

Strategic and Operational Plan

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1. Introduction

1.1. History

On February 13, 2009, Congress passed the American Recovery and Reinvestment Act (ARRA) and President Obama signed it into law four days later. ARRA is composed of twenty-eight different agencies that have been designated \$787 billion dollars in Recovery Funds. Each agency is to develop specific plans for how they will spend their funds. Then, the agencies award grants and contracts to state governments, schools, hospitals, contractors, and other organizations.

The Recovery Act has five immediate goals:

1. Create new jobs and to save existing jobs
2. Promote economic recovery
3. Assist the people most impacted by the recession
4. Provide investments needed to increase economic efficiency by urging technological advances in science and health
5. Invest in transportation, environmental protection, and other infrastructure that will provide long-term economic benefits

The ARRA funding is focused on all different aspects of the economy. A portion of the ARRA funds are being allocated to computerize health records to reduce medical errors and save on healthcare costs.

1.2. HITECH

The Health Information Technology for Economic and Clinical Health (HITECH) Act is the portion of ARRA specifically created in order to facilitate and support the adoption of healthcare information technology in order to improve overall health and medical outcomes. It outlines provisions specifically focused on healthcare information technology, including the promotion and testing of health information technology, grants and loans, and privacy. The HITECH Act provides funds to states supporting efforts to achieve widespread and sustainable Health Information Exchange (HIE) within and among states through the Meaningful Use of certified Electronic Health Records (EHR). These funds were awarded through the State Health Information Exchange Grant Programs to states and qualified State Designated Entities (SDE) to develop and advance mechanisms for information sharing across the healthcare system.

The HITECH Act also outlines Medicare and Medicaid health information technology and miscellaneous Medicare provisions including:

- Medicare incentives
- Medicaid incentives
- Other Medicare provisions, including moratoria on certain Medicare regulations
- Long-term care technical corrections

The HITECH Act envisions Health Information Technology working in coordination with the Medicaid and Medicare incentive programs. Providers, who need to achieve Meaningful Use as defined in the HITECH Act, will be able to use the services of the HIE to report on their compliance to federal requirements. Qualification for incentive payments that require the exchange of information with disparate providers can be facilitated by the HIE.

The Medicare and Medicaid EHR incentive programs will provide incentive payments to eligible professionals and eligible hospitals as they adopt, implement, upgrade or demonstrate Meaningful Use of certified EHR technology. These payments are administered either through the Centers for Medicare and Medicaid Services (CMS) in the case of the Medicare program, or through the states for the eligible providers who qualify under the Medicaid program. The HITECH Act provided that CMS and the Office of the National Coordinator for Health Information Technology (ONC) develop the appropriate policies and definitions to enable the administration and distribution of the incentive funding. Through this enabling, CMS and ONC developed 42 CFR 412, 413, 422, and 495 that implements the provisions of ARRA that provide incentive payments to eligible professionals (EPs), eligible hospitals, and critical access hospitals (CAHs) participating in Medicare and Medicaid programs that adopt and successfully demonstrate Meaningful Use of certified electronic health record (EHR) technology.

This final rule specified: the initial criteria EPs, eligible hospitals, and CAHs must meet in order to qualify for an incentive payment; calculation of the incentive payment amounts; payment adjustments under Medicare for covered professional services and inpatient hospital services provided by EPs, eligible hospitals, and CAHs failing to demonstrate Meaningful Use of certified EHR technology; and other program participation requirements. In addition, the ONC issued a closely related final rule that specified the Secretary of Health and Human Services' (HHS) adoption of an initial set of standards, implementation, specifications, and certification criteria for electronic health records.

1.3. Meaningful Use

The HHS, ONC, and CMS recently released the Meaningful Use final rule specifying the related initial set of standards, implementation specifications, and certification criteria for EHR technology, along with final Meaningful Use Stage 1 objectives and measures. This document fully recognizes the final rules along with Meaningful Use Stage 1 objectives and measures. It also recognizes the technical infrastructure reflecting Meaningful Use objectives and adopted standards, implementation specifications, and certification criteria in the design of an HIE architecture on planning, adopting, and implementing specifications of the initial set of services. Appendix A contains a table of summaries of the final rule for Meaningful Use Certification Criteria for Health Information Technology released by CMS and ONC. The last column of the table, “HIE Stage 1” indicates a set of standards/implementation specifications recommended for content exchange, vocabulary, and security/privacy to be adopted for the first stage (Stage 1) of the HIE implementation as well as a set of capabilities to be offered at Stage 1 of the HIE implementations. The following list identifies a minimum set of services to be offered for Stage 1, aligned with general and ambulatory/inpatient specific capabilities as specified in the Meaningful Use final rule:

- Electronic Prescribing Service – electronic generation and transmission of prescriptions and prescription related information
- Laboratory Results Exchange Service – electronic submission of laboratory test orders and receiving/displaying of laboratory test results
- Exchange of a Patient Summary Record - in the format of Health Level 7 (HL7) Clinical Document Architecture (CDA) Release 2, Continuity of Care Document (CCD)¹, with the following minimum data elements:
 - Demographics
 - Problem list
 - Medication & medication allergy list
 - Laboratory test results
 - Procedures

Creating a patient-focused healthcare model enables the transformation to higher quality, more cost efficient, patient-focused healthcare through electronic health information access and use by care providers and patients. The stated objectives are to open the door for electronic exchange of information, while

¹ HITSP/C32 “Summary Documents Using HL7 CCD Component” as an implementation specification to be adopted

protecting the privacy and security of patients' health information. It will also allow the movement of electronic health information to where it is needed, when it is needed, to support individual healthcare needs. In addition to these two objectives, the patient-focused healthcare model is built to establish systems for multiple stakeholder's priority setting and decision making and to encourage nationwide distribution of electronic health records and personal health records to provide higher quality care. The objectives are as follows:

- To advance privacy and security policies, rules, procedures, and protections for health information
- To open the door to the movement of health information to support population-oriented uses
- To encourage nationwide adoption of technologies that will improve population and individual health
- To create processes supporting healthcare information for use in improving population health

2. Project Background

2.1. Mississippi

In 2007, Governor Haley Barbour established the Mississippi Health Information Infrastructure Task Force (Task Force) for the purpose of improving the quality and safety of healthcare delivery by means of the expedited adoption and implementation of Health Information Technology (HIT) and Health Information Exchange (HIE) across the State. The first milestone for the Task Force was the development of an action plan, *Mississippi Health Information Infrastructure Action Plan*, published in September of 2007. The plan detailed recommended activities, staffing requirements, funding options, and milestone dates necessary to achieve the goals set by executive order within the designated two year time frame.

Work accomplished by the Task Force led to a recommendation that Mississippi implement a “proof of concept” HIE project. Soon thereafter, the Office of the Governor was able to secure funding to establish the Mississippi Coastal Health Information Exchange (MSCHIE). The Mississippi Department of Information Technology Services (ITS) provided technical advice and oversaw the procurement process for Request for Proposal (RFP) No. 3560, developed for the Mississippi Foundation for Medical Care, Inc. d/b/a Information and Quality Healthcare (IQH). The primary goal of the MSCHIE RFP was to establish a restructuring effort to improve patient care delivery in Mississippi, particularly for Pearl River, Stone, George, Hancock, Harrison, and Jackson counties. These are the State’s six coastal counties that were most affected by Hurricane Katrina.

After the completion of the procurement process for RFP No. 3560, Medicity Inc. received a notice of award from IQH on September 20, 2008, as the best technical and lowest cost vendor. When subsequent contract negotiations were finalized, MSCHIE began Phase I of implementation in October 2008 with three disparate coastal stakeholders: Coastal Family Health Center, Memorial Hospital at Gulfport, and Singing River Health System. These three provider organizations are currently sharing basic clinical information, lab results, and medication history. Phase II, currently underway, is expanding the HIE by adding more hospital participants and establishing an extensive provider outreach program.

The Mississippi Health Information Infrastructure Task Force structure was to expire December 31, 2009. However, since there was no formal governance structure in place at that time for the statewide HIE, the decision was made to extend the duties of the Task Force until June 30, 2010. The Task Force was instrumental in including key stakeholders in the development of the State’s Strategic and Operational Plan as well as in achieving the project’s overarching objectives and outcomes.

The HITECH Act sets forth a plan for advancing the appropriate use of health information technology to improve quality of care and establish a foundation for healthcare reform. As a requirement of the HITECH Act, Mississippi is required to develop a Strategic and Operational Plan to submit to the ONC for approval. Once approved, the State will move forward with implementation of the infrastructure for the Mississippi Health Information Network (the statewide HIE). The Mississippi Health Information Network (MS-HIN) will utilize a technology platform capable of scalable and rapid connectivity and be able to interface with providers of care, public health organizations, and local and regional health information exchanges (such as Mississippi Health Partners - MHP), as well as provide connectivity to the National Health Information Network (NHIN).

At the request of Governor Haley Barbour, ITS is the State Designated Entity (SDE) for the State Health Information Exchange Cooperative Agreement Program. In close collaboration with the Office of the Governor, ITS has the day-to-day responsibility for key tasks such as overall project management and monitoring of the project's ongoing progress, preparation of reports, and communications with the ONC and other partners.

ITS conducted an open and competitive Request for Proposal process to select a company with extensive HIE knowledge and expertise to assist them with the writing of the Strategic and Operational Plan. At the conclusion of the RFP process, Public Consulting Group (PCG) was selected as the firm to complete the work. PCG partnered with Hielix and MEDNET to form the PCG Team and have worked with ITS and the Office of the Governor since May 2010 to research and write the Strategic and Operational Plan for the State of Mississippi.

The 2010 legislative session saw the passage of House Bill 941 (HB 941) providing the initial structure for the Mississippi Health Information Network (MS-HIN). The bill, signed by the Governor, can be reviewed at <http://billstatus.ls.state.ms.us/2010/pdf/history/HB/HB0941.xml> (See Appendix E).

The statute provided direction and information necessary to establish the initial MS-HIN leadership. The Governor appointed Candice Whitfield as the State HIT Coordinator and assigned her responsibility for overseeing and managing the Strategic and Operational Plan process. In May 2010, Ms. Whitfield formed five Domain Teams, following the example set forth in the ONC Cooperative Agreement, building on the previous work of the Task Force. The Domain Teams included:

- Governance
- Finance
- Technical Infrastructure
- Business and Technical Operations
- Legal and Policy

Many of the members appointed to the Domain Teams had served as members of the Task Force work groups. The Domain Teams were chaired by leaders from across stakeholder groups and leveraged the knowledge and experience of the Task Force.

The MS-HIN Board of Directors, created by House Bill 941, was appointed in September 2010. The timing for this appointment was considered strategic and important and occurred after the Strategic and Operational Plan was submitted to the ONC. The Board’s first meeting took place in October 2010. The Governance Domain Team recommended that the Board receive significant information and education, including action priorities and a set of recommendations from all of the Domain Teams.

2.2. Mississippi Domain Teams

The Governor appointed representatives from various stakeholder groups to provide expertise and input into the development of the Strategic and Operational Plan. The names and organizations of the Domain Team members include:

Finance Domain Team	
Theresa Hanna (Chair) Center for MS Health Policy thanna@mshealthpolicy.com	
Toby Barker MS Legislator tbarker@house.ms.gov	John Dawson Montfort Jones Memorial Hospital jdawson@mjmh.com
Richard Ferrans, MD Memorial Hospital at Gulfport Rferrans@mhg.com	James Fuzy MS Health Partners jfuzy@mhpartners.com
Ricki Garrett, PhD MS Nurses' Association rgarrett@manurses.org	Warren Jones, MD University of MS Medical Center wjones@ovc.umsmed.edu
Rita Rutland Division of Medicaid rita.rutland@medicaid.ms.gov	Ed Tucker Consultant ed@getucker.com

Technical Infrastructure Domain Team	
Kevin Gray (Chair) Dept. of Information Technology Services kevin.gray@its.ms.gov	
Chuck Clark Coastal Family Health Center cclark@coastalfamilyhealth.org	Bud Douglas MS Coastal Health Information Exchange bud.douglas@gmail.com
James Dunaway Dept. of Mental Health dunaway@msh.state.ms.us	JJ Dunn Dept. of Finance and Administration dunnjj@dfa.state.ms.us
Charlie Enicks University of MS Medical Center Cenicks@umc.edu	Rita Rutland Dept. of Medicaid rita.rutland@medicaid.ms.gov
Taylor Strickland Delta Health Alliance tstrickland@deltahealthalliance.org	Scott Stringer Blue Cross Blue Shield Sstringer@bcbsms.com
Keith VanCamp St. Dominic Hospital KvanCamp@stdom.com	Marc Wilson Dept. of Health Marc.Wilson@msdh.state.ms.us

Business and Technical Operations Domain Team	
James McIlwain, MD (Chair) Information Quality Healthcare jmcilwain@msqio.sdps.org	
Barry Davis Sta-Home Health and Hospice bdavis@sta-home.com	Sam Dawkins Delta Health Alliance sdawkins@deltahealthalliance.org
Bud Douglas MS Coastal Health Information Exchange bud.douglas@gmail.com	Richard Golladay Forrest General Hospital rgolladay@forrestgeneral.com
Steve Lesley MS Hospital Association slesley@mhanet.org	TC Washington MS Primary Healthcare Association twashington@mphca.com
Craig Orgeron, PhD Dept. of Information Technology Services craig.orgeron@its.ms.gov	Tom Skelton, MD University of MS Medical Center tskelton@umc.edu

Legal/Policy Domain Team	
Patsy Hathorn (Chair) MS Baptist Hospital System PHathorn@mbhs.org	
Bo Bowen Information Quality Healthcare BBowen@msqio.sdps.org	Carl Cloer Singing River Health System Carl.Cloer@mysrhs.com
Clay Hays, MD Jackson Heart Clinic chays@JacksonHeart.com	Susan McCoy MS Pharmacy Association smccoy@mbp.state.ms.us
Ann Peden, PhD University of MS Medical Center apeden@shrp.umsmed.edu	Lucien Smith Governor's Office lsmith@governor.state.ms.us

Governance Domain Team	
Candice Whitfield (Chair) Governor's Office cwhitfield@governor.state.ms.us	
Richard Ferrans, MD Memorial Hospital at Gulfport Rferrans@mhg.com	Kevin Gray Dept. of Information Technology Services kevin.gray@its.ms.gov
Hal Leftwich Hancock Medical Center hleftwich@hancockmedical.net	Charmain Kanosky Mississippi State Medical Association ckanosky@msmaonline.com
Teresa Planch Ms Dept. of Finance and Administration plancht@dfa.state.ms.us	Bob Williams United Healthcare robert_c_williams@uhc.com

2.3. Vision

A strong vision statement is one of the keys to a successful Strategic Plan. It sets the direction for the organization and inspires others to want to help your organization achieve a desired future state. A vision statement provides inspiration and becomes the foundation on which the organizations business strategy is built. A strong vision statement has five key attributes:

1. Clear – easy to understand
2. Compelling – enlists others in helping you
3. Challenging – difficult but achievable
4. Consistent – transcends time and can serve as guideposts for many years
5. Charter – defines the purpose for being in existence

The vision statement describes the desired future state to which the organization aspires. While organizations rarely attain their true vision, it is something that everyone associated with the organization can understand and hope to achieve. It serves as guide and is used to enlist stakeholders in the journey to the desired future state.

The Mississippi Domain Teams met in joint sessions in June 2010 to create a vision for healthcare information exchange in Mississippi. They discussed their aspirations for health information exchange and created several vision statements. At the end of the workshop, they settled on a preliminary statement. The statement was reviewed by each Domain Team and achieved consensus in July 2010.

Mississippi Health Information Exchange Vision Statement

The trusted source for secure, quality healthcare information – anywhere, anytime – for a healthier Mississippi

2.4. Mission

The mission statement defines the fundamental purpose of the organization and describes what the organization does to achieve its vision. It outlines the basic purpose and process for getting the organization to the desired level of performance that is described in the vision statement. The mission statement has five key attributes:

1. Connects with the vision – describes the path the organization will take to reach its vision
2. Sets the purpose – defines the fundamental purpose of the organization
3. Establishes the framework – sets the parameters for work activities

4. Describes the primary services – describes the basic services offered by the organization
5. Defines the customer – tells who the services are designed to benefit

The Mississippi Domain Teams met in joint sessions in June 2010 to establish the mission for healthcare information exchange in Mississippi. Aspirations for health information exchange were discussed and several mission statements were created. At the end of the work shop, the following mission statement was reviewed by each Domain Team and achieved consensus in July 2010.

Mississippi Health Information Exchange Mission Statement

To provide sustainable, trusted exchange of health information to improve the quality, safety, and efficiency of healthcare for all Mississippians

2.5. Principles

Principles describe the foundational beliefs that are shared among the stakeholders of an organization. They represent a set of values that establish an obligation for the organization to behave or act in a certain way. Principles are voluntary and without external coercion and describe the organization's desired culture and priorities.

The Mississippi Health Information Infrastructure Task Force developed a set of principles for health information exchange in 2007. These principles were reviewed by the various Domain Teams in June 2010 and minor modifications were suggested to adjust for the changed environment. The principles were further reviewed by each Domain Team and consensus was achieved in July 2010.

Mississippi Health Information Exchange Principles:

- Be patient-centric: First and foremost, all efforts will focus on patient privacy, patient outcomes, and patient safety.
- Foster a collaborative culture: An optimal number of stakeholders must collaborate to build and sustain the HIE over the long term.
- Engage stakeholders: Efforts must create value for all participants - statewide, regionally, and for each stakeholder's interest. To promote acceptance and adoption, it is important to communicate with and educate all participants early and often regarding the value and benefits of HIE.
- Promote statewide HIE solutions: Every region of Mississippi is different and should be given the flexibility and standards to fit into the emerging HIE infrastructure in the way that is appropriate to service patients and protect patient health data.

- Leverage existing HIT initiatives and resources: A coordinated effort, leveraging existing initiatives and resources, provides the greatest potential for improving HIT adoption rates and HIE success.
- Recognize IT as an enabler: An HIE strategy for Mississippi will support and enable a broader healthcare vision.
- Remain cognizant of federal and other states' efforts: The capacity for transformational change of an industry of this magnitude, including technical capacity, systems capacity, and most important, social capital, will proceed in a way to achieve critical mass and get stakeholders on board early. The HIE strategy will be mindful of, support, and build upon the work and activities at the federal and state levels.
- Recognize the effect of HIT on a culturally diverse population: Sensitivity to the culturally diverse population will be considered as part of the design, development, and implementation of all HIE activities.
- Build stakeholder trust: Create and foster trust by and between healthcare stakeholders to further the willingness to exchange healthcare information and data.
- Maintain neutrality: Ensure the statewide HIE remains neutral in the competitive marketplace in Mississippi and delivers a high quality exchange service that meets the needs of all stakeholders without giving an advantage to any other stakeholder.
- Secure stakeholder investment: All stakeholders will contribute financially to the formation and ongoing operation of the statewide HIE.
- Foster fair processes: When an issue is complex and various stakeholders may be at odds, create a fair and logical process to research and analyze the issue and determine the outcome.

3. Environmental Scan

3.1. Environmental Scan Process

The State is participating in a nationwide effort to improve the quality and cost efficiency of healthcare. This effort includes a concentrated initiative to support the move of the healthcare system to the use of electronic health record systems and connect healthcare providers for the exchange of data. The federal government support for this initiative includes planning and implementation grants for development of statewide health information exchanges.

The Environmental Scan provided an analysis of the data collected, the value proposition expressed by the provider organizations toward the exchange of electronic clinical data, and other considerations that will factor into the readiness assessment for health information exchange. The scan also includes a technology assessment. In addition, the Environmental Scan also analyzed the information gathered and detailed in previous studies and reports. Finally, it included and provided an evaluation of the structured interviews conducted during June 2010.

3.1.1. Review of Existing Documents

The Environmental Scan consisted of three major components:

1. Review of existing documents from previous HIE work
2. Interviews with potential stakeholders
3. Discussions with various state agencies

The first steps in the data gathering process included conducting surveys and interviews. The survey tool and the interview questionnaire were designed to elicit detailed information about the current level of health information technology and health information exchange and to assess the organizations' readiness for participation. The readiness assessment interview questions used the survey data to support and complement the interviews. In addition, data was gathered from a survey conducted by the Mississippi Hospital Association and the State conducted a survey of Community Health Centers.

Prior to beginning the Environmental Scan, the State collected and analyzed over 40 documents and reports from previous work. The primary documents and reports reviewed included:

- Mississippi Health Information Infrastructure Action Plan (September 2007)
- Lessons From KatrinaHealth – Markle Foundation (June 2006)
- Mississippi Coastal Health Information Exchange – ITS (April 2010)

- Center for Information Technology Leadership – The Value of Healthcare Information Exchange and Interoperability (2004)
- Nationwide Health Information Onboarding Guide (February 2010)
- Data Use and Reciprocal Support Agreement (DURSA) (2009)
- Privacy and Security Solutions for interoperable Health Information Exchange: Mississippi’s Implementation Project Summary and Impact Report – RTI International (November 2007)
- North Sunflower Health and Economic Committee Survey and Results – National Center for Rural Health Works (August 2008)
- MSCHIE Business Plan: Proof of Concept (July 2009)
- Medicity’s Collaborative Care Platform
- Mississippi Hospital Association IT Survey (2009)
- Community Health Center IT Survey Summary (2010)
- Mississippi Health Information Infrastructure Task Force: Technology and Interoperability Workgroup Report (August 2009)
- Development of Regional Health Information Organizations: Support of Gulf Coast Health Information Activities – Foundation for eHealth Initiative (September 2006)

In addition, several documents and reports were discovered during the Environmental Scan and copies were made available for review and analysis.

3.1.2. Interviews with Potential HIE Stakeholders

Onsite interviews were conducted for the Environmental Scan throughout the State during the month of June 2010. During the Environmental Scan process, the State met face-to-face with more than 50 different healthcare provider entities and interviewed nearly 200 people. Meetings held across the State included: Batesville, Biloxi, Greenville, Greenwood, Gulfport, Jackson, Lucedale, Meridian, Oxford, Pascagoula, Tupelo, and Yazoo City. Additionally, the State conducted four public forums, one each in: Greenville, Gulfport, Jackson, and Tupelo.

The State interviewed the following representative organizations during the Environmental Scan:

- Regional Urban Hospitals
- Critical Assess Hospitals
- Federally Qualified Health Centers
- Various Clinics and Physicians
- Payers

- Employers
- Public Health Agencies
- State Hospital
- University of Mississippi Medical Center
- United States Military
- Delta Health Alliance
- Veterans Administration
- Long-term Care Facilities
- State Agencies
- State Associations (Hospital, Pharmacy, Medical, etc.)
- Consumers
- Mental Health Facilities
- Hospice Organizations

3.1.3. Discussion with State Agencies

In addition to the provider organizations, the State met with representatives from Health and Human Service agencies as well as Corrections Officials about HIE. Specifically, the State met with representatives from the following agencies:

- Department of Public Health
- Division of Medicaid
- Department of Corrections
- Department of Health and Human Services

In many ways, the internal departments of the State of Mississippi are a microcosm reflecting the status of the State as a whole. Some effort is currently underway to identify, list, and review all the disparate systems within the various departments and then address their own state of readiness for interconnectivity. At the time of this plan, the list was not complete but the departmental review will continue during the implementation of the MS-HIN.

A continual theme from the healthcare community is the desire to minimize the amount of repeated data entry when submitting information to the State. Thus, an internal effort to connect databases through some form of internal clearinghouse module would not only improve efficiencies across the State, it would greatly enhance stakeholder perceptions of the State as a whole when dealing with various State departments.

The Mississippi Division of Medicaid (DOM) is currently engaging in its own planning process. They recently held a competitive bid process to select a

vendor to assist them with the development of the State Medicaid HIT Plan (SMHP). The PCG Team was selected as the vendor and will be working with the DOM over the next few months to write the SMHP. This will make integration of the plans easier as the State will coordinate both the SMHP and the HIE Strategic and Operational Plan.

The Centers for Disease Control (CDC) has a strong desire to align the State Public Health Departments with NHIN and the CDC for reporting and bio-surveillance in cooperation with the ONC. The CDC fully supports and endorses NHIN, and in conjunction with ONC, is encouraging State Public Health Departments to participate fully in the Strategic and Operational Plan, as well as NHIN for connectivity and interoperability. It is the State's recommendation that Public Health reporting and participation on the NHIN with CDC is included in the State's Strategic and Operational Plan.

3.1.4. Data Analysis

After the stakeholder interviews were completed, the State carefully reviewed and analyzed all of the relevant data and information. The result of that analysis is shown in the following Sections.

3.1.5. Review with the Domain Teams

The findings from the Environmental Scan were used as the basis for building the Domain Team background presentations for their initial meeting.

3.2. Value Proposition

The value proposition is the statement that describes why an organization would willingly participate in a venture such as a Health Information Exchange. The value proposition is a clearly defined statement designed to demonstrate a proposed service offering that will solve a problem in such a way that the value to the participating organization is greater than the value of not participating.

An optimal value proposition will provide reasons a potential healthcare stakeholder would want to be included in the HIE Project. In order to achieve the project objectives, the value propositions need to be clear, concise, and compelling. By identifying stakeholder needs through the Environmental Scan research and analysis, it is possible to develop clear and concise value propositions for each stakeholder that reflect specific stakeholder requirements. When the stakeholders' return on investment (ROI) is measured over time, the

tangible results participants can reasonably expect from participating in the HIE can be quantified and reported².

The value proposition is important because it is a key component of any financial sustainability model. Linking an organization's value proposition to an achievable ROI is key to keeping the organization engaged throughout the creation and implementation of the HIE. Developing an ROI for each participant and continually reporting on it during the HIE formation process will serve as a reminder of the value the HIE will provide to each stakeholder when fully functional. As a product of the Environmental Scan, the following table shows the prime value proposition(s) for each stakeholder category.

Table 1: Value Propositions

Stakeholder Category	Value Proposition
All Participating Entities	<ul style="list-style-type: none"> • Improved quality of care • Cost savings
Prospective Payment System (PPS) Hospitals	<ul style="list-style-type: none"> • Greater financial efficiencies • Greater operational efficiencies • Market share/Competitive advantage
Critical Access Hospitals (CAH)	<ul style="list-style-type: none"> • Continuity of care • Better connectivity to tertiary facilities • Long-term financial viability
Federally Qualified Health Centers (FQHC)	<ul style="list-style-type: none"> • Ability to meet reporting requirements • Better connectivity to tertiary facilities
Clinics	<ul style="list-style-type: none"> • Better connectivity to tertiary hospitals • Continuity of care
United Healthcare	<ul style="list-style-type: none"> • Better healthcare outcomes • Reduced claims payments
Public Health Agencies	<ul style="list-style-type: none"> • Easier data entry in the registries • Ability to fulfill mission and survivability
Veterans Administration	<ul style="list-style-type: none"> • Completeness of patient information • Better care for veterans
U.S. Navy	<ul style="list-style-type: none"> • Information on local treatment of service personnel • Input for their worldwide EHR
State Associations	<ul style="list-style-type: none"> • Ability to provide assistance to their members during the transition to EHR technology • Member education
Mental Health	<ul style="list-style-type: none"> • Protection of patient privacy

² Adapted from Wikipedia

Stakeholder Category	Value Proposition
	<ul style="list-style-type: none"> • Access to better patient information
Long-term Care	<ul style="list-style-type: none"> • Continuity of care • Better connectivity to other healthcare providers
State Agencies	<ul style="list-style-type: none"> • Better interoperability/coordination between agencies

3.3. Health Information Technology Adoption

Approximately 2,900,000 people reside in Mississippi. The State has four Metropolitan Statistical Areas (MSA) - Gulfport/Biloxi, Pascagoula, Jackson, and Hattiesburg and four counties that are part of the Memphis Tennessee MSA. Mississippi ranks 49th in per capita income and 48th in median family income in the United States. Numerous studies are available that provide a comprehensive picture of the State, and these were consulted during the research for this project.

As of FY2009, there were 109 non-state operated hospitals in Mississippi. These include:

- 95 Acute Care Facilities
 - 27 *Critical Access Hospitals*
- 3 Psychiatric Facilities
- 1 Rehabilitation Facility
- 1 OB/GYN Facility
- 9 Long-term Acute Care Facilities

Eighty-five percent of the hospitals are either government or non-profit owned. The remaining fifteen percent are for-profit entities. Health Management Associates of Naples, Florida owns ten of the for-profit facilities.

In 2006, there were 5,421 active licensed physicians and 34,796³ registered nurses practicing in Mississippi.

The work undertaken with this Environmental Scan substantially supports previously cited findings from earlier studies by MSCHIE and others.

³ Mississippi State Department of Health. State Rural Health Plan

3.4. Health Information Exchange Readiness

Electronic health information exchange usually starts with a recognized value proposition between providers. For example, physicians refer patients to the local laboratory (lab) for tests and need the results back for proper treatment. The patient may need hospitalization for treatment and the physician will admit the patient to the local hospital. Having current and complete patient information is important for successful treatment. Therefore, an organic need emerges for the exchange of patient information for proper treatment. This need becomes the value proposition for exchanging health related information between physician, the lab, and the hospital.

Extended further, the exchange of information is the foundation for a healthcare ecosystem. The patient may need additional treatment and be referred to a tertiary hospital for care. Other physicians in the community provide treatment in the same way and they also recognize the need to exchange healthcare information electronically. As this need is recognized, more providers become participants in the ecosystem. Labs, pharmacies, hospitals, long-term care facilities, public health agencies, clinics, hospice, state agencies, and others have a need to electronically exchange information and see value in doing so. When establishing these connections on a required transaction by transaction basis, the exchange begins to create its own network and grows over time.

In Mississippi, several such organic ecosystems have emerged over time. They tend to center on a specific natural need as described above. Typically, healthcare providers see the need to make electronic connections within their geographic region. In Mississippi, seven of these ecosystems including Northern Mississippi Health Services (NMHS), Hattiesburg, the University of Mississippi Medical Center (UMMC), Mississippi HealthSafe Net, the Mississippi Coastal Health Information Exchange (MSCHIE), Mississippi Health Partners (St. Dominic Hospital and Baptist Health System), and the Delta Health Alliance (recipient of the Beacon Community Grant) are already coming together. Although these ecosystems are generally geographic, 14 of the 21 Federally Qualified Health Centers (FQHC) located throughout Mississippi have come together to reduce costs and share clinical information in a more statewide approach – 11 of the 14 were operational at the end of August 2010. In Northwest Mississippi, the ecosystem includes connections to existing HIEs serving areas of Tennessee. In Southwest Mississippi, the ecosystem will include parts of Louisiana.

The large urban Prospective Payment System (PPS) hospitals serving each region are already well on their way to using electronic health exchange with their provider community. While they are in various stages of electronic medical record (EMR) adoption, as defined by the Health Information Management System Society (HIMSS) Analytics Adoption Model, they are all seeking to attain a greater and more complete adoption. In some cases, they may have

characteristics resembling an Integrated Delivery Network (IDN) although there was no evidence of a fully operational IDN.

Local clinics and providers recognize the need for electronic exchange but often lack the resources to make it happen. Many are already aligning with the larger PPS hospitals and in one case, a CAH has signed a merger agreement with a major PPS hospital. This is likely to become a trend as the financial burdens of EHR technology and the need to share data electronically increase.

The need to exchange information across the large healthcare systems and/or between local providers and systems outside their region seems small. Most of the interviewees indicated they primarily interfaced within their own ecosystem. While the need to exchange information between a local provider and the large healthcare systems outside their geographic region existed, it was a relatively low percentage of the exchange transactions. In addition, there was a clear need to exchange healthcare information with state agencies from all regions but, this need represents a small percentage of the total potential exchange transactions.

Based on the review of the current HIE best practices, healthcare information exchange in Mississippi will begin within the natural, regional organic ecosystems. This is where the greatest need exists, where the value proposition is strongest, and where the greatest population base can be served. Connecting these ecosystems will provide the biggest and most immediate return on the investment in HIE technology. Therefore, the design of the technical infrastructure will include connecting these organic ecosystems as the overall design is completed.

3.4.1. HIE Readiness

The HIE Readiness Assessment was conducted during June 2010. The assessment involved interviews with representatives of 27 facilities in areas near Tupelo, Oxford, Greenville, Meridian, Gulfport, and Jackson, Mississippi. The Mississippi Hospital Association (MHA) IT Survey, conducted in December 2009, had 48 respondents or slightly less than 50% of the total number of hospitals in Mississippi. The Community Health Center (CHC) Survey, conducted in March 2010, had 17 respondents or approximately 77% of the total number of CHCs in Mississippi.

Figure 2 shows the percentages and distributions of respondents included in the HIE Readiness interviews. The respondents were located in both urban and rural settings and involved hospitals (acute care, critical access, and specialty) and clinics.

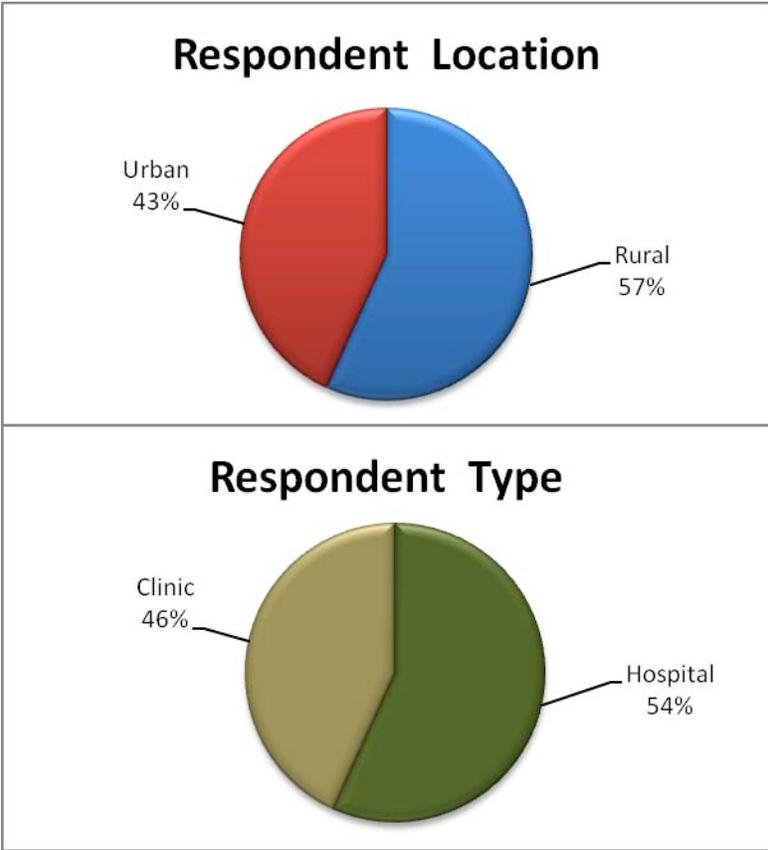


Figure 1: Respondent Location and Type

Figure 2 indicates the type of facility that responded to the CHC survey, identified by Long-term Acute Care (LTAC), Critical Access Hospital (CAH), Prospective Payment System (PPS) Hospitals, and Other.

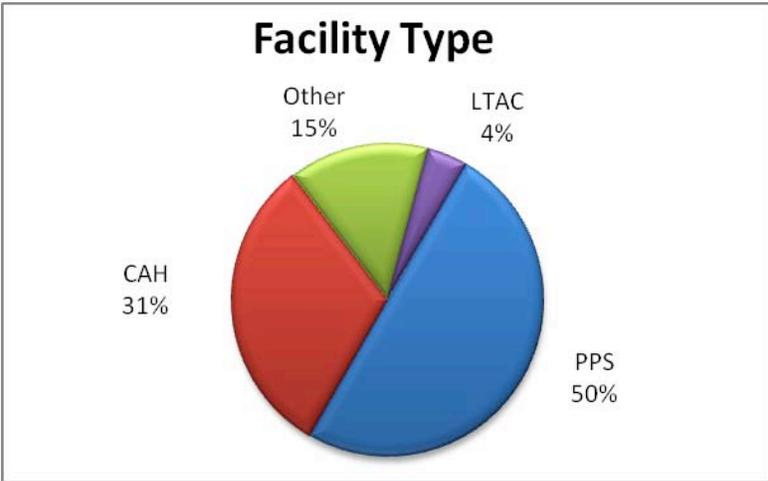


Figure 2: By Type of Facility

Table 2 summarizes and compares the data from the CHC survey, the MHA survey, and the Environmental Scan used in the HIE Readiness Assessment.

Table 2: Survey Summary

Source	No EMR	EMR in place or in process	HIE-Ready	Exchanging Data
HIE Readiness Assessment	32%	68%	19%	5%
CHC IT Survey	31%	69%	9%	18%
MHA IT Survey	79%	21%	15%	3%
<p>As a matter of definition:</p> <ul style="list-style-type: none"> • No EMR - none currently in use and none planned in the next 12 months • EMR in place or in progress - an EMR is in use or assumes implementation in the next 12 months • HIE-Ready - the organization is able to exchange electronic clinical data via a standard format (e.g. CCD) but is not yet doing so • Exchanging Data – the organization is currently participating in an exchange (e.g. an HIE or RHIO) • HIE Readiness Assessment - survey data includes a mix of provider types see facility list in appendix 				

3.4.2. No Electronic Medical Record Technology

During the Environmental Scan process, the interview team learned that many facilities without an EMR often have a billing or practice management system in place. The primary reasons cited for not moving forward with implementing an EMR are as follows:

- Upfront cost involved
- Uncertainty over whether or not the chosen vendor will meet the certification requirements necessary for ARRA funding

This interview data, supported by all three surveys, identifies capital and ongoing costs as the major barriers to implementation or expansion of an EHR system.

3.4.3. EMR Adoption

During the HIE Readiness Assessment, those interviewed provided the following information about the percentage of EMR adoption.

As shown in Figure 3, urban hospitals with more resources are more inclined to have an EMR. Typically, clinics in rural areas would have lower adoption rates. The reason rural clinics are the exception in this survey is because of HRSA federal funding in recent years. On the other hand, rural hospitals are often a CAH or behavioral health facilities with limited financial resources and therefore, fewer have implemented an EMR.

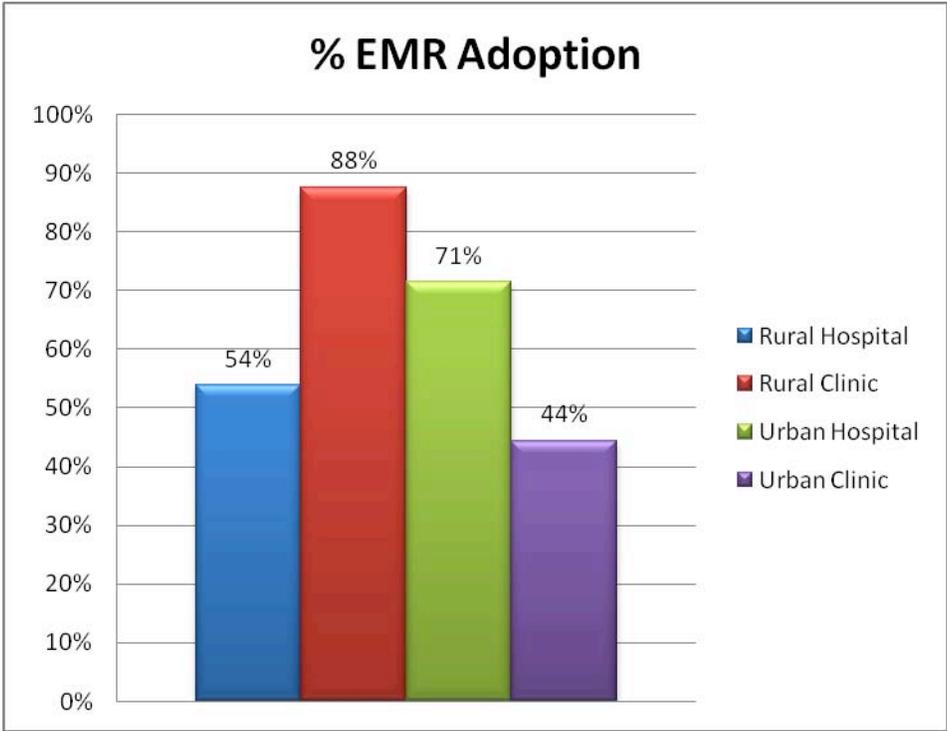


Figure 3: Percentage of EMR Adoption

In Figure 4, the HIE Readiness Assessment survey contains a mix of provider types. The percentages below show vendor distribution for EMR systems implemented by Mississippi providers that participated in the survey:

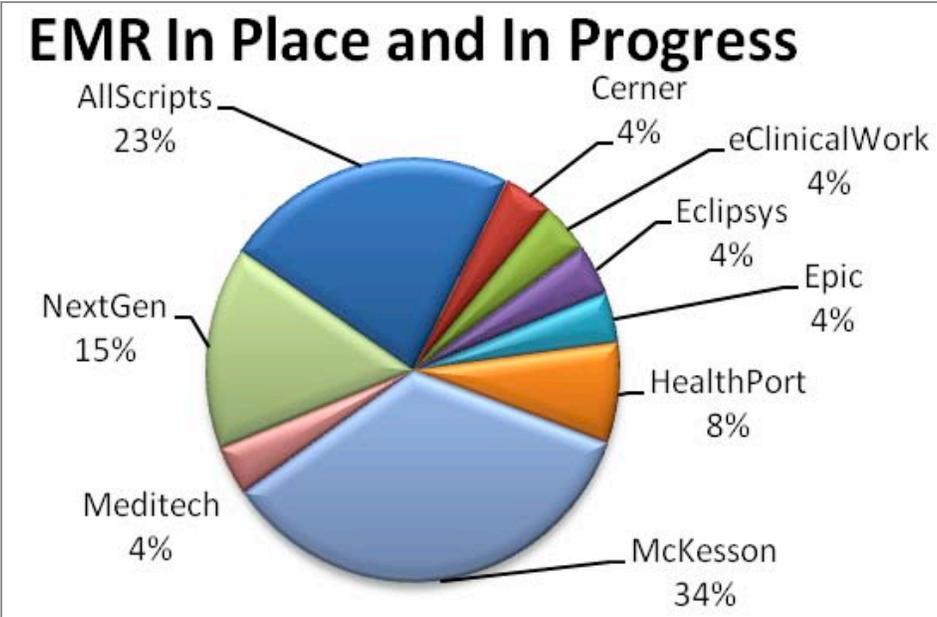


Figure 4: EMR Vendor

Figure 5 and Figure 6 indicate the EHR vendors used by the CHCs and Hospitals that responded to their respective surveys.

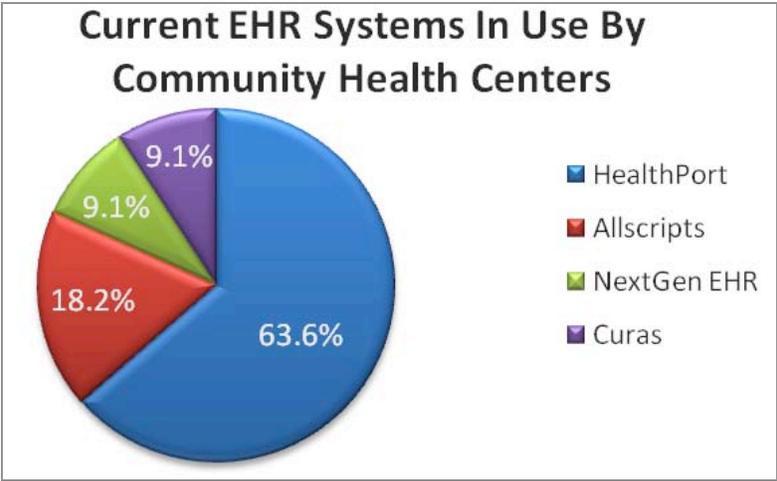


Figure 5: CHC Systems in Use

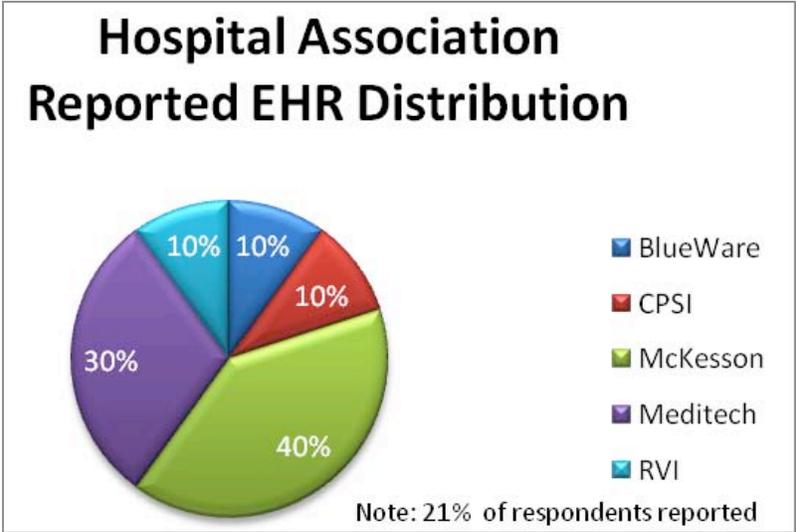


Figure 6: MHA EHR Vendors

The data in Figure 4 through Figure 6 indicates that a wide variety of vendors have been chosen for EMR/EHR implementations throughout Mississippi. However, it is important to note a recent trend of increased merger and acquisition activity among HIT vendors that is likely to continue and accelerate throughout 2011. The merger and acquisition activity may impact the market and the interoperability of the EMR/EHR.

One factor, sometimes stated but often assumed, is the ability of vendors to achieve certification standards in compliance with their product. With the exception of RVI (Figure 6), all vendors reported in interviews and surveys they

are either Certification Commission for Healthcare Information Technology (CCHIT) compliant (based on the prior year requirements), or have expressed intent to achieve compliance once the rules and certification bodies have been established.

3.4.4. HIE Ready

The organizations expressing readiness or plans to exchange data within the next year typically have the ability to produce a Continuity of Care Document (CCD) and have identified not only the technology but also the vehicles through which they would conduct the exchange. These vehicles fall into three general categories:

- A private network of homogeneous or heterogeneous provider facilities utilizing the same vendor/platform (e.g. McKesson's RelayHealth)
- An organization interested in connecting their standards-based system with an existing regional health information organization (RHIO) or regional HIE (e.g. Mississippi Coastal Health Information Exchange)
- A future statewide HIE

In all cases, readiness and current capabilities are based on an assumption of the HL7/CCD standard. It is also assumed all organizations that are currently sharing data and those planning to share data intend to continue their efforts to maximize their investments.

MS-HIN will employ the following strategies to ensure all providers in the state have the capacity to share clinical care summaries to achieve Stage 1 Meaningful Use:

- **Strategy 1** – The MS-HIN will serve as a Health Information Service Provider (HISP) and will use the tightly-controlled provider verification process that is used today by MSCHIE and extend this process statewide in support of both the MS-HIN Grid network and Direct network specifications. This includes validation of provider accreditation, practice locations and provider ID codes in order for providers to send and receive clinical information including, but not limited to clinical care summaries and lab results via simple messaging. As part of this process, MS-HIN will assign and store a Direct provider address in support of the MS-HIN's overall Provider Directory. This process will allow all providers across the state of Mississippi to quickly meet the requirements of Stage 1 Meaningful Use.
- **Strategy 2** - Use the capabilities of Direct to enable providers to connect to disparate organizations for the exchange of clinical summaries. Providers in Mississippi will be able to connect to disparate organizations for shared patients using the standards detailed earlier in Phase One implementation.

- **Strategy 3** – Provide technical assistance to providers who desire to connect to disparate organizations but lack the experience and/or knowledge to use NHIN Direct. Develop web-based content to provide educational information to providers on using Direct.
- **Strategy 4** – Design and implement a communications and education program, working with Medicaid, to educate and train providers in the capabilities of and the use of Direct as a solution for point-to-point connections.

3.4.5. Summary

The two main sources of data for the Environmental Scan, in-person interviews and electronic surveys, provide a representative sample of data from which to establish the current state of HIT adoption as well as intention toward participation in an HIE. It is interesting to note that the interviews seem to provide a more realistic and less optimistic view of the current state than online survey data, but this does not materially alter the following conclusions:

- The success of participation in exchanges relies on the finalization of the standards and certification bodies as well as, and equally as important, on vendor ability to achieve system certification
- Regardless of their EMR or EHR status, all providers seem to recognize the inevitable need for an EHR as well as an exchange of clinical data
- Regional ecosystems (e.g. MSCHIE and Mississippi Health Partners) and system-wide health information sharing will continue to increase in parallel with a statewide HIE effort, acknowledging the establishment of standards is critical to interoperability and alignment with the existing exchanges

3.5. Issues

Various issues were identified in the Environmental Scan and are summarized below.

3.5.1. Trust

Trust issues are predominant in nearly every HIE and EHR technology study completed since 2001. The Environmental Scan identified many of these same trust issues can be found in Mississippi as well. These issues take several forms. In no particular order, they can be expressed as follows:

- **Competitive Trust** – The issue is how the HIE might change or alter the competitive landscape in Mississippi. While not readily apparent, it is a serious issue lying right below the surface. To be successful, the HIE will have to build stakeholder trust and alleviate concerns about the HIE changing the competitive landscape in Mississippi.

- **Consumer Trust** – Consumers have concerns, some real and some imagined, about HIE. To be successful, the HIE will have to build consumer trust by addressing privacy and security issues as early as possible in the process and explain the protocols about the control and use of the data.
- **Legislative Trust** – Mississippi faces serious financial problems for the foreseeable future. However, it is likely the legislature will be asked to provide financial support to the HIE effort. To be successful, the HIE will have to build legislative trust to gain support and secure adequate funding by demonstrating the viability of HIE.
- **Rural Trust** – Most states have a trust divide between the rural areas and the larger urban areas. In Mississippi, this issue has been identified in several reports and several interviewees expressed this concern during the Environmental Scan. To be successful, the HIE will have to build trust with the rural areas to overcome the perceptions of disparity in the delivery of healthcare with the larger urban areas.
- **Generational Trust** – Technology is generally more difficult for older Americans to trust than for younger generations. Older Americans tend to be slower to adopt and generally use technology less often. To be successful, the HIE will have to build generational trust as older patients are more suspicious of technology than younger patients and more trusting of their personal physician.
- **National Trust** – The federal government is playing a much more active role in defining healthcare in America today. It is pushing the adoption of health information technology and changing the way providers report quality information. These trends will only accelerate in the coming years. To be successful, the HIE will have to build national trust by agreeing to use the Data Use and Reciprocal Support Agreement (DURSA) for connecting to the MS-HIN to the Nationwide Health Information Network.

3.5.2. Adoption

Rates of adoption of EMR technology vary widely across the State and in some places, there is very limited adoption. However, even in some of the more advanced hospital systems, adoption can vary significantly. One interviewee stated, “100% of our physicians use our EHR system but 0% use all of its capabilities”. MSCHIE estimates only 50% to 60% of its providers are using EMR technology to “some extent”. Mississippi Health Partners reports adoption started slower than anticipated but is improving. Other systems reported similar statistics. One strategy emerging from the Strategic and Operational Plan will be the emphasis toward improvement in the adoption and use of EHR technology, if the statewide HIE is to provide the value it promises.

3.5.3. Workflow Impact

Perhaps the biggest issue facing the successful exchange of health information is that it forces people to adopt new ways of doing their jobs. Routine repetition of work related tasks has a calming effect on workers. Workers like to know what is expected of them and they take pleasure in knowing how to do their jobs satisfactorily. Whenever change is introduced into the workplace, it disrupts the normal flow of work and may cause people to resist. Even when workers understand the rationale for the change and may even agree with it logically, they will remain emotionally skeptical. Frequently, workers are not shown how the change impacts them directly. Many concerns typically arise. *Will I be able to perform the new work tasks as well as I could the old tasks? If I don't perform as well, will that impact my employment? Will I still have the same power and prestige in the organization? Will the change eliminate my job? Will I still be working with the same people who I know and trust? Does my superior know how the change will impact them and what does that mean for me?* All of the issues articulated above slow the adoption of EHR technology.

One way to deal with this issue is to leverage the lessons of change from other industry sectors. The most successful change models seek a balance between the technology and required changes in operational processes. Believing HIE and EHRs are all about technology is one of the fastest ways to ensure failure of any HIE effort. Operational processes (Governance, Privacy and Security, Business and Financial Planning) are equally important elements in building a sustainable HIE. It is tempting to seek the technology solution that will substitute for the hard work necessary to establish sound operational processes. Despite what the vendors will tell you, there is no technology for working through these processes. The MSCHIE interview was very clear on this point. The successful approach doesn't neglect technology - the HIE leadership team must keep a good balance between the allure of technology and the challenges of building a solid operational foundation.

3.5.4. Broadband

In most of the interviews, broadband connections were not cited as an issue. However, in the Delta region, the interviewees indicated broadband was not readily accessible for all providers and was an issue of concern. Most other parts of the State indicated they currently have adequate and expandable broadband access for Internet connections. Combined with the widespread use of local area networks (LAN) within organizations, broadband provides some of the basic infrastructure for the potential exchange of electronic health information across the State. However, additional research is needed to better understand the broadband situation throughout all of Mississippi.

3.5.5. Time

Exchanging health information is a process that can take time to get up and running. From the point in time that a State decides HIE is of value and wishes to exchange information across the State, it can easily take up to three years before any meaningful quantity and quality of data can be exchanged. Identifying the best information to exchange, getting stakeholders to commit to exchanging information, and building an operational exchange takes time and patience. Of course, during this lengthy process stakeholders can lose interest or get distracted by needs that are more urgent.

3.5.6. Competitive Pressures

Given the timelines in place for both certification and Meaningful Use and the associated pressures of meeting those deadlines without penalty, the State noted that several organizations, which compete in common markets, have made decisions to move ahead more aggressively, originally outpacing the State's strategic and operational plan development process. These organizations, by the very nature of early fiscal and resource commitments, could influence statewide decisions in the deployment strategy of the HIE. However, acknowledging this potential imbalance, it is important to the future stability of the statewide HIE to be perceived as neutral to the pressures on the marketplace.

3.5.7. Public Health

Mississippi Code §41-63-4 authorized the Mississippi Department of Health to design and establish a centralized Hospital Discharge Data System (HDDS) that includes data collected on every inpatient and outpatient discharge from all licensed healthcare facilities throughout Mississippi. While a critical entity in healthcare across the State, public health is significantly underfunded and the same code that establishes the HDDS restricts the release of identifiable health information. While challenging, given the amount of healthcare data public health collects and reports on, finding a way to ensure it is included in the HIE will be important to the overall success of the HIE.

3.6. Scan Participants Feedback on HIE

During the Environmental Scan, potential stakeholders were asked a set of questions. One of those questions concerned the benefits to them of HIE. The responses came in two categories. First, they spoke about the fundamental qualities necessary for HIE to be beneficial. These qualities included:

- **Ease of Use** - Many providers talked about the importance of ensuring the HIE is easy to use (single sign on screen, one password, instant information, etc.).

- **Benefits to Workflow** - Providers want to see the HIE add value to their clinical workflow – make my life easier (necessary information first, doesn't waste time in front of the patient, etc.).
- **Interstate Exchange Capability** - Many stakeholders indicated that they need to exchange information with bordering states. The HIE will help facilitate this process.
- **Clarity Concerning Privacy and Security** - There appears some misunderstanding and inconsistent understanding concerning the application of Health Information Portability and Accountability Act (HIPAA) and State release of information laws. Providers need to understand HIPAA better and how it applies to continuity of care.

Second, potential stakeholders spoke about healthcare in general and HIE benefits offered to them and their organization. These benefits included:

- Easy access to a more complete and accurate record
- Higher quality of care with improved medical outcomes
- Decrease in inappropriate and/or unnecessary admissions
- Reduced treatment errors
- Decreased lengths of hospital stays
- Better medication reconciliation
- Decreased time to see patients
- Better continuity of care
- Reduction in duplicate procedures/labs
- Lower costs, increased staff efficiencies
- Benchmarking data for operational and treatment procedures
- Better response to emergency situations
- More time spent on patient care and less on administration
- Decrease in claims denials
- Better quality outcomes
- Easier reporting to the state and feds
- Reduction in chronic disease states
- Reduced wait times for patients
- Better communications
- More patient access to information and control of their health information
- Easier to transmit state required information

- Decrease in the ability of “drug seekers” to be successful
- Decrease in readmission rates
- Improved patient safety
- Improved wellness programs for employers

The Environmental Scan also identified several areas of concerns about the use of EHR technology and HIE. These concerns included:

- Initial start-up costs
- Long-term sustainability
- Agreed upon standards and protocols
- Ease of use
- Proof of value
- HIPAA security and breach of confidentiality concerns generally, and more specifically, who has access to what information
- Integration of and interoperability of disparate HIT systems
- Functionality
- Liability for breaches of information
- Will enough entities participate to make it useful
- Loss of control over data
- Integrity of the information
- Connections to Medicare and Medicaid
- Redundancy in the event the main server crashes
- Connectivity—when the power goes out, how does it operate
- Broadband capabilities and capacity
- Uniform policies and procedures
- Useful implementation from the beginning
- Time needed to train staff
- Staff resistance to electronic records
- Information used against patients to drop coverage
- Competence of the HIE staff
- Workforce training
- Speed (getting up and running and transmission of data when it is running)

- Who operates it

3.7. e-Prescribing Readiness

In examining the Surescripts report on e-Prescribing for 2009, it is reported that 82% of Pharmacies in Mississippi have an activated e-Prescribing system. This represents an increase from 60% in 2008 and 53% in 2007. The number of physician's prescribing electronically is 23% in 2009. While this is an increase from the 6% in 2008, the total percentage is still relatively low and will require better adoption among providers. Most of the pharmacies are ready to accept electronic prescriptions, but many of the providers are not yet using the technology.

3.8. Structured Lab Results Readiness

Mississippi conducted an extensive survey of 142 labs by a variety of provider types across the state. Survey methodology using standard sampling techniques was used to measure adoption of electronic reporting capabilities for labs in Mississippi (see Appendix D). The approximate total number of labs in Mississippi is 2,340. Approximately 1,700 have CLIA waivers or are PPM labs where minor or simple exams and procedures are done "onsite" for a patient. Typically the results are recorded manually in that patient's "onsite" record or immediately passed on verbally to the one being tested (simple blood sugar level "sticks" at a rural pharmacy). However, the state will work in coordination with the REC to insure the lab results for all eligible providers are entered into certified EHR technology as structured data in order to support the exchange of these lab results. Of the remaining 616 "Full Service" Labs, 360 are located in a physician office and 139 are in Hospitals or Clinics. While these figures help identify the number of labs that may need assistance from MS-HIN to be able to report results electronically, based on the survey data, it is estimated that over 75% of all lab orders in Mississippi will be transmitted electronically when the major stakeholders (PPS hospitals, CAH, etc.) are connected to MS-HIN.

MS-HIN recognizes the need for a short-term strategy to assist non-electronic labs to share results and meet Stage 1 Meaningful Use requirements. MS-HIN will employ the following strategies to address the identified gaps:

- **Strategy 1** - Mississippi has already taken a critical step forward towards enabling care summary exchange and lab results messaging through the MSCHIE. By leveraging the existing MSCHIE infrastructure, MS-HIN will have implemented Medicity's technology to send results data to major EHR vendor deployments on the coast of Mississippi and is extending that capability statewide. Phase 1 includes the on-boarding of large data providers (e.g. LabCorp, Quest, UAL) to MS-HIN's existing infrastructure to immediately enable provider access of lab data via internet browser and/or print devices.

- **Strategy 2** - Require Medicity to develop interfaces to integrate lab results into patient records, particularly those sent using Direct specifications. MS-HIN will provide technical assistance to lab personnel to implement the Grid or support the Direct project's transport standards and service specifications to push structured lab results to known, trusted health care providers. Bringing these data providers onboard is the key towards facilitating early meaningful exchange between MS-HIN providers.
- **Strategy 3** - Work with the Regional Extension Center, eQHealth Solutions, to develop a plan to provide assistance to labs in Mississippi who need help with EHR vendor selection. As many states have already created such a plan, MS-HIN will leverage this information and work with the REC to create a list of certified EHRs for Mississippi with particular focus on the needs of labs. Additionally, the MS-HIN will provide technical assistance to eligible professionals who are solo and small practice providers that need support in achieving Meaningful Use HIE requirements. To help address this potential need, MS-HIN and the REC will serve as the source for collaboration. The REC will communicate the specific HIE needs of the providers they have signed up for technical assistance, particularly those that use reference labs that aren't able to deliver results electronically. MS-HIN will be "command central", serving as the information hub for these providers.
- **Strategy 4** – Work with the state legislature to identify laws and regulations to ensure alignment and compliance with CLIA regulations.
- **Strategy 5** – Implement a standards based architecture and core HIE services to assist providers meet Stage 1 Meaningful Use requirements.
- **Strategy 6** – Work with Medicaid to integrate standards-based interface language requirements in lab service contracts.

Mississippi has approximately 2,340 labs. They are affiliated with a broad cross section of healthcare providers as shown in Table 3 below:

Table 3: Labs by Provider Type

Provider Type	#
Ambulance	9
Ambulatory Surgery Center	54
Ancillary Testing Site	31
Assisted Living Facility	1
Blood Bank	5
Community Clinic	97
Comp Outpatient Rehab Facility	1
End Stage Renal Disease Facility	71
Federally Qualified Health Center	26
Health Fair	12
Health Maintenance Organization	9
Home Health Agency	42
Hospice	74
Hospital	143
Independent	46
Industrial	21
Mobile Laboratory	11
Other	190
Other Practitioner	85
Pharmacy	55
Physician Office	1001
Prison	4
Public Health Laboratory	5
Rural Health Clinic	66
School/Student Health Service	94
Skilled Nursing Facility/Nursing Facility	181
Tissue Bank/Repositories	2

A survey was employed to get a sense, by various types of labs across Mississippi, of their readiness for exchanging results. The survey used a random sampling technique and asked about current and future lab results delivery, percentage of the results being sent electronically, and if the organization plans on having a certified product. In each category, the number of labs surveyed for this plan is shown below. The result of that sampling is as follows:

Ambulatory Surgery Center- 6 surveyed

- One has the capability to send results electronically. They are sending all their data electronically and will have a certified product.
- Five are unable to send data electronically. These five all listed different dates that they would install systems the earliest 2011, latest 2014. All will install certified systems.

Ancillary Testing Sites – 5 surveyed

- All are sending data electronically. All but one are sending over 80% of their data electronically, that one is sending only 20%, they stated they would increase the amount to 40-59% by 2012. Only one facility knows their product will not be a certified product and they intend on acquiring a certified product. The remaining facilities will use a certified product.

Community Clinics- 11 surveyed

- Six clinics are able to send results electronically. Five clinics are sending over 80% and one is only sending 20%. The clinic only sending 20% intends on increasing to 40-59% by 2012. Most of the clinics sending results will have certified product when the certifications are know and the others will acquire certified system.
- Five are currently not sending results electronically. These clinics that are not sending results plan on sending results, but all have different timeframes, two in 2010, one in 2011, and two in 2014. All plan on having certified systems.

End Stage Renal Disease Facility- 8 surveyed

- All facilities are sending results electronically. All are sending over 80% and only one will not have a certified system when the standards are released and will not change products, but the others plan on getting a certified system.

Home Health Agencies - 5 surveyed

- Three capable of sending results, but only a limited amount of data. Only one home health agency plans to increase the percentage sent by 2012, but all will be appropriately certified when certification standards are available.
- Two are not capable of sending results electronically, both will be able to send results electronically in 2012, and they plan on sending all results with a certified system.

Hospice - 9 surveyed

- Five are capable of sending limited amount of data, none are sending over 80%. Most of those capable now, will only increase their amount of data

by a limited amount in 2012. All the systems will be certified when certification standards are available.

- Four are not capable of sending data electronically. Two hospices organizations plan on sending all data electronically by 2012. The other two plan on sending limited data by 2014.

Hospitals- 15 surveyed

- Twelve have the capabilities to send data electronically. Nine hospitals send over 80% results, one hospital sends 40-59%, and two sends 20%. The ones currently not over 80%, in 2012, one will increase and send over 80%, one will increase to 40-59%, and one will stay at 20%. All will have certified systems.
- Three hospitals are not sending results electronically. One will be able to send over 80% results in 2011, one over 80% in 2012 and one 20% in 2014. Two will have certified systems; one will not have a certified system.

Independent - 5 surveyed

- Three have the capability to send electronically, one can send a limited amount of data; the other two have full capabilities. All three will have certified systems.
- Two are not capable of sending data electronically. Both will be able to send data by 2013, one sending limited data, the other has full capabilities.

Industrial – 4 surveyed

- One facility has the capabilities to send data electronically, only sending a limited amount now, will send all results by 2012 and will be certified.
- Three are not capable of sending data, some discussion, but no definitive plans nor timeline.

Other Practitioner – 10 surveyed

- Two had on-site fully accredited labs. One manually keyed the results into their EMR for physicians to access/view and had no plans to send the information electronically since all their physicians were in-house staff. The other was a research lab and all results were de-identified and used strictly for research purposes.
- Four had Clinical Laboratory Improvement Amendments (CLIA) waivers which allow for “simple testing” based on the following requirements:
 - Fully auto instrument or unitized test system
 - Uses direct unprocessed samples (finger-stick blood or venous whole blood or urine)
 - Non technique dependent specimen or reagent manipulation

- No operator intervention during analysis
- No technical or specialized training –troubleshooting or complex error codes
- Easy to read test results (positive, negative, value, etc.)
- Three utilized paper-based records and the results were printed to file. Two were investigating an EMR system and indicated they would be certified if purchased.
- One had an EMR but the lab results were manually entered into the system for physician access/view and had no plans to send results electronically.

Pharmacy- 6 surveyed

- All six have the capabilities to send data electronically. No pharmacies are submitting all the data electronically, some have plans to increase the amount of data they send, but no pharmacy expects to send all data electronically. All pharmacies will use a certified system.

Physician Office- 28 surveyed

- Eight physician offices are sending results electronically. Most of the offices are sending over 80%, only one is sending less. There is only one office not affiliated with a hospital that is sending results electronically. All of the systems will be certified when the certification standards become available.
- Twenty are not sending results electronically. Two are no longer conducting in-house lab testing. Two offices stated their systems are capable of sending results, but they are independent offices and have no interfaces to outside entities. Eleven have had no discussions about implementing a system. Four have had preliminary discussions, but have no definitive timeline for implementation, but hope to implement within the next two years. All stated that if they do implement a system, they would purchase a certified system.

Rural Health Centers - 10 surveyed

- Only one Center is sending data electronically. It is a HMA owned Center. They are sending over 80% of the results electronically and will have a certified system.
- The other Centers are not sending results electronically. Only one Center has had any discussion of implementing a system, but has no definitive timeline. The others have had no serious discussions regarding implementing a system. One Center can submit results to the lab they use electronically, but does not have any plans to go further with that project.

Skilled Nursing/Nursing Facility – 20 surveyed

- None contacted had on-site laboratories per se. All performed “simple testing” under a CLIA Waiver (as defined earlier within “Other Practitioner”).
- According to Patsy Bryant, the director of the Long Term Care Nursing Coalition, there are no fully “certified” or “accredited” laboratories within any nursing home in Mississippi.
- Of the twenty facilities contacted, only three had EMRs. Only one could accept outside lab results directly into the system while the other two required manual input into their EMR. All three had physician access/view capabilities but one still printed the results to file.
- Four were PPM labs, which can only do CLIA waived tests and microscopic procedures on bodily fluids and waste.
 - One could send the lab results directly to their EMR for physician access/view. They had the capability to send the electronic results directly to the physician, but none had requested it.
 - Two had EMR systems, but had to enter the lab results manually. Both systems had physician access/view capabilities, but one facility still printed the results to file.
 - One was totally paper-based and the lab results were printed to file.

It is estimated, based on the survey data, that over 75% of all lab orders in Mississippi will be transmitted electronically when the major stakeholders (PPS hospitals, CAH, etc.) are connected to MS-HIN.

3.9. Medicaid Readiness

The Mississippi Division of Medicaid’s State Medicaid HIT Plan (SMHP) and Implementation Advance Planning Document (IAPD) have both been approved by CMS. Both documents state Medicaid’s desire to participate in MS-HIN. Medicaid and MS-HIN will jointly work on a strategy to ensure the MS-HIN, provides both leadership and funding support, as appropriate, to assure that Medicaid beneficiaries are best represented and served by the MS-HIN. The Chief Information Officer (CIO) for Mississippi Medicaid, Rita Rutland, is a member of the HIE Technical Infrastructure Domain Team and the Finance Domain Team; she attends both sets of meetings. In addition, the PCG Team was awarded the contract to complete the SMHP and IAPD for Medicaid and has assigned the same basic team members to both the HIE and the SMHP projects to ensure coordination.

With the use of funds from a transformation grant, provider stabilization grant, and Medicaid Management Information System (MMIS) enhanced match, the State of Mississippi has implemented the Medicaid Electronic Health Record System (MEHRS). The project launched in June, 2010 supporting over 650,000

beneficiaries. Community adoption exceeded 300 providers and 700 clinical and staff users within the first 90 days. The Medicaid Electronic Health Record System and e-Prescribing System (MEHRS/eScript) provides point of service web-based access to beneficiary claims history including encounter data and medication history, based on a three year repository of Medicaid claims data.

This system offers providers the following capabilities:

- E-prescribing and analysis of claim data to prevent medication and allergy interactions
- Opportunities for care improvement when comparing a patient's information against a similar set of patients from the Medicaid population
- Free-text entry of patient-reported allergies, immunizations, medications, and vitals

The system, at launch, included the following capabilities:

- Administration and clinical data based certifiable Electronic Health Record (with a rolling 36 months of data)
- e-Prescribe for Medicaid and non-Medicaid patients including clinical and medication alerts for patient safety
- Analytical based longitudinal patient-centric health record
- Evidence-Based Problem Lists and Care Opportunities
- Links to Evidence Based reference materials to support potential care opportunities
- Templates for additional patient-reported allergies, medications, and vitals
- Secure Messaging
- Enterprise Master Patient Index (EMPI)
- Healthcare Information Exchange (HIE)
- Clinical Decision Support (CDS)
- Clinical outreach programs and support teams

Phase 2 began in August 2010 and is scheduled for completion in March 2011. The following functionality is being addressed in Phase 2:

- Population predicative modeling tools and reporting
- Additional workflow and data interoperability with Mississippi Coastal Healthcare Information Exchange (MSCHIE), Delta Health Alliance (DHA), and the statewide HIE when available
- Workflow and data interoperability with requested practice management and electronic medical records systems

- Additional clinical population management and CDS tools

Phase 3 of the project began in January 2011. The following functionality is planned for inclusion in Phase 3:

- Orders and Results module including radiology and lab
- Referral Management
- Additional advanced secure messaging
- Personal Health Record (PHR) Management Console
- Additional population predicative modeling tools and portal options
- Continue additional workflow and data interoperability with Mississippi communities health systems and practice management / electronic medical records systems

The Mississippi Electronic Health Record System (MEHRS/eScript) system powered by Shared Health will provide providers with a certified electronic health record system (certification scheduled for October 2011) that will aid in applying for stimulus funds. The smart analytics and predicative modeling will enable the improvement of care for the Medicaid beneficiaries while concurrently managing and reducing the cost of care. The implementation of the MEHRS system statewide positioned the Division of Medicaid to make Medicaid patient clinical and prescription history available for exchange with the other ecosystems including DHA and MSCHIE and ultimately the statewide HIE.

3.10. Public Health Readiness

The Mississippi Department of Health (MSDH), a centralized public health system, is governed by an 11-member Board appointed for staggered terms by the Governor. Mississippi is one of the few states to transform public health reporting by integrating data feeds across multiple programs in order to produce more timely and comprehensive information while reducing provider reporting burdens. The information provides baseline and trend data about the health and healthcare use of Mississippi citizens and identify opportunities to target and improve health and healthcare deliver.

Until 2008, Mississippi was one of the few states or jurisdictions without a state health data reporting system. During the late 1980's, MSDH staff began work to develop a statewide Hospital Discharge Data System (HDDS). In 2002, the Legislature enacted Mississippi Code §41-63-4 to create an HDDS. In September 2004, the MSDH developed a voluntary, statewide, electronic surveillance system. The MSDH piloted the voluntary system in 27 facilities throughout Mississippi. Using the lessons learned from the pilot, the MSDH was able to provide valuable information to the Mississippi Legislature during the 2008 Legislative Session securing the passage of House Bill 1023 amending Mississippi Code §41-63-4 and authorizing the MSDH to design and establish a

registry program. As a result of the new Mississippi reporting code, each licensed healthcare facility will report discharge data to the MSDH on every inpatient and outpatient discharged, including those seen in the emergency department. Hospitals may submit data to MSDH directly or through the Mississippi Hospital Association (MHA) for submission to the HDDS, as specified by law. The HDDS regulations also stipulate that all licensed healthcare facilities shall submit data for each calendar month based upon discharges occurring during such month. Collected data shall be submitted to the MSDH on or before the 15th day of the following month. One record for each discharge during the calendar month shall be submitted.

With the implementation of the HDDS, the MSDH created a comprehensive health data system with improved data quality and efficiency of data collection while improving the ease of submission. The primary goal of the health data system is to establish and maintain a centralized reporting system that includes tracking all Mississippians, promoting public use of the data, and generating research products that, along with aggregate reports, add value to the data and stimulate community and health improvements

Mississippi has advanced the goal to implement an interoperable system for public health by leveraging existing data flow from a hospital's automated system(s) and has provided a cost-effective way to gather detailed hospital data, ensuring a more rapid utilization of the data. Implementing a common and shared system for public health and providing stakeholders a single view of data via an automated, streamlined, web-enabled, system will enhance our capabilities to prioritize our public health response. The MSDH's use of an integration engine/brokering tool to facilitate the message exchange between healthcare facilities and the MSDH ensures effortless integration between all healthcare systems.

3.11. Health Plans Readiness

In Mississippi, Blue Cross/Blue Shield (BCBS) and United Healthcare are the primary payers in the commercial insurance market. Both insurance carriers are supporting electronic eligibility and claims transactions.

According to census data, there are 2,346,000 insured individuals in the State of Mississippi. The majority of insured individuals are covered by Medicaid, Medicare, Blue Cross Blue Shield of Mississippi and United Healthcare. These four payers cover 93.56% of the insured population and all have the ability to support electronic eligibility and claims transactions.

4. Medicaid Coordination

The MS-HIN planning effort recognizes the need to coordinate closely with the Mississippi Division of Medicaid. Medicaid plays a key role in the exchange process and DOM will be a major user of the HIE with claims processing. The team that developed the HIE Strategic and Operational Plan is also creating the Mississippi State Medicaid HIT Plan (SMHP). Knowing that the two plans must be in harmony, the State has considered both when creating and executing the work plan for these efforts. Throughout the HIE Strategic and Operational Planning process, any and all opportunities to combine work plans, stakeholder meetings, public forums, provider focus groups, and environmental scans were taken.

The MS-HIN strategy will leverage the provider participation in the Medicaid incentive program to facilitate and accelerate the provider's use of HIE. The HIE Strategic and Operational Plan will help support the provider's realization of Meaningful Use incentives – ultimately helping to improve overall healthcare quality and coordination for all beneficiaries.

4.1. Integration Between HIE and SMHP

Just as the HIE strategy accelerates provider participation in the Medicaid incentive program, the SMHP will advance the development of Medicaid's capacity to facilitate care coordination and improved efficiencies. The two efforts are closely aligned and consistent. Mississippi is leveraging the common stakeholders and forums to ensure integration between the HIE Strategic and Operational planning and the SMHP efforts.

The healthcare data available through the MS-HIN will help Medicaid providers meet the federal Meaningful Use measures and guidelines. This also helps ensure the goals of the HIE are met. Having this data available will also help Medicaid providers get a broader perspective on their client's healthcare history and outcomes.

Mississippi's Medicaid HIT and strategic HIE planning activities are tightly coordinated. Mississippi's statewide HIE goals, objectives, and capacities will be actively considered in program planning and integrated in the State Medicaid HIT Plan.

The Mississippi Department of Information Technology Services and the Mississippi Division of Medicaid are using common stakeholder forums, meetings, and focus groups to ensure common understanding, close alignment, and strong integration between the two efforts. Approximately 30% of Mississippi's residents are Medicaid beneficiaries. It is expected that this percentage will rise to 50% under federal Healthcare Reform legislation.

Because of this, Mississippi understands the need to closely monitor and incorporate results and findings across both projects.

4.2. Measures of Provider Participation

The Mississippi Division of Medicaid (DOM) is expecting a fairly large number of eligible providers to apply for the Medicaid incentive program. Mississippi ranks high on various measures of poverty in the United States. With the passage of healthcare reform, estimates of Medicaid eligibility could approach 35% of the population. Therefore, a significant number of physicians and over 70% of all hospitals in Mississippi may be eligible for incentives.

The DOM is beginning the development of a web site to explain the incentive programs and Meaningful Use requirements to providers across the state. The web site is operational. Provider adoption is critical and the DOM is working closely with the Regional Extension Centers (REC) and MS-HIN to accelerate adoption. Provider adoption of EHR technology is viewed as a key component of achieving Meaningful Use. Achieving Meaningful Use is viewed as key to improving the overall health of Mississippians and lowering health costs in the state.

4.3. Governance Structure

Dr. Robert Robinson is the Executive Director for the Mississippi Division of Medicaid. He reports to the Governor and is responsible for the direction of the Division. He works with staff from the Centers for Medicaid and Medicare Services (CMS) to maintain compliance with federal laws and regulations; and networks with other agencies and organizations for improved healthcare. The Division is broken into several departments responsible for the operations of the Medicaid programs in Mississippi.

4.4. Coordination of Provider Outreach

The Division of Medicaid has a public relations bureau specifically responsible for working with providers. The Bureau of Provider and Beneficiary Relations performs a variety of tasks including assisting with enrollment, answering provider questions, assisting with claims issue and providing education materials for providers. The Bureau will also be responsible for managing the web site and putting provider information on the site to assist with adoption and achieving Meaningful Use.

The Bureau is also developing a Communications Plan to address providing information about the EHR Provider Incentive Payment Program to various entities including:

- State Legislators
- State Healthcare Associations

- Eligible professionals and hospitals through their professional organization newsletters

The Communication Plan will also include revising the web site to include putting provider information to assist with the adoption, implementation, and upgrade of EHRs and achieving Meaningful Use.

4.5. Collaboration with Regional Extension Centers

The Division of Medicaid has provided information to the Regional Extension Center (REC) for dissemination when working face-to-face with providers. The REC for Mississippi, eQHealth Solutions, is collaborating with the DOM in presenting at their provider focus group meetings and other similar events. The DOM and eQHealth Solutions will create a formal agreement in which the DOM will delegate to the REC the responsibility for education and outreach of providers required to be included in the SMHP.

4.6. Coordination with ONC Funded Workforce Project

The Division of Medicaid has not yet initiated activities with Hinds Community College (HCC), the ONC Funded Workforce Project, but has provided information when asked and directed providers to the appropriate ONC funded workforce entity for assistance with workforce needs.

4.7. Alignment of HIE and Medicaid Efforts with Meaningful Use

The Division of Medicaid is represented on the MS-HIN Board by the Medicaid Chief Information Officer (CIO). The CIO has attended various HIE meetings to look at the commonalities of activities between the SMHP and the HIE Strategic and Operational Plan, the required clinical measures for reporting and the Meaningful Use clinical measures to be reported in order to qualify for EHR provider incentive payment. Both the CIO and the State HIT Coordinator have met with individuals in the State Health Department and others to determine how current systems could be leveraged for clinical outcomes data reporting.

The DOM is participating with a multi-state consortium in the development of a Provider Incentive Payment system that will interface with the National Level Repository (NLR) for CMS-required registration and attestation purposes. This system will be maintained as customizable product that will run a “software for service” offering. Since eligible providers and hospitals will need to show evidence of product certification, this information will be shared with the HIE and the REC to assist them in completing their functions and activities.

The Medicaid EHR provider incentive payments will assist eligible providers and hospitals in the purchase of equipment and to move toward the implementation of EHR technology and compliance with Meaningful Use.

4.8. Coordination and Alignment of Various Efforts

4.8.1. Needs Assessments

The State HIT Coordinator and the Medicaid CIO continue to work together in identifying the data exchange needs communicated by professionals and hospitals. The Division has identified that dentists as a whole are lacking in EHR capability. A strategy to provide assistance to dentists to submit claims electronically will assist this group move towards EHR adoption and Meaningful Use.

The State HIT Coordinator has identified a need for EHR capability in the public health units and for the creation of electronic databases and systems for public health and syndromic surveillance reporting purposes. Mississippi's public health system is a centralized system and has full investment of the State Health Officer and the Mississippi State Board of Health. The agency supports clinics throughout the State in nine (9) public health districts and in eighty-one (81) counties. Currently, 28% of the licensed acute care facilities in Mississippi report syndromic surveillance data electronically. While the Immunization program offers web-based physician reporting, the MSDH is not receiving electronic messages for Immunizations. Mississippi is currently working on leveraging the work already completed with the deployment of Orion Health's Rhapsody Connect Integration engine in Mississippi licensed healthcare facilities by adding an electronic laboratory report (ELR) profile and a Healthcare-Associated Infection (HAI) profiles. The ELR profile deployment will be the beginning of electronic laboratory reporting in Mississippi. Additionally, Mississippi has leveraged the work already completed by adding an immunization profile as well as provided the opportunity for Immunization providers to submit and receive immunization information.

In addition, needs have also been identified for EHR capability in the long-term care setting, as well as for small, independent providers.

4.8.2. Environmental Scan

The Division of Medicaid is using the Environmental Scan conducted for MS-HIN in 2010 as the baseline for information, as well as information gathered by MSCHIE during their Environmental Scan. In addition, the SMHP process includes additional elements of an environmental scan including two provider focus groups and additional research and analysis.

4.8.3. Regional Extension Centers

Information regarding the collaboration between the Division of Medicaid and the REC is described in detail in 4.5 above and throughout section 4.

4.8.4. Privacy and Security Policies

The Division of Medicaid, in carrying out activities for the EHR Provider Incentive Payment Program will adhere to any and all privacy and security laws, rules and regulations required by CMS, HIPAA and any others that pertain to the exchange and protection of healthcare information. All personnel from the Division of Medicaid will use all of these policies and procedures to meet all privacy and security requirements.

4.8.5. Infrastructure

The Division of Medicaid is assessing the staffing requirements for fulfilling the guidelines of the EHR Provider Incentive Payment program. Depending upon the level of effort required of DOM staff once the final CMS/ONC requirements are issued, DOM may find it necessary to contract with additional resources to supplement the existing DOM audit and program integrity staff. As mentioned in a previous section, the DOM will participate as part of an Application Service Provider model for the Provider Incentive Payment system. Internal staff will participate in the requirements definition and testing of the system, but not in the maintenance of the product.

4.8.6. Operational Collaboration

As mentioned in the sections above, the Division of Medicaid has determined they may be able to offer assistance to the HIE. Once connected to the NLR, the DOM may also be able to provide vendor certification numbers to the HIE when needed.

4.8.7. Payment Incentives

DOM is planning on participating as a Tier 1 provider and will be ready to accept eligible provider attestations in January 2011 and is also planning to make payments as early as May 2011, depending upon CMS' payment schedule.

4.9. Measures of Provider Participation and Adoption

Health Information Technology is frequently associated with efficiencies and cost reduction / avoidance plans. Electronic Health Record Technologies will serve as the foundation for a creating a number of these efficiencies. However, these technologies will not attain the efficiencies desired if providers do not adopt EHR technologies and use them as a part of their clinical workflow. Only by significantly increasing provider adoption rates can these efficiencies be realized.

The ONC recognized this issue when they created the Regional Extension Centers. Since launching in April 2010, most of the RECs have been gearing up to assist providers with HIT adoption. It will be necessary for the MS-HIN to coordinate with Medicaid, the Regional Extension Centers, and the Job Training program to accelerate the adoption of HIT across the State. In order to attain

adoption rates that exceed the normal patterns, MS-HIN will need to be able to bring the following proven tools and competencies to this project.

- Knowledge of EHR technologies
- Understanding of provider clinical work flows
- Process for managing change
- Easy to use and understand application to assist providers find the right EHR technology for them
- Roadmap for achieving Meaningful Use and obtaining stimulus funds

In order to assist the provider community in navigating the required transition to EHR technology successfully, it will be necessary to have a set of proven tools and materials that providers can use. MS-HIN will work with the Regional Extension Centers and Medicaid to provide these key tools in order to achieve the early adoption of EHR technology. These tools and materials are described below.

- EHR Assessment/Analysis – There are currently over 360 EHR products on the market today. It is anticipated that as many as 50 – 60 may receive certification within the next few months. Providers are not willing or equipped to assess the various attributes of all these products to determine which one is most suitable for their practice. Different EHRs fit different specialties and clinical workflow styles. In order to choose the right solution for each provider, it will be necessary to do an assessment of these products and analyze the ones that best fit different specialties and workflow styles.
- Vendor Selection – This is a tool that practices may use to assist them with the complicated process of selecting an EHR vendor. Knowing the key things to look for in the selection process and how to negotiate with vendors is critical information providers will need to make a successful transition to EHR technology.
- Data Use Agreements – There are several different Data Use Agreement templates in use today. It is important for providers that wish to participate in the exchange of information and use the HIE to accomplish this task to be able to have Data Use Agreements that fit the legal structure of Mississippi.
- Business Associate Agreements – Same as Data Use Agreements above
- Practice and Workflow Redesign – Many providers do not have the skills to do their own workflow redesign. The REC is developing these services and will need to have a fully functioning methodology for assisting provider's adoption of EHR technology, transforming their practice, meeting Meaningful Use requirements, and receiving their ARRA stimulus funds.

- Privacy and Security Best Practices – Currently, there are very few experts in privacy and security working in the field. Having access to an individual with these specific skills is important to identifying best practices.

In addition to the knowledge tools articulated above, MS-HIN will need additional educational materials that provide an initial understanding of HIT, EHR, and ARRA for all providers as they begin the process of adopting, enhancing, and implementing technology. The REC will need to have fully developed materials available to providers that allow them to understand and connect to the HIE including:

- HITECH/Meaningful Use – Providers need a basic education about HITECH, Meaningful Use, and HIE. Overall, there is a general lack of knowledge in the provider community about all of these topics and it will be critical for MS-HIN to provide this information to providers.
- ARRA/Stimulus Funding – Overcoming the general lack of knowledge in the provider community about ARRA and Stimulus Funding through basic educational opportunities will be critical for the MS-HIN.
- HIE Integration – Understanding how all of this electronic data interconnects, how privacy and security is protected, and where the provider fits into the bigger picture will be important to obtaining broad usage of electronic health records

There are also several other opportunities for improving the adoption rates and increasing the likelihood of improved efficiencies for the whole system. These areas of opportunity include:

- Providers are very focused on the clinical aspects of EHRs in their selection process and many providers are not aware of additional modules in the Electronic Health Record that can impact their practice, including administrative modules with the ability to output and submit “clean”, HIPAA-compliant claims and other “clean” administrative transactions to payers, such as HIPAA compliant eligibility, claims status, and prior-authorization
- Providers are still migrating to and working on electronic processes for administrative transactions and in some states, with some Medicaid systems, the acceptance rate of electronically submitted HIPAA-compliant claims are low and the rejection rate is high
- Providers are examining their options for acquiring EHR technology, and can be overwhelmed with the number of vendors, offerings, and the overall selection process. Providing a process to assist them through this selection and acquisition process will enhance adoption rates

A significant win for all the stakeholders, including the Division of Medicaid, is the ability to adopt modern, effective technology solutions that not only meet clinical needs and requirements but also solve the ever-persistent business and administrative challenges at the same time. As an example, when a provider is looking to move from a paper-based process to a modern, efficient electronic health record system, the provider can also add administrative components and modules, upgrading the entire workflow (from clinical to administrative transactions). Thus, the provider now has the ability to have an upgraded, entirely electronic workflow, including the submission of HIPAA-compliant and tested claims to the State Medicaid and Medicare systems. The impact to providers upgrading their systems with options/optional modules as they select and implement their EHRs can be significant.

- Providers can output and submit clean, tested compliant claims to Medicaid and other payers, leading to faster payment and fewer rejections
- Medicaid can accept more electronic claims, will reject fewer claims, and subsequently gain efficiencies and streamline workflows due to the higher submission of claims and lower rejection rates

Adoption rates of comprehensive technology solutions, such as EHRs with administrative modules, can be raised significantly with proper, deeper education of the providers, in concert with education and strategy planning by the combined resources of the Regional Extension Center, Medicaid, and the statewide HIE. By providing further provider-based education for migrating to a modern, effective clinical (EHR) solution with optional administrative modules, the provider, the statewide HIE and State Medicaid systems can realize cost savings, workflow improvements, and overall payment process improvements, making a significant impact on the entire system.

HIT adoption will also be driven by the willingness of physicians and other healthcare providers in Mississippi to adopt and use these new technologies. In many ways, this makes HIT adoption a large scale change management project. The HIE Strategic and Operational Plan as well as the State Medicaid Health Information Technology Plan (SMHP) will reflect clear and actionable processes for achieving significant adoption rates.

David Blumenthal, the former National Coordinator for Health Information at Department of Health and Human Services stated “People working in health IT should think about electronic health records, not as a technology project but as a change management project. Components of Meaningful Use include sociology, psychology, behavior change and the mobilization of levers to change complex systems and improve their performance”. Awareness of the resistance to change will steer all procedures, process, and policies for improving provider adoption in Mississippi.

It is important for the statewide HIE, Regional Extension Center, and Medicaid to address these concerns and offer solutions. Adoption will be much easier if strategies are developed to address and overcome stakeholder concerns early in the process. Four simple change management elements to include in the adoption process are:

1. Follow a proven change management process
2. Use the tools and materials described above
3. Provide the proper education and training to stakeholders
4. Continually connect the change with the stakeholder's own value proposition

Using these techniques to manage change successfully should improve the overall provider adoption rate. Applied early in the change process, they can result in success stories for the proposed changes. This can be a powerful tool for obtaining the support of other stakeholders as they adopt the EHR technology. The earlier the adoption, the larger the resulting benefit to all stakeholders.

5. Coordination of Medicare and Federally-Funded, State-Based Programs

5.1. Medicare Coordination

The State of Mississippi recognizes that coordination with Medicare is of critical importance, therefore the MS-HIN will deploy an NHIN Gateway, based upon the CONNECT protocols, to enable direct connectivity with Medicare over NHIN for both clinical and administrative transactions. Since Medicare and CMS as a whole are migrating towards NHIN, it is critical for the MS-HIN to have direct, NHIN-based connectivity with Medicare and CMS. Therefore, the MS-HIN will enable a CONNECT compliant NHIN Gateway for connecting to Medicare and CMS.

The MS-HIN will also assist as necessary with provider connections to the National Level Registry (NLR), giving providers who are seeking ARRA stimulus funding a pathway to CMS.

5.2. CDC Coordination

A national initiative of the Centers for Disease Control and Prevention (CDC) is to enable real-time, interoperable data exchange between organizations for the promotion of collaboration and rapid dissemination of critical information in the organizations associated with public health.

The integration and alignment of the MS-HIN Strategic and Operational Plan to include Public Health reporting and surveillance to the CDC over NHIN, coordinating with senior staff at CDC and Mississippi Department of Health, as well as ONC and Health and Human Services (HHS), is critical to the development and full deployment of a statewide Health Information Exchange. The CDC fully supports and endorses NHIN and encourages State Public Health Departments to fully participate in the statewide HIE as well as the NHIN for connectivity and interoperability.

The MS-HIN and Department of Health is reviewing connectivity and reporting standards, including considering the implementation of the Geocoded Interoperable Population Summary Exchange (GIPSE) format of syndromic surveillance information to the CDC (complying with NHIN standards for connectivity and interoperability). The GIPSE format is designed to allow the electronic exchange of health condition/syndrome summary data that has been stratified by a number of variables include geography. The GIPSE Data Content and Data Format Groups, a collaborative effort among the CDC HIE Project Awardees and National Center for Public Health Informatics (NCPHI), developed and continues working on the GIPSE standard. The GIPSE standard will be

utilized by public health to conduct situational awareness, including early event detection and monitoring, for potential public health events.

5.3. CMS/ASPE Coordination

The integration of a statewide HIE with the Center for Medicare and Medicaid Services (CMS) will enable electronic quality reporting over NHIN, as ordered by the American Recovery and Reinvestment Act (ARRA). The standards for quality reporting are defined by the ONC and CMS. The ability of states to report data to CMS through the statewide HIE and NHIN is an essential component for achieving Meaningful Use.

5.4. HRSA Coordination

The Health Resources and Services Administration (HRSA) is the primary federal agency for improving access to healthcare services for low income and uninsured individuals. The role of the statewide HIE in alignment with HRSA includes ARRA funding to expand resources and services available to the low income and uninsured individuals. Mississippi received a grant from HRSA to establish, restore, or retain pharmacy services in medically-underserved rural areas of the State through tele-pharmacy technology, and the State of Mississippi will continue to align with the HRSA.

5.5. SAMHSA Coordination

The Substance Abuse and Mental Health Services Administration (SMHSA), an agency of HHS, focuses attention, programs, and funding on improving the lives of people with or at risk of mental and substance abuse disorders. Many states have passed state laws that provide heightened privacy and protection for the disclosure of certain types of health information, such as substance abuse, sexually transmitted diseases, genetics, and mental health and developmental disabilities in children and adults that cannot be shared with other healthcare providers without written patient consent. The MS-HIN, where applicable, must comply with these laws with much higher privacy standards, even if the disclosure of information would otherwise have been permitted without patient consent or authorization under HIPAA regulations. The statewide HIE will coordinate with the State Health Authority to ensure that specific standards for Substance Abuse and Mental Health records are included in the MS-HIN operational policies and procedures for in-state and out-of-state disclosures.

Please see Section 13, Legal and Policy, for additional information.

6. Participation with Federal Care Delivery Organizations

6.1. Department of Defense Coordination

There are three major military installations in Mississippi. Two are Air Force bases near Columbus and Biloxi and the third is a Navy facility near Meridian. Interviews at the healthcare clinic at the naval facility were conducted during the Environmental Scan process. The results of those interviews indicate the military is interested in receiving information about the off base treatment of military personnel but are unable to connect to the statewide HIE due to severe security constraints. Therefore, the exchange of healthcare information will be done through the Nationwide Health Information Network (NHIN) by connecting with the Department of Defense using secure protocols and standards.

6.2. Indian Health Services

Choctaw Indians are the most prevalent minority of the American Indian population in Mississippi. Mississippi's Choctaw Indians remain a rich cultural resource and have endured and survived many obstacles. Presently, the Mississippi Choctaw Reservation has eight communities: Bogue Chitto, Bogue Homa, Conehatta, Crystal Ridge, Pearl River, Red Water, Tucker, and Standing Pine. The total land area for the main reservation is 84 km and its total population is approximately 5,200 people. There is a community health service that enables members of the Mississippi Choctaw Indians to achieve maximum health by improving each individual's health knowledge, attitudes, and practices. Today, the Mississippi Choctaw Indians is one of the State's largest employers, operating 19 businesses and employing more than 7,800 people.

Members representing the tribe attended one of the Environmental Scan workshops and expressed strong interest in the statewide HIE. They indicated they are participating with IHS and the best connection should be through NHIN. Therefore, the exchange of healthcare information will be done through the Nationwide Health Information Network (NHIN) by connecting with the Indian Health Service using secure protocols and standards.

6.3. Veterans Administration Coordination

There are two large Veterans hospital facilities in Mississippi, one in Biloxi and one in Jackson. Interviews were conducted with the Gulfport facility during the Environmental Scan and ITS was made aware of the work between the Department of Defense and the Veterans Administration to develop the Virtual Lifetime Electronic Record (VLER). The VLER will support future connections through the MS-HIN / NHIN Gateway.

6.4. Social Security Administration Coordination

The State of Mississippi is aware of the Social Security Administration (SSA) and the existing SSA NHIN project for Disability Benefit Eligibility Determination utilizing NHIN. The MS-HIN recognizes the importance of utilizing NHIN-based connectivity to and with the SSA. Connecting to the SSA with bi-directional, electronic exchange of data, versus utilizing existing paper-based workflow and communication mechanisms, will significantly decrease the time between the event that caused a person to become disabled and the time it takes for them to receive benefits.

As the MS-HIN will implement a CONNECT NHIN Gateway for bi-directional clinical and administration exchange, the addition of SSA as a trading partner) will allow SSA disability benefit eligibility verification using an electronic CCD. Therefore, the MS-HIN will support direct HIE to SSA connectivity in order to migrate paper-based eligibility transactions to more efficient electronic transactions.

7. Coordination with Other ARRA Programs

7.1. Regional Extension Center Coordination

During the summer of 2009, the Department of Health and Human Services through the Office of the National Coordinator for Health Information Technology issued a competitive funding opportunity titled, *American Recovery and Reinvestment Act of 2009, Health Information Technology Extension Program: Regional Centers*. The funding opportunity announcement sought to identify and fund qualified entities to serve as Regional Centers within the Extension Program. The purpose of the Regional Centers is to furnish assistance, defined as education, outreach, and technical assistance to help providers in their geographic service areas select, successfully implement, and meaningfully use certified EHR technology to improve the quality and value of healthcare. The Regional Centers were also tasked to help providers achieve, through appropriate available infrastructures, exchange of health information in compliance with applicable statutory and regulatory requirements, and patient preferences.

The program requires the Regional Extension Centers to give priority to providers that are primary care providers in the following settings: individual and small group practices with ten or fewer professionals with prescriptive privileges primarily focused on primary care; public and Critical Access Hospitals; Community Health Centers and Rural Health Clinics; and other settings that predominantly serve uninsured, underinsured and medically underserved populations. The primary measure of a Regional Extension Center's effectiveness is whether it has assisted providers in becoming Meaningful Users of certified EHR technology. The original projects indicated that each Regional Extension Center would be expected to provide federally supported individualized technical assistance to a minimum of 1,000 priority primary care providers in the first two years of the four-year cooperative agreement project period. At the national level, the Regional Extension Centers are expected to support over 100,000 priority primary care providers in the aggregate.

The successful applicants joined the collaborative learning network which is a consortium facilitated by the Health Information Technology Research Center (HITRC) where lessons learned by all of the Regional Extension Centers about effective practices in provider implementation and use of EHRs will be shared. Each cooperative agreement entered into by the Regional Centers with ONC consists of a four-year project period with two separate two-year budget periods. Non-competing continuations for the second two-year budget period are contingent upon the performance of the individual Regional Extension Center and a determination by HHS that such continuation of the cooperative agreement with a given center is in the best interest of the program.

The Regional Extension Centers are expected to work with both priority primary care providers who have not yet adopted EHR systems, and with priority primary care providers who have existing EHR systems to assist them in achieving Meaningful Use of a certified EHR. The scope of services includes:

- Education and Outreach to providers, including dissemination of knowledge about the effective strategies and practices to select, implement, and meaningfully use certified EHR technology to improve quality and the value of healthcare
- National Learning Consortium, through which the Regional Extension Centers will become members and use the client management, tracking, and reporting application furnished by HITRC to provide ongoing data in support of ONC's monitoring, oversight and continuous improvement of the Extension Program as well as to make their materials available to other Regional Extension Centers
- Vendor Selection and Group Purchasing, including assistance in assessing the health IT needs for priority primary care providers and selecting and negotiating contracts with vendors or resellers of EHR systems, hardware, networking, and IT services
- Implementation and Project Management over the entire EHR implementation process, including individualized and on-site coaching, consultation, troubleshooting and other activities required to assure that the supported provider is able to assess and enhance organizational readiness for health IT, assess and remediate gaps in IT infrastructure, configure the software to meet practice needs and enable Meaningful Use, and ensure adequate software training is delivered for all staff
- Practice and Workflow Redesign necessary to achieve Meaningful Use of EHRs
- Functional Interoperability and Health Information Exchange by enabling primary care providers to connect to available health information exchange infrastructure(s)
- Privacy and Security Best Practices including implementation and maintenance of physical and network security, user-based access controls, disaster recovery, encryption and identification of state laws and regulatory requirements that impact privacy and security policies for electronic, interoperable health information exchange
- Progress Towards Meaningful Use by helping priority primary care providers to understand, implement technology and process changes needed to attain Meaningful Use requirements and demonstrate this attainment

- Local Workforce Support, by partnering with local resources such as community colleges to promote the integration of health IT into the initial and ongoing training of health professionals and supporting staff

On May 7, 2010, eQHealth Solutions announced that it had been selected by the Department of Health and Human Services to operate the eQHealth Regional Extension Center to assist primary care physicians in Mississippi. The eQHealth Regional Extension Center's stated goal is to provide vendor-neutral technical assistance related to the selection, implementation, and use of electronic health record systems. They have specifically defined programs and services to assist in the following areas:

- Education
- Adoption and implementation
- Practice and workflow redesign
- EHR implementation
- Group purchasing assistance
- Grants and loans
- Functional interoperability and health information exchange
- Privacy and security
- Meaningful Use

Members of eQHealth Solutions attended the public meetings held across the State during the Environmental Scan process and were given opportunities to present their program to the attendees. MS-HIN is working with eQHealth Solutions to ensure they are introduced and available to providers across the State. In addition, eQHealth Solutions presented at two Medicaid sponsored meetings in August 2010 to introduce their services to Medicaid providers and presented to the MS-HIN Board in February, 2011.

7.2. Workforce Development Coordination

Workforce development in Mississippi is being managed by Hinds Community College (HCC) for the central and southern part of the State and Itawamba Community College (ICC) for the northern part of the State. They are working to deliver training to healthcare and technical professionals seeking opportunities to work in healthcare technology. They will offer certificates in all six (6) roles necessary for a person to achieve certification.

The first course was offered in September, 2010. All courses were available online and took approximately six (6) months to complete. For Hinds Community College, enrollment began in early September and approximately 50 students

began training in the first class. The average student is expected to complete seven courses to receive their certificate.

The Community Colleges are working closely with eQHealth Solutions, the Regional Extension Center for Mississippi, to inform healthcare providers across the State about the training programs.

7.3. Broadband Mapping and Access Coordination

The State of Mississippi has had a public mandate to improve access to broadband technology since 2003 when the Mississippi Broadband Technology Development Act was passed (Mississippi Code Annotated, Section 57-87-1). There is also a Mississippi Broadband Task Force that was founded in 2004 to promote citizen use of the internet and develop a broadband strategy. Since that time, the State has been moving forward with planning and implementation of improved access to broadband services. Specifically, the State is participating in the national broadband mapping and planning initiative through the Broadband Technology Opportunity Program (BTOP) administered by the Department of Commerce (DOC).

In addition to the expansion of broadband services funded by the American Recovery and Reinvestment Act, Mississippi is participating in broadband connectivity expansion specifically for tele-health initiatives through the Federal Communications Commission (FCC) funding of the University of Mississippi Medical Center (UMMC). UMMC also received a United States Department of Health and Human Services Health Resources and Services Administration (HRSA) and Office for the Advancement of Tele-health (OAT) grant for a telemedicine project in the Delta.

7.4. Beacon Communities Coordination

The Delta Health Alliance (DHA) was founded in 2001 to support community-based initiatives that would lead to sustainable improvements in the health and wellness of residents of the Mississippi Delta, one of the poorest and unhealthiest regions in the United States. Mississippi has a long history of lack of access to appropriate services and poor health outcomes. Clinicians in the Delta have readily adopted new health information technologies over the last four years, understanding the value of how access to up to date health information can impact patient outcomes. The Better Living Utilizing Electronic Systems (BLUES) project has an ambitious vision to bring Electronic Health Records in the Delta to a new level, establishing and supporting a network that is comparable to integrated systems typically only found in resource-rich, urban settings.

The BLUES program involves several key initiatives:

- Work with rural providers to assess their HIT needs

- Redesign workflows to improve efficiencies
- Install, test, provide training, and support Meaningful Use certified Electronic Health Record systems that meet the provider's needs.

As of October 1, 2009, there are 163 physicians actively using DHA's Electronic Health Record system. Of these, 41 work primarily in the Delta. The total number of active patients in DHA Electronic Health Record database is 669,803 and 298,306 of these patients live in the Delta. The DHA has the largest number of Electronic Health Record providers in the Delta. Currently, only Baptist Memorial Hospital in Desoto county and Greenwood Leflore Hospital in Leflore county are utilizing Electronic Health Record's in a meaningful fashion in accordance with ONC's definition, although three others are in different stages of planning and implementation. Baseline electronic health record adoption rate among hospitals by hospital-based providers is 21.7%. Baseline electronic health record adoption among hospitals by number of beds is 27.5%.

The main goal and objective of the BLUES project is to achieve Electronic Health Record Meaningful Use adoption among 70% of primary care providers in the Delta. DHA will do this by providing needs assessments, workflow redesign, network recommendations, equipment ordering and testing, training of personnel, and ongoing maintenance of systems. Currently 251 of the 575 (43.7%) licensed physicians in the Mississippi Delta are utilizing Electronic Health Record's in a meaningful fashion (per ONC definition), based on a survey of use completed January 11, 2010. Adoption rate for nurses is calculated at 1,966 of the 5,272 (37.3%) RN, LPN, and NP licensed in the Delta, based on staffing levels at clinics using Electronic Health Records. DHA will continue to work with local clinicians promoting the adoption of certified Electronic Health Record technology and providing assistance in determining their specific needs and making recommendations on which solution is best for them.

Another goal is to provide 80% of eligible providers using EHR Technology in the Mississippi Delta (both in and out of the DHA network) with interfaces to connect to the developing MS-HIN system for integrated retrieval of patient data by authorized users. There are no providers in the Delta that are currently interfaced with the statewide HIE system. Interfaces are broken down into two primary types:

- Record Locator - The preferred method of participation is to utilize the statewide HIE system as a Master Patient Index to serve as record "pointers", updated in real time as new clinical information is added to their systems.
- Data Repository - Organizations will also have the opportunity to participate through the statewide HIE system's secure, HIPAA-compliant database.

The BLUES Beacon Community will supplement the DHA's ongoing mission to reach out to providers serving the 18 counties of the Mississippi Delta in order to support adoption of meaningful EHR utilization and health information exchange. Advanced HIT functionalities, including clinician decision support, disease management, continuous quality improvement, and data aggregation for research support, have a tremendous potential to dramatically impact the health and well-being of the residents.

DHA installed the AllScripts system as the sole source for HIT for the University of Mississippi Medical Center in Jackson (just south of the MS Delta Region) and it has been the solution of choice for many healthcare organizations in the region, simplifying interface design between practices. The BLUES Beacon Collaborative will continue to reach out to a broad range of diverse care settings, including private practices and faith-based clinics, community health centers, pharmacies, outpatient clinics, and rural hospitals. Through the use of different modules, the DHA EHR network provides clinical decision support, disease monitoring and management, practice management, e-Prescribing, care plans, and medication and data aggregation services.

There are two aspects to management and oversight of the BLUES Beacon Community program relating to:

- Delta-specific activities of increasing EHR adoption and HIE integration
- HIE integration at the state-wide level

DHA will expand its existing EHR network's governance structure to incorporate the new goals and activities of the BLUES Beacon Community Program. The current goals are:

- Implement a structure within which project initiatives can be executed
- Promote coordination across the region in support of state-wide HIE initiatives
- Provide active direction, periodically review interim results, and identify and execute adjustments to ensure achievement of the targeted goals

The BLUES Beacon Community project was designed as a multi-stakeholder collaboration to bring together disparate resources for the promotion of HIT and use of EHRs to improve the health of the public. The BLUES Beacon Community will deliver a variety of services geared toward assisting providers and stakeholders in acquiring certified EHRs.

8. Multi-State Coordination

8.1. Upper Midwest HIE Collaborative

Mississippi, through its connections with the PCG Team will be able to take advantage of the Upper Midwest HIE Collaborative project. Beth DeLair, one of the project leads for Research Triangle Institute (RTI) also works with Hielix and has worked on this Strategic and Operational Plan as the facilitator for the Legal and Policy Domain Team. If PCG is chosen for further work with Mississippi on the statewide HIE implementation, she will be able to inform Mississippi on key project findings of the collaborative.

Illinois, Iowa, Minnesota, Mississippi, South Dakota, and Wisconsin recently received assistance through RTI identifying the barriers associated with differences in state laws and ways to overcome them. The work of this collaboration will build on the previous efforts of the Health Information Security and Privacy Collaboration (HISPC), the Inter-Organizational Agreement, and the Intrastate/Interstate Consent Policy Option. The desired outcomes of the RTI project include:

- Establish an Upper Midwest HIE Collaborative organization
- Conduct an analysis of current laws
- Identify possible mechanisms and common language to enable interstate HIE
- Identify electronic method for implementation of the preferred mechanisms
- Provide support for implementation of mechanisms to enable interstate HIE

The project is expected to take 12 months and be completed in August of 2011. Mississippi will be able to benefit from transferred project knowledge as the MS-HIN confronts many of the same issues.

8.2. Other State Connections

Information Technology Staff as well as Candice Whitfield, State HIT Coordinator, regularly attend national meetings and network with surrounding states. As Mississippi patients seek treatment in all neighboring states, it is critical to understand and work closely with these states. The State is also involved in an 11 state collaborative, the Southeastern Regional Collaborative on HIT/HIE (SERCH), participating in standing weekly phone calls that address multi-state HIE related issues such as disaster recovery.

8.3. Standards-Based Connectivity to Other States

The MS-HIN will be based on NHIN standards and will connect to all other state HIEs as well as federal entities connected to the NHIN. It is the intent of the MS-HIN to subscribe to all NHIN CONNECT standards as well as Integrating the Healthcare Enterprise (IHE) standards to maintain connectivity to other states, federal agencies, and other entities willing to exchange healthcare data and information across the NHIN.

8.4. NGA Meetings and Participation Including Medicaid

The State of Mississippi, including the Division of Medicaid, is currently participating in regular meetings with the National Governors Association (NGA) to integrate HIE work with other states. The State and the Mississippi Division of Medicaid work closely together to coordinate efforts within Mississippi as well as between other states.

8.5. eQHealth Solutions

As described in Section 7.1 above, eQHealth Solutions has been chosen as the Regional Extension Center for Mississippi. It is eQHealth Solutions mission to provide assistance to Mississippi's healthcare providers to improve quality and patient outcomes through the adoption and Meaningful Use of electronic health records. At eQHealth Solutions, they are working to ensure the healthcare infrastructure in Mississippi is highly connected and interoperable. Through the statewide adoption of electronic health records by physicians and hospitals, the quality of care will improve and cost efficiencies will be achieved.

8.6. HIE Collaboration

The State has a direct interest in exploring all collaboration opportunities with other states. The State will specifically reach out to surrounding states (including, but not limited to those participating in the weekly SERCH calls) to seek any and all collaboration opportunities. The MS-HIN will also continue to explore areas where it can work with other states to control costs and/or increase revenue opportunities.

9. Governance Domain Team

9.1. Governance Entity

Mississippi Code Section 41-119-1 through 41-119-21 provides the initial structure for the Mississippi Health Information Network (see Appendix E). The statute provides for initial startup of operations and ongoing management of the MS-HIN.

This code section authorizes the creation of the MS-HIN Board of Directors (Board). The Board consists of eleven members who represent various healthcare stakeholders that include:

- An insurance carrier
- Mississippi State Medical Association
- Department of Health
- Hospital representative with knowledge of health IT
- Division of Medicaid
- Department of Mental Health
- Mississippi Primary Healthcare Association
- Mississippi Coastal Health Information Exchange
- University of Mississippi Medical Center
- Delta Health Alliance
- Department of Information Technology Services

Mississippi Code Section 41-119-7 authorizes the Board to hire an Executive Director and provides the Board with the oversight responsibility for the statewide HIE. Duties include:

- Initiating the statewide health information network
- Promoting more efficient and effective communication among multiple healthcare providers and payers
- Creating efficiencies by eliminating redundancy in data capture and storage and reducing administrative, billing and data collection costs
- Creating the ability to monitor community health status
- Providing reliable information to healthcare consumers and purchasers regarding the quality and cost-effectiveness of healthcare, health plans and healthcare providers
- Promoting the use of certified electronic health records technology in a manner that improves quality, safety, and efficiency of healthcare delivery,

reduces healthcare disparities, engages patients and families, improves healthcare coordination, improves population and public health, and ensures adequate privacy and security protections for personal health information

The Governance Team agreed that the statute provides direction and information necessary to establish the initial MS-HIN leadership. Although the initial leadership is acceptable, the Governance Team stated that additional healthcare finance expertise on the MS-HIN Board of Directors would be necessary to assure appropriate consideration is made for operational sustainability. The Governance Domain Team will also recommend to the Board that a financial manager be hired to coordinate all financial activities and to assist with the development of a long range sustainability plan. The Governance Team indicated that they will plan their work to overlap with the work of the MS-HIN Board of Directors expressly for the purpose of providing assistance. The Governance Team also stressed the importance of assuring transparency and accountability.

The MS-HIN Board is authorized in MS CODE Sections 41-119-1 through 41-119-21. The Board consists of various stakeholders all with an interest in the statewide HIE. Since the Board was established after the development of the SOP, it is important to the State that all the Board members understand the plan and process for the establishing the statewide HIE. Board members have been involved in the State's efforts to create a statewide HIE in varying degrees. Some members were part of the Governor's original Healthcare Infrastructure Task Force created in March 2007. Others have only recently been made aware of the State's efforts, both the MSCHIE project and the expansion to a statewide HIE. As HIT Coordinator, in conjunction with the Department of Information Technology Services, the current objective for the MS-HIN Board is to ensure not only members understand the goals of the statewide HIE, but also all HITECH programs. The MS-HIN Board has met monthly since October 2010 on the third Wednesday of the month. Below are the topics that were discussed:

- Establishment of MS-HIN Bylaws and Election of Chairperson
- Review of the SOP
- Overview of the MSCHIE Project
- Re-negotiation of Medicity Contract
- Monthly Project Updates
- Overview of Medicaid Incentive Program
- Report of Grant Expenditures
- MS-HIN Financial Sustainability Model
- Reports from both the Beacon and REC Projects

The MS-HIN Board is ultimately responsible for oversight of the HIE. MS CODE 41-119-7 gives the Board broad authority to initiate a statewide exchange. It is

also the responsibility of the Board to convene healthcare stakeholders and build trust and consensus among those individuals. As noted above, the initial monthly meetings of the Board were focused on understanding all the HITECH programs. In the coming months, the Board will develop a strategy that engages stakeholders and discuss ways:

- The statewide HIE framework can enhance Meaningful Use;
- Develop appropriate policies and procedures addressing privacy and security issues and interoperability that aligns with both state and federal standards; and
- Institute a financial sustainability model that ensures financial success beyond ARRA funding.

It was important when creating the governance structure, that this entity would ensure collaborative multi-stakeholder decision making. The Operation Plan lists potential MS-HIN staff and MS-HIN Domain Teams. The Domain Teams will include subject experts in the areas of governance, finance, technical infrastructure, business/technical operations, legal/policy, clinical, communications and consumer adoption. Once these Teams are established the stakeholders will voice their opinions and provide recommendations to the Board. Much of the policy/regulatory work will occur within the committee structure. The Domain Teams, in conjunction with the Board will use the statutory authority granted to them to help establish and populate the HIE. For example, the Communications Team will develop a communication plan that reaches all healthcare stakeholders and explains and touts the value of the HIE. The Legal and Policy Team will work with the healthcare associations to learn about and develop strategies that negate trust issues associated with any HIE.

In addition, the Board members represent various stakeholders groups with an interest in the success of the HIE. For example, the Board has representatives from the Mississippi State Medical Association, Mississippi Primary Healthcare Association, Medicaid and Blue Cross Blue Shield, just to name a few. It is imperative that Board members engage his or her representative industry group to enhance knowledge of the HIE and to build support for the initiative. Board members must share information about their respective group projects and how these efforts will enhance the statewide HIE.

It is anticipated that Medicaid will participate in the HIE as both a user and funder. MS-HIN is currently engaged in the development of its financial sustainability plan and is meeting with Medicaid to discuss their role in the HIE. A part of those discussions will involve defining Medicaid's fair and reasonable portion of the operating expenses. The financial sustainability work for the HIE is being coordinated with Medicity as the MS-HIN expands to cover the entire state. The Medicity contract has been successfully renegotiated and the financial sustainability model is expected to be completed by the end of June 2011. MS-HIN expects Medicaid to fully participate in the HIE.

Medicaid completed its IAPD November 2010 and submitted it for approval to CMS. The Plan was approved in December 2010. Attached are Medicaid's IAPD and budget detail spreadsheet. The spreadsheet lists two line-items which constitute Medicaid's fair and reasonable portion of the HIE operating expenses. Medicaid has budgeted \$60,000 for system and resource costs associated with the State interfaces of the HIE. The second line-item is the contribution to the operations of the HIE which totals \$4.2 million.

9.1.1. HIE Governance

The MS-HIN Board of Directors convened in September 2010.

- Appointed three (3) additional Domain Teams to assist with the implementation process including:
 - Communications
 - Consumer and Provider Adoption
 - Clinical

9.1.2. HIE Construction and Operational Responsibilities

Based on the success of the MSCHIE project (as described earlier in Section 2), the Technical Infrastructure Domain Team requested ITS move forward to open negotiations with Medicity to become the statewide platform for HIE. Therefore, the following strategies were utilized by ITS:

- Negotiate with Medicity for the construction and operation of the MS-HIN in accordance with laws governing the use of an existing complete bid contract and in accordance with the Strategic and Operational Plan
- Write a contract with specific responsibilities for performing services related to building and operating the MS-HIN
- Establish accountability to MS-HIN for all construction and operational activities

9.1.3. Roles and Responsibilities

Roles and responsibilities for MS-HIN include:

- Writing a comprehensive requirements document for building and operating the MS-HIN
- General oversight of the construction and operation of the MS-HIN
- Control of all revenue and expenditures
- Policy setting and adherence to state personnel practices
- Compliance with Health Information Portability and Accountability Act (HIPAA)

Roles and responsibilities for Medicity include:

- Accountability to the MS-HIN for all activities related to the MS-HIN
- Construction and ongoing operations of the MS-HIN
- Reporting to MS-HIN on construction and ongoing MS-HIN operations
- Complying with all MS-HIN policies related to building and operating the MS-HIN

9.2. Long-Term Commitment

Exchanging health information is a process that can take time to implement. From the point in time that a state decides HIE is of value and wishes to exchange information across the state, it can easily take up to three years before any meaningful quantity and quality of data can be exchanged. Identifying the best information to exchange, getting stakeholders to commit to exchanging information, and building an operational exchange takes time and patience. Building on the lessons learned with the MSCHIE will reduce this lengthy process, but it is important that the MS-HIN maintain its connection with all stakeholders and keep them engaged throughout the process.

The strategies for ensuring stakeholders are committed for the duration of the process includes:

- Secure long-term commitments for key stakeholders at the beginning of the MS-HIN process
- Continuously link HIE activities to the value proposition for each stakeholder
- Establish clear and measurable timeframes for MS-HIN construction and operations and adhere to these timelines
- Create a strong project management plan and authorize the MS-HIN Executive Director to closely manage the project

9.3. HIE Accountability

9.3.1. Privacy and Security

The primary responsibility for the MS-HIN is the protection and safeguarding of patient data and information. The MS-HIN will comply with all HIPAA regulations as well as with all Mississippi legislation related to the protection of specific patient data and information.

9.3.2. Interoperability Standards

The MS-HIN will be constructed in accordance with all current interoperability standards including NHIN, IHE, and CCD.

9.3.3. Fiscal Integrity

The MS-HIN will operate in accordance with Generally Accepted Accounting Principles (GAAP) standards. GAAP requires regular reporting and fiscal integrity in all transactions. The MS-HIN will adhere to these accounting principles in all business related matters.

9.3.4. Transparent Accounting

In accordance with the principles outlined in Section 2.5 (Principles) and Section 9.3.3, all accounting will comply with the following:

- Mississippi Open Meeting regulations
- Openness and transparency
- Stakeholder accountability requirements
- Consumer trust

9.4. Trust

The Environmental Scan identified several trust issues across Mississippi. The following strategies will be employed to address the six areas of trust previously identified as “issues” in Section 3.5.1.

9.4.1. Competitive Trust

The issue is how the HIE might change or alter the competitive landscape in Mississippi. The following strategies for building trust between competitors in the HIE will be employed:

- Maintain neutrality in all HIE activities
- Consistent and frequent communications and education about the process
- Representation of the key stakeholders in the Domain Team workgroups
- Be inclusive with all stakeholder groups
- Use Subject Matter Experts (SMEs) from all stakeholder groups on a rotating basis

9.4.2. Consumer Trust

Consumers have concerns about HIE. The following strategies for building trust with consumers in the HIE will be employed:

- Consumer education
- Adherence to privacy and security policies
- Consistent and frequent communications and education about the process
- Inclusion of additional consumer groups in the implementation process
- Develop a clear process for accountability to stakeholders

9.4.3. Legislative Trust

It is likely the legislature will be asked to provide some level of financial support to the HIE effort. The following strategies for building trust with the legislature will be employed:

- Legislative education on the HIE process and progress
- Open and transparent reporting on activities
- Consistent and frequent communications about the process
- Establish a strong working relationship with various legislative committees that oversee and fund HIE operations
- Enlist consumers in building legislative support for the statewide HIE
- Engage statewide associations in building legislative support for the statewide HIE

9.4.4. Generational Trust

Technology is generally more difficult for older Americans to trust than for younger generations. The following strategies for building trust between different generations using HIE services will be employed:

- Provide additional support and education for older consumers
- Consistent and frequent communications and education about the process
- Link older Mississippians to consumer groups for a better understanding of the value of the HIE
- Present educational seminars to senior groups where they meet regularly (i.e. County Aging Services, AARP, Meals on Wheels, Senior Centers, etc.)

9.4.5. Rural Trust

The following strategies for building and promoting trust between urban and rural consumers of HIE services will be employed:

- Create policies that provide equitable HIE services to all regions in Mississippi
- Use tele-health when available to better connect rural patients to the larger urban systems
- Leverage the large hospital system's current connections to the rural community to educate and treat patients
- Consistent and frequent communications and education about the process

9.4.6. National Trust

The federal government is playing a much more active role in defining healthcare in America today. The following strategies for building trust with Federal Agencies will be employed:

- Adopt and adhere to the Data Use Reciprocal Support Agreement (DURSA)
- Create a simple form for Mississippi stakeholders to use that binds them under the state DURSA agreement
- Identify and adopt standard Business Associate Agreements for use in Mississippi
- Identify and adopt standard Data Sharing Agreements for use in Mississippi

9.5. HIE Transparency and Openness

The following strategies for engaging consumers in the HIE creation process will be employed:

- Coordinate with various consumer groups (AARP, Chambers of Commerce Healthcare Committee, Faith-based groups, etc.) for input and involvement
- Leverage the current consumer outreach programs and processes already in place by the major healthcare facilities across the State
- Appoint a consumer advisory task force

9.6. Nationwide Health Information Network (NHIN) Participation

The MS-HIN will participate in the Nationwide Health Information Network (NHIN) and will comply with all standards for connecting. It is the intent of the MS-HIN to adopt the DURSA as described in Section 9.4.6 above.

9.7. State Health Information Technology (HIT) Coordinator

Governor Barbour appointed the State HIT Coordinator, Candice Whitfield, as the State of Mississippi Health Information Technology Coordinator in early 2010. Ms. Whitfield works with the Director of IT from the Mississippi Department of Information Technology Services to manage the planning and implementation of the MS-HIN. In late September of 2010, the Board of Directors for the MS-HIN will be appointed. They will then assume operational responsibilities for MS-HIN. In order to establish appropriate policies and procedures for operating MS-HIN, the Board will need to employ the following strategies:

- Identify the MS-HIN Executive Director and appoint them to the office
- Establish a formal reporting structure for the Executive Director to the MS-HIN Board of Directors.
- Create a policy manual outlining the work responsibilities of the Executive Director, the annual planning process used by MS-HIN to set annual goals and objectives for the Director, and an annual performance appraisal process
- Appoint a subcommittee of the MS-HIN Board to complete an initial set of recommendations to establish policies for the management of the Executive Director's office.

As noted in Sections 4, 5, 6, and 7 above, the Strategic Plan sets forth how the HIT Coordinator will coordinate with all federally-funded programs and HIE activities within the State.

10. Finance Overview

10.1. Overview

David Blumenthal, the former National Coordinator for Health Information Technology at the Department of Health and Human Services stated, “People working in health IT should think about electronic health records, not as a technology project but as a change management project. Components of Meaningful Use include sociology, psychology, behavior change and the mobilization of levers to change complex systems and improve their performance”. The information contained in this document is designed to accommodate the need for people to acclimate to the changes brought about by technology and discover a financially sustainable plan for Health Information Technology.

In order to create an acceptable financial model, stakeholders need to provide data and information about their current and planned operations. In many instances, stakeholders may be competitors and therefore reluctant to share their data and information. Using a third party that is viewed as a trusted resource by all stakeholders is critical to obtaining the required data and information. In order to be reasonable, the financial model must be handled using a process of obtaining the information, analyzing it, reporting it and discussing it privately while maintaining the confidentiality of the information for each stakeholder.

Once the financial model is built, there must be a mechanism for changing it as the environment changes. In addition, it must accommodate input in various forms from diverse stakeholders. A set of “dashboard” type applications to collect, analyze, manipulate, and report key financial indicators can be useful in modeling various financial scenarios. These tools are relatively common in the private sector and can be easily adapted for use in healthcare. They will allow decision makers to input data and information, change assumptions and strategies, and immediately see the impact on the underlying financial model.

In summary, it is critical to start with solid data and information. This can only be obtained if a certain level of trust exists with the stakeholders. Therefore, it is important to start the HIE process with an open and transparent process that builds trust from the beginning. When trust is developed, then reliable financial information can be collected, analyzed, and reported.

10.2. Trust

Successful financial modeling is built on four key factors:

1. Building trust with the diverse stakeholder group
2. Obtaining closely held, reliable data and information from each stakeholder

3. Determining the revenue structure and establishing the types of income that will be used to support HIE operations
4. Analyzing the data and information and creating pro-forma budgets and income projections

The basis for building a robust business and financial plan is reliable financial data and information as described above. Having trust is necessary to create a credible business plan with key financial metrics that all stakeholders can endorse.

Another critical element in building a sustainable plan is determining the right mix of revenues that are supported by the stakeholders. Revenues can come from a variety of sources. Direct revenues may include fees, subscriptions, grants, sale of de-identified data and information, and future fee for service income. Indirect revenues can come from operational savings and lower costs. To create a sustainable model, all sources of direct and indirect revenue must blend together and create the optimal mix that can be supported by diverse stakeholders.

10.3. Success Factors

Research into both the successful and unsuccessful HIE efforts across the country over the past several years reveal two facts: 1) HIEs that were created using internal stakeholder funding have a higher probability of success and 2) the costs / benefits of HIE are not distributed equally to all stakeholders.

Success in building sustainable HIEs rests on two key factors:

1. Determining the optimal mix of funding from multiple sources
2. Reaching agreement on a plan for the equitable sharing of benefits

First, internal stakeholder funding is the single best financial resource. Creating financial models that address the value proposition for each stakeholder is the first step in identifying internal funding sources. Showing a return on investment (ROI) that is connected to the value proposition will engage stakeholders faster than any other motivating factor.

Second, because benefits are not distributed equally, the financial model must show who benefits the most and the least. Some stakeholders may benefit from significant cost savings in some areas while others may see their costs increase slightly. It is important to reach consensus on how these costs / benefits will be shared between stakeholders. That is why it is critical to develop trust early in the process.

Based upon the existing research, it is possible to graph the potential cost savings benefits or the revenue benefits for the various stakeholder groups. Including the stimulus funds available for physicians and hospitals, Figure 7 projects one possible scenario for how key stakeholders may benefit from the

adoption of electronic health records and the use of the health information exchange. While the actual benefits will likely vary from this graph, the intent is to describe how different stakeholders benefit differently and to use this knowledge to help analyze and establish equitable fees for all stakeholders.

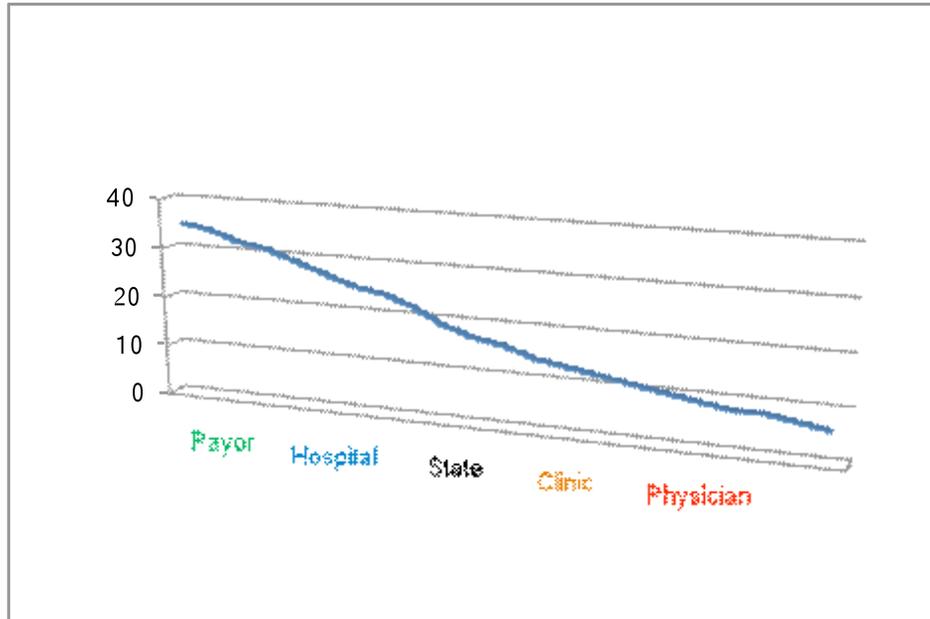


Figure 7: Potential Cost Savings Benefit by Provider Type

10.4. Project Risks

Changing environmental factors may create risks to the implementation of the Strategic Plan as designed. Anticipating and identifying these risks can help determine the impact to the plan. Therefore, it is important to consider the potential project risks and to develop a mitigation strategy with accountability to avoid them. In this Section, the risks are identified and in Section 14, the mitigation plan is discussed.

Risk identification is built on six key factors:

1. Identifying potential risks and determining their impact on the project
2. Establishing key metrics to measure the impact
3. Creating project milestones and trigger points where go / no-go decisions will be considered
4. Developing a timeline to demonstrate progress
5. Building stakeholder accountability in to the Strategic and Operational Plan for the HIE effort
6. Reporting results on a regular basis and identifying variances to the plan with actions to reduce or eliminate the variance

Risk mitigation involves the identification of risk and the development of strategies to manage and reduce or eliminate it. Generally, risk mitigation involves these steps:

- Identification of risk and issue scope
- Process planning through open discussion, this may involve determining the objectives of the diverse stakeholders
- Analysis of risks involved in the process
- Mitigation of risks using available resources
- To ensure that possible risks reach the attention of key stakeholders, risk factors are identified in Project Status Reports

There is no question the environment will continue to evolve during the various stages of HIE creation in Mississippi. Stakeholders will change and financial commitments will ebb and flow depending on a variety of factors. Knowing this to be true, creating a business and financial plan that has the flexibility to adjust and continue to move forward is key. The three most important factors in maintaining commitment over a long-term project are:

1. Demonstrating a clear ROI connected directly to each stakeholders' value proposition
2. Trust between the stakeholders and with consumers
3. Using a proven change management process

If these three factors are in place, the probability of success rises significantly.

10.4.1. Adoption Risks

The following adoption risks were identified as potential barriers to building a financially sustainable and successful HIE in Mississippi:

- Agreement of the major ecosystems in Mississippi to participate in the HIE
- Setting achievable expectations for adoption over a five year time frame
- Failure of the HIE system to respond quickly to stakeholder inquiries (system response time)
- Initial operating costs are unsupportable in the first three years

10.4.2. Political Risks

The following political risks were identified as potential barriers to building a successful HIE in Mississippi:

- Continued legislative support
- Lobbying by various groups that may resist the changes that are required to successfully operate the HIE

- Resistance from various impacted state agencies
- Required legislative action around public policy issues

10.4.3. Business Plan/Financial Risks

The following business plan risks were identified as potential barriers to building a successful HIE in Mississippi:

- Failure to follow the adopted Strategic and Operational Plan
- Inability of certain stakeholder groups (i.e. CAHs, Physicians, Long-term care) to contribute their equitable share of the costs

10.4.4. Legal Risks

The following legal risks were identified as potential barriers to building a successful HIE in Mississippi:

- Privacy and Security Risks – perceived or real. Use HIPAA law as a guide in Mississippi

10.4.5. Technical Risks

The following technical risks were identified as potential barriers to building a successful HIE in Mississippi:

- Additional unanticipated ONC requirements
- Additional unanticipated CMS requirements
- Maintaining pace with rapidly evolving technical specification and standards

10.4.6. National Risks

The following risks with the Medicare program were identified as potential barriers to building a successful HIE in Mississippi:

- Failure to participate with the health information exchange
- Failure to share equitably in the costs of providing health information exchange

10.4.7. NHIN Risks

The following risks associated with the Nationwide Health Information Network were identified as potential barriers to building a successful HIE in Mississippi:

- Allowing multiple NHIN connections within each state could make an HIE unsustainable
- Allowing vendors to connect directly with NHIN and permitting the exchange of information by providers through this connection

- Providers using NHIN Direct and assuming it will meet their Meaningful Use needs for all three stages

10.5. Revenue Models

The Finance Domain Team examined seven different revenue models as possible methods for funding the construction and operation of the Health Information Exchange.

10.5.1. Membership Fees

Application fee due monthly or annual depending on class of user (Hospital, Payer, Employer, etc.)

Pros	Cons
Easy to understand and administer	Fees don't reflect actual usage
Flexible structure	May charge a disproportional share to one stakeholder group
Fees based on specific criteria	

10.5.2. Usage Fees

Payments are based on actual usage of the exchange

Pros	Cons
Based on actual amount of information exchanged	May discourage usage by key stakeholders
Measures data volume	Difficult to track and bill
	Difficult to administer

10.5.3. Assessment Fees

Assessment fee charged on a particular characteristic such as number of beds, hospital discharges, or the number of employees in health plan

Pros	Cons
Ensures all stakeholders contribute something to the operations	Fees don't reflect actual usage
Flexible	May charge a disproportional share to one group
May include a broader group of stakeholders	Annual audits may be necessary to reflect changes in chargeable characteristics

10.5.4. Cost Savings

Payments are based on the projected operational costs saved or gained by each stakeholder from joining the HIE

Pros	Cons
Does not require new operational revenues to cover costs	Difficult to track and measure
	Difficult to identify real bottom line savings
Easier to sell to Boards of Directors	Realizing savings may require layoffs and this seldom occurs with smaller stakeholders

10.5.5. Taxation

A specific consumer tax levied by the legislature to cover the operational costs of the HIE

Pros	Cons
Reliable funding supported by a general tax levy	Difficult to gain approval of legislature
Includes most users of the healthcare system	Difficult to change after initial adoption

10.5.6. Grants

Support from various agencies and organizations in the form of an appropriation for a specific purpose

Pros	Cons
Many sources available and willing to support a good cause	Generally they are for a specific purpose and for a limited time frame
Better for capital expenditures than for operational costs	Usually requires many applications to secure a few grants

10.5.7. Fees for HIE Services

Fees for establishing various services (consumer services like PHR support, sponsorships, secondary uses of data, etc.) that stakeholders will pay for beyond the basic services of the HIE.

Pros	Cons
Direct correlation between fees and services	Difficult to determine basic from added value services
Stakeholders only pay for the services they desire	May price some services outside the affordability of smaller stakeholders

10.6. Existing Financial Models in Other States

The Finance Domain Team researched financing models in other states. Many of the contacted entities were unwilling to share key financial data. However, the eHealth Initiative released their annual survey in July 2010 and it contains data that is useful in considering what other states are doing. They had 107

respondents included in their survey. The following charts present various revenue models for consideration. The numbers shown are the number of respondents (of the 107) in each year that indicated that the stated item applied to their operation

Table 4: eHealth Initiative Survey Results – Start-up Funds

Sources of Start-up Funds (Number of respondents citing)	2009	2010
Hospitals	42	63
State government grants	43	57
Other Federal grants	39	50
Private payers	26	35
Physician practices	15	33
Philanthropic sources	19	25
Public payers (Medicaid/ Medicare)	12	14
Medical societies	11	11
Public Health	8	10

Table 5: eHealth Initiative Survey Results – Ongoing Revenue Sources

Ongoing Revenue Sources (Number of respondents citing)	2009	2010
Hospitals	26	43
Physician practices	16	32
Private payers	14	25
Laboratories	11	19
Other Federal grants	9	12
State Government Grants	10	11
Public payers (Medicaid/ Medicare)	5	10
Public Health	7	10

Table 6: eHealth Initiative Survey Results – Funding Sources for Operations

Funding Sources for Operations (Number of respondents citing)	2010
Subscription fees or membership dues to data providers	32
Subscription fees or membership dues to data users	30
One-time financial contribution	12
Transaction fees charged to data providers	11
Transaction fees charged to data users	9
Advertising or marketing	2
Utility model – Fees assessed through state for public service	1

10.7. Decisions and Recommendations

After careful discussion at the Finance Domain Team meeting and in consultation with the legislative appointee, the Team recommended MS-HIN reject taxation as a viable alternative. They considered the following alternatives as feasible in some combination:

- Membership fees
- Fee for Service Revenues
- Grants (capital expenditures but not ongoing operations)
- Cost Savings / Cost Avoidance

10.8. Cost Savings / Cost Avoidance

Cost savings are frequently touted as a way to pay for HIE services. Many states have relied on the Center for Information Technology Leadership (CITL) study from 2004 to show potential cost savings related to redundant tests, workflow efficiencies, and e-Prescribing. While the study identifies ways the healthcare system can reduce costs, unfortunately, when field tested, these savings are not easily obtained. When these costs do not materialize, the projected cost savings and cost avoidance models do not provide reliable methods for paying for HIE services. Indicated below are six primary reasons why these savings frequently do not materialize.

10.8.1. Quantification of Savings

It is extremely difficult to quantify any real cost savings for stakeholders. Stakeholders are not persuaded by various assumptions and it is difficult to convince stakeholders that they can realize any actual savings or avoid any real costs. Many stakeholders typically show serious resistance to using potential cost savings as a viable way to fund an HIE.

10.8.2. Reduced Staffing Levels

Cost savings are built on the principle that costs can be lowered by reducing staffing levels. In many cases, this does not translate into “real savings”. For example, most providers are already short staffed. Any savings from EHR and HIE technology doesn’t typically result in reduced staff but more often in staff reassignments. While the staff may be better utilized and the provider may see an overall improvement in efficiency, the savings are absorbed by other work. Therefore, the provider does not actually see any reduced costs on the bottom line.

10.8.3. Higher Expense

In the event that organizations can reduce staff in some areas because of the positive effects of electronic health records (EHRs), the added costs of operating the electronic health record system can offset any reduction in staff expenses. The difference is in the expenses associated with the personnel eliminated by reducing paperwork and tests compared to the costs associated with staff skills required to operate the EHR. Frequently, the staff expense (salaries and benefits) associated with the skills of the personnel doing various paperwork and tests is lower than the expenses for staff capable of operating the EHR. Therefore, reducing X number of lower paid staff can be offset by needing Y number of higher paid staff to work in a technology-driven environment.

10.8.4. Liability

Liability laws also play in to the equation. We have had many physicians tell us that “until the liability laws change, I am ordering that extra test”. Exploring changes to liability laws in Mississippi may be necessary to address this issue.

10.8.5. Trust

Trust is also a major issue. Many physicians will not accept the lab result, image, or other test from someone they are not familiar with and trust. Receiving results from somewhere outside the known and trusted labs and imaging center is simply not deemed reliable enough for most physicians. Therefore, they tend to order the test repeated from a known and trusted source.

10.8.6. Lost Revenue

When a test is not performed, someone’s bottom line suffers. While not commonly discussed openly, there is enough resistance from providers to know this is a real concern for those who administer various tests. While they tend to resist for a variety of reasons, lost revenue is often the real issue for many of them.

10.9. Cost Savings Opportunities

Cost savings are possible, but not in the amounts projected from the CITL study. However, it is reasonable to project savings of some amount from duplicative tests and to make projections in other areas where cost can be reduced. Listed below are three areas where savings can be quantified and realized in believable amounts.

10.9.1. Reduced Administrative Costs

There are many economic benefits to being involved with a Health Information Exchange/ Health Information Technology program. First, there is a cost associated with interfacing multiple hospitals, where each interface with each hospital ranges in cost of several thousand dollars. When using an HIE only one interface is needed to interact with several hospitals, creating a reduction in cost by eliminating multiple interfaces. Due to economies of scale, the HIE will be able to secure a lower cost for the one interface to produce even greater cost savings. Also, with just one interface, hospitals can cut IT costs associated with the maintenance and communication between multiple interfaces.

HIE can be used to reduce the cost of overhead. Currently, a substantial amount of time is spent on administrative duties. A recent study in Illinois has shown that the efficiencies from using HIE have produced a mean savings of \$112,000 annually per physician. When the benefits of an HIE are combined with paperless patient care, the cost savings increase immensely. Hospitals are no longer calling and requesting reports to be sent, waiting for reports and charts to print, or canceling appointments due to lack of intake information. Another benefit of paperless patient care is the inflow of information to help reduce medical errors, thereby increasing the quality of patient care and decreasing the risk of malpractice lawsuits.

In addition to the time saved by operating paperless, the cost of printing documents per patient is saved as well. The Wisconsin Health Information Network uses a paper-based system and has historically reported a cost of \$5.10 per patient. The Indiana Health Information Exchange estimated that their reduced paper-based system has a total cost of \$0.81 per patient report. Illinois has had even more impressive results, and is reporting a cost of \$0.41 per patient with their paperless system. Savings of \$4.00 to \$4.50 per patient can result in a substantial annual savings.

10.9.2. Reduced Processing Costs

Health Information Technology will enhance overall claims processing procedures. The latest electronic health record technology vastly improves the ability of providers to submit “clean” claims. As this technology is fully implemented across Mississippi, savings in the claims process can be allocated to help pay for the operation of the HIE.

In North Dakota, Blue Cross/Blue Shield (BC/BS) provides coverage for about 90% of the private payer market. Blue Cross/Blue Shield conducted a study to determine the impact that better quality claims submissions had on claims processing costs. They studied claims submissions from the six major hospitals in the state and discovered the following:

- A relatively significant difference between the hospitals was found in the number of claims successfully processed without administrative intervention. Overall, the number of claims processed successfully without administrative intervention for all six hospital systems was 84%. However, the differences between the hospitals statewide ranged from 67% to 86%.
- It has been calculated that for each percentage point increase in the overall claims processing success rate, BC/BS could save up to \$315,000 annually in administrative costs.

The application of Health information technology will improve the claims processing process for payers and health information exchange will also contribute to this improvement. Therefore, it is reasonable to assume that providers could save an equal or greater amount compared to what they would spend in time gathering and resubmitting the requested patient data and information. In addition, similar or greater savings could be gained in the Medicaid process. When combined, the total savings within the State of Mississippi could approach \$1,000,000 annually. This potential reduction in operating costs is significant, considering the annual operational cost of the MS-HIN is estimated to be under \$4,000,000.

10.10. Fees for Services

It is clear from the previous section that the MS-HIN cannot be funded solely from cost savings and / or cost avoidance. While some savings can be obtained by stakeholders, converting these savings into revenue for the HIE is difficult to accurately determine. Therefore, it is the conclusion of the State that revenue in the form of fees for services must be included in any financial sustainability plan.

10.10.1. Healthcare Informatics Consulting Services (Ingenix, 2010)

In a recent Ingenix study, reporting on their HIE Gateway Model for Long-Term sustainability, offerings of analytical services on a fee for service basis to providers, payers, governmental agencies, and other stakeholders were described. In their model, these value added services included:

- Performance management
- Care gap identification
- Fraud and abuse identification and prevention
- Population monitoring and predictive profiling

- Care and disease management
- Clinical research

Each of these services can be used to fund the MS-HIN by charging stakeholders for value-added services. Ingenix cites the Michigan case where using analytics saves their stakeholders \$200 million annually. With these types of savings, stakeholders should be willing to pay a fee of 10% – 15% of the savings for consulting services provided by the MS-HIN. Using the annual Michigan savings as a guide for Mississippi and based on calculations incorporating the population differences between the states, the annual savings in Mississippi could approach \$15,000,000. This converts into potential annual revenue for MS-HIN consulting fees of between \$1,500,000 and \$2,250,000.

10.10.2. Best Practices Consulting Services

A Mississippi study published in the Health Care Financial Management Association magazine in April 2004, North Mississippi Health Services, using care-based cost management (CBCM), improved their bottom line by \$7,500,000 annually. If the MS-HIN developed consulting services that stakeholders could use to achieve similar operational savings, the MS-HIN will be able to charge 10% to 20% of the savings as fees. If the other seven ecosystems within the State were able to save as little as \$3,000,000 annually, the total reduction could approach \$21,000,000 annually. Given a consulting fee in the 5% range of the total cost savings, MS-HIN has the potential of generating revenues in excess of \$1,000,000 annually.

10.10.3. Quality Reporting Services

All stakeholders will be required to do quality reporting to CMS by 2015. Many smaller stakeholders may need the statewide HIE to provide a way for them to satisfy this requirement. While it is too early to estimate demand or project potential revenue, it is important to include this as a potential revenue source for sustaining HIE operations.

10.10.4. Clearing House Services

Many HIE stakeholders use clearing house services to help consolidate and process insurance claims. Given the nature of the HIE operation, it is possible to perform similar services at the HIE for various stakeholders. While it is too early to estimate demand or project potential revenue, it is important to include this as a potential revenue source for sustaining HIE operations.

10.10.5. Web Portal Services

Consumers are projected to begin using technology to manage their healthcare within the next few years. It is estimated that Medicare patients for example use the services of approximately nine (9) different providers. Providing a web portal

for patients to browse various provider services, collect personal health information from multiple sources to populate their Personal Health Record, and manage multiple providers with appointment scheduling, test results and other services, will be an excellent source of revenue for the HIE. While it is too early to estimate demand or project potential revenue, it is important to include this as a potential revenue source for sustaining HIE operations.

10.10.6. Sponsorships / Underwriting

When the HIE has a web portal service available and is connecting with patients across Mississippi, it can sell sponsorships and underwriting to various companies that would like to reach these same patients. While it is too early to estimate potential revenue, it is important to include this as a potential revenue source for sustaining HIE operations.

10.10.7. Secondary Uses of Redacted Data

It is widely assumed that various entities would have an interest in the data and information the HIE can access and collect. Given this potential service, the HIE can collect and de-identify data for secondary uses by interested entities who are willing to pay for the data. While it is too early to estimate demand or project potential revenue, it is important to include this as a potential revenue source for sustaining HIE operations.

10.11. Sample Revenue Model

Using the e-Health Initiative survey data as described earlier in Section 3, it is possible to model various scenarios of how the HIE costs could be distributed to stakeholders. The potential model presented below is based on the following assumptions:

- Assumption 1 – All HIE services are as yet undetermined
- Assumption 2 – A pro-forma expense budget is to be created after the services are more precisely defined
- Assumption 3 – It is assumed for this exercise that the annual operating budget for the fully functional statewide HIE is below \$6,000,000. The actual cost will be determined after the services are clearly defined
- Assumption 4 – The primary private sector payers are Blue Cross/Blue Shield and United Health Care
- Assumption 5 – The existing and planned Ecosystems will contribute equitability and they include:
 - MSCHIE (Gulf Coast)
 - MHP (Jackson)
 - Delta Health Alliance (Greenville/Greenwood)

- Northern Mississippi Health Services (Tupelo)
 - Hattiesburg Clinic (Hattiesburg)
 - Mississippi HealthSafe Network (Statewide)
 - ACCESS Family Health Services (Tupelo)
- Assumption 6 – State agencies include the Department of Mental Health, Department of Health, Division of Medicaid, and Department of Corrections
 - Assumption 7 – All services, for which fees will be charged, are not yet determined
 - Assumption 8 – Cost savings / avoidance will need to be determined and actual dollar values assigned after the Strategic and Operational Plan is approved
 - Assumption 9 – As much as feasible, all stakeholders make some contribution to offset the operating costs
 - Assumption 10 – Physicians will be willing to pay \$50 per month for HIE services
 - Assumption 11 – Startup capital funding is obtained from the ONC grant
 - Assumption 12 – Operational funding for the first three years is predominately secured from the larger stakeholders in a manner to be determined

Revenue for funding the MS-HIN will be generated according to the following formula:

Table 7: Revenue Formula

	2011	2012	2013	2014	2015	2016
State Legislative Appropriation 50% for first six years	0%	5%	5%	5%	5%	5%
Provider/Payer Fees (to be determined) 50% for first six years	75%	70%	70%	65%	65%	60%
State Medicaid	25%	25%	20%	20%	15%	15%
Fees for HIE Services	0%	0%	5%	10%	15%	20%

10.12. Finance Health Information Exchange Strategies

The Finance Domain Team identified the following strategies for constructing and operating the statewide Health Information Exchange.

10.12.1. Benefits Distribution

The following strategies for determining the distribution of benefits related to HIE were identified by the Domain Team:

- Gather and analyze real operational data from various stakeholders (Hospitals, Medicaid, BC/BS of Mississippi, etc.) to determine the actual benefits accruing to stakeholder groups
- Use the actual data to create an equitable financial model to pay for HIE services
- Determine an equitable and fair membership fee that factors in any real cost savings / avoidance

10.12.2. Financial Model

The following strategies for analyzing the benefits that each stakeholder may potentially receive from participation in the HIE were established:

- Build sustainability into the model from the beginning and separate start-up from ongoing operations
- Revenue structure will be simple, easy to understand, and equitable
- Incentivize early adopters to join and support the HIE (expense to join the state HIE is economically high for independent providers)
- Compensation offset for the ecosystems that exist through private investment
- Create a strong marketing plan and strategy to sell and market the HIE
- Use the data from a critical mass of hospitals for creating business-to-business revenue and/or cost saving opportunities
- Incentivize providers to join existing ecosystems
- Examine the ONC model for incentives and penalties for monthly membership fees
- Encourage collaboration across the State, similar to the ACCESS group, to reduce operating costs and provide better benefits to stakeholders

10.12.3. Seeking Outside Funding

The following strategies were created to secure outside funding to help pay for the MS-HIN:

- Look at the British Petroleum Fund to obtain funds for public health needs in Mississippi over the next 20 plus years
- Solicit hospital, corporations, and private foundations for sponsorship funding
- Hire a development person
- Grants should not be utilized for operating funds but for capital purchases

10.12.4. Building MS-HIN

Strategies for building MS-HIN were identified:

- Build off the natural ecosystems and limit the exceptions
- Use incentives to encourage physicians to join an existing organic ecosystem
- Pre-Start-up (9 months) – Activities during the planning work include:
 - Negotiating with Medicity (use their platform for the statewide HIE)
 - Appointing the Board of Directors
 - Writing and obtaining agreement on various legal documents
 - Creating the financial sustainability model
 - Developing Business and Technical Operations policies and procedures
- Initial Start-up (18 months) – Activities associated with the building of the HIE include:
 - Project management
 - Deploy gateway services to receive and send clinical documentation in a secure email format
 - Purchasing various components
 - Connecting the major ecosystems and testing data exchange
 - Beginning the marketing program
 - Provider adoption
- Ramp up to critical mass (12-18 months) – Moving from start up to achieving break-even and beyond
 - Marketing MS-HIN to providers - Sell on enhancing the patient experience
 - Connecting providers across the State
 - Identifying and creating MS-HIN services

- Establishing a steady revenue stream
- Finalizing Business and Technical Operation policies and procedures
- Steady State (48 month level) – Fully self-sustainable and growing
 - Achieving sustainability
 - Reaching critical mass
 - Launching new services to assist providers achieve Meaningful Use and report on quality measures

10.12.5. State Agencies

The following strategies for including various state agencies in the MS-HIN were established:

- Determine value proposition for all state agencies and ensure they are connected to the HIE
- Integrate all of the public health registries into the HIE
- Study population health issues due to the oil spill and lay a foundation for health surveillance
- All state agencies, when issuing RFPs related to healthcare and/or HIE services through the Department of Finance and Administration, should require responders be a stakeholder in the HIE in order to be eligible to bid on State related projects
- Work with Medicaid and integrate with the SMHP process

10.12.6. Additional Revenue Opportunities

The following revenue opportunities, as described earlier in Section 10.10 will be studied and further analyzed as potential sources of additional operational funding:

- Healthcare Informatics Consulting
- Best Practices Consulting
- Quality Reporting
- Clearing House Services
- Web Portal Services
- Corporate Sponsorships/Underwriting
- Secondary uses of data
- Group purchasing services
 - Decision Support Services
 - Disease Management
 - EHR Lite

11. Technical Infrastructure

The Meaning Use (MU) final rule, released by the Department of Health and Human Services and the Office of the National Coordinator for Health Information Technology and Centers for Medicare and Medicaid Services, specifies the related initial set of standards, implementation specifications, and certification criteria for electronic health record technology with final Meaningful Use Stage 1 objectives and measures.

This document fully recognizes the final rules for Meaningful Use Stage 1 along with objectives and measures. The technical infrastructure described in this Section reflects Meaningful Use objectives and adopted standards, implementation specifications, and certification criteria in the design of the HIE architecture. Appendix A contains a table of summaries of final rule for Meaningful Use Certification Criteria for Health Information Technology released by CMS and ONC. The last column of the table, "HIE Stage 1" indicates a set of capabilities and standards/implementation specifications recommended for content exchange, vocabulary, and security/privacy to be adopted for the first stage (Stage 1) of the Health Information Exchange implementation.

The following list identifies a minimum set of services to be offered during Stage 1 aligned with general and ambulatory/inpatient specific capabilities as specified in the Meaningful Use final rule.

- **Electronic Prescribing Service:** Electronic generation and transmission of prescriptions and prescription related information
- **Laboratory Results Exchange Service:** Electronic submission of laboratory test orders and receiving/displaying of laboratory test results
- **Exchange of Patient Summary Record in the format of HL7 CDA Release 2, Continuity of Care Document (CCD)⁴ with following minimum data elements:**
 - Demographics
 - Problem list
 - Medication & Medication Allergy List
 - Laboratory test results
 - Procedures

As detailed in Phase 1, the MS-HIN will focus on the 'white space' by providing support for simple interoperability using the existing MS-HIN Grid network and by

⁴ HITSP/C32 "Summary Documents Using HL7 CCD Component" as an implementation specification to be adopted

adding a HISP in support of Direct network specifications. This includes validation of provider accreditation, practice locations, and provider ID codes in order to support clinical care summary access and exchange of lab results via simple exchange capabilities. As part of this process, MS-HIN will educate providers, assign and store a Direct provider address in support of the MS-HIN's overall Provider Directory and serve as the trust broker for the state.

We are fortunate since clinical care summary and lab results exchange is already supported for non-affiliated providers on the Coast of Mississippi (via the original MSCHIE pilot project). Additionally, collaboration with the Delta Health Alliance (as part of the Community Beacon Grant) is already underway. Providers of the Delta Region of Mississippi are being onboarded to the MS-HIN, using the former MSCHIE pilot project's infrastructure and the Direct specifications outlined herein. Phase 1 will focus on the 'white space' and those providers that are in need of simple interoperability in order to achieve Meaningful Use.

The following sections describe standards and implementation specifications adopted for Meaningful Use.

11.1. Adopted Standards for Meaningful Use

Table 8: Category for Standards to Support Meaningful Use

Category	Description
Vocabulary Standards	Standardized nomenclatures and code sets used to describe clinical information such as problems and procedures, medications, allergies, etc
Content Exchange Standards	Standards used to share clinical contents between healthcare stakeholders: patient record summaries, prescriptions, structured clinical documents, and administrative transactions
Transport Standards	Standards used to establish a common, predictable, secure communication channel for exchange of clinical contents between health information systems.
Privacy and Security Standards	Standards related to security and privacy: Authentication, Authorization, Access Control, and Auditing

11.1.1. Vocabulary Standards

The HIE will adhere to semantic interoperability and standards for coding systems.

Table 9: Vocabulary Standards

Purpose		Meaningful Use Stage 1	Meaningful Use Stage 2
Electronic Prescribing		National Library of Medicine's RxNorm	RxNorm
Patient Summary Record	Medication Allergy List	No Standard	Unique Ingredient Identifier (UNII)
	Medication List	National Library of Medicine's RxNorm	RxNorm
	Problem List	ICD-9-CM or SNOMED-CT	ICD-10-CM or SNOMED CT
	Procedures	45 CFR 162.1002 (a)(2) and (a)(5)	
	Lab Order and Results	LOINC	LOINC
Lab Results Reporting to Public Health		LOINC	LOINC, UCUM, SNOMED-CT
Surveillance Reporting to Public Health		HL7 2.3.1 or HL7 2.5.1	GIPSE
Submission to Immunization Registries		CVX	CVX

11.1.2. Content Exchange Standards

Table 10: Content Exchange Standards

Purpose	Meaningful Use Stage 1	Meaningful Use Stage 2
Electronic Prescribing	NCPDP SCRIPT 8.1 or SCRIPT 10.6	NCPDP SCRIPT 10.6
Drug Formulary Check	NCPDP Formulary and Benefits Standards 1.0	NCPDP Formulary and Benefits Standards 1.0
Patient Summary Record	HL7 CDA R2 CCD Level 2 (HITSP C32) or ASTM CCR	NPRM: NwHIN Direct and optional NwHIN Connect
Administrative Transactions	HIPAA Transaction Standards ASC X12N or NCPDP	HIPAA Transaction Standards ASC X12N or NCPDP ASC X12N 270/271 ASX X12N 837 (Dental, Professional, and Institutional) Other transactions
Quality Reporting	CMS PQRI	CMS PQRI

Purpose	Meaningful Use Stage 1	Meaningful Use Stage 2
Lab Results reporting to Public Health	HL7 2.5.1	TBD
Surveillance Reporting to Public Health	HL7 2.3.1 or 2.5.1	TBD
Submission to Immunization Registries	HL7 2.3.1 or 2.5.1	TBD

11.1.3. Transport Standards

- Simple Object Access Protocol (SOAP)
- Representational State Transfer (REST)
- HTTP
- eXtensible Markup Language (XML)

11.1.4. Privacy and Security Standards

Table 11: Privacy and Security Standards

Purpose	Adopted Standards
General Encryption and Description of Electronic Health Record	FIPS 197 Advanced Encryption Standard (AES)
Encryption/Decryption of Electronic Health Information for Exchange	Secure communication channel – TLS, IPv6, IPv4 with IPsec
Audit Logging	Minimum data elements: date, time, patient ID, user ID
Data Integrity	SHA-1 or higher hashing algorithm FIPS PUB Secure Hash Standard (FIPS PUB 180-3)
Cross Enterprise Authentication	IHE Cross Enterprise User Assertion (XUA) with SAML
Record Treatment, Payment, and Healthcare operations disclosures	Minimum data elements: date, time, patient ID, user ID, and a description of the disclosure

11.2. Data Architecture Overview

The following diagram shows a high-level system architecture and its four core component architecture including 1) Business and Application Architecture, 2) Data Architecture, 3) Technical Architecture: Interstate-HIE and Intrastate-HIE, and 4) Privacy and Security Architecture. These four core component architectures are loosely coupled and interact with each other to realize a healthcare ecosystem. Desired system features (such as interoperability, scalability, efficiency and cost effectiveness, and quality of service) can be realized with coordination of the four architecture components.

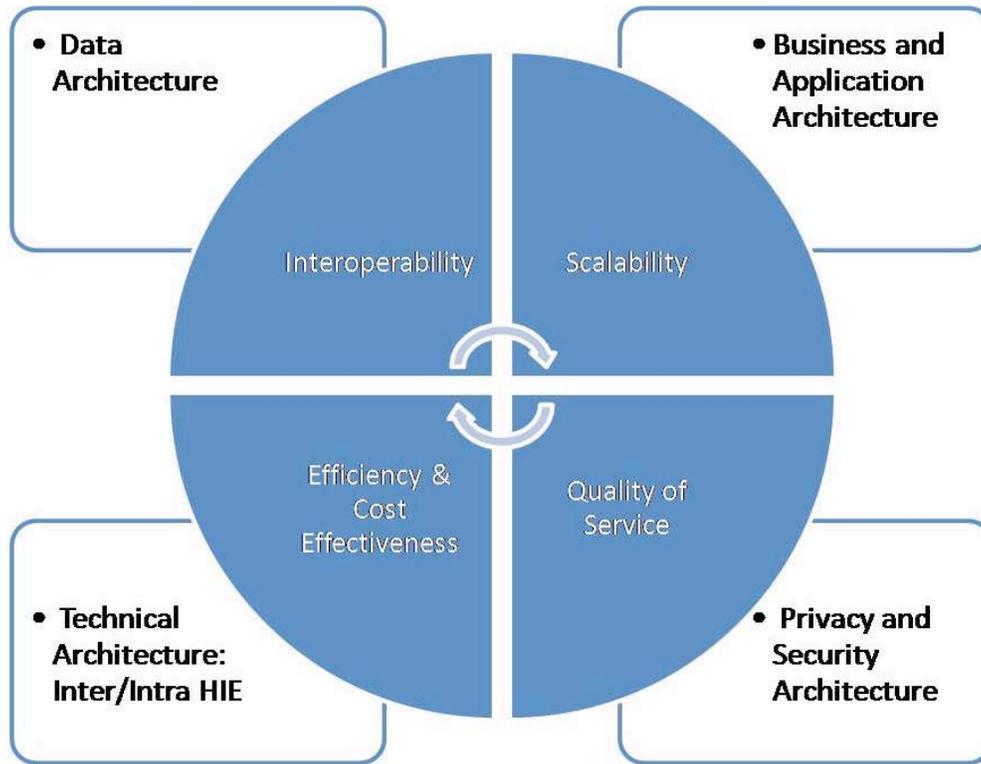


Figure 8: High-Level Architecture for Healthcare Ecosystem

11.2.1. Business and Application Architecture

Business and Application Architecture includes a Core Service stack comprising of components and subsystems supporting three core functionalities for health information exchange: 1) Privacy and Security, 2) Patient Discovery, and 3) Administrative/Clinical Data Exchange. This core service stack is integrated with various health information systems via standardized Application Programming Interfaces (APIs) and adapters. On top of the Core Service stack, services implementing business workflows (use cases) and applications are deployed via adapters. Each service on this stack supports a specific business workflow with trading partners such as providers, HIEs, Federal/State agencies, payers, and research communities.

11.2.2. Data Architecture

Data Architecture addresses syntactic and semantic interoperability (Content Exchange and Vocabulary Standards) for health information exchange by including, but not being limited to:

- Vocabulary mapping engine
- Data conversion/transformation
- Data consolidation

- Support of both structure and unstructured data
 - Structured Data - structured with an abstract data model (e.g., HL7 CDA)
 - Unstructured Data - usually computerized information without a data model (or with a data model that is not easily usable by a computer program)

11.2.3. Technical Architecture

Technical Architecture provides core functionalities supporting business use cases/workflows, and services. It includes components for establishing a common, predictable, secure communication between health information systems. It supports Interstate-HIE and Intrastate-HIE.

11.2.4. Privacy and Security Architecture

Privacy and Security Architecture includes the following components:

- Authentication
- Authorization
- Access Control
- Auditing

11.3. Technical Considerations

The table below shows a list of criteria that were considered when designing the statewide HIE Architecture. This list comes from a combination of best practices for system architecture design and the result of the State’s Environment Scan conducted in April 2010.

Table 12: Technical Considerations

Criteria	Description
Flexibility	<p>The architecture and system components should be easy to modify for integration with other applications, software components, and environments. For flexibility, the following will be taken into consideration when designing the HIE architecture:</p> <ul style="list-style-type: none"> • Flexible Programming: Language Independent + Platform Independent • Architectural Styles: Support various architectural design: for example, peer-to-peer, distributed and centralized • Reusable components with minimum modification

Criteria	Description
Interoperability & Interoperable Standards	<p>The architecture and system components should be designed to assure syntactic and semantic interoperability for the exchange of health information. The proposed HIE architecture will be designed by:</p> <ul style="list-style-type: none"> • Adopting existing and evolving standards addressing interoperability for health information exchange • Adopting HIT and standards adopted and/or recommended by HHS/ONC/Federal Health Architecture (FHA) • Vocabulary Standards • Content Exchange Standards • Transport Standards • Privacy and Security Standards
Scalability	<p>The architecture will be designed to scale up (rescaling in size and volume) as the HIE grows with more stakeholders, additional connectivity, rapidly growing transaction/data volumes, and newly added services supporting business use cases and workflows.</p>
Privacy and Security	<p>The architecture will ensure protection of patients' privacy and the security of the information exchanged between stakeholders. This requires the following:</p> <ul style="list-style-type: none"> • Coordination with HIPAA • Coordination with HITECH Act • Coordination with DURSA (HHS/ONC/NHIN)
Liability	<p>The architecture will ensure the local ownership of medical data and information.</p>
Cost Effective	<p>The architecture will be designed for HIE sustainability.</p>
Other Quality of Service (QoS) Metrics	<p>The architecture will also be designed considering other QoS elements including but not limited to</p> <ul style="list-style-type: none"> • Performance • Availability • Ease of Use: The architecture must be designed in way that is easy to use, seamless, and have the same functionality and appearance to stakeholders
Business Use Case and Workflows	<p>The architecture will ensure offerings of business use cases and workflows along with services for the stakeholders including but not limited to:</p> <ul style="list-style-type: none"> • HIE to HIE including state's report to Federal Public Health • Provider to Patient • Provider to Provider • Provider to Laboratory • Provider to Pharmacy • Provider to Federal/State Public Health

11.4. Architectural Choices Overview

There are generally three architectures that are supported for Health Information Exchange; Federated, Centralized, and Hybrid Architectures. The State of Mississippi will ensure that any and all vendor systems adhere to national standards (FHA, ONC, NHIN, HHS, etc.) in order to ensure interoperability and support from the community.

11.4.1. Federated Architecture

A Federated Architecture is a distributed architecture for HIE where the patient data remains at the provider level and is not duplicated in a HIE centralized repository or database. Since all patient data remains at each individual provider location, typically behind the provider's firewall and protected by existing provider security and systems. It is considered to be a high security model. Patient data is queried and retrieved from each source system and the information returned is assembled and presented to the person or system querying the information.

11.4.2. Centralized Architecture

A Centralized Architecture for HIE has a centralized database, allowing all HIE members to access and utilize core services and data, including patient data. In a Centralized model, the HIE is the data center and patient repository, and all patient data is synchronized from provider systems to the centralized database and 'router'. In this model, the HIE is fully responsible for privacy and security, as well as access controls to the patient data in the HIE, which can present some operational, legal, and security hurdles that must be overcome.

11.4.3. Hybrid Architecture

A Hybrid Architecture for HIE utilizes the best of both the Federated and Centralized Architecture. In a Hybrid Architecture model, the HIE acts as a centralized clinical information coordinator and the federated patient data stays in the source or provider system and/or is staged on dedicated databases within the HIE. It is also important to note that the responsibility for patient information and security is shared amongst the HIE participating members. The State of Mississippi has selected a Hybrid Architecture model to be used for the statewide HIE.

11.5. Nationwide Health Information Network Overview

An important aspect of HIE interoperability and Meaningful Use is the ability to connect with the Nationwide Health Information Network (NHIN) and be in full compliance with current and developing standards from Health and Human Services, the ONC and FHA. Installation and utilization of a certified and compliant NHIN Gateway, as well as standards-compliant systems and solutions, will ensure that the MS-HIN can link with other NHIN HIEs, states, and Federal

Agencies. Interoperability with other State and Federal networks, as well as other HIEs, will support the MS-HIN in meeting the criteria for Meaningful Use.

11.5.1. Nationwide Health Information Network (NHIN)

The Nationwide Health Information Network comprises standards, services, and a trust fabric that enables the secure exchange of health information over the Internet. This critical part of the national health IT agenda will enable health information to follow the consumer, be available for clinical decision making, and support appropriate use of healthcare information beyond direct patient care, so as to improve population health.

To support providers wishing to achieve Meaningful Use of electronic health records and qualify for incentives under the HITECH Act, technical and policy activities during 2010 will expand the value of NHIN standards, services, and trust fabric as well as extend the ability to exchange health information securely to a larger audience.

One instance of the NHIN standards, services, and trust fabric has been in pilot testing through the NHIN cooperative, which is now ready for a limited production pilot to a broader community. This instance of the NHIN includes the robust technology and trust fabric necessary to support health information exchange among large nationwide organizations and federal entities. Entities that wish to exchange information with these partners must:

- Execute a comprehensive trust agreement called the Data Use and Reciprocal Support Agreement (DURSA) that governs the roles and responsibilities of exchange at this level
- Demonstrate that they can support a multi-point information exchange
- Complete a validation and on-boarding process

The ONC believes the secure exchange of health information using NHIN standards, services and policies, with broad implementation, will help improve the quality and efficiency of healthcare for all Americans.⁵

11.5.2. Integration with and Participation on the Nationwide Health Information Network:

As listed above, to participate in the Nationwide Health Information Network, the MS-HIN must execute the DURSA agreement, demonstrate a multi-point information exchange, and complete a validation and on-boarding process.

⁵ Overview of the Nationwide Health Information Network by The Office of The National Coordinator (ONC)

Rules and regulations on connectivity to NHIN, as well as requirements, such as having an executive sponsor or Federal Sponsoring Agency, are fluid and changing, thus the MS-HIN might require a Federal Agency sponsor to participate on the NHIN. Therefore, the MS-HIN will present a NHIN use case and connectivity model to a Federal Agency as part of the Phase I implementation of the MS-HIN. By utilizing a Federal Agency use-case and sponsor, the MS-HIN can insure participation and compliancy with the NHIN at a Federal level, and thus utilize NHIN to connect to local and other state HIE initiatives and departments.

It is recognized that states and initiatives surrounding the State of Mississippi have plans to implement or are implementing NHIN connectivity for both intrastate and interstate connections. Therefore the MS-HIN will implement an NHIN Gateway for standards-based interstate and intrastate connectivity, with the first use case to a federal agency. NHIN connectivity to other states and HIEs will be added in a phased approach, beginning with the border states of Tennessee, Louisiana, Arkansas, and Alabama. Other states and HIE initiatives, including more Federal Agencies and Federal use cases, can be added in additional phases.

11.5.3. NwHIN CONNECT Gateway

The MS-HIN will implement the Medicity NwHIN Gateway. The Medicity NHIN Gateway is fully NwHIN compliant and the MS-HIN can insure full compliancy and interoperability with NwHIN by utilizing a NHIN Gateway.

This software solution was developed by Medicity can be used to help set up health information exchanges and share data using nationally-recognized interoperability standards.

Medicity NwHIN Gateway can be used to:

- Set up a health information exchange within an organization
- Tie a health information exchange into a regional network of health information exchanges
- Tie a health information exchange into the NHIN

By advancing the adoption of interoperable health IT systems and health information exchanges, the country will be better able to achieve the goal for all citizens to have electronic health records by 2014. With electronic health records, health data will be able to follow a patient across the street or across the country.⁶

⁶ From <http://www.connectopensource.org>

As the CONNECT NwHIN software specifications are updated by the ONC, the MS-HIN will implement an NwHIN Gateway either:

- As a managed service from a certified NwHIN CONNECT vendor, with upgrades and compliancy insured, or
- Budget and staff internally so that the NwHIN Gateway is upgraded, patched, and supported quarterly to insure full compliancy and interoperability with NwHIN

11.5.4. Aligned with NHIN Direct Efforts

NHIN Direct is another initiative lead by ONC addressing use cases such as provider-to-provider, provider-to-pharmacy, and/or provider-to-laboratory. The HIE architecture for the State of Mississippi will consider future inclusion of the outcome of these efforts.

“NHIN Direct is the set of standards, policies and services that enable simple, secure transport of health information between authorized care providers. NHIN Direct enables standards-based health information exchange in support of core Stage 1 Meaningful Use measures, including communication of summary care records, referrals, discharge summaries and other clinical documents in support of continuity of care and medication reconciliation, and communication of laboratory results to providers”.⁷

Medicity’s current architecture being used by the MSCHIE and leveraged for MS-HIN is a superset of Direct specifications. The Phase 1 architecture model reflects the ability to help providers exchange a secure message to an unaffiliated provider or organization through Direct or via the Grid. MS-HIN, as the state-level HISP, serves as the primary option for independent providers who don’t otherwise choose to use the higher-level services of MS-HIN or HISPs that may exist in the state.

As detailed in the Phasing described herein, MS-HIN will:

- Serve as a Health Information Service Provider (HISP): Every provider will have the opportunity to receive or send unsolicited clinical documentation and lab data in a secure email using Direct specifications.
- Provision Health Domain Addresses: For every enrolled provider (or provider organization) a health domain address will be provisioned that will allow that provider to be reached by another trusted provider. This Health Domain Address will be persisted within the Provider Directory.

⁷ From <http://www.nhindirect.org>

- Participate in HISP 'White List' Replication: As a supplier of HISP technology, participate in the process of maintaining an approved list of HISPs that enable a trusted "Health Internet" to be created.

Medicity has enable the above services as part of the initial deployment phase of the MS-HIN as an extension of the existing HIE network which is already aligned to the Direct Project specifications. Additionally, the MS-HIN has developed Direct-related content for the MS-HIN website that includes FAQs, code downloads, and links to request support. MS-HIN's site serves as the primary source of information for providers wanting to join the network.

11.6. Proposed Technologies for Health Information Exchange Architecture

The following technologies serve as the foundation for building the MS-HIN:

- Service Oriented Architecture (SOA) is desired as a foundation of the HIE architecture (one important aspect of SOA is the separation of the service from its implementation)
- Federated Identity Management along with Single Sign On and Role-Based Access Control (RBAC)
- Cloud Computing technology along with Virtualization technology
 - Infrastructure as a Service (IaaS)
 - Platform as a Service (Paas)
 - Software as a Service (Saas)
- Hybrid HIE Architecture – Combination of centralized and federated architectures
- Adoption of Open Source solutions with on-going development and support
- Syntactic and Semantic Interoperability
- Adoption of Enterprise Service Bus pattern for integration of heterogeneous health information systems
- SaaS (Software as a Service) based service offerings

As referenced in Phase 0, MS-HIN is using the Medicity provider directory capability for the statewide HIE. There has been discussions with Medicaid to determine how they might leverage the HIE provider directory. However, Medicaid is moving forward to create a directory that satisfies its need to administer the incentive payment program under Medicaid rules. As Medicaid is using an ACS platform and not Medicity, it is likely they will have their own provider directory for some period of time. MS-HIN will work with Medicaid to

offer the HIE provider directory to Medicaid as a user of the HIE and to integrate the directories over time.

In Table 13, the technology is shown and compared to nine (9) different criteria for usability.

Table 13: Usability Criteria

	SOA	Federated Identity Management	Cloud Computing/ Virtualization	Hybrid Architecture	Adoption of Open Source Solutions	Adoption of Standards	ESB
Flexibility	√		√	√	√	√	√
Scalability	√	√	√	√		√	√
Interoperability	√	√				√	√
Privacy & Security	√	√		√		√	
Liability				√			
Cost Saving			√		√		√
Performance			√				
Availability	√		√				
Ease of Use			√				

11.7. Core Functionality

Table 14 shows a description on core functionalities, business needs, challenges, and recommendations.

Table 14: Core Functionality

Core Functionality	Business Needs	Challenges	Strategies
Privacy and Security	HIPAA compliant system to ensure security and protecting patient privacy	<ul style="list-style-type: none"> • Disparate governance rules and policies on security and privacy in different healthcare organizations • Different authentication mechanisms • Locality of identities → Not globally sharable 	<ul style="list-style-type: none"> • Public Key Infrastructure (PKI) based strong Authentication, Authorization, Access Control, and Auditing (4A) • Federated Identity Management <ul style="list-style-type: none"> ▪ Simplified authorization and registration process to multiple services across healthcare organizations ▪ Single Sign On ▪ Integrated Patient Health Information Protection • Role Based Access Control (RBAC) • Patient Consent Management

Core Functionality	Business Needs	Challenges	Strategies
			System
Patient Discovery	“ <i>Identifying A Patient</i> ”: Locating a patient and establishing the identity of mutual patients in different healthcare domains	<ul style="list-style-type: none"> • A lack of National Patient ID • Inconsistent demographic attributes among healthcare providers (or HIEs) and their data sources • Disparate and disconnected MPIs and independent matching algorithms • Consumer privacy restrictions 	<ul style="list-style-type: none"> • Within a HIE (Intra-HIE Clinical Information Exchange): Distributed/Federated Patient Lookup • Across HIEs (Inter-HIE Clinical Information Exchange): Adopting NHIN Service Interface “Patient Discovery”
Administrative/ Clinical Data Exchange	“ <i>Exchanging Clinical Information Securely</i> ”: Exchanging clinical data between different healthcare stakeholders	<ul style="list-style-type: none"> • Establishing co-relation between patient IDs from different healthcare stakeholders → <i>Addressed by Patient Discovery</i> • Disparate and disconnected EHR systems using different communication protocols and data formats 	<ul style="list-style-type: none"> • Within a HIE (Intra-HIE Clinical Information Exchange): Enterprise Service Bus (ESB) strategy to support various communication protocols (transport protocols) and disparate data formats (data transformation/conversion) • Across HIEs (Inter-HIE Clinical Information Exchange): Adopting NHIN Service Interfaces “Query for Documents” & “Retrieve Documents”

11.8. Privacy and Security

The MS-HIN has ensured all systems and services are fully compliant with all HIPAA regulations, and utilize standards-based security mechanisms, including standardized encryption technologies. Industry proven technologies such as Federated Identity Management with Role Based Access Controls will be considered for adoption to ensure data security and integrity. A high level of encryption, including Public Key Infrastructure (PKI) has been considered as an encryption standard, as well as the process of encrypting each and every message, regardless of location of the system (including within the HIE system). The utilization of standards based encryption technologies such as PKI will ensure authenticity and non-repudiation of data by digitally signing each and every message.

Future utilization of a Federated Identity Management Service, along with the current Role-Based Access Control (RBAC) framework, will insure information and data is available to be shared across wide area security domains. Additionally, any and all security processes and systems will comply with any and all local, state, and Federal laws.

Integration of HIE services with a Federated Identity Management System, with Public Key Infrastructure and Role-Based Access Control, allows for interoperable clinical data exchange globally, with management retained locally.

11.8.1. Patient Consent Management

The MS-HIN has a Patient Consent Management system integrated into the statewide HIE infrastructure, allowing a patient to opt-out of the MS-HIN via request at their provider of service.

11.8.2. Enterprise/Master Patient Index

In order to support patient discovery, the MS-HIN has implemented an Enterprise Master Patient Index (eMPI), as a part of the core offering of the Health Information Exchange. The eMPI is fully integrated with the HIE offerings and systems, to allow for HIE-wide patient matching. For example, the eMPI is fully interactive with the Record Locator Service to establish the mutual identity between patients from the local HIE, as well as other HIEs. Implementation of the eMPI has reduced or eliminated the risk of having multiple records and data for the same patient that are not matched and utilized / coordinated for care.

11.8.3. Clinical Data Exchange

The MS-HIN could provide HIPAA-compliant clinical data exchange in both standard data formats, including CCR (Continuity of Care Record) and CCD (Continuity of Care Document). Since the CCD has been selected as the standard for the Federal Health Architecture and NHIN, the State has implemented the CCD standard for clinical data input, output, and exchange. The MS-HIN is aware many providers who have EHR are not capable of CCD compliancy and the costs can be somewhat prohibitive to implement full CCD compliancy, especially for smaller providers and healthcare entities. Providers who are incapable of exporting and importing CCD documents from their EMR systems will either need to upgrade their EMR systems to allow for full CCD interoperability or implement a custom translator service/interface for CCD compliancy.

11.8.4. Record Locator Service

Modern patient care techniques and services demand instant access to a patient's disparate healthcare information. Instant access is realized with a system that accurately identifies all related information for an individual automatically, without human intervention. In general, a Record Locator Service,

(RLS), can be defined as an electronic index of patient identifying information. This RLS information directs providers to the location of the patient health records (usually held by healthcare organizations). Typically, the two core capabilities of an RLS are:

- Identifying a patient within a community (HIE or Regional Health Information Organization) and/or in remote communities
- Identifying the location (communities and/or healthcare provider facilities) of a patient’s clinical data

Users search for a patient with full or partial demographic information including first name, last name, date of birth, gender, and zip code, and other search criteria.

11.9. Proposed Health Information Exchange Architecture

The proposed HIE Architecture for the State of Mississippi is a standards-based hybrid architecture with: 1) a combination of centralized and distributed (federated) registries/ services/applications and 2) centralized and de-centralized data.

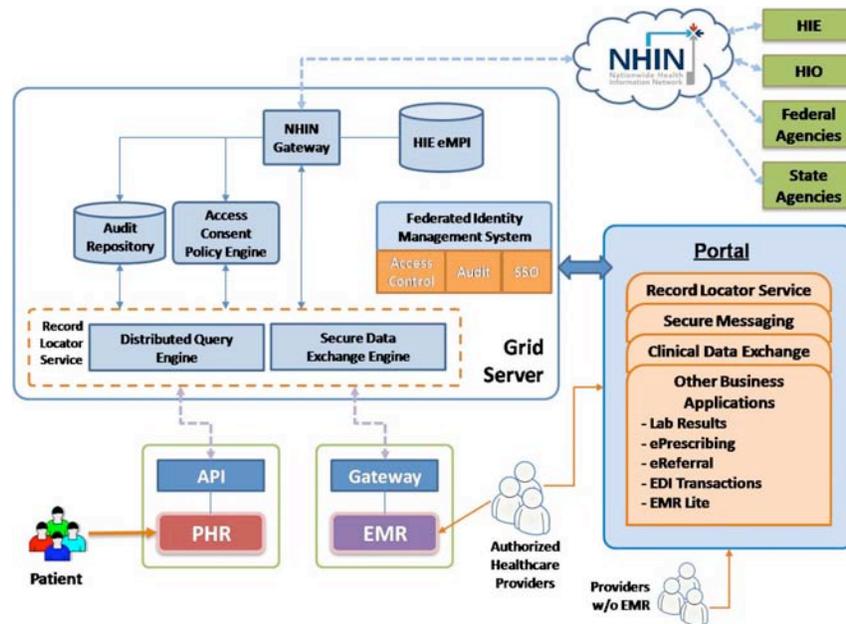


Figure 9: Proposed Architecture

11.9.1. Development of Nationwide Health Information Network (NHIN) Gateway

NHIN Core Service Interface Specification and Profiles⁸

The table below describes a list of NHIN Core Service Interfaces and Profiles. The MS-HIN's NHIN Gateway implementation will fully comply with NHIN Core Service Interface Specifications and may implement/support optional profiles. Even though most of profiles are flagged as "optional", some will have to be implemented and supported by the MS-HIN to connect some federal agencies on various projects.

Table 15: Core Service Interface

Category	Name	Description	HIE Implementation: Options
Core Service Interface Specification	Patient Discovery	This interface defines the mechanism by which one NHIN Node can query another to determine if it is a source of information for a specific patient. This query is intended to be directed to the most likely source nodes, as opposed to broadcast across the NHIN	Required
	Query for Documents	A query from one NHIN Node to another, requesting a list of available patient specific documents meeting query parameters for later retrieval	Required
	Retrieve Documents	This interface defines an information exchange service that allows an initiating NHIN Node to retrieve one or more documents for a specific patient from a responding NHIN Node. The service requires the initiating node's use of the responding node Document IDs to specify the documents requested. Those Document IDs are presumably (but not necessarily), obtained by a prior Query for Documents	Required
	Document Submission	This interface defines an information exchange service that allows an initiating NHIN Node to send one or more documents for a given patient to a receiving node. Unlike Query/Retrieve and Pub/Sub, Document Submission does not require a prior request to retrieve a document or to subscribe to content and is categorized as a "push" transaction	Required

⁸ NHIN Exchange <http://healthit.hhs.gov/>

Category	Name	Description	HIE Implementation: Options
	Access Consent Policy	This specification provides a standard language, XCAML, for expressing restrictions on access to health information. These restrictions are also known as Access Consent Policies (ACPs)	Required
	Authorization Framework	This specification defines the exchange of metadata used to characterize the initiator of an NHIN request so that it may be evaluated by responding NHIOs in local authorization decisions. Along with the Messaging Platform, this specification forms the NHIN's messaging, security, and privacy foundation. It employs SAML 2.0 assertions	Required
	Messaging Platform	This specification describes the common web service protocols that must underlie every message transmitted between NHIOs. This specification represents a common messaging and security platform for all other NHIN core service interfaces. The Messaging Platform describes the transport rather than the interface specifications as Messaging Platform consists of the underlying common elements of message transport rather than individual programming interfaces that can be invoked as web services. Along with the Authorization framework, this specification forms the NHIN's messaging, security, and privacy foundation	Required
	Health Information Event Messaging (HIEM)	This specification defines an information exchange service that allows National Health Information Organizations (NHIOs) to request to subscribe or unsubscribe to various classes of content and events, and to notify NHIOs when content or events matching a subscription have been created or modified. Any NHIO seeking to utilize the pub/sub exchange pattern must utilize the HIEM service and apply the relevant HIEM Profile	Required
	Web Services Registry	This specification describes how NHIN participating HIOs to locate and utilize the appropriate NHIN web services offered by other members in a controlled, secure manner	Required
	Audit logging	Each service interface specification requires a set of audit events which will be generated and logged into an audit record repository at the HIE level. IHE ATNA profile is adopted for the format	Required

Category	Name	Description	HIE Implementation: Options
Profiles	Continuity Assessment Record and Evaluation (CARE) Profile	The objective of the CARE data exchange is to improve the quality of care experienced by patients as they transition among healthcare providers	Optional
	Geocoded Interoperable Population Summary Exchange (GIPSE) Profile	The GIPSE Profile supports the implementation of near real-time, nationwide public health event monitoring to support early detection, situational awareness and rapid response management across care delivery, public health, and other authorized government agencies	Optional
	Administrative Distribution Profile	This profile is intended to provide a mechanism for NHIOs to exchange non-patient specific data using a “push” mechanism	Optional
	Physician Quality Reporting Initiative (PQRI) Profile	The PQRI program’s primary purpose is to enable program participants to monitor their participation and clinical performance data as well as obtain information concerning the incentive payments they have earned. CMS is facilitating this endeavor through the collection of information about the outcome of services rendered that have had claims and clinical quality data codes populated by the Provider. These codes are then used to compute analytical statistics (i.e. ratios) for Provider Feedback reports	Optional
	CMS Medicaid Member Eligibility Verification Profile	This document presents the NHIN Medicaid Eligibility Verification Web Service Interface Specification. This service will allow healthcare providers and other authorized users to determine the enrollment status of an individual patient in any of the 54 different Medicaid systems operated by US states and territories using a real-time request/response service across the NHIN	Optional – Emergence Pilot Profile
	CMS Electronic Submission of Medical Documentation (esMD) Profile	This profile specifies mechanisms supporting the submission of documentation by providers such as physicians and hospitals to a limited number of Medicare Review Contractors	Optional – under development

11.9.2. Leveraging the Open Source CONNECT NHIN Gateway

As indicated in Section 11.5.3, the MS-HIN will implement a standard CONNECT NHIN Gateway to insure full compliancy and interoperability with the NHIN. By leveraging CONNECT NHIN Gateway, the MS-HIN can be aligned with NHIN technology and reduce costs for development and on-going maintenance of the NHIN Gateway. The basic capability is part of a soon to be released ProAccess 5.6.1, but full NHIN compliance and certification is pending final rules and process.

CONNECT can be used to:

- Set up a health information exchange within an organization
- Tie a health information exchange into a regional network of health information exchanges
- Tie a health information exchange into the NHIN

Figure 10 shows a conceptual grouping of NHIN services and specifications into groups of infrastructure specifications, exchange services, and profiles implemented by the CONNECT NHIN Gateway. “Foundation” contains core service interfaces and infrastructure supporting capabilities and applications. “Capabilities” describes two core functionalities required for Inter-HIE data exchange: Discovery and Exchange. These functionalities are realized by the combination of underlying core services interfaces and profiles. Finally, “Applications” represents a set of use cases and workflows that can be developed and offered by leveraging foundations and capabilities.

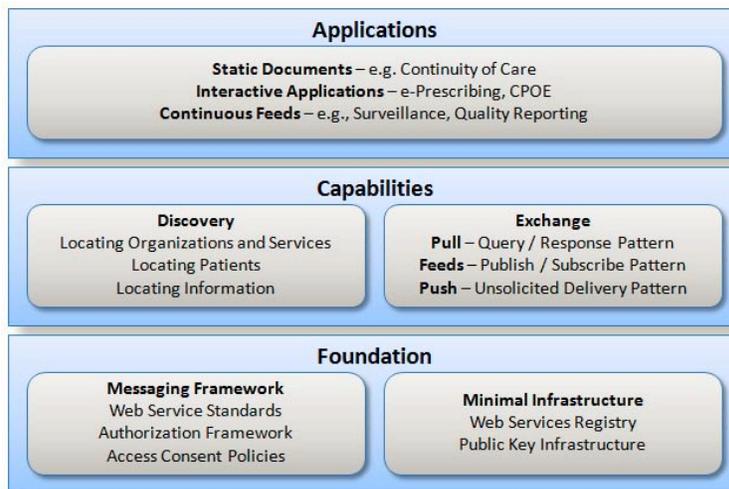


Figure 10: Workflows

CONNECT NHIN Gateway API and Adapter Development

As shown in Figure 11, the CONNECT NHIN Gateway (CONNECT SDK) includes a set of interfaces and adapters. The MS-HIN will have a NHIN

Gateway and a suite of HIE engines and services will be integrated with the NHIN Gateway through proprietary adapters. The State of Mississippi plans to enter contract negotiations with Medicity, a vendor who has extensive experience with NHIN Gateway standards and the open source CONNECT NHIN Gateway. The vendor will develop a set of proprietary adapters for the MS-HIN's various health information systems.

The following efforts are required for the NHIN Gateway development and maintenance.

- Ongoing updates on NHIN Core Service Interface Specifications as new specifications are developed and become available
- Ongoing updates on NHIN Core Service Interface Profiles
- Testing, installation, configuration, and upgrade as a new version of CONNECT SDK is released quarterly
- Development of proprietary NHIN adapters as new health information systems are added to the MS-HIN
- Establishing new connectivity to federal agencies and/or other statewide/regional HIEs

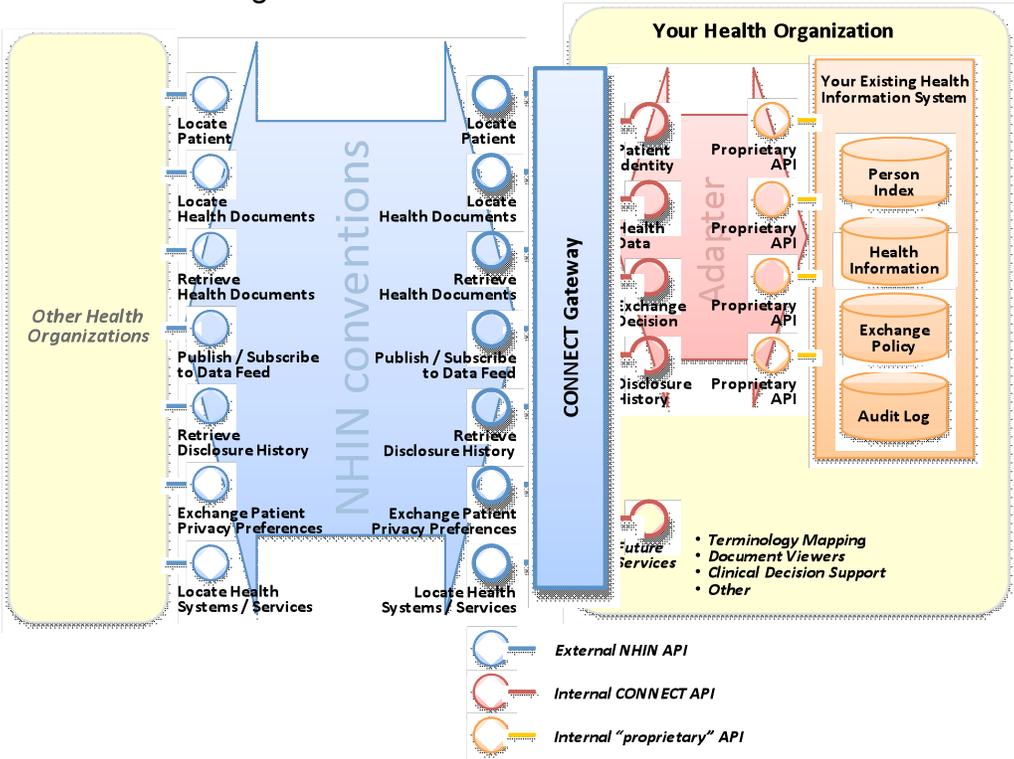


Figure 11: Connect NHIN Gateway API

Connectivity to Federal Agencies

The following are a list of currently identified federal level projects. The MS-HIN will leverage NHIN Gateway to connect to federal agencies on various projects but will not be limited to the following:

- Exchange of summary patient records for SSA Disability Determination Purposes
 - Agency: Social Security Administration (SSA)
 - Description: These electronic medical records, which will be sent through the Nationwide Health Information Network Exchange (NHIN Exchange), will significantly shorten the time it takes to make a disability decision and will improve the speed, accuracy, and efficiency of the disability program
- Exchange of Summary Patient Records for the Virtual Lifetime Electronic Record (VLER)
 - Agencies: Department of Veterans Affairs (VA) and Department of Defense (DoD)
 - Description: The goal of VLER is to unburden the veterans by having data available, when and wherever it is needed, by providing seamless access to all of the electronic records for service members throughout their lives as they transition from active military to veteran status
- Bio-surveillance and Case Reporting
 - Agencies: Center for Disease Control and Prevention (CDC)
 - Description: The purpose of this project is the implementation of near real-time, nationwide public health event monitoring to support early detection, reporting in GIPSE format, situational awareness and rapid response management across care delivery, public health, and other authorized government agencies
- CMS C-HIEP Project: Reporting de-identified quality assessment data to CMS
 - Agencies: Centers for Medicare and Medicaid Services (CMS)
 - Description: The project leverages NHIN technology to enable HIEs and providers to submit de-identified quality assessment information to CMS for conducting quality assessment and improvement activities, including outcomes evaluation and development of clinical guidelines or protocols
- CMS esMD Project
 - Agencies: Centers for Medicare and Medicaid Services (CMS)
 - Description: The Electronic Submission of Medical Documentation (esMD) will enable providers to respond to requests for medical documentation by electronic transmission via the NHIN, in addition to,

(or opposed to) the three existing choices; mailing a paper record, mailing a CD containing a Portable Document Format (PDF) or Tag Image File Format (TIF) file, or sending the record by fax.

11.10. SOA-based HIE Suite of Registries, Engines and Subsystems

Figure 12 shows the registries, engines, and subsystems of the Medicity HIE architecture being utilized for the MS-HIN.

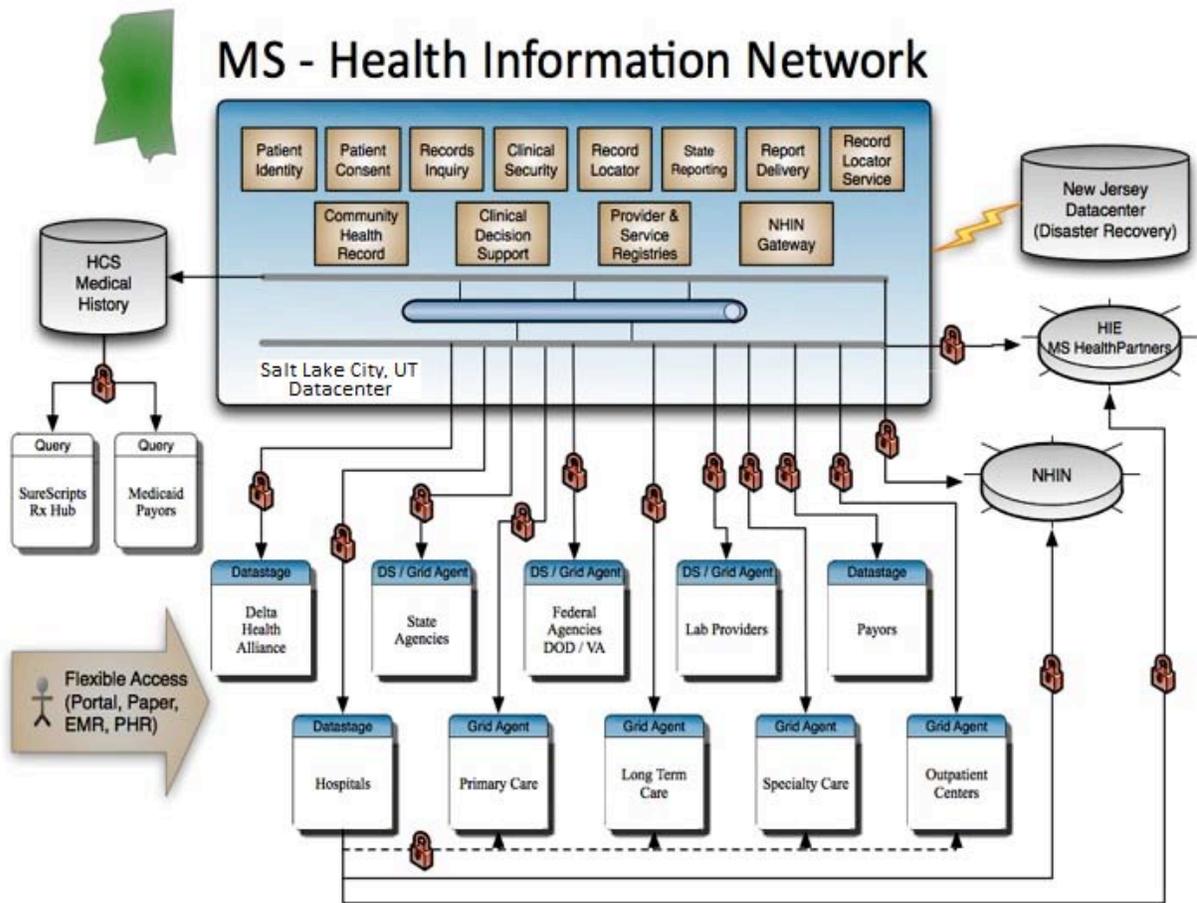


Figure 12: Medicity Architecture

11.10.1. Provider Registry

The MS-HIN has created a centralized provider registry that supports lookup, creation, update of entries, and credential verification of healthcare providers (professionals and organizations). The provider registry has been exposed through standard APIs such as Simple Object Access Protocol (SOAP) and/or Representational State Transfer (RESTful) Web Services APIs and will be integrated with the National Provider Identifier (NPI) database. In cases dealing

with health information systems with proprietary APIs, an Enterprise Service Bus (ESB) engine will be interfaced with the provider registry.

11.10.2. Consent Registry

The Consent Registry is a consistent source of a consumer's preferences, thereby enabling patient engagement and provider access to clinical information. The registry will need to connect to existing consent registries and will comply with the NHIN exchange model – adoption of eXtensible Access Control Markup Language (XACML) for Access Consent Policies (ACPs) and Healthcare Information Technology Standards Panel (HITSP) TP30 “HITSP Manage Consent Directives Transaction Package” adopting Integrating the Healthcare Enterprise's (IHE) Basic Patient Privacy Consents (BPPC), which is HL7-based. For the Exchange of Consent document, IHE Cross-Enterprise Document Sharing (XDS) document sharing protocol and IHE Cross-Enterprise Document Reliable Interchange (XDR) profiles will be adopted.

11.10.3. Web Services Registry (UDDI)

For both Interstate-HIE and Intrastate-HIE transactions, a set of Web Services endpoints are registered and available on the Service Registry for trading partners (state stakeholders, federal agencies, or HIEs) to locate and utilize the statewide Web Services. OASIS's Universal Description, Discovery, and Integration (UDDI) registry specifications are utilized.

11.10.4. Web Services Endpoints and Messaging

Web Services is a technology that has recently emerged as a standard communication platform to overcome the interoperability problems. One of the key features of the Web Services technology is an ability to wrap existing resources (such as electronic medical records, scanned images, lab results etc) and expose them as services available to other trading partners. This feature enables a healthcare enterprise to address the interoperability problems of their legacy/proprietary healthcare information systems. The MS-HIN has been designed based on the Service Oriented Architecture (SOA) and is able to adopt the SOAP based implementation of the SOA.

All business use cases and workflows are developed as standard SOAP or RESTful Web Services and are exposed through the Service Registry. A Graphical User Interface-based (GUI) management tool is built on top of the Service Registry to support management of the Service Registry (register, modify, and delete, etc.).

11.10.5. Integration and Message Transformation

HIE architecture leverages Web Services standard technology (Web Service Definition Language [WSDL], SOAP, and Universal Description, Discovery and Integration [UDDI]) to realize SOA – defining, publishing, and using web services.

It has also implemented Web Services profiles (Web Services Interoperability Organization [WS-I] Basic Profiles and WS-I Security Profiles) as a standard messaging platform for the XML-based messaging exchange as well as address heterogeneity of the underlying database systems and health information systems (HIS).

11.11. Value Proposition: Business Use Case and Service Offerings

The MS-HIN has the opportunity to provide improved workflows, patient outcomes and care, as well as full Meaningful Use compliancy. A critical part of Meaningful Use is the ability to exchange clinical data between providers within the MS-HIN as well as between Federal Agencies and established HIEs located in surrounding states.

11.11.1. Initial Data Elements for HIE exchange From the Environmental Scan

One of the questions posed to the Environmental Scan participants was “If this HIE work had to be done in stages, what are the data elements you would desire in the first release?” The feedback was fairly consistent across the participants. Most indicated they wanted a fully functioning HIE from the beginning, but understood that may not be financially possible. The data elements most often cited as most desirable in the first release include:

- Patient demographics
- Chief complaint
- Medications
- Allergies
- Latest labs and/or radiology results
- Immunizations

In later releases, participants would like to see the following data elements included:

- Quality indicators
- Medical history
- Disease management information
- Public health reporting
- Peer review
- Trending and benchmarking

11.11.2. User Stories

Table 16: User Stories

Actors	Use Stories
HIE to HIE	<ul style="list-style-type: none"> • Cross-State exchange of health information • HIE to Federal Agencies (CMS, SSA, DoD, VA, IHS etc) • Provider's Quality Measures Reporting to CMS over NHIN (PQRI) • Provider's Quality Measure Reporting to State over NHIN (PQRI) • State's public health data reporting to CDC (GIPSE) • Medicaid Connectivity to CMS • Medicare Connectivity to CMS
Provider to Patient	<ul style="list-style-type: none"> • Patient Health Record • Patient Record Access Consent Management
Provider to Provider	<ul style="list-style-type: none"> • Electronic Referrals • Electronic Disease reporting • Clinical Messaging
Provider to Laboratory	<ul style="list-style-type: none"> • Electronic Lab Ordering • Electronic Lab Results Reporting
Provider to Pharmacy	<ul style="list-style-type: none"> • Electronic Prescribing
Provider to Public Health	<ul style="list-style-type: none"> • Electronic immunization reporting • Electronic Disease reporting
Provider to Payers	<ul style="list-style-type: none"> • Eligibility • Claims • Prior Authorization

11.11.3. Specific Use Cases for the State of MS-HIN

Of particular relevance are use cases. During the Environmental Scan, a number of themes became abundantly clear. Satisfying the needs of these use cases will improve HIE adoption rates and drive toward sustainability.

11.11.4. Emergency Use Case

When a patient is admitted to an emergency room, immediate access to basic clinical information such as immunization history, current medications, recent lab history, and allergies can make a real difference in the quality of patient care as well as the efficiencies gained within the provider's institution.

11.11.5. Continuity of Care

The greatest increases in the quality of care and institutional efficiency could be seen when patients are sent for tertiary treatment or transferred to another type of care facility (long-term care, referral to the state hospital, etc.). Additionally, providers located along Mississippi's border expressed concerns related to patients that cross state lines seeking medical care. They were concerned that patient information could not be exchanged freely between states. Similar opportunities exist to increase the quality of care for transient citizens who routinely travel from state to state.

11.11.6. e-Prescribing

The ability for providers to have electronic prescribing, with medication history, presents a strong use case for the MS-HIN. The migration of providers from a paper based or semi-electronic prescribing process to a fully integrated, electronic prescribing process (with medication history) could provide an immediate positive impact on the quality of care of patients in Mississippi. The MS-HIN will continue to use the HCS pharmacy data module that integrates with Medicity to help facilitate e-Prescribing.

11.11.7. EHR Light, or SaaS-based EHR

Providers in the State of Mississippi are working towards EHR compliancy, however, the State and MS-HIN will consider a lightweight, Software as a Service (SaaS) based, Electronic Health Record for inclusion in the offering and use cases for the statewide HIE. Depending on the offering and associated funding models, a EHR-Lite offering would allow providers who are reluctant, lack financial or human resources or are otherwise technology resistant, a way to participate in the HIE and collaborate.

11.12. Continuity of Care Document Provisions

The Continuity of Care Document contains 17 primary data fields. The MS-HIN will satisfy all Meaningful Use requirements by building the capacity to exchange all CCD data elements as defined for each stage of Meaningful Use.

1. *Header*: Defines the type of document being created, who the document is regarding (patient, physician, author) and how the document relates to other existing documents (if applicable).
2. *Purpose*: States the reason the document was generated, but only if a specific purpose is known (i.e., a referral, transfer, or by request of the patient).
3. *Problems*: Provides a list of relevant clinical problems, both current and historical, that are present for the patient at the time the document was created.

4. *Procedures*: Provides a list of all relevant and notable procedures or treatments, both current and historical, for the patient.
5. *Family History*: Gives relevant family health information that may have an impact on the patient's healthcare risk profile.
6. *Social History*: Describes the patient's lifestyle, occupation, and environmental health risks plus patient demographics such as marital status, ethnicity, and religion.
7. *Payers*: Provides payment and insurance data pertinent to billing and collection, plus any authorization information that might be required.
8. *Advance Directives*: Includes information about wills, healthcare proxies, and resuscitation wishes, including both patient instructions and references to external documents.
9. *Alerts*: Provides a list of allergies and adverse reactions that are relevant for current medical treatment.
10. *Medications*: Provides a list of current medications and relevant historical medication usage.
11. *Immunizations*: Gives information the patient's current immunization status plus pertinent historical information about past immunizations.
12. *Medical Equipment*: Provides a list of medical equipment and any implanted or external devices relevant to patient treatment.
13. *Vital Signs*: Details information about vital signs for the time period including at a minimum the most recent vital signs, trends over time, and a baseline.
14. *Functional Stats*: Detailed information about what is normal for the patient, deviations from the norm (both positive and negative) and extensive examples.
15. *Results*: Lists lab and procedure results, and at a minimum, lists abnormal results or trends for the time period.
16. *Encounters*: Details relevant past healthcare encounters including the activity and location.
17. *Plan of Care*: Lists active, incomplete or pending activities for the patient that are relevant for ongoing care – including orders, appointments, procedures, referrals and services.

11.13. Mississippi Coastal Health Information Exchange (MSCHIE) Pilot

The Mississippi Coastal Health Information Exchange (MSCHIE) was a pilot project for the state that evolved into the initial participants of the MS-HIN. The MSCHIE pilot began by providing health information technology adoption and

health information exchange infrastructure in the six coastal counties of Mississippi (Pearl River, Stone, George, Hancock, Harrison, and Jackson) that were devastated by Hurricane Katrina.

Damage in the Mississippi Gulf Coast Region from Hurricane Katrina in August 2005 highlighted the critical importance of the State's healthcare infrastructure. A large number of Mississippi's hurricane evacuees suffered as a result of being displaced from their medical records. As healthcare professionals struggled to reconstruct medical histories from any paper-based medical records that still existed at various provider locations, the need for location-independent availability of health information was made clear in the days, weeks, and months following the storm. Hurricane Katrina focused Mississippi's attention on the need to put medical records online and establish connectivity amongst providers across care locations. It also reinforced the goal that every community should have access to HIE, not just those located in an area prone to natural disasters.

In August of 2006, President George W. Bush issued a Presidential Executive Order – "Promoting Quality and Efficient Health Care in Federal Government Administered or Sponsored Health Care Programs". Per this executive order, the President directed federal agencies that administer or sponsor federal health insurance programs to:

- Increase transparency in pricing
- Increase transparency in quality
- Encourage adoption of health information technology (HIT) standards
- Provide options that promote quality and efficiency in healthcare

Mississippi Governor Haley Barbour created the Mississippi Health Information Technology Infrastructure Task Force (Task Force) by Executive Order 979 in March 2007. The Task Force was tasked with *"improving the quality and safety of healthcare delivery by means of the expedited adoption and implementation of health information technology (HIT) and health information exchange (HIE) across the state"*. The 20-member Task Force established working groups to develop white papers focused on the issues surrounding the creation of a statewide and interstate HIT infrastructure and provided its recommendations to the Governor.

The working groups were Clinical, Privacy and Security, Governance, Interoperability and Technology, Communication, and Education. In the first annual report from the Task Force, it was recommended that a proof of concept or pilot project for a regional exchange be established and grant money was subsequently secured for the project.

The Mississippi Foundation for Medical Care, Inc. (doing business as Information and Quality Healthcare [IQH] a non-profit healthcare quality improvement organization) agreed to oversee the grant and manage the project. Even though

IQH was not a state agency, they decided to adhere to the state procurement laws as a guide for selecting a vendor via a competitive procurement. An agreement was made with the MS Department of Information Technology Services (ITS), utilizing their experience with technology procurements for the State, to assist in developing a Request for Proposal (RFP) for the project.

In March of 2008, a Request for Proposal (RFP) was released for this Proof of Concept. Among other benefits, the resulting system was intended to:

- Restore the medical information systems within the areas of Mississippi most devastated by Hurricane Katrina
- Facilitate improved healthcare delivery and treatment
- Provide for the formation of a hybrid clinical data repository / HIE
- Give the Task Force hands-on experience developing a strategy for a statewide HIE

The procurement (RFP 3560) was conducted during the summer of 2008 and eight (8) proposal responses were received. A nine-member evaluation committee, consisting of members of the Governor's Task Force, the ITS, and IQH reviewed the proposals received and awarded an implementation contract to Medicity, Inc. in September of 2008.

In October 2008, the MSCHIE project began its first phase of implementation with three stakeholders: Coastal Family Health Center, Memorial Hospital at Gulfport, and Singing River Health System. In addition to these participant users and sources of data, MSCHIE provided aggregate medication fulfillment history from HCS as well as outpatient lab results from LabCorp. These three provider organizations located across the six-county coastal region shared an initial set of data over the MSCHIE and continued expanding with new data feeds.

Funded initially by a federal block grant, MSCHIE met the requirements of helping to restore health information systems damaged by Hurricane Katrina. The federal funding has "jump started" the HIE activity in Coastal Mississippi, spearheaded by the Governor's Task Force. This funding was used to complete Phase 1 of the project and continue the work into Phase 2.

The Proof of Concept was broken into multiple phases.

- Phase 1 (Demonstration Phase)
 - Query of medication history, discharge summaries, face sheets, lab results, radiology, and transcription reports
 - Creation and finalization of a governance model for the HIE
 - Development of an initial financing model for the three-year implementation
 - Delivery of results from hospitals to community providers by clinical inbox and auto-print

- Phase 2 (Network Expansion Phase)
 - Implementation of direct connectivity to four EHR Vendors
 - 30% community provider adoption and implementation of a patient summary record to include discharge summaries, inpatient and outpatient visit history, medication history, lab results and radiology reports
- Phase 3 (Interoperability with Other States and NHIN Phase)
 - Expand the number of data senders participating in MSCHIE, to reach 80% of the hospitals in the region and 50% of community providers
 - Demonstrate interoperability with Public Health
 - Connect to additional EHR vendors
 - Explore opportunities for connectivity with other HIEs in MS as well as surrounding States (e.g., Louisiana, Alabama, Georgia, Florida) and with FedCONNECT
 - Finalize long-term financing and suitability model

The MSCHIE and its Phase 1 stakeholders – Coastal Family Health Center (an 11-clinic Federally Qualified Health Center [FQHC]), Memorial Hospital at Gulfport, and Singing River Health System implemented:

- Outpatient medication history
- Face sheets
- Discharge summaries
- Lab results
- Transcription
- Radiology reports

While this project was run by IQH, collaboration and feedback between the Task Force and the State was integral to the successful deployment of HIT/HIE in Mississippi.

MSCHIE Assessment

In April of 2010, ITS conducted an assessment of the MSCHIE pilot project. Part of this assessment included Administrative (Chief Executive Officers) and Technical (Chief Information Officers) interviews for the stakeholders participating in the MSCHIE which include; Coastal Family Health Center, Memorial Hospital at Gulfport, and Singing River Health System. Contract/Project Management interviews with IQH's Chief Executive Officer and the MSCHIE Project Manager were also conducted.

Administrative Interview Results

The Medicity product received a high overall ranking from the administrators ranging from 8 – 10 from all interviewed. The product's ability to connect healthcare providers with comprehensive sources of patient information (patient history, labs, and pharmacy) was hailed as its best asset.

The least favorable thing that was said was the start time on the project was slow, but responded that any new innovative project takes time. When asked if anything could have been done differently, what should it be, some thought users could have been brought into the system sooner. However, reluctance appeared to be more on the providers' behalf than the MSCHIE.

Administrators indicated the physician users find the information particularly useful in diagnosing and treating patients with whom there is no established relationship. The system was indicated to have great benefit for clinicians who treat the more mobile and uninsured patients because they tend to use emergency rooms for primary care. Many indicated the access to pharmacy data had identified a number of drug seekers and has allowed intervention as a form of treatment that previously could have been overlooked. Some indicated that it had already made a marked improvement in quality and reduction of errors. It was also felt that the system will allow the facilities to meet Meaningful Use.

Technical Interview Results

The MSCHIE technical staff received high ranking from 8-10 concerning their level of helpfulness and knowledge. The facilities ranked the overall MSCHIE technical experience, concerning implementation/interfaces from 6-10. There was concern that the data capture options were limited and that Medicity requires the facility to adhere to a standard format requiring customization on the sender's part. All felt Medicity was no better/worse than other previous system implementation. "It's never easy" was one comment. The scope of work for at least one facility was underestimated due to needs discovered during the implementation process (this is not uncommon). The general consensus is once in place the product is very functional and requires very low maintenance.

Implementation timelines and milestones were generally met and those that were not seemed to be outside Medicity's control. However, some were not met due to what at least one facility believed was because the majority of the work required relies more heavily and unexpectedly on the facility. It was suggested the implementation process needed to be more of a collaborative effort.

The overall product impression of Medicity, based on the technicians interviewed, was very favorable ranking 9 and 10 out of a possible 10. Medicity was hailed as being very flexible and considered as a working partner. Prior experience in the field and existing interfaces were thought to be a major benefit towards effective and efficient implementations. Synergy between all staff involved, Medicity, Perot, and stakeholders were thought high regarding test and certification environments. Also, many indicated they were relieved that Medicity worked well

with all involved in the process and they understood the vision and purpose of the MSCHIE.

The worst experience with Medicity to date was the perception that multiple providers could not be added as quickly as hoped. One facility thought the product required quite a bit of effort on their part and the state of “readiness” concerning interfaces may not be where we were lead to believe it was during the initial selection process. However, most timelines and milestones were met (some in advance) and those that were not met were not considered Medicity’s fault.

End User Interview Results

Feedback from the end users has been very favorable. There were complaints originally about having to access another system, but once they saw the value of the software information, there has been little to no complaints about the software.

Contract Evaluation

Vendors were required to submit costs based on a set of metrics provided in the original RFP for comparison purposes. The RFP specifications were written to allow a wide range of vendors to be able to apply their particular approach and all required specifications were met in an efficient and timely manner. The costs associated with those metrics appear to have been adhered to by Medicity. However, there were a few change orders to the original RFP that increased the overall cost of the project, but these changes have added value and the costs appear appropriate. The change orders were made after Medicity met with IQH and the initial stakeholders and IQH agreed to take advantage of new technologies, most notable was the addition of the Novo grid. Medicity expects to continue expanding the Novo Grid platform believing it will reduce overall costs and implementation times.

Conclusion

The demonstration project already included many of the functional requirements of the grant and it was believed that building upon the health information exchange foundation implemented in the Coastal region, Medicity could support rapid deployment of a statewide HIE.

Figure 13 shows the seven MSCHIE designated service areas of the State and Figure 14 shows the original MSCHIE stakeholders and potential MS-HIN stakeholders within those seven service areas (beginning with the coastal service area 7).

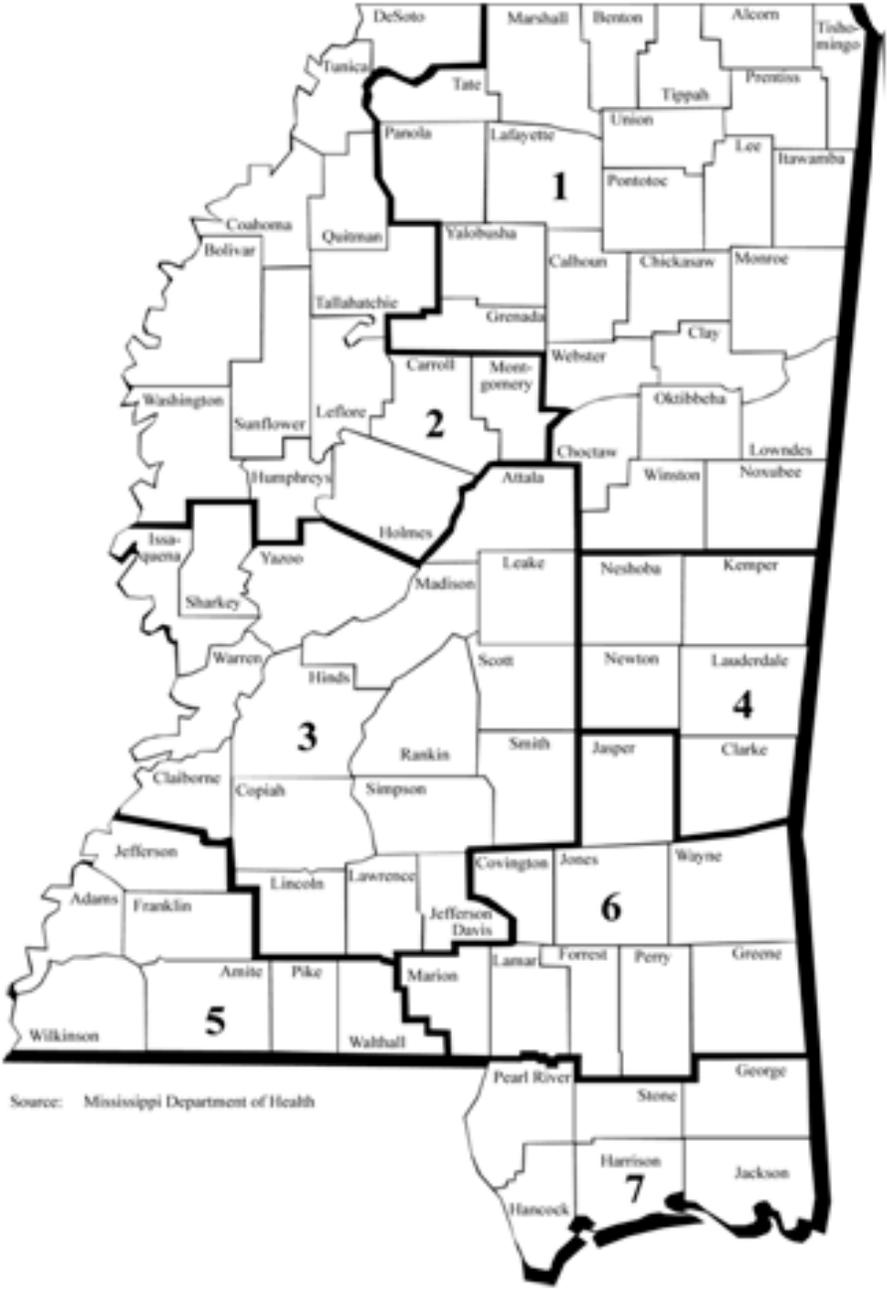


Figure 13: MSCHIE Service Areas

Figure 14: MSCHIE Stakeholders by Service Area

Service Area 7						
COUNTIES: Hancock, Harrison, Jackson, Pearl River, Stone, George						
Data Stakeholder (First Draft Listing)	<u>MSCHIE STATUS</u> *LIVE* READY/HOLD ACTIVE IMPLEMENT ACTIVE PLANNING EXPRESSED INTEREST	Interfaces	2010	2011	2012	Licensed Beds
Coastal Family Health Center (11)	*LIVE*	2	X			
South MS Home Health	EXPRESSED INTEREST	1-2				
Biloxi Regional Medical Center (HMA)	*LIVE*	4/1	X			153
Garden Park Medical Center	ACTIVE PLANNING	4		X*		130
George County Hospital	ACTIVE IMPLEMENT	4		X*		53
Gulf Oaks Hospital (HMA)	N/A – MENTAL HEALTH	NA				44
Hancock Medical Center	ACTIVE IMPLEMENT	4	X*			47
Highland Community Hospital	ACTIVE IMPLEMENT	4		X*		95
Memorial Hospital at Gulfport	*LIVE*	4/1	X			303
Ocean Springs Hospital	*LIVE*	3/1	X			136
Pearl River Hospital & Nursing Home	EXPRESSED INTEREST					24
Singing River Hospital	*LIVE*	3/1	X			385
Stone County Hospital	EXPRESSED INTEREST					25
Medicaid	*LIVE*	1				
HCS - Medication History	*LIVE*	1				
Service Area 6						
COUNTIES: Marion, Lamar, Forrest, Perry, Greene, Covington, Jones, Wayne						
Data Stakeholder (First Draft Listing)	<u>MSCHIE STATUS</u> *LIVE* READY/HOLD ACTIVE PLANNING EXPRESSED INTEREST	# Identified Interfaces	2011	2012	2013	Licensed Beds
Coastal Family Health Center (6)	READY/HOLD	2				
South MS Home Health	EXPRESSED INTEREST	1-2				
Covington County Hospital						35
Forrest General Hospital	ACTIVE PLANNING	4				400
Greene County Hospital						3
Jasper General Hospital						16
Marion General Hospital						21
Perry County General Hospital						30
South Central Regional Medical Center	ACTIVE PLANNING	4				275
Wayne General Hospital						80
Wesley Medical Center						211
HCS and Medicaid - Medication History	READY/HOLD	1				

Service Area 5						
COUNTIES: Wilkinson, Amite, Pike, Walthall, Adams, Franklin, Jefferson						
Data Stakeholder (First Draft Listing)	MSCHIE STATUS *LIVE* READY/HOLD DHA CONTRACT IN DISCUSSION	# Identified Interfaces	2011	2012	2013	Licensed Beds
Coastal Family Health Center (3)	READY/HOLD	2				
Beacham Memorial Hospital						37
Field Memorial Community Hospital						25
Franklin County Memorial Hospital						36
Jefferson County Hospital						30
Natchez Community Hospital						101
Natchez Regional Medical Center (HMA)	READY/HOLD	4				159
Southwest Miss Regional Medical Center						140
Walthall County General Hospital						25
HCS and Medicaid – Medication History	READY/HOLD	1				
Service Area 4						
COUNTIES: Neshoba, Kemper, Newton, Lauderdale, Clarke						
Coastal Family Health Center (3)	READY/HOLD	2				
Alliance Health Center						68
Alliance Laird Hospital						25
H.C. Watkins Memorial Hospital, Inc.						25
Jeff Anderson Regional Medical Center						260
Neshoba General Hospital						82
Newton Regional Hospital						30
Riley Memorial Hospital (HMA)	READY/HOLD	4				120
Rush Foundation Hospital	EXPRESSED INTEREST					215
HCS and Medicaid – Medication History	READY/HOLD	1				
Service Area 3						
COUNTIES: Attala, Leake, Madison, Hinds, Rankin, Scott, Smith, Simpson, Lawrence, Jefferson Davis, Lincoln, Copiah, Clairborne, Warren, Sharkley, Issaquena						
Coastal Family Health Center (7)	READY/HOLD	2				
Central MS Medical Center (HMA)	READY/HOLD	4				
Claiborne County Hospital						32
Crossgates River Oaks (HMA)	READY/HOLD	4				
Hardy Wilson Memorial Hospital						35
Jeff Davis Community Hospital						35
King's Daughters Hospital-Yazoo City						35
King's Daughters Medical Center						122
Lawrence County Hospital						25
Madison County Medical Center (HMA)	READY/HOLD	4				67
Magee General Hospital						64
Mississippi Baptist Medical Center						541
Miss Methodist Rehabilitation Center						44
Montfort Jones Memorial Hospital						71
Patients' Choice Medical Center						29
Rankin Medical Center						134
River Oaks Hospital (HMA)	READY/HOLD	4				110
River Region Health System						261
Scott Regional Hospital						30
S.E. Lackey Memorial Hospital						35
Sharkey - Issaquena Community Hospital						29
Simpson General Hospital						35
St. Dominic-Jackson Memorial Hospital						417
University Hospital & Clinics	DHA CONTRACT	5	X			664
Woman's Hospital (HMA)	READY/HOLD	4				111
HCS and Medicaid – Medication History	READY/HOLD	1				

Service Area 2						
COUNTIES: DeSoto, Tunica, Coahoma, Quitman, Tallahatchie, Leflore, Holmes, Humphreys, Sunflower, Bolivar, Coahoma, Washington						
Data Stakeholder (First Draft Listing)	MSCHIE STATUS *LIVE* READY/HOLD DHA CONTRACT EXPRESSED INTEREST	# Identified Interfaces	2011	2012	2013	Licensed Beds
Coastal Family Health Centers (7)	READY/HOLD	2	X			
Clinics (40+)	DHA CONTRACT	15	X	X		
Sta-Home - Home Health Services	EXPRESSED INTEREST	1-3				
Bolivar Medical Center						165
Delta Regional Medical Center-W. Campus	DHA CONTRACT	4	X			57
Delta Regional Medical Center	DHA CONTRACT	4	X			221
Greenwood Leflore Hospital	DHA CONTRACT	5	X			188
Humphreys Country Memorial Hospital						34
Kilmichael						19
North						35
Northwest MS Regional (HMA)	READY/HOLD	4	X			181
Quitman						33
South						49
Tallahatchie						9
Tyler						25
University						35
LabCorp	DHA CONTRACT	1		X		
Quest	DHA CONTRACT	1		X		
UAL Lab	DHA CONTRACT	1		X		
HCS and Medicaid – Medication History	READY/HOLD	1	X			
Service Area 1						
COUNTIES: Marshall, Benton, Tippah, Alcom, Tishomingo, Tate, Union, Panola, Lafayette, Pontotoc, Lee, Itawamba						
Coastal Family Health Centers (7)	READY/HOLD	2				
Alliance Healthcare System						40
Baptist Memorial Hospital						114
Baptist Memorial Hospital						285
Baptist Memorial Hospital						204
Baptist Memorial Hospital						153
Calhoun Health Services						30
Choctaw County Medical Center						25
Gilmore Memorial Hospital (HMA)	READY/HOLD	4				95
Grenada Lake Medical Center						156
Iuka Hospital						48
Magnolia Regional Health Center						145
North Miss Medical Center	EXPRESSED INTEREST	3-4				554
North Miss Medical Center						60
North Oak Regional Medical Center						76
Noxubee General Critical Access Hospital						25
Oktibbeha County Hospital						96
Pioneer Community Hospital of Aberdeen						35
Pontotoc Health Services						25
Tippah County Hospital						20
Trace Regional Hospital						84
Tri-Lakes Medical Center						77
Webster Health Center						38
Winston Medical Center						33
Yalobusha General Hospital						26
HCS and Medicaid – Medication History	READY/HOLD	1				

Medicity, with data center support at that time from Perot Systems, Inc. had proven to have a robust and scalable hybrid architecture, making it a logical choice to support statewide connectivity by interfacing with other regions as well as Medicaid and Public Health. The technology can also be leveraged to support regional and other statewide participants that require a data stage placed behind their firewalls for security purposes. Along with this flexible architecture, the Medicity product has robust privacy and security protocols, has redundancy and disaster recovery capabilities across time zones, and currently connects to numerous EHR vendors in communities across the country.

It should be noted MSCHIE's recovery plan included a backup site at least 250 miles from the production data center. While Perot Systems in Plano, TX, housed the production data center at that time, the backup site was in New Jersey. The disaster recovery was implemented via a contract with Sungard and was tested with data from Memorial Hospital of Gulfport in December of 2009. This contract was part of the MSCHIE contract with Medicity and was transferred via planned negotiations to the MS-HIN.

The State HIE Cooperative Agreement Program has afforded the State of Mississippi an excellent opportunity by leveraging its previous investment in MSCHIE to achieve connectivity across regional exchanges.

IQH, the federally designated quality improvement organization for Mississippi that was tasked with administering MSCHIE, along with the previous Task Force and current Domain Teams, believed that using the Medicity platform, could be the cornerstone for a statewide HIE that would improve healthcare, lower costs, and enable Mississippi healthcare organizations to cope with subsequent natural disasters. Based upon the success and assessment of the MSCHIE pilot project, the State began and subsequently completed contract negotiations to construct the MS-HIN on the Medicity platform.

11.14. Technical Infrastructure Strategies

The Mississippi Technical Infrastructure Domain Team determined the following strategies will be included in the Mississippi Health Information Exchange Strategic and Operational Plan.

11.14.1. Determine the HIE Architecture

The following strategies for determining the HIE architecture were employed:

- Given the success of the MSCHIE, it was the recommendation of the team that ITS move forward with negotiations with Medicity as the statewide exchange platform
- ITS developed a strategy to engage Medicity in negotiations to use their platform for the exchange of information. The criteria for extending the contract was "the same or greater functionality for the same or less costs"

- The HIE was designed as a hybrid model with patient demographics stored centrally.
- The HIE has been architected and constructed with minimum required data elements and cost effective disaster recovery as a key component so the centrally stored data is secured
- The remaining data elements of the Meaningful Use requirements will be stored at the provider level and the Medicity master patient index will be used to locate specific patient information upon authorized request. This data includes:
 - Problems
 - Allergies
 - Medications
 - Observations
 - Vital signs
 - Laboratory results
 - Imaging reports
 - Transcribed documents such as History & Physical, Operative Reports, Discharge Summaries, and ED notes
- The HIE allows for the bi-directional exchange of healthcare information as required by Meaningful Use
- The HIE provides a multiple standards-based methods of access to connect to interoperable and certified EHRs. It will be the responsibility of each provider to connect their EHR technology to the HIE
- The HIE will eventually have a robust and easy to use patient portal where patients can access and share their medical information when and from where they determine
- The HIE has been constructed so that stakeholders can choose from a list of services when connecting to the HIE. These services may include, but are not limited to:
 - Patient Personal Health Record
 - Orders
 - Quality Reporting
 - E-Prescribing Function
 - Provider Registry

11.14.2. NHIN Connections

The following strategies for connecting to NHIN will be employed:

- ITS will execute the Data Use and Reciprocal Support Agreement (DURSA) with DHHS on behalf of all Mississippi providers
- The MS-HIN will provide the primary connection to the NHIN for all Mississippi providers participating in the MS-HIN. Patients from other states will be connected through the NHIN to their healthcare provider.

11.14.3. Proposed Technologies

To increase adoption of health information technology by providers, the following strategies for supporting the HIE are:

- Provide web portal (ASP model) by which providers can share health information (such as medication history) and by which patients will eventually be able view their records
- Provide an interoperable ASP EHR (such as “EHR Lite”) that could be used by providers with or without their own EMR system
- Provide Continuity of Care Record (CCR), which may include information of value—such as medication history, clinical messaging, results reporting, leading to a sustainable business model
- Connect to and integrate with other systems such as PHRs
- Functional Requirements include:
 - Upload or register patient records
 - Allow hospital/clinic to upload or register CCR
 - Allow laboratory to upload or register patient lab results
 - Ensure lab data integrity, informed by the Clinical Laboratory Improvement Amendments (CLIA) and Mississippi law pertaining to lab data
 - Allow hospital to upload or register discharge summary reports
 - Allow Emergency Department (ED) to upload or register summary reports
 - Allow radiology service to upload or register imaging reports
 - Aggregate results and reports correctly from different sources about the patient
 - Allow users to log into the system with username and password
 - Provide functionality for the user to query and identify the correct patient
 - Provide functionality to assist the user to query and sort records about the patient
 - Allow the user to view records about the patient
 - Allow the user to print selected records

- Allow the user to save selected records for a patient to disk or other media
 - Create a local, standard format CCR/CDA representation of selected records for a patient from the health information exchange
 - Save the standard format representation of the patient record in encrypted form on disk or other media
- Support creation of user roles, at a minimum to include:
 - Clinicians
 - Clinician Proxy
 - Patients
 - Patient Proxy
 - “Other User” involved in PTO for the patient
 - Health information exchange administrator
- Manage the identity and registration of users
 - Manage Patient identity and registration
 - Manage Patient Proxy identity and registration
 - Manage Clinician identity and registration
 - Manage Clinician Proxy identity and registration
 - Manage Other User identity and registration
 - Manage health information exchange administrator identity and registration
- Allow Clinicians to designate specific individuals as Clinician Proxy users to obtain results and reports about the patient
- Allow Patients to designate specific individuals as Patient Proxy users to view their records and audit trails
- Allow the Patient to opt in or out of the health information exchange
 - Allow the patient to authorize provision of their demographic and registration data to the health information exchange
 - Allow the patient to order the removal of their demographic and registration data from the health information exchange
 - Allow the patient to authorize the inclusion of specific records from a participating source to the health information exchange
 - Allow the patient to order the removal of all existing records from the health information exchange
- Allow the patient to designate authorized users to access their records
- Create audit trails, at a minimum to include:
 - Audit each User logon to system
 - Audit each User query of patient identity
 - Audit each User query of patient records

- Audit each User viewing of patient records
- Audit each registration or upload of patient records to the system
- Audit each unsuccessful User logon to system
- Vendor must provide print/view capabilities that must include, but are not limited to 1) by patient; 2) by provider code; 3) by time reference/range, and 4) any combination thereof
- Vendor must ensure that the site is accessible through MS-HIN's chosen URL and provide a link to the URL of MS-HIN's hosted application
- Vendor must recommend appropriate data storage compartmentalization (i.e., by data type, by patient) to allow aggregate reporting.
- Vendor must ensure data integrity for all data types:
 - Verify transmitted data in the exchange
 - Provide the ability to easily reconcile results in the exchange with the source systems
 - All data must be tagged with its source

12. Business and Technical Operations

Business and Technical Operations is the domain to address how Mississippi will develop Health Information Exchange capacity. The Business and Technical Operations Domain Team will assist the MS-HIN Board with their primary work activities during the implementation of the SOP. MS-HIN understands that various organizations across the State of Mississippi have different operational procedures and part of the work of the Business and Technical Domain Team will be to reconcile the differences and consider the most efficient operation structure, policies, and procedures for the MS-HIN. In addition, the Business and Technical Operations Domain Team will define the following primary work activities:

- Determine current HIE capabilities across the State
- Define how data exchange mechanisms can leverage existing services
- Develop the operating principles for the HIE
- Develop standard operating procedures and processes for HIE services
- Build stakeholder support for operational services
- Identify policies for connecting to the NHIN

12.1. Assumptions

The Business and Technical Operations Domain Team is chartered to use the following set of assumptions:

- Leverage the existing HIE capacities
- Coordinate with state and federal programs
- Develop uniform policies and procedures
- Coordinate with the other Domain Teams

12.2. Operational Rules

The Business and Technical Operations Domain Team is chartered to design the business operational rules to:

- Leverage current health HIE capacity
- Develop additional HIE capacity
- Address Meaningful Use
- Connect with regional and interstate HIEs
- Create a plan to reach all providers in Mississippi with EHR technology

12.3. Coordination with Other Domain Teams

Because much of the work of the Business and Technical Operations Domain Team is driven by the work of the other Domain Teams, it was decided that one member of the Business and Technical Operations Team will be assigned to sit with the other teams to gain a better understanding of the points of intersection and keep all of the work team efforts aligned.

12.4. Environmental Scan Issues

The Environmental Scan identified several critical issues that stand as barriers to the successful implementation of health information exchange in Mississippi. If the statewide HIE is to fulfill the vision for improving the quality of care in Mississippi, the Business and Technical Operations Domain Team will specifically address and resolve the following issues.

12.4.1. Adoption

HIT adoption will be driven by the willingness of physicians and other healthcare providers from across the State to adopt the new technology. In many ways, this makes HIE adoption a large scale change management project. Change is discussed in the next section and the difficulty of change for most people will slow wide spread adoption. The Strategic and Operational Plan must reflect clear and actionable processes for achieving sustainable adoption rates.

12.4.2. Change Management

Provider adoption is critical to the success and sustainability of the MS-HIN. Change is difficult for most people so in order to increase adoption rates across the State, a process will be developed to help people recognize the need for change and to help them successfully manage those necessary changes. Offering to help people cope with the necessary changes associated with EHR technology and the exchange of information will quicken the pace of adoption.

Awareness of the resistance to change will inform all procedures, processes, and policies for the MS-HIN. The Business and Technical Operations Domain Team will construct procedures, policies, and processes that facilitate the ability of people across the State to deal with the complexities of change.

12.4.3. Time

Implementing an HIE requires a long-term commitment of resources. Because of the time commitment required, it becomes important for the Business and Technical Operations Domain Team to design a strategy to keep stakeholders engaged. The Team will work with all stakeholders to ensure they understand the time commitment required and work to obtain stakeholder commitment to the long-term success of the MS-HIN. The basic elements for obtaining the commitment of a diverse stakeholder group include:

- Alignment with each stakeholders value proposition and their expected return on investment
- Establishing realistic expectations related to the time and resource commitment
- Informing stakeholders early in the process as to the expected deliverables for each stage of HIE implementation

12.4.4. Project Management

Constructing and operating the MS-HIN will require significant project management experience. In order to manage the overall project, the proper resources and skill sets will be assigned to this project. These skill sets include:

- Knowledge of HIE
- Experience with large scale, multi-year projects
- Familiar with diverse healthcare stakeholders
- Understands the culture of healthcare in Mississippi

12.5. State-Level Shared Services

The State of Mississippi has several ongoing regional organic ecosystems as well as numerous state agency directed activities. The Business and Technology Operations Domain Team will need to determine whether other regional health information organizations (RHIO) or other statewide HIE planning efforts include consideration of specific standards established for interfaces to the statewide HIE. Where found, these standards will serve as the basis for HIE Strategic and Operational Plan.

In addition, the Health Information Exchange Strategic and Operational Plan will integrate the requirements of the following state organizations into the final document.

- Medicaid
- Medicare
- Public Health
- Corrections
- Health and Human Services

12.5.1. Medicaid

Because of Medicaid's impact on the entire healthcare structure, it is important that Medicaid have an active participation role in the statewide HIE project. The PCG Team is assisting the State to develop and coordinate the statewide HIE Strategic and Operational Plan and the Medicaid State Health Information

Technology Plans. This will allow the State to leverage the concurrent planning efforts and have strong coordination between these two critical projects. Towards that end, MS-HIN will charter the Business and Technical Operations Team to conduct the following activities:

- Identify the needs of the State Medicaid Agency and integrate their requirements into the HIE Strategic and Operational Plan
- Identify and integrate the needs of the Medicaid providers into the HIE Strategic Plan
- Identify the requirements of MS-HIN and integrate the results into the HIE Strategic Plan

12.5.2. Medicare

The Business and Technical Operations Domain Team has considered coordination of Medicare and other federally funded state based programs as part of the Strategic and Operational Planning priorities. Specifically, the team provided information that has become part of the Operational Plan including:

- Electronic prescribing (e-Prescribing) – include e-Prescribing with drug interaction checking for all physicians and pharmacies
- Structured lab results – include the electronic exchange of structured lab results with all clinical laboratories in Mississippi
- Interoperability priorities – include all authorized healthcare providers across Mississippi to connect to the HIE
- Implementation of Electronic Medical Records – included Mississippi hospitals and physicians and other providers such as long-term care and Hospice
- Meeting standardization and certification requirements – Mississippi providers have to meet the “Meaningful Use” of certified EHR technology requirements in order to take advantage of the Medicaid and Medicare payment incentives.
- Assist physicians meet the 2011, 2013 and 2015 Meaningful Use requirements and qualify for ARRA stimulus funding

12.5.3. Nationwide Health Information Network (NHIN)

Many of the NHIN data specifications and standards have been completed, while others are still in development or awaiting development. The Strategic and Operational Plan for the statewide HIE requires adoption of all current NHIN standards and specifications, as well as the adoption of future standards and certifications. NHIN standards will ensure that the HIE is currently coordinated with state and federal efforts and that future specifications will support increased interoperability.

12.5.4. Coordination of Medicare and Federally Funded, State Based Programs

The statewide HIE will incorporate Nationwide Health Information Network standards to ensure the coordination with Medicare and federally funded, state based programs. In addition, the HIE will develop coordination efforts with Federal Agencies, such as the Social Security Administration (SSA) disability insurance programs, CMS, the CDC, Veterans Administration (VA), and the Department of Defense (DoD).

12.5.5. Public Health

Identify and integrate the needs of public health providers into the Strategic Plan, insuring Public Health is in full alignment with CDC and NHIN, including facilitating any discussions with senior leadership at CDC to insure proper coordination and alignment.

12.6. Business and Technical Operations Health Information Exchange Strategies

The Business and Technical Domain Workgroup identified the following strategies for constructing and operating the MS-HIN.

12.6.1. Stage 1 Meaningful Use Required Services (2011 and 2012)

The MS-HIN will enable all healthcare providers to meet the requirements of Meaningful Use as the federal regulatory scheme guidelines and deadlines evolve, including but not limited to:

- e-Prescribing
- Clinical lab results electronically
- Health department immunizations, syndromic surveillance, and notifiable lab results
- CCD requirements for Stage 1 Meaningful Use including the exchange of data between disparate systems
- Quality reporting
- Payer connectivity

12.6.2. Stage 2 Meaningful Use Required Services (As additional requirements are defined)

The MS-HIN will enable all healthcare providers to meet the requirements of Meaningful Use as the federal regulatory scheme guidelines and deadlines evolve, including but not limited to:

- Expanded Continuity of Care Documents – Stage 2

- Personal Health Records
- Electronic Health Record “Lite” application – available as a “Meaningful Use Module” for the iNexx/DIRECT application

12.6.3. Establish Standard Operating Procedures, Operations and Functions

The MS-HIN will establish standard procedures, operations, and functions that will provide efficiencies and improved access to healthcare data, including but not limited to:

- All stakeholders will follow adopted national standards for exchanging healthcare data and information
- All applications connecting to the HIE will meet current certification requirements
- Meaningful Use criteria, as specified by ONC will be used to determine the priority of the healthcare information exchanged

12.6.4. Population Health Data

The statewide HIE will be a gateway for population health data reporting including:

- Quality Reporting
- Clinical Data
- Public Health immunizations, syndromic surveillance and notifiable laboratory results – currently working out the details for pilot projects

12.6.5. Core Capabilities

Define and determine the core capabilities for the statewide HIE to provide value for HIE participants:

- The statewide HIE is functioning as a utility supporting stakeholder needs for sharing and exchanging clinical and administrative healthcare data and information in a secure environment
- The statewide HIE has been constructed to allow for normal growth and expansion based on changing needs and new technologies
- The statewide HIE is currently working on pilot project for a bi-directional connection to the Department of Health’s immunizations registry so information can be readily available to providers

12.6.6. Maintaining and Transferring Knowledge

Support adoption of HIT/HIE by maintaining expert knowledge in the evolving EHR and HIT marketplace

- The statewide HIE will become a key source of HIT/HIE knowledge and information for providers
- The statewide HIE will become a key source for Privacy and Security information
- The statewide HIE will provide information to providers on evolving state and federal standards

12.6.7. Education

The MS-HIN will collaborate with other State and Federal programs to provide awareness and education to providers and consumers including:

- eQHealth Solutions – The Regional Extension Center for Mississippi
- The Workforce and Jobs Training program led by Hinds Community College
- University based training programs similar to University of Mississippi Medical Centers Bachelor and Master programs

12.6.8. Harmonization with Federal Standards

The MS-HIN is in the process of adopting policies and procedures for operation of MS-HIN while ensuring consistency with federal standards

- Federal standards has been incorporated to the MS-HIN standards as necessary to support NHIN, IHE, and CCD
- Align with the Federal Health Architecture (FHA) and NHIN

12.6.9. Align with Medicaid

The MS-HIN is coordinating with Medicaid to establish an integrated approach to all HIE process and procedures, such as:

- Ensure Medicaid continues to have representation in the HIE Governance structure
- Enable electronic Meaningful Use and clinical reporting to Medicaid
- Work with Medicaid to align the HIE with the Medicaid State Health Information Technology Plan (SMHP)
- Coordinate with Medicaid and the Regional Extension Centers to advance stakeholder adoption of HIT/HIE across Mississippi
- Analyze Medicaid claims data to identify ways the HIE can improve and enhance the success rate of claims processing

12.6.10. Align with Public Health Programs

The MS-HIN is coordinating with Medicaid and public health programs to establish an integrated approach including both programs being represented in the Governance structure and process.

- Public Health has representation in the HIE Governance structure
- Pilot projects have been agreed upon to integrate the various Public Health responsibilities into the HIE to facilitate the collection and dissemination of data including:
 - Immunization information
 - Laboratory information
 - Public Health statistics
 - Bio-surveillance/syndromic surveillance reporting
 - Healthcare associated infection information
 - Others as required
- Enable the distribution of Public Health information in Mississippi
- Provide for users to obtain health, socio-economic and demographic analysis for planning, intervention and evaluation of programs

12.6.11. Leveraging HIE Capacities

The MS-HIN will support the efforts of the existing organic ecosystems to grow and build their exchange capacities by:

- Conducting a more detailed environmental analysis to identify existing HIE capacity and capabilities across Mississippi
- Connecting with various state associations and boards to leverage their knowledge about their member's HIT capacities and capabilities to reduce or eliminate redundancy

12.6.12. Rural Provider Practices

Rural provider practices is a priority for the MS-HIN and an important part of the immediate work needed to identify barriers of adoption for all rural providers in order for them to meet Meaningful Use.

- Beginning with coordination of the Delta Health Alliance's Beacon project, conducting an inventory and then creating an outreach and education program to provide assistance to rural providers about HIT/HIE
- Coordination is underway with the Regional Extension Centers to provide information about the rural providers needs concerning adoption of health information technology and connecting with other providers through the statewide HIE

12.6.13. Long-Term Care Providers

Long-term and post-acute care (LTPAC) consists of skilled nursing facilities, assisted living, home health agencies, and others. LTPAC patients and residents have multiple chronic conditions and co-morbidities that require the coordination of numerous providers, who prescribe multiple medications and diagnostic tests. This population is also known to transition frequently between different care settings, sometimes moving back and forth between different levels of care and care settings, such as nursing homes and hospitals.

- Include LTPAC organizations in the design and implementation of MS-HIN in order to meet the needs of patients in their care
- Enhance the ability of LTPAC to improve care coordination, provide higher quality care, and reduce health disparities
- Develop a way for patients and families to be able to electronically exchange meaningful clinical information between the professional healthcare team over the entire spectrum of care

12.7. ONC Program Information Notice Strategies

12.7.1. e-Prescribing

Mississippi has set an e-prescribing adoption goal rate of 97% by December 31, 2012. To determine the number of pharmacies that have e-prescribing capabilities, the State utilized the SureScripts data provided by the Office of the National Coordinator. With the assistance of the Mississippi Board of Pharmacy, the data was reviewed and those pharmacies that were closed or no longer had a valid authorized dispensing permit were removed from the list. Using the April 2012 SureScripts data, there are 777 total pharmacies and 47 do not have e-prescribing capabilities. Therefore, the current adoption rate is 94.0%. In order to meet the Mississippi's goal of 97%, 24 pharmacies must implement e-prescribing software by December 31, 2012.

The State has been working diligently for the last six months to inform pharmacists about e-prescribing services, the benefits of e-prescribing, e-prescribing penetration in their local market and the Centers for Medicare and Medicaid Services Meaningful Use Incentive Program. In February 2012, the State convened the MS-HIN Pharmacy Committee. Committee members include: the Director of Pharmacy for the Mississippi State Department of Health, the Independent Pharmacy Association, the Chain Pharmacy Association, the Board of Pharmacy and the Mississippi Pharmacy Association. The Committee was responsible for developing the e-prescribing outreach campaign. The Committee was given the November 2011 SureScripts data to develop a baseline of the pharmacies with no e-prescribing capabilities. At that time the data indicated there were 107 pharmacies without e-prescribing capabilities.

To ensure 107 was the true number of pharmacies not e-prescribing, a survey was sent to all these pharmacies to; 1) to confirm they were not e-prescribing, 2) if not, what were the barriers to implementation, and 3) if the pharmacy planned on e-prescribing; what was their timeline. Unfortunately, the response rate was very low, but the State was able to determine the main barrier to implementation is on-going monthly fees and uncertain return on investment. In addition, the majority of respondents plan on adopting e-prescribing in the next year. Due to the low response rate, the Committee felt it was appropriate to send the outreach materials to ensure all those pharmacies listed as not e-prescribing were aware the CMS Incentive Program and the requirements prescribers must meet in order to receive incentive payments.

The Pharmacy Committee developed an outreach letter which was sent to only those pharmacies indicated as not e-prescribing. The letter discussed e-prescribing services, benefits of e-prescribing and the CMS Incentive Program. In addition, the letter provided information from the SureScripts on the e-prescribing activity in their community. The letter provided information on pharmacies in a ten mile radius that accept e-prescriptions and the physicians actively e-prescribing. The letter generated limited response from pharmacies, mostly to inform the State they had recently implemented e-prescribing software.

The State will continue targeted outreach to those pharmacies through follow-up phone calls. In June 2012, the MS-HIN staff will call the 47 pharmacies not e-prescribing. MS-HIN staff will develop a call script to help engage pharmacies in order to understand their level of interest and the market related to e-prescribing. Much like the letter, the calls will focus on the e-prescribing landscape in their community. Most of these pharmacies are independents, so MS-HIN will enlist the help of the Independent Pharmacy Association and the Mississippi Pharmacy Association to reach out again explaining the benefits of e-prescribing and the requirements physicians are facing to meet meaningful use. In addition, if barriers to implementation exist, the State will compile this information and determine if there are any options available to assist pharmacists.

Both the Independent Pharmacy Association and the Mississippi Pharmacy Association send newsletters, email alerts and other publications to reach their members. In July, the State will begin an informational campaign through these associations focusing on the e-prescribing and medication reconciliation components of meaningful use. The goal is to complement the previous outreach materials to ensure pharmacists are aware of the prescriber's need for e-prescribing and they understand the incentives and penalties they face if certain requirements are not met.

E-Prescribing of Controlled Substances

Currently, Mississippi does not allow any e-prescribing of controlled substances. The Drug Enforcement Agency now permits prescriptions for controlled substances to be issued as long as its regulatory requirements are met.

Prescribers that wish to manage these prescriptions electronically must use technology that has been certified for this transmission. Prescribers themselves must undergo an ID Proofing process before they begin to submit prescriptions for controlled substances electronically. Prescribers must use a 'two-factor authentication processes each time they send a prescription for a controlled substance electronically. There are currently a limited number of certified vendors for e-prescribing controlled substances.

Mississippi laws will need to be revised to accommodate the DEA approved process of electronic prescribing for controlled substances prescriptions. The DEA approved process provides better protection from diversion than the current use of paper and oral prescriptions. Employing this technology to transmit prescriptions for controlled substances could reduce the incidences of drug diversion in Mississippi. Notably, the National Association of State Controlled Substances Authorities, a group comprised of leaders of state agencies that have oversight over the various state controlled substances laws and rules, encourages and supports the adoption of laws and rules permitting electronic prescribing of controlled substances - due (in part) to the fact that the practice "curtails prescription forgery and other forms of prescription fraud."

The 2013 Mississippi Legislative Session begins in January. Prior to the legislative session, MS-HIN will work with the Pharmacy Subcommittee, Mississippi Bureau of Narcotics, the Board of Pharmacy and the Legislature to educate policymakers about e-prescribing of controlled substances as well as determine how the state wants to move forward with e-prescribing of controlled substances and the mechanism to authorize e-prescriptions. The MS-HIN Pharmacy Committee discussed the need to develop a position on e-prescribing of controlled substances. The Committee will need to evaluate numerous factors including cost, software availability, security prescribers' interest, etc. to recommend a position to both the MS-HIN Board and lawmakers.

Currently, the Board of Pharmacy regulations state a pharmacist may dispense a Schedule II controlled substance only pursuant to a valid written prescription/order signed by the prescribing practitioner. In order for the State to allow prescribers to e-prescribe controlled substances, the Legislature will either have to authorize this process in statute or the Board of Pharmacy will have to amend their regulations. Over the next six months, the Pharmacy Committee members and MS-HIN staff will work with all the appropriate parties (including but not limited to the Board of Pharmacy, Bureau of Narcotics, State Medical Association, legislative members and their staff) to determine the appropriate course of action. In addition, MS-HIN staff will review existing legislation and reach out to other states that allow e-prescribing of controlled substances to review their various legislative approaches. This information will assist the MS-HIN and its partners in deciding what strategy and authorization is best for Mississippi.

12.7.2. Structured Lab Results

In April 2012, MS-HIN staff conducted a lab census of both hospitals and independent labs. The State utilized the survey tools provided by ONC. For the hospital survey, the State was able to send the survey both by mail and email to improve response rates. Of the 116 licensed Mississippi hospitals, 74 hospitals provided responses to the survey. Of those who responded, the majority classified themselves as either a hospital or health system (87.8%). Roughly 26% stated they sent lab results in electronically structured format to ambulatory providers outside their organization as indicated in Figure 14. The State is very interested in hospitals' use of HL7 standards and LOINC mapping. It is the policy of the Mississippi State Department of Health (MSDH), that all reportable electronic lab results will have to use HL7 2.5.1 and LOINC. Since MS-HIN is partnering with MSDH, it is important to understand what hospitals are currently able to send ELR in the required format. Only seven hospitals indicated they are using HL7 2.3.1 and four are using 2.5.1. The majority answered they were unaware of their current messaging standard. In regards to LOINC coding, only one hospital is currently utilizing LOINC.

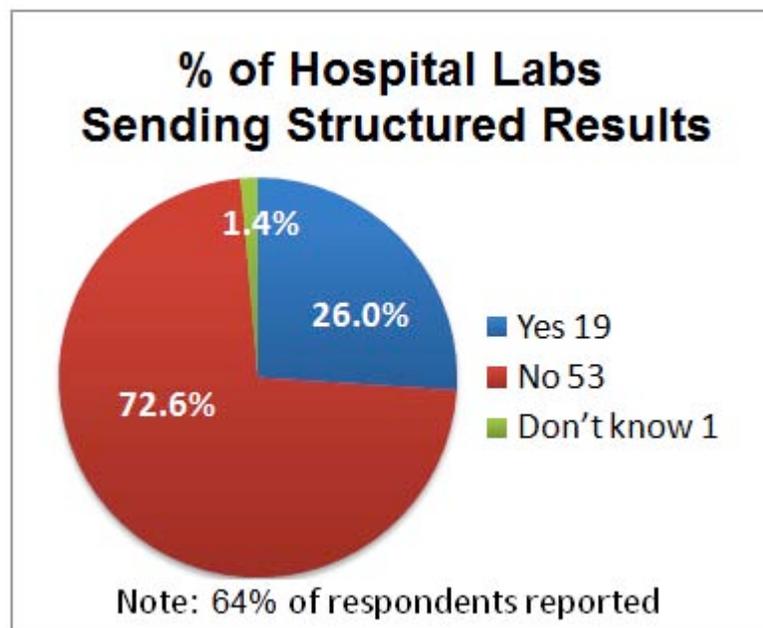


Figure 15: Percentage of Hospital Labs Sending Structured Results

The participation from the independent labs was not as robust as the hospitals. There were 47 surveys sent and MS-HIN staff was only able to mail out the survey, email addresses were not available. The State received 17 responses. Seven of the 17 stated they were able to send structured lab results to ambulatory providers outside their organization as indicated in Figure 14. Of the 17, none of the independent labs indicated they use 2.3.1 or 2.5.1 HL7 messaging standards (many responded they were unaware of their current

standards). In addition, only three labs indicated they currently use LONIC mapping.

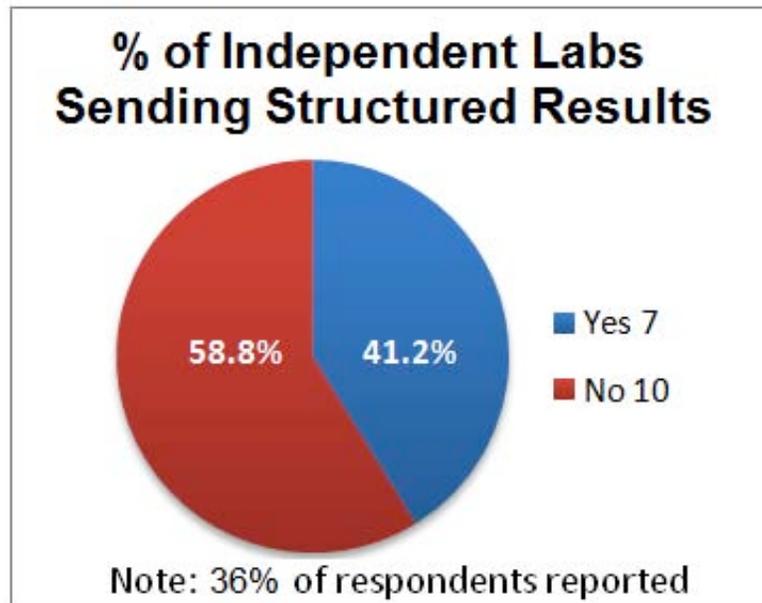


Figure 16: Percentage of Independent Labs Sending Structured Results

The survey responses are very helpful in assisting MS-HIN staff set goals for lab reporting. As apparent by the survey responses, currently there is not a lot of exchange of structured lab data. In setting target measures, the State will not only set a goal that represents that amount of lab data being exchanges, but also implement the necessary strategies to help providers implement LOINC mapping. Currently, there are only a limited number of labs sending electronic structured lab results outside their organization and even fewer using HL7 2.3.1 or 2.5.1 and LOINC. One of MS-HIN's first objectives is to help labs get LOINC enabled. The Mississippi State Department of Health in partnership with the Laboratory Interoperability Cooperative (LIC) is offering Electronic Laboratory Reporting (ELR) Laboratory LOINC Mapping Guidance educational workshop. These sessions are hosted in conjunction with the Mississippi Hospital Association, Mississippi Rural Health Association, and Mississippi Health Information Network.

The LIC is organized to facilitate the electronic submission of reportable lab results from hospital laboratories to Public Health Agencies. The goal of the workshop is to assist hospitals in achieving Meaningful Use (MU) stage 1 criterion objectives for ELR to public health agencies reporting by providing the foundation and core skills needed to move your laboratory's public health reportable data to LOINC. The workshops provide training on: mapping LOINC codes to the local data dictionary, gaining important skills to meet the Meaningful Use criteria for Electronic Lab Reporting (ELR) to public health agencies and accessing online tools, resources and support through LIC participant portal.

In addition, the MSDH will utilize contractual funds awarded in several grant opportunities to hire a vendor to assist hospitals with LOINC mapping for submission for Electronic Laboratory Reporting. It is recognized that submitting laboratories may not have the ability and or the staff to crosswalk or report utilizing LOINC. The vendor has the expertise in LOINC values and will assist the MSDH with selected pilot hospitals to transfer their local codes to LOINC. It is essential for Mississippi to hire this level of expertise to work with MSDH and our pilot hospitals to submit electronic laboratory reports.

In accordance to the State Health Information Exchange Cooperative Agreement Program, MS-HIN has identified unique opportunities in the area of integrated structured laboratory results. As MS-HIN matured the original strategy to incorporate and facilitate lab results across MSHIN physicians it requires new strategies to effectively add value and ensure participation within the network. MS-HIN is utilizing its partnership with MSDH and the Direct Solution to add value for providers. Direct is an easy first step to allow healthcare providers to share lab results through securing messaging eliminating faxing and the administrative resources tied to it. In addition MSDH is asking providers to use Direct to complete ELR attestation.

MS-HIN will focus on three primary approaches to integrate structured lab results to the network and disseminate these among MS-HIN participants. The first is the on-boarding hospitals which provide the majority of the lab services in Mississippi. In order to facilitate a robust exchange of lab results, the hospitals must be contributing their data. MS-HIN offers integration services as providers become members and follow on boarding processes to either the Direct or EMR platforms. As part of the on boarding process, lab interfaces are integrated to MS-HIN core services and use structured lab results. As this integration takes place, the individual EMR systems are brought to standards of the MS-HIN community health record. The greatest obtained value will be as large hospitals and health organizations on-board and provide EMR integrations among their clinics and outlying providers. MS-HIN is specifically focused on adoption efforts with large Integrated Delivery Systems which comprise the largest ratios of providers and clinics throughout the State.

MS-HIN is currently working with the large health systems to on-board their hospitals over the next six to eight months. The State is working with over 22 hospitals (six health systems) to build out ELR interfaces and foster CCD exchange. In addition, MS-HIN is promoting Direct as a way providers can exchange lab results. For example, we are on-boarding a large hospital in South Central Mississippi who currently does not have the capabilities to send lab results to their clinics. MS-HIN staff is setting up Direct in the hospital's wholly owned clinics and community clinics to allow for electronic exchange of information. Many of the smaller hospitals in Mississippi do not have the capabilities to send results. MS-HIN is working with the Mississippi Hospital's Association, Rural Health Association to reach out to rural hospitals to discuss

the use and benefits of Direct to exchange lab results. MS-HIN staff is scheduling a Direct demo with the members of the Rural Health Association and will provide registration instructions via web-ex for participants. In addition, MS-HIN is offering interim view-only access through the iNexx platform (the technical solution for Direct), providing practitioner access to results until they are ready to contribute data to the exchange.

The second strategy incorporates MS-HIN's unique position within the state. Originally, the Governor's Office was the State Designated Entity for the MS-HIN and these responsibilities have been passed to the Mississippi State Department of Health (MSDH). As expected, the overall mission, vision and goals of the MSDH aligns well with the MS-HIN vision, mission and goals. MSDH requires electronic lab results of all reportable diseases. Currently, healthcare providers send this reportable health data through various transport mechanisms both electronic and paper-based. MSDH is working with MS-HIN to provide one transport solution for all public health reporting. As indicated, MS-HIN is actively working with MSDH to ensure structured formatting requirements among hospitals and clinics are met enabling them to meet meaningful use ELR requirements. Also, as providers become integrated and participate with MS-HIN not only will reportable public health data be available, but all structured lab results can be seen, increasing the provider's ability to improve patient care. Currently these use cases are being piloted with large Integrated Delivery Systems comprised of many providers within two of the State's largest service areas.

MSHIN's third focus is to actively engage with the commercial laboratory companies to provide a courtesy copy of all structured lab results. This courtesy copy will make all lab results available to MS-HIN participants via the integration of Electronic Medical Records or via the Direct notification services. By enabling these transmissions, MSDH will gain the value of having the results available as well. MSHIN is finalizing its first contract with LabCorp, which is the largest commercial lab company and will imminently begin data transfers. The second largest commercial lab provider is Quest. MS-HIN will begin working with Quest in the fall to receive a courtesy copy of their structured lab results.

12.7.3. Care Summary Exchange

HIE Care Summary Strategy

The Meaningful Use objective addresses the importance of clinical care summaries for effective and efficient transition of care from one provider to another. The eligible professional or hospital transitioning their patient to another setting or provider of care, or refers their patient to another provider, should provide a summary of care record for each transition of care or referral. The eligible professional or hospital that transitions or refers their patient to another setting of care or provider of care must provide a summary of care record for more than 50 percent of transitions of care and referrals. The “summary care record” is required to include at a minimum, diagnostic test results, problem list, medication list, and medication allergies.

There are a number of key benefits associated with clinical care summaries including, but not limited to:

- Allowing providers to receive critical health data at transfer of care
- Improving speed and accuracy of data absorption into new providers’ EHR
- Reducing costs by reducing and potentially eliminating reproduction and transportation of paper records
- Reducing patient frustration by eliminating the need to complete new providers’ registration materials
- Improving quality of care through more complete and timely information
- Enabling patients to receive an accurate, readable record of a visit or encounter

Under the ONC’s Standards and Certification Final Rule, a certified EHR must be able to electronically send and receive and display a patient’s summary record from other providers and organizations and enable a user to electronically transmit a patient summary record to other providers and organizations. Within the robust HIE, by way of MS-HIN’s platform ProAccess version 5.6.1, the MS-HIN is able to receive and display a community based patient care summary or Continuity of Care Document (CCD) for all participating providers. The CCD contains the following minimum data elements:

- Demographics
- Problem list
- Medication list
- Allergy list
- Laboratory test results
- Procedures

The goal is to not only have a query access to the CCD on the MS-HIN community health record but to exchange CCDs with provider's EMR. Those vendor systems currently under review for CCD integration are:

- eClinicalWorks
- HealthPort
- eMDs
- AllScripts My Way
- NextGen
- Pine Belt EHR
- GE Centricity

In order to promote the MS-HIN's HIE services, the MS-HIN Board approved a strategic plan reaching out first to medium to large hospitals/health systems in different geographic areas of the State. This will insure there is ample data available to all healthcare providers as they join the MS-HIN. In addition, until providers are ready to participate and exchange data within the HIE, Mississippi implemented a DIRECT solution which provides an interim solution for exchanging clinical care summaries by using secure messaging services.

Currently there are a number of hospitals participating in the MS-HIN on the coast, through prior connection of the MSCHIE pilot project, and the Delta region, through the Beacon Project. Recently, the Beacon Project changed its focus to include connections for more hospitals versus clinics. In that regard, the MS-HIN is actively working with Beacon Staff to reach out to Delta hospitals to expand and promote the HIE while aiding hospitals to meet meaningful use. As the coastal and Delta areas continue to gain in provider enrollment, MS-HIN will expand connection to other parts of the State, ensuring there is data available to flow to smaller hospitals and clinician practices as they join.

Since Stage 2 MU was pushed back for hospitals until October 2013, many hospitals are still in the process of implementing an internal certified EHR system. Since Stage1 requires a limited amount of clinical data exchange, many providers are waiting until next year to join MS-HIN. However, the MS-HIN Board approved an incentive program to promote provider enrollment by paying for the one-time HIE implementation and interface fees. The State was awarded private grant funding and if providers commit to join by the end of the federal fiscal year, their costs will be covered.

The State is promoting this program through direct marketing and various healthcare associations, such as the Mississippi Hospital Association (MHA), to encourage providers to become early adopters. The MHA has proven to be a great partner to the MS-HIN by providing recent survey data to help direct recruitment efforts toward hospitals ready to join the MS-HIN. MS-HIN has

reached out to these facilities offering to meet and show demonstrations of the MS-HIN's ProAccess capabilities.

Recently, the MS-HIN met and presented to seven health systems totaling twenty-seven hospitals. The state's strategy is to work with and onboard these seven health systems over the next six to eight months. This would bring the total number of hospitals participating in MS-HIN to thirty-seven.

MS-HIN is also working with the RECs to develop a consistent message and appropriate capabilities as well as scheduling system demonstrations. The MS-HIN website also contains useful information to providers concerning what the MS-HIN offers and all marketing materials points to the MS-HIN website.

DIRECT Care Summary Strategy

The same principles and overall objectives of care summary exchange for the core HIE remain consistent with care summary exchange through DIRECT. While DIRECT is not intended to address robust information exchange, it has been designed to provide a low cost way to initially satisfy Stage 1 Meaningful Use requirements using simple secure messaging via a "health internet."

MS-HIN is serving as the state's Health Information Service Provider (HISP) and DIRECT (including an open provider directory) is being deployed through Medicity's iNexx application. This is a rather unique approach because the iNexx application not only includes DIRECT messaging capability; it also provides a rich functioning referral application. Every MS-HIN provider enrolled in DIRECT receives a health domain address that allows that provider to be reached by providers within the MS-HIN as well as other trusted HISPs.

The State went live with DIRECT in late January after a successful pilot with a group of 125 providers concentrated around Mississippi's coastal hospital systems. As other hospital systems are implemented in differing areas of the state, the MS-HIN will be reaching out to the surrounding provider community, informing them of the availability and benefits of both HIE and DIRECT services. Currently, the MS-HIN is working with numerous healthcare associations and the REC to promote statewide DIRECT enrollment, regardless if there is a MS-HIN hospital system participant in their area or not. The enrollment promotion is backed with marketing materials (all are available on the website) and a video on the website that introduces DIRECT services. The website also includes an "on-line" enrollment process that greatly increases on-boarding capabilities.

Medicity, MS-HIN, and Medicaid recently held a technical meeting to develop action steps for DIRECT use cases. These include:

- Offer DIRECT messaging & referrals to all Medicaid providers for purposes of providing a secure electronic service to do referrals and exchange miscellaneous patient care information

- Offer DIRECT messaging to support MS-HIN with SLR Attestation and other administrative communications to DOM from providers

As a result of that meeting, MS-HIN and the Division of Medicaid are working on finalizing policy and procedures that will require all Medicaid providers to send attestation documentation securely over DIRECT. MS-HIN is also working with Medicaid to design and implement a communication and education program. The program will educate and train providers in the capabilities of and the use of DIRECT as a solution for point-to-point connections.

The Mississippi Department of Health (MSDH) is also informing providers to use MS-HIN to send attestation documentation. The MS-HIN and the MSDH are currently working to develop a communication and education program similar to Medicaid's.

MS-HIN has met or participated in conference calls with the REC over the last six months and is currently working with the REC on a DIRECT campaign to ensure all primary care physicians know about DIRECT and how they can enroll. Webinars will be scheduled as needed. However, as requests increase, regularly scheduled webinars are planned and the dates and times will be posted on the MS-HIN website.

The State HIE and Beacon grant recipient, Delta Health Alliance (DHA) meet regularly. In the last six months DHA has been in the testing phase with numerous clinics and two hospitals. The Beacon program utilizes the same vendor (Medicity) as the State for HIE services. As their program roll-out approaches, MS-HIN has taken a more active role to ensure they have all the resources needed to go-live as quickly as possible. As part of this collaborative effort, DHA has agreed that all their participants will be enrolled in DIRECT.

13. Legal and Policy

The Mississippi Health Information Network is committed to implementing a secure statewide health information exchange of "protected health information"(PHI) that is consistent with state and federal privacy and security laws and with the Principles articulated in the Office of National Coordinator for Health Information Technology's, *Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health Information* (Privacy and Security Framework). "Protected health information" is defined under the Privacy Rule of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), and is broad term that essentially includes any individually identifiable health information.

A number of state and federal laws, including, but not limited to HIPAA and provisions under the Health Information Technology for Economic and Clinical Health Act will form the basis for all legal and policy decisions and

implementation measures undertaken by the MS-HIN. Accordingly, a thorough review and analysis of all applicable state and federal laws and regulations will be a crucial stepping stone towards implementing a secure statewide health information exchange.

The Legal and Policy Domain Team has considered a number of legal and policy issues that must be addressed in order to ensure that a comprehensive privacy and security framework is developed. These issues, strategies, and operational plans are summarized below.

13.1. Make Initial Recommendations and Participate in a Process to Ensure Consensus Driven Decisions Are Made Regarding Legal and Policy Issues

The Legal and Policy Domain Team identified a number of important policy issues that will require consensus driven decision making in order to implement the MS-HIN. While the Legal and Policy Domain Team has provide the initial recommendations, approval of final policy recommendations rest with the governing body established both as part of Mississippi Code Section 41-119-1 (see Appendix E) and as the work done by the Governance Domain Team.

13.1.1. Opt-In/Opt Out Determination

Based on the Legal and Policy Domain Team recommendation, the MS-HIN will utilize a default inclusion of individuals' Protected Health Information (PHI) in the MS-HIN with a right to opt-out upon written notification to any participating entity, as does the MSCHIE pilot project. A brochure geared towards healthcare consumers will be developed by the Legal and Policy Domain Team and will include an explanation regarding the process for opting out of the MS-HIN. Providing an opt-out option is consistent with the Nationwide Privacy and Security Framework, and the "Individual Choice Principle," which stresses an individual's right to make informed decisions regarding their PHI, while also providing the potential to include significant numbers of patients in the MS-HIN. The Legal and Policy Domain Team also decided that if an individual chooses to opt-out, then none of their PHI will be made available to the MS-HIN. Allowing partial opt-out creates significant operational burdens related to delineating and tracking those who opt out. The MS-HIN will develop a process that makes it easy for patients to choose to opt back into the MS-HIN if they have initially chosen to opt out. To the extent required by law (e.g. HIPAA and HITECH), patients will be allowed to request restrictions on the uses and disclosures of their PHI. Also, requests for restrictions will be limited to what is required by law, because, like the opt-out option, allowing restrictions creates operational burdens related to implementing, tracking, and ensuring compliance with requested restrictions.

The MS-HIN will consider whether opt-out determination needs to be added to State Code.

13.1.2. Data - Initial Purpose for the Use and Disclosure of PHI in the Mississippi HIN

The MS-HIN will be initially limited to uses and disclosures of PHI for treatment and continuity of care purposes. HIPAA permits certain uses and disclosures of PHI (treatment, payment, or “healthcare operations” purposes) without patient authorization. Healthcare operations are broadly defined and would include activities related to quality (e.g. reporting). However, if the protected health information is used and disclosed in the MS-HIN for activities outside the permitted scope of federal law, patient authorization is required. Additionally, state law for mental health treatment permits disclosure of such information “when necessary for the continued treatment of a patient.” Limiting initial MS-HIN uses and disclosures to treatment purposes makes it easier for entities to comply with state and federal laws. Additionally, limiting it to these purposes allows participants to better learn and gain trust and confidence in the MS-HIN generally, and specifically in its privacy and security capabilities.

13.1.3. Data Ownership

The MS-HIN will adopt the current language regarding data property rights and liability found in Mississippi Code Section 41-119-11. This section limits liability for the misuse of PHI in the MS-HIN provided rules and regulations of the MS-HIN are followed. Having this language in legislation will encourage greater participation in the MS-HIN.

Section 6 of House Bill Number 941 establishes entities’ relationship to the data (property right and license to use) provided to the MS-HIN, which impacts each entity’s responsibilities related to the data (See Appendix E).

13.1.4. Data Uses

The MS-HIN will also determine how and for what purposes the PHI in the HIE will be used. The Legal and Policy Domain team recommends the statewide HIE be initially limited to uses and disclosures of PHI for treatment and continuity of care purposes. Limiting the initial uses and disclosures to treatment purposes makes it easier for entities to comply with federal laws and it helps to build trust and gain confidence in the MS-HIN. Once entities participating in the MS-HIN get comfortable with using it for these purposes, the MS-HIN Board may want to consider expanding the purposes and uses of PHI in the HIE to potentially include public health reporting and surveillance, quality measure reporting, research, and law enforcement.

13.1.5. Mandatory Participation

Although the State would certainly benefit if all providers were required to participate in the statewide HIE (because most patients' PHI would then be included in it), the Legal and Policy Domain Team recommended voluntary participation in the MS-HIN, with strong encouragement from the State to join. A number of stakeholders expressed "big brother" type concerns related to State involvement in the MS-HIN. Trust, collaboration, and cooperation are key to successfully implementing the MS-HIN. Given the concerns expressed by many stakeholders, it is believed State mandated participation would have the exact opposite effect of fostering trust, collaboration, and cooperation. The Legal and Policy Team will further review break glass policies and make recommendations.

13.1.6. Patient Access to the HIE

During the planning process, the Finance Domain Team identified a patient portal as a potential revenue source for the MS-HIN and the Technical Infrastructure Domain Team felt, with some reservation, a patient portal would allow an efficient way for patients to access and share their medical information. However, the Legal and Policy Domain Team has great reservations in giving patients direct access into the MS-HIN because doing so creates additional security risks and increases the operational burdens of establishing and monitoring passwords.

Under HIPAA, patients have a right to access and have copies of their medical records, but that does not necessarily mean they should have direct access into the MS-HIN as they do with a personal health record. Indirect patient access could be handled by:

- Participating providers allowing "on-site" viewing of the patient's electronic medical record as an authorized user from that facility accesses their record
- Participating healthcare providers or entities allowing patients direct access, via patient portal, into their facility's medical records system
- The MS-HIN establishing processes that would direct patients to an alternate source for viewing or accessing their medical records

Once the MS-HIN Board is in place, it is recommended they form a committee consisting of the chairs from each Domain Team to resolve the issue of whether or not patients should have direct access (via a patient portal) into the MS-HIN. If it is determined they should not have direct access, policies and procedures will need to be developed to insure patients have the appropriate access to their electronic medical record.

13.1.7. Oversight

Consistent with the Accountability Principle of the Privacy and Security Framework, the Legal and Policy Domain Teams recommends oversight responsibility for the MS-HIN. This oversight will include ensuring the development, implementation, monitoring, and enforcement of common policies, procedures, forms, and agreements.

The MS-HIN must also oversee processes for addressing and mitigating non-compliance and/or breaches in privacy and security standards. Finally, the MS-HIN will ensure that all participants provide employee training on privacy and security policies and procedures and that sanctions be applied for non-compliance with such policies and procedures. The Legal and Policy Domain Team recommends drafting legislation that specifies MS-HIN oversight responsibilities.

The Legal and Policy Domain Team recognizes the importance of identifying, analyzing, and harmonizing the different state and federal laws affecting access to and release of protected health information within the State and across state lines. Mississippi must follow state and federal laws (HIPAA and Federal 42 CFR Chapter 1 Public Health Service, Department of Health and Human Services, Part 2 Confidentiality of Alcohol and Drug Abuse Records (42 CFR Part 2) when determining what protected health information may be released and under what circumstances (e.g. whether patient authorization is required). However, it will be important for the MS-HIN to also have an understanding of any bordering state laws that are either contrary to, or more stringent than, the laws Mississippi must follow. The following laws will need to be reviewed, harmonized, and analyzed:

13.1.8. Mississippi Statute 41-21-97, Confidentiality of Hospital Records and Information; Exceptions

This statute makes the “hospital records of and information pertaining to patients at treatment facilities or patients treated by physicians, psychologists..., licensed master social workers or licensed professional counselors” confidential. In relevant part, these records may only be released by the written authorization of the patient or “when necessary for the continued treatment of a patient.”

“Treatment facility” is defined under Mississippi Statute 41-21-61 as “a hospital, community mental health center, or other institution qualified to provide care and treatment for mentally ill, mentally retarded, or chemically dependent persons.”

13.1.9. Mississippi Department of Health, Part III Office of Health Protection, Subpart 01—Health Facilities Licensure and Certification, Chapter 40, Minimum Standards of Operation for Psychiatric Hospitals, Section 122 Patient Records (Psychiatric Hospital Standards)

Section 122 of these regulations protects patient records created and maintained in psychiatric hospitals in Mississippi. Provisions from this section that may impact the MS-HIN include the following:

- Section 122.02. Patient “records shall be kept confidential and only authorized personnel shall have access to the record.”
- Section 122.03. “The facility shall have written policies and procedures that protect the confidentiality of patient records and govern the disclosure of the information in the records. The policies and procedures shall specify the conditions under which information on applicants or patients may be disclosed and the procedures for releasing such information.”
- Section 122.04. This section states a patient or his or her authorized representative may consent to the release of information provided that written consent is given on a form containing the following information:
 - Name of the person
 - Name of the program
 - The name of the person, agency or organization to which the information is to be disclosed
 - The specific information to be disclosed
 - The purpose for the disclosure
 - The date the consent was signed and the signature of the individual witnessing the consent
 - The signature of the patient, parent, guardian or authorized representative
 - A notice that the consent is valid only for a specified period of time
- Section 122.06 requires every consent for release of information shall include the following in the patient’s record:
 - The actual date the information was released
 - The specific information released
 - The signature of the staff member who release the information

13.1.10. The Privacy and Security Rule of the Health Insurance Portability and Accountability Act of 1996 (HIPAA).

The HIPAA Privacy Rules establish minimal requirements for the use and disclosure of PHI. Under these rules, PHI may be accessed, used, and/or

disclosed without patient authorization for treatment, payment, or healthcare operations purposes. The HIPAA Security Rules establish minimum security requirements for creating, maintaining, and exchanging electronic protected health information. Provisions under HITECH strengthened the HIPAA Security Rules and expanded coverage of the requirements to additional entities. These rules will provide the basis under which the MS-HIN operates.

13.1.11. Federal 42 CFR Chapter 1 Public Health Service, Department of Health and Human Services, Part 2 Confidentiality of Alcohol and Drug Abuse Records (42 CFR Part 2).

42 C.F.R. Part 2 broadly protects *all information* about any person who has applied for or has been given a diagnosis or received treatment for alcohol or drug abuse at a federally assisted program (Program). Program means “an individual or entity, or an identified unit within a general medical facility that holds itself out as providing, and provides alcohol or drug abuse diagnosis, treatment or referral for treatment.” Program also means “medical personnel or other staff in a general medical care facility that are identified as having a primary function of providing alcohol or drug abuse diagnosis, treatment or referral for such treatment.” Federally assisted means “conducted, regulated, or directly or indirectly assisted (e.g. pays for services) by any department or agency of the United States.”

Information created and maintained at a Program may not be disclosed unless the patient has provided written consent or unless another very limited exception specified in the statute applies.

The only treatment related exception to the consent requirement is “to medical personnel to the extent necessary to meet a bona fide medical emergency.” Under this exception, information may be disclosed to medical personnel who have a need for the information for the purpose of treating a condition “which poses an immediate threat to the health” of the individual and “which requires immediate medical intervention.”

It is important to have a good understanding of this statute because if this statute applies, in general, any information subject to it can only be accessed and/or disclosed pursuant to patient written authorization. Moreover, this statute places additional restrictions on the information subject to it, such as a prohibition on re-disclosure (unless specifically permitted) and a requirement that certain statements be appended to any information disclosed.

Recently, the Substance Abuse and Mental Health Services Administration of the U.S. Department of Health and Human Services (the agency that wrote 42 CFR Part 2) published a guidance document entitled, “Frequently Asked Questions, Applying the Substance Abuse Confidentiality Regulations to Health Information Exchange.” This guidance document will have to be reviewed and analyzed, with recommendations coming from the Legal and Policy Domain Team. The concept of the MS-HIN being considered “a qualified service organization” will be

reviewed and analyzed by the Legal and Policy Domain Team and the Attorney General or appropriate designee.

13.1.12. Other Federal Statutes

The Legal and Policy Domain Team must also review and analyze additional federal statutes to determine any impact they may have on activities and processes contemplated by the MS-HIN. These may include (depending on the purposes for which the HIE will ultimately be used), but are not limited to:

- The Federal Privacy Act (5 U.S.C. § 552a)
- The Freedom of Information Act (5 U.S.S. § 552; also 45 C.F.R. Part 5)
- Medicaid Privacy Requirements (42 U.S.C. §1396a (a) (7) and 42 C.F.R. §§ 431.300-307)
- Genetic Information Nondiscrimination Act of 2008 (GINA) (Pub. L. No. 110-233)
- Clinical Laboratory Improvement Amendments (42 U.S.C. §263a and 42 C.F.R. § 493.1291)
- Controlled Substances Act (21 U.S.C. § 801 and 21 C.F.R. § 131623)
- Federal Policy for the Protection of Human Subjects (45 C.F.R. §§ 46.11(a)(7), 46.116(a)(5))
- Federal Certificate of Confidentiality (research subjects) (42 U.S.C. 241(d))
- Family Educational Rights and Privacy Act (1974) (20 U.S.C. § 1232h, also 34 C.F.R. Part 99)
- AHRQ Confidentiality Provisions (42 U.S.C. §§299c-3(c),(d))
- CDC Confidentiality Provisions (42 U.S.C. § 242m(d))
- Patient Safety and Quality Improvement Act of 2005 (42 U.S.C. 299b-21 to 299b-26, also, 42 C.F.R. Part 3)
- The Patriot Act (109 P.L. 177)

13.1.13. Bordering State Laws

The MS-HIN will review and analyze the privacy and release of information laws from bordering states such as Tennessee, Louisiana, Arkansas, and Alabama to determine whether contrary or more stringent provisions exist that may impact the exchange of protected health information with these bordering states. The State is involved in the SERCH group weekly meetings where this and other topics have been and continue to be reviewed.

13.1.14. Health Information Strategies

The Legal and Policy Domain Team recommends the following strategies and creates the following operational plans for resolving these issues:

- Mississippi State Laws

The Legal and Policy Domain Team will request that the Attorney General or appropriate designee formally review and draft an opinion that addresses the following in relationship to the MS-HIN:

- Whether medication lists and/or prescriptions written while receiving care in a “treatment facility” as defined under Miss. Code 41-21-61 triggers the confidentiality provisions under Miss. Code 41-21-97
- Whether the MS-HIN can use aggregate, de-identified information created while receiving care in a “treatment facility” for non-treatment related purposes (e.g. public health, quality etc) without triggering the consent requirements under Miss. Code 41-21-97
- Whether patient records from psychiatric hospitals may be added to the MS-HIN, and if so, what conditions and requirements attach to the use and/or disclosure of those records
- Clarify the elements of a valid consent form under Psychiatric Hospital Standards Section 122.04, specifically, whether the elements limits consent to point of care and a onetime disclosure versus a prospective release of information for defined purposes over a specified period of time

- Harmonizing State and Federal Laws

- The Legal and Policy Domain Team will create a legal work group to analyze and make recommendations regarding regulatory requirements in relationship to HIE activities. MS-HIN Board will determine who and what stakeholders should be represented on the workgroup.
- The legal workgroup will utilize any existing documents already addressing these issues including, but not limited to:
 - Analysis and spreadsheets compiled by the MSCHIE Legal and Policy Domain Team
 - Work product, analyses and final reports under Mississippi HISPC I, II, and III
 - Analysis, spreadsheets and/or PowerPoint presentations prepared by state attorneys
 - *Frequently Asked Questions, Applying the Substance Abuse Confidentiality regulations to health Information Exchange*, prepared by the Legal Action Center for the Substance Abuse and Mental Health Services Administration of the U.S. Department of Health and Human Services Administration

- The Office of National Coordinator for Health Information Technology's, *Federal Privacy Laws Table*;
- The Office of National Coordinator for Health Information Technology's, *Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health Information*
- Any other guidance documents developed by Office of National Coordinator for Health Information Technology; and
- Any other analyses or reports of these issues from other identified intra and interstate resources
- Given time constraints and other limitations, the legal workgroup in conjunction with the MS-HIN may consider outsourcing analysis and coordination of these activities to a consulting or legal firm with recognized expertise with these laws and regulations.
- The legal workgroup will identify any legal barriers to the electronic health information exchange and will consider suggesting legislative changes to better align with efforts and goals of the MS-HIN.
- Bordering State Laws
 - The MS-HIN, under the guidance and leadership from the Legal and Policy Domain Team, will reach out and establish on-going relationships with corresponding workgroups and state leaders in bordering states. Developing and maintaining these relationships is important to Mississippi because it will allow the State to:
 - Learn about bordering state laws without wasting precious resources
 - Identify potential barriers to interstate electronic exchange
 - Collaboratively develop processes for the electronic exchange PHI in common bordering areas

13.2. Consumer and Provider Education

Both consumers and providers will need to be given education related to the MS-HIN. The type, detail, format, and modalities will differ between the two groups.

13.2.1. Provider Education

The Legal and Policy Domain Team recognizes that healthcare providers will need the following education:

- What is “Meaningful Use” and how can providers achieve it
- What is the MS-HIN, how will it operate, what are its security measures and etc
- Rules and regulations governing access to and disclosure of PHI

Achieving Meaningful Use by a large number of entities is critical to the development and success of the MS-HIN. To that end, the Legal and Policy Domain Team recommends the MS-HIN take a leadership role in collaborating with current exiting entities and individuals to help achieve this goal.

It was clear during the Environmental Scan that not all healthcare providers had the same level of understanding about the MS-HIN, in general, or how the MS-HIN could benefit them directly. The Legal and Policy Domain Team recognize the importance of continuous education geared toward all provider types as the MS-HIN is developed and implemented.

Mississippi participated in the Health Information Security and Privacy Collaboration (HISPC) projects I, II, and III. One of the observations made during Mississippi's participation in HIPSC I was that entities were inconsistent in their understanding and implementation of HIPAA's Privacy and Security Rules. One of the deliverables created as a result of participating in HISPC was a HIPAA training module for providers. This module was made available on the Mississippi HISPC website at www.mshispc.com. Despite this effort, it was clear during the Environmental Scan that not only did providers still show a lack of understanding of HIPAA rules, there was also a lack of understanding of Mississippi state laws and federal 42 CFR Part 2. MS-HIN will consider creating a module that not only incorporates HIPAA, but also state and other federal laws affecting the electronic exchange of health information. Additionally, more effective methods for delivering education must be considered, including not just making written materials available, but also presenting at statewide conferences and delivering public services announcements.

13.2.2. Consumer Education

Public forums were held in four cities in Mississippi during the Environmental Scan. Questions and comments presented during the Environmental Scan demonstrated an overall lack of knowledge by consumers of health information exchange in general and an overarching concern for maintaining the privacy and security of individual health records. An education plan focused on consumers will emphasize general information about the MS-HIN, including; what it is, what kind of entities will be participating, how their health information will be included, and how their health information will be protected. A resounding theme throughout the Environmental Scan was the low literacy rate and low levels of education throughout much of Mississippi, but especially in rural Mississippi. This means that consumer education needs to be developed at a 6th to 8th grade level (or lower) and needs to be delivered using multiple modalities, which may include written materials, public forums, and media presentations. Based on these forums, consumer education will focus on the following:

- The purpose and benefits of HIE

- How their medical information will become part of the HIE and how it will be protected
- Who has access to their information
- Whether the federal and/or state government will have access into their health information stored and shared within the HIE

13.2.3. Health Information Strategies and Operational Plans

The following implementation strategies will be used for consumer and provider education:

- Provider Education
 - The Legal and Policy Domain Team will collaborate with the Business and Technical Operations Domain Team and the REC to ensure providers understand Meaningful Use and how to achieve Meaningful Use status. This includes:
 - Assessing gaps in provider education based on what the REC is doing
 - Determining methods and identifying potential resources available to provide additional education
 - Developing a plan to address additional educational needs
 - Engage provider associations (e.g. hospital, medical, nursing, pharmacy etc.) to help educate their respective constituents by:
 - Identifying and recommending the associations that will be approached to help deliver this message
 - Recommending a plan for making contact and follow through
 - Drafting the “talking points” document to be used by associations to ensure a consistent message is delivered
 - Create public campaign or Public Service Announcements geared more towards providers.
 - Content from the “talking points” document can form the basis for these Announcements
 - The Public Service Announcements should be delivered directly from the Governor to ensure the highest visibility
- Consumer Education
 - The Legal and Policy Domain Team will develop the following consumer based educational content pieces:
 - Consumer specific information brochure. This brochure will be available for, and expected to be used, by all entities participating in the MS-HIN. The brochure will be written in an 8th grade level or lower and will also be made available in Spanish. The MS-HIN

- may need to consider making the brochure available other languages common to a particular area in the State.
- A “talking points” document to be used by healthcare providers and consumer advocacy groups. This document will be easy-to-understand and in summary format to ensure consumers are receiving consistent information about the MS-HIN.
- Content for use in Public Service Announcements, like the “talking points” document, will be in summary format and will explain the MS-HIN in simple, easy-to-understand terms.
- The Legal and Policy Domain Team will engage the healthcare provider community, including applicable associations, as well as consumer advocacy groups (e.g. AARP, Triple A etc.) to help educate consumers about the MS-HIN by:
 - Identifying and recommending the associations and advocacy groups that will be approached to help deliver this message;
 - Recommending a plan for contact and follow-through; and
 - Utilizing the “talking points” document to ensure a consistent message is delivered.
- Develop and deliver Public Service Announcements (PSA) describing the MS-HIN, its benefits and security measures.
 - The Legal and Policy Domain Team will develop the content and recommend the frequency for making the PSA.
 - The Announcements should come directly from the Governor to ensure the highest level of visibility and attention to the issue.
- HIPAA Specific Harmonization/Release of Information Laws
 - Develop and deliver content that specifies what can and cannot be done in HIE under Mississippi law, HIPAA and other federal release of information and privacy protection laws.
 - Content should be easy-to understand and limited to practical every day information in summary format in order to keep the providers engaged and to ensure they understand the most critical legal issues pertaining to their involvement in the HIE;
 - Consider delivering content in multiple formats;
 - Collaborate with professional associations (e.g. medical, nursing, hospital, pharmacy etc.) to ensure content gets added to relevant conferences; and
 - Consider making content available to meet continuing education requirements.
 - Deliver content at various provider association conferences
 - Collaborate with associations to ensure content gets added to relevant conferences

- Identify and engage potential speakers to deliver the content
- Make content available in multiple formats to help meet continuing education requirements (medical, nursing, pharmacy etc.).
 - Identify and plan a process for getting continuing education credits
 - Identify methods and implement a process for delivering content (e.g. webinars, internet modules etc.)

13.3. Common Forms and Agreements

The MS-HIN will develop a set of forms and agreements that all participants may use. Developing a common set of forms and agreements will create consistency and help foster trust, coordination, and cooperation among all entities participating in the MS-HIN.

The following is a list of potential (not all inclusive) forms and agreements that may need to be developed depending on policy decisions made by MS-HIN. The Legal and Policy Domain Team will take the lead in making recommendations related to such forms and agreements.

13.3.1. Forms

- Opt out of the MS-HIN
- Cancellation of Opt Out Request
- Requesting Restrictions on the Access to and/or Use or Disclosure of PHI
- Patient Consent for the Release Protected Health Information (as applicable)
- Breach Notification Letter
- Model Notice of Privacy Practices
- Request for Amendment to PHI Form
- Accounting of Disclosures
- Patient Requests for Audit
- Request for Access to MS-HIN

13.3.2. Agreements

- End User Agreements
- Business Associate Agreements
- Participant Agreement
- DURSA

13.3.3. Health Information Strategies and Operational Plans

The following strategies will be used to create the implementation plan for addressing this issue:

- Utilize existing documents
 - The forms and agreements created and used by MSCHIE and reviewed for consideration of adaption and use by the MS-HIN include:
 - Access to Information Policy
 - Audit Reports List
 - Auditing Procedures
 - Breach Assessment Procedures
 - Consent Form – Facility Access
 - Consumer Audit Report Request Procedures
 - User Privacy and Security Information Document
 - Toolkit – End User License Agreement
 - Toolkit – Cancellation of Non-Participation Request
 - The Legal and Policy Domain Team will research the Internet and contact bordering states for additional sample forms and agreements as necessary.
- Determine whether existing forms and agreements are appropriate for use by the MS-HIN.
 - The Legal and Policy Domain Team will provide initial review and recommendations for modifications or additions to all forms and agreements.
- Contract with external legal or consulting firm to create final drafts of all forms and agreements.
 - Firm must have current expertise in reviewing and drafting these forms and agreements.
- Provide recommendations for final approval of all forms and agreements by the MS-HIN.

13.4. Common Policies

The MS-HIN must develop and enforce policies that comply with the Privacy and Security Rules under HIPAA and HITECH as well as be consistent with the principles articulated under the Privacy and Security Framework. HIPAA establishes minimum requirements governing the privacy and security of protected health information for all deemed “covered entities.” Additionally, provisions under HITECH strengthen these requirements and expand the types of entities that must adhere to some of the requirements (e.g. “business associates”). While these federal laws create baseline privacy and security

requirements, not all of the entities that may participate in the MS-HIN are required to follow these regulations. Moreover, entities inconsistently interpret and apply these requirements. Developing and enforcing a core set of policies and procedures is imperative to establishing trust among participants in the MS-HIN.

Policies will be developed to implement and address the following.

13.4.1. Authorization

Authorization refers to the process by which an entity determines who has the right to access protected health information. Entities typically apply a “role-based” process to establish an individual’s right to access protected health information. Role-based access takes an individual’s role or job into consideration and their need to access information in order to perform their job. An authorization process is consistent with the Safeguards Principle under the Privacy and Security Framework.

13.4.2. Authentication

Authentication refers to the mechanism by which an individual granted access to the MS-HIN can be verified as that individual. The most common method for authenticating individuals is through the use of unique passwords. Developing a process for authenticating individuals is consistent with the Safeguards Principle under the Privacy and Security Framework.

13.4.3. Access Control

Access control policies ensure that individuals granted access to the MS-HIN only access the information needed to do their job or what they may be allowed by patient authorization. Developing an access control process is consistent with the Safeguards Principle under the Privacy and Security Framework.

13.4.4. Audits

Audits are performed to identify areas of inconsistent or inadequate levels of compliance with state and federal laws as well as common policies, procedures and contractual obligations. Consistent audit practices enhance confidence and trust in the privacy and security of the MS-HIN. Developing an audit process is consistent with the Safeguards Principle under the Privacy and Security Framework.

13.4.5. Breach Notification

The HITECH rules require entities to develop processes for notifying individuals when their electronic PHI is “breached” (situation must meet the definition of a breach). As such, the MS-HIN will adopt a breach notification process.

Providing notification of a breach is consistent with the Openness and Transparency Principle of the Privacy and Security Framework.

13.4.6. Patient Right to Request Restriction on Access to and/or Use and Disclosure of PHI

The HIPAA Privacy Rule grants patients the right to request that a covered entity restrict how their PHI is used or disclosed for treatment, payment, or healthcare operations purposes. However, under these rules, a covered entity is not required to agree to a restriction.

Effective February 18, 2010, provisions under HITECH allow a patient the right to request, and requires the healthcare provider to comply with a request to restrict disclosures of PHI to a health plan for purposes of payment or healthcare operations when the PHI pertains to a service for which the healthcare provider has been paid in full by the patient “out of pocket.”

Granting patients a right to request restrictions is consistent with the Collection, Use, and Disclosure Limitation Principle in the Privacy and Security Framework. The Legal and Policy Domain team recommends the MS-HIN adopt a policy that permits patients to request restriction on how their PHI is used or disclosed, but only grants the restriction either as required by law or if extenuating circumstances prevail and the request can be technologically managed.

13.4.7. Accounting of Disclosures

Currently, the HIPAA Privacy Rule grants patients a right to request an “accounting” (or a listing) of disclosure of their PHI. However, disclosures made for treatment, payment or healthcare operations do not have to be included as part of this accounting. In general, disclosures made for treatment, payment and healthcare operations purposes account for at least 90% of all disclosures of PHI, and would comprise, most, if not all disclosures contemplated by the MS-HIN.

Effective January 1, 2014, entities must be able to account for disclosures of *electronic* PHI for treatment, payment, and healthcare operations purposes. This change in law will have a direct impact on the MS-HIN. Having an accounting of disclosures process is consistent with the Openness and Transparency Principle of the Privacy and Security Framework. Consequently, the MS-HIN will develop a process for meeting this requirement.

13.4.8. Right to Request an Amendment to Health Records

The HIPAA Privacy Rule grants patients the right to request an amendment to their PHI contained in a “designated record set” (as defined by HIPAA). This is consistent with the Correction Principle under the Privacy and Security Framework. The HIPAA Privacy Rule establishes requirements for developing

processes that implement this patient right. Specifically, the Legal and Policy Domain Team will review and provide a recommendation to establish a policy that directs records requiring corrections and amendments to be sent back to the original provider.

13.4.9. Health Information Strategies

The following strategies and implementation plan will be used for creating and implementing common policies:

- Utilize existing documents
 - The policies and procedures created and used by MSCHIE will be gathered, inventoried, and reviewed for consideration of adaption and use by the MS-HIN.
 - The Legal and Policy Domain Team will research the Internet and contact bordering states for sample policies as necessary.
- Determine whether existing policies are appropriate for use by the MS-HIN
 - The Legal and Policy Domain Team will review the Office of National Coordinator for Health Information Technology's, *Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health Information* and any other related guidance documents to ensure all policies and procedures are consistent with principles articulated in the documents.
 - The Legal and Policy Domain Team will provide initial review and recommendations for modifications or additions to all forms and Agreements.
- Contract with external legal or consulting firm to create final drafts of all forms and Agreements.
 - Firm must have current expertise in reviewing and drafting these forms and Agreements.
- Provide recommendations for final approval of all policies and procedures by MS-HIN.
- Address retention of records by the MS-HIN and follow Federal and/or State rules that exist or may exist.

14. Mississippi Operational Plan

14.1. Introduction to Operational Plan

The following section describes the overall milestones, timeline for the core activities and associated tasks/subtasks to achieve goals and objectives outlined in the State of Mississippi's HIE Strategic Plan for the statewide HIE.

The Mississippi HIE Strategic Plan will be implemented through this Operational Plan that outlines a corresponding and comprehensive set of activities to achieve the statewide HIE. Execution of this plan will enable and support Mississippi's providers in achieving and demonstrating Meaningful Use of EHR technology to improve patient care and safety through the enhanced delivery, quality, and value of healthcare.

The Mississippi Health Information Network Board of Directors Board has been identified as the leadership team for the MS-HIN. The Board will operate in a leadership role to determine the path and optimize the model for the exchange of health information in Mississippi and Nationwide. As such, the Board will serve as the governing body for Mississippi's HIE initiative.

The State of Mississippi through the MS-HIN, will continue its practice of sharing information and coordinating with the HIE efforts of other States, in addition to supporting the NHIN initiatives that are coordinating the development and interoperability of HIEs across the nation. Coordination with other States through the NHIN is included in this Operational Plan.

In order to achieve initial goals and objectives, the initial Operational Plan will be continually evaluated and revised to reflect lessons learned during the implementation. As the State identifies new goals and objectives, these will be incorporated into the Operation Plan.

This Operational Plan covers topics as follows:

- Coordination with Other ARRA Programs
- Coordination with Medicaid
- Coordination with Other States
- Additional Environmental Scan Requirements
- Project Timeline
- Risk Mitigation
- Governance
- Communications
- Coordination with National-level and State-level HIT Programs

- Finance
- Technical Infrastructure
- Business and Technical Operations
- Legal and Policy

14.2. Coordination with Other ARRA Programs

The State of Mississippi will coordinate the multitude of healthcare related project initiatives under the auspices of the MS-HIN implementation project. This project will be the essential enabler for assisting practitioners demonstrate Meaningful Use of Health IT. Connecting to federal agencies is also an important consideration addressed in the Operational Plan. Federal agencies, CMS for example, will require information exchange for programs such as the Patient Quality Reporting Initiative (PQRI). Connecting to federal agencies to exchange health information will be facilitated over the NHIN.

14.2.1. Regional Extension Centers

The MS-HIN is already collaborating with eQHealth Solutions, the Regional Extension Center for Mississippi. eQHealth Solutions has participated in the Environmental Scan for this project as well as the Environmental Scan for the SMHP. They will continue to work with the State HIT Coordinator and ITS to coordinate activities. It is anticipated those relationships and that level of integration will continue over the next several years. Therefore, Mississippi is well positioned to coordinate and integrate the activities of the SMHP and REC programs.

14.2.2. Workforce Development

The MS-HIN is also collaborating with Hinds Community College and Itawamba Community College on the Workforce Development program for Mississippi. The State HIT Coordinator has spoken with the staff and they have committed to coordinating efforts. It is anticipated this relationship will continue over the next several years. Therefore, Mississippi is well positioned to coordinate and integrate the activities of this very important program.

14.2.3. Broadband

A total of \$7.2 billion was appropriated for broadband funding in the American Recovery and Reinvestment Act of 2009 (ARRA). The funding is being administered by two federal agencies. (1) The Commerce Department's National Telecommunications and Information Administration (NTIA) was appropriated \$4.7 billion. The majority of this funding will be used to administer the Broadband Technology Opportunities Program (BTOP) which provides grants to fund comprehensive broadband infrastructure projects, public computer centers and sustainable broadband adoption projects; (2) The Agriculture Department's Rural

Utilities Service (RUS) will receive \$2.5 billion to administer the Broadband Initiatives Program (BIP) which provides loans and grants for broadband infrastructure projects in rural areas.

NTIA has awarded the State of Mississippi \$70 million for the development and implementation of a system to provide next-generation mobile broadband to first responders and public safety officials across the State. This award includes an enhanced expansion of the Mississippi Wireless Integrated Network (MSWIN) to increase mobile data capabilities, an action which will benefit public safety by improving the utilization of the system by first responders. The grant award also includes a number of funding opportunities to expand “middle mile” broadband availability in the State for community anchor institutions, such as schools, libraries, healthcare providers, and community colleges.

In addition, ARRA legislation designates NTIA to develop and maintain a comprehensive nationwide inventory map of broadband service capability and availability, and to make the map publicly available via the Internet by February 17, 2011. The map will educate consumers and businesses about broadband Internet availability, enable broadband Internet providers and investors to make better-informed decisions regarding the use of their private capital for future broadband investment and inform the decisions of Federal, State and local policymakers as they work to expand the benefits of broadband to all Americans.

NTIA has awarded grants to assist states or their designees in developing state-specific data on the deployment levels and adoption rates of broadband services. The Mississippi Office of the Governor, the State’s eligible entity, received a mapping grant comprised of approximately \$1.5 million for broadband data collection and mapping activities and \$500,000 for broadband planning activities over a two-year period, bringing the total grant award to approximately \$2 million. ITS is spearheading the broadband mapping initiative in conjunction with the designated mapping vendor, BroadMap, the entity chosen by the Mississippi Broadband Task Force to create a statewide broadband inventory map for Mississippi.

As part of the mapping initiative, Mississippi will be implementing an interactive map for viewing, analyzing, and validating broadband data in the State. The map will also be searchable by address and show the broadband providers offering service in the corresponding census block or street segment.

BroadMap, in conjunction with ITS, will work with all broadband providers in the State to create these detailed maps of broadband coverage in order to accurately pinpoint remaining gaps in broadband availability in Mississippi.

14.2.4. Beacon Community Grants

The Delta Health Alliance (DHA), located in the Mississippi Delta, was awarded a Beacon Community Grant that is described in detail in Section 7.4 of the

Strategic Plan. The State has regular discussions with the DHA and DHA staff members serve on the SOP Domain Teams. In addition, the State and DHA are conducting joint planning sessions for connecting the Beacon Community to the MS-HIN. The Delta Health Alliance is utilizing the same vendor and infrastructure, Medicity to implement the Beacon HIE. The Beacon Grant is a three year project which will end in 2013. The MS-HIN contract with Medicity was structured so that at the end of the Grant, the Beacon participates will become a part of the statewide HIE, thus receiving the same services and pricing structure as the rest of the State.

14.3. Coordination with Medicaid Incentive Payments Program

The Mississippi Division of Medicaid is currently working on their State Medicaid Health Information Technology Plan, as described in Section 4 of this document. The “As-Is” report was completed in October, 2010 and the “To-Be” plan was complete in November, 2010. Both Plans have been approved by CMS and Medicaid continues to work on the following the following activities:

- Coordination with MS-HIN to use existing HIT infrastructure when and where possible
- Creation of a Medicaid HIT webpage accessed directly or through the State Medicaid web page or the State HIT web page
- Coordination with the National Level Repository to create a current provider list for Mississippi
- Presentations about the EHR Provider Incentive Payment Program to:
 - State Legislators
 - Eligible professionals and hospitals through their professional organizations
- Coordination with the Regional Extension Center for dissemination of incentive program information to providers
- Disseminated information about CMS webinars and calls available to providers participating in the EHR Provider Incentive Payment Program

Moving forward into 2011 and beyond, Medicaid will:

- Complete and submit the State Medicaid Health Information Technology Plan describing the complete process for the Incentive Program
- Follow the approved SMHP to ensure all eligible Medicaid providers receive qualified payments
- Continue to coordinate with the MS-HIN Executive Director, the Regional Extension Center (eQHealth Solutions), the Hinds and Itawamba

Community Colleges (Workforce Development), and Medicaid providers to disseminate information about the program

- Work with Medicaid providers, as described in the SMHP and assist them meet Meaningful Use requirements

14.4. Coordination with Other States

Mississippi will continue its coordination efforts with other states as described in Section 8 above. These efforts will include:

- Coordination with the Upper Midwest HIE Collaborative project to learn about standard agreement and contracts
- Continued participation and coordination with the 11 state Southeastern Regional Collaborative on HIT/HIE (SERCH) to seek opportunities for collaboration - specifically with participating bordering states including:
 - Alabama
 - Arkansas
 - Louisiana
 - Tennessee
- Continue to participate in national meetings related to HIE, Medicaid, and the RECs and hosted by:
 - Office of the National Coordinator
 - National Governors Association
 - Health Information Management Systems Society
 - National Association of State Chief Information Officers (NASCIO)
 - Agency for Healthcare Research and Quality
 - National e-Health Collaborative
 - State Alliance for e-Health
 - e-Health Initiative
 - Others as deemed appropriate by the MS-HIN Executive Director

14.5. Additional Environmental Scan Requirements

14.5.1. Investment of Federal Funds for Stage 1 Meaningful Use

The State of Mississippi received a federal grant of \$10,387,000 to build the statewide HIE. The Cooperative Agreement program outlined an allocation for interstate and intrastate connections. The State has invested approximately \$420,000 in strategic and operational planning activities. The remainder of the funds will be allocated to build the HIE infrastructure as indicated in Section 14.11.2.4 below. It is estimated that this amount of funding is sufficient to build the statewide HIE as described in the Strategic and Operational Plan.

The total expenditure of funds is estimated to be as follows:

Table 17: Estimated Allocations

Allocation Recipient	
State HIE Infrastructure	\$ 7,114,291.00
NHIN Direct HISP Infrastructure	\$ 983,500
Project Management	\$ 1,024,737.00
Consulting Assistance	\$ 1,264,460.00
Total Estimated Expenditures	\$ 10,387,000

This will put the MS-HIN in a position to meet all Stage 1 Meaningful Use requirements for providers across the State. In addition, it will position the state for Stage 2 and 3 Meaningful Use when they become better defined.

14.6. Project Timeline

The MS-HIN Board will oversee the development of the statewide HIE by achieving the goals and objectives outlined in the phased approach to the MS-HIN Operational Plan Framework as described in Figure 17 below.

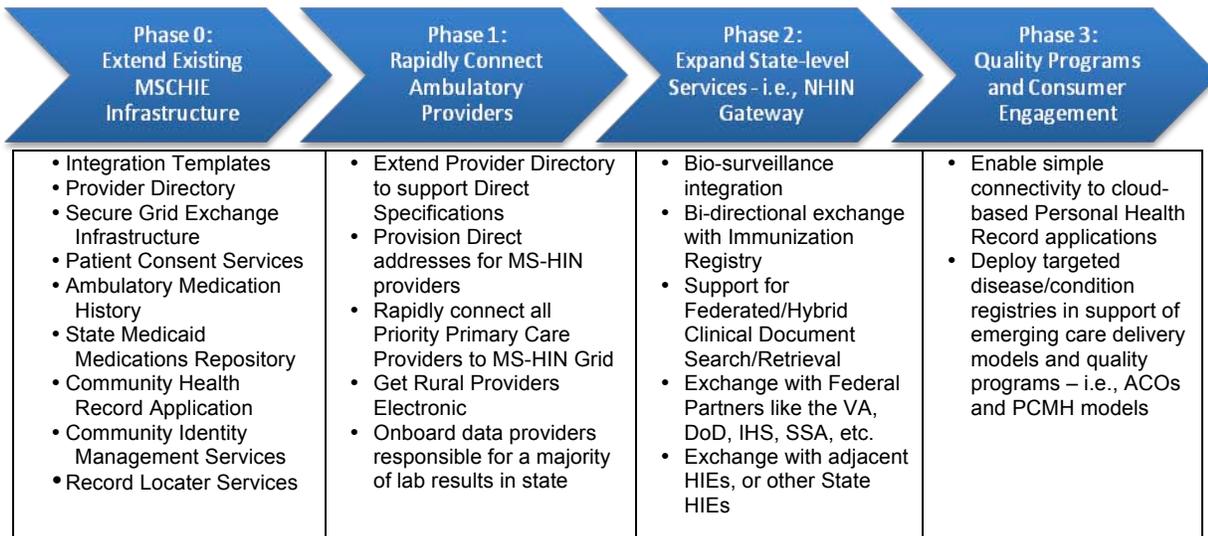


Figure 17: MS-HIN Operational Plan Framework

This Operational Plan will be executed by the following major principles:

- Initial efforts for building the statewide HIE are agreed among stakeholders and costs will be shared across stakeholder interests to make the statewide HIE sustainable
- HIE implementation is incremental to ensure that HIE capacity grows seamlessly

- This Operational Plan is flexible to reflect newly found requirements and lessons learned during the implementation. Ongoing evaluation and revision of the plan is required and planned
- Every effort and activity is well documented and reviewed by stakeholders regularly and is open to any interested entities for valuable feedback and comments
- Ongoing assessment is conducted to measure the effectiveness and usefulness of value-added HIE services
- HIE implementation is aligned with other federal-level and state-level programs
- HIE implementation is aligned with the Meaningful Use stages

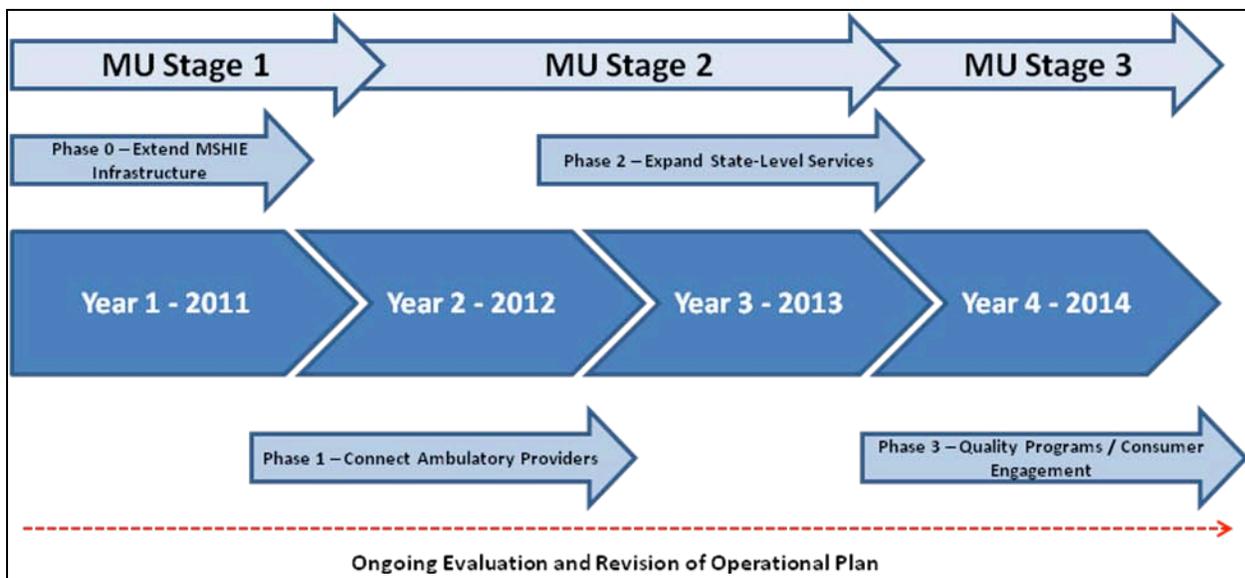


Figure 18: High-Level Mississippi Operational Time Line Based on Meaningful Use

It is anticipated that the first Phase will be the most intensive with the fewest number of sites and taking approximately three months to complete. During this time, schedules will be set, governance rules will be finalized, and resources identified. Additionally, sites will be prepared for rollout to minimize any disruption to workflow and patient care. During this time the MS-HIN will also develop and introduce the series of teams that will be involved in the statewide HIE deployment, implementation, and training.

Subsequent Phases will be adjusted according to MS-HIN priorities, whether expansion is geographic, Application Programming Interface (API) or site specific. For example, expansion could center on each of the seven major ecosystems, bringing adjoining clinics on line in ever-widening concentric circles. Another alternative would be to focus on the more prominent EHR systems and connect them irrespective of geographic location. Some fluidity will be built into

the team structure as it is suspected the final implementation will be a blend of API and geography.

By the second year, the emphasis will start to shift from hospitals, clinics, and payers to physicians and the more difficult regions to reach. Coordination between the MS-HIN and ITS is planned to ensure broadband is available to all providers. A more detailed description on each phase is found in Table 18 below.

Table 18: HIE Implementation Phasing

Phases	Description	MU Alignment
Phase 0 Existing MSCHIE Infrastructure Leveraged for MS-HIN	This initial phase is pre-launch, hence the “zero” reference. In a similar vein to the preliminary stage, this is where the technical infrastructure is clarified; the overall design is developed and subsequently installed. It is worth noting that there is overlap between the phases to maximize efficiency in a tight time frame. This further serves to minimize exposure to risk due to unmet deadlines. While adhering to deadlines is highly desirable, a slight over-run in one phase will not cause a halt to the launch of the next phase. Since the state leveraged existing contract as a base for the MS-HIN, the MS-HIN will be able to build upon the existing infrastructure, which would reduce this phase time significantly.	MU Stage 1
Phase 1 Rapidly Connect Ambulatory Provider Community	For the State of Mississippi, Phase 1 of the HIE implementation will focus on expansion of the Provider Directory from a regional to State-level asset. Part of this expansion includes adding support for the Direct project specifications. The specifics of the expansion include: establishing a HISP, provider verification and provision health domain addresses. A mass deployment of MS-HIN Agent-Grid technology will be deployed to connect all Primary Care Providers. This process will allow all providers across the State to quickly meet stage 1 Meaningful Use.	MU Stage 1 and 2
Phase 2 Expand State-Level Services	During Phase 2, once the MS-HIN Grid is established, each care setting will have access to state-level services which include; submission of data to Bio-surveillance departments, Bi-directional exchange with Immunization Registry, support for federated/hybrid clinical document search/retrieval, exchange with federal partners and exchange with HIEs.	MU Stage 2
Phase 3 Quality Programs and Consumer Engagement	In Phase 3, the core components will have been deployed to the provider community and state agencies, MS-HIN will shift its focus to supporting next generation care like ACOs and Patient Centered Medical Homes. In addition, MS-HIN will deploy a Personal Health Record Gateway.	MU Stage 2

Phase 0 – Existing MSCHIE Infrastructure Leveraged for MS-HIN

Phase 0 represents the work that has been done to date via the Mississippi Coastal Health Information Exchange (MSCHIE) that is immediately leveraged and built upon in Phase 1 of the MS-HIN roll-out. In Phase 0 of Mississippi's approach to enabling meaningful exchange of health information, MS-HIN is leveraging the established core infrastructure of the MSCHIE to accelerate the deployment of a stable, reliable and proven infrastructure to assist providers that have an existing EHR system and are ready to connect with a robust HIE in order to meet Meaningful Use. The experience of connecting the coast has provided a unique opportunity to gain valuable experience and input from our provider community that have ultimately shaped the sequencing within the state's Operational Plan.

By leveraging MSCHIE's platform, the three foundational use cases of health information exchange are immediately enabled for MS-HIN:

- Data exchange to support transition-of-care workflow – Discharge Coordination, Referrals, Transfer to Long-Term Care, Lab Results Distribution, Feeds to Public Health, etc.
- Secure and authorized access to Community Health Records during Emergency Care scenarios
- Efficient exchange and collaboration with State and Federal programs like Medicaid and Medicare

At a more detailed level, the following proven, production-grade services are made available to MS-HIN:

- Templates for accelerated data integration (connectivity, transformation, translation, routing) for key clinical data sets - Lab Results, Radiology, Pathology and Other Transcribed Report Distribution – into Commercial EMR software packages and print devices
- Provider Directory used to provision all members of the Health Information Exchange
- Provider-level preferences for Report Distribution based on content type/source/patients
- Core Grid Infrastructure to facilitate the secure exchange of data between Ambulatory and Acute Care Providers
- Patient Consent Services
- Ambulatory Medication History Service (including State Medicaid Medications Repository)
- Community Health Record Application
- Edge Servers to support Patient Discovery (or Inquiry)

- Community Identity Management Services – Patient Identification, Indexing, Resolution
- Record Locater Services

The existing experience supporting clinical data exchange, as well as patient discovery in emergency scenarios, is helping our providers ultimately improve the quality and efficiency of the care they provide the residents of Mississippi.

Phase 1 – Rapidly Connect Ambulatory Provider Community

Phase 1 will focus on expansion of the Provider Directory from a regional to State-level asset. Part of this expansion includes adding support for the Direct project specifications for simple, secure, direct transport of health information using S/MIME-based transactions. The specifics of the expansion include:

- **Establishing a Health Information Service Provider (HISP):** MS-HIN will deploy gateway services to receive and send clinical documentation in a secure email format to known and trusted providers.
- **Provider Verification:** MS-HIN will expand the existing, tightly-controlled provider verification process in place today with the MSCHIE to serve as the basis for a state-wide process to assign Direct addresses for authenticated MS-HIN providers (Note: current process includes collection and verification of provider credentials and provider identification codes).
- **Provision Health Domain Addresses:** For every provider (or provider organization) enrolled in MS-HIN, assign and store a health domain address that allows that provider to be reached by another trusted provider.

Once upgraded, a mass deployment of MS-HIN Agent-Grid technology will be deployed to connect all priority Primary Care Providers (PCPs) in distributed, decentralized and light-touch model. Participants on the MS-HIN Grid have the ability to participate in rich, meaningful collaboration with other care providers in the mechanism that best supports their existing workflow (through provider-driven delivery preferences). For example, a Primary Care Physician (PCP) can choose to dynamically route certain clinical transactions to specific locations, systems, and/or support staff. In some care settings, Facesheets could be automatically sent to the back office billing staff, while lab test results are automatically filed in an EMR. The Agent-Grid technology supports both simple interoperability (e.g. a provider is able to attach a scanned document as part of a referral and send a direct communication to another provider on the Grid) and more intelligent routing of information (e.g. a provider is notified when data on a patient is posted to the Grid network by another provider on the Grid).

Additionally, the MS-HIN's support of the Direct project specifications provides the ability for any MS-HIN care providers to exchange data with any Direct

provisioned user, not limited or restricted to the MS-HIN network. The MS-HIN will serve as the trust broker and use the tightly-controlled provider verification process that is used today by MSCHIE and extend this process statewide in support of both the MS-HIN Grid network and Direct network specifications. This includes validation of provider accreditation, practice locations and provider ID codes in order to support clinical care summary access and exchange of lab results via simple exchange capabilities. As part of this process, MS-HIN will assign and store a Direct provider address in support of the MS-HIN's overall Provider Directory. This process will allow all providers across the state of Mississippi to quickly meet Stage 1 requirements of Meaningful Use.

Phase 1 also includes the onboarding of large data providers (e.g. LabCorp, Quest, UAL) and integrating with existing Beacon grant programs (Delta Health Alliance) to MS-HIN. Based on data collected from the environmental scan, it was identified that the commercial labs in the state (i.e., LabCorp, Quest, UAL) and primary care inpatient care settings regionally provide 75% of the lab services in the state. Additionally, MS-HIN will provide technical assistance to lab personnel to implement Direct project's transport standards and service specifications to push structured lab results to known, trusted health care providers. Bringing these data providers onboard is key to facilitating early exchange between non-affiliated MS-HIN providers.

MS-HIN will also target getting rural providers electronic during this phase by cooperating with the Delta Health Alliance and their Beacon Community Grant efforts. Specifically, the Delta Health Alliance is connecting those providers that have EHRs across the Delta Region. MS-HIN will build upon this provider network by enabling non-EHR rural providers with simple messaging capabilities to participate in meaningful exchange of clinical care summaries with those that are connecting as part of the Beacon Grant.

The figure below highlights Phase 1 services (in yellow) of MS-HIN network. Phase 1 will allow all providers across Mississippi the opportunity to qualify for Meaningful Use.

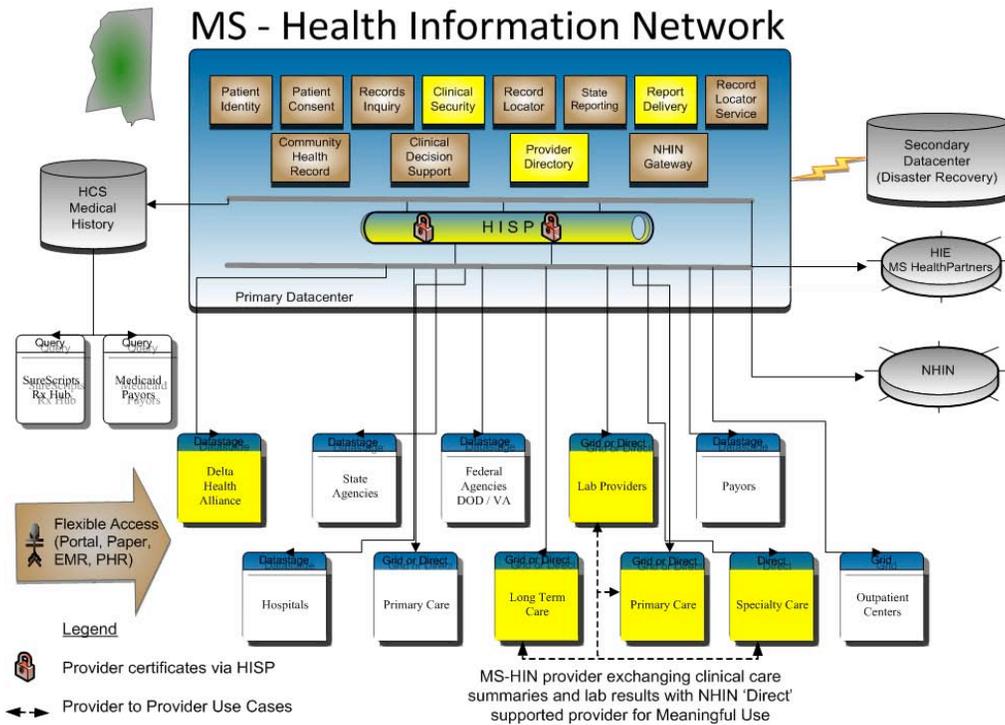


Figure 19: MS-HIN Phase 1 – Rapid Connection of All Ambulatory Providers

Phase 2 – Expand State-level Services

Once the MS-HIN Grid is established, each connected care setting will have access to state-level services that have traditionally been very difficult for many to interoperate with such as:

- Submission of data to Bio-surveillance departments
- Bi-directional exchange with Immunization Registry
- Support for Federated/Hybrid Clinical Document Search/Retrieval
- Exchange with Federal Partners like the VA, DoD, IHS, SSA, etc.
- Exchange with adjacent HIEs, or other State HIEs
- Enabling simple connectivity to a growing number of cloud-based Personal Health Record applications

As an illustrative example, all connected Ambulatory Care Providers can leverage the MS-HIN Grid technology to interact with Public Health Reporting services, such as bi-directional exchange with their Immunization Registry or submission of key data sets to the state’s Bio-surveillance department.

Specifically during Phase 2, integration with the State’s Immunization Registry will be completed using standard vaccination transactions – VXQ, VXX, VXR and VXU – wrapped in either batch uploads, interactive web form updates, embedded transactions using synchronous web services interactions, or asynchronous

submissions using the Direct specifications. Supporting all four modes/interfaces will establish connectivity quickly taking into account the care setting's level of technology adoption.

Also during this phase, select organizations will be connected to the State's Record Locator Service (RLS) to expand the data sets available, as well as include more of a representative population of the State in the Community Master Person Index (CMPI). The work has been architected using the latest IHE profiles adopted by the ONC Standards & Interoperability Framework for NHIN Exchange.

Expansion of the CMPI and RLS are critical pre-requisites to deployment of more advanced State-level services like NHIN Exchange Gateway that will allow the State's providers to participate in authorized exchange of clinical documentation with Federal agencies like VA, DoD, HIS and the SSA – as well as adjacent and/or other Health Information Exchange networks.

The figure below details the higher level HIE services to be deployed in Phase 2 of the MS-HIN.

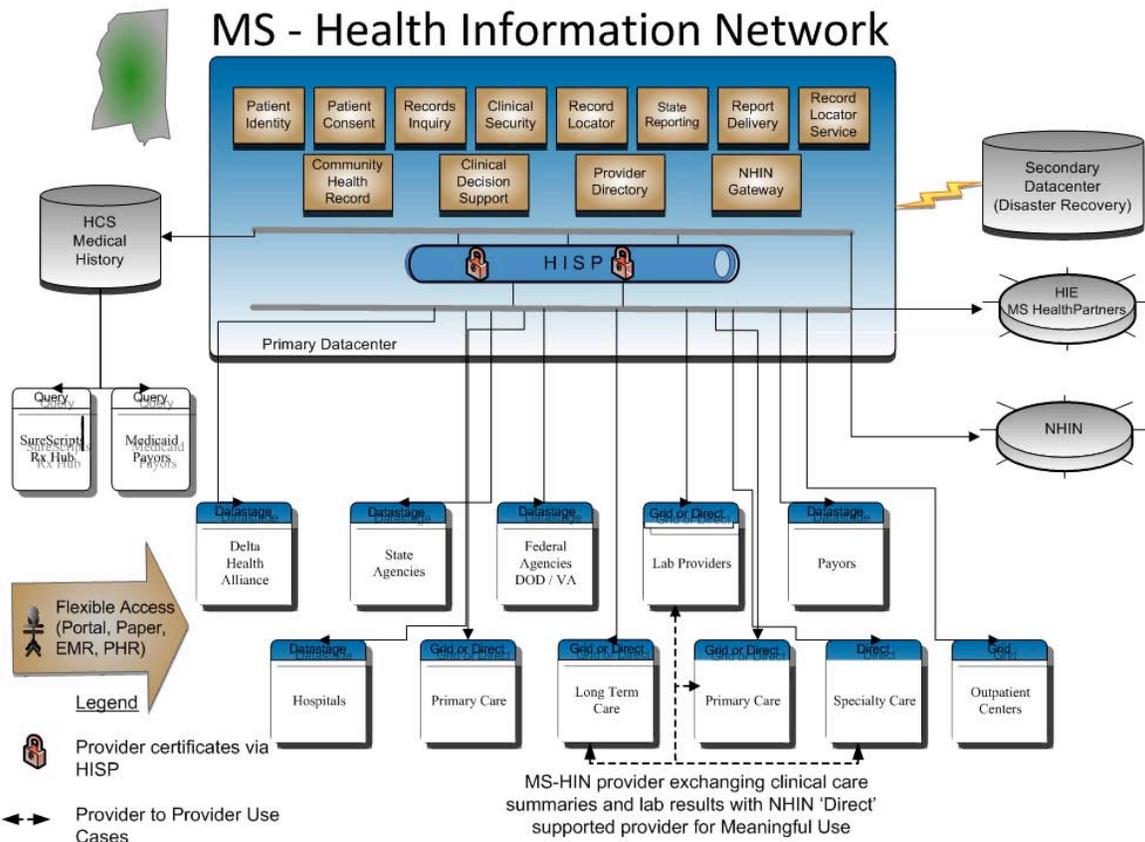


Figure 20: MS-HIN Phase 2 – Expand State-level Services

Phase 3 – Quality Programs and Consumer Engagement

Once all of the core connectivity components have been deployed to the provider community and key agencies within the state (Grid, NHIN Gateway, Expansion of State-level Services) MS-HIN will shift its focus to facilitating/supporting next generation care delivery models such as Accountable Care Organizations (ACOs) and Patient Centered Medical Home (PCMH). An important component in all of those programs is consumer engagement.

In an effort to support providers and quality organizations, MS-HIN will deploy a Personal Health Record (PHR) Gateway that simplifies the framework and connectivity to the market-leading cloud-based PHR technologies. MS-HIN providers will have the opportunity to focus on crafting personalized, meaningful patient communication (with clinical document attachments), without having to work through the complex and disparate technical details of integrating their practice to a PHR technology.

In addition to connecting patients and providers, MS-HIN will also begin to selectively deploy targeted condition/disease registries to begin quality tracking in this phase of the rollout – i.e., diabetes care, chronic heart failure, etc.

Project Schedule

The Project Schedule detailed below describes the tasks and subtasks that will be completed over the next four years to enable and implement the MS-HIN. Dates are projected based on reasonable assumptions for ONC approval.

MS Operational Project Plan					
ID	Task Name	Duration	Start	Finish	Predec
1	MS HIE Strategic & Operational Plan Deployment	1185 days	10/1/10	4/16/15	
2	Negotiate with Medicity	60 days	10/1/10	12/23/10	
3	Develop Process for Metrics and Evaluation	10 days	10/1/10	10/14/10	
4	Present Initial Propbsal	5 days	10/15/10	10/21/10	3
5	Allow for Medicity to Review and Respond	30 days	10/22/10	12/2/10	4
6	Evaluate Medicity Response	10 days	12/3/10	12/16/10	5
7	Award New Medicity Contract	5 days	12/17/10	12/23/10	6
8	Coordinate with State Teams	1046 days	10/15/10	10/17/14	
9	Work With State Legislature	976 days	1/21/11	10/17/14	
56	Coordinate with Medicaid	976 days	1/21/11	10/17/14	
103	Cordinate with Medicare	976 days	1/21/11	10/17/14	
150	Monthly Update Meetings with State HIE	438 days	10/15/10	6/19/12	
173	State HIE Program Reporting	986 days	1/14/11	10/24/14	
174	Submit ARRA Reports Quarterly	976 days	1/21/11	10/17/14	
191	Submit Financial Status Reports Quarterly to ONC	976 days	1/28/11	10/24/14	
208	Submit ONC Program Progress Reports Semi-Annually	911 days	1/14/11	7/11/14	
217	Participation / Data Use Agreements (DURSA)	26 days	1/24/11	2/28/11	
218	Review Federal DURSA	10 days	1/24/11	2/4/11	233
219	Confer with Legal for State DESA Requirments	10 days	2/7/11	2/18/11	218
220	Finalize Standardized Language	5 days	2/21/11	2/25/11	219
221	Review Annually as Environment Changes (ongoing)	1 day	2/28/11	2/28/11	220
222	Communications Plan	65 days	3/1/11	5/30/11	221
223	Develop Communications Plan and Strategy	30 days	3/1/11	4/11/11	
224	Report on Goals to HIT Committee	5 days	4/12/11	4/18/11	223
225	Notify Regional Extension Centers of Goals	5 days	4/19/11	4/25/11	224
226	Notify EP/H of Goals	5 days	4/26/11	5/2/11	225
227	Report on Final Implementation Plans	5 days	5/3/11	5/9/11	226
228	Finalize Test Communications Plan	10 days	5/3/11	5/16/11	226
229	Report Readiness Status to HIT Committee	5 days	5/17/11	5/23/11	228
230	Develop Plan for Offering Technical Assistance	10 days	5/17/11	5/30/11	228

MS Operational Project Plan					
ID	Task Name	Duration	Start	Finish	Predec
231	Statewide HIE Preliminary Planning	90 days	1/3/11	5/6/11	
232	Update Strategic & Operational Plan per State Requirements	90 days	1/3/11	5/6/11	
233	Update Governance Requirements	3 wks	1/3/11	1/21/11	
234	Update Finance Requirements	3 wks	1/3/11	1/21/11	
235	Update Technical Infrastructure Requirements	3 wks	1/3/11	1/21/11	
236	Update Business & Technical Operations Requirements	3 wks	1/3/11	1/21/11	
237	Update Legal Policy Requirements	3 wks	1/3/11	1/21/11	
238	Align State Medicaid HIT Plan with State HIE Plan	5 wks	1/24/11	2/25/11	237
239	Align State Public Health Requirements with State HIE Plan	5 wks	1/24/11	2/25/11	237
240	Consolidate Statewide HIE Strategic & Operational Plan with HIE Business Plan	5 wks	2/28/11	4/1/11	239
241	Obtain Endorsement of Strategic & Operational Plan from ITD Board & Shareholders	5 wks	4/4/11	5/6/11	240
242	Complete Environmental Scan of Existing Assets	30 days	1/24/11	3/4/11	233
243	Evaluate Existing HIE Assets	30 days	1/24/11	3/4/11	
244	Evaluate State Department Assets	30 days	1/24/11	3/4/11	
245	Evaluate HIE Participant Assets	30 days	1/24/11	3/4/11	
246	Phase 0: State HIE Program Meetings & Training	1 day	5/10/11	5/10/11	
247	Attend Kick-Off Summit & Leadership Training	1 day	5/10/11	5/10/11	172
248	Phase 0: Upgrade MS-HIN HIE Infrastructure	165 days	5/10/11	12/26/11	
249	Upgrade HIE Servers -- Hardware	6 wks	5/10/11	6/20/11	172
250	Upgrade HIE Servers -- Software	2 wks	6/21/11	7/4/11	249
251	Upgrade HIE Servers -- Licenses	1 wk	6/21/11	6/27/11	249
252	Integrate Single - Sign On Capabilities	3 wks	6/21/11	7/11/11	249
253	Provider Adoption	45 days	5/11/11	7/12/11	247
254	Identify Team to Meet with Providers	5 days	5/11/11	5/17/11	
255	Survey Providers for Adoption Criteria	30 days	5/18/11	6/28/11	254
256	Incorporate Provider Feedback into Operation Plan	10 days	6/29/11	7/12/11	255
257	Install State HIE	125 days	7/5/11	12/26/11	
258	Select Data Center in State of Mississippi	15 days	7/5/11	7/25/11	250

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MS Operational Project Plan					
ID	Task Name	Duration	Start	Finish	Predec
259	Install Federated hybrid Servers at MS D/C	15 days	7/26/11	8/15/11	258
260	Review Meaningful Use for Updated Applications	10 days	8/16/11	8/29/11	259
261	Install HIE Applications onto MS HIE Servers	45 days	8/30/11	10/31/11	260
262	Test Identified Applications	30 days	11/1/11	12/12/11	261
263	Install NHIN HIE CONNECT Gateway	5 days	12/13/11	12/19/11	262
264	Install FIM / SSO / RBAC Privacy System	5 days	12/20/11	12/26/11	263
265	Phase 0: HIE Pre-Production Activities	20 days	5/10/11	6/6/11	
266	Complete Privacy & Security Policies	2 wks	5/10/11	5/23/11	172
267	Develop Patient - Opt Out Policies & procedures	2 wks	5/10/11	5/23/11	172
268	Obtain HIE Security Certification	2 wks	5/10/11	5/23/11	172
269	Comply with Standards to Support Meaningful Use	2 wks	5/10/11	5/23/11	172
270	Develop Process to Capture HIE Status & Metrics	2 wks	5/24/11	6/6/11	269
271	Phase 1: Stakeholder Integration - Healthcare Ecosystems	242 days	6/7/11	5/9/12	
272	Regional Ecosystem 1	30 days	6/7/11	7/18/11	270
273	Network Subscription Agreement Review & Signature	1 wk	6/7/11	6/13/11	
274	Interface Requirements Gathering	2 wks	6/7/11	6/20/11	
275	Install On Site Edge Server	2 days	6/7/11	6/8/11	
276	Install Clinical Interfaces	2 days	6/7/11	6/8/11	
277	Install HIE Gateway Interfaces	2 days	6/7/11	6/8/11	
278	API Interface Development (Test, Validate, Go Live)	6 wks	6/7/11	7/18/11	
279	Set Up End User Connectivity	1 day	6/7/11	6/7/11	
280	Train End Users	2 days	6/7/11	6/8/11	
281	Site Go Live	1 wk	7/4/11	7/8/11	
282	Regional Ecosystem 2	30 days	6/9/11	7/20/11	276
283	Network Subscription Agreement Review & Signature	30 days	6/9/11	7/20/11	
284	Interface Requirements Gathering	30 days	6/9/11	7/20/11	
285	Install On Site Edge Server	30 days	6/9/11	7/20/11	
286	Install Clinical Interfaces	30 days	6/9/11	7/20/11	
287	Install HIE Gateway Interfaces	30 days	6/9/11	7/20/11	
288	API Interface Development (Test, Validate, Go Live)	30 days	6/9/11	7/20/11	

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MS Operational Project Plan					
ID	Task Name	Duration	Start	Finish	Predec
289	Set Up End User Connectivity	30 days	6/9/11	7/20/11	
290	Train End Users	30 days	6/9/11	7/20/11	
291	Site Go Live	30 days	6/9/11	7/20/11	
292	Regional Ecosystem 3	30 days	7/21/11	8/31/11	286
293	Network Subscription Agreement Review & Signature	30 days	7/21/11	8/31/11	
294	Interface Requirements Gathering	30 days	7/21/11	8/31/11	
295	Install On Site Edge Server	30 days	7/21/11	8/31/11	
296	Install Clinical Interfaces	30 days	7/21/11	8/31/11	
297	Install HIE Gateway Interfaces	30 days	7/21/11	8/31/11	
298	API Interface Development (Test, Validate, Go Live)	30 days	7/21/11	8/31/11	
299	Set Up End User Connectivity	30 days	7/21/11	8/31/11	
300	Train End Users	30 days	7/21/11	8/31/11	
301	Site Go Live	30 days	7/21/11	8/31/11	
302	Regional Ecosystem 4	30 days	9/1/11	10/12/11	296
303	Network Subscription Agreement Review & Signature	30 days	9/1/11	10/12/11	
304	Interface Requirements Gathering	30 days	9/1/11	10/12/11	
305	Install On Site Edge Server	30 days	9/1/11	10/12/11	
306	Install Clinical Interfaces	30 days	9/1/11	10/12/11	
307	Install HIE Gateway Interfaces	30 days	9/1/11	10/12/11	
308	API Interface Development (Test, Validate, Go Live)	30 days	9/1/11	10/12/11	
309	Set Up End User Connectivity	30 days	9/1/11	10/12/11	
310	Train End Users	30 days	9/1/11	10/12/11	
311	Site Go Live	30 days	9/1/11	10/12/11	
312	Regional Ecosystem 5	30 days	10/13/11	11/23/11	306
313	Network Subscription Agreement Review & Signature	30 days	10/13/11	11/23/11	
314	Interface Requirements Gathering	30 days	10/13/11	11/23/11	
315	Install On Site Edge Server	30 days	10/13/11	11/23/11	
316	Install Clinical Interfaces	30 days	10/13/11	11/23/11	
317	Install HIE Gateway Interfaces	30 days	10/13/11	11/23/11	
318	API Interface Development (Test, Validate, Go Live)	30 days	10/13/11	11/23/11	

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MS Operational Project Plan					
ID	Task Name	Duration	Start	Finish	Predec
319	Set Up End User Connectivity	30 days	10/13/11	11/23/11	
320	Train End Users	30 days	10/13/11	11/23/11	
321	Site Go Live	30 days	10/13/11	11/23/11	
322	Regional Ecosystem 6	30 days	11/24/11	1/4/12	316
323	Network Subscription Agreement Review & Signature	30 days	11/24/11	1/4/12	
324	Interface Requirements Gathering	30 days	11/24/11	1/4/12	
325	Install On Site Edge Server	30 days	11/24/11	1/4/12	
326	Install Clinical Interfaces	30 days	11/24/11	1/4/12	
327	Install HIE Gateway Interfaces	30 days	11/24/11	1/4/12	
328	API Interface Development (Test, Validate, Go Live)	30 days	11/24/11	1/4/12	
329	Set Up End User Connectivity	30 days	11/24/11	1/4/12	
330	Train End Users	30 days	11/24/11	1/4/12	
331	Site Go Live	30 days	11/24/11	1/4/12	
332	Regional Ecosystem 7	30 days	1/5/12	2/15/12	326
333	Network Subscription Agreement Review & Signature	30 days	1/5/12	2/15/12	
334	Interface Requirements Gathering	30 days	1/5/12	2/15/12	
335	Install On Site Edge Server	30 days	1/5/12	2/15/12	
336	Install Clinical Interfaces	30 days	1/5/12	2/15/12	
337	Install HIE Gateway Interfaces	30 days	1/5/12	2/15/12	
338	API Interface Development (Test, Validate, Go Live)	30 days	1/5/12	2/15/12	
339	Set Up End User Connectivity	30 days	1/5/12	2/15/12	
340	Train End Users	30 days	1/5/12	2/15/12	
341	Site Go Live	30 days	1/5/12	2/15/12	
342	Regional Ecosystem 8	30 days	2/16/12	3/28/12	336
343	Network Subscription Agreement Review & Signature	30 days	2/16/12	3/28/12	
344	Interface Requirements Gathering	30 days	2/16/12	3/28/12	
345	Install On Site Edge Server	30 days	2/16/12	3/28/12	
346	Install Clinical Interfaces	30 days	2/16/12	3/28/12	
347	Install HIE Gateway Interfaces	30 days	2/16/12	3/28/12	
348	API Interface Development (Test, Validate, Go Live)	30 days	2/16/12	3/28/12	

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MS Operational Project Plan					
ID	Task Name	Duration	Start	Finish	Predec
349	Set Up End User Connectivity	30 days	2/16/12	3/28/12	
350	Train End Users	30 days	2/16/12	3/28/12	
351	Site Go Live	30 days	2/16/12	3/28/12	
352	Regional Ecosystem 9	30 days	3/29/12	5/9/12	346
353	Network Subscription Agreement Review & Signature	30 days	3/29/12	5/9/12	
354	Interface Requirements Gathering	30 days	3/29/12	5/9/12	
355	Install On Site Edge Server	30 days	3/29/12	5/9/12	
356	Install Clinical Interfaces	30 days	3/29/12	5/9/12	
357	Install HIE Gateway Interfaces	30 days	3/29/12	5/9/12	
358	API Interface Development (Test, Validate, Go Live)	30 days	3/29/12	5/9/12	
359	Set Up End User Connectivity	30 days	3/29/12	5/9/12	
360	Train End Users	30 days	3/29/12	5/9/12	
361	Site Go Live	30 days	3/29/12	5/9/12	
362	Phase 2: Other Trading Partners Integration	292 days	5/10/12	6/21/13	246
363	Integration: State Systems	164 days	5/10/12	12/25/12	
364	State System 1	52 days	5/10/12	7/20/12	271
365	Network Subscription Agreement Review & Signature	1 wk	5/10/12	5/16/12	
366	Interface Requirements Gathering	1 wk	5/17/12	5/23/12	365
367	Install On Site Edge Server	1 wk	5/24/12	5/30/12	366
368	Install Clinical Interfaces	1 wk	5/31/12	6/6/12	367
369	Install HIE Gateway Interfaces	1 wk	6/7/12	6/13/12	368
370	API Interface Development (Test, Validate, Go Live)	3 wks	6/7/12	6/27/12	368
371	Set Up End Users	1 wk	6/28/12	7/4/12	370
372	Train End Users	1 wk	7/5/12	7/11/12	371
373	Install User Certificates	1 day	7/12/12	7/12/12	372
374	End User Privacy & Security Training	1 day	7/13/12	7/13/12	373
375	Activate Single Sign On	1 wk	7/16/12	7/20/12	374
376	Site Go Live	1 day	7/16/12	7/16/12	374
377	State System 2	52 days	7/5/12	9/14/12	371
378	Network Subscription Agreement Review & Signature	1 wk	7/5/12	7/11/12	367

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MS Operational Project Plan					
ID	Task Name	Duration	Start	Finish	Predec
379	Interface Requirements Gathering	1 wk	7/12/12	7/18/12	378
380	Install On Site Edge Server	1 wk	7/19/12	7/25/12	379
381	Install Clinical Interfaces	1 wk	7/26/12	8/1/12	380
382	Install HIE Gateway Interfaces	1 wk	8/2/12	8/8/12	381
383	API Interface Development (Test, Validate, Go Live)	3 wks	8/2/12	8/22/12	381
384	Set Up End Users	1 wk	8/23/12	8/29/12	383
385	Train End Users	1 wk	8/30/12	9/5/12	384
386	Install User Certificates	1 day	9/6/12	9/6/12	385
387	End User Privacy & Security Training	1 day	9/7/12	9/7/12	386
388	Activate Single Sign On	1 wk	9/10/12	9/14/12	387
389	Site Go Live	1 day	9/10/12	9/10/12	387
390	State System 3	52 days	8/2/12	10/12/12	381
391	Network Subscription Agreement Review & Signature	1 wk	8/2/12	8/8/12	380
392	Interface Requirements Gathering	1 wk	8/9/12	8/15/12	391
393	Install On Site Edge Server	1 wk	8/16/12	8/22/12	392
394	Install Clinical Interfaces	1 wk	8/23/12	8/29/12	393
395	Install HIE Gateway Interfaces	1 wk	8/30/12	9/5/12	394
396	API Interface Development (Test, Validate, Go Live)	3 wks	8/30/12	9/19/12	394
397	Set Up End User Portals	1 wk	9/20/12	9/26/12	396
398	Train End Users on Portals	1 wk	9/27/12	10/3/12	397
399	Install User Certificates	1 day	10/4/12	10/4/12	398
400	End User Privacy & Security Training	1 day	10/5/12	10/5/12	399
401	Activate Single Sign On	1 wk	10/8/12	10/12/12	400
402	Site Go Live	1 day	10/8/12	10/8/12	400
403	State System 4	52 days	8/23/12	11/2/12	391
404	Network Subscription Agreement Review & Signature	1 wk	8/23/12	8/29/12	393
405	Interface Requirements Gathering	1 wk	8/30/12	9/5/12	404
406	Install On Site Edge Server	1 wk	9/6/12	9/12/12	405
407	Install Clinical Interfaces	1 wk	9/13/12	9/19/12	406
408	Install HIE Gateway Interfaces	1 wk	9/20/12	9/26/12	407

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MS Operational Project Plan					
ID	Task Name	Duration	Start	Finish	Predec
409	API Interface Development (Test, Validate, Go Live)	3 wks	9/20/12	10/10/12	407
410	Set Up End User Portals	1 wk	10/11/12	10/17/12	409
411	Train End Users on Portals	1 wk	10/18/12	10/24/12	410
412	Install User Certificates	1 day	10/25/12	10/25/12	411
413	End User Privacy & Security Training	1 day	10/26/12	10/26/12	412
414	Activate Single Sign On	1 wk	10/29/12	11/2/12	413
415	Site Go Live	1 day	10/29/12	10/29/12	413
416	State System 5	52 days	10/15/12	12/25/12	401
417	Network Subscription Agreement Review & Signature	1 wk	10/15/12	10/19/12	406
418	Interface Requirements Gathering	1 wk	10/22/12	10/26/12	417
419	Install On Site Edge Server	1 wk	10/29/12	11/2/12	418
420	Install Clinical Interfaces	1 wk	11/5/12	11/9/12	419
421	Install HIE Gateway Interfaces	1 wk	11/12/12	11/16/12	420
422	API Interface Development (Test, Validate, Go Live)	3 wks	11/12/12	11/30/12	420
423	Set Up End User Portals	1 wk	12/3/12	12/7/12	422
424	Train End Users on Portals	1 wk	12/10/12	12/14/12	423
425	Install User Certificates	1 day	12/17/12	12/17/12	424
426	End User Privacy & Security Training	1 day	12/18/12	12/18/12	425
427	Activate Single Sign On	1 wk	12/19/12	12/25/12	426
428	Site Go Live	1 day	12/19/12	12/19/12	426
429	Integration: Healthcare Trading Partners - Including hospitals	82 days	11/5/12	2/26/13	
430	Partner 1	37 days	11/5/12	12/25/12	
431	Network Subscription Agreement Review & Signature	1 wk	11/5/12	11/9/12	419
432	Interface Requirements Gathering	1 wk	11/12/12	11/16/12	431
433	Install On Site Edge Server	1 wk	11/19/12	11/23/12	432
434	Install Clinical Interfaces	1 wk	11/26/12	11/30/12	433
435	Install HIE Gateway Interfaces	1 wk	12/3/12	12/7/12	434
436	API Interface Development (Test, Validate, Go Live)	3 wks	12/3/12	12/21/12	434
437	End User Privacy & Security Training	1 day	12/24/12	12/24/12	436
438	Site Go Live	1 day	12/25/12	12/25/12	437

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MS Operational Project Plan					
ID	Task Name	Duration	Start	Finish	Predec
439	Partner 2	37 days	11/26/12	1/15/13	
440	Network Subscription Agreement Review & Signature	1 wk	11/26/12	11/30/12	433
441	Interface Requirements Gathering	1 wk	12/3/12	12/7/12	440
442	Install On Site Edge Server	1 wk	12/10/12	12/14/12	441
443	Install Clinical Interfaces	1 wk	12/17/12	12/21/12	442
444	Install HIE Gateway Interfaces	1 wk	12/24/12	12/28/12	443
445	API Interface Development (Test, Validate, Go Live)	3 wks	12/24/12	1/11/13	443
446	End User Privacy & Security Training	1 day	1/14/13	1/14/13	445
447	Site Go Live	1 day	1/15/13	1/15/13	446
448	Partner 3	37 days	12/17/12	2/5/13	
449	Network Subscription Agreement Review & Signature	1 wk	12/17/12	12/21/12	442
450	Interface Requirements Gathering	1 wk	12/24/12	12/28/12	449
451	Install On Site Edge Server	1 wk	12/31/12	1/4/13	450
452	Install Clinical Interfaces	1 wk	1/7/13	1/11/13	451
453	Install HIE Gateway Interfaces	1 wk	1/14/13	1/18/13	452
454	API Interface Development (Test, Validate, Go Live)	3 wks	1/14/13	2/1/13	452
455	End User Privacy & Security Training	1 day	2/4/13	2/4/13	454
456	Site Go Live	1 day	2/5/13	2/5/13	455
457	Partner 4	37 days	1/7/13	2/26/13	
458	Network Subscription Agreement Review & Signature	1 wk	1/7/13	1/11/13	451
459	Interface Requirements Gathering	1 wk	1/14/13	1/18/13	458
460	Install On Site Edge Server	1 wk	1/21/13	1/25/13	459
461	Install Clinical Interfaces	1 wk	1/28/13	2/1/13	460
462	Install HIE Gateway Interfaces	1 wk	2/4/13	2/8/13	461
463	API Interface Development (Test, Validate, Go Live)	3 wks	2/4/13	2/22/13	461
464	End User Privacy & Security Training	1 day	2/25/13	2/25/13	463
465	Site Go Live	1 day	2/26/13	2/26/13	464
466	Integration: Neighboring Statewide HIEs	120 days	1/7/13	6/21/13	
467	State HIE 1 - Tennessee	60 days	1/7/13	3/29/13	451
468	DURSA Agreement Review & Signature	60 days	1/7/13	3/29/13	

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MS Operational Project Plan					
ID	Task Name	Duration	Start	Finish	Predec
469	Use case, workflow, interface Requirements Gathering	60 days	1/7/13	3/29/13	
470	Implement business use cases and workflows	60 days	1/7/13	3/29/13	
471	NHIN Gateway Setup and Testing	60 days	1/7/13	3/29/13	
472	Integrate Intra-HIE HIS systems & services	60 days	1/7/13	3/29/13	
473	Pre-production: Use cases and workflows (Test, Validate, Go Live	60 days	1/7/13	3/29/13	
474	End User Training: Services, Privacy & Security	60 days	1/7/13	3/29/13	
475	Go-Live	60 days	1/7/13	3/29/13	
476	State HIE 2 - Louisiana	60 days	4/1/13	6/21/13	475
477	DURSA Agreement Review & Signature	60 days	4/1/13	6/21/13	
478	Use case, workflow, interface Requirements Gathering	60 days	4/1/13	6/21/13	
479	Implement business use cases and workflows	60 days	4/1/13	6/21/13	
480	NHIN Gateway Setup and Testing	60 days	4/1/13	6/21/13	
481	Integrate Intra-HIE HIS systems & services	60 days	4/1/13	6/21/13	
482	Pre-production: Use cases and workflows (Test, Validate, Go Live	60 days	4/1/13	6/21/13	
483	End User Training: Services, Privacy & Security	60 days	4/1/13	6/21/13	
484	Go-Live	60 days	4/1/13	6/21/13	
485	End of Phase HIE Status Update	14 days	2/27/13	3/18/13	465
486	Evaluate Project Plan	5 days	2/27/13	3/5/13	
487	Evaluate Risk Assessment Strategy	5 days	3/6/13	3/12/13	486
488	Report to HIE Oversight Committee	1 day	3/13/13	3/13/13	487
489	Adjust Project Plan (if Needed)	3 days	3/14/13	3/18/13	488
490	Adjust Risk Mitigation Plan (if Needed)	3 days	3/14/13	3/18/13	488
491	Phase 3: Meaningful Use Stage 2 Transition	70 days	3/19/13	6/24/13	
492	Revisit Meaningful Use with ITD	2 wks	3/19/13	4/1/13	490
493	Upgrade Gateway Service Modules	2 wks	4/2/13	4/15/13	492
494	Market & Promote Enhanced Meaningful Use Modules	2 wks	4/16/13	4/29/13	493
495	Integrate New Modules into End User Training	6 wks	4/30/13	6/10/13	494
496	Promote New Module Integrated Network Services	2 wks	6/11/13	6/24/13	495
497	Evaluate HIE Exchange Performance and Functionality	10 days	6/11/13	6/24/13	495
498	Phase 4: Site Installations -- Expansion by Regional Areas	1027 days	5/11/11	4/16/15	

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MS Operational Project Plan					
ID	Task Name	Duration	Start	Finish	Predec
499	Regional Area 7	800 days	5/11/11	6/3/14	246
500	Regional Area 2	800 days	6/6/11	6/27/14	
501	Regional Area 6	800 days	8/1/11	8/22/14	
502	Regional Area 5	800 days	10/3/11	10/24/14	
503	Regional Area 3	800 days	12/5/11	12/26/14	
504	Regional Area 1	800 days	2/6/12	2/27/15	
505	Regional Area 4	800 days	3/5/12	3/27/15	
506	End of Phase HIE Status Update	14 days	3/30/15	4/16/15	505
507	Evaluate Project Plan	5 days	3/30/15	4/3/15	
508	Evaluate Risk Assessment Strategy	5 days	4/6/15	4/10/15	507
509	Report to HIE Oversight Committee	1 day	4/13/15	4/13/15	508
510	Adjust Project Plan (if Needed)	3 days	4/14/15	4/16/15	509
511	Adjust Risk Mitigation Plan (if Needed)	3 days	4/14/15	4/16/15	509

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14.6.1. Required Funding

In Section 14.11.4 and 14.11.5 below, detailed funding requirements for both capital and operating expenses are shown. Discussions with most of the major stakeholders have been held and indications are positive that they will support the MS-HIN and provide the necessary operational funding. Given the current financial situation in Mississippi, legislative funding will be challenging.

14.6.2. Medicaid Role

Medicaid is a key participant in building the MS-HIN. They are a major user as well as a major funder. Initial discussions have already been held with the Medicaid Chief Information Officer (CIO). Currently, the State is working on the financial sustainability model and has included this funding to assist with initial build-out expenses.

In addition, Medicaid has a seat on the MS-HIN Board. Medicaid's Chief Information Officer is the Board representative and has been actively engaged in Board activities. Medicaid will work in partnership with the MS-HIN, providing both leadership and funding support (as appropriate) to assure that Medicaid beneficiaries are best represented and served by the MS-HIN. Mississippi ITS staff members work directly with the MS-HIN and are specifically chartered to ensure that MS-HIN is compliant with the State of Mississippi's laws and policies.

14.7. ONC Required Support

The State will require continual and ongoing guidance from the ONC in the areas of information sharing and multi-state meetings. These meetings will facilitate discussions and review of evolving knowledge and respond to the expressed needs of various states.

14.8. Environmental Scan Gap Strategies

While the Environmental Scan was thorough, additional work is required to address the gaps in HIE capabilities and identify provider requirements at a more detailed level - specifically, focusing on lab results delivery, e-Prescribing, and transmission of patient summary records (CCD).

The MS-HIN has identified the following strategies to immediately expand on the work completed during the Environmental Scan:

- Establish a plan to gather the necessary additional details required at the individual provider level (October 2010)
- Conduct additional data gathering across the State to gather the essential information (November 2010)

Once the needed information is gathered, the MS-HIN will develop policies and procedures to enhance and extend the initial HIE activities and provide direction to public and private stakeholders. Strategies will include, but are not limited to:

- Building upon the capacity of public health systems to accept electronic reporting of immunizations, notifiable diseases, and syndromic surveillance reporting
 - Currently, 28% of the licensed acute care facilities in Mississippi report syndromic surveillance data electronically to the Department of Health and they are expanding the system by adding electronic lab reporting and immunization profiles
- Enabling clinical quality reporting to Medicaid and Medicare
 - Connecting federal agencies via the NHIN will allow exchange of required information for programs such as the Patient Quality Reporting Initiative (PQRI)
 - All stakeholders will be required to submit quality reports to CMS by 2015 and the statewide HIE will provide a way for them to satisfy this requirement
- Encourage pharmacies and clinical laboratories to participate in electronic service delivery
 - Set policy, purchasing and/or regulatory actions requiring e-Prescribing (for pharmacies) or electronic sharing of lab results (for clinical labs) in State or Medicaid contracts.)

14.9. Project Management Plan

14.9.1. Project Management Approach

The Institute of Electrical and Electronics Engineers (IEEE) Standard 1490-2003 adoption of the PMI's Project Management Body of Knowledge defines project management as "the application of knowledge, skills, tools, and techniques to project activities to meet project requirements." In other words, project management encompasses the standards, processes, procedures, and supporting tools necessary to plan, monitor, and execute project life cycle phases. In addition, project management goes beyond managing the daily activities of the project team. It involves monitoring and communicating the project status, ensuring the timeliness and quality of deliverables and identifying and resolving issues before the project is affected.

The MS-HIN assigned project manager shall ensure an information cross flow between the stakeholders. The project manager shall be responsible for overseeing the work of the MS-HIN implementation and shall follow these four basic project management objectives:

- High-Quality Work: Deliver a high quality project that addresses the MS-HIN business objectives and meets stakeholder requirements

- On-Time Delivery: Complete deliverables on schedule and within budget
- Effective Communication: Timely and accurate communication to project participants and stakeholders throughout the entire project
- Proactive Management: Identify potential problems before they develop, and initiate appropriate corrective action

The Project Management Body of Knowledge (PMBOK) is widely accepted as a standard for the project management profession. The PMBOK provides a framework encompassing all aspects of project management and represents generally accepted best practices. The MS-HIN will utilize PMBOK as a guide to strong project management as the HIE is constructed and begins operations.

14.9.2. Risk Mitigation

Table 19: Identified Risks and Mitigation Plan

Identified Risk	Mitigation Plan
Adoption Risks (Section 10.4.1)	
1. All 7 Ecosystems don't join HIE	A. Revise the financial sustainability plan
	B. Seek additional anchor participants
	C. Scale back on the size of the HIE
	D. Explore joining another state effort
2. Setting achievable expectations	A. Build solutions from existing architectures and software
	B. Base statewide roll-out on implementation pilot
	C. Review expectations with vendors, stakeholders and state agencies
	D. Review technological capabilities of provider locations
	E. Review and, if necessary, revise implementation timeline
3. MS-HIN fails to address stakeholder inquiries	A. Schedule additional stakeholder meetings with HIE vendor
	B. Revise stakeholder & provider support process
4. Operating costs are unsustainable	A. Delay timeline for implementation of new technology
	B. Renegotiate on-going rates for HIE services with HIE vendor
	C. Revise the financial sustainability plan
	D. Seek additional funding sources such as grants
Political Risks (Section 10.4.2)	
1. Insufficient legislative support and financing	A. Appeal to state agencies & stakeholders within State
	B. Schedule stakeholder meetings to review legislative process

	C. Seek additional funding sources such as grants
2. Resistance from lobbyists	A. Appeal to state agencies & stakeholders within State
	B. Schedule stakeholder meetings with local decision makers, politicians and influencers
	C. Appeal to CMS
	D. Appeal to the ONC
3. Resistance from state agencies	A. Appeal to stakeholders within State
	B. Revise strategic & operational plans to address needs of state agencies
	C. Appeal to CMS
	D. Appeal to the ONC
4. Required legislative action around public policy issues	A. Schedule stakeholder meetings to review policy issues
	B. Schedule stakeholder meetings to review legislative process
Business Plan/Financial Risks (Section10.4.3)	
1. Failure to follow SOP	A. Set vendor payment milestones based on SOP milestones
2. Inability of stakeholders to contribute to costs	A. Seek additional funding sources such as grants
	B. Delay timeline for implementation of new technology
Legal Risks (Section10.4.4)	
1. Privacy & Security Risks	A. Review HIPAA guidelines with operating organization
	B. Review HIPAA guidelines with HIE vendor
	C. Review HIPAA guidelines with key stakeholders & state agencies
	D. Review privacy & security technology options, revise strategic & operational plans to address risks
Technical Risks (Section10.4.5)	
1. Unanticipated ONC requirements	A. Review ONC requirements with respect to existing plans and technology
	B. Revise strategic & operational plans based on new requirements
	C. Delay timeline for implementation of technology outside of the requirements
2. Unanticipated CMS requirements	A. Review CMS requirements with respect to existing plans & technology
	B. Revise strategic & operational plans based on new requirements

	C. Delay timeline for implementation of technology outside of the requirements
3. Maintaining up-to-date technical specifications and standards	A. Build technical infrastructure according to national standards
	B. Set maintenance & support plan to include updates for new specifications and standards
	C. Revise technical specifications according to quarterly NHIN updates
	D. Require adherence to standards from IHE, NHIN, and the incentive payment plan requirements
National Risks (Section 10.4.6)	
1. Failure of Medicare to participate with MS-HIN	A. Meet with Medicare & participants to review interactions & use-cases
	B. Appeal to CMS with contact from stakeholders & state agencies
2. Failure of Medicare to share equitably in cost of MS-HIN	A. Request additional CMS HIE funding
NHIN Risks (Section 10.4.7)	
1. Multiple NHIN connections & sustainability	A. Deploy one central NHIN connection within the State
	B. Revise SOP to include NHIN gateways based purely on need, reduce number of NHIN connections to a minimum
2. Vendors to connect directly with NHIN	A. Revise state HIE technical infrastructure to be based on NHIN specifications and route communication through the NHIN-compliant state HIE
	B. Offer financial incentives for providers connecting to statewide HIE
	C. Address laws, mandates or other legislative requirements for providers joining the HIE
3. Using NHIN Direct if providers think it will address Meaningful Use needs	A. Revise statewide architecture to include NHIN direct
	B. Offer financial incentives for providers connecting to statewide HIE
	C. Address laws, mandates or other legislative requirements for providers joining the HIE
4. Educating providers about NHIN Exchange and NHIN Direct and its capabilities	A. Require NHIN outreach sessions
	B. Require NHIN educational sessions

14.10. Governance

14.10.1. Governance Structures

The structure for the Mississippi Health Information Network is set forth in Mississippi Statute (see Appendix E). The governing body is the Mississippi Health Information Network Board of Directors. The Board was appointed in September 2010 and has had monthly meeting since October 2010. Figure 21 below shows the overall structure for MS-HIN.

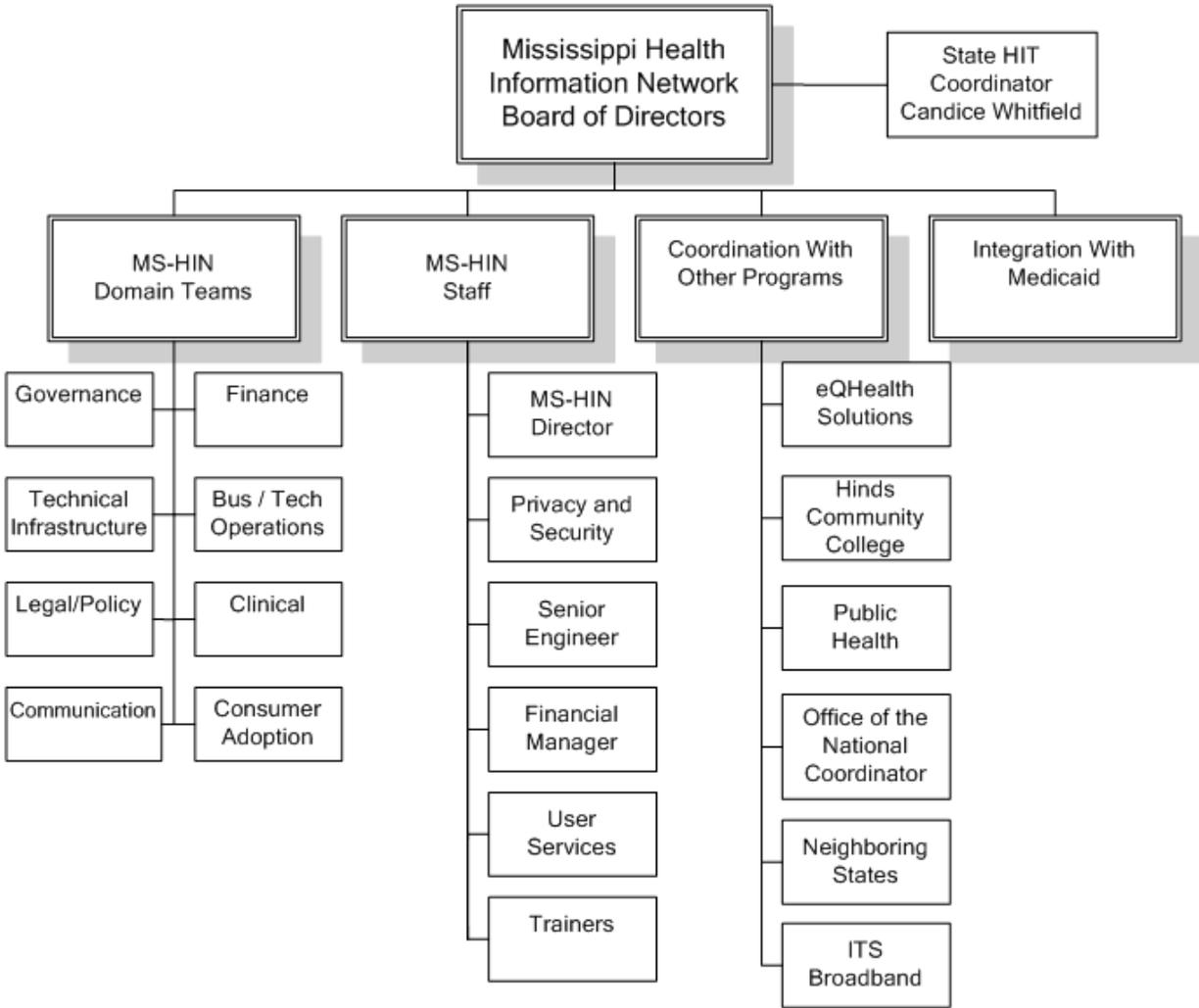


Figure 21: MS-HIN Organizational Chart

14.10.2. Stakeholder Engagement and Representation

MS-HIN has a broad representation of stakeholders and the Domain Teams are open to additional stakeholders. At the present time, over 40 entities receive regular communications from the State and the State HIT Coordinator. The MS-HIN has added a Domain Team specifically for consumers so they are clearly represented as well.

14.10.3. Oversight

The MS-HIN Board of Directors will maintain oversight responsibility for all HIE activities in the State of Mississippi. In addition, ITS staff members will work with the MS-HIN and are specifically chartered to ensure the MS-HIN is compliant with Mississippi laws and policies.

14.10.4. Policy Development

Policy development is a function of the MS-HIN Board of Directors. They will use the Domain Team structure as well as advice from various stakeholders in the development of all policy decisions. The MS-HIN requires a majority of the total membership to approve all policy decisions.

14.10.5. Advisory Groups

As shown in Figure 21 above, the MS-HIN Board of Directors has eight (8) Domain Teams to provide advice and counsel to them on all issues. In addition, MS-HIN will form special advisory groups on an as needed basis to address specific issues of importance.

14.10.6. Coordination with Medicaid and Public Health

The State HIT Coordinator is also the Governors Health Policy Advisor. She works closely with the senior staff at Medicaid to coordinate activities across a wide range of issues. The HIT Coordinator and the Medicaid Director will work closely to integrate their activities whenever and wherever possible.

14.11. Finance

14.11.1. Cost Estimates

Table 20 describes key items to be required for the implementation of a statewide Health Information Exchange. These descriptions are generic as the State feels the SOP should be approved before beginning contract negotiations with Medicity. While the core infrastructure currently in place for the MSCHIE pilot project can be utilized, vastly reducing the typical “start-up” time, the infrastructure as outlined in the SOP is slightly different. The State has had preliminary discussions with Medicity and has been assured everything as outlined in the SOP can be accomplished with the Medicity platform.

Table 20: Infrastructure Description

Item Name	Description	One-Time Fees	Annual Fees
HIE Core Infrastructure	HIE Core Infrastructure - eMPI, Single Sign-On with Identity Management Service, Record Locator Service, Patient Consent Management Service, Registries/Centralized Store of data Elements, Applications/support of Lab orders and results, e-Prescribing, Quality Reporting, Audit Logging/Reporting	License fee and one-time installation fee	Annual maintenance, support, patches, fixes, upgrades
EDGE Gateways	EDGE Gateways with Clinical Support of IHE Certified Systems (CCD)	One-time license fee, installation and integration with IHE certified EHRs	EDGE Gateways for annual connectivity, support, maintenance, and support of applications/services
Standalone Lab Interface (Orders/Results)	Standalone lab interfaces with LIS - lab orders and results management with integrated clinical data support	Standalone labs integration and installation	Maintenance, support, and ongoing connectivity
Physicians Portal Access	Physician portal access for: Includes Identity Management/Single Sign-On, State Services Access, e-Prescribing, Lab Orders/Results, Record Locator Services	Setup and training of physicians	Annual maintenance and upgrades
NHIN Gateway Connections	NHIN Gateway with external connections	One-time fees for license and setup	Annual maintenance and support
Integration with Medicaid and State Systems	Integration with Medicaid eMPI and systems, Public Health Systems, API development, etc.	One-time fees for license and setup	Annual maintenance and support
Hosting, Hardware, Etc.	Hosting, Hardware and Miscellaneous Fees	Hardware and software for main datacenter and redundant/failover datacenter	Annual maintenance and support
Optional EHR Lite offering for physicians	EHR Lite offering for physicians	One-time setup fee and training	Annual maintenance and support

Part of the stipulation for the State to utilize an existing contract, is the services received from the contracted vendor has to be the same or more, for the same or less. Using pricing agreed upon for the MSCHIE contract, and based on the experiences with the MSCHIE coastal proof-of-concept, we have given our best estimate on expected expenditures for years 1 – 4 of this cooperative agreement. A revised budget will be required once contract negotiations are concluded. It is the intent of the State to negotiate the best value of service and utilize as much of the funding as possible during year 1 and 2.

14.11.2. Staffing Plans

The MS-HIN will be managed to a significant degree by vendor contracts that are responsible for installing and maintaining many of the components of the technical infrastructure. In addition, it is believed the MS-HIN will need to employ several positions, phased in over time as shown in the pro-forma budget, to manage several of the ongoing operational aspects of the HIE. Shown below are descriptions of those positions that will be recommended to the MS-HIN Board.

For the first two years of the grant, the State is utilizing Governor's Office's staff and Department of Information Technology Services' staff to perform both the administrative and operational functions of implementing the HIE. Although the MS-HIN Board (the State's governance structure) has been established and meeting regularly since October 2010, the Board has just begun its search for a contract Program Manager. This individual will work with the State Designated Entity (SDE) and the HIT Coordinator to manage day-to-day operations as well as coordinate the work of the MS-HIN with other health related IT activities within the State. This position is responsible for carrying out the MS-HIN's mission and vision and managing the implementation of the Strategic and Operational Plan. Specific areas including communications, finance, technology, and policy; managing the State's HIE vendor contact, as well as building and maintaining relationships with diverse stakeholders - both within the state as well as nationally. This position will not be a state position because there are currently no State personnel identification numbers (PINS) associated with the Board. In the 2012 Legislative Session, the Board will ask the State Personnel Board to assign PINS in order to hire staff.

Once the PINS are valid (July of 2012) the State will hire an Executive Director, Project Manager and Administrative Assistant (see job descriptions). These individuals will assume all the responsibilities currently performed by Governor's Office and ITS staff. The Executive Director will assume the role of HIT Coordinator and ultimately be responsible for grant management and oversight of the project.

Director

The Director provides overall leadership in all areas such as communications, finance, technology, and policy. He or she will effectively coordinate, develop, and execute business plans and fundraising efforts with the MS-HIN Board of Directors, as well as manage the day-to-day operations of the organization. The Director will manage relationships among the Board of Directors as well as local and national stakeholders. He or she will also oversee the coordination and integration of the Division of Medicaid, Public Health programs, and other local, state, and national-level efforts.

Privacy and Security Officer

The role of the Privacy and Security Officer includes ensuring compliance with privacy and security standards, assessing risk and vulnerability, and overall data security. He or She will initiate and oversee projects with significant impact to the MS-HIN, including risk mitigation and policy development. The Privacy and Security Officer will work closely with legal counsel.

Financial Management

The role for the financial manager includes the responsibility of coordinating all of the financial activities of the MS-HIN. He or she will design, develop, and implement financial policies and procedures in accordance with GAAP and report on all financial matters to the MS-HIN Board of Directors. He or she will also present reports for staff and providers as well as the general public.

Data Management

The role in Data Management includes the responsibility of collecting, editing, processing, and distributing of data to meet the needs of the MS-HIN. He or she will design, develop, and implement computerized data files and information systems. He or she will also present reports for staff and providers as well as track national HIE efforts.

Senior Engineer

The Senior Engineer is responsible for the development, maintenance, and support of web-based application systems. He or She will also monitor and manage the day-to-day operations of projects or programs, as well as develop and maintain project schedules, documentation, and budgets. The senior engineer will also supervise professional, technical and support staff.

Stakeholder Services

The role of Stakeholder Services is to provide support to all users, ensuring the ability to exchange health information effectively. Stakeholder Services will include high-quality, technical staff and infrastructure for software development, system integration (mainly with EHR systems), testing (connectivity, interoperability, and end-to-end transaction), and production system/service maintenance for successful fulfillment of the project.

Trainer

The Trainer is responsible for the education and training of stakeholders. He or she will also deploy a User Acceptance Testing (UAT) process to ensure the education and materials are effective and useful to the providers and consumers. The Trainer will provide additional training in areas such as HITECH/Meaningful Use, ARRA/Stimulus Funding, and HIE Integration. The Trainer will also provide

training to the REC, so the REC will be fully capable of providing the same level of service after the engagement.

Development Officer

The Development Officer will manage and coordinate fundraising efforts, and will build and maintain relationships with donors. He or she will maintain records of past and current approaches to outside funding sources. The Development Officer will also be responsible for the development and implement marketing strategy.

Health Information Consultant

In Section 10.10 of the Strategic Plan, a description of the revenue generating, value added services the HIE will offer stakeholders is described. In order to offer these services, staff members will be required to develop and provide these services. Staff will need to be employed to offer these services and will require competencies and skills to complete a client assessment, analyze data and information, prepare recommendations and reports, and present solutions to stakeholders.

14.11.3. Controls and Reporting

The MS-HIN will employ standard GAAP processes to fulfill its promise of openness and transparency in all financial activities. The MS-HIN will provide regular and frequent reports to stakeholders, consumers, and legislators.

14.11.4. Pro-Forma Capital Budget

In

Table 21, capital costs are presented for building the MS-HIN over the next four years. Recognizing that the grant funds from the Cooperative Agreement Program have an escalating match from the State (100% year 1, \$1 for every \$10 in Year 2, \$1 for every \$7 in Year 3 and \$1 for every \$3 in Year 4), the following budget shows the amount of funding commitment from the State of Mississippi to build the HIE. Project management is shown for the first two years as most of the work is required during this time period. Consulting assistance is also shown for the first two years of operations.

Table 21: Capital Budget by Years

	CY 2011	CY 2012	CY 2013	CY 2014
Revenue				
Cooperative Agreement	\$ 5,254,325	\$ 3,043,907	\$ 667,912	\$ -
State of Mississippi	\$ 519,659	\$ 1,304,531	\$ 1,558,462	\$ 555,000
Total Revenue	\$ 5,773,984	\$ 4,348,438	\$ 2,226,374	\$ -
Expense				
Implementation Services	\$ 536,128	\$ 741,728	\$ 568,334	\$ 280,264
ASP Services	\$ 868,388	\$ 814,115	\$ 488,468	\$ 162,823
Software Licenses	\$ 1,565,000	\$ 525,000	\$ 375,000	\$ 75,000
Integration Services	\$ 572,000	\$ 843,000	\$ 95,000	\$ 415,000
NHIN Gateway	\$ 250,000			\$ -
Business Planning Services	\$ 294,468	\$ 210,000	\$ 95,000	\$ 95,000
Other	\$ 300,000	\$ 64,595	\$ 29,572	\$ 16,923
Optional EHR Lite	\$ 588,000	\$ 600,000	\$ 575,000	\$ 555,000
Project Management	\$ 350,000	\$ 300,000		
Consulting Assistance	\$ 450,000	\$ 250,000		
Total Expense	\$ 5,773,984	\$ 4,348,438	\$ 2,226,374	\$ 1,600,010

14.11.5. Pro-Forma Operating Budget

The MS-HIN will require fees to fund operations over time. Expenses will include projected ongoing maintenance and licensing fees, staff salaries and benefits, project management, and consulting assistance. Ongoing maintenance and licensing fees are based on the capital budget shown the Section above. Staff salaries and benefits are based on a phased-in approach to staff according to the increasing needs of the operations.

Table 22 shows the pro-forma budget for the first four years of operations.

- Budget Assumptions
 - MS-HIN becomes effectively operational on March 1, 2011, therefore, federal matching (\$10 to \$1) is only available for 7 months of the first year
 - Revenue is received per the strategic plan
 - It is anticipated that staffing ramps up over a three year period
 - 2011 – Director, Privacy and Security (6 months), Development Officer (6 months)
 - 2012 – Make Privacy and Security and Development Officer full time, add Data Management, Senior Engineer, and Consultant (6 months), add User Services and Trainer full time
 - 2013 – All staff full time and additional staff is included
 - EHR Lite is optional and will be offered on a fee for service basis

Table 22: Annual Operating Budget

	CY 2011	CY 2012	CY 2013	CY 2014
Revenue				
State of Mississippi	\$ -	\$ 481,150	\$ 579,900	\$ 618,625
Providers/Payers	\$ 5,017,800	\$ 7,217,250	\$ 8,118,600	\$ 7,423,500
Medicaid (Estimated)	\$ 1,672,600	\$ 1,924,600	\$ 2,319,600	\$ 2,474,500
Fees for Services (EHR Lite Fees)	\$ 345,600	\$ 504,000	\$ 1,264,275	\$ 2,000,600
Total Revenue	\$ 7,036,000	\$ 10,127,000	\$ 12,282,375	\$ 12,517,225
Expense				
Annual Maintenance	\$ 108,000	\$ 270,000	\$ 486,000	\$ 540,000
Other Support Fees	\$ 6,000,000	\$ 8,000,000	\$ 9,000,000	\$ 9,000,000
NHIN Gateway	\$ 90,000	\$ 150,000	\$ 150,000	\$ 150,000
Integration with State Systems	\$ 32,400	\$ 54,000	\$ 54,000	\$ 54,000
Hosting, Hardware, etc	\$ 72,000	\$ 140,000	\$ 140,000	\$ 140,000
Optional EHR Lite	\$ 288,000	\$ 420,000	\$ 850,000	\$ 1,200,000
Staffing	\$ 100,000	\$ 589,000	\$ 918,000	\$ 1,288,500
Total Expense	\$ 6,690,400	\$ 9,623,000	\$ 11,598,000	\$ 12,372,500
Operating Margin	\$ 345,600	\$ 504,000	\$ 684,375	\$ 144,725

14.12. Technical Infrastructure

14.12.1. Standards and Certifications

Meeting the Meaningful Use standards is a major objective in building a statewide HIE. As such, this Operational Plan illustrates the installation of the key components necessary for meeting the criteria set by the ONC and CMS for Meaningful Use. The HHS, ONC, and CMS have recently released the Meaningful Use final rule specifying the related initial set of standards, implementation specifications, and certification criteria for EHR technology with final Meaningful Use Stage 1 objectives and measures. Aligned with general and ambulatory/inpatient specific capabilities as specified in the Meaningful Use final rule, the MS-HIN identifies the following as a minimum set of services to be offered for Stage 1:

- Electronic Prescribing Service - electronic generation and transmission of prescriptions and prescription related information
- Laboratory Results Exchange Service - electronic submission of laboratory test orders and receiving/displaying of laboratory test results

- Exchange of Patient Summary Record - in the format of HL7 CDA Release 2, Continuity of Care Document (CCD)⁹

The MS-HIN will adhere to standards (detailed in Section 11.1) adopted and recommended in the final rule:

- Vocabulary Standards
- Content Exchange Standards
- Transport Standards
- Privacy and Security Standards

The project will be phased in correlation with the recommendations of Meaningful Use. Thus, Stage One will include at a minimum:

- Demographics
- Electronic Prescribing Service
- Laboratory Results Exchange Service
- CCD exchange with minimal data elements to include:
 - Medication Allergy list
 - Medication List
 - Problems list
 - Procedures
 - Lab Order and Results

14.12.2. Technical Architecture

Each stage in the implementation process is associated with a set of activities. As shown in Figure 22, a suite of HIE-level core engines, subsystems, a HIE portal (along with set of HIE-level services), and a NHIN Gateway will be implemented based on the HIE system architecture and plan developed during the Stage 1 of the implementation. During Stage 2, participating stakeholders and trading partners will be connected to the statewide HIE, including but not limited to hospitals, regional health organizations, payers, military bases, state agencies, State Medicaid program and interstate HIEs. During Stage 3, MS-HIN will review the evolving criteria for the Meaningful Use of EHR technology and will incorporate it into the operational plan. A set of new services and engines will be added to the existing HIE services to support stakeholders as they transition to future requirements of Meaningful Use. Finally, capacity will be

⁹ HITSP/C32 “Summary Documents Using HL7 CCD Component” as an implementation specification to be adopted

expanded by adding more connections to the MS-HIN making it self-sustainable by Stage 4.

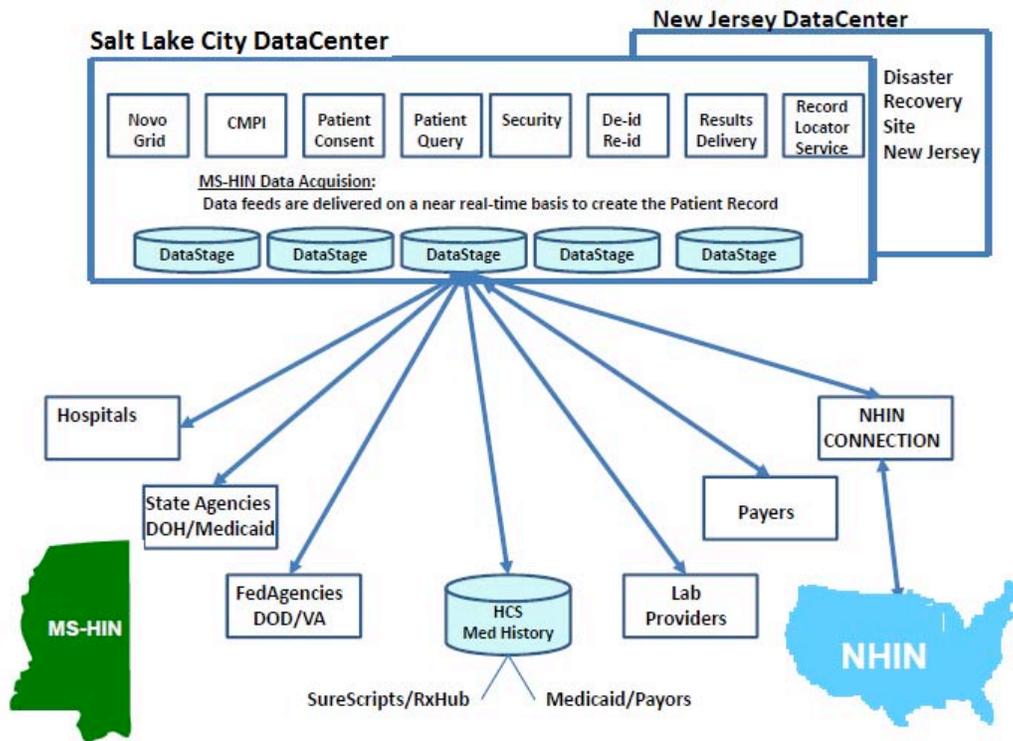


Figure 22: High-Level HIE Architecture

14.12.3. Technology Deployment

Operational Plans for the MS-HIN infrastructure and services will ensure the success of the following goals, including but not limited to:

- Leveraging of existing regional health information ecosystems
- Adhering to federal data exchange standards
- Supporting Meaning Use of EHR technology
- Improving healthcare outcomes and qualities
- Building a self-sustainable health information exchange.

In order to achieve the goals described above, the MS-HIN technical infrastructure will achieve the following objectives:

- Protection of Clinical Data by requiring:
 - Certified secure data centers ensuring robust physical security of clinical data, hosted platforms, infrastructure, and applications
 - Encryption of data at rest

- Secure transmission of health information data by encryption and/or digital signature
- Secure network firewall and infrastructure including introduction and detection/prevention components
- Well-planned policies and infrastructure for authorized access control
- Ensuring end-node security for hardware and software – computers, laptops and other mobile devices connected to the HIE - virus and malware prevention
- Logging auditable events
- Reliability and Disaster Recovery requires:
 - Avoidance of single point failures for high level reliability
 - Redundant hardware (clustering) and software deployment on one or more secure data centers – databases, software platforms (web servers, application servers, service containers to name a few), applications and etc
 - Regularly scheduled database backup on encrypted storages
 - A well planned disaster recovery plan
- Cost-efficient Scalability requires:
 - HIE services and subsystem able to handle increasing users without significant increase of cost
 - Hardware and software infrastructure designed and built to easily and cost-effectively expand hardware resources (CPU, memory, hard disks etc) and software components
 - Adoption of secure private cloud along with virtualization technology

14.13. Business and Technical Operations

Successful implementation of an HIE is in large part dependent on the actions of the stakeholders. The most critical step in obtaining stakeholder support is early involvement and transparency. Experience teaches us that this is important to the implementation process whenever action is required at the stakeholder level.

The success of this project is dependent on the acceptance, adoption, and use of EHRs and HIT services by healthcare providers at all levels. Initial participants in an HIE implementation project should reflect the greatest cross-section of the Mississippi community, including:

- An array of user types including Primary Hospitals, Clinics, Veteran Affairs, Critical Access Hospitals, Pharmacies, and Family Health Services
- A variety of EMR systems including Surescripts, McKesson, Healthland, GE Centricity and Epic
- A broad cross section of the geographic community including rural and urban areas

14.13.1. Current HIE Capacities

The implementation plan connects the major ecosystems indicated in Figure 23 as soon as possible. By focusing on HISP implementation as well as those participants most ready for HIE, MS-HIN will gain a solid footing for building momentum and getting critical mass of stakeholders into the MS-HIN early in the process. Major facilities across Mississippi will be brought online allowing clinics and physicians to follow suit rapidly. Additionally, by developing a variety of API connections early in the project, later participants will be able to come on line in a smoother, more stream-lined fashion.

Once the initial participants are successfully online, first stage Meaningful Use modules can be delivered via the EDGE gateway servers in synch with MU requirements. The implementation vendor will use rolling teams for implementation so multiple sites can be brought up in parallel, rather than in series of one after another.

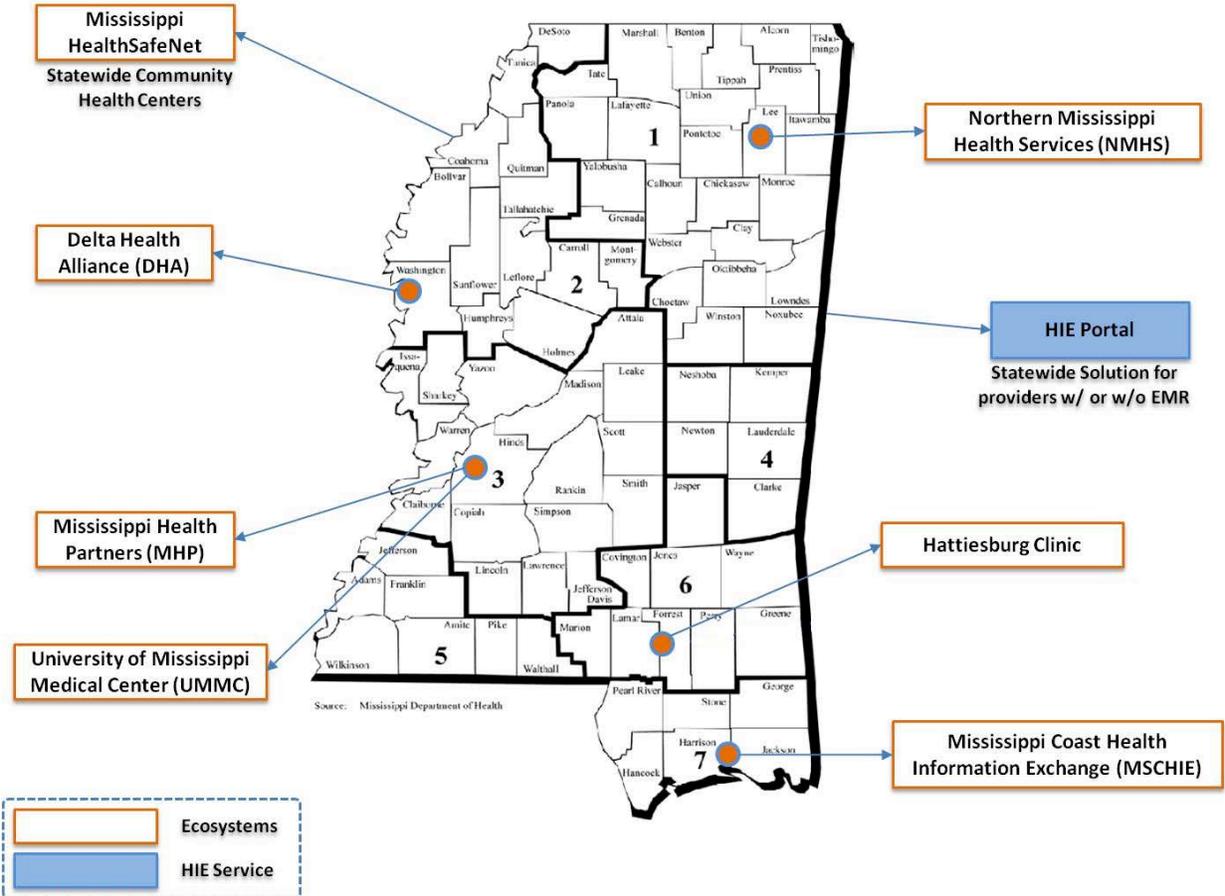


Figure 23: Basic HIE Ecosystems in Mississippi

14.13.2. State-Level Shared Services

Mississippi Medicaid is working on a shared state services directory. The MS-HIN will coordinate with Medicaid as well as the Mississippi Board of Medical Licensure and Department of Health to create a provider registry to support three basic functions:

- Assist with the ARRA stimulus funding program for Medicaid
- Assist the MS-HIN participants in obtaining Medicare stimulus funds
- Provide a source for provider authentication, authorization and credential verification for sharing healthcare data over the HIE

When fully developed, the provider registry will be a reliable database and a key source of information for identifying providers in Mississippi.

14.13.3. Standard Operating Procedures

Once the initial statement of work (SOW) for the statewide HIE is finalized, the MS-HIN will work with the Business and Technical Domain Team to create a set of standard operating procedures. Agreement exists for developing the standard operating procedures but work to create standard procedures remains on hold. Once a clear direction is established, minimal time will be necessary to create the required procedures.

14.13.4. Training and Technical Assistance

Training is crucial to a successful implementation of Health Information Exchange. As discussed in Section 14.11.2, a trainer is one of the key positions that will be recommended to the MS-HIN Board. Having a staff member that can work with various stakeholders to train them on MS-HIN functions as well the uses of and procedures for utilizing the services is important. Only through early involvement with the HIE can the person be fully capable of addressing stakeholder concerns and training them on all operational procedures. In addition, this person will be key in helping create the standard operating procedures discussed above.

14.13.5. Disaster Recovery

Damage in the Mississippi Gulf Coast Region from Hurricane Katrina in August 2005 highlighted the critical importance of the State's healthcare infrastructure. A large number of Mississippi's hurricane evacuees suffered as a result of being separated from their medical records. As healthcare professionals struggled to reconstruct medical histories from any paper-based medical records that still existed at various provider locations, the need for location-independent availability of health information was made clear in the days, weeks, and months following the storm.

Hurricane Katrina focused Mississippi's attention on the need to put medical records online and establish connectivity amongst providers across care locations. It also reinforced the goal that every community should have access to the MS-HIN, regardless of whether it is located in an area prone to natural disasters. Finally, Hurricane Karina has taught us that medical records should be securely backed-up in a disparate location.

Disaster recovery can be ensured via data backup sites. There are a number of options for data backup, including a second database within the provider location. The advantage of backing-up data at the provider location is that information will continue to be owned, managed, and administered by the provider's staff. The disadvantage of backing-up data at the provider location is the risk of having an entire geographic area destroyed by a disaster. In the case of a provider-location backup, both the original data and the backup would be at risk if a disaster strikes that area.

A data backup at a geographically disparate location (off-site) is the most secure and reliable plan for disaster recovery. Medical records can be backed up at a disparate location via datacenters, accomplished by synchronizing a database at the datacenter with the database at the provider location that stores the original electronic health records. Any change made to the original records at the provider location is mirrored at the synchronized backup site. A hosted, off-site datacenter provides convenient access to data via the Internet. This will allow providers to access and transfer their data from the datacenter back to the provider location in the event of a disaster.

This Strategic and Operational Plan promotes a central statewide data backup site, which can be purchased from a datacenter, located outside of Mississippi, and made available to any provider in the State. This choice will create maximum security by storing information at each provider location, as well as, a central location. It is highly unlikely that two disparate locations, one being a provider location within Mississippi, the other being the off-site statewide backup center, will be simultaneously compromised. If the State desires a third fail-over mechanism, redundant servers can be purchased from the State's datacenter vendor.

In the event of a disaster, provider locations that lost their medical records will be able to establish a connection to the backup site. The provider will be able to connect to the backup site, by a secure internet connection, and transfer information from the backup site to the provider's database.

It should be noted, that the MSCHIE RFP included a requirement for a disaster recovery plan that included a backup site at least 250 miles from the production data center. While the production data center currently resides in Medicity's Salt Lake City location, in 2009 Perot Systems in Plano, TX, housed the production data center with the backup site in New Jersey. The disaster recovery is

implemented via a contract with Sungard and was tested with data from Singing River Health System in December of 2009.

The documents, listed below, provided by Medicity and Perot Systems, included very detailed plans and procedure manuals for every aspect of the recovery effort:

- MSCHIE F5 Load Balancer Disaster Recovery Procedures
- MSCHIE Inel Disaster Recovery Procedures
- MSCHIE IT Crisis Management Plan
- MSCHIE NW and FW Recovery Procedures
- MSCHIE Sungard Contract
- SRHS Validation 12-16-09

14.14. Legal and Policy

14.14.1. Establish Requirements

The MS-HIN has carefully reviewed and analyzed State statutes and policies. In almost all instances, Mississippi statutes closely follow HIPAA standards. The privacy and security framework is thoroughly discussed earlier in section 13 and the MS-HIN will use that framework to protect patient privacy and maintain compliance with HIPAA.

14.14.2. Privacy and Security Harmonization

Since the MSCHIE has been active for the past two years, they have already harmonized with state and federal laws and are sharing the benefit of their knowledge. Based upon their work, the MS-HIN will be able to:

- Understand Mississippi laws as they relate to the exchange of healthcare data and information
- Use common forms developed by MSCHIE that are already in the proper legal format
- Use common agreements developed by MSCHIE that are already in the proper legal format
- Utilize the legal knowledge and experience available from MSCHIE on a variety of other HIE matters

14.14.3. Noncompliance or Breach Process

The MS-HIN will establish strict and certain procedures for dealing with breaches of or noncompliance with all standards including privacy and security. Clear and unambiguous standards for noncompliance will be established and maintained in

accordance with current operating procedures. Standards and processes will be well published and made part of staff training as well as stakeholder training and education. Policies and procedures for noncompliance and breaches will be published widely so the public has an understanding of the measures taken for privacy and security protection. The procedures will also be a key element of all provider and consumer education programs.

14.14.4. Process for Securing Agreement

The MS-HIN will use a four step process to secure agreement with all privacy and security matters. The process includes the following steps:

- Complete the strategies set forth earlier in Section 13
- Work with MSCHIE and Medicity personnel to integrate their knowledge into the MS-HIN
- Recommend to the Mississippi legislature, where appropriate, changes in current law that should be modified to harmonize with neighboring states and/or federal statutes
- Recommend to various state agencies, where appropriate, changes in policies and procedures that should be modified to harmonize with the MSHIN and neighboring states and/or federal statutes

In the case of securing stakeholder approval of various data sharing and business associate agreements, the MS-HIN will rely on the following three primary activities:

- Involvement of key stakeholders in the development of the various agreements and contracts so they reflect a consensus of opinion regarding major provisions of the documents
- Education of other stakeholders so they may also have input into the creation of these agreements
- Adoption of common agreements and contracts for the MS-HIN to reflect the best practices of the collective participants and establish uniform standards across the State

15. Updates to SOP

15.1. June 2012

15.1.1. Sustainability

Value to Mississippi

Health information exchange is considered a key component of healthcare reform efforts to improve quality and contain healthcare cost. The traditional use of paper-based records has resulted in fragmented patient data and information residing in institutional silos making it difficult to develop a complete picture of a patient's medical history. Mechanisms with which to capture and exchange clinical data will provide opportunities to reduce fragmentation and inefficiencies and provide more accurate and actionable patient information than what is currently available. Therefore the social and economic value is greatest when all those eligible to participate do so to the maximum possible degree.

The Mississippi Health Information Network enables the flow of data. The value of the MS-HIN reaches its greatest potential when eligible partners contribute and use the data. It is the goal of the MS-HIN to get 100% participation from Mississippi healthcare providers. The value of that consolidated data for treatment allows healthcare providers a historical view of the patient health record providing clinical information not typically shared without a Health Information Exchange (HIE) like the MS-HIN.

Estimated Return on Investment for Stakeholder Groups

Healthcare in the United States is evolving very quickly as technology begins to create opportunities to greatly reduce or eliminate wasteful processes and procedures as well as improve efficiency in the healthcare system. With the introduction of health IT, including Electronic Health Records (EHRs) and Health Information Exchanges (HIEs), opportunities for improving and achieving higher quality healthcare are just beginning to emerge. With the added ability to share important health information through the HIE, we stand on the threshold of transformational change from paper based records to electronic storage and sharing of medical information.

Since 2004, numerous studies have identified and quantified the Return on Investment (ROI) associated with implementing health IT. With the passage of the ARRA HITECH Act in 2009, the federal government is driving the healthcare industry from a paper-based system to an electronic-based system. Incentive funds for hospitals and eligible providers are available to help with the transition to EHRs and provide support and training for clinicians to engage in meaningful use of health IT.

In a study reported in Health Affairs, the authors concluded the use of health IT shows predominantly positive results. Of the 154 studies examined 96 (62%) were classified as positive. 142 (92%) studies were classified as either positive or mixed-positive. Most of the negative findings in the studies were related to work flow, not clinical or financial based.

Shown below are brief summaries of the results of various studies completed over the past several years quantifying the ROI for electronic health and medical records as well as health information exchange. These studies give Mississippi and other states the opportunity to extrapolate potential savings and cost avoidances by successfully implementing EMR, EHR and HIE technology as well as begin the transformation to new models of healthcare delivery. Below are examples focusing on the financial benefits HIEs provide to its participants.

Increased Provider Availability

Providers frequently spend significant staff time searching for patient records. A study in the Journal of Healthcare Information Technology estimates a 35% reduction in chart pulls with the use of healthcare information technology. The resulting time savings can free up clinical time and allow a provider to see additional patients. In addition, the study reported this can result in a cost savings of up to \$16,900 annually per provider.

Increased Productivity from Better Patient Information Searches

In a study in the Journal of the American Medical Association, missing clinical information during primary care visits was analyzed. 13.6% of all visits reported missing clinical information including lab results, radiology results, history, medications and other pertinent information. The missing information was likely located outside the clinical system. As a result, patients suffered from delayed care and the need for additional and sometimes redundant services. In addition, the study reported significant time was spent looking for the records, which was usually unsuccessful.

Reduced Administrative Expenses

The Center for Information Technology Leadership (CITL) studied the costs of paper-based orders and results. The study concluded providers spend \$18.29 per lab order transaction (sending orders and receiving results) while the lab spends \$19.38 per transaction. The potential administrative annual costs savings could range from \$129,000 for a small group to \$440,000 for a larger hospital.

Reduction in Medication Errors

A study in the New England Journal of Medicine reported almost half of the reported medication errors (dosage, allergy, interaction, etc.) were the result of a lack of patient information at the point of care. A Briggs study estimated the cost

for medication errors can reach \$3,224 per episode, obviously excluding adverse impact, malpractice or wrongful death.

Reduced Costs of Filing, Retrieving, and Storing Paper Records

A study by the University of Wisconsin demonstrated that the use of electronic healthcare technology can reduce the need for filing, retrieving and storing medical records by 85%. Given the cost per square foot of office and storage space this can translate into significant savings for providers. In addition, it is estimated that the average time spent retrieving records can be as much as 18 minutes. Given the average salary of administrative staff, the average provider could see a potential cost savings of \$15,000 annually.

Reduced Duplicative Consults

Duplicative consults are fairly common in healthcare settings today. Due to a lack of sharable electronic medical records, patients are often asked to repeat workups during encounters with healthcare providers. In a study done for Rhode Island by the Boston Consulting Group, it was estimated that the savings to the state could be \$20,000,000.

Reduced Emergency Room Costs

In a recent Rand Foundation study, it was estimated between 13.7% and 27.1% of all emergency department visits could take place at alternative sites resulting in substantially lower costs. The study estimated the savings at \$4.4 billion annually across the United States.

The Rand study also examined preventable readmissions. A readmission is defined as preventable if the patient received (1) high quality of care, (2) adequate discharge planning, (3) adequate discharge follow-up, and (4) improved coordination between inpatient and outpatient care-teams. The study demonstrated that 7.87% of readmissions were potentially preventable. While admission costs vary according to the diagnosis and length of stay, the average per patient was \$9,170.

MS-HIN Services

MS-HIN is an operational statewide HIE containing a community master patient index (CMPI) and record locator services (RLS) that enables providers to search patient records for laboratory results, radiology reports, transcribed reports, medication history, as well as admission, discharge, and transfer data face sheets. MS-HIN provides query based access to retrieve clinical results and search for patient-centric clinical summaries. MS-HIN will work with EHR vendors and support interfaces to deliver results directly to a patient's electronic chart within the provider's EHR system.

A Community Master Patient Index is a core element for HIEs that identifies all patients in a healthcare setting. The CMPI identifies the patient to create a

Community Health Record across geography and multiple settings of care. Each data source is required to send HL7 ADT (admit discharge transfer) transactions to the CMPI. Logic in the CMPI system is then used to link the patient identifiers and demographics into a single patient catalog which contains the identifiers used by the individual data sources to identify a unique patient.

MS-HIN offers providers a web-based single point of access to a comprehensive community health record. Providers use this secure clinical application to view patient information aggregated from multiple systems throughout Mississippi.

To complement the longitudinal community patient record, the MS-HIN's core capabilities include an ambulatory medications history, clinical claims summary, discrete problems and allergies lists, and CCD exchange. These capabilities enhance clinical decision-making and workflow. With online access to the community patient health record – anytime, anywhere – providers spend less time searching for information and more time focusing on providing high quality and cost-effective care.

In addition, MS-HIN is offering DIRECT and Referrals Services to healthcare providers. The goal of the DIRECT services is to provide an alternative to mailing and faxing patient information from practice to practice and/or practice to organization. In effect, DIRECT is secure transport for health information. The DIRECT services extend the ONC DIRECT Project standards with additional components that assist healthcare providers with coordinating care around a specific patient. The Mississippi DIRECT solution can be used to meet the following ONC 2011 State Designated Entity requirements; provider directory, secure practice and organization messaging, secure routing, and support for practices with no EMR or unconnected EMR.

The DIRECT application can query the Provider Directory and empower the practice or organization to leverage the DIRECT protocol when messaging. The user may also attach such files as, but not limited to, CCD's, HL7, and PDF's. The DIRECT application enables the practices and organizations to collaborate through direct messaging by offering organization level message queues or inboxes.

The platform utilized by Mississippi for DIRECT services incorporates not only secure messaging, but also a referrals application. The referrals application has been DIRECT enabled to allow practices and organizations to combine the legacy workflow of the Referrals application with the ability to query the Provider Directory and securely send Referrals using the DIRECT protocol.

Electronic Public Health Reporting

Stage 2 Meaningful Use requirements incorporate public health reporting with the electronic submission of Electronic Lab Results (ELR), immunization data and syndromic surveillance. The Mississippi State Department of Health (MSDH) and

MS-HIN have worked closely to align current and future efforts with the shared goals of increasing healthcare data exchange within the state of Mississippi, increasing the value of MS-HIN to the provider community, and creating strategic partnerships/plans to meet MS-HIN’s implementation goals.

Going into 2012, both MSDH and MS-HIN were deploying data exchange solutions throughout the Mississippi hospital community. In May 2012, a formal partnership of MSDH, MS-HIN, and the Mississippi Hospital Association (MHA) was formed with the single goal of achieving the state’s healthcare data exchange and Meaningful Use objectives by using MS-HIN to its fullest capacity. The partnership has successfully:

- Coordinated public health reporting through MS-HIN to satisfy both MSDH mandates and hospital’s Meaningful Use criteria through the use of Direct Secure Messaging and standards based electronic interfaces.
- Created a strategic plan that identified the primary targets for MS-HIN implementation leveraging current MSDH efforts such as the immunization program’s Immunization Information System EHR interoperability grant and the Electronic Lab Capacity grant (supporting Electronic Lab Results reporting).
- Created a communications plan with focus on the clarity of the MSDH – MS-HIN relationship, value of MS-HIN to the hospital community, transition of the existing MSDH Orion Rhapsody solution (currently in use for one-way hospital based public health reporting) to the bi-directional MS-HIN Medicity solution, and roles for MSDH, MS-HIN, and MHA.
- Tested connectivity between the MS-HIN and MSDH infrastructures.

MS-HIN Financial Sustainability Plan

In October of 2011, the MS-HIN Board approved the financial sustainability model. The model is designed to generate revenue associated with the value and services MS-HIN participants receive. This model ensures that the HIE will be self-sustaining entity once the ONC grant is exhausted. Below is an outline of the funding model:

Stakeholder	Cost
Hospitals	\$100 per licensed bed per year
Physicians, Nurse Practitioners, Physician Assistants	\$150 per provider per year
State Agencies	\$50,000 per year
Medicaid	31% of total operating expenses until MS-HIN is operational
Payers-Commercial payers, State Health Plan	\$1 per covered life per year

The model tries to equitably and reasonably divide costs among those who use and benefit from the system. The MS-HIN Board wanted to ensure participation in the HIE is affordable for all participants. The Board utilized studies examining ROI to determine what provider groups benefit most from the health IT and structured the financial model to reflect that value.

There are six primary stakeholder groups in Mississippi: 1) State and Federal; 2) Medicaid; 3) Hospitals and hospital systems; 4) Provider and provider practices; 5) Payers; and 6) Other healthcare entities. The MS-HIN Board established a different payment methodology for each stakeholder group. These methodologies are described below.

1. State and Federal

Mississippi received \$10,387,000 from ONC as a part of the Cooperative Agreement for implementation of the Mississippi Health Information Network (MS-HIN). The ONC funding has been allocated over a four year period to aid in building the MS-HIN. In addition, for State Fiscal Year 2013, the Mississippi Legislature appropriated MS-HIN \$700,000.

As a requirement of the Cooperative Agreement the State of Mississippi must provide a match to the federal funding. The formula for matching the money for the last three federal fiscal years of this grant is 90:10 in 2011, 70:30 in 2012, and 30:70 in 2013. The state is matching the federal funds through in-kind contributions and state appropriations.

To assist the State in meeting the match for FFY 2012, MS-HIN staff secured a grant from the Bower Foundation. The Bower Foundation supports innovative strategies to improve the health of Mississippians by proactively providing grants for the creation, expansion, and support of quality healthcare initiatives. The Bower Foundation granted the MS-HIN \$964,000.

As part of state funding, state agencies will join the MS-HIN. Currently, MS-HIN is working with Mississippi Departments of Health, Department of Mental Health, and Medicaid (Medicaid funding methodology is explained below). As more healthcare providers join the MS-HIN and send data, it is possible to leverage all this information to identify potential public health threats. Data collected from each patient visit is stripped of patient-specific identifiers and is transmitted where it can be measured against disease profiles and anomalies found in the data. This syndromic surveillance system allows officials to quickly identify public health threats such as a flu outbreak, food borne illness, or weather related impacts. For instance, officials in the Wisconsin Division of Health Services, Department of Public Health and the City of Milwaukee Public Health Department match symptoms captured by electronic records to patients reporting an illness within a concentrated area and can issue a public health alert. This real-time surveillance can in turn alert physicians to watch for patients presenting specific symptoms. This is a prime example of how

WHIE is leveraging the health information exchange to use and reuse the data collected in new ways.

State agencies will pay \$50,000 to participate in MS-HIN.

2. Medicaid

The State of Mississippi is progressing along the path to sustainability of the information exchange. The Medicaid Electronic Health Record Provider Incentive Payment program is operational and well on the way to its goal of enrolling approximately 2,500 Eligible Providers (EP). This number represents approximately 31% of the active licensed EPs in the State. To maximize the benefit to population of Mississippi, at least 75% of the providers in the State should have access to and utilize the HIE. Based on the current rate of provider uptake, this is expected to happen in 2015. We are currently working with Medicaid to submit updated Implementation Advance Planning Document (IAPD) for HIE funding. CMS requested a separate IAPD to specifically describe the cost allocation methodology associated with Medicaid funding their fair and reasonable share of HIE activities.

As per the State Medicaid Directors' Letter (SMDL) # 11-004, dated May 18, 2011,

“Specifically, this SMD letter provides further detail on our criteria that health information exchange promotion activities: 1) have costs that are divided equitably across other payers (e.g., private/commercial) based on the fair share principle (defined in OMB Circular A-87 as “in accordance with benefits received”) and are appropriately allocated, 2) leverage efficiencies with other Federal HIE funding, and 3) are developmental and time-limited in nature. This letter also reiterates the principle that the 90 percent FFP would not be available for on-going HIE costs where these services are fully operational.”

If the State Medicaid agency is seeking HITECH funds directly tied to the Medicaid EHR Incentive Program, States may calculate the percentage of all providers the State projects will receive Medicaid EHR incentives over the next five years from the onset of proposed HIE activities to the State's total number of providers. For example, if there are 10,000 providers in the State, and the State projects that 500 of them will receive Medicaid EHR incentives within five years, then Medicaid's allocated share would be five percent. States' environmental scans (“As-Is” HIT assessments) should support these projections.

Based on the above references and the projection of 31% of Medicaid EP EHR Incentive Payment enrollment (2500 / 8090), the “fair share” principle would indicate that Medicaid's allocated share would be 31%. The State of Mississippi believes these allocations are within limits and follow the “fair

share” principles. The State also believes this allocation represents “*proportional investments based on market share and expected volume of transactions*”. In the State of Mississippi, 30% of the population is eligible for Medicaid. With Health Care Reform and all its implications, this percentage of population is expected to rise. If approved by CMS, Medicaid will contribute 31% of the total expenses until the HIE is operational.

3. Hospitals and Hospital Systems

Hospitals benefit from MS-HIN services in a variety of ways; improving patient care and administrative functions can lead to better health outcomes and lower costs. Hospitals use MS-HIN to distribute reports and results, thus eliminating their current manual processes. Hospitals will use MS-HIN to interface with physician’s EMR system to provide results delivery. Hospitals are able to vastly improve patient care through easier retrieval of information and enhanced communication between providers. Medications, clinical results and reports from other providers are most valuable to hospital-based providers as they care for patients without previously established relationships. Benefits to hospitals include, but are not limited to:

- Prompt access to patient information from other healthcare facilities.
- Emergency Departments have access to patient information at the time of care.
- Minimization of unnecessary/avoidable services.
- Reduced expensive manual processing costs of information.
- Reduced emergency room costs.

Hospital participation fees are assessed on a per-bed basis for each hospital of \$100 per licensed bed per year. MS-HIN will start collecting fees July 1, 2012.

4. Provider and Provider Practices

The benefits for providers are similar to hospitals in the sense providers have real-time access to information that in the past was either never reviewed or required a manual process to send. For example, a primary care doctor needs hospital discharge data about her patient, so she can help manage that person’s care and prevent her from being readmitted to a hospital unnecessarily. Providers will now have access to all reports and results when a patient walks in their practice. Small practices will also garner greater benefit from reduced administrative expenses and time. Benefits to providers include, but are not limited to:

- Prompt access to information from other healthcare providers.
- Better clinical decisions with more access to information.
- Avoidance or elimination of duplicate tests.
- Less manual filing with the computerized system.

- Better access to current medication lists.

Clinic and healthcare practices are assessed fees based on the number of licensed providers (MD's, DO's, NP's and PA's). The fees are assessed on a per provider basis. The fee per physician in the sustainable model is \$150 per year. The MS-HIN Board wanted the provider's cost to be very reasonable to encourage provider participation.

5. Payers

Payers should pay their fair share because they receive significant value from MS-HIN. A study by Humana of emergency room visits in Wisconsin demonstrated an HIE-based cost avoidance of \$29/emergency room visit. Payers benefit from MS-HIN's query/patient search functionality by reducing or avoiding costs associated with performing duplicate tests and filling duplicate prescriptions. In addition, there are various opportunities for payers to improve their care coordination functions. They will receive financial value from more complete information because better care coordination leads to cost savings over time. A payer has access to the discharge summary and the results as well as reports to conduct follow-up management of the patient's health. Payers will have clinical information available, versus the current exchange of mostly claims data. In the future, there is the potential for health plans to become users of MS-HIN to support disease management, quality monitoring and clinical decision support. A plan for health plan access and usage must be defined. Benefits for payers include, but are not limited to:

- Reduction of redundant tests, resulting in lower costs.
- Better care coordination between caregivers.
- Better patient outcomes.
- Potential use of clinical data for quality reporting and physician incentive programs.

Payers include all of the health insurance companies operating in Mississippi except Medicaid, which is discussed above. Also included in this category are the self-insured health-plans owned by one of the major employers operating in the state but administered by one of the payers. The fees are assessed on a covered life basis at \$1.00 per member per year. The MS-HIN Board felt that the majority of the costs should be covered by payers and hospitals. The Board believed based on various studies and research that the return on investment for these two groups far outweighed the benefits to others.

6. Other Healthcare Entities

Other healthcare entities include long-term care, home healthcare, outpatient surgery centers, pharmacies, and radiology clinics. These facilities will benefit in much the same way as the hospitals and providers indicated above. To ensure equitable and fair pricing for all entities, the Board has acknowledged

the need for revised pricing for the “Other Healthcare Entities”. Once the Board has reviewed and subsequently approved the restructured pricing, Mississippi will submit a revised sustainability model.

15.1.2. Privacy and Security Framework

Purpose

The Mississippi Health Information Network is committed to implementing a secure statewide health information exchange of “protected health information” (PHI) that is consistent with state and federal privacy and security laws and with the Principles articulated in the Office of National Coordinator for Health Information Technology’s, Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health Information (Privacy and Security Framework). Protected health information is defined under the Privacy Rule of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), and is broad term that essentially includes any individually identifiable health information.

One of the primary responsibilities of MS-HIN is the protection and safeguarding of patient and clinical information. In order for an HIE to be successful, a patient must trust that their health information is kept confidential and secure. The MS-HIN privacy policies and security controls will provide assurances to both providers and patients that their information is being used for the appropriate purposes and by the appropriate health care personnel.

In January 2012, the MS-HIN Board convened a Privacy and Security Committee (the “Committee”) to establish policies and procedures that protect both providers and consumers who participate in MS-HIN. The Committee consisted of members who are experts in the HIPAA and Mississippi laws related to health information technology.

The intent of the policies and procedures are to:

- Provide information to providers and consumers about the patient’s rights regarding the use and disclosure of their personal health information;
- Establish the access controls and parameters necessary to achieve and maintain an appropriate level of security to protect patient data from unauthorized access and disclosure and to ensure the secure and reliable operation of MS-HIN.

Scope

The policies and procedures are applicable to all MS-HIN participants and member organizations. All participants of MS-HIN must sign and agree to the MS-HIN Participation Agreement and Business Associate Agreement. The policies and procedures apply to the delivery and query of information through MS-HIN for the purpose of clinical treatment, payment or administrative functions. In June 2012 the Board approved the policies and procedures recommended by the P&S Committee. These include:

- Operational Guidelines for Mississippi Health Information Network
- Consumer Audit Request Procedure
- Auditing Protocol
- Request to Receive and Amend Protect Health Information Procedure
- Breach Assessment and Notification Procedure
- Non-Participation and Cancellation Procedure

Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health Information Domains

Individual Choice

In 2008, when the State first established the regional HIE on the coast (MSCHIE), the coastal stakeholders implemented an opt-out consent policy. In 2010, when Mississippi was developing its Strategic and Operational Plan, this opt-out policy was reviewed and the decision was made to implement this policy for the statewide HIE. MS-HIN staff reviewed other states' approaches to individual choice and many of the operational HIEs (both statewide and regional) include all patients unless they have opted-out. The opt-out approach is crucial to new HIEs because it allows the master patient index to be quickly populated and the value exists for both the provider and patient because the clinical information is available.

The P&S Committee developed a Non-Participation and Cancellation Procedure which directs both participants and MS-HIN staff on the steps to take when a patient chooses to opt-out. This document is readily available through the MS-HIN office and the individual's health care provider.

MS-HIN participants are responsible for informing patients that the healthcare provider participates in MS-HIN. MS-HIN will provide a MS-HIN Educational Toolkit to participants containing a window cling that indicates the healthcare provider participates in MS-HIN. The toolkit will also include talking points for participants to assist with responding to patient inquiries and outreach materials discussing MS-HIN. The toolkit will include the Non-Participation Form which can be given to the patient at the time of treatment.

Below is the MS-HIN opt-out process:

- The MS-HIN training process will include an overview of this information for office staff. It should be emphasized that office staff may direct patients to the MS-HIN website for information and a contact number.
- The MS-HIN website has a page for consumers to read and instructions on contacting MS-HIN for more information if consumers prefer not to participate.
- If a patient calls MS-HIN and indicates his or her desire not to participate, the support services person will screen the calls and transfer them to the

MS-HIN Director. A tracking log will be maintained by the MS-HIN Director to record calls/conversations with patients.

- If a patient does not want to participate in MS-HIN, staff will send a Non-Participation Form to the person electronically, via faxed or via mail. In addition, the document can be accessed on the MS-HIN website. In addition, the patient can fill out the form at the participant's office, and they can send to MS-HIN.
- A completed Non-Participation Form must be received with original signatures. The document is scanned, information is entered by the MS-HIN Director and the original is filed at MS-HIN office to be retained for a minimum of two years. MS-HIN staff will verify through the Mississippi Bureau of Medical Licensure that the healthcare provider that signed the form is a licensed provider in Mississippi.
- The MS-HIN Director will verify in the system that the individual's opt-out request has been completed and their record information is no longer available. This final step will be documented on the tracking log.
- If a patient decided to opt-out at one provider location, they will be opted-out at all other provider locations unless they decide to opt-in at a later date.

In June 2012, MS-HIN's HIE vendor will add a feature to their platform which allows for opt-out management at the provider level. The Patient Consent Maintenance Tool allows client administrators or delegated users the rights to change a patient's consent settings or to preemptively opt out a patient before information is received by the HIE. At the July MS-HIN Board meeting, members will review the Maintenance Tool and develop additional guidance to ensure MS-HIN staff is notified of the individuals who opt-out.

Patients also have the ability to opt back in to MS-HIN by completing a Reinstatement Form. This form will be provided to MS-HIN participants and will also be available from the MS-HIN office. It can also be accessed on the MS-HIN website or via fax and mail.

Openness and Transparency

Before an individual can decide to participate in MS-HIN, they must understand and trust their IHI is secure and only available to those who provide healthcare services. Trust of both providers and patients is a key component of a successful HIE. Openness and transparency will help foster this trust because it allows individuals to know what information exists about them, how it is collected, used or disclosed and whether they can exercise control over these elements.

The MS-HIN website provides information to both consumers and providers describing why their IHI is collected, how it is used and who has access. The MS-HIN website has a consumer page dedicated to educating consumers on the

benefits and services of the HIE. In addition, the MS-HIN Education Toolkit is provided to all organizations/practitioners that join the MS-HIN. This toolkit will be used to help patients understand MS-HIN and the benefits of electronic exchange of IIHI. The toolkit includes a MS-HIN Fact Sheet, Non-Participation Form, Reinstatement Form, MS-HIN Talking Points and the Privacy and Security White Paper which discusses MS-HIN security procedures and adherence to all applicable federal and state laws.

The MS-HIN Board also approved a Consumer Audit Request Procedure which allows consumers to request a record of everyone who has accessed their IIHI. Consumers may contact MS-HIN by phone to request an audit report of users that have accessed/viewed their health information. MS-HIN staff sends the audit report request form to the person by email, fax or mail or an individual can download the form off the MS-HIN website. The MS-HIN staff will log the call on the weekly request report. The MS-HIN Auditor will run the audit report and print a paper copy (electronic copy may also be emailed to requestor). A standard cover page will accompany the report which explains the various components of the report. All MS-HIN participants referenced in the audit report will be notified the report was requested and sent to the requestor. If the requestor indicates suspicion of misuse based on the audit report:

- MS-HIN management staff will advise requestor to contact the provider/facility individually. MS-HIN legal counsel will be contacted to review the incident and make an internal report under current state and federal law. (Further investigative action will be determined on a case-by-case basis, depending on the magnitude of the issue/situation.)
- The MS-HIN Director will document the reported incident.

Collection, Use and Disclosure Limitation

The MS-HIN Board wants to ensure that consumers understand how and why their IIHI will be used. At this time, the only allowable uses of IIHI are for treatment, payment and operations. MS-HIN defines permitted purposes as treatment, payment, and health care operations activities. A covered entity also may disclose protected health information for the treatment activities of any health care provider, the payment activities of another covered entity and of any health care provider, or the health care operations of another covered entity involving either quality or competency assurance activities or fraud and abuse detection and compliance activities, if both covered entities have or had a relationship with the individual and the protected health information pertains to the relationship. MS-HIN PHI is not sold or disclosed for any marketing activity (as defined by HIPAA) to the individual nor is individual information provided and/or used for mailing lists.

All participants having access to MS-HIN will have a unique ID. It is the organization's responsibility to authorize, maintain and terminate an employee's permission to use MS-HIN. The MS-HIN Operational Guidelines authorizes

specific access controls which states only authorized users are granted access to MS-HIN and users are limited to defined, documented and approved levels of access rights. Access control to MS-HIN is achieved via identifiers that are unique to each user and provide individual accountability and enable tracking. Access rights are based on user roles and job responsibilities. The Member Organization and health care provider enrolled in MS-HIN are responsible for creating staff accounts and assigning user roles to those who work for them. Users must be granted access to information on a need to know basis. That is, users must receive access only to the minimum functions and privileges required for performing their jobs.

Expanded Query Access

With role-based access controls, participants are limited to functionality and information through the MS-HIN based on individual role and job function. MS-HIN does provide the functionality to expand query access. This expanded access is used mostly in the Emergency Room setting where a provider has no established relationship to the patient. It allows providers access to a patient's information fostering better care and outcomes. The capability of a user to obtain expanded query access is established by the MS-HIN user roles. If the expanded query access is utilized, the user must indicate a reason, from a pre-defined list of options, as to why he or she has expanded his or her access rights. Each time expanded query is utilized, the user must also indicate the period of time for which he or she needs to have access to the patient's PHI, ranging from one single time to a period of time not to exceed six (6) months. The expanded query access is based on defining the relationship between the provider and the patient. All expanded query access activities will be audited by both MS-HIN and the participant.

Data Quality and Integrity

It is the responsibility of all those involved in the exchange of health information to take reasonable steps to ensure the IHI is complete, accurate and up to date. The MS-HIN technical solution incorporates a Community Master Patient Index (CMPI) that matches reports and results to a specific patient.

The Community Master Patient Index (CMPI) is solution for identifying the patient to create a Community Health Record across geography and multiple settings of care. Each data source is required to send HL7 ADT (admit discharge transfer) transactions to the CMPI. Logic in the CMPI system is then used to link the patient identifiers and demographics into a single patient catalog which contains the identifiers which are used by the individual data sources to identify a single patient.

The logic in the CMPI is based on a set of deterministic rules and specific weighting criteria for each rule. Some attributes (or fields) used in a rule can also support fuzzy matching. For example, matching against a nickname or alternate

name table can be instantiated for the first name attribute. Some attributes support common keyboard mistakes, such as the Social Security Number (assuming that it is included as part of the patient identification or demographics).

When used together, these rules, weights and criteria can be used to establish match and potential match logic and queues, which can then be used by the administrative staff of the CMPI to correct any detected errors of the system.

The CMPI supports a federated approach to data storage of the patient data based on contributing data source. The CMPI and the Record Locator Service (RLS) which tracks the location of all data for each patient must be operated on a centralized shared basis.

Ensuring clinical information which resides in MS-HIN is accurate is not only important to garner the trust of providers and consumers but will also help providers make effective diagnostic and treatment decisions. Currently, users do not have the ability to alter or delete information not originating at that organization. Any changes to PHI must occur at the originating provider organization. Therefore, if inaccurate information is entered into a provider's EHR, only that provider can alter or delete the information. MS-HIN is an aggregator of the data and the expectation is the data is correct when MS-HIN provides it to all other users. The P&S Committee developed a policy which instructs consumers to contact their providers to discuss changes to PHI.

Individual Access and Correction

Currently, MS-HIN does not have a patient portal. The State did contract for this service but has yet to implement. Until this functionality is available, the P&S Committee established a procedure requiring patients to get their health information through their provider or healthcare organization. As part of the meaningful use incentive program, providers must make available patients with timely electronic access to their health information. Some EHR products incorporate a patient portal thus allowing direct access from the providers to a patient's health information.

In addition, the patient has the right to request to amend their PHI if they believe it is inaccurate. This change cannot be made at the MS-HIN level and the patient will have to contact their health care provider to discuss inaccurate PHI.

The MS-HIN procedure is laid out below:

- Patients have the right to request and/or amend their protected health Information (PHI), he or she must request the information from his or her healthcare provider. The Centers for Medicare and Medicaid Services meaningful use guidelines require healthcare providers to provide patients copies of their PHI in electronic format.

- If a request is made to MS-HIN, staff will assist participants in compiling data.
- Patients have the right to correct their PHI if they believe the PHI is incomplete or inaccurate.
- All amendments to a patient's PHI will occur at the originating covered entity meaning the covered entity at which the PHI was generated.
- In the event MS-HIN is notified that a request has been made by a patient to amend his or her PHI, MS-HIN will refer the patient to the appropriate participant to address the inquiry.
- MS-HIN will work with participants and test data transmission for PHI amendments as needed.
- All MS-HIN participants are responsible for reviewing the patient's amendment request and deciding whether it is appropriate to agree with the request.
- Under current law, the MS-HIN participants must respond within 60 days of the request. The MS-HIN participant can request one 30-day extension if it provides the patient with written notice of the reasons for the delay.

Accountability

All MS-HIN participants sign both a Business Associate Agreement and a Participation Agreement. Both documents establish common agreement on policies to address compliance with applicable law, cooperation with HIE participants, and expectations to use MS-HIN only for permitted purpose. In addition, the Participation Agreement references all MS-HIN policies and procedures and requires all participants to adhere to Board approved actions. The Participation Agreement and Operational Guidelines for MS-HIN sets forth the authorization of participants for data use; permitted uses for access; what the data cannot be used for; notice of privacy; authentication of participants; conflict resolution for participants; and procedures for enforcing compliance with agreements.

In addition, the MS-HIN Board developed an auditing protocol which requires participants to comply with audit requirements that monitor information which is accessed through the HIE. Monitoring the system helps to foster trust by providing transparency on how information is used and who has access to the information. MS-HIN has a designated auditor that performs weekly audits of the system. In the auditing protocol, the Board maintains that all participants should also have a designated auditor. Most providers already conduct auditing functions because of HIPAA and HITECH requirements. The Board was concerned this might be a burden on small practices and thus recommends monthly audits of 5% of the patient charts. MS-HIN will provide training for participants on auditing functions.

The MS-HIN Auditor will perform audits based on the following criteria:

- Monitor Expanded Query Access: based on User, review User status and justification
- Received request for consultation
- Providing coverage for patient's physician
- Patient is presenting for clinical care
- Patient is new to my practice
- Patient is presenting for emergency services
- I have a clinical relationship with this patient that is not yet established in MS-HIN

For other payment or health operations, the MS-HIN auditor and designated organization auditors will audit expanded query access and look for certain usage patterns which include:

- Last Name Matching – Look for cases where individuals may be looking up relatives (same last name).
- Repeated Access to a Single Record - Look for obvious pattern of excessive “hits” to single patient record.
- Day of Week/Time of Day - Look for time of access or break glass outside of work hours and work location.
- Employee as a Patient - Monitor facility-specific employee or physician name searches if hospitalization information is known.
- Business Associate Access - Look for BA access to records, administrative staff level access and maintain a list of these users.
- Change in Job Status: Look for change in CE Workforce Job Status.

MS-HIN Auditor will also conduct special audits requested by participants. These include:

- VIP Care /Sensational Audits -
 - In the event of VIP care activity, a MS-HIN participant must notify the MS-HIN Office. Auditing shall occur for the record in addition to routine auditing. VIP care activity includes care of celebrities, executive staff leadership, high profile individual(s) in the media, etc. The MS-HIN participant will define VIP care activity.
- Terminated Covered Entity (CE) Workforce
 - HOSPITAL PARTICIPANTS: The covered entity can notify MS-HIN to conduct an audit as needed.

- CLINIC/PROVIDER PARTICIPANTS: The covered entity is encouraged to notify MS-HIN to conduct an audit for a two week period prior to the password inactivation.
- Change in Covered Entity (CD) Workforce Job Status
 - In the event a workforce member changes jobs and their MS-HIN ORG/User Role access has not been updated in a timely fashion and there was a change in access privileges, the CE can request a MS-HIN audit as needed.
- Authenticate e-PHI status
 - In the event there is suspicion that e-PHI has been altered or destroyed in an unauthorized manner, the Covered Entity (CE) can notify MS-HIN who will in turn contact Medicity to provide detailed audit information for a specific MS-HIN record based on the specific incident. From there, next steps for addressing the incident and possible breach will be based on the audit findings.

Breach Assessment and Notification

Ensuring the security of MS-HIN PHI is crucial for the success of the statewide HIE. In the unfortunate event a breach of PHI is suspected, the MS-HIN Board approved a procedure which spells out both the responsibilities of the MS-HIN (Business Associate) and the participants (covered entities). The Breach Procedure ensures the appropriate steps take place to determine 1.) if a breach has occurred and 2.) sets forth the appropriate action to notify both the patient and media, if necessary. The MS-HIN participant will run the appropriate audit reports locally and will review the findings as soon as a potential breach has been detected. If needed, the designee may contact the MS-HIN Office for assistance with running reports. The MS-HIN participant will commence the breach investigation as soon as possible and no more than 7 days after being reported or suspected. MS-HIN participants will send the incident report and associated audit reports to the MS-HIN Director. If needed, MS-HIN legal counsel will be requested to review the findings before a final assessment is made.

The designee will deactivate the participant's User ID at the time the incident is reported or suspected. The participants' User ID will remain inactive during the investigation period.

The MS-HIN designee will conduct an investigation and make a preliminary finding. If a breach is suspected, the participant will prepare an incident report and will call the MS-HIN Office. With the assistance from the MS-HIN Office and legal counsel, both will follow the HIPAA requirements set forth in the procedure to notify the affected patients.

Safeguards

Authentication and Authorization

As discussed earlier, all MS-HIN participants must have a unique user ID.

Community Health Record - To obtain access to the MS-HIN CHR application, an authorized user must enter his/her unique user identification and supply an individual user password. To obtain a new password from MS-HIN, users must be able to provide the answers to unique questions selected and answered by the user at the time of set-up. All users will be required and prompted to change their passwords at a time interval defined by MS-HIN and consistent with HIPAA. Passwords must be promptly changed if suspected of being disclosed to unauthorized parties. At the time a user is no longer associated with or employed by a member organization, the member organization is required to terminate the user's access to MS-HIN. MS-HIN's current technical solution through our vendor Medicity supports NIST 800-63 version 1.0.2 Assurance Level 2. The enhancement to increase our Assurance Level to 3 is planned for late 2012 early 2013.

Direct/Referrals – To obtain access to the MS-HIN Direct application, an authorized user must enter his/her unique user identification and supply an individual user password. At the time a user is no longer associated with or employed by a member organization, the member organization is required to terminate the user's access to MS-HIN.

ONC -State HIE Security Checklist

MS-HIN has been actively engaged with conducting a thorough exchange-level review using the checklist guidelines. MS-HIN has also distributed the checklist to business partners, requesting they formally respond.

15.1.3. Evaluation Plan

Summary

The State of Mississippi, in accordance with the Program Information Notice ONC-HIE-PIN-002 (released February 8, 2012), presents this Evaluation Framework Plan as required by Section 3013 of the HITECH Act. This framework lays out the evaluation plan the State will use to facilitate and expand health information exchange in the program priority areas as laid out by ONC.

Approaches and Strategies

Program Priority Areas

	LAB RESULTS	PHARMACIES USING E-PRESCRIBING	PROVIDERS USING SUMMARY OF CARE RECORDS	OTHER
<p>Approaches and Strategies used to facilitate and expand HIE</p>	<p>Work with the two primary commercial laboratory testing companies to provide electronic lab results via MS-HIN statewide including:</p> <ul style="list-style-type: none"> ▪ LabCorp ▪ Quest Diagnostics <p>A partnership with MS Department of Health to send all public health data through MS-HIN, this includes ELR.</p> <p>As hospitals are on-boarded, lab interfaces are built thus allowing hospitals not only to share reportable lab results, but all available results.</p> <p>Utilizing DIRECT as a mechanism to send ELR. For hospitals that do not push results to their community, DIRECT allows a secure transport for lab results that would normally not be available or only available in paper-based form.</p>	<p>Continue to use HCS pharmacy data module that integrates with MS-HIN ProAccess.</p> <p>Convene a Pharmacy Subcommittee to develop outreach materials to be sent to pharmacies currently not e-prescribing.</p> <p>The outreach materials will focus on explaining to pharmacists the benefits of e-prescribing, meaningful use requirements for providers, and sharing SureScripts data with pharmacies and providers who participate in e-prescribing in their area.</p> <p>MS will conduct follow-up phone calls to inquire about barriers to e-prescribing and if the assistance is needed in learning about e-prescribing options. The phone campaign will contact those pharmacies not e-prescribing directly and discuss barriers and solutions to help these pharmacists adopt e-prescribing.</p> <p>In addition, the Pharmacy Subcommittee consists of various pharmacy associations. MS-HIN will publish a newsletter that will be distributed to all these associations. The first newsletter will focus on meaningful use and the pharmacist's role in helping providers meet meaningful use.</p>	<p>Continued implementation of DIRECT services with an attachment option. Implement ProAccess with full view CCD capability.</p> <p>Reviewing survey results compiled by the MS Hospital Association accessing which hospitals are ready to join MS-HIN. Will reach out to those hospitals to discuss incentive program the State is supporting to help providers pay for one-time implementation and interface fees.</p> <p>Continue meeting with hospitals to demo ProAccess and DIRECT. Have scheduled meetings with seven health systems totaling 27 hospitals. MS-HIN has begun data testing with South Central Regional Medical Center to build the interfaces necessary for them to participate in the MS-HIN.</p> <p>Q2 will be spent meeting with hospital/health systems, working with the Mississippi Hospital Association to reach out to hospitals that are ready to join the HIE this year. The Hospital Association is helping to promote the incentive program sponsored by the State.</p>	<p>Medicaid DIRECT Strategy Collaboration with DOM to build out ongoing campaign strategy for notifying and educating all Medicaid providers.</p> <p>Develop HISP policies and procedures specific to Medicaid attestation procedures. Send email notification to all Medicaid providers in July and consecutive months. Schedule Webinars.</p> <p>Use Cases for Medicaid to utilize Direct: 1. Referrals between Medicaid and non-Medicaid providers with clinical document exchange (CCD) using Direct secure messaging. 2. Direct secure messaging of administrative documents between DOM and MS-HIN, including attestation support documentation.</p> <p>Execute an outreach campaign in early July which explains to Medicaid providers the use of DIRECT for attestation. In addition, the campaign will focus on the different value add provided through DIRECT like referrals and view only access of the community health record.</p>

	LAB RESULTS	PHARMACIES USING E-PRESCRIBING	PROVIDERS USING SUMMARY OF CARE RECORDS	OTHER
	LAB RESULTS	PHARMACIES USING E-PRESCRIBING	PROVIDERS USING SUMMARY OF CARE RECORDS	OTHER
Conditions that support and hinder implementation	<p>Most Hospital labs still using HL7 version 2.3 and should be at 2.5.1. They also are not utilizing LOINC.</p> <p>The partnership with MSDH supports implementation of the ELR strategy because it provides healthcare practitioners one technical solution to meet all meaningful use requirements.</p> <p>DIRECT offers a simple, secure way to transport ELR, the fee is nominal and is currently available statewide.</p>	<p>Pharmacists were not included in the CMS Provider Incentive Program. Although pharmacists receive no incentives, there is an expectation they will support Meaningful Use.</p> <p>Many pharmacists currently not e-prescribing either cannot afford or do not want to pay the transaction fees associated with e-prescribing.</p>	<p>Pushing out Stage 2 Meaningful Use requirements has hindered implementation of the HIE. Providers are waiting to join the HIE because it is not a requirements until October 2013.</p> <p>Moving the Meaningful Use timelines out, while granting relief for providers, has allowed them to postpone active participation in the HIE.</p>	<p>Medicaid has recently restructured their Mississippi EHF program and has not had the resources to commit to the DIRECT Project.</p>
Mississippi HIE Performance	<p>By the end of 2012, the State expects to be sharing electronic lab results with two commercial labs.</p> <p>The State plans to on-board 27 hospitals over the next year which will include exchange of ELR.</p>	<p>The State has a 94% adoption of e-prescribing. Mississippi has a 97% adoption goal for December 2012.</p>	<p>Currently, the State has five hospitals live on MS-HIN. The goal is to on-board 27 more over the next year.</p> <p>MS-HIN has rolled out DIRECT statewide and providers can currently use this as transport solution and a way to meet stage 1 Meaningful Use.</p>	<p>The progress on this effort has been slow. MS-HIN and DOM agreed on the HISP policy and the outreach campaign is planned for the near future.</p> <p>MS-HIN will utilize the REC to assist with notifying Medicaid providers about DIRECT and its benefits.</p>

Aims of the Evaluation

The State of Mississippi will move forward with a program evaluation which includes a number of quantitative metrics that can be easily obtained and a set of qualitative and quantitative assessments designed to delve deeper into the impact and success of the state HII grant. In general, evaluation efforts will focus on:

- Adoption/Utilization
- Effectiveness/Satisfaction
- Barriers

Evaluation Framework

OBJECTIVE	KEY RESEARCH QUESTIONS	OUTCOME MEASURES	IMPACT MEASURES
<p>Increase the number of laboratories delivering electronic structured lab results</p>	<p>Is the percentage of laboratories delivering electronic structured lab results increasing over time?</p> <p>Is the percentage of laboratory orders that are sent electronically increasing over time?</p>	<p>Audit Usage statistics from system audit logs and check for increases in electronic structured lab results</p> <p>Frequency laboratories accessing the system / # of individual labs in the state</p> <p>Analyze the number of labs sent the previous year versus the current year.</p>	<p>Include the following questions in the Laboratory Satisfaction Survey</p> <p>How comfortable do you feel delivering structured lab results?</p> <p>What are the most important factors that are currently preventing you from delivering electronic structured lab results?</p>
<p>Reduce the number of duplicate laboratory tests</p>	<p>Is the number of duplicate laboratory tests decreasing over time?</p>	<p>Audit Data</p> <p>Use organizations that are not using MS-HIN as a control group and identify the number of duplicate laboratory tests that are currently being run. Compare that number to those organizations currently using MS-HIN and the number of duplicate laboratory tests that they are running.</p> <p>Those using MS-HIN should be lower.</p> <p>Audit data and check for decreases over time in percentage of duplicate laboratory tests.</p> <p># of duplicate tests / total # of organizations using MS-HIN</p>	

OBJECTIVE	KEY RESEARCH QUESTIONS	OUTCOME MEASURES	IMPACT MEASURES
Decrease the amount of laboratory costs associated with sending results	Is the average cost that laboratories spend to send laboratory results decreasing over time?	Audit Financial logs and check for decreases Identify the costs traditionally used to send out results and compare that to current spending.	
Ensure that laboratory personnel is satisfied with MS-HIN	Is laboratory personnel in the State satisfied with MS-HIN?		Laboratory Personnel Satisfaction Survey
Increase the number of providers participating in MS-HIN	Is the percentage of providers participating in MS-HIN increasing over time? Are the providers currently participating in MS-HIN satisfied? What are the biggest factors that cause providers not to participate in MS-HIN?	Audit Data Log, Identify provider participation rates and check for increases # of providers currently participating / # of all providers in the State eligible to participate	Include the following questions in the Provider Satisfaction Survey How satisfied are you with MS-HIN What are the biggest factors that are preventing you from participating with MS-HIN?
Increase the amount of providers exchanging care summaries	Is the rate of providers exchanging care summaries increasing over time? How satisfied are providers with their ability to exchange care summaries through MS-HIN? What are the biggest factors that cause providers not to exchange care summaries?	Audit Data and check for increases Identify the percentage of providers exchanging care summaries in the State - # of providers currently exchanging care summaries / # of all providers in the State eligible to participate	Include the following questions in the Provider Satisfaction Survey How often do you exchange care summaries? How satisfied are you with exchanging care summaries over MS-HIN? What is the biggest factor that is preventing you from exchanging care summaries through MS-HIN?
Reduce the number of redundant diagnostic radiology tests	Is the number of redundant diagnostic radiology tests decreasing over time?	Audit Data and check for decreases Use organizations that are not using MS-HIN as a control group and identify the number of redundant diagnostic radiology tests that are being performed. Compare that number to those organizations currently using MS-HIN and the number of redundant diagnostic radiology tests that they are performing. Those using MS-HIN should be lower.	

OBJECTIVE	KEY RESEARCH QUESTIONS	OUTCOME MEASURES	IMPACT MEASURES
<p>Increase the amount and frequency of providers accessing patient medication history</p>	<p>Is the number of providers accessing patient medication history increasing over time?</p> <p>Is the frequency at which providers are accessing patient's medication history increasing over time?</p> <p>How is the medication history helping with patient adherence/compliance?</p>	<p>Audit System Data Log and check for increases Identify the number of providers that are accessing patient medication history.</p> <p>Identify the average frequency in which a doctor accesses patients medication history</p>	<p>Include the following questions in the Provider Satisfaction Survey</p> <p>How often do you access patient's medication history?</p> <p>Has having the medication history helped with patient adherence/compliance?</p> <p>How has having a patients medication history helped with patient adherence/compliance?</p>
<p>Increase the number of e-prescriptions written and accepted in the State</p>	<p>Is the number of pharmacies participating in e-prescribing increasing over time?</p> <p>Is the number of providers writing e-prescriptions increasing over time?</p> <p>What are the biggest factors that cause providers not to write e-prescriptions?</p> <p>What are the biggest factors that cause pharmacies not to participate in e-prescribing?</p>	<p>Audit Data Log and check for increases Identify the pharmacy e-prescription participation rate # of pharmacies currently participating / # of all pharmacies in the State (SureScripts data)</p> <p>Identify the provider e-prescription participation rate # of providers currently participation rate / # of all providers in the state (SureScripts website)</p>	<p>Include the following questions in the Provider Satisfaction Survey and the Pharmacist Satisfaction Survey:</p> <p>Are you currently participating in e-prescribing?</p> <p>What are the biggest factors that are preventing you from participating in e-prescribing?</p> <p>What efficiencies do you feel are gained by e-prescribing?</p>
<p>Ensure that pharmacy personnel is satisfied with MS-HIN</p>	<p>Is pharmacy personnel satisfied with MS-HIN?</p>		<p>Pharmacist Satisfaction Survey</p>
<p>Decrease the discrepancy rate between what was intended to be prescribed and what was dispensed?</p>	<p>Is the discrepancy rate between what was intended to be prescribed and what was dispensed decreasing over time?</p> <p>What are the causes behind the discrepancy rate?</p>		<p>Pharmacist Satisfaction Survey</p>

OBJECTIVE	KEY RESEARCH QUESTIONS	OUTCOME MEASURES	IMPACT MEASURES
Decrease the amount of time to report events to Public Health Departments	Is the amount of time it takes to report events to Public Health Departments decreasing over time?	Audit Data Log and check for decreases Track time interval from date of event to time logged into public health database. If data is available, compare to pre-implementation of MS-HIN.	
Ensure that patients are satisfied with the MS-HIN	Are patients satisfied with the MS-HIN?		Patient Satisfaction Survey
Ensure that clinicians are satisfied with the MS-HIN	Are clinicians satisfied with the MS-HIN?		Clinician Satisfaction Survey

Evaluation Methods

ASSESSMENT	STUDY DESIGN	KEY QUESTION	STUDY POPULATION	DATA SOURCES AND COLLECTION METHODS	DATA ANALYSIS
Pharmacist Satisfaction Survey	Annual survey using an interval measurement type to determine pharmacy personnel perceptions and attitudes toward the MS-HIN	Overall, is pharmacy personnel satisfied with the MS-HIN? Hypothesis: Pharmacy personnel are satisfied with MS-HIN	<ul style="list-style-type: none"> Pharmacists Pharmacy Technicians Pharmacy Administrative Personnel 	Survey will be designed so that it can be distributed to all pharmacies involved in MS-HIN. Survey will incorporate key questions from the evaluation framework and elicit qualitative feedback on ways to improve the MS-HIN.	<p><i>Accept Hypothesis</i> - More than 60% of respondents agree with Hypothesis</p> <p><i>Reject Hypothesis</i> - Less than 59% of respondents agree with Hypothesis</p>
Patient Satisfaction Survey	Annual survey using an interval measurement type to determine patient perceptions and attitudes toward the MS-HIN	Overall, are patients satisfied with MS-HIN? Hypothesis: Patients are satisfied with MS HIN	<ul style="list-style-type: none"> Participating Provider's Patients 	Participating providers will distribute to their patients after an encounter. Survey will be designed to elicit qualitative feedback on ways to improve the MS-HIN.	<p><i>Accept Hypothesis</i> - More than 50% of respondents agree with Hypothesis</p> <p><i>Reject Hypothesis</i> - Less than 49% of respondents agree with Hypothesis</p>
Provider Satisfaction Survey	Annual survey using an interval measurement type to determine providers perceptions and attitudes toward the MS-HIN	Overall, are providers satisfied with MS-HIN? Hypothesis: Providers are satisfied with MS-HIN	<ul style="list-style-type: none"> Physicians Nurses Hospital Administration Personnel 	Distribute survey to participating providers. Survey will be designed to incorporate questions from the evaluation framework and elicit qualitative feedback on ways to improve the MS-HIN.	<p><i>Accept Hypothesis</i> - More than 60% of respondents agree with Hypothesis</p> <p><i>Reject Hypothesis</i> - Less than 59% of respondents agree with Hypothesis</p>

ASSESSMENT	STUDY DESIGN	KEY QUESTION	STUDY POPULATION	DATA SOURCES AND COLLECTION METHODS	DATA ANALYSIS
Radiology Personnel Satisfaction Survey	Annual survey using an interval measurement type to determine Radiology personnel perceptions and attitudes toward the MS-HIN	Overall, Is radiology personnel satisfied with MS-HIN? Hypothesis: Radiology personnel are satisfied with MS-HIN.	<ul style="list-style-type: none"> • Radiologist • Radiology technicians • Radiology administrative personnel 	Design the survey so that it can be distributed to all radiology centers involved with MS-HIN. Survey should include questions from the evaluation framework and elicit qualitative feedback on ways to improve the MS-HIN.	<i>Accept Hypothesis</i> - More than 60% of respondents agree with Hypothesis <i>Reject Hypothesis</i> - Less than 59% of respondents agree with Hypothesis
Clinician Satisfaction Survey	Annual survey using an interval measurement type to determine clinician perceptions and attitudes toward the MS-HIN	Overall, are clinicians satisfied with MS-HIN? Hypothesis: Clinician personnel are satisfied with MS-HIN.	<ul style="list-style-type: none"> • Clinician's administrative personnel 	Design the survey so that it can be distributed to those clinicians involved with MS-HIN. Survey will include questions from the evaluation framework and elicit qualitative feedback on ways to improve the MS-HIN.	<i>Accept Hypothesis</i> - More than 70% of respondents agree with Hypothesis <i>Reject Hypothesis</i> - Less than 69% of respondents agree with Hypothesis
Hospital Status Survey	Focus group to determine perceptions toward the HIE as well as identifying the factors leading to hospitals not implementing the HIE solution	Do the hospitals believe that the HIE has value for them? What are the primary factors leading to a hospital not implementing the HIE solution?	<ul style="list-style-type: none"> • Hospital CEOs and CIOs 	Survey will be designed so that it can be distributed to all hospitals not involved in MS-HIN. Survey will incorporate questions from the evaluation framework and elicit qualitative feedback on ways to improve hospital participation.	Identify major themes and key findings from discussion.
Audit Data Log	Process of auditing data logs to identify relevant data to answer questions identified in the evaluation framework.	Various questions identified in the evaluation framework.	<ul style="list-style-type: none"> • N/A 	Data will be collected through surveys, the system, and stakeholder record logs.	During year one, the data collected may be used to establish baselines. Once baselines are established future years can be measured against the established baseline. As adoption of MS-HIN increases, there will be improvements in meeting the objectives identified in the evaluation framework

15.1.4. MS-HIN Project Schedule

ID	Task Name	Duration	Start	Finish	Predec
1	MS HIE Strategic & Operational Plan Deployment	1091 days	Fri 8/20/10	Fri 10/24/14	
2	Negotiate with Medicity	145 days	Fri 10/1/10	Thu 4/21/11	
3	Develop Process for Metrics and Evaluation	10 days	Fri 10/1/10	Thu 10/14/10	
4	Present Initial Proposal	5 days	Fri 10/15/10	Thu 10/21/10	3
5	Allow for Medicity to Review and Respond	30 days	Fri 10/22/10	Thu 12/2/10	4
6	Evaluate Medicity Response	10 days	Fri 12/3/10	Thu 12/16/10	5
7	Award New Medicity Contract	90 days	Fri 12/17/10	Thu 4/21/11	6
8	Coordinate with State Teams	896 days	Fri 10/15/10	Fri 3/21/14	
9	Work With State Legislature	826 days	Fri 1/21/11	Fri 3/21/14	
49	Coordinate with Medicaid	826 days	Fri 1/21/11	Fri 3/21/14	
89	Monthly MS-HIN Board Meetings	701 days	Fri 10/15/10	Fri 6/21/13	
125	State HIE Program Reporting	986 days	Fri 1/14/11	Fri 10/24/14	
126	Submit ARRA Reports Quarterly	976 days	Fri 1/21/11	Fri 10/17/14	
143	Submit Financial Status Reports Quarterly to ONC	976 days	Fri 1/28/11	Fri 10/24/14	
160	Submit ONC Program Progress Reports Semi-Annually	911 days	Fri 1/14/11	Fri 7/11/14	
169	Participation / Business Associate Agreements	10 days	Tue 1/24/12	Mon 2/6/12	
170	Review Participation / Business Associate Agreements	10 days	Tue 1/24/12	Mon 2/6/12	177
171	Direct - Communications Plan	80 days	Mon 7/11/11	Fri 10/28/11	
172	Direct - Develop Communications Plan and Strategy	80 days	Mon 7/11/11	Fri 10/28/11	
173	HIE - Communications Plan	238 days	Mon 7/11/11	Wed 6/6/12	
174	HIE - Develop Communications Plan and Strategy	238 days	Mon 7/11/11	Wed 6/6/12	
175	Statewide HIE Preliminary Planning	512 days	Wed 7/13/11	Thu 6/27/13	
176	Update Strategic & Operational Plan per State Requirements 2012	65 days	Wed 2/8/12	Tue 5/8/12	
177	Update Governance Requirements	3 wks	Wed 2/8/12	Tue 2/28/12	
ID	Task Name	Duration	Start	Finish	Predec
178	Update Finance Requirements	3 wks	Wed 2/8/12	Tue 2/28/12	
179	Update Technical Infrastructure Requirements	3 wks	Wed 2/8/12	Tue 2/28/12	
180	Update Business & Technical Operations Requirements	3 wks	Wed 2/8/12	Tue 2/28/12	
181	Update Legal Policy Requirements	3 wks	Wed 2/8/12	Tue 2/28/12	
182	Align State Medicaid HIT Plan with State HIE Plan	5 wks	Tue 2/28/12	Mon 4/2/12	
183	Align State Public Health Requirements with State HIE Plan	5 wks	Tue 2/28/12	Mon 4/2/12	182
184	Consolidate Statewide HIE Strategic & Operational Plan with HIE Business Plan	5 wks	Wed 2/29/12	Tue 4/3/12	183
185	Obtain Endorsement of Strategic & Operational Plan from ITD Board & Shareholders	5 wks	Wed 4/4/12	Tue 5/8/12	184
186	Update Strategic & Operational Plan per State Requirements 2013	100 days	Fri 2/8/13	Thu 6/27/13	
187	Update Governance Requirements	3 wks	Fri 2/8/13	Thu 2/28/13	
188	Update Finance Requirements	3 wks	Fri 2/8/13	Thu 2/28/13	
189	Update Technical Infrastructure Requirements	3 wks	Fri 2/8/13	Thu 2/28/13	
190	Update Business & Technical Operations Requirements	3 wks	Fri 2/8/13	Thu 2/28/13	
191	Update Legal Policy Requirements	3 wks	Fri 2/8/13	Thu 2/28/13	
192	Align State Medicaid HIT Plan with State HIE Plan	5 wks	Fri 3/1/13	Thu 4/4/13	191
193	Align State Public Health Requirements with State HIE Plan	4 wks	Fri 4/5/13	Thu 5/2/13	192
194	Consolidate Statewide HIE Strategic & Operational Plan with HIE Business Plan	4 wks	Fri 5/3/13	Thu 5/30/13	193
195	Obtain Endorsement of Strategic & Operational Plan from ITD Board & Shareholders	4 wks	Fri 5/31/13	Thu 6/27/13	194
196	Complete Environmental Scan of Existing Assets	30 days	Wed 2/29/12	Tue 4/10/12	177
197	Evaluate Existing HIE Assets	30 days	Wed 2/29/12	Tue 4/10/12	
198	Evaluate State Department Assets	30 days	Wed 2/29/12	Tue 4/10/12	
199	Evaluate HIE Participant Assets	30 days	Wed 2/29/12	Tue 4/10/12	
200	Policies and Procedures	501 days	Wed 7/13/11	Wed 6/12/13	
201	Develop Ongoing Privacy & Security Policies	75 wks	Thu 1/5/12	Wed 6/12/13	

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ID	Task Name	Duration	Start	Finish	Predec
202	Develop Patient - Opt Out Policies & procedures	21.6 wks	Thu 1/5/12	Mon 6/4/12	201SS
203	Complete HIE Security Checklist	21.6 wks	Thu 1/5/12	Mon 6/4/12	202SS
204	Develop HISP Policy	6.5 mons	Wed 7/13/11	Tue 1/10/12	
205	Bi-Weekly Conference Calls with P&S Committee	21.6 wks	Thu 1/5/12	Mon 6/4/12	204SS
206	Phase 0: State HIE Program Meetings & Training	1 day	Mon 6/11/12	Mon 6/11/12	
207	Attend Kick-Off Summit & Leadership Training	1 day	Mon 6/11/12	Mon 6/11/12	124
208	Phase 0: Upgrade MS-HIN HIE Infrastructure	153 days	Wed 6/1/11	Fri 12/30/11	
209	Upgrade HIE Servers -- Hardware	13.4 wks	Wed 6/1/11	Thu 9/1/11	
210	Upgrade HIE Servers -- Software	13.4 wks	Wed 6/1/11	Thu 9/1/11	
211	Upgrade HIE Servers -- Licenses	13.4 wks	Wed 6/1/11	Thu 9/1/11	
212	Expand MSCHIE Platform to Statewide MS-HIN	86 days	Fri 9/2/11	Fri 12/30/11	
213	Migrate Data Center Location	86 days	Fri 9/2/11	Fri 12/30/11	210
214	Expand Federated hybrid Servers at Data Center	86 days	Fri 9/2/11	Fri 12/30/11	213
215	Review Meaningful Use for Updated Applications	86 days	Fri 9/2/11	Fri 12/30/11	214
216	Verify HIE Applications on MS HIE Servers	86 days	Fri 9/2/11	Fri 12/30/11	215
217	Test Identified Applications	86 days	Fri 9/2/11	Fri 12/30/11	216
218	Phase 1: Connect Additional Hospitals and Ambulatory Providers	812 days	Fri 8/20/10	Mon 9/30/13	
219	Extend Provider Directory - Verification and Credentials	3 mons	Fri 8/20/10	Thu 11/11/10	
220	Provision Direct Addresses for Providers	2 mons	Fri 11/12/10	Thu 1/6/11	219
221	Connect Providers to MS-HIN Grid / Direct	6 mons	Fri 1/7/11	Thu 6/23/11	220
222	Implement Direct Services	88 days	Mon 8/1/11	Wed 11/30/11	
223	Implement Pilot Project on Coast	88 days	Mon 8/1/11	Wed 11/30/11	
224	Expand Service Delivery - Coast	714 days	Wed 1/5/11	Mon 9/30/13	
225	Hospital/Clinics - George Regional	440 days	Wed 1/5/11	Tue 9/11/12	
ID	Task Name	Duration	Start	Finish	Predec
226	Recruitment	2 wks	Wed 1/5/11	Tue 1/18/11	
227	Obtain BAA & Participation Agreements	1 wk	Wed 1/19/11	Tue 1/25/11	226
228	Complete HISP/Direct Registration	2 wks	Wed 8/1/12	Tue 8/14/12	
229	Interface Requirements Gathering	4 wks	Tue 7/5/11	Mon 8/1/11	
230	Interface Development (Test, Validate, Go Live)	5.4 wks	Tue 5/1/12	Wed 6/6/12	
231	Results Distribution Services	4 wks	Wed 8/15/12	Tue 9/11/12	
232	Train End Users	4 wks	Wed 8/15/12	Tue 9/11/12	
233	Site Go Live	1 wk	Tue 9/4/12	Mon 9/10/12	
234	Hospital/Clinics - Singing River Health System	177 days	Mon 4/2/12	Tue 12/4/12	
235	Interface Requirements Gathering - Conversion to Epic	87 days	Mon 4/2/12	Tue 7/31/12	
236	Interface Development (Test, Validate, Go Live)	3 mons	Wed 8/1/12	Tue 10/23/12	235
237	Results Distribution Services	4 wks	Wed 10/24/12	Tue 11/20/12	236
238	Site Go Live	2 wks	Wed 11/21/12	Tue 12/4/12	237
239	Ambulatory Providers	453 days	Thu 1/5/12	Mon 9/30/13	
240	Ongoing Direct Services Training	453 days	Thu 1/5/12	Mon 9/30/13	
241	Ongoing CHR Training	453 days	Thu 1/5/12	Mon 9/30/13	
242	Ongoing Results Distribution Services	453 days	Thu 1/5/12	Mon 9/30/13	
243	Ongoing EMR Integration Services	453 days	Thu 1/5/12	Mon 9/30/13	
244	Expand Service Delivery - Central/East MS	370 days	Tue 5/1/12	Mon 9/30/13	
245	Hospital/Clinics - Anderson	201 days	Tue 5/1/12	Tue 2/5/13	
246	Recruitment	5.4 wks	Tue 5/1/12	Wed 6/6/12	
247	Obtain BAA & Participation Agreements	1 wk	Wed 8/1/12	Tue 8/7/12	
248	Complete HISP/Direct Registration	5 wks	Wed 8/8/12	Tue 9/11/12	247
249	Interface Requirements Gathering	5 wks	Wed 9/12/12	Tue 10/16/12	248

ID	Task Name	Duration	Start	Finish	Predec
250	Interface Development (Test, Validate, Go Live)	5 wks	Wed 10/17/12	Tue 11/20/12	249
251	Results Distribution Services	5 wks	Wed 11/21/12	Tue 12/25/12	250
252	Train End Users	5 wks	Wed 12/26/12	Tue 1/29/13	251
253	Site Go Live	1 wk	Wed 1/30/13	Tue 2/5/13	252
254	Hospital/Clinics - Rush	313 days	Tue 5/1/12	Thu 7/11/13	
255	Recruitment	5.4 wks	Tue 5/1/12	Wed 6/6/12	
256	Obtain BAA & Participation Agreements	1 wk	Fri 1/4/13	Thu 1/10/13	
257	Complete HISP/Direct Registration	5 wks	Fri 1/11/13	Thu 2/14/13	256
258	Interface Requirements Gathering	5 wks	Fri 2/15/13	Thu 3/21/13	257
259	Interface Development (Test, Validate, Go Live)	5 wks	Fri 3/22/13	Thu 4/25/13	258
260	Results Distribution Services	5 wks	Fri 4/26/13	Thu 5/30/13	259
261	Train End Users	5 wks	Fri 5/31/13	Thu 7/4/13	260
262	Site Go Live	1 wk	Fri 7/5/13	Thu 7/11/13	261
263	Ambulatory Providers	180 days	Tue 1/22/13	Mon 9/30/13	
264	Ongoing Direct Services Training	9 mons	Tue 1/22/13	Mon 9/30/13	
265	Ongoing CHR Training	9 mons	Tue 1/22/13	Mon 9/30/13	
266	Ongoing Results Distribution Services	9 mons	Tue 1/22/13	Mon 9/30/13	
267	Ongoing EMR Integration Services	9 mons	Tue 1/22/13	Mon 9/30/13	
268	Expand Service Delivery - South	453 days	Thu 1/5/12	Mon 9/30/13	
269	Hospital/Clinics - South Central Regional Medical Center	255 days	Thu 1/5/12	Wed 12/26/12	
270	Recruitment	5.4 wks	Thu 1/5/12	Wed 6/6/12	
271	Obtain BAA & Participation Agreements	1 wk	Thu 6/7/12	Wed 6/13/12	270
272	Complete HISP/Direct Registration	5 wks	Thu 6/14/12	Wed 7/18/12	271
273	Interface Requirements Gathering	7 wks	Thu 7/19/12	Wed 9/5/12	272
ID	Task Name	Duration	Start	Finish	Predec
274	Interface Development (Test, Validate, Go Live)	5 wks	Thu 9/6/12	Wed 10/10/12	273
275	Results Distribution Services	5 wks	Thu 10/11/12	Wed 11/14/12	274
276	Train End Users	5 wks	Thu 11/15/12	Wed 12/19/12	275
277	Site Go Live	1 wk	Thu 12/20/12	Wed 12/26/12	276
278	Ambulatory Providers	195 days	Tue 1/1/13	Mon 9/30/13	
279	Ongoing Direct Services Training	9.75 mons	Tue 1/1/13	Mon 9/30/13	
280	Ongoing CHR Training	9.75 mons	Tue 1/1/13	Mon 9/30/13	
281	Ongoing Results Distribution Services	9.75 mons	Tue 1/1/13	Mon 9/30/13	
282	Ongoing EMR Integration Services	9.75 mons	Tue 1/1/13	Mon 9/30/13	
283	Expand Service Delivery - Central	366 days	Fri 5/4/12	Fri 9/27/13	
284	Hospital/Clinics - UMC	212 days	Fri 5/4/12	Mon 2/25/13	
285	Recruitment	67 days	Fri 5/4/12	Mon 8/6/12	
286	Obtain BAA & Participation Agreements	1 wk	Tue 8/7/12	Mon 8/13/12	285
287	Complete HISP/Direct Registration	5 wks	Tue 8/14/12	Mon 9/17/12	286
288	Interface Requirements Gathering	7 wks	Tue 9/18/12	Mon 11/5/12	287
289	Interface Development (Test, Validate, Go Live)	5 wks	Tue 11/6/12	Mon 12/10/12	288
290	Results Distribution Services	5 wks	Tue 12/11/12	Mon 1/14/13	289
291	Train End Users	5 wks	Tue 1/15/13	Mon 2/18/13	290
292	Site Go Live	1 wk	Tue 2/19/13	Mon 2/25/13	291
293	Ambulatory Providers	145 days	Mon 3/11/13	Fri 9/27/13	
294	Ongoing Direct Services Training	145 days	Mon 3/11/13	Fri 9/27/13	
295	Ongoing CHR Training	145 days	Mon 3/11/13	Fri 9/27/13	
296	Ongoing Results Distribution Services	145 days	Mon 3/11/13	Fri 9/27/13	
297	Ongoing EMR Integration Services	145 days	Mon 3/11/13	Fri 9/27/13	

ID	Task Name	Duration	Start	Finish	Predec
298	Expand Service Delivery - North	424 days	Wed 2/15/12	Mon 9/30/13	
299	Hospital/Clinics - North Mississippi Medical Center	218 days	Wed 2/15/12	Fri 12/14/12	
300	Recruitment	33 days	Wed 2/15/12	Fri 3/30/12	
301	Obtain BAA & Participation Agreements	1 wk	Mon 4/2/12	Fri 4/6/12	300
302	Complete HISP/Direct Registration	5 wks	Mon 4/9/12	Fri 5/11/12	301
303	Interface Requirements Gathering	7 wks	Mon 5/14/12	Fri 6/29/12	302
304	Interface Development (Test, Validate, Go Live)	7 wks	Mon 7/2/12	Fri 8/17/12	303
305	Results Distribution Services	7 wks	Mon 8/20/12	Fri 10/5/12	304
306	Train End Users	7 wks	Mon 10/8/12	Fri 11/23/12	305
307	Site Go Live	3 wks	Mon 11/26/12	Fri 12/14/12	306
308	Ambulatory Providers	304 days	Wed 8/1/12	Mon 9/30/13	
309	Ongoing Direct Services Training	304 days	Wed 8/1/12	Mon 9/30/13	
310	Ongoing CHR Training	304 days	Wed 8/1/12	Mon 9/30/13	
311	Ongoing Results Distribution Services	304 days	Wed 8/1/12	Mon 9/30/13	
312	Ongoing EMR Integration Services	304 days	Wed 8/1/12	Mon 9/30/13	
313	Expand Service Delivery - Southwest	390 days	Mon 4/2/12	Fri 9/27/13	
314	Hospital/Clinics - Natchez Regional	251 days	Mon 4/2/12	Mon 3/18/13	
315	Recruitment	66 days	Mon 4/2/12	Mon 7/2/12	
316	Obtain BAA & Participation Agreements	1 wk	Tue 9/4/12	Mon 9/10/12	
317	Complete HISP/Direct Registration	5 wks	Tue 9/11/12	Mon 10/15/12	316
318	Interface Requirements Gathering	5 wks	Tue 10/16/12	Mon 11/19/12	317
319	Interface Development (Test, Validate, Go Live)	5 wks	Tue 11/20/12	Mon 12/24/12	318
320	Results Distribution Services	5 wks	Tue 12/25/12	Mon 1/28/13	319
321	Train End Users	5 wks	Tue 1/29/13	Mon 3/4/13	320
322	Site Go Live	2 wks	Tue 3/5/13	Mon 3/18/13	321
323	Ambulatory Providers	171 days	Fri 2/1/13	Fri 9/27/13	
324	Ongoing Direct Services Training	171 days	Fri 2/1/13	Fri 9/27/13	
325	Ongoing CHR Training	171 days	Fri 2/1/13	Fri 9/27/13	
326	Ongoing Results Distribution Services	171 days	Fri 2/1/13	Fri 9/27/13	
327	Ongoing EMR Integration Services	171 days	Fri 2/1/13	Fri 9/27/13	
328	Expand Service Delivery - Statewide	208 days	Mon 4/23/12	Wed 2/6/13	
329	Hospital/Clinics - Health Management Associates	208 days	Mon 4/23/12	Wed 2/6/13	
330	Recruitment	33 days	Mon 4/23/12	Wed 6/6/12	
331	Obtain BAA & Participation Agreements	1 wk	Thu 6/7/12	Wed 6/13/12	330
332	Complete HISP/Direct Registration	5 wks	Thu 6/14/12	Wed 7/18/12	331
333	Interface Requirements Gathering	7 wks	Thu 7/19/12	Wed 9/5/12	332
334	Interface Development (Test, Validate, Go Live)	7 wks	Thu 9/6/12	Wed 10/24/12	333
335	Results Distribution Services	7 wks	Thu 10/25/12	Wed 12/12/12	334
336	Train End Users	5 wks	Thu 12/13/12	Wed 1/16/13	335
337	Site Go Live	3 wks	Thu 1/17/13	Wed 2/6/13	336
338	Integrate Commercial Lab Providers	372 days	Thu 12/1/11	Fri 5/3/13	
339	Labcorp	242 days	Thu 12/1/11	Fri 11/2/12	
340	Obtain Contract	163 days	Thu 12/1/11	Mon 7/16/12	
341	Interface Requirements	10 wks	Mon 6/4/12	Fri 8/10/12	
342	Interface Development	3 mons	Mon 8/13/12	Fri 11/2/12	341
343	Quest	174 days	Tue 9/4/12	Fri 5/3/13	
344	Obtain Contract	64 days	Tue 9/4/12	Fri 11/30/12	
345	Interface Requirements	10 wks	Mon 12/3/12	Fri 2/8/13	344

ID	Task Name	Duration	Start	Finish	Predec
346	Interface Development	3 mons	Mon 2/11/13	Fri 5/3/13	345
347	UAL	174 days	Tue 9/4/12	Fri 5/3/13	
348	Obtain Contract	64 days	Tue 9/4/12	Fri 11/30/12	
349	Interface Requirements	10 wks	Mon 12/3/12	Fri 2/8/13	348
350	Interface Development	3 mons	Mon 2/11/13	Fri 5/3/13	349
351	Phase 2: Expand State-Level Services	837 days	Fri 8/20/10	Mon 11/4/13	
352	Mississippi State Department of Health	626 days	Fri 8/20/10	Fri 1/11/13	
353	Obtain BAA & Participation Agreements	1 wk	Fri 8/20/10	Thu 8/26/10	
354	Complete HISP/Direct Registration	1 day	Fri 8/20/10	Fri 8/20/10	
355	Immunizations	180 days	Mon 5/7/12	Fri 1/11/13	
356	Interface Requirements Gathering	4 mons	Mon 5/7/12	Fri 8/24/12	
357	Interface Development (Test, Validate, Go Live)	4 mons	Mon 8/27/12	Fri 12/14/12	356
358	Train End Users	3 wks	Mon 12/17/12	Fri 1/4/13	357
359	Site Go Live	1 wk	Mon 1/7/13	Fri 1/11/13	358
360	ELR	180 days	Mon 5/7/12	Fri 1/11/13	
361	Interface Requirements Gathering	4 mons	Mon 5/7/12	Fri 8/24/12	
362	Interface Development (Test, Validate, Go Live)	4 mons	Mon 8/27/12	Fri 12/14/12	356
363	Train End Users	3 wks	Mon 12/17/12	Fri 1/4/13	357
364	Site Go Live	1 wk	Mon 1/7/13	Fri 1/11/13	358
365	Integration: Neighboring Statewide HIEs	253 days	Thu 11/15/12	Mon 11/4/13	
366	State HIE 1 - Tennessee - Direct	210 days	Tue 1/15/13	Mon 11/4/13	
367	Planning - Define Direct Use Cases	2 mons	Tue 1/15/13	Mon 3/11/13	
368	Define Agreements/Additional Policies	2 mons	Tue 3/12/13	Mon 5/6/13	367
369	HISP Activation	60 days	Tue 5/7/13	Mon 7/29/13	368
ID	Task Name	Duration	Start	Finish	Predec
370	Testing	60 days	Tue 7/30/13	Mon 10/21/13	369
371	Go-Live	2 wks	Tue 10/22/13	Mon 11/4/13	370
372	MS-HIN Program Evaluation	145 days	Thu 11/15/12	Wed 6/5/13	
373	Conduct Performance Evaluation	7 mons	Thu 11/15/12	Wed 5/29/13	
374	Report on Program Evaluation Findings	5 days	Thu 5/30/13	Wed 6/5/13	373
375	Phase 3: Quality Programs and Consumer Engagement	344 days	Wed 6/6/12	Mon 9/30/13	
376	Monitor Federal PIN Requirements Concerning Consumer Engagement and HIE Requirements	68.8 wks	Wed 6/6/12	Mon 9/30/13	

Updated Staffing Plan

The MS-HIN has been operating with limited staff for the last two years. MS-HIN has been operating utilizing a part-time HIT Coordinator, part-time support from two individuals at the Department of Information Technology Services (ITS) and a part-time technical consultant. The MS-HIN Board has been unable to hire any state staff positions because the MS-HIN did not have any Personnel Identification Numbers (PINs) associated with the organization. All Mississippi state agencies must hire personnel through the State Personnel Board utilizing PINs acquired through the appropriation process. Due to the grant funding, the MS-HIN Board had yet to request general fund support. In the 2012 Legislative Session, the MS-HIN Board requested and were authorized three PINs to hire staff.

All the staff who originally worked on the grant, continue to provide staffing support. Currently, the MS-HIN has an acting Director who was the HIT Coordinator when the grant was located in the Governor's Office. The MS-HIN Board will be able to hire full-time staff starting July 1, 2012. The MS-HIN will hire a Technical Project Manager and an Administrative Assistant. The Technical Project Manager will work closely with the Medicity technical staff to assist participants with the on-boarding process and continued support as they exchange clinical data. In addition, when the MS-HIN Board renegotiated the vendor contract with Medicity, a substantial amount of money was

included for consulting services. This decision was made because there were no PINs available at that time to hire staff and Medicity staff had already been working in the State due to their involvement in the regional HIE on the coast. Currently through the Medicity contract, MS-HIN employs an HIE Program Director, a Program Manager and two Outreach Coordinators. MS-HIN staff works very closely with Medicity staff coordinating outreach, recruitment and implementation of MS-HIN participants.

In February 2012, the State of Mississippi transferred the HIE State Designated responsibilities from the Office of the Governor to the Mississippi State Department of Health (MSDH). The decision was made to transfer the grant to MSDH because of the important role they hold in protecting and promoting the health of Mississippi citizens. The MSDH has a long history of providing healthcare services, healthcare strategic planning and policy development, quality improvement and performance measurement and public health preparedness and response. MSDH has the necessary infrastructure to assist MS-HIN with the grant's fiscal requirements. The Division of Grants Management within the MSDH has a staff of twelve and who report to the Chief Financial Officer. The Grants Management staff will operate the billing and invoicing of MS-HIN participants, administering the federal grant accounting and assisting with grant reporting.

As noted above, the Department of Information Technology Services staff has provided support since the beginning of the Cooperative Agreement Grant. The ITS staff has been instrumental in proving program and contract management. The MSDH will execute a Memorandum of Understanding with ITS to provide continued program management. In 2008, when the Mississippi Coastal Health Information Exchange was established, ITS wrote the Request for Proposal, led the evaluation process and negotiated the HIE contract. ITS is the holder of the current Medicity contract which covers statewide HIE services. ITS facilitates effective planning, deployment, and operation of information technologies for Mississippi State Government. One of ITS main responsibilities is to form partnerships with the private sector to optimize the use of available resources for enhanced delivery of government services. The Medicity contract is a prime example of this type of relationship. ITS will continue to provide grant program management and ensure all technical and business infrastructure requirements are met.

15.1.5. Program Information Notice - Appendix A

Changes to HIE Strategy

Domain/Sections	Short Description of Approved Portion of SOP that Grantee is Proposing to Change (include page numbers)	Proposed Changes	Reason for the Proposed Changes	Budget Implications of Proposed Changes
<i>Include in First and Subsequent SOP Updates</i>				
Overall HIE Strategy including Phasing	No Changes	N/A	N/A	N/A
Governance	No Changes	N/A	N/A	N/A
Technology	<p>Section 11.1.2 (Table 10), Patient Summary Record, the content exchange standard for the patient summary record was updated to reflect the current standards. (p. 92)</p> <p>Section 11.5.3- Describes how MS-HIN will connect with NHIN.(p.99)</p> <p>Section 11.14.1- Describes how and where the MS-HIN clinical information will be stored. (p.127)</p>	<p>Section 11.5.3- The proposed change incorporates Medicity employing their own NHIN Gateway as opposed to an open source solution. The Medicity NHIN Gateway is fully interoperable with all NHIN standards.</p> <p>Section 11.14.1- Instead of patient data being stored centrally, all clinical data excluding patient demographics will be stored at the provider level.</p>	<p>Section 11.5.3- The original SOP stated the content exchange standard for the patient summary record was to be determined. The change specifies the standard.</p> <p>Section 11.14.1- Storing all data centrally is cost prohibitive.</p>	None
Financial	Section 15.1.1 Updated Sustainability Model (p.208)	The model establishes a fair and equitable fee structure for all MS-HIN participants.	Updated according to PIN 002 requirements.	None
Business Operations	No Changes, but have included updated PIN strategies in Section 12.7 starting on p.140.	N/A	N/A	None
Legal/Policy	Section 15.1.2 Privacy and Security Framework (p.217)	Developed P&S policies and procedures to ensure protected health information is secure and adheres to all state and federal laws.	Required P&S Framework	None

Strategies for e-Prescribing	The MS-HIN Board convened the Pharmacy Committee to develop pharmacy outreach materials to distribute to pharmacist not e-prescribing. The outreach materials discuss e-prescribing programs, benefits and meaningful use. MS-HIN staff will conduct follow-up phone calls to all pharmacies not e-prescribing after outreach materials are sent. MS-HIN staff will continue to work with Pharmacy Associations to distribute education materials/newsletters to educate pharmacists about meaningful use, and e-prescribing benefits. Section 12.7.1 (p.140)	In Mississippi's original SOP, the State did not provide a lot of detail on the e-prescribing strategy; just stated MS-HIN staff would work with pharmacies. This SOP update provides the details of the e-prescribing strategy.	The e-prescribing strategy has developed since the SOP original submission and the MS-HIN Board established a Pharmacy Committee to provide leadership for this effort.	None
Strategies for Structured Lab Results Exchange	The updated lab strategy submitted in this SOP update is very similar to the strategy in the original SOP. The approved strategy discusses leveraging the coastal infrastructure to increase access to lab data. In addition, the approved strategy discusses using DIRECT as a way to securely transport lab data. Section 12.7.2 (p.143)	The update provides more details regarding the State working with both hospital and commercial labs. MS-HIN will still leverage the existing coastal HIE and extending this infrastructure statewide will facilitate access to lab data. In addition, the original SOP discusses the use of DIRECT as a way to transport lab results and this strategy update provides more detail on those outreach and implementation efforts. In the original SOP, there was very little discussion of the need to collaborate with commercial labs to exchange lab data. MS-HIN is currently finalizing a contract with LabCorp and will soon begin contract negotiations with Quest and UAL.	The proposed changes include more detail on the State's lab strategy and include the need to work with commercial labs.	None, these costs were built into the budget.

Strategies for Care Summary Exchange	There has been no change from the State's original strategy of leveraging the coastal HIE infrastructure and providing Meaningful Use support .The updated strategy section provides more detail and elaborates on the DIRECT strategy. Section 12.7.3 (p.147)	MS-HIN is reaching out/on-boarding medium to large hospitals/health systems and their clinics first to ensure there is ample data in the system available for all healthcare providers as they join the MS-HIN. In addition, until providers are ready to participate and exchange data within the HIE, Mississippi implemented a DIRECT solution which provides an interim solution for exchanging clinical care summaries by using secure messaging services.	N/A	None
<i>The Core Documents Are Required As Part Of First SOP Update. Changes Should be Indicated in Subsequent SOP Update</i>				
Sustainability	When the original SOP was written, the Medicity contract had yet to be renegotiated and pricing was unknown. Therefore, the State simply presented an Operating Budget based on estimated prices. Section 15.1.1 (p.208)	In October of 2011, the MS-HIN Board approved the financial sustainability model. The model is designed to generate revenue associated with the value and services MS-HIN participants receive. This model ensures that the HIE will be self-sustaining entity once the ONC grant is exhausted.	The goal is to ensure MS-HIN is self-sustaining by 2015.	None
Privacy and Security Framework	The P&S Framework follows the ONC PIN 003 requirements. The MS-HIN Board convened the P&S Committee to develop all policies and procedures related to P&S. Over the last four months, the Committee met and worked on policies related to operational guidelines, auditing, breaches, and request to receive and amend PHI. Section 15.1.2 (p.217)	New Requirement	N/A	None

Evaluation Plan	MS-HIN followed PIN 002 requirements for the Program Evaluation. The aims of the MS-HIN's Evaluation include adoption/utilization, effectiveness/satisfaction and barriers. The Evaluation focuses on the PIN requirements and analyzes both outcome and impact measures. Section 15.1.3 (p.226)	New Requirement	N/A	MS-HIN will use at least 2% of the overall grant budget to complete the Program Evaluation.
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15.1.6. Program Information Notice - Appendix C

Tracking Program Progress

Program Priority	Report in first SOP update		Report January, 2013		Report January, 2014	
	Status as of December, 2011	Target for December, 2012	Status as of December, 2012	Target for December, 2013	Status as of December, 2013	Target for end of grant period
1. % of pharmacies participating in e-prescribing	94.0% 730 of 777 participating	97.0% Requires adding 24 pharmacies 754 of 777				
2. % of labs sending electronic lab results to providers in a structured format ¹⁰	24.0% 48 of 200 From AHA data supported by our survey results	30.0% Requires adding 12 laboratories 60 of 200				
3. % of labs sending electronic lab results to providers using LOINC	4.4% 4 of 91 survey respondents	8.62% Working with MSDH, MS's goal is to increase the total number to 10 based on 116 hospitals				
4. % of hospitals sharing electronic care summaries with unaffiliated hospitals and providers	4a) 18.76% 4b) 24.51%	4a) 20.64% 4b) 26.51% MS's goal is to increase these areas by 10%				

¹⁰ **Structured format:** Documentation of discrete data using controlled vocabulary, creating fixed fields within a record or file, or another method that provides clear structure to information (is not completely free text).

	Report in first SOP update		Report January, 2013		Report January, 2014	
Program Priority	Status as of December, 2011	Target for December, 2012	Status as of December, 2012	Target for December, 2013	Status as of December, 2013	Target for end of grant period
5. % of ambulatory providers electronically sharing care summaries with other providers	24.54%	31.20% MS's goal is to meet the national average for this program priority				
6. Public Health agencies receiving ELR data produced by EHRs or other electronic sources. Data are received using HL7 2.5.1 LOINC and SNOMED. Yes/no or %	Yes – 1	10				
7. Immunization registries receiving electronic immunization data produced by EHRs. Data are received in HL7 2.3.1 or 2.5.1 formats using CVX code. Yes/no or %	Yes – 6	30				

Program Priority	Report in first SOP update		Report January, 2013		Report January, 2014	
	Status as of December, 2011	Target for December, 2012	Status as of December, 2012	Target for December, 2013	Status as of December, 2013	Target for end of grant period
<p>8. Public Health agencies receiving electronic syndromic surveillance hospital data produced by EHRs in HL7 2.3.1 or 2.5.1 formats (using CDC reference guide).</p> <p>Yes/no or %</p>	No – 0	<p>0</p> <p>Guides have not been released by the CDC. However, MSDH currently has 26 hospitals submitting syndromic surveillance through EARS (Early Aberration Reporting System).</p>				
<p>9. Public Health agencies receiving electronic syndromic surveillance ambulatory data produced by EHRs in HL7 2.3.1 or 2.5.1.</p> <p>Yes/no or %</p>	No – 0	0				

Appendix A: Summary of Meaningful Use Certification Criteria for HIE

CMS and ONC Final Rule Compliant

	Category	Certification Criteria	Description	Standards	HIE Stage 1
1	General	Drug-drug, drug-allergy interaction checks – Notifications	Automatically and electronically, generate and indicate in real-time, notifications at the point of care for drug-drug and drug-allergy contraindications based on medication list, medication allergy list, and computerized provider order entry (CPOE).	N/A	√
2	General	Drug-drug, drug-allergy interaction checks – Adjustments	Provide certain users with the ability to adjust notifications provided for drug-drug and drug-allergy interaction checks.	N/A	√
3	General	Drug-formulary checks	Enable a user to check electronically if drugs are in a formulary or preferred drug list.		√
4	General	Maintain up-to-date problem list	Enable a user to electronically record, modify, and retrieve a patient's problem list for longitudinal care.	45 CFR 162.1002(a)(1) & SNOMED CT	√
5	General	Maintain active medication list.	Enable a user to electronically record, modify, and retrieve a patient's active medication list as well as medication history for longitudinal care.	N/A	√
6	General	Maintain active medication allergy list	Enable a user to electronically record, modify, and retrieve a patient's active medication allergy list as well as medication allergy history for longitudinal care.		√
7	General	Record and chart vital signs – Vital Signs	Enable a user to electronically record, modify, and retrieve a patient's vital signs including, at a minimum, height, weight, and blood pressure.		
8	General	Record and chart vital signs – Calculate body mass index	Automatically calculate and display body mass index (BMI) based on a patient's height and weight.		

	Category	Certification Criteria	Description	Standards	HIE Stage 1
9	General	Record and chart vital signs – Plot and display growth charts	Plot and electronically display, upon request, growth charts for patients 2-20 years old.		
10	General	Incorporate laboratory test results--(1) Receive results	Electronically receive clinical laboratory test results in a structured format and display such results in human readable format.		√
11	General	Incorporate laboratory test results—(2) Display test report information	Electronically display all the information for a test report.	42 CFR 493.1291(c)(1) through (7)	√
12	General	Incorporate laboratory test results--(3) Incorporate results	Electronically attribute, associate, or link a laboratory test result to a laboratory order or patient record.		√
13	General	General Patient Lists	Enable a user to electronically select, sort, retrieve, and generate lists of patients according to, at a minimum, the data elements included in: <ul style="list-style-type: none"> • (1) Problem list • (2) Medication list • (3) Demographics • (4) Laboratory test results 		√
14	General	Medication reconciliation.	Enable a user to compare electronically two or more medication lists.		√
15	General	Submission to immunization registries	Electronically record, modify, retrieve, and submit immunization information in accordance with: <ul style="list-style-type: none"> • (1) The standard (and applicable implementation specifications) specified in §170.205(e)(1) or §170.205(e)(2) • (2) At a minimum, the version of the standard specified in §170.207(e) 	[Content] HL7 2.3.1 or HL7 2.5.1 and [Vocabulary] HL7 Standard Code Set CVX	√ (if available)

	Category	Certification Criteria	Description	Standards	HIE Stage 1
16	General	Public health surveillance	Electronically record, modify, retrieve, and submit syndrome-based public health surveillance information in accordance with the standard (and applicable implementation specifications).	[Content] HL7 2.3.1 or HL7 2.5.1	√ (if available)
17	General	Patient-specific education resources	Enable a user to electronically identify and provide patient-specific education resources according to, at a minimum, the data elements included in the patient's: problem list; medication list; and laboratory test results; as well as provide such resources to the patient.		
18	General	Automated measure calculation	For each Meaningful Use objective with a percentage-based measure, electronically record the numerator and denominator and generate a report including the numerator, denominator, and resulting percentage associated with each applicable Meaningful Use measure.		
19	General – Security and Privacy	Access control	Assign a unique name and/or number for identifying and tracking user identity and establish controls that permit only authorized users to access electronic health information.		√
20	General – Security and Privacy	Emergency access	Permit authorized users (who are authorized for emergency situations) to access electronic health information during an emergency.		√
21	General – Security and Privacy	Automatic log-off	Terminate an electronic session after a predetermined time of inactivity.		√
22	General – Security and Privacy	Audit log (1)— Record actions	Record actions related to electronic health information.		√
23	General – Security and Privacy	Audit log (2)— Generate Audit Log	Enable a user to generate an audit log for a specific time period and to sort entries in the audit log according to any of the elements specified in the standard at §170.210(b).		√

	Category	Certification Criteria	Description	Standards	HIE Stage 1
24	General – Security and Privacy	Integrity.	<ul style="list-style-type: none"> • (1) Create a message • (2) Verify upon receipt of electronically exchanged health information that such information has not been altered • (3) Detection. Detect the alteration of audit logs 	A hashing algorithm with a security strength equal to or greater than SHA-1	√
25	General – Security and Privacy	Authentication.	Verify that a person or entity seeking access to electronic health information is the one claimed and is authorized to access such information.		√
26	General – Security and Privacy	General encryption	Encrypt and decrypt electronic health unless the Secretary determines that the use of such algorithm would pose a significant security risk for Certified EHR Technology.	Any algorithm identified NIST (FIPS 140-2)	√
27	General – Security and Privacy	Encryption when exchanging electronic health information	Encrypt and decrypt electronic health information when exchanged.	Any	√
28	General – Security and Privacy	Optional Accounting of disclosures	Record disclosures made for treatment, payment, and healthcare operations.	45 CRF 164.501	√ (when required)
29	Ambulatory /Inpatient	Computerized provider order entry	Enable a user to electronically record, store, retrieve, and modify, at a minimum, the following order types: <ul style="list-style-type: none"> • (1) Medications • (2) Laboratory • (3) Radiology/imaging 		
30	Ambulatory	Electronic prescribing	Enable a user to electronically generate and transmit prescriptions and prescription-related information.	[Content] NCPDP v8.1 or NCPDP v10.6 [Vocabulary] RxNorm	√
31	Ambulatory /Inpatient	Record demographics	Enable a user to electronically record, modify, and retrieve patient demographic data including preferred language, gender, race, ethnicity, and date of birth. Enable race and ethnicity to be recorded.		√

	Category	Certification Criteria	Description	Standards	HIE Stage 1
32	Ambulatory	Patient reminders	Enable a user to electronically generate a patient reminder list for preventive or follow-up care according to patient preferences based on, at a minimum, the data elements included in: <ul style="list-style-type: none"> • (1) Problem list • (2) Medication list • (3) Medication allergy list • (4) Demographics • (5) Laboratory test results 		
33	Ambulatory /Inpatient	Clinical decision support - (1) Implement rules	Implement automated, electronic clinical decision support rules (in addition to drug-drug and drug-allergy contraindication checking) based on the data elements included in: problem list; medication list; demographics; and laboratory test results.		
34		Clinical decision support - (2) Notifications	Automatically and generate electronically and indicate in real-time, notifications and care suggestions based upon clinical decision support rules.		
35	Ambulatory /Inpatient	Electronic copy of health information	Enable a user to create an electronic copy of a patient's clinical information, including, at a minimum, diagnostic test results, problem list, medication list, and medication allergy list in: <ul style="list-style-type: none"> • (1) Human readable format • (2) On electronic media or through some other electronic means 	[Content] HL7 CDA Release 2, CCD or ASTM CCR	√
36	Inpatient	Electronic copy of discharge instructions	Enable a user to create an electronic copy of the discharge instructions for a patient, in human readable format, at the time of discharge on electronic media or through some other electronic means.		

	Category	Certification Criteria	Description	Standards	HIE Stage 1
37	Ambulatory	Timely access	Enable a user to provide patients with online access to their clinical information, including, at a minimum, lab test results, problem list, medication list, and medication allergy list.		√
38	Ambulatory	Clinical summaries	Enable a user to provide clinical summaries to patients for each office visit that include, at a minimum, diagnostic test results, problem list, medication list, and medication allergy list. If the clinical summary is provided electronically it must be: <ul style="list-style-type: none"> • (1) Provided in human readable format • (2) Provided on electronic media or through some other electronic means 		√
39	Ambulatory /Inpatient	Exchange clinical information and patient summary record—(1) Electronically receive and display	Electronically receive and display a patient's summary record, from other providers and organizations including, at a minimum, diagnostic tests results, problem list, medication list, and medication allergy list. Upon receipt of a patient summary record formatted according to the alternative standard, display it in human readable format.	[Content] HL7 CDA Release 2, CCD or ASTM CCR	√
40	Ambulatory /Inpatient	Exchange clinical information and patient summary record—(1) Electronically transmit	Enable a user to transmit electronically a patient summary record to other providers and organizations including, at a minimum, diagnostic test results, problem list, medication list, and medication allergy list.	[Content] HL7 CDA Release 2, CCD or ASTM CCR	√

	Category	Certification Criteria	Description	Standards	HIE Stage 1
41	Ambulatory /Inpatient	Calculate and submit clinical quality measures—(1) Calculate	<ul style="list-style-type: none"> • (1)Electronically calculate all of the core clinical measures specified by CMS for eligible professionals • (2) Electronically calculate, at a minimum, three clinical quality measures specified by CMS for eligible professionals, in addition to those clinical quality measures 		
42	Ambulatory /Inpatient	Calculate and submit clinical quality measures	Enable a user to electronically submit calculated clinical quality measures.	CMS PQRI	
43	Inpatient	Reportable lab results	Electronically record, modify, retrieve, and submit reportable clinical lab results.	[Content] HL7 2.5.1 [Vocabulary] LOINC v2.27	
44	Inpatient	Advance directives	Enable a user to electronically record whether a patient has an advance directive.		

Appendix B: Healthcare Terminology

Term	Definition
Authentication	Authentication is a method or methods employed to prove that the person or entity accessing information has the proper authorization. Generally used to protect confidential information and network or application access.
Authorization	Authorization is a system established to grant access to information. Authorization also establishes the level of access an individual or entity has to a data set and includes a management component—an individual or individuals must be designated to authorize access and manage access once access is approved.
Broadband	A medium that can carry multiple signals, or channels of information, at the same time without interference. Broadband Internet connections enable high-resolution videoconferencing and other applications that require rapid, synchronous exchange of data.
Business Associate	A business associate is an agent of a healthcare organization, generally with access to individually identifiable health information, who assists the healthcare organization in conducting business. A business associate can also be a covered entity in its own right. This definition derives from business associate as defined in the Health Insurance Portability and Accountability Act (HIPAA) Security and Privacy Rules; the term is defined at 45 C.F.R. § 160.103.
Business Practices	Business practices are organizational actions or processes implemented to address the needs of the business in meeting organizational goals, legal requirements, the needs of customers (in healthcare, patients and health plan members) and remaining profitable.
Computerized physician order entry (CPOE)	Computer-based systems that automate and standardize the clinical ordering process in order to eliminate illegible, incomplete, and confusing orders. CPOE systems typically require physicians to enter information into predefined fields by typing or making selections from on-screen menus. CPOE systems often incorporate, or integrate with, decision support systems.
Data repository	A database acting as an information storage facility. Although often used synonymously with data warehouse, a repository does not have the analysis or querying capabilities of a warehouse.
Data warehouse	A large database that stores information like a data repository but goes a step further, allowing users to access data to perform research-oriented analysis.

Term	Definition
De-identified health information	De-identified health information consists of individual health records with data redacted or edited to prevent it from being associated with a specific individual. See the HIPAA Privacy Rule for de-identification guidelines. The term is defined at 45 C.F.R. § 160.103.
Domains	In this context, the term Domains refers to the five domains (Governance, Legal and Privacy, Technical Infrastructure, Finance, and Business and Technical) that are outlined by the Office of the National Coordinator.
e-Prescribing	Practice in which drug prescriptions are entered into an automated data entry system (handheld, PC, or other), rather than handwriting them on paper. The prescriptions can then be printed for the patient or sent to a pharmacy via the Internet or other electronic means.
Electronic Health Record (EHR)	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 healthcare organization.
Electronic Medical Record (EMR)	An electronic record of health-related information for an individual that can be created, gathered, managed, and consulted by authorized clinicians and staff within one healthcare organization.
Federal Health Architecture (FHA)	A collaborative body composed of several federal departments and agencies, including the Department of Health and Human Services (HHS), the Department of Homeland Security (DHS), the Department of Veterans Affairs (VA), the Environmental Protection Agency (EPA), the United States Department of Agriculture (USDA), the Department of Defense (DOD), and the Department of Energy (DOE). FHA provides a framework for linking health business processes to technology solutions and standards, and for demonstrating how these solutions achieve improved health performance outcomes.
Formulary	A list of medications (both generic and brand names) that are covered by a specific health insurance plan or pharmacy benefit manager (PBM), used to encourage utilization of more cost-effective drugs. Hospitals sometimes use formularies of their own, for the same reason.
Health Information Technology (HIT)	The application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of healthcare information, data, and knowledge for communication and decision-making.

Term	Definition
Health Information Exchange (HIE)	The electronic movement of health-related information among organizations according to nationally recognized standards. Health Information Exchange is a term commonly used to describe a Regional Health Information Organization (RHIO). The notion of HIE is the precursor to RHIO and is used interchangeably when discussing RHIO.
Health Insurance Portability and Accountability Act of 1996 (HIPAA)	A federal law intended to improve the portability of health insurance and simplify healthcare administration. HIPAA sets standards for electronic transmission of claims-related information and for ensuring the security and privacy of all individually identifiable health information.
Health Level 7 (HL7)	HL7 is one of several American National Standards Institute (ANSI)-accredited standards-developing organizations operating in the healthcare arena. Health Level 7's domain is clinical and administrative data.
Healthcare Information Technology Standards Panel (HITSP)	Sponsored by ANSI under a contract from ONC, HITSP is a public/private partnership dedicated to facilitating the harmonization of consensus-based standards necessary to enable the widespread interoperability of healthcare information in the United States.
Informed consent	Informed consent is a process of information exchange that may include, in addition to reading and signing the informed consent documents, subject recruitment materials, verbal instructions, question/answer sessions and measures of subject understanding. The clinical investigator is responsible for ensuring that informed consent is obtained from each research subject before that subject participates in the research study.
Interoperability	HIMSS' definition of interoperability is "ability of health information systems to work together within and across organizational boundaries in order to advance the effective delivery of healthcare for individuals and communities." For further information, visit HIMSS Interoperability Definition and Background (PDF).
Legacy system	An existing Information Technology (IT) system or application, often built around a mainframe computer, which generally has been in place for a long time and represents a significant investment. Compatibility with legacy systems is often a major issue when considering new applications.
Master Patient Index (MPI)	A database program that collects a patient's various hospital identification numbers, e.g. from the blood lab, radiology department, and admissions, and keeps them under a single, enterprise-wide identification number.

Term	Definition
Nationwide Health Information Network (NHIN)	The name of the federal government's program to implement a national interoperable system for sharing electronic medical records or EMRs (a.k.a. electronic health records or EHR). NHIN describes the technologies, standards, laws, policies, programs and practices that enable health information to be shared among health decision makers, including consumers and patients, to promote improvements in health and healthcare. The development of a vision for the NHIN began more than a decade ago with publication of an Institute of Medicine report, "The Computer-Based Patient Record".
Office of the National Coordinator of Health Information Technology (ONC)	Previously referred to as ONCHIT, ONC provides leadership for the development and nationwide implementation of an interoperable health information technology infrastructure to improve the quality and efficiency of healthcare and the ability of consumers to manage their care and safety.
Personal Health Record (PHR)	An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be drawn from multiple sources while being managed, shared, and controlled by the individual.
Portal	A Web site 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 who directly (primary care physicians, psychiatrists, nurses, surgeons, etc) or indirectly (laboratories, radiology clinics, etc) provide healthcare to patients.
Public Health	Public health is the art and science of safeguarding and improving community health through organized community effort involving prevention of disease, control of communicable disease, application of sanitary measures, health education, and monitoring of environmental hazards.
Regional Health Information Organization (RHIO)	A health information organization that brings together healthcare stakeholders within a defined geographic area and governs health information exchange among them for the purpose of improving health and care in that community.
Regulatory Agencies	Regulatory agencies are governmental and often report to the executive branch (state and federal). They regulate the activity of organizations and individuals as generally outlined in rules or regulations (e.g., Medicaid agencies, public health authorities, Board of Medical Examiners, insurance commissions, consumer protection agencies).
Scalability	The ability to add users and increase the capabilities of an application without having to making significant changes to the application software or the system on which it runs.
Stakeholder	A stakeholder is any organization or individual that has a stake in the exchange of health information, including healthcare providers, health plans, healthcare clearinghouses, regulatory agencies, associations, consumers, and technology vendors.

Term	Definition
Telehealth	The use of telecommunications and information technology to deliver health services and transmit health information over distance -sometimes called telemedicine.
Telemedicine	The use of telecommunications and information technology to deliver health services and transmit health information over distance - sometimes called telehealth.
Total Cost of Ownership (TCO)	A long-term view of all costs associated with a specific technology investment. Costs include that of acquiring, installing, using, maintaining, changing, and disposing of a technology during its useful life.
Vendors	Vendors are organizations that provide services and supplies to other organizations. In the context of health information exchange, the term usually refers to technology vendors who provide hardware or software, such as electronic health records, e-Prescribing technology, or security software.

Appendix C: Related Acronyms

Acronym	Stands For:
ACP	Access Consent Policy
ANSI	American National Standards Institute
API	Application Programming Interface
ARRA	American Reinvestment and Recovery Act
BC/BS	Blue Cross/Blue Shield
BPPC	Basic Patient Privacy Consents
BTOP	Broadband Technology Opportunities Program
CAH	Critical Access Hospital
CBCM	Care-Based Cost Management
CCD	Continuity of Care Document
CCHIT	Certification Commission for Healthcare IT
CDA	Clinical Document Architecture
CDC	Centers for Disease Control and Prevention
CFR	Code of Federal Regulations
CITL	Center for Information Technology Leadership
CLIA	Clinical Laboratory Improvement Amendments
CMS	Centers for Medicare and Medicaid
CPOE	Computerized Physician Order Entry
CRH	Center for Rural Health
DHHS	Department of Health and Human Services
DoD	Department of Defense
DURSA	Data Use and Reciprocal Support Agreement
EDI	Electronic Data Interchange
EHR	Electronic Health Record
eMPI	Enterprise Master Patient Index
EMR	Electronic Medical Record
EP	Eligible Professional
ESB	Enterprise Service Bus
FHA	Federal Health Architecture
FIPS	Federal Information Processing Standards
GIPSE	Geocoded Interoperable Population Summary Exchange

Acronym	Stands For:
GUI	Graphical User Interface
HHS	Department of Health and Human Services
HIE	Health Information Exchange
HIMMS	Healthcare Information and Management Systems Society
HIO	Health Information Network
HIPAA	Health Information Portability and Accessibility Act
HISPC	Health Information Security and Privacy Collaboration
HIT	Health Information Technology
MS-HIN	Health Information Technical Advisory Committee
HITECH	Health Information Technology for Economic and Clinical Health
HL7	Health Level 7
HRSA	Health Resource Service Administration
ICD	International Classification of Diseases
IHE	Integrating the Healthcare Enterprise
IHS	Indian Health Services
LOINC	Logical Observation Identifiers Names and Codes
MITA	Medicaid Information Technology Architecture
MMIS	Medicaid Management Information System
NCPDP	National Council for Prescription Drug Programs
NHIN	Nationwide Health Information Network
NIH	National Institutes of Health
NIST	National Institutes of Standards and Technology
NLM	National Library of Medicine
NPI	National Provider Identifier
ONC	The Office of the National Coordinator for Health Information Technology
PHI	Protected Health Information
PHR	Personal Health Record
PKI	Public Key Infrastructure
PQRI	Patient Quality Reporting Initiative
RBAC	Role-Based Access Control
REC	Regional Extension Centers
RFP	Request for Proposal
RHIO	Regional Health Information Organization

Acronym	Stands For:
RLS	Record Locator Service
ROI	Return on Investment
SaaS	Software as a Service
SAMHSA	Substance Abuse and Mental Health Services Administration
SME	Subject Matter Expert
SMHP	Medicaid State Health Information Technology Plan
SOA	Service Oriented Architecture
SOAP	Simple Object Access Protocol
SOP	Strategic and Operational Plan
SSA	Social Security Administration
UCUM	Unified Code for Units of Measure
UDDI	Universal Description, Discovery, and Integration
UMLS	Unified Medical Language System
VA	Veterans Administration
XDS	Cross-Enterprise Document Sharing
XDR	Cross-Enterprise Document Reliable Interchange

Appendix D: Lab Survey

1. Does your lab currently have the capability of sending test results electronically to the ordering physician?
If yes, please proceed to question 2.
If no, please proceed to question 4.

2. What percentage (%) of your results are currently sent electronically?
 - A. Under 20%
 - B. 20% to 39%
 - C. 40% to 59%
 - D. 60% to 79%
 - E. Above 80%

3. What percentage (%) of your results do you estimate will be sent to the ordering physician electronically in 2012?
 - A. Under 20%
 - B. 20% to 39%
 - C. 40% to 59%
 - D. 60% to 79%
 - E. Above 80%

4. When do you plan to be able to send lab results electronically?
 - A. 2010
 - B. 2011
 - C. 2012
 - D. 2013
 - E. 2014 or later

5. What percentage (%) of your results do you estimate will be sent electronically in 2012?
 - A. Under 20%
 - B. 20% to 39%
 - C. 40% to 59%
 - D. 60% to 79%
 - E. Above 80%

6. Will the application your lab is using today to send structured lab results be appropriately certified when the certification requirements are known?
 - A. Yes
 - B. No

7. If no, does your lab have plans in place to convert to a certified application?
 - A. Yes
 - B. No

Appendix E: House Bill 941 (Mississippi Code Section 41-119-1 through 41-119-21)

AN ACT TO CREATE THE MISSISSIPPI HEALTH INFORMATION NETWORK ACT TO PROMOTE THE USE OF HEALTH INFORMATION TECHNOLOGY AND EXCHANGE OF THAT INFORMATION TO IMPROVE HEALTH CARE QUALITY AND EFFICIENCY; TO ESTABLISH THE MISSISSIPPI HEALTH INFORMATION NETWORK AND PROVIDE THAT IT WILL BE GOVERNED BY A BOARD OF DIRECTORS; TO PROVIDE FOR THE MEMBERSHIP OF THE MS-HIN BOARD; TO PROVIDE FOR THE POWERS AND DUTIES OF THE MS-HIN BOARD; TO PROVIDE CERTAIN IMMUNITY FOR MEMBERS OF THE MS-HIN BOARD; TO PROVIDE FOR PRIVACY OF HEALTH INFORMATION IN THE NETWORK; TO REQUIRE ALL AGENCIES OF THE STATE ENGAGED IN THE DELIVERY OR PROVISION OF HEALTH INFORMATION TECHNOLOGY SERVICES TO COORDINATE BETWEEN THE SEVERAL STATE AGENCIES, WITH PRIVATE NONPROFIT CORPORATIONS, AND WITH FEDERALLY FUNDED AGENCIES TO PREVENT UNNECESSARY DUPLICATION, WASTEFUL EXPENDITURES OF STATE FUNDS; TO ENCOURAGE THE DEVELOPMENT OF AN INTEROPERATIVE STATEWIDE SYSTEM OF HEALTH INFORMATION TECHNOLOGY; TO REQUIRE STATE AGENCIES, BEFORE ACQUIRING ANY HEALTH INFORMATION TECHNOLOGY SYSTEM, TO CONDUCT A SURVEY OF ALL HEALTH INFORMATION TECHNOLOGY SYSTEMS WITHIN THE GEOGRAPHIC AREA FOR WHICH THE SERVICE IS INTENDED, AND ANALYZE THE BENEFITS OF USING EXISTING PROVIDERS; TO REQUIRE THE MISSISSIPPI HEALTH INFORMATION NETWORK TO REVIEW PROPOSALS AND PROVIDE GUIDANCE FOR HEALTH INFORMATION TECHNOLOGY ACQUISITION; TO DIRECT THE PEER COMMITTEE TO MAKE CERTAIN REPORTS REGARDING THE DEVELOPMENT OF ELECTRONIC HEALTH INFORMATION IN MISSISSIPPI; AND FOR RELATED PURPOSES.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MISSISSIPPI:

SECTION 1. This act shall be known and may be cited as the "Health Information Technology Act."

SECTION 2. The Mississippi Health Information Network is a public-private partnership for the benefit of all of the citizens of this state.

SECTION 3. (1) The Mississippi Health Information Network is established, and is referred to in this act as the "MS-HIN."

(2) The MS-HIN shall be governed by a board of directors (MS-HIN board) consisting of eleven (11) members. The membership of the MS-HIN board shall reasonably reflect the public-private and diverse nature of the MS-HIN.

(3) The membership of the MS-HIN board of directors shall consist of the following:

(a) The Governor shall appoint one (1) member of the MS-HIN board of directors, who shall be a representative of a health insurance carrier in Mississippi with knowledge of information technology, to serve an initial term of three (3) years;

(b) The State Board of Health shall appoint one (1) member of the MS-HIN board of directors, who shall be a representative of a Mississippi hospital with knowledge of information technology, to serve an initial term of three (3) years;

(c) The Mississippi State Medical Association shall appoint a member of the MS-HIN board of directors, who shall be a licensed physician, to serve an initial term of three (3) years; (d) The Primary Health Care Association shall appoint a member of the MS-HIN board of directors to serve an initial term of one (1) year;

(e) The Delta Health Alliance shall appoint a member of the MS-HIN board of directors to serve an initial term of four (4) years;

(f) The Information and Quality Health Care-Mississippi Coastal Health Information Exchange (MCHIE) shall appoint a member of the MS-HIN board of directors to serve an initial term of one (1) year;

(g) The State Board of Health shall appoint a member of the MS-HIN board of directors who shall be an employee of the State Department of Health to serve an initial term of one (1) year;

(h) The Mississippi Board of Information Technology Services shall appoint a member of the MS-HIN board of directors to serve an initial term of two (2) years;

(i) The Mississippi Board of Mental Health shall appoint a member of the MS-HIN board of directors who shall be an employee of the Department of Mental Health to serve an initial term of four (4) years;

(j) The University of Mississippi Medical Center shall appoint a member of the MS-HIN board of directors to serve an initial term of two (2) years; and

(k) The Division of Medicaid shall appoint a member of the MS-HIN board of directors who shall be an employee of the Division of Medicaid to serve an initial term of two (2) years.

Initial terms shall expire on June 30 of the appropriate year, and subsequent appointments shall be made by the appointing entity for terms of four (4) years. Members may be reappointed.

(4) No state officer or employee appointed to the MS-HIN board or serving in any other capacity for the MS-HIN board will be construed to have resigned from public office or employment by reason of that appointment or service.

(5) The chairperson of the MS-HIN board shall be elected by a majority of the members appointed to the MS-HIN board.

(6) The MS-HIN board is authorized to conduct its business by a majority of a quorum. A quorum is six (6) members of the MS-HIN board.

(7) The MS-HIN board may adopt bylaws for its operations, including, but not limited to, the election of other officers, the terms of officers, and the creation of standing and ad hoc committees.

SECTION 4. (1) In furtherance of the purposes of this act, the MS-HIN shall have the following duties:

(a) Initiate a statewide health information network to:

(i) Facilitate communication of patient clinical and financial information;

(ii) Promote more efficient and effective communication among multiple health care providers and payers, including, but not limited to, hospitals, physicians, nonphysician providers, third-party payers, self-insured employers, pharmacies, laboratories and other health care entities;

(iii) Create efficiencies by eliminating redundancy in data capture and storage and reducing administrative, billing and data collection costs;

(iv) Create the ability to monitor community health status;

(v) Provide reliable information to health care consumers and purchasers regarding the quality and cost-effectiveness of health care, health plans and health care providers; and

(vi) Promote the use of certified electronic health records technology in a manner that improves quality, safety, and efficiency of health care delivery, reduces health care disparities, engages patients and families, improves health care coordination, improves population and public health, and ensures adequate privacy and security protections for personal health information.

(b) Develop or design other initiatives in furtherance of its purpose; and

(c) Perform any and all other activities in furtherance of its purpose.

(2) The MS-HIN board is granted all incidental powers to carry out its purposes and duties, including the following:

(a) To appoint an executive director, who will serve at the will and pleasure of the MS-HIN board. The qualifications and employment terms for the executive director shall be determined by the MS-HIN board.

(b) To adopt, modify, repeal, promulgate, and enforce rules and regulations to carry out the purposes of the MS-HIN;

(c) To establish a process for hearing and determining case decisions to resolve disputes under this act or the rules and regulations promulgated under this act among participants, subscribers or the public;

(d) To enter into, and to authorize the executive director to execute contracts or other agreements with any federal or state agency, any public or private institution, or any individual in carrying out the provisions of this act; and

(e) To discharge other duties, responsibilities, and powers as are necessary to implement the provisions of this act.

(3) The executive director shall have the following powers and duties:

(a) To employ qualified professional personnel as required for the operation of the MS-HIN and as authorized by the MS-HIN board;

(b) To administer the policies of the MS-HIN board; and

(c) To supervise and direct all administrative and technical activities of the MS-HIN.

(4) The MS-HIN shall have the power and authority to accept appropriations, grants and donations from public or private entities and to charge reasonable fees for its services. The revenue derived from grants, donations, fees and other sources of income shall be deposited into a special fund that is created in the State Treasury and earmarked for use by the MS-HIN in carrying out its duties under this act.

SECTION 5. (1) All members of the MS-HIN board shall not be subject to and are immune from claim, suit, liability, damages or any other recourse, civil or criminal, arising from any act or proceeding, decision or determination undertaken, performed or reached in good faith and without malice by any such member or members acting individually or jointly in carrying out the responsibilities, authority, duties, powers and privileges of the offices conferred by law upon them under this act, or any other state law, or duly adopted rules and regulations of the aforementioned committees, good faith being presumed until proven otherwise, with malice required to be shown by a complainant. All employees and staff of the MS-HIN, whether temporary or permanent, shall enjoy the same rights and privileges concerning immunity from suit otherwise enjoyed by state employees under the Mississippi Constitution of 1890 and Section 11-46-1 et seq.

(2) The MS-HIN is not a health care provider and is not subject to claims under Sections 11-1-58 through 11-1-62. No person who participates in or subscribes to the services or information provided by the MS-HIN shall be liable in any action for damages or costs of any nature, in law or equity, that result solely from that person's use or failure to use MS-HIN information or data that were imputed or retrieved in accordance with the rules or regulations of the MS-HIN. In addition, no person will be subject to antitrust or unfair competition liability based on membership or participation in the MS-HIN, which provides an essential governmental function for the public health and safety.

SECTION 6. (1) All persons providing information and data to the MS-HIN shall retain a property right in that information or data, but grant to the other participants or subscribers a nonexclusive license to retrieve and use that information or data in accordance with the rules or regulations promulgated by the MS-HIN board and in compliance with the provisions of the Health Insurance Portability and Accountability Act of 1996, Public Law 104-191.

(2) Patients desiring to obtain a copy of their personal medical record or information are to request the copy from the health care provider who is the primary source of the information, and the MS-HIN shall not be required to provide this information directly to the patient.

(3) All processes or software developed, designed or purchased by the MS-HIN shall remain its property subject to use by participants or subscribers in accordance with the rules and regulations promulgated by the MS-HIN board.

SECTION 7. (1) The MS-HIN board shall by rule or regulation ensure that patient specific health information be disclosed only in accordance with the provisions of the Health Insurance Portability and Accountability Act of 1996, Public Law 104-191, which governs the electronic transmission of that information.

(2) Patient specific health information and data of the MS-HIN shall not be subject to the Federal Freedom of Information Act, Mississippi Open Records Act (Section 25-61-1 et seq.) nor to subpoena by any court. That information may only be disclosed by consent of the patient or in accordance with the MS-HIN board's rules, regulations or orders.

(3) Notwithstanding any conflicting statute, court rule or other law, the data in the network shall be confidential and shall not be subject to discovery or introduction into evidence in any civil action. However, information and data otherwise discoverable or admissible from original sources are not to be construed as immune from discovery or use in any civil action merely because they were provided to the MS-HIN.

(4) Submission of information to and use of information by the State Department of Health shall be considered a permitted disclosure for uses and disclosures required by law and for public health activities under the Health Insurance Portability and Accountability Act and the privacy rules promulgated under that act.

(5) Any violation of the rules or regulations regarding access or misuse of the MS-HIN health information or data shall be reported to the Office of the Attorney General, and shall be subject to prosecution and penalties under state or federal law.

SECTION 8. For the purposes of this act, the following terms shall be defined as provided in this section:

(a) "Electronic health records" or "EHR" means electronically maintained clinical and demographic information, used by a meaningful EHR user.

(b) "Health information technology" or "HIT" means the equipment, software and networks to be used by a meaningful EHR user.

(c) "Acquisition" of HIT systems or other computer or telecommunications equipment or services means the purchase, lease, rental or acquisition in any other manner of HIT systems or any other computer or telecommunications equipment or services used exclusively for HIT.

(d) "Meaningful EHR user" means an eligible professional or eligible hospital that, during the specified reporting period, demonstrates meaningful use of certified EHR technology in a form and manner consistent with certain objectives and measures presented in applicable federal regulations as amended or adopted. These objectives and measures shall include the use of certified EHR.

(e) "Entity" means and includes all the various state agencies, officers, departments, boards, commissions, offices and institutions of the state, but does not include any agency financed entirely by federal funds.

SECTION 9. (1) Before the acquisition of any HIT system, an entity shall provide MS-HIN, at a minimum, description, purpose and intent of the proposed service or system, including a description and specifications of the ability to connect to MS-HIN.

(2) Where existing entities can be used to provide the proposed HIT system, in whole or in part, the submission shall include letters of commitment, memoranda of agreements, or other supporting documentation.

(3) The MS-HIN shall review proposals for acquisition of HIT systems for the purposes contained in Section 4 of this act, and provide guidance to entities including collaborative opportunities with MS-HIN members.

(4) Any acquisition of an HIT system that was approved by the Mississippi Department of Technology Services before the effective date of House Bill No. 941, 2010 Regular Session, is exempt from the requirements of Sections 8 and 9 of this act.

SECTION 10. The Legislative Audit Committee (PEER) shall develop and make a report to the Chairmen of the Senate and House Public Health and Welfare/Medicaid Committees regarding the following electronic health records (EHR) system items:

(a) Evaluate the Request for Proposals (RFP) for the implementation and operations services for the Division of Medicaid and the University Medical Center electronic health records system and e-Prescribing system for providers;

(b) Evaluate the proposed expenditures of the Mississippi Division of Medicaid (DOM) and the University Medical Center (UMC) regarding electronic health information; and

(c) Evaluate the use of American Recovery and Reinvestment Act (ARRA) funds for electronic health records system implementation in the State of Mississippi.

The PEER Committee shall make its report on or before December 1, 2010, including any recommendations for legislation.

SECTION 11. This act shall stand repealed on July 1, 2014.

SECTION 12. This act shall take effect and be in force from and after its passage.