

**Joint Legislative Committee on Performance
Evaluation and Expenditure Review (PEER)**

Report to
the Mississippi Legislature



Mississippi's Progress Since 2010 in Implementing Electronic Health Records

Since PEER's 2010 report on procurement and implementation of electronic health records systems, the University of Mississippi Medical Center has established its electronic health records system as one component within its larger health care information system, known as Epic. Epic officially went live June 1, 2012.

Although the Division of Medicaid initially implemented an electronic health records system on June 4, 2010, neither the division's original contracted provider nor a second contracted provider could provide an electronic health records system that met revised federal electronic health records and Medicaid user acceptance standards. Consequently, the Division of Medicaid shifted to providing a clinical data repository. Many of the federal regulations specific to an electronic health records system no longer apply, but the division reports that it is in compliance with applicable federal and state electronic health records requirements.

While the Mississippi Health Information Exchange system is mostly in place, the Mississippi Health Information Network is still in its early stages of adding providers to the system, with most early participation being from the Gulf Coast and the Delta. The Mississippi Health Information Network has application modules in place as part of the Mississippi Health Information Exchange to assist providers in meeting meaningful use requirements as well as for meeting requirements of components of the Patient Protection and Affordable Care Act. These include reporting requirements (e. g., immunization) as well as patient alerts, with the goal of assisting providers and insurers in tracking patients and managing patient care more effectively.

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The Mississippi Legislature created the Joint Legislative Committee on Performance Evaluation and Expenditure Review (PEER Committee) by statute in 1973. A joint committee, the PEER Committee is composed of seven members of the House of Representatives appointed by the Speaker and seven members of the Senate appointed by the Lieutenant Governor. Appointments are made for four-year terms, with one Senator and one Representative appointed from each of the U. S. Congressional Districts and three at-large members appointed from each house. Committee officers are elected by the membership, with officers alternating annually between the two houses. All Committee actions by statute require a majority vote of four Representatives and four Senators voting in the affirmative.

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The Committee assigns top priority to written requests from individual legislators and legislative committees. The Committee also considers PEER staff proposals and written requests from state officials and others.

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November 12, 2014

Honorable Phil Bryant, Governor
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Members of the Mississippi State Legislature

On November 12, 2014, the PEER Committee authorized release of the report entitled **Mississippi's Progress Since 2010 in Implementing Electronic Health Records.**

A handwritten signature in cursive script that reads "Nancy Adams Collins".

Senator Nancy Adams Collins, Chair

This report does not recommend increased funding or additional staff.

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Mississippi's Progress Since 2010 in Implementing Electronic Health Records

Executive Summary

Introduction

H. B. 392, Regular Session 2014, amending MISS. CODE ANN. § 41-119-19 (1972), requires PEER to report by December 1, 2014, on progress in implementing the electronic health records system in the state of Mississippi.

For this report, PEER reviewed implementation of electronic health records by the University of Mississippi Medical Center (UMMC) and the Division of Medicaid (DOM). The University of Mississippi Medical Center was selected because it is one of the state's largest health care providers and the Division of Medicaid was selected because it is one of the largest providers of health care coverage to persons in the state. PEER sought to determine what progress these two entities have made in implementation since issuance of PEER Report #542, *A Review of Requests for Proposals Used by the Division of Medicaid and University of Mississippi Medical Center to Procure Electronic Health Records Systems* in 2010.

PEER also reviewed the Mississippi Health Information Network because it is tasked with developing the statewide health information exchange that will encompass UMMC, DOM, and other providers and entities throughout the state.

While H. B. 392 tasked PEER with evaluating the state of Mississippi's "progress in implementing the electronic health records system," PEER limited this review to evaluating the progress of the previously named three entities in implementing electronic health records (EHR).

Background: Electronic Health Records and Health Information Exchanges

Electronic health information technology is the use of technology to collect, store, retrieve, and transfer by electronic means a patient's clinical, administrative, and financial health information. For purposes of this report, the major components that make up the electronic health information technology structure are electronic medical records, electronic health records, health information exchanges, and community health records. (See the Glossary in Appendix A, page 33, of the report for definitions of terms related to electronic health records.)

Factors that have influenced the development and implementation of electronic health records and health information exchanges in Mississippi are:

- The federal Health Information Technology for Economic and Clinical Health (HITECH) Act, passed in 2009, offers financial incentives to health care providers to implement electronic health records based on compliance with prescribed standards.
- Electronic health records also serve as a tool to help achieve the goals established in the Patient Protection and Affordable Care Act (PPACA) passed by Congress in 2010.
- The Health Information Technology Act, passed by the Legislature in 2010, established the Mississippi Health Information Network to coordinate and facilitate building a statewide capability to securely, electronically exchange health information.

In its 2010 report, PEER concluded that UMMC and DOM had complied with best practices to date for procurement of their electronic health records systems. At that time, UMMC estimated that its system would cost \$70 million and DOM projected that the cost of its system would be less than \$10 million. At the time of that report, it was not yet possible to know what portion of American Recovery and Reinvestment Act funds that Mississippi providers would receive with which to implement health information technology.

What progress has the University of Mississippi Medical Center made since 2010 in implementing its electronic health care information system?

UMMC's electronic health care information system, known as Epic, replaced twenty existing legacy systems and officially went live June 1, 2012. Epic is a comprehensive, unified electronic health care information system, including electronic health records, a centralized patient portal, a centralized master patient index, research support, and improved administrative and billing components, including tying billing to the electronic health records.

UMMC reports that Epic complies with applicable EHR requirements. Epic currently maintains required EHR certification with the Office of the National Coordinator for Health Information Technology. UMMC also reports that Epic complies with all requirements of the Health Insurance Portability and Accountability Act of 1996. Further, UMMC and its providers remain on track for meeting the Electronic Health Records Incentive Program requirements (e. g., "meaningful use"), generating over \$24 million in incentive payments to date for progress in adopting and implementing electronic health records.

UMMC funds Epic through patient revenues. Through May 30, 2014, UMMC had spent approximately \$97 million on training, staffing, consultants, software licensing fees, Epic implementation fees, and hardware costs to implement Epic. UMMC expects to spend from \$15 to \$17 million per year in FY 2015 and FY 2016 to operate and maintain Epic.

What progress has the Division of Medicaid made since 2010 in implementing electronic health records?

The Division of Medicaid initially implemented an electronic health records system on June 4, 2010, prior to the 2011 federal requirements for certified electronic health records. Neither DOM's original contracted provider nor a second contracted provider could provide an electronic health records system that met federal EHR and Medicaid acceptance standards. Consequently, in 2014, after consultation with the Centers for Medicare and Medicaid Services, DOM made the decision to provide clinical data repositories instead of supplying Medicaid providers with electronic health records systems. A contract was subsequently assigned to Mede/Analytics in 2014 to proceed with a clinical data repository system.

The Division of Medicaid's new clinical data repository system includes a clinical data repository in which providers can search patient records, a master patient index, and a secure provider portal. The Division of Medicaid is partnering with the Mississippi Health Information Network to capture Medicaid-specific provider data at the hospital and clinical level to add to the clinical data repository. Many of the federal regulations specific to an EHR system no longer apply, aside from Health Insurance Portability and Accountability Act and other privacy and security requirements. DOM reports that it is in compliance with remaining applicable federal and state EHR requirements.

From FY 2009 to FY 2014, the Division of Medicaid spent \$14.1 million to attempt to procure and implement a statewide electronic health records system.

What progress has the Mississippi Health Information Network made since 2010 in implementing electronic health records?

MISS. CODE ANN. § 41-119-7 (1972) tasked the Mississippi Health Information Network with developing the Mississippi Health Information Exchange, an electronic exchange of health information in Mississippi that allows providers access to a patient's community health record.

While the exchange system is mostly in place, the MS-HIN is still in the early stages of adding providers to the system, with most early participation being from the Gulf Coast and the Delta. The MS-HIN continues to build and develop the exchange to expand opportunities to the remainder of the state's medical providers. MS-HIN has application modules in place as part of the exchange to assist providers in meeting meaningful use requirements as well as for meeting components of the Patient Protection and Affordable Care Act.

MS-HIN has received approximately \$12.8 million in federal, state, and private funding and has expended approximately \$11.2 million to create and implement the Mississippi Health Information Exchange. While one goal of MS-HIN is to be self-sufficient, it has not yet reached a point where it has sufficient revenues to cover operational and additional build-out costs completely. Furthermore, MS-HIN expects additional expenditures for providing patients with a searchable system projected to commence in 2016, for which the specific costs are unknown to date.

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Mississippi's Progress Since 2010 in Implementing Electronic Health Records

Introduction

Authority

In accordance with MISS. CODE ANN. Section 5-3-51 et seq. (1972) and House Bill 392, Regular Session 2014, the PEER Committee reviewed the progress of the University of Mississippi Medical Center, the Division of Medicaid, and the Mississippi Health Information Network in implementing health information exchanges/electronic health records in Mississippi.¹

Scope and Purpose

Within recent years, health care providers nationwide have begun moving from manually maintained paper health records to computerized health information systems. The development of an information technology infrastructure for patients' health care records has the potential to improve the safety, quality, and efficiency of health care.

Through the use of financial incentives and penalties implemented under the Health Information Technology for Economic and Clinical Health (HITECH) Act (as part of the 2009 federal American Recovery and Reinvestment Act [ARRA]), health care providers have accelerated implementation of health information technology. Even prior to ARRA, within Mississippi, both the Division of Medicaid (DOM) and University of Mississippi Medical Center (UMMC), as well as other public and private health care providers, had been making strides in implementing health information technologies.

H. B. 392, Regular Session 2014, amending MISS. CODE ANN. § 41-119-19 (1972), requires PEER to report by December 1, 2014,

¹According to the *Strategic and Operational Plan* issued in 2010 by the Mississippi Health Information Infrastructure Task Force, an *electronic health record* is “an electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization.”

on progress in implementing the electronic health records system in the state of Mississippi.

For this report, PEER reviewed implementation of electronic health records by the University of Mississippi Medical Center and the Division of Medicaid. The University of Mississippi Medical Center was selected because it is one of the state's largest health care providers and the Division of Medicaid was selected because it is one of the largest providers of health care coverage to persons in the state. PEER sought to determine what progress these two entities have made in implementation since PEER's 2010 report (#542, *A Review of Requests for Proposals Used by the Division of Medicaid and University of Mississippi Medical Center to Procure Electronic Health Records Systems* [see page 8]).

PEER also reviewed the Mississippi Health Information Network's implementation of electronic health records because it is tasked with developing the statewide health information exchange that will encompass UMMC, DOM, and other providers and entities throughout the state.

Appendix A, page 33, is a glossary of the acronyms and terms related to electronic health records.

In this review, PEER sought to determine the following:

- What progress has Mississippi made in implementing electronic health records since 2010²?
- Do the University of Mississippi Medical Center, the Division of Medicaid, and the Mississippi Health Information Network each have a fully functioning electronic health records system that meets federal and state requirements? If not, what are the missing elements? What is the timeline for completion?
- What were the sources of funds for expenditures to implement electronic health records systems? What are total expenditures to date for implementation? What expenditures remain to be made and for what purposes?

Scope Limitation

While H. B. 392, Regular Session 2014, tasked PEER with evaluating the state of Mississippi's "progress in implementing the electronic health records system," PEER limited this review to evaluating the progress of the previously named three entities in implementing electronic health records.

²On November 9, 2010, in response to the requirements of H. B. 941, 2010 Regular Session, the PEER Committee issued Report #542, *A Review of Requests for Proposals Used by the Division of Medicaid and University of Mississippi Medical Center to Procure Electronic Health Records Systems*. This report evaluates implementation progress since issuance of that report. See page 8 for a summary of Report #542.

Method

In conducting this review, PEER:

- reviewed MISS. CODE ANN. Title 41, Chapter 119 (1972) and House Bill 941, Regular Session 2010, establishing Mississippi's "Health Information Technology Act," including the Mississippi Health Information Network;
- reviewed relevant provisions of the American Recovery and Reinvestment Act (including the HITECH Act), the Patient Protection and Affordable Care Act, and the Health Insurance Portability and Accountability Act of 1996 (HIPAA);
- reviewed documentation relevant to progress made by the University of Mississippi Medical Center, the Division of Medicaid, and the Mississippi Health Information Network in implementing electronic health records systems;
- viewed demonstrations of the University of Mississippi Medical Center's Epic system and the Mississippi Health Information Network health information exchange; and,
- interviewed staff of the University of Mississippi Medical Center, the Division of Medicaid, and the Mississippi Health Information Network regarding implementation of electronic health records systems.

Background: Electronic Health Records and Health Information Exchanges

This chapter addresses the following questions:

- What are the major components of electronic health information technology?
- What factors have influenced the development and implementation of electronic health records and health information exchanges in Mississippi?
- What did PEER conclude in its 2010 report on Mississippi's electronic health records systems?

What are the major components of electronic health information technology?

***Electronic health information technology* is the use of technology to collect, store, retrieve, and transfer by electronic means a patient's clinical, administrative, and financial health information. For purposes of this report, the major components that make up the electronic health information technology structure are electronic medical records, electronic health records, health information exchanges, and community health records.**

As noted in PEER Report #542, *electronic health information technology* refers to the use of technology to collect, store, retrieve, and transfer by electronic means a patient's clinical and financial health information. The ultimate goal of health information technology is to bring together vital pieces of patient data that are scattered among providers.

Databases of providers (such as clinics and hospitals) utilize either electronic medical records or electronic health records. By using *electronic medical records* (EMR), providers have a digital version of a paper chart that contains all of their patients' medical histories from one practice. However, the providers cannot easily share the information stored in electronic medical records with providers outside their practice.

In contrast, by using *electronic health records* (EHRs), providers can share patient records that can be created and managed across more than one health care organization. EHRs also offer additional tools, including financial software to manage patient billing and decisionmaking tools to manage patient care.

The electronic sharing of patient information (EMRs and EHRs) between legally authorized health care providers (such as medical providers, insurers) is known as a *health information exchange*. This exchange can be either a limited scope process (i. e., between two or more providers) or a broader and more

formal process (i. e., the Mississippi Health Information Network, which is discussed on page 22). Using this shared information, the health information exchange generates a *community health record*, which is an aggregate of patient information from multiple health care systems throughout the community.

In summary, providers electronically send medical data that feeds into a patient health record, which can then feed into a community health record through a health information exchange. The overall goal is to create a database that allows medical providers access to a consolidated patient file from a patient's various providers and pharmacies.

What factors have influenced the development and implementation of electronic health records and health information exchanges in Mississippi?

The federal Health Information Technology for Economic and Clinical Health (HITECH) Act, passed in 2009, offers financial incentives to health care providers to implement electronic health records based on compliance with prescribed standards. These electronic health records also serve as a tool to help achieve the goals established in the 2010 Patient Protection and Affordable Care Act (PPACA). Also, the Health Information Technology Act, passed by the Mississippi Legislature in 2010, established the Mississippi Health Information Network.

Factors such as advances in health information technology, the need to control medical costs, and the desire to manage and track patient data more effectively have encouraged providers to seek opportunities and efficiencies in modernizing the health information infrastructure. Continued development and implementation have been brought about primarily by the HITECH Act and the PPACA at the federal level and by establishment of the Mississippi Health Information Network at the state level.

The Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009

Upon passage of the HITECH Act, Congress implemented the Electronic Health Records Incentive Program to authorize financial incentives for health care providers to implement electronic health records.

In 2009, Congress passed the HITECH Act, which was funded by the 2009 American Recovery and Reinvestment Act (ARRA). One key provision of the HITECH Act was the Electronic Health Records Incentive Program, commonly referred to as "meaningful use."

The HITECH Act states that as of January 1, 2014, all public and private health care providers and other eligible professionals must have adopted and demonstrated "meaningful use" of electronic medical records in order to maintain their existing Medicaid and Medicare reimbursement

levels. In addition, meaningful use provisions offer financial incentives for health care providers to implement electronic health records.

Meaningful use of electronic health records, as defined by HealthIT.gov, consists of using digital medical and health records to achieve the following:

- improve quality, safety, efficiency, and reduce health disparities;
- engage patients and family;
- improve care coordination; and,
- maintain privacy and security of patient health information.

In order for eligible providers to receive meaningful use incentive payments, they must meet certain thresholds established by the Centers for Medicare and Medicaid Services (CMS). These thresholds vary depending on whether they refer to the Medicare program or to the Medicaid program. For a brief description of meaningful use programs, see Appendix B on page 36.

Patient Protection and Affordable Care Act (PPACA) of 2010

Electronic health records serve as a tool to help achieve many of the goals set forth in the Patient Protection and Affordable Care Act of 2010, such as supporting the development of accountable care organizations, curbing hospital readmissions, and reducing paperwork and administrative costs.

While the PPACA does not specify requirements for the development of electronic health records, as the HITECH Act does, electronic health records do serve as a tool to help achieve some of the PPACA's goals. These goals include:

- *supporting the development of and communication among accountable care organizations*--The Patient Protection and Affordable Care Act provides a cost-savings incentive to accountable care organizations.³ If the accountable care organizations can provide high quality care and reduce costs to the overall health care system, they can keep some of the money that they have helped save. One possible way to achieve improved integration is to utilize electronic health records.
- *managing patient health care more effectively and curbing hospital readmissions*--Providers can potentially utilize electronic health records to manage a patient's continuum of care more effectively by making more well-informed and timely decisions. For example, a provider could use electronic health records to target patients once they are

³An *accountable care organization* (ACO) is a coordinated network of health care providers that share financial and medical responsibility for providing care to patients with a goal of meeting specific quality of care benchmarks and controlling costs. The PPACA authorized CMS to create an accountable care organization program.

discharged from the hospital in order to schedule and track follow-up appointments with the goal of reducing the number of hospital readmissions.

- *generating more comprehensive data for understanding health disparities*--To help understand health disparities, the PPACA requires any ongoing or new federal health program to collect and report racial, ethnic, and language data. By implementing electronic health records, hospitals and providers will not only have a greater ability to generate electronic medical information, but also more readily searchable and transferrable patient information. The U. S. Department of Health and Human Services can then use this data to help identify and ultimately work toward reducing health disparities.
- *reducing paperwork and administrative costs*--The PPACA standardizes billing and requires health plans to begin adopting and implementing rules for the secure, confidential, electronic exchange of health information. Using electronic health records has the potential to reduce paperwork and administrative burdens, which can reduce costs.

Mississippi Health Information Technology Act of 2010

The Mississippi Health Information Technology Act of 2010 created the Mississippi Health Information Network (MS-HIN) through MISS. CODE ANN. § 41-119-5 et seq. (1972). The primary goal for MS-HIN is to serve as a centralized coordinated health information exchange in Mississippi.

In 2010, the Mississippi Legislature enacted the Health Information Technology Act (House Bill 941, 2010 Regular Session) to create the Mississippi Health Information Network, thus expanding its predecessor Mississippi Coastal Health Information Exchange (MSCHIE) from a local coastal health information exchange to a statewide health information network. The Legislature created the Mississippi Health Information Network to provide statewide capability to exchange health information securely and electronically. Examples of patient data that can be collected and shared through MS-HIN are x-rays and lab reports. Such information can then be used to create a consolidated, searchable, electronic patient file for each Mississippian that can be reviewed by physicians and specialty providers.

Building on the statewide health information exchange, another goal is for the data collected through MS-HIN to be shared with Healtheway, formerly known as the Nationwide Health Information Network (NHIN). The Nationwide Health Information Network exchange includes entities such as Centers for Disease Control and Prevention, Centers for Medicare and Medicaid Services, and the Department of Veterans Affairs.

What did PEER conclude in its 2010 report on Mississippi's electronic health records systems?

In its 2010 report, PEER concluded that UMMC and DOM had complied with best practices to date for procurement of their electronic health records systems. At that time, UMMC estimated that its system would cost \$70 million and DOM projected that the cost of its system would be less than \$10 million. At the time of that report, it was not yet possible to know what portion of ARRA funds that Mississippi providers would receive.

In its report entitled *A Review of Requests for Proposals Used by the Division of Medicaid and University of Mississippi Medical Center to Procure Electronic Health Records Systems* (Report #542, November 9, 2010), the PEER Committee:

- evaluated the requests for proposals for the implementation and operations services for the Division of Medicaid and the University of Mississippi Medical Center electronic health records systems and e-prescribing system for providers;
- evaluated the proposed expenditures of the Division of Medicaid and the University of Mississippi Medical Center regarding electronic health information; and,
- evaluated the use of American Recovery and Reinvestment Act of 2009 funds for electronic health records system implementation in Mississippi.

Because the Division of Medicaid's and the University of Mississippi Medical Center's health information technologies were in their early stages of implementation at the time of the 2010 review, PEER did not review the operations of such technologies. However, PEER did determine that:

- Both UMMC and the Division of Medicaid complied with RFP components considered to be "best practices" based on procurement requirements of the Department of Information Technology Services, the Personal Service Contract Review Board, and the American Bar Association.
- UMMC initially estimated the lifecycle cost of its health care information system to be \$70 million. The Division of Medicaid's consultant projected the cost of its electronic health records and e-prescribing system at less than \$10 million.
- ARRA provided more than \$19 billion to states for Medicare and Medicaid health information technology incentives over five years, but at the time of that report, it was not yet possible to know the portion of ARRA funds that Mississippi providers would receive.

The full text of PEER Report #542 is available at www.peer.state.ms.us.

The next three chapters address what progress UMMC, the Division of Medicaid, and the Mississippi Health Information

Network have made toward implementing electronic health records since issuance of Report #542. These chapters also discuss the extent to which each respective entity complies with the EHR requirements of federal or state law, the costs of implementation, and what expenditures remain to be made and for what purposes.

What progress has the University of Mississippi Medical Center made since 2010 in implementing its electronic health care information system?

UMMC's electronic health care information system, known as Epic, replaced twenty existing legacy systems and officially went live June 1, 2012. UMMC reports that Epic complies with applicable requirements. Through May 30, 2014, UMMC had spent approximately \$97 million to implement Epic and it expects to spend from \$15 to \$17 million per year in FY 2015 and FY 2016 to operate and maintain Epic.

This chapter addresses the following questions:

- What progress has the University of Mississippi Medical Center made in implementing electronic health records?
- Does UMMC's Epic system enable UMMC to comply with the EHR requirements of federal and state law?
- How did UMMC fund the implementation of the Epic system? What expenditures have been made to date toward implementing Epic? What expenditures remain to be made and for what purposes?

What progress has the University of Mississippi Medical Center made in implementing electronic health records?

UMMC's electronic health care information system, known as Epic, replaced twenty existing legacy systems and officially went live June 1, 2012.

In 2009, the University of Mississippi Medical Center chose to eliminate its existing systems and create a new consolidated health care information system. On August 23, 2010, UMMC entered into a contract to purchase the Epic electronic health care information system from Epic Systems Corporation. Epic is a comprehensive, unified electronic health care information system, including electronic health records, a centralized patient portal, a centralized master patient index, research support, and improved administrative and billing components, including tying billing to electronic health records.

The Epic system officially went live (i. e., became operational) on June 1, 2012. The four major project areas that comprise Epic's health care information system are:

- *Enterprise-wide Patient Access and Revenue Cycle*--includes applications for collecting, tracking, and maintaining patients' registration information; managing patients' hospital stays from preadmission to discharge for centralized and/or decentralized admitting; and a Welcome Kiosk that expedites patient flow via a self-service touch screen that allows patients to check in for appointments,

answer questionnaires, sign forms electronically, and make payments. In addition, Epic provides billing with provider- or hospital-level reporting and online work queues for billing edits, claim edits, denial management, and paperless collections.

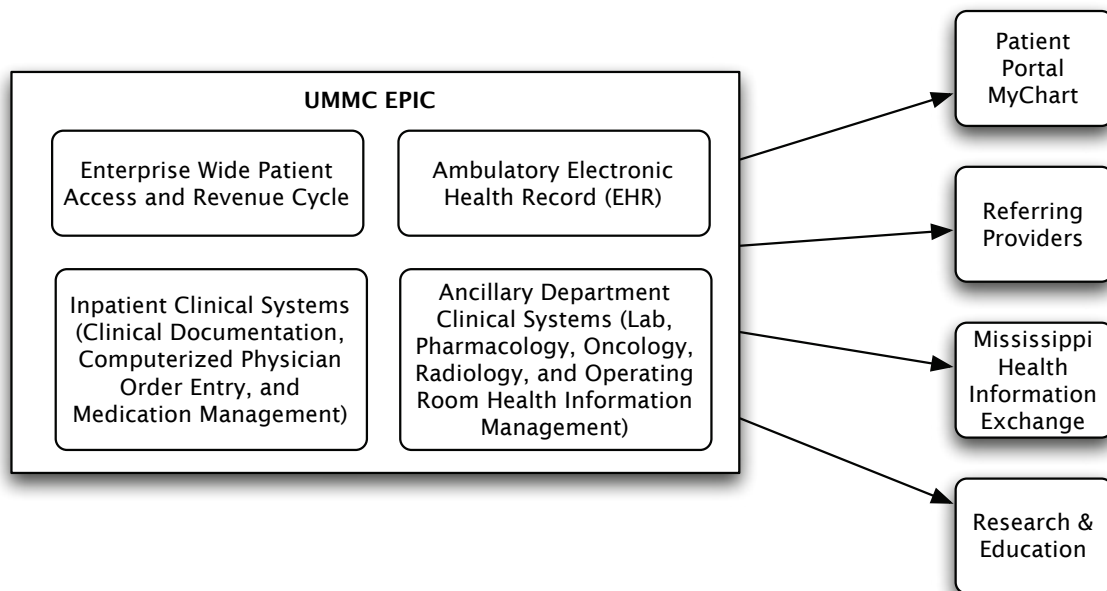
- *Inpatient Clinical Systems*--includes the patient data repository, clinical documentation, computerized physician order entry, and medication management.
- *Ancillary Department Clinical Systems*--includes applications supporting lab, pharmacy, oncology, radiology, operating room management and anesthesia management, transplant support, and health care information management, including chart tracking, release of information, and deficiency tracking, coding, and abstracting.
- *Ambulatory Electronic Health Record*--includes the electronic medical record component, the application for directly interacting with other providers (i. e., Care Everywhere and Care Elsewhere). It also includes the MyChart Shared patient record, which provides patients with controlled access to their electronic medical record and self-service options such as scheduling, refill request, and bill paying.

A few Epic applications still remain in the development process. UMMC is also in the process of onboarding⁴ its electronic health records with MS-HIN, with an expected go live date in fall 2014.

Exhibit 1, page 12, shows the interaction of the Epic components with the patient portal MyChart, referring providers, the Mississippi Health Information Exchange, and the research and education component of UMMC and other entities. Appendix C, page 38, includes additional description of each of the Epic applications. Appendix D, page 43, presents a timeline of UMMC's implementation process.

⁴*Onboarding* is the management of the early stages of incorporating a provider, such as UMMC or DOM, into the MS-HIN health information exchange, including issues of connecting and interfacing systems.

Exhibit 1: UMMC'S Epic Health Care Information System



The four major components of Epic interact with the patient portal MyChart, with referring providers, with the Mississippi Health Information Exchange, and with the research and education component of UMMC and other entities.

SOURCE: PEER analysis of *Epic Health Care Implementation Program Charter*, University of Mississippi Medical Center, February 1, 2011.

Does the University of Mississippi Medical Center's Epic system enable UMMC to comply with the EHR requirements of federal and state law?

Epic currently maintains required EHR certification with the Office of the National Coordinator for Health Information Technology. UMMC also reports that Epic complies with all requirements of the Health Insurance Portability and Accountability Act of 1996. Further, UMMC and its providers remain on track for meeting the Electronic Health Records Incentive Program requirements (e. g., "meaningful use"), generating over \$24 million in incentive payments to date for progress in adopting and implementing electronic health records.

Maintaining Federal EHR Certification

To qualify for the Electronic Health Record Incentive Program, Epic maintains required EHR certification with the Office of the National Coordinator for Health Information Technology.

In order to qualify for the Electronic Health Record Incentive Program (i. e., "meaningful use;" see page 5), an electronic

health records system must meet standards set by the Office of the National Coordinator for Health Information Technology (ONC) accrediting body and be certified. The ONC keeps a Certified Health IT Product List on its website. As the Centers for Medicare and Medicaid Services and the ONC change or update these standards, electronic health records vendors are required to be recertified or lose their certification and force their customers to find another certified electronic health record. UMMC's Epic continues to maintain certification as an electronic health record with the ONC accrediting body.

Compliance with HIPAA

UMMC reports that Epic complies with all requirements of the Health Insurance Portability and Accountability Act of 1996.

The Health Insurance Portability and Accountability Act (HIPAA) is a federal law that provides baseline privacy and security standards for medical information. The U. S. Department of Health and Human Services (HHS) is the federal agency in charge of enforcing HIPAA.

HIPAA was passed in 1996 in order to set standards for transmitting electronic health data and to allow people to transfer and continue health insurance after they change or lose a job. In 2003, the HHS issued the first national data privacy and security rules under HIPAA. The most frequently referred to of these rules is the Privacy Rule that gives individuals rights with respect to protecting their health information. In 2013, HHS's Omnibus Rule made several important changes to the HIPAA rules and it implemented many provisions of the HITECH Act.

UMMC reports that Epic complies with all HIPAA requirements. All staff accessing Epic have a secure login and can only access the sections they have permission to access. For example, a social worker may only access and modify patient files pertaining to his or her role as a social worker, but cannot access and/or modify patient files outside his or her job function.

Implementing the Electronic Health Records Incentive Program

UMMC and its providers have attested to meeting the first year of the Electronic Health Records Incentive Program (i. e., "meaningful use") requirements set by CMS, to date generating over \$24 million in incentive payments for progress in adopting and implementing electronic health records and meeting meaningful use program requirements established by CMS.

The University of Mississippi Medical Center qualifies for two incentive programs under the Electronic Health Records Incentive Program: (a) Eligible Hospitals, which applies to the University of Mississippi Medical Center and includes all hospital-based providers, and (b) Eligible Professionals, which

applies separately for each of the approximately 400 eligible professionals at University Physicians.

The overall objectives of the Electronic Health Records Incentive Program are:

- to implement use of a certified electronic health record in a meaningful manner;
- to exchange health information electronically between providers;⁵ and,
- to generate the ability to submit quality, descriptive, and other measures automatically to government agencies.

UMMC and its providers⁶ have attested to meeting the first year of the Electronic Health Records Incentive Program (i. e., “meaningful use”) requirements set by CMS, generating over \$24 million in incentive payments to date for progress in adopting and implementing electronic health records and meeting meaningful use program requirements. For a breakdown of incentive payments received by the University of Mississippi Medical Center through July 1, 2014, see Appendix E, page 44.

How did UMMC fund implementation of the Epic system? What expenditures have been made to date toward implementing Epic? What expenditures remain to be made and for what purposes?

UMMC funds Epic through revenues generated from serving patients. Through May 30, 2014, UMMC had spent approximately \$97 million on training, staffing, consultants, software licensing fees, Epic implementation fees, and hardware costs to implement Epic. UMMC expects to spend from \$15 to \$17 million per year in FY 2015 and FY 2016 to operate and maintain Epic.

UMMC funds the cost of the Epic system with revenues generated from serving patients. UMMC also receives ARRA funds for participating in the Electronic Health Records Incentive Program to achieve meaningful use of electronic health information (see page 5). These revenues help offset a portion of the costs for investing in health information technology.

⁵To support communication with other health care providers, UMMC uses the industry-recognized Health Level Seven (HL7) language to standardize electronic communication between UMMC and other eligible hospitals and eligible providers. MS-HIN also uses HL7. HL7 provides a unified communication framework (and related standards) for the exchange, integration, sharing, and retrieval of electronic health information.

⁶UMMC’s 400 plus providers, as part of University Physicians, each attest to meeting specified meaningful use requirements separately, as approved by CMS, and thus are in various stages of completion of the requirements.

Through May 30, 2014, UMMC had spent approximately \$97 million on staffing, consultants, software licensing fees, Epic implementation fees, and hardware costs. UMMC expects to spend approximately \$17 million in FY 2015 and approximately \$15 million in FY 2016 to operate and maintain Epic, including UMMC staffing and consultants and software license fees.⁷ See Appendix F on page 45 for a breakdown of UMMC's Epic expenditures by category (for FY 2011 actual to FY 2016 budgeted).

As noted in the 2010 PEER report, the University of Mississippi Medical Center initially estimated in 2009 the five-year lifecycle cost of its health care information system Epic to be approximately \$50 million. However, after receipt of proposals and selection of a preferred vendor, UMMC, with approval of the Department of Information Technology Services, revised Epic's five-year lifecycle cost in 2010 to be approximately \$70 million. However, these costs did not include additional third-party transactional costs.

⁷These costs do not include projected one-time FY 2016 implementation and hardware costs to add UMMC Grenada to UMMC's Epic system.

What progress has the Division of Medicaid made since 2010 in implementing electronic health records?

Although the Division of Medicaid initially implemented an electronic health records system on June 4, 2010, neither the division's original contracted provider nor a second contracted provider could provide an electronic health records system that met revised federal EHR and Medicaid user acceptance standards. Consequently, the Division of Medicaid shifted to providing a clinical data repository. Many of the federal regulations specific to an EHR system no longer apply, but DOM reports that it is in compliance with applicable federal and state EHR requirements. From FY 2009 to FY 2014, the Division of Medicaid spent approximately \$14.1 million to attempt to procure and implement a statewide electronic health records system.

This chapter addresses the following questions:

- What progress has the Division of Medicaid made in implementing electronic health records?
- What comprises the Division of Medicaid's clinical data repository system? Does this system meet federal and state requirements for electronic health records?
- How did the Division of Medicaid fund the implementation of its electronic health records/clinical data repository systems? What expenditures have been made to date? What expenditures remain to be made and for what purposes?

What progress has the Division of Medicaid made in implementing electronic health records?

The Division of Medicaid initially implemented an electronic health records system on June 4, 2010, prior to the 2011 federal requirements for certified electronic health records. Neither DOM's original contracted provider nor a second contracted provider could provide an electronic health records system that met federal EHR and Medicaid acceptance standards. Consequently, in 2014, after consultation with the Centers for Medicare and Medicaid Services, DOM made the decision to provide a clinical data repository instead of supplying Medicaid providers with an electronic health records system. A contract was subsequently assigned to Mede/Analytics in 2014 to proceed with a clinical data repository system.

As noted in PEER Report #542, in 2010, the Division of Medicaid initially issued a request for proposals to implement an electronic health records system that could be utilized by all Medicaid providers. In 2009, the Division of Medicaid

competitively selected Shared Health, Inc., as the vendor to design, develop, and implement an e-health records and e-prescribing system, executing a contract on July 1, 2009.

Changes in Contractors

The Division of Medicaid initially implemented an electronic health records system on June 4, 2010, prior to the 2011 federal requirements for certified electronic health records. Neither DOM's original contracted provider nor a second contracted provider could provide an electronic health records system that met federal EHR and Medicaid user acceptance standards.

Partnering with Shared Health, the Division of Medicaid's Medicaid Electronic Health Record System and ePrescribing system (MEHRS/eScript) went into production on June 4, 2010. However, in 2011, the Office of the National Coordinator for Health Information Technology began requiring that all electronic health records systems be certified under federal requirements. Shared Health was unable to provide a transition from a non-certified to an ONC-certified electronic health record system, as required by its contract with DOM. In March 2012, Shared Health informed the Division of Medicaid that it would not be a good business decision for Shared Health to continue developing a certified EHR and thus it was exiting the EHR market.

Because Shared Health was still under contract to provide electronic health records services for the Division of Medicaid, Shared Health, on behalf of the Division of Medicaid, sought a replacement vendor in compliance with its original contract terms. Shared Health used criteria from Medicaid's original request for proposals and statement of work to evaluate proposals by two vendors: Orion Health, which partnered with subcontractor Mede/Analytics, and eMD.

According to DOM staff, Shared Health vetted the technical proposals and considered which would be the best option for the state, including, for example, the ability to meet Medicaid contract requirements. After vetting the two providers (Orion and eMD), Shared Health concluded that eMD was not able to meet the technical requirements of the Division of Medicaid, but that Orion could fulfill these requirements. According to DOM staff, the Division of Medicaid also reviewed the vetting and the documents submitted by Orion based on Shared Health's recommendation. Ultimately, in August 2012, the Division of Medicaid made the decision to select Orion (along with its subcontractor Mede/Analytics) based on its responses to meeting requirements defined in the contractual statement of work.

By August 2013, Orion had put into production its version of the new Medicaid system, but subsequent testing showed that it did not meet the user acceptance test standards established for the product by Medicaid. DOM's staff noted that Orion's system was not popular with the Medicaid providers. Also, the Division of Medicaid's system was about to have to meet the

Centers for Medicare and Medicaid Services' new requirements for the 2014 certification of the product by ONC. Orion subsequently chose to no longer continue providing services to the Division of Medicaid prior to being terminated for failure to meet contract terms.

Shift to a Clinical Data Repository

In 2014, CMS began encouraging state Medicaid agencies to move toward providing a clinical data repository with clinical data (not just Medicaid claims) instead of supplying Medicaid providers with an EHR system. DOM determined it to be in the best interest of the state to utilize existing investments in technology and move forward with provision of a clinical data repository.

When DOM first began developing a statewide EHR system, local provider implementation of EHRs was limited. After Congress created the Electronic Health Records Incentive Program to encourage development of electronic health records at the provider level, providers began installing electronic health records systems on their own in return for incentive payments. Therefore, state Medicaid agencies no longer needed to build statewide EHR systems.

In 2014, the Centers for Medicare and Medicaid Services (CMS) began changing course regarding electronic health records and published Medicaid Information Technology Architecture 3.0, in which CMS encouraged state Medicaid agencies to move toward providing clinical data repositories with clinical data (not just Medicaid claims) instead of providing EHR systems for Medicaid providers' use.

Once the Division of Medicaid determined that Orion was unable to fulfill the terms of the contract to implement a certified electronic health records system, DOM reevaluated its options. By making the shift to a statewide clinical data repository, Mississippi's Division of Medicaid could gain access to a statewide, searchable Medicaid patient record and access to more data to manage patients.

Orion's subcontractor Mede/Analytics had successfully gone live with a clinical data repository and enterprise master patient index in December 2013. Rather than pursuing legal recourse against Orion because it had chosen to no longer provide services, DOM determined it to be in the best interest of the state to utilize those existing investments in technology and move forward with Mede/Analytics. Subsequently, after consultation with the Centers for Medicare and Medicaid Services, the Division of Medicaid required Orion to assign the remaining portion of the EHR contract to Mede/Analytics for implementation of a clinical data repository.

Appendix G, page 47, presents a timeline of the Division of Medicaid's implementation process.

What comprises the Division of Medicaid's clinical data repository? Does this system meet federal and state requirements for electronic health records?

The Division of Medicaid's new clinical data repository system includes a clinical data repository in which providers can search patient records, a master patient index, and a secure provider portal. The division is partnering with the Mississippi Health Information Network to capture Medicaid-specific provider data at the hospital and clinical level to add to the clinical data repository. Many of the federal regulations specific to an EHR system no longer apply, aside from HIPAA and other privacy and security requirements. DOM reports that it is in compliance with remaining applicable federal and state EHR requirements.

Components of the Clinical Data Repository System

The Division of Medicaid's new clinical data repository system includes a clinical data repository in which providers can search patient records, a master patient index, and a secure provider portal. DOM is partnering with the Mississippi Health Information Network to capture Medicaid-specific provider data at the hospital and clinical level to add to the clinical data repository.

By coordinating with CMS, the Division of Medicaid was able to transition by incorporating existing Mede/Analytics components and build a centralized state electronic Medicaid patient file into which providers can log in and search instead of building an electronic health records system. The Division of Medicaid noted that it plans to further develop and improve the Medicaid data imported into this system.

Components of the clinical data repository system are:

- *Clinical data repository*--contains up to nine years of historical data (e. g., diagnoses, procedures, medications) for each Medicaid beneficiary. This data is view-only for providers and is updated weekly from the Medicaid Management Information System.
- *Master patient index*--creates a single patient identifier and ensures that patients are represented only once across all systems. It also verifies whether the patient is a Medicaid patient.
- *Medical and Medicaid management tools*--offers tools to allow the Division of Medicaid to identify critical patterns and correlations where cost savings may exist, such as identifying high-risk beneficiaries for care management and measuring utilization across various service categories.

DOM staff stated that the goal of these components is to pursue seamless data exchange with the Mississippi Health Information Network (MS-HIN).

One long-term goal of the clinical data repository system is to allow DOM to move toward an automated prior authorization process and to meet some of the new service requirements

under the Medicaid Information Technology Architecture (MITA) 3.0. Furthermore, the Division of Medicaid, MS-HIN, and CMS are partnering to provide funding to MS-HIN in which CMS and MS-HIN provide approximately \$4 million over two years (90/10 share) to expand MS-HIN services to forty-two additional eligible hospitals in exchange for the necessary clinical data to potentially automate the prior authorization process. In exchange for this funding, MS-HIN will provide the Division of Medicaid with:

- laboratory reports;
- radiology reports;
- pathology reports;
- admission, discharge, and transfer reports;
- continuity of care documents; and,
- consolidated-clinical document architecture (C-CDA)^{8,9}

As of September 2014, the Implementation Advanced Planning Document¹⁰ had been completed and had been resubmitted to the Centers for Medicare and Medicaid Services for approval.

Compliance with Federal and State Electronic Health Records Requirements

Because the Division of Medicaid ceased offering an electronic health records system in early 2014 by converting to a clinical data repository system, many of the federal regulations specific to an EHR system no longer apply (aside from HIPAA and other privacy and security requirements). DOM reports that it is in compliance with remaining applicable federal and state EHR requirements.

Regarding DOM's compliance with federal and state EHR requirements:

- From July 1, 2013, to June 30, 2014, DOM reported compliance with 45 C.F.R. Part 17 concerning standards for testing and implementing an electronic health records

⁸Together with the Continuity of Care Record standard, the Clinical Document Architecture forms the basis for the Continuity of Care Document standard for patient document information exchange. Both the CCR and CCD standards meet the United States government's guidelines for the meaningful use of EHR technology.

⁹The Consolidated-Clinical Document Architecture implementation guide defines nine different types of commonly used CDA documents, including: (a) Continuity of Care Document; (b) Consultation Notes; (c) Discharge Summary; (d) Imaging Integration and DICOM Diagnostic Imaging Reports; (e) History and Physical; (f) Operative Note; (g) Progress Note; (h) Procedure Note, and, (i) Unstructured Documents.

¹⁰An *Implementation Advanced Planning Document* (IAPD) is a recorded plan of action to request federal financial participation in the costs of designing, developing, and implementing a system. The Centers for Medicare and Medicaid Services approves and funds IAPD requests.

system, as well as “meaningful use requirements,” while offering a certified EHR system to Medicaid providers.

- From June 4, 2010, to June 30, 2014, DOM reported that it was in compliance with HIPAA while offering a certified EHR to Medicaid providers and that its clinical data repository system’s provider portal was also in compliance with HIPAA.

When DOM later shifted from an EHR system to a clinical data repository in 2014, as noted on page 18, the federal and state EHR requirements no longer applied.

Regarding DOM’s compliance with federal and state requirements that are still applicable:

- The Division of Medicaid reported that it is compliant with 42 C.F.R. Part 2 and MISS. CODE ANN. § 41-30-1 et seq. (1972) regarding confidentiality for alcohol and drug abuse prevention, treatment, and patient records. DOM has implemented a sensitive data policy, which prohibits the display/disclosure of alcohol abuse data in the former EHR system and in the current provider portal.
- The Division of Medicaid reported that it is compliant with MISS. CODE ANN. § 41-21-97 (1972), which provides for the confidentiality of hospital records and patient information pertaining to mental health treatment.

How did the Division of Medicaid fund implementation of its electronic health records/clinical data repository system? What expenditures have been made to date? What expenditures remain to be made and for what purposes?

From FY 2009 to FY 2014, the Division of Medicaid spent \$14.1 million to attempt to procure and implement a statewide electronic health records system.

From FY 2009 to FY 2014, the Division of Medicaid spent \$14.1 million to procure and implement a statewide electronic health records system. Federal funding through grants accounted for 47% of total project funding and state funding through matching grant support accounted for 7%. Shared Health funded the remaining 46% through payments to Medicaid and EHR contractors after Shared Health did not meet its contract obligations in implementing an electronic health records system.

Costs included payments to Shared Health, Orion, and Mede/Analytics for designing and developing an electronic health records system, payments to Fox Systems for planning, including MITA planning and finding a provider (Shared Health), and consulting and project management services.

What progress has the Mississippi Health Information Network made since 2010 in implementing electronic health records?

While the Mississippi Health Information Exchange system is mostly in place, the Mississippi Health Information Network is still in its early stages of adding providers to the system, with most early participation being from the Gulf Coast and the Delta. The Mississippi Health Information Network has application modules in place as part of the Mississippi Health Information Exchange to assist providers in meeting meaningful use requirements as well as for meeting components of the Patient Protection and Affordable Care Act. These include reporting requirements (e. g., immunization) as well as patient alerts, with the goal of assisting providers and insurers in tracking patients and managing patient care more effectively.

This chapter addresses the following questions:

- What is the Mississippi Health Information Network and what is the Mississippi Health Information Exchange?
- What progress has the MS-HIN made in implementing a health information exchange since the Legislature passed the Health Information Technology Act in 2010?
- Does the Mississippi Health Information Exchange meet the EHR requirements of federal and state law?
- How did MS-HIN fund implementation of the Mississippi Health Information Exchange? What expenditures have been made to date toward implementation? What expenditures remain to be made and for what purposes?

What is the Mississippi Health Information Network and what is the Mississippi Health Information Exchange?

MISS. CODE ANN. § 41-119-7 (1972) tasked the Mississippi Health Information Network with developing the Mississippi Health Information Exchange, an electronic exchange of health information in Mississippi that allows providers access to a patient's community health record.

As noted on page 7 in this report, the Mississippi Health Information Infrastructure Task Force initially created the Mississippi Coastal Health Information Exchange (MSCHIE) in 2007 as a pilot project for the state's coastal counties that were most affected by Hurricane Katrina.

In 2010, the Mississippi Legislature enacted the Health Information Technology Act (House Bill 941, 2010 Regular Session, now codified as MISS. CODE ANN. § 41-119-5 et seq. [1972]) to create the Mississippi Health Information Network

(MS-HIN), thus expanding MSCHIE from a local coastal health information exchange to a statewide network.

The Legislature created the Mississippi Health Information Network to coordinate and facilitate building a statewide capability to securely, electronically exchange health information. The MS-HIN is a secure electronic exchange of health information that allows providers quick, reliable access to a patient's community health record.

Exhibit 2, page 24, shows the sources of data for and users of the Mississippi Health Information Exchange.

The intent of the MS-HIN is to retrieve patient data (e. g., lab reports) from the provider level (e. g., hospitals) and create a consolidated, searchable, electronic patient file for each Mississippian that can be reviewed by physicians and specialty providers. Public health agencies receive more searchable data more quickly on patient health (e. g., for monitoring disease outbreaks) or for research on public health (e. g., for review on past sample cases of cancer) without having to search individual patient records manually.

Appendix H, page 48, presents a timeline of MS-HIN's development.

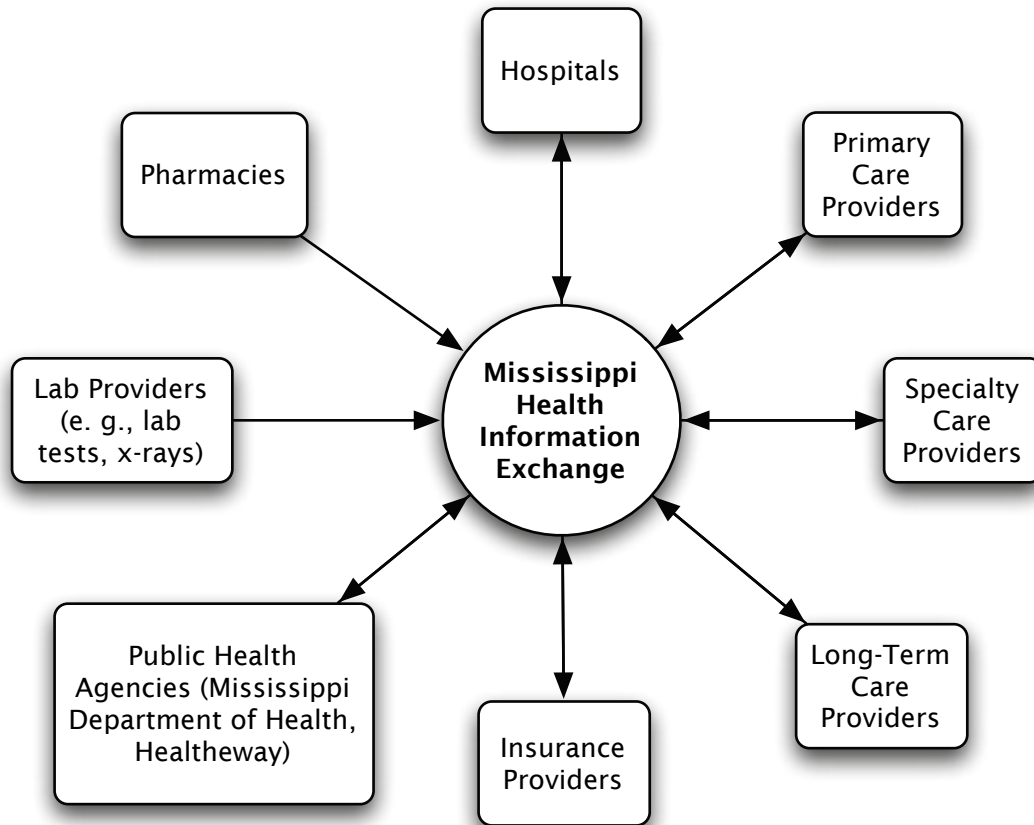
What progress has the MS-HIN made in implementing a health information exchange since the Legislature passed the Health Information Technology Act in 2010?

While the Mississippi Health Information Exchange system is mostly in place, the MS-HIN is still in the early stages of adding providers to the system, with most early participation being from the Gulf Coast and the Delta. The MS-HIN continues to build and develop the Mississippi Health Information Exchange to expand opportunities to the remainder of the state's medical providers, focusing primarily on hospitals and clinical providers, then expanding to ancillary providers, including long-term care providers and pharmacies.

Since its initial expansion from a pilot project on the Gulf Coast (see page 22), the Mississippi Health Information Network has targeted expanding into hospitals and clinics. As of June 2014, MS-HIN included:

- at least 600,000 unique covered patients;
- thirteen participating hospitals;
- thirty-nine participating clinics/federally qualified health centers; and,

Exhibit 2: Examples of Sources of Data for and Users of the Mississippi Health Information Exchange



The Mississippi Health Information Network, utilizing the Mississippi Health Information Exchange, electronically receives patient information from multiple health care systems throughout the community, establishes a community health record for each patient, and through the use of queries and push exchanges, aggregates and transfers health information to health insurance companies, to public health agencies, and to providers to monitor health.

SOURCE: PEER analysis.

- twenty hospitals in active onboarding, including University of Mississippi Medical Center (including University Physicians), Rush Health Systems, and the North Mississippi Medical Center system.

Also, as of June 2014, MS-HIN had:

- 1,001 total secure e-mail accounts, including 986 providers (doctors or nurses at hospitals or clinics);
- ninety-three hospitals with secure e-mail accounts;

- 1,616 separate medical providers (e. g., doctors, nurses) with secure access identification to log in and search records on MS-HIN's community health record; and,
- 165,106 community health record chart views by a doctor or nurse in calendar year 2013.

The long-term goal of MS-HIN expansion is to onboard all hospitals throughout Mississippi.

Services Provided by the Mississippi Health Information Exchange

Providers are able to search the web-based Mississippi Health Information Exchange to view patient information aggregated from multiple health providers throughout the state into a consolidated patient file.

The Mississippi Health Information Exchange service allows providers to query available patient health information within a network. With the click of a mouse, providers can access information such as patient laboratory reports, past procedures, diagnosis, and medications. The MS-HIN offers health care providers a single point of access to a comprehensive community health record. Providers use this web-based clinical application to view patient information aggregated from multiple systems throughout the community in a secure electronic format.

The Mississippi Health Information Exchange offers the following services:

- community health records;
- community medication history; and,
- results distribution.¹¹

One example of how these services may be utilized is that the community results distribution could be combined with the community health record to provide an emergency department staff with real-time patient information, test results, and medical history, necessary for when a trauma, heart attack, or stroke patient is transferred into one hospital from another hospital.

Subscribing to the Mississippi Health Information Exchange allows health care providers to share messages and health information needed to provide patient care. Providers can electronically send and receive patient information quickly and securely. Additionally, the MS-HIN Direct Program enables eligible professionals and eligible hospitals participating in incentive payment programs to meet meaningful use requirements.

Also, providers can electronically send, schedule, and track patient referral information. Providers can see the status and communicate about each referral for their practice; upon

¹¹*Results distribution* is the delivery of structured clinical results from one EHR to another.

making a referral, search the MS-HIN network by physician name, practice name, or service; and specify how they want to receive referrals by adding questions and instructions for the referring office. An example of how direct messaging could be used is that when a primary care clinic emails a referral request to a specialist and attaches relevant patient history documents, the specialist could then send back an email with a diagnosis and/or recommendation for care.

MS-HIN also assists providers with public health reporting. With the advent of meaningful use and its associated requirements to exchange data (see page 5), health care organizations are under pressure to implement standards-based interoperability solutions in a relatively short time frame. To support health care organizations in complying, the State Department of Health and MS-HIN have created a set of solutions that can help make provider data reporting to both the State Department of Health and the Centers for Medicare and Medicaid Services easier by leveraging MS-HIN interfaces and the Office of National Coordinator for Health IT-approved solutions. For example, MS-HIN forwards required data to the State Department of Health to satisfy electronic lab reporting requirements and MS-HIN supports program specific interfaces such as the state's immunization registry and state hospital discharge reporting requirements.

Impact of MS-HIN on Patients

While MS-HIN does not directly serve patients, the Mississippi Health Information Exchange offers the potential for improved benefits and services for patients and their care.

As the Mississippi Health Information Exchange expands, it has the potential to make a patient's interactions with the health care system more convenient, more reliable, and less time-consuming. Examples of potential benefits and services for patients and their care include:

- rapid information sharing between providers;
- reduced paperwork; and,
- reduced duplication in medical tests by shared access to prior results.

While the Mississippi Health Information Network offers the potential for improved benefits and services for patients and their care, implementation and use of its exchange may vary from provider to provider as health information technology continues to develop at both the provider level and at the state and industry level.

Does the Mississippi Health Information Exchange meet the EHR requirements of federal and state law?

The Mississippi Health Information Network's Mississippi Health Information Exchange serves as a tool that enables providers to meet the EHR requirements of the Patient Protection and Affordable Care Act and the HITECH Act. MS-HIN itself does not have to meet any Patient Protection and Affordable Care Act standards or meaningful use requirements under the HITECH Act. However, the Mississippi Health Information Exchange does have built-in privacy and security features to ensure HIPAA compliance.

As noted previously in this report, an electronic health records system must comply with multiple federal regulations in order to be classified as a federally certified system. Since the MS-HIN is building a statewide health information exchange with the goal of creating a statewide network to connect providers' electronic health records systems, it does not have to comply specifically with some of these regulations as an entity. However, it serves as a tool that will help this network of providers ensure compliance of electronic health records systems with federal regulations.

How the Exchange Helps Providers Meet Requirements of the HITECH Act and the Patient Protection and Affordable Care Act

The Mississippi Health Information Network's Mississippi Health Information Exchange is a tool that enables providers to meet the requirements of the HITECH Act and the Patient Protection and Affordable Care Act.

While MS-HIN, as an electronic health information network, is not required to meet meaningful use requirements under the HITECH Act, MS-HIN provides services that assist eligible professionals and eligible hospitals in meeting meaningful use requirements. These services include:

- *MS-HIN Direct Services--MS-HIN Direct, a peer-to-peer messaging service for health care organizations, assists providers in meeting meaningful use requirements for eligible professionals and eligible hospitals and Patient Protection and Affordable Care Act requirements by enabling providers to send, receive, and share timely, secure clinical documentation and other patient health information with other providers. MS-HIN Direct capability is a Stage 2 meaningful use requirement for all certified electronic health records and can be utilized by eligible hospitals and providers to fit their needs. MS-HIN Direct may also be used to enhance provider workflow in managing care coordination, referrals, and other key clinic operations. The State Department of Health is using MS-HIN Direct to satisfy program-specific reporting requirements such as Hearing Screening and Stage 1*

meaningful use attestation for lab results, immunizations, and syndromic surveillance.

- *Summary of Care*--MS-HIN assists providers in meeting meaningful use requirements for eligible professionals and eligible hospitals by providing an electronic transport method for summary of care records (i. e., the continuity of care documents) for transitions and referrals through MS-HIN Direct.
- *Public Health Reporting*--MS-HIN assists providers in meeting meaningful use requirements for eligible professionals and eligible hospitals by supporting successful ongoing submission of laboratory results, immunization, and syndromic surveillance data to the State Department of Health.

Further, although MS-HIN itself does not have to meet any specific PPACA standards, MS-HIN enables providers to meet the requirements of the Patient Protection and Affordable Care Act. For example, MS-HIN helps accountability care organizations manage patient care by storing the patient's medical information all in one place, allowing the providers to communicate and jointly manage the patient's care more effectively.

The Exchange's Privacy and Security Features

The Mississippi Health Information Exchange has built-in privacy and security features to ensure HIPAA compliance.

MS-HIN is built to enable role-based access so that only authorized individuals can view patient information on a need-to-know basis. Unlike paper record storage systems, the Mississippi Health Information Exchange tracks who accesses or changes information and maintains an audit log.

How did MS-HIN fund implementation of the Mississippi Health Information Exchange?

What expenditures have been made to date toward implementation? What expenditures remain to be made and for what purposes?

MS-HIN has received approximately \$12.8 million in federal, state, and private funding and has expended approximately \$11.2 million to create and implement the Mississippi Health Information Exchange. While one goal of MS-HIN is to be self-sufficient, it has not yet reached a point where it has sufficient revenues to cover operational and additional build-out costs completely. Furthermore, MS-HIN expects additional expenditures for providing patients with a searchable system projected to commence in 2016, for which the specific costs are unknown to date.

Since its establishment in 2010 (by House Bill 941, 2010 Regular Session), the MS-HIN has received approximately \$12.8 million in grants and appropriations from the federal and state

government and not-for-profit foundations. Through June 2014, MS-HIN had expended approximately \$11.2 million to create, develop, and implement the Mississippi Health Information Exchange and to collaborate with hospitals, clinical providers to onboard them, and with insurance providers and pharmacies to collaborate data collection and information sharing. MS-HIN was not able to utilize approximately \$1.3 million in HITECH grant funds under ARRA because of a lack of matching funds, which subsequently lapsed in March 2014.

MS-HIN is in the beginning stages of self-generating revenue as it develops the Mississippi Health Information Exchange and thus is not yet capable of generating enough revenues to be self-sufficient. Clinics and hospitals pay a combination of one-time and/or annual fees based on a set fee schedule for clinical services and hospital services based on the services they need. MS-HIN has also established fee structures for ancillary providers, including nursing homes, and pharmacies and insurance providers pay a flat fee for data services. MS-HIN has collected \$330,155 in self-generated revenues as of the close of FY 2014, but its financial sustainability model projects MS-HIN needs from \$2.5 million to \$3 million in self-generated revenue per year to operate. MS-HIN staff stated that its original 2011 goal of being self-sustaining by 2015 was ambitious, given the developmental state of electronic medical/health records in Mississippi.

In addition to ongoing operational costs, MS-HIN will incur additional connection fee costs as it continues to build out the hospital and clinical connections to the network. As discussed on page 20, the Division of Medicaid and MS-HIN are in the process of procuring another \$4 million through an Implementation Advanced Planning Document to assist the Mississippi Health Information Network in building out the network to an additional forty-two hospitals as well as paying for Medicaid-specific data services. The Centers for Medicare and Medicaid Services and MS-HIN will share the costs 90% to 10%. Additional funds will be needed to expand MS-HIN (and subsequently Medicaid) to the remaining providers in future years, but such costs and funding sources have not yet been established. MS-HIN estimates these costs to be approximately \$5 million. As noted previously, Medicaid/CMS is projected to cover forty-two hospitals at a cost of \$4 million, plus the services of providing Medicaid clinical data to Medicaid for each MS-HIN provider. MS-HIN is also working with the Mississippi Public Health Institute to obtain \$900,000 in funding from the BP Deepwater Horizon Settlement overseen by the Louisiana Public Health Institute to fund a primary care physician notification tool.

Regarding future costs, MS-HIN staff notes that additional costs would be incurred with implementation of Phase Two, which is projected to commence in 2016. This would add a patient engagement solution to the existing MS-HIN, including providing patients with a searchable patient portal. However, MS-HIN has not further scoped or planned the security,

feasibility, and cost of such deployment to date. MSHIN is also pursuing additional federal and/or grant funding to add providers to the Mississippi Health Information Exchange in Phase Two.

Conclusion

Since PEER's 2010 report on procurement and implementation of electronic health records systems, the University of Mississippi Medical Center has established its electronic health records system as one component within its larger health care information system, known as Epic.

When Mississippi's Division of Medicaid first began developing a statewide EHR system, local provider implementation of EHRs was limited. As Congress created the Electronic Health Records Incentive Program to encourage the development of electronic health records at the provider level, providers began installing electronic health records on their own in return for incentive payments based on requirements of "meaningful use." Although DOM originally was pursuing an electronic health records system at the time of the 2010 PEER report, it has since transitioned into a clinical data repository.

Finally, the Mississippi Health Information Network has evolved from the original Mississippi Coastal Health Information Exchange to a statewide network.

Appendix A: Glossary of Terms Related to Electronic Health Records

ACOs (Accountable Care Organizations)--a coordinated network of health care providers that shares financial and medical responsibility for providing care to patients with a goal of meeting specific quality of care benchmarks and controlling costs. Under the Patient Protection and Affordable Care Act, each ACO has to manage the health care needs of a minimum of 5,000 Medicare beneficiaries for at least three years.

ARRA (American Recovery and Reinvestment Act)--an economic stimulus package enacted by the 111th Congress in February 2009, commonly referred to as the “Stimulus” or “The Recovery Act”

CAH (Critical Access Hospital)--a small facility that gives limited outpatient and inpatient hospital services to people in rural areas

CCHIT (Certification Commission for Health Information Technology)--a private, not-for-profit organization functioning as an ONC-Authorized Testing and Certification Body of electronic health records

CEHRT (Certified Electronic Health Record Technology)--certified EHR technology gives assurance to purchasers and other users that an EHR system or module offers the necessary technological capability, functionality, and security to help meet meaningful use criteria established by CMS and the Office of the National Coordinator for Health Information Technology

CQM (Clinical Quality Measures)--tools that help measure and track the quality of health care services provided by eligible professionals, eligible hospitals, and critical access hospitals

EHS (Eligible Hospitals)--under the Medicaid Incentive Program, includes acute care hospitals (including Critical Access Hospitals and cancer hospitals) with at least 10% Medicaid patient volume and children’s hospitals

EHR (Electronic Health Record)--an electronic record of health-related information of an individual that conforms to nationally recognized interoperability standards that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization

Electronic Health Records Incentive Program (“meaningful use” requirements)--provides financial incentives to health care providers to implement electronic health records in a meaningful way, including meeting program requirements established by CMS

eMPI (Enterprise Master Patient Index)--a database that contains a unique identifier for every patient in the enterprise who receives medical services, along with their demographic information, in order to identify, match, merge, and create a consolidated patient record for each individual patient in the database

EMR (Electronic Medical Record)--an electronic record of health-related information that can be created, gathered, managed, and consulted by authorized clinicians and staff within one health care organization

EP (Eligible Provider)--medical professional available for EHR incentive payments through the Medicaid EHR Incentive Program: non-hospital based physicians (M.D. or D.O.), nurse practitioners, certified nurse-midwives, dentists, and physician assistants who practice in a federally qualified health center or rural health clinic that is led by a physician assistant

Epic--the health care information system purchased by the University of Mississippi Medical Center from Epic Systems Corporation

ePrescribing--the ability to send an accurate, error-free and understandable prescription electronically and directly to a pharmacy from the point-of-care

HIE (Health Information Exchange)--the electronic movement of health-related information among organizations according to nationally recognized standards

HIN (Health Information Network)--a set of standards, services, legal agreements, and governance that enables the Internet to be used for secure and meaningful exchange of health information to improve health care

HIPAA (Health Insurance Portability and Accountability Act of 1996)--HIPAA is a federal law that sets standards for electronic transmission of claims-related information and for ensuring the security and privacy of all individually identifiable health information. HIPAA applies to healthcare providers, health plans, and healthcare clearinghouses (collectively called "covered entities"), as well as any of these covered entities' business associates that have access to medical records and transmit health information. HIPAA requires (1) certain security standards for the protection of electronic protected health information, (2) certain notification requirements if there is a breach of unsecured protected health information, and (3) certain privacy standards regarding individually identifiable information.

HIT (Health Information Technology)--the 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 decisionmaking11/24/14

HITECH (Health Information Technology for Economic and Clinical Health)--This was legislation enacted under Title XIII of the American Recovery and Reinvestment Act of 2009. The purpose of HITECH was to promote spending to expand adoption rates of HIT.

HL7 (Health Level Seven)--HL7 is one of several American National Standards Institute-accredited standards-developing organizations operating in the health care arena. Health Level Seven's domain is clinical and administrative data.

IAPD (Implementation Advanced Planning Document)--a recorded plan of action to request federal financial participation in the costs of designing, developing, and implementing a system

Interoperability--*Interoperability* is the ability of different information technology systems and software applications to communicate, exchange data, and use the information that has been exchanged. This includes permitting data to be shared across clinicians, labs, hospitals, pharmacies, and patients regardless of the application or application vendor.

Meaningful Use--*Meaningful use* is the use of certified electronic health records to improve quality, safety, efficiency, reduce health disparities, engage patients and family, improve care coordination, and maintain privacy and security of patient health information.

MEHRS/eScript (Medicaid Electronic Health Record System/eScript)--This system offers providers an EHR that aids providers in meeting meaningful use criteria. Smart analytics and predictive modeling enable improvement of care for Medicaid beneficiaries.

MES (Medicaid Enterprise System--the current Medicaid system for tracking and managing financial billing and automation of Medicaid claims

MSCHIE (Mississippi Coastal Health Information Exchange)--the predecessor health information exchange to MS-HIN

MITA (Medicaid Information Technology Architecture)--an initiative to promote improvements in the Medicaid enterprise and systems that support it through collaboration between CMS and the states. It is also a framework that provides a blueprint consisting of models, guidelines, and principles to be used by states as they implement enterprise solutions.

MMIS (Medicaid Management Information System)--The Medicaid Management Information System is an integrated group of procedures and computer processing operations (subsystems) developed to meet principal objectives.

NHIN (Nationwide Health Information Network)--NHIN is the federal government's program to implement a national interoperable system for sharing electronic medical records. NHIN includes the set of standards, specifications, and policies that enable the secure exchange of health information over the Internet.

ONC (Office of the National Coordinator for Healthcare Information Technology)--a staff division within the U. S. Department of Health and Human Services primarily focused on implementing an interoperable, private, and secure nationwide health information system and supporting the widespread meaningful use of technology.

Portal--a website that offers a range of resources, such as email, chat boards, search engines, and content

Provider--a provider is an individual or group of individuals that directly (primary care physicians, psychiatrist, nurses, surgeons, etc.) or indirectly (laboratories, radiology clinics, etc.) provide health care to patients

Shared Health, Inc.--a vendor providing DOM with MEHRS/eScript products

SOURCES: Division of Medicaid's State Medicaid Health Information Technology Plan; ONC Glossary of Terms on www.healthit.gov; www.cms.gov; and, www.medicaid.gov.

Appendix B: Meaningful Use

As part of the 2009 HITECH Act, the Electronic Health Care Record Incentive Program (commonly referred to as “meaningful use”) provides incentive payments to health care providers as they adopt, implement, upgrade, or demonstrate meaningful use of certified EHR technology.

As part of the 2009 HITECH Act, the Electronic Health Care Record Incentive Program--commonly referred to as “meaningful use”--provides incentive payments to eligible professionals, eligible hospitals, and critical access hospitals as they adopt, implement, upgrade, or demonstrate meaningful use of certified EHR technology.

The Medicare EHR Incentive Program is run by the federal Centers for Medicare and Medicaid Services. The maximum incentive amount is \$44,000, with payments made over five consecutive years. Providers must demonstrate meaningful use every year to receive incentive payments. However, unlike Medicaid, there is a penalty provision commencing in 2015 and later for failing to implement; Medicare-eligible professionals who do not successfully demonstrate meaningful use will have a negative payment adjustment made to their Medicare reimbursement. The payment reduction starts at one percent and increases each year that a Medicare-eligible professional does not demonstrate meaningful use, up to a maximum of five percent.

In contrast, the Medicaid EHR Incentive Program is an incentive-only program run by the state Medicaid agency (e. g., the Mississippi Division of Medicaid). The maximum incentive amount is \$63,750, with payments made over six years (unlike Medicare, payments do not have to be consecutive). In the first year, providers can receive an incentive payment for adopting, implementing, or upgrading EHR technology. Providers then must demonstrate meaningful use in the remaining years to receive further incentive payments.

Eligible hospitals may enroll and receive incentives for both the Medicare EHR and Medicaid EHR programs, but will only receive a penalty for non-compliance with the Medicare EHR program. In contrast, eligible providers may only enroll in either the Medicare or Medicaid program, but will receive a penalty, based on the Medicare penalty, for failing to attest to whichever program they enroll in (if they see Medicaid patients).

To receive an EHR incentive payment, providers have to show that they are “meaningfully using” their EHRs by meeting thresholds for a number of objectives. CMS has established the objectives for “meaningful use” that eligible professionals, eligible hospitals, and critical access hospitals must meet in order to receive an incentive payment.

The Electronic Health Record Incentive Programs have three stages with increasing requirements for participation. Stage 1 and Stage 2 each last two years. A provider must successfully meet the criteria of each stage for two consecutive years to advance to the next stage. In addition, all providers participating in the meaningful use program must also annually report progress on the clinical quality measures, which represent the Department of Health and Human Services' National Quality Strategy priorities for health care quality improvement. The criteria for Stage 3 have not yet been determined by CMS.

SOURCE: Centers for Medicare and Medicaid Services (www.cms.gov); University of Mississippi Medical Center; PEER Report #542.

Appendix C: Detailed Description of UMMC's Epic

Enterprise-Wide Patient Access and Revenue Cycle (PARC)

Consolidated Patient Access

Welcome Patient Kiosk: Expedites patient flow via a self-service touch screen kiosk by enabling patients to check in for appointments, answer questionnaires, sign forms electronically, make payments, etc.

Cadence Enterprise Scheduling System: Searches for appropriate availabilities for joint, recurring, and sequential appointments. Tracks and manages clinician and resource scheduling via flexible templates.

Includes *Referral Tracking* to manage incoming, internal, and outgoing referrals.

Includes *Advanced Rules-Based Scheduling*, which provides automatic scheduling based on definable procedures, associated resources, and rules.

Prelude Enterprise Registration System: Collects, tracks, and maintains registration information, interactive reporting, and searching.

Admission/Discharge/Transfer System: Manages hospital stays from preadmission to discharge for centralized and/or decentralized admitting, including workflows for authorizations, bed management, and environmental services.

Call Management/Customer Relationship Management: Centralizes customer services for the organization. Provides flexible workflows for managing a variety of customer-related communications. Records customer contacts, creates messaging pools, reviews correspondence history, provides extensive reporting, etc.

Nurse Triage: Provides the patient information, practice management tools, and clinical protocols nurses need to help sick patients over the phone. Walks nurse through the triage process step by step using online protocols.

Consolidated Revenue Cycle

Resolute Professional Billing and Patient Accounting: Physician billing with provider-level reporting and tracking of accounts receivable. Provides online work queues for charge and claim edits, denial management, and paperless collections. Produces electronic claims including the ANSI 837 v4010 Professional and Institutional formats. Includes an electronic remittance loader for automatic payment posting of various formats including HIPAA ANSI 835 v4010. Includes additional specialty modules for tracking dental billing; residency documentation; anesthesia billing; and, state billing requirements.

Resolute Hospital Billing and Patient Accounting: Facility billing for inpatients, outpatients, emergency department visits, and recurring visits. Provides online work queues for billing edits, claim edits, denial management, and paperless collections. Calculates expected reimbursement to monitor payment accuracy from payors and net down Accounts Receivable. Produces electronic claims including the ANSI 837 v4010 Professional and Institutional formats. Includes an electronic remittance loader for automatic payment posting of various formats including HIPAA ANSI 835 v4010. Includes additional specialty modules for abstracting and coding and state billing requirements.

EpicCare Inpatient Clinical System

Epicenter Enterprise Data Repository: Captures and organizes patient data from applications and interfaces across the continuum of care. Includes Chart Review, Results Review, In Basket, decision-support alerts, Notes, and accordion reports (data available depends on modules selected).

Electronic Medical Record (EMR): Includes chart entries such as Patient History, Demographics, Allergy Management, Problem List, Inpatient Notes, Flowsheet documentation including Intake and Output Entry, and Patient Education; Intra-team Communication; Patient Lists and Report Features.

Computerized Physician Order Entry: Order entry and decision support for pharmacy, radiology, lab, and other orders.

Core Clinical Documentation: Includes Interdisciplinary Notes, Documentation Flowsheets, and Intake and Output Review.

Extended Clinical Documentation: Includes Worklists, Discharge Instruction Writer, Interdisciplinary Patient Education Record, and Data Capture for device integration.

Medication Administration Record: Includes the electronic Medication Administration Record and reports, medication scheduling, integration with ordering and pharmacy functionality, variance documentation, and workstation-based barcode medication administration.

Interdisciplinary Care Plan: Facilitates collaborative care model with multiple disciplines. It allows care team to construct plan of care, evaluate document progress, alert clinicians for unmet expected goals/outcomes and can be carried across multiple encounters.

Clinical Pathways: Allows customers to build templates of standard sequenced care (e. g. orders, assessments, interventions, and teaching for admission day) for a given condition. It also provides at-a-glance review tools with traffic light indicators for patient progress trafficking.

ICU: Fine-tuned, configurable workflows for treatment decisions and review of high-density information; enhanced IV and data management tools to increase staff efficiency; and, configurable patient dashboard for critical care. However, it does not include real-time telemetry or machine interfaces.

Willow Inpatient Pharmacy System: Inpatient Pharmacy System provides order entry and verification for both simple and complex orders; interfaces with automated dispensing systems such as Pyxis and Omnicell; supports multiple hospitals, pharmacies, formularies, and charge calculation formulas. It also provides complete access to patient charts as well as tools for monitoring and managing patients.

MobileMeds: Provides a vehicle for Five Rights/Positive ID in the hospital using a PDA or mobile device. Includes Patient Lists, Rosters, Inpatient Nursing Medical Administration Record, Inpatient Nursing Vitals, and Intake and Output Entry.

ASAP Emergency Department Information System: Includes electronic tracking board views, patient status tools, and events logging, physician documentation and ordering, nursing documentation, medication administration and reconciliation, and support for quick patient arrivals. ASAP also includes full integration with the EpicCare Inpatient and EpicCare Ambulatory patient chart and clinical decision support.

***Ancillary Department Clinical Systems
(Lab, Pharmacy, Oncology, Radiology, and Operating Room
Health Information Management)***

OpTime Operating Room Management System: Includes scheduling and staff availability, case logs, inventory balances, and procedure requirements for multiple numbers of operating rooms, sites, and locations. Manages schedules in conjunction with Cadence Enterprise Scheduling System.

Perioperative Charting: Includes charting tools, nursing notes, flowsheet capabilities, and detailed medication administration recording.

Anesthesia: Documents preoperative assessments, collects real-time data from anesthesia monitors, and records intraoperative medication administrations and assessments.

Beacon Oncology Information System (Pediatric and Adult): Includes protocol and treatment plan management, protocol-based chemotherapy ordering and administration, protocol-based decision support and treatment scheduling, and functionality for cancer staging documentation.

Stork Obstetrics Information System: Provides an integrated, concise view of the patient's obstetric record, focusing on the continuum of care from the initial prenatal visit to the delivery room, through specialized documentation and review tools for all aspects of the obstetric experience, including ultrasound procedures, labor documentation, and delivery reporting.

Kaleidoscope Ophthalmology Information System: Provides an infrastructure for capturing numeric data from ophthalmology devices. Future functionality will include improved integration with phoropters and other numeric devices, exam form configuration options, and workflow tools for scheduling and resulting images and procedures.

Phoenix Transplant Information System: Provides a comprehensive view of the patient's transplant chart, focusing on the continuum of care from the initial evaluation to post-operative follow-ups. Additionally, transplant-specific documentation tools allow tracking of data for clinical operations and research and registry reporting. Support for patient

surveillance, waitlist management, UNOS waitlist reconciliation, and UNOS registry is included. Current focus is on solid organ transplants.

EpicCare Home Health: Checks out the patient record onto a laptop so it can be used remotely in the home, then synchronizes it back up with the repository after the visit. It includes Home Health Billing. However, it does not support hospice requirements.

Willow Ambulatory Pharmacy System: Pharmacy order entry; interaction checking and alerts; real-time claim adjudication through a third party; local or central fill of prescriptions; order review; status tracking; inventory; interfaces to robotics/pill counters; and, reporting and management tools.

Radiant Radiology Information System: Provides workflow support for complex radiology departments. Combines technologists' work lists, reading work lists, and support for seamless embedded PACS integration alongside Epic's tools for rules-based scheduling, clinical documentation, results communication, mammography, and film tracking. Natively supports Digital Imaging and Communications in Medicine.¹²

Beaker Laboratory Information System: Includes General Lab and Microbiology and supports interfaces with automated laboratory instrumentation. Also included are Reference Lab and Lab Billing modules to support reference laboratory workflows. Does not include Flow Cytometry, Molecular Pathology, Genetics, or Blood Bank.

Beaker Anatomic Pathology: Includes case entry, synoptic reporting, quality analysis correlations, rules for screening, and work lists for histologists, pathologists, and cytologists.

Ambulatory Electronic Health Record (EHR) and eHealth

EpicCare Ambulatory Electronic Medical Record (EMR):

Ambulatory Visits, Hospital Outpatient Visits (Emergency Department visits if used in the Emergency Department and EpicCare inpatient is not licensed)

Care Everywhere - Care Epic: Used to share information among organizations that use EpicCare.

Care Everywhere - Care Elsewhere: Used to share information between Epic and non-Epic providers.

Haiku: Allows providers to view their schedule and patient information, including past visits and results, on their mobile phone.

EpicCare Link: Allows affiliates who refer patients to follow the progress of their patients, review their results, request appointments, place procedure orders, and communicate via In Basket. Also improves the referral process to affiliates to whom you refer and allows affiliate clinic managers the ability to manage user and provider records.

¹²DICOM is an application layer network protocol for the transmission of medical images, waveforms and accompanying information.

MyChart Shared Patient Record: Provides patients with controlled access to their electronic medical record and important self-service options such as scheduling, refill request, bill paying, etc. Patients can also maintain their own personal health record. Features depend on applications licensed.

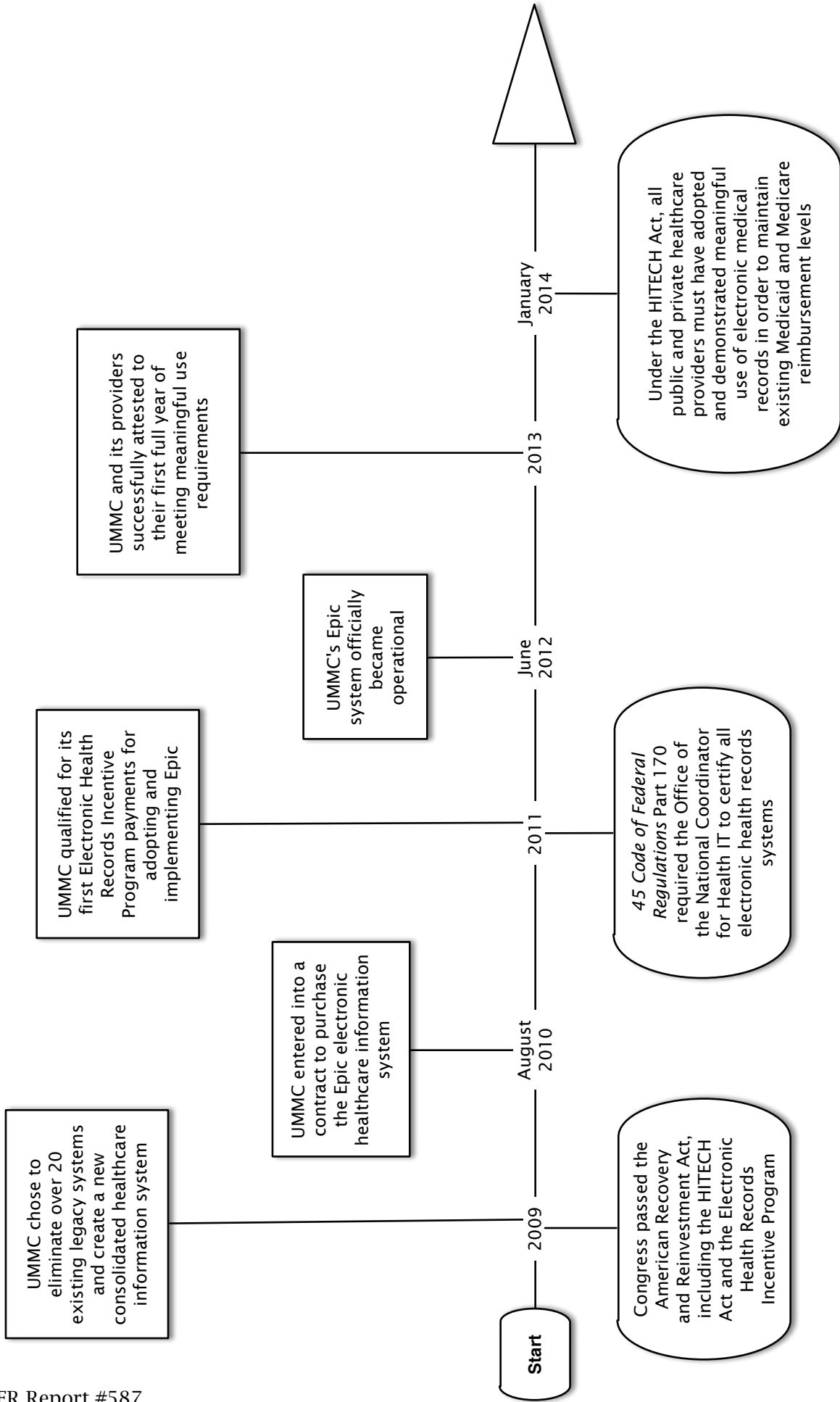
Lucy: Included with MyChart. Allow patients to upload the information provided through MyChart and add their personal comments and clarifications. Patients can elect to share both this uploaded information and their personal health record with any health care organization.

MyChart in Hospital: Allows patients (and proxies) to keep friends and family informed while they are admitted, includes interactive tools for patient education and tracking of milestones toward recovery/discharge, and includes the ability of family and friends to order gifts and flowers for the patient.

OutReach: Integrate with Beaker to facilitate reference lab services for providers outside an organization, allowing them to place orders, view results, and manage specimens online.

SOURCE: *Epic Health Care Implementation Program Charter.* University of Mississippi Medical Center. February 1, 2011. Version 1.04

Appendix D: University of Mississippi Medical Center Timeline of Implementing Electronic Health Records



Appendix E: Electronic Health Records Incentive Program Incentive Payments Received by the University of Mississippi Medical Center through July 1, 2014

Financial Unit	EHR Incentive Program Funding Category	Revenue by EHR Incentive Program Funding Category	Revenue by Financial Unit
University of Mississippi Medical Center (eligible hospital portion)	Medicaid Adopt, Implement, or Upgrade (2012)	\$4,102,409	\$8,771,825
	Medicaid Stage 1 Year 1 (2013)	\$3,281,927	
	Medicare Stage 1 Year 1 (2013)	\$1,387,489	
UMMC - Holmes County	Medicaid Adopt, Implement, or Upgrade (2012)	\$772,000	\$1,389,600 + \$555,645 pending
	Medicaid Stage 1 Year 1 (2013)	\$617,600	
	Medicare Stage 1, Year 1 (2013)	(\$555,645 pending)	
University Physicians	Medicaid Adopt, Implement, or Upgrade (2011)	\$9,456,250	\$13,629,750
	Medicaid Stage 1, Year 1 (2013)	\$4,173,500	
School of Nursing Providers	Medicaid Adopt, Implement, or Upgrade (2012)	\$212,500	\$212,500
	Medicaid Stage 1, Year 1	Included in University Physicians Amount	
Combined Total Received:			\$24,003,675
Additional Pending:			\$555,645

SOURCE: Health System Financial Incentive Programs, Quality Administration, University of Mississippi Medical Center. Data through July 1, 2014.

Appendix F: UMMC Expenditures for Epic, by Category of Expenditure, FY 2011 Actual-FY 2016 Budgeted

	FY 2011 Actual	FY 2012 Actual	FY 2013 Actual	FY 2014 (As of 05/30/14)	FY 2015 Budgeted	FY 2016 Budgeted*	Total Cost
Epic Payroll	\$ 4,055,986	\$ 9,712,748	\$ 8,676,036	\$ 8,676,036	\$ 8,676,036	\$ 8,676,036	\$ 48,472,878
Staff Augmentation	\$ -	\$ 4,222,231	\$ 4,318,178	\$ 475,169	\$ 1,000,000	\$ 1,000,000	\$ 11,015,578
Software License Fees (includes 11 months of perpetual license fees post 2015)	\$ 3,051,970	\$ 4,365,611	\$ 4,705,161	\$ 4,017,787	\$ 4,611,744	\$ 2,797,074	\$ 23,549,347
Epic Implementation Fees	\$ 1,957,490	\$ 5,095,253	\$ 3,423,286	\$ 174,644	\$ 150,000	\$ 150,000	\$ 10,950,673
UMMC Epic Training/Travel Costs	\$ 533,169	\$ 586,675	\$ 199,054	\$ 171,065	\$ 175,000	\$ 175,000	\$ 1,839,963
UMMC buildout expenses related to Epic	\$ 2,050,132	\$ 15,609	\$ -	\$ -	\$ -	\$ -	\$ 2,065,741
Misc Expenses related to implementation	\$ -	\$ 552,761	\$ 79,324	\$ 579	\$ -	\$ -	\$ 632,664
Hardware costs	\$ 6,218,816	\$ 10,024,634	\$ 1,989,157	\$ 617,118	\$ 500,000	\$ 500,000	\$ 19,849,725
Third Party Software non Epic billed	\$ 33,750	\$ 726,125	\$ 131,760	\$ 147,856	\$ 350,642	\$ 350,642	\$ 1,740,775
Interface fees for third party to Epic	\$ -	\$ 1,095,430	\$ 103,655	\$ 104,975	\$ 5,495	\$ 5,495	\$ 1,315,050
Siemens Conversion fees	\$ 33,750	\$ 274,659	\$ 74,676	\$ -	\$ -	\$ -	\$ 383,085
Epic training renovations	\$ -	\$ 507,976	\$ 27,968	\$ -	\$ -	\$ -	\$ 535,944
Epic Maintenance (includes Epic hardware maintenance)	\$ 57,006	\$ 364,380	\$ 1,236,463	\$ 740,523	\$ 1,200,000	\$ 1,200,000	\$ 4,798,372
Third party maintenance related to Epic	\$ -	\$ 178,115	\$ 1,480,524	\$ 126,473	\$ 355,776	\$ 355,776	\$ 2,496,664
Epic transaction Items (MyChart access, CareEverywhere, Haiku, etc.)	\$ -	\$ -	\$ 21,550	\$ 48,680	\$ 103,314	\$ 103,314	\$ 276,858
Epic Project Total	\$ 17,992,069	\$ 37,722,207	\$ 26,466,792	\$ 15,300,905	\$ 17,128,007	\$ 15,313,337	\$ 129,923,317

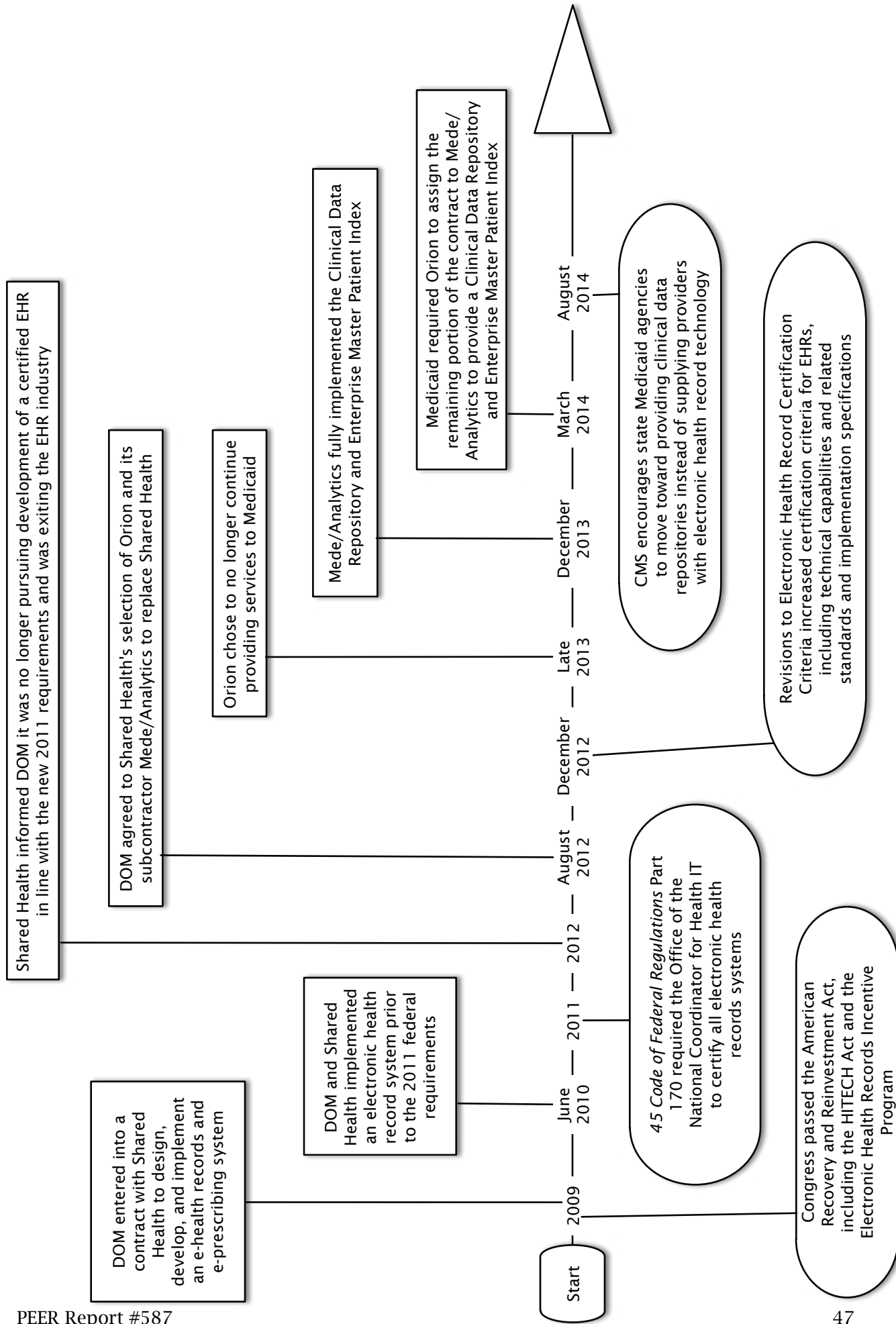
*These costs do not include projected one-time FY 2016 implementation and hardware costs to add UMMC Grenada to UMMC's Epic system.

Appendix F: UMMC Expenditures for Epic, by Category of Expenditure, FY 2011 Actual-FY 2016 Budgeted

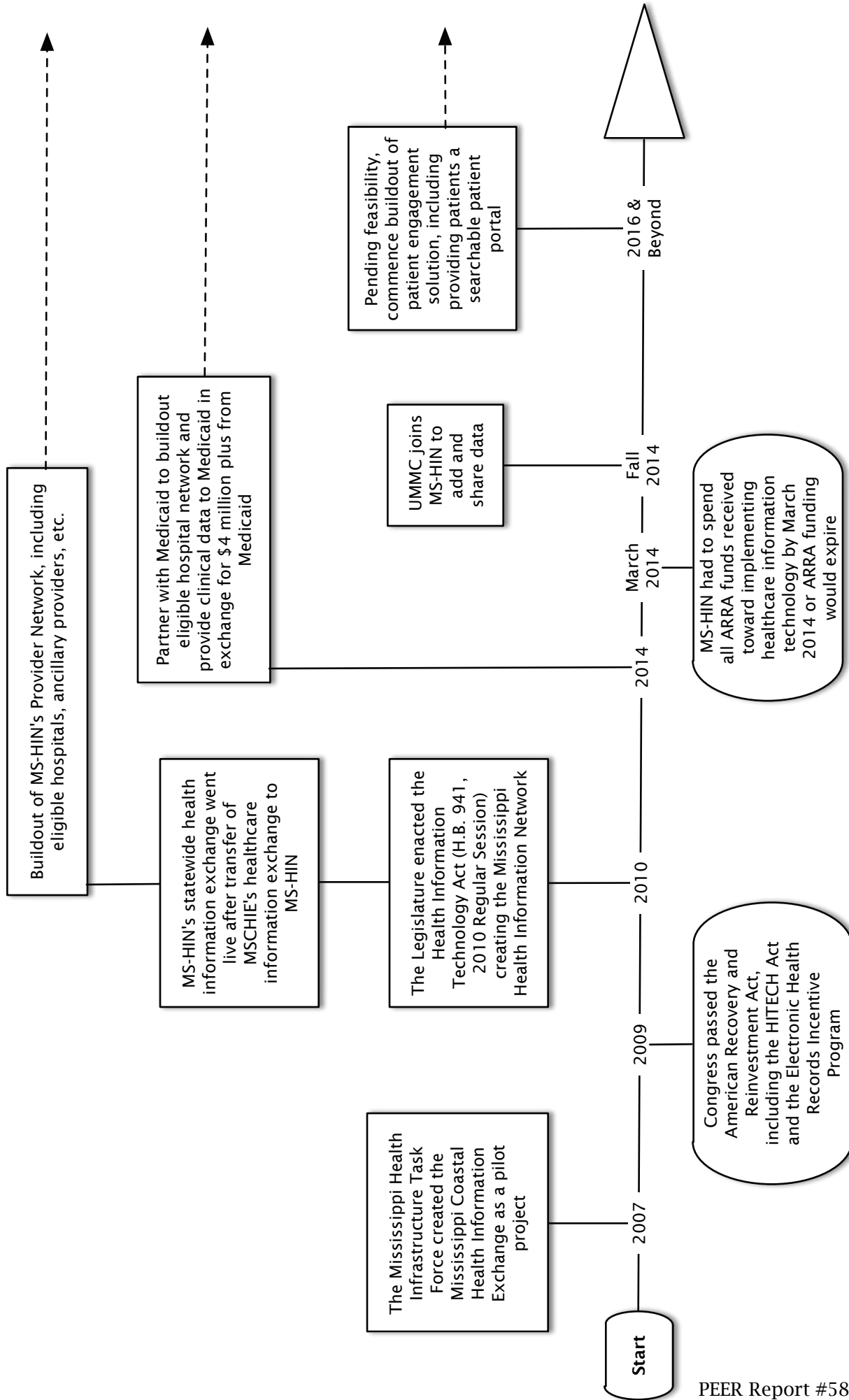
NOTES:	
1) Epic Payroll--UMMC's project team's expenses to implement Epic	
2) Staff Augmentation--consultant fees related to training UMMC staff in and implementing Epic	
3) Epic Implementation Fees--fees to implement Epic at UMMC	
4) Siemens Conversion Fees--Siemens's fees to move UMMC patient data from Siemens Signature and Siemens Invision to Epic	
5) Epic Training Renovations--costs incurred to renovate classroom space to train approximately 4,000 UMMC employees to use Epic	
6) Third-Party Maintenance Related to Epic--Maintenance costs for third-party applications related to Epic that are already in use by UMMC (e. g., the fetal monitoring system Obix and the document management system 3M Chart Link).	
NOTE: FY 2015 and FY 2016 projected amounts are as of June 30, 2014.	
SOURCE: PEER analysis of expenditure information from UMMC.	

*These costs do not include projected one-time FY 2016 implementation and hardware costs to add UMMC Grenada to UMMC's Epic system.

Appendix G: Mississippi Division of Medicaid Timeline of Implementing Electronic Health Records



Appendix H: Mississippi Health Information Network Timeline of Implementing Mississippi Health Information Exchange



SOURCE: PEER Analysis of Mississippi Health Information Network documents and applicable federal and state law

Agency Responses



November 3, 2014

Max K. Arinder, Ph.D.
Executive Director
PEER Committee
501 North West Street, Suite 301A
Jackson, MS 39201

Dear Dr. Arinder:

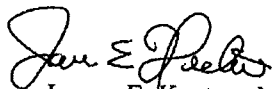
Thank you for giving the University of Mississippi Medical Center the opportunity to review and respond to the Mississippi Joint Legislative PEER Committee's Report entitled "Mississippi's Progress Since 2010 in Implementing Electronic Health Records." Over the past four years, UMMC has made significant progress in implementing and utilizing the Epic Electronic Health Record System. As we continue to move healthcare in Mississippi forward, the advancement of EHR technology will continue to play a vital role in this process.

Below are points of clarification that we would request be included in the final report:

- Page 15, Last paragraph: The original five year life-cycle cost was estimated to be \$50 million, however an additional \$20 million for consulting services was requested and approved through a CPI from the Department of Information Technology Services. The consulting services contract was never executed during this implementation phase.

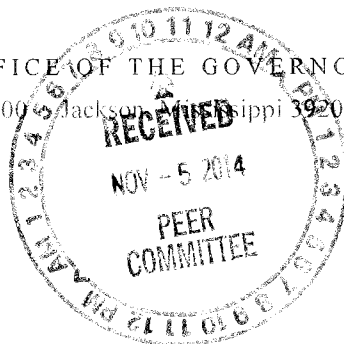
UMMC has no other points of clarification or revisions at this time. We would again like to thank you for the professional manner in which this audit was conducted and for the opportunity to provide our response.

Sincerely,



James E. Keeton, M.D.
Vice Chancellor for Health Affairs and
Dean, School of Medicine

Office of the Vice Chancellor for Health Affairs
2500 North State Street • Jackson, Mississippi 39216
Phone: 601.984.1010 • umc.edu



MISSISSIPPI DIVISION OF
MEDICAID

November 4, 2014

DOM Control Number: DOM-11042014-1

Dr. Max Arinder
Executive Director
Joint Legislative Committee on Performance Evaluation and Expenditure Review
P. O. Box 1204
Jackson, MS 39215-1204

Dear Dr. Arinder:

The Division of Medicaid (DOM) received your letter of October 10, 2014, notifying us of the opportunity to review the Joint Legislative Committee on Performance Evaluation and Expenditure Review (PEER) draft report entitled *Mississippi's Progress Since 2010 in Implementing Electronic Health Records*. DOM staff who were charged with providing information for the report sincerely appreciated the opportunity to review the report for factual inaccuracies and to provide suggested corrective language and associated documentation prior to official publication. Following our review, DOM and PEER staff met on October 22, 2014 to discuss the draft report and provide additional information.

In general, DOM found the DOM component of the report to be factually accurate and had no great concerns. Clarifying information that was provided by DOM staff was incorporated into the final draft. We believe these revisions made for a more comprehensive picture of the Division of Medicaid's Electronic Health Record project.

I would like to commend your staff on the time and effort it took to take the massive amount of information associated with this report and assimilate it into an understandable and accurate depiction of DOM's EHR project status to-date. To say that it was a massive undertaking is an understatement. We sincerely appreciate your staff's ability to filter out the noise and provide a balanced and thorough view of the project, start to finish.

If there are other questions that arise as a result of the report, DOM stands ready and willing to assist. For further assistance, please contact Rita Rutland, Deputy Administrator of the Office Information Technology Management at (601) 576-4147 or rita.rutland@medicaid.ms.gov.

Sincerely

David Dzielak, PhD
Executive Director

November 3, 2014

Max K. Arinder, Ph.D.
Executive Director
PEER Committee
501 North West Street, Suite 301A
Jackson, MS 39201

RE: MS-HIN Response to PEER Report entitled "Mississippi's Progress Since 2010 in Implementing Electronic Health Records".

Dear Dr. Arinder:

Thank you for giving MS-HIN the opportunity to review and respond to the PEER Committee's report entitled "Mississippi's Progress Since 2010 in Implementing Electronic Health Records". MS-HIN has made great strides since the inception of our agency and we feel those accomplishments have been accurately reflected in the report. MS-HIN has no additional comments or revisions.

We would like to thank your staff for their courteous and professional manner while conducting the review. Please let us know if we can be of any further assistance.

Regards,



Jeremy Hill
Acting Executive Director

PEER Committee Staff

Max Arinder, Executive Director
James Barber, Deputy Director
Ted Booth, General Counsel

Administration

Tracy Bobo
Larry Landrum
Rosana Slawson
Gale Taylor

Corrections Audit

Lou Davis

Reapportionment

Ben Collins

Evaluation

Kim Cummins
Matthew Dry
Lonnie Edgar
Barbara Hamilton
Matthew Holmes
Barton Norfleet
Angela Norwood
Jennifer Sebren
MeriClare Steelman
Jenell Ward
Ava Welborn
Sarah Williamson
Julie Winkeljohn
Ray Wright

Performance Budgeting

Brian Dickerson
David Pray
Linda Triplett