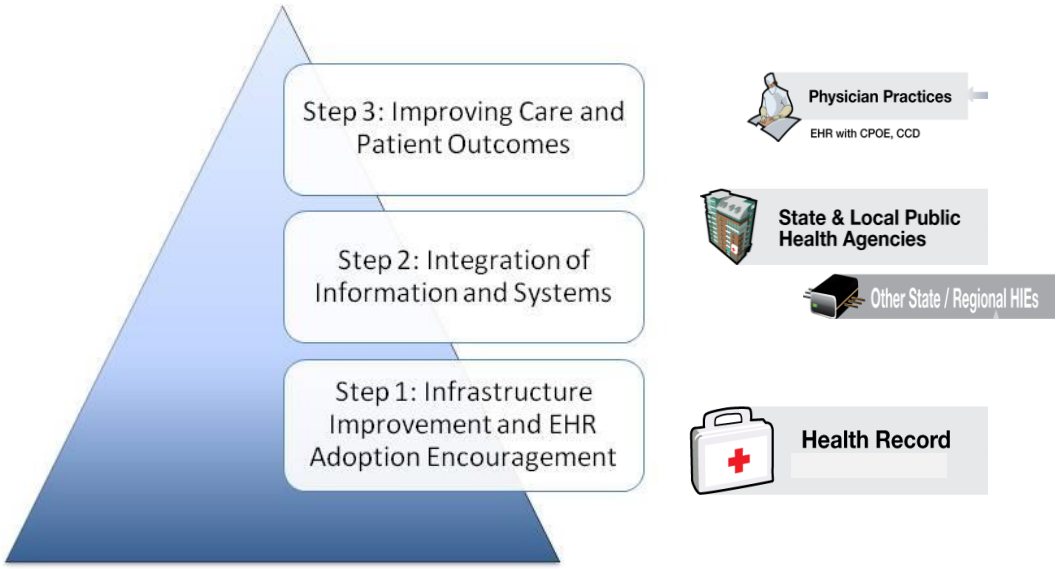
E.1 Provide CMS with a graphical as well as narrative pathway that clearly shows where your Medicaid agency is starting from today, where you expect to be five years from now, and how you plan to get there (Question 1).

Medicaid initiated the EHR Incentive Program in Fall 2011. At the time, Medicaid used a legacy system for benefit administration and claims processing (Medicaid Management Information System (MMIS) Baseline System), but the Maryland Department of Health used a relatively robust public health reporting system (see Section A). The MMIS Baseline System has been in place since 1992. This system is a direct descendant of the original MMIS applications based upon the Federal Blue Book specification and technical architecture of the 1970s.

In 2011, Medicaid anticipated the implementation of a new enterprise MMIS system that supported off-the-shelf solutions, a call center, document management, customer support management, and connectivity to the statewide HIE. We also intended to grow HIE functionality. However, in 2015, Medicaid cancelled our contract to obtain a new enterprise MMIS.

Despite this setback, Maryland continues to move forward following the graphical HIT Roadmap in Figure E2.

Figure E.2: Graphical Pathway of the State's HIT Roadmap



MDH's Roadmap is meant to describe the overall journey toward achieving the To Be vision and EHR Incentive payments – with the appropriate milestones for achievement.

Step 1: Infrastructure Improvement and EHR Adoption and Encouragement

After canceling our enterprise MMIS contract, Medicaid leveraged MMIS design work to develop a modular approach to MMIS development. MDH has recently received approval for its MMIS Modular Transformation (MMT) implementation APD along with a recently completed MITA 3.0 state self-assessment. The MMT APD outlines the state's plan to move from a monolithic system to a service-oriented architecture with multiple modules integrated across the enterprise. The MMT IAPD identifies the various components necessary to accomplish the state's transformation including integration technologies, service modules, and program resources.

The state is currently working on implementing several initial modules including the pharmacy point of sale electronic claims processing system and a behavioral health administrative services organization program. In addition, the State is working on procuring a provider management module and working with MD THINK to identify opportunities to leverage potential solutions for the data warehouse, decision support system, and enterprise service integration layer.

In the area of Health Information Exchange (HIE), Medicaid has continued to be an active participant in the statewide HIE efforts and maintains a member on the Policy Board. The Policy Board has general oversight of the statewide HIE, including the authority to evaluate and recommend to the Maryland Health Care Commission (MHCC) the policies that will govern the exchange.

As detailed in Section A, Maryland's HIE, CRISP, has successfully connected with all hospitals in the Maryland and surrounding states. Data exchange among these entities is occurring, with increased features planned for the future. Because of the State's unique All-Payer Waiver, Maryland is able to use portions of hospital assessments and HIE fees to support some activities. Medicaid has continued to leverage available 90/10 funding to reach the tipping point of connectivity and available health data in the HIE to support sustainability.

The number of identities within the HIE and of transactions between HIE participants continue to increase. Over the most-recent four quarters, the HIE averaged 336,412 clinical queries and over 4 million Encounter Notification Service notifications. Medicaid has successfully used IAPD funding to support image exchange between hospitals. Maryland also successfully built, moved into production, and released to the open source community a popHealth-like tool, CQM Aligned Population Health Reporting (CAliPR). CAliPR accesses Quality Reporting Data Architecture (QRDA) category 1 and category 3 files for eCQM reporting. We have integrated four of the top 10 vendors in Maryland into the HIE generally and CAliPR specifically, and onboarded over 20 practices.

To encourage the adoption of EHRs, Medicaid consolidated outreach approaches to create a single-stream outreach and HIE onboarding process that offsets provider onboarding costs via milestone payments sensitive to data quality. The Data Exchange Support Program (DESP) offset the HIE onboarding costs to providers as they connected using various HL7 standard messages with high levels of data integrity over at least a year. Participating providers included Eligible Professionals (EP) as well as those behavioral health (mental health and substance abuse) and long-term care providers that shared patients with EPs. Onboarding these providers helped EPs meet Meaningful Use, particularly in post-acute and behavioral health care settings.

Additionally, Maryland is continuing development on a consent manager and data router to facilitate the exchange of substance use data across the health care system and the integration of data with rules-based exchange provided at the point of care (in-context ENS reporting).

For *Step 2: Information and System Integration*, Medicaid has successfully used the HIE to trigger and extract CCDs from providers, route the data to CAliPR, generate eCQMs, and using an Application Program Interfaces (API), submit this data to Medicaid for Medicaid EHR Incentive Program participation. We have done this with four EHR vendors, athenahealth,

NextGen, GE Centricity, and Epic. These vendors are among the top ten ambulatory vendors in the State.

In addition to assisting the HIE with developing a data router, consent manager, and data warehouse, Medicaid has modified the HIE's technical architecture to expose data to API and support big data analysis. Moreover, the DESP Medicaid embarked upon differentially assisted providers based on the type of EHR connection and quality of data submitted to the HIE. The DESP also imposed a claw-back provision if providers fail to maintain data quality. See IAPD, Appendix D for more details.

Additionally, Medicaid is assisting public health with surveying their information system architecture and then gradually improve the architecture to provide a single point of HL7 message validation and facilitate bi-directional exchange with the HIE.

Regarding *Step 3: Improving Care and Patient Outcomes*, Medicaid is just beginning to explore linking various health-care related data sets and using that data to improve care coordination and patient outcomes.

Medicaid has begun to modularize our MMIS by acquiring a service vendor to provide electronic provider enrollment.

In the next five years, Medicaid expects to:

1. Continue to move forward with upgrading our current MMIS using a modular approach, particularly in case reporting, claims editing, and data warehouse and decision support;
2. Connect all major Medicaid providers to their most-frequent referrals and data exchangers via the HIE, including meeting mandatory public health reporting requirements;
3. Expand HIE functions and connectivity such that Medicaid-eligible professionals cannot only meet meaningful use, but do so in the most clinically relevant and work-flow friendly way;
4. Leverage the HIE to create a learning health system that facilitates research and best practices;
5. Explore the potential to develop pay-for-outcomes programs that incorporate quality, patient preference, risk stratification, and provider characteristics.

Medicaid's approach to meeting this five-year plan is to follow the same steps as outlined in Figure E.2.

S*tep 1: Infrastructure Improvement and EHR Adoption and Encouragement*: Medicaid has completed a MITA State Self-Assessment (MITA SS-A). Our MITA SS-A provides an analysis of

our As-Is and To-Be MMIS environment. Although most of the MMIS modular enhancements will improve business process efficiency and accuracy, the data warehouse and decisions support system will make it easier for Medicaid to aggregate data to facilitate payment for outcomes.

Medicaid is also in the process of implementing a data router to move various EHR-created data across the health care system, based on user roles and profiles. Additionally, the HIE is also creating various data warehouses, which, when combined with the data router, rules engine, consent manager, and master patient and provider indices, will facilitate the merging of data. Combined data will facilitate such things as care coordination or create robust clinical quality measurements.

Although no new providers may begin participating in the Medicaid EHR Incentive Program, Medicaid still intends to encourage EHR adoption by offering many HIE-based functionalities to providers that necessitate an EHR.

Step 2: Information and System Integration: Through the data router and data aggregator, Medicaid will be able to push and pull information across the health care ecosystem, while at the same time plugging the holes in health care data created by single players in the health care system. By facilitating the push, pull, and aggregation of data, Medicaid will make it easier for patients to access and potentially contribute to their health care data.

Further, by moving towards making the HIE a storage and message routing utility, Medicaid is able to leverage economies of scale and improve the ease of data exchange among health care providers. This may particularly be important for public health reporting, where, via ongoing CDA interfaces, providers can provide patient care, receive in-context notifications, and meet mandated public health reporting with minimal modifications to existing work flows.

Step 3: Improving Care and Patient Outcomes: Medicaid anticipates that once data is freed from its originating source and aggregated with other data, meaningful analytics can be performed to improve care coordination, inform patient attribution and risk adjustments, drive quality reporting, and eventually improve health outcomes and lower costs. In a true learning health system, providers and patients can not only access data about the care they are receiving, but they can also obtain information on procedures and interventions that are tailored to specific patient characteristics.

E.2 What are the SMA's expectations regarding provider EHR technology adoption over time? Annual benchmarks by provider type (Question 2)

Implementing the EHR Incentive Program has been a major undertaking that required systems to be designed, built, and tested; Medicaid staff and the provider community to be informed

and educated; new policies, procedures, and audit plans to be developed, tested, and implemented. Section B.1 covers the EHR incentive administrative goals and outcomes including benchmarks for adoption on an annual basis. Medicaid does not have annual benchmarks for provider types. However, based on our most-recent environmental scan, we updated our annual benchmarks in Section B.

In addition to numeric adoption goals, Maryland is interested in tracking adoption rates in order to compare them to national estimates. Adoption rates among the Medicaid and general provider population will likely be impacted by both the EHR Incentive Program and Maryland's State Regulated Payor EHR Adoption Incentive Program (see Section A, Overview). We hope to further analyze adoption rates in our final environmental scan. As we described in Section B, hospital and professional adoption rates paralleled with national adoption trends. Therefore, Maryland will tie its EHR adoption goals to the national adoption goals. National goals are based on Health and Human Service (HHS) performance measures in the Annual Performance Plan and Report, Goal 1, Objective F (Lead Agency – ONC; Measure ID 1.B.4).[56]

Based on Maryland Medicaid's 2017 environmental scan and data from ONC, we updated Maryland's EHR adoption rates for both EPs and EHs. See Table E.1 below for these rates. Compared to the national estimates for EPs, Maryland demonstrated substantially higher adoption rates. As mentioned in Section A, the adoption rates can be overestimated because the EHR users were more likely to fill out the surveys. Overall, Maryland's estimates match up with national trends.

[56] HHS.gov, FY 2017 Annual Performance Plan and Report - Goal 1 Objective F, February 2016. Available at: https://www.hhs.gov/about/budget/fy2017/performance/performance-plan-goal-1-objective-f/index.html

Table E.1 – Maryland's EHR Adoption Rate Goals

Year	National EHR Adoption Rates (Targets)	Maryland Medicaid Adoption Rates (Targets)**	Maryland Hospital Adoption Rate (Targets)
Baseline	--	19%*	55%
2011	--	20%	60%*
2012	22%	50%	83%
2013	45%	65%*	85%
2014	58%	68%	100%
2015	66%	70%	100%
2016	(64%)	74%*	(100%)

** Maryland only performed environmental scans for the Baseline, 2013 and 2016.*
*** Maryland estimates that roughly 70 percent of eligible Medicaid provider types meet patient volume requirements. Using SK&A data below, the total eligible provider population is estimated at 8,374 (13,956 x 0.6).*
Sources: SK&A data on eligible professionals and hospitals (United States, n=715,989, Maryland, n=6,774), Web. May, 2017. https://dashboard.healthit.gov/datadashboard/documentation/ska-data-documentation.php; "FY 2017 Annual Performance Plan and Report - Goal 1 Objective F." HHS.gov, February 9, 2016. Web. March 16, 2016; ONC Data Briefs, obtained from https://www.healthit.gov/policy-researchers-implementers/briefs; Maryland EHR Environmental Scans; and MHCC hospital EHR assessment reports.

E.3 Describe the annual benchmarks for each of your goals that will serve as clearly measurable indicators of progress along this scenario (Question 3)

Generally, Medicaid's three goals follow our HIT pathway described in E.1: Improve Medicaid-Based Systems, HIE Collaboration and Connectivity, and Encouraging the Advanced Use of EHR. Medicaid's progress towards meeting past goals and the specific goals for Year 9 and the benchmarks are listed below.

Goal 1: Improve Medicaid-Based Systems

In order to reach our long-term goal of payment reform, Medicaid needs to upgrade our current MMIS and integrate it with the HIE. We are following a modular approach to MMIS upgrades. Within the past year, Medicaid has completed a MITA State Self-Assessment (MITA SS-A), which will provide a roadmap towards modularity, and implemented a provider enrollment system. We have also developed draft Request for Proposals (RFP) for a Decision Support and Data Warehouse and incremental claims payment module.

Goal 2: Meet Benchmark Goals of the HIE HITECH Funding Request Described in the IAPD-U

In part to help improve interoperability among providers, Medicaid is requesting 90/10 funding for HIE-related activities in our IAPD-Update. Medicaid will adopt the benchmarks listed in the IAPD when evaluating the effectiveness of our proposed activities.

Goal 3: Meet or Exceed MU Return Rate Achievement Goals

As listed in Table B.3, Medicaid intended to move 90 percent of providers to Meaningful Use within three years. We only moved 60 percent to MU within three years. With nearly 400 providers attesting for AIU with Maryland Medicaid for Program Year 2016 and an estimated 150 providers remaining in AIU status, Maryland's goal is to move 70 percent of providers to Meaningful Use within three years of AIU. To reach this goal, Medicaid will leverage Management Service Organizations and the HIE's Advanced Implementation Support project within the IAPD to link AIU providers to technical assistance resources.

Table E.2 – Goal 3: Indicators of Progress

Activity	SFQ1	SFQ2	SFQ3	SFQ4
MSO or HIE Advanced Implementation Support outreach to AIU provider to assist with meeting MU	130	130	130	130

E.4 Discuss annual benchmarks for audit oversight activities (Question 4)

In Year 2, Medicaid increased staff to handle post-payment audits, including desk reviews and site visits. During Year 2 and into Year 3 and in accordance with our CMS-approved audit plan, Medicaid conducted 483 desk reviews and performed 46 site visits.

During Year 3, Medicaid also created an EHR Post-Payment Auditing Request for Proposal (RFP) to obtain the services of an auditing vendor to perform all post-payment auditing activities. During Year 3 and into Year 4, Medicaid continued to use internal resources through the Office of Policy and Compliance (OPC) to conduct AIU auditing while selecting a contractor to conduct MU auditing. In October 2015, Medicaid entered a contract with Myers and Stauffer, LC (MSLC) to perform post-payment audits for all MU attestations and for future AIU post-payment audits. Medicaid continues to perform pre-payment verification internally.

Medicaid met the benchmarks outlined in Table E.3 for Federal Fiscal Years (FFY) 2015 and 2016, as well as the first two quarters of FFY 2017. Medicaid is on track to meet the benchmarks outlined for the remainder of FFY 2020.

In Year 5, MSLC completed 138 desk reviews and two on-site reviews for 2013 MU attestations. In Year 6, MSLC completed 143 desk reviews and four on-site reviews for 2014 AIU attestations, as well as 149 desk reviews and one on-site review for 2014 MU attestations. In Year 7, MSLC completed 283 audits cases for the 2015 sample. In Year 8, MSLC completed 278 audit cases for the 2016 sample. For Program Year 2017, MSLC conducted 136 audit cases. For Program Year 2018, MSLC has been contracted to conduct 87 audit cases.

Table E.3 – Annual Benchmarks for EHR Auditing

Item	Description	Q1	Q2	Q3	Q4
FFY 2015					
Auditing Sample 2013 (total 231 AIU attestations)	Conduct post-payment AIU audits for 2013 attestations	Complete 58 audit cases	Complete 58 audit cases	Complete 58 audit cases	Complete 57 audit cases
MU Audits	MU audits conducted by selected vendor	Release the RFP	Release the RFP	Select the vendor	Select the vendor
FFY 2016					
Auditing Sample 2014 (147 AIU attestations)	AIU audits will be conducted by Myers and Stauffer, LC	N/A	N/A	Complete sampling for 2014	Start 2014 audit cases
Auditing Sample for 2012-2013 (140 MU attestations) and 2014 (150 MU attestations)	MU audits will be conducted by Myers and Stauffer, LC	Contract start	Complete sampling for 2012-2013	Complete 28 audit cases for 2012- 2013 and sampling for 2014	Complete 112 audit cases for 2012 and 2013
FFY 2017					
Auditing Sample for 2014 (147 AIU attestations)	AIU audits will be conducted by Myers and Stauffer, LC	Complete 37 audit cases from 2014	Complete 107 audit cases from 2014	Complete 3 audit cases for 2014 and sampling for 2015	Start 2015 audit cases
Auditing Sample for 2014 (130 MU attestations)	MU audits will be conducted by Myers and Stauffer, LC	Start 2014 audit cases	Complete 117 audit cases	Complete 33 audit cases and complete sampling for 2015	N/A
FFY 2018					

Item	Description	Q1	Q2	Q3	Q4
Auditing Sample for 2015 (101 AIU attestations)	AIU audits will be conducted by Myers and Stauffer, LC	Complete 71 audit cases from 2015	Complete 26 audit cases from 2015	Complete 4 audit cases from 2015 and complete sampling for 2016	Start 2016 audit cases
Auditing Sample for 2015 (182 MU attestations)	MU audits will be conducted by Myers and Stauffer, LC	Complete 2 audit cases from 2015	Complete 119 audit cases from 2015	Complete 61 audit cases from 2015 and complete sampling for 2016	N/A
FFY 2019					
Auditing Sample for 2016 (estimated 140 AIU attestations)	AIU audits will be conducted by Myers and Stauffer, LC	Complete audit 40 cases from 2016	Complete 60 audit cases from 2016	Complete 40 audit cases from 2016	N/A as AIU did not exist for 2017
Auditing Sample for 2016 (estimated 140 MU attestations)	MU audits will be conducted by Myers and Stauffer, LC	Complete 40 audit cases from 2016	Complete 60 audit cases from 2016	Complete 40 audit cases from 2016 and complete sampling for 2017	Start 2017 audit cases
FFY 2020					
Auditing Sample for 2017 (estimated 136 MU attestations)	MU audits will be conducted by Myers and Stauffer, LC	Complete 22 audit cases from 2017	Complete 114 audit cases from 2017	2018 attestations remained open	2018 attestations remained open
Auditing Sample for 2018 (estimated 87 MU attestations)	MU audits will be conducted by Myers and Stauffer, LC	Start 2018 audit cases	No cases completed due to COVID-19	No cases completed due to COVID-19	Complete 4 audit cases from 2018
FFY 2021					
Auditing Sample for 2019 (estimated 40 MU attestations)	MU audits will be conducted by Myers and Stauffer, LC	Complete 83 audit cases from 2019	Start 2019 audit cases	TBD	TBD
FFY 2022					
Auditing Sample for 2020 (MU)	TBD if auditing will be conducted by MSLC	TBD	TBD	TBD	TBD

Item	Description	Q1	Q2	Q3	Q4
Auditing Sample for 2021 (MU)	TBD if auditing will be conducted by MSLC	TBD	TBD	TBD	TBD

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Glossary of Terms and Acronyms

The matrix below provides a glossary of terms and acronyms that are frequently used in discussions about MDH's HIT initiative.

Term	Acronym	Definition
Technology		
Health Information Technology	HIT	• Allows comprehensive management of medical information and its secure exchange between health care consumers and providers • Application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data and knowledge for communication and decision-making
Electronic Medical Record	EMR	• The legal record created in hospitals and ambulatory environments that is the source of data for an electronic health record (EHR) • A record of clinical services for patient encounters in a single provider organization; does not include encounter information from other provider organizations • Created, gathered, managed and consulted by licensed clinicians and staff from a single provider organization who are involved in the individual's health and care • Owned by the provider organization • May allow patient access to some results information through a portal, but is not interactive
Electronic Health Record	EHR	• A subset of information from multiple provider organizations where a patient has had encounters • An aggregate electronic record of health-related information for an individual that is created and gathered cumulatively across multiple health care organizations, and is managed and consulted by licensed clinicians and staff involved in the individual's health and care • Connected by a Health Information Exchange (HIE) • Can be established only if the EMRs of multiple provider organizations have evolved to a level that can create and support a robust exchange of information • Owned by patient • Provides interactive patient access and ability for the patient to append information

Term	Acronym	Definition
Personal Health Record	PHR	• Electronic, cumulative record of health-related information for an individual in a private, secure and confidential manner • Drawn from multiple sources • Created, gathered, and managed by the individual • Integrity of the data and control of access are the responsibility of the individual
Health Information Exchange	HIE	• The sharing of clinical and administrative data across the boundaries of health care institutions and providers • The mobilization of healthcare information electronically across organizations within a region, community or hospital system • Provides capability to electronically move clinical information among disparate health care information systems while maintaining the meaning of the information being exchanged • Goal is to facilitate access to and retrieval of clinical data to provide safer, more timely, efficient, effective, equitable patient-centered care
Chesapeake Regional Information System for Our Patients	CRISP	• A statewide health information exchange funded under the Office of the National Coordinator for HIT's Statewide HIE Collaborative Agreement program that will connect regional HIE's and integrated health systems • Maryland's Regional Extension Center (REC)
Medicare and Medicaid EHR Incentive Program Registration and Attestation System	RNA	• A repository that will be available to states to help avoid duplication of payments to providers participating in the EHR Incentive Program • Information stored in the repository includes provider registration information, Meaningful Use attestations and incentive payment information