

NC HIE STRATEGY

North Carolina

Health Information Exchange

Strategic Plan

Table of Contents

- Overview 4**
 - Health Information Exchange 5
 - Guiding Principles 5
- 1 Environmental Scan 7**
 - 1.1 Overview 7
 - 1.2 Assessment of Current HIE Capacities that Could be Expanded or Leveraged..... 8
 - 1.3 Collaboration Opportunities 11
 - 1.4 Human Capital..... 18
 - 1.5 HIE Readiness..... 19
- 2 HIE Development and Adoption..... 19**
 - 2.1 Overview 19
 - 2.2 Vision..... 20
 - 2.3 Goals & Objectives 20
 - 2.4 State-level HIEs 21
 - 2.5 State-Level Infrastructure Development 23
 - 2.6 Implementation Roadmap 24
 - 2.7 Coordination of Other ARRA Programs..... 26
- 3 Governance 30**
 - 3.1 Overview 30
 - 3.2 Governance Structure 30
 - 3.3 Governance Process..... 32
 - 3.4 Deliverables..... 34
 - 3.5 HIT Coordinator..... 35
- 4 Finance 35**
 - 4.1 Overview 35
 - 4.2 Financial Controls and Reporting..... 35
 - 4.3 Sustainability/Business Plan 36
- 5 Technical Infrastructure 38**
 - 5.1 Overview 38
 - 5.2 Deploying HIE Across North Carolina Communities 40
 - 5.3 Deploying Topology: Federal Architecture 40
 - 5.4 Technical Architecture 43
 - 5.5 Guiding Principles 44
 - 5.6 Objectives/Defining & Prioritizing Services 44
 - 5.7 Supported Services 45
 - 5.8 Meaningful Use Services 45
 - 5.9 NHIN Gateway Function..... 46
 - 5.10 Patient Identity Management..... 46

5.11 Identity Proofing	46
5.12 Shared Directories & Registries	49
5.13 Service Implementation Projected Timeline.....	50
5.14 HIE Services Deployment Scenarios.....	50
6 Business & Technical Operations	51
6.1 Statewide Services Operation.....	51
6.2 Services Provided to Community HIEs	51
6.3 Business Operations and Administration.....	52
7 Legal & Policy	52
7.1 Overview	52
7.2 Privacy & Security	55
7.3 State Laws	56
7.4 Policies & Procedures	58
7.5 Trust Agreements.....	59
7.6 Oversight.....	60

1. Overview

The Challenges and Opportunities for NC

Advances in information technology systems have dramatically altered the world in which we live. Huge investments, both public and private, make it virtually impossible to carry out the activities of daily living without utilizing some form of automation. For a variety of reasons, the healthcare delivery industry has been slow to take advantage of new technology on a broad scale. Only a small percentage of healthcare providers have successfully integrated information technology into their own practices. Even fewer have connected their systems with other providers in any meaningful way to improve care coordination and exchange of health information. Consequently, currently in North Carolina most medical records remain paper based, and the vast majority of providers provide ambulatory care in small practices which do not exchange healthcare records on a regular basis with other medical providers. For HIT to be adopted widely, not only must it be affordable, provide value to the practitioner, be easy to implement and cost-effective to maintain over time, it must also engage the public's trust in the safety and security of the system.

NC aims to establish the statewide health information exchange (HIE) infrastructure and capacity to support clinicians in quality and population health improvement, provide new models of care delivery along with prevention and wellness initiatives. The health IT transformation program is a part of the state's agenda to advance patient-centered care and enable improvements in health care quality, affordability and outcomes for each person, family and business in North Carolina.

North Carolina is uniquely positioned to evolve a model of health that can more effectively serve our nation. The critical elements for success already exist: a culture of collaboration and innovation, successful pilot projects and programs, substantial IT investments and infrastructure, thought leaders that reside in our academic medical centers, a robust biomedical research community, private funding partners who have a track record of investing in HIT, large military bases and VA medical centers, the Eastern Band of the Cherokee Indians, a strong underpinning of safety net providers, and strong core public health programs at the state and local levels.

American Recovery and Reinvestment Act of 2009

The large and complex federal stimulus legislation known as the American Recovery and Reinvestment Act of 2009 (ARRA) contains authorization for nearly \$36 billion in funding for health information technology (HIT) infrastructure over six years. The concepts for how this unprecedented investment in HIT is to be spent are set forth in the Health Information Technology for Economic and Clinical Health (HITECH) portion of ARRA. The overall goal of HITECH is to create a nationwide health information infrastructure that enables electronic health information to be recorded, shared and utilized in a way that improves health. Broadly described, this includes three major components: (1) the wide adoption of electronic health records (EHRs), (2) establishment of interoperable systems for health information exchange (HIE), and (3) aggregate data reporting to improve the quality of individual healthcare as well as overall population health reform." Of the total authorized funding, the largest portion, roughly \$34 billion, is set aside as incentive payments by the Medicare and Medicaid programs

for providers who implement HIT in their practices. More specifically, to qualify for these incentive payments, the provider must adopt a certified electronic health record, demonstrate meaningful use of the EHR in their practice, and provide data for quality reporting. The complex payment formula for these incentives stipulates that eligible providers can begin receiving payments as early as 2011. In 2016 incentive payments come to an end, and providers who have not adopted meaningfully used HIT by that time, will actually receive reduced payments for failure to comply. The remaining portion of ARRA HIT funding, approximately \$2 billion, is appropriated to the Office of the National Coordinator of Health Information Technology (ONC). States have the opportunity to access a portion of the \$2 billion through: (1) planning and implementation grants for HIE development; (2) loans for EHR adoption available on a match basis of \$1 non-federal for every \$5 in federal funds; and (3) HIT extension programs for the establishment of Regional Extension Centers. Federal funds may not provide more than 50% of the cost required to create and operate a Regional Extension Center. A state must have an HIT strategic plan in place that is consistent with the National HIT Strategic Plan in order to apply for funds under the HITECH portion of ARRA. Although North Carolina is recognized as a national leader in the development of HIT & HIE systems and policies, this comprehensive HIE strategic plan is needed to guide policy decisions and prioritize funding decisions.

Health Information Exchange

The North Carolina HIT Collaborative envisions a future in which all residents of North Carolina have accurate and secure health records available at the point of care. Technology exists to design and build a fully integrated and connected health information system that will enhance efficiency, quality and effectiveness of the delivery of healthcare. Technology can also enhance the patient's ability to be an engaged consumer of healthcare and an important partner in their health management. Setting aside the issues of cost, there are significant overarching policy decisions and guiding principles upon which such a system must be founded. Each of the guiding principles below must be addressed and satisfied before HIE will be widely used and accepted.

Guiding Principles

The HIE solution must be consumer-centered. A critical element toward improving health is an engaged consumer who has the means, information, opportunity and the know how to better manage their own health and lifestyle choices. Engaged consumers will have easier access to and more control over their individual health records and they will be able to play a more active role in managing their own health. Sharing information between multiple providers and across disciplines will improve the decisions providers and consumers make and result in better continuity of care.

Better health, not just better healthcare, must be the goal. Better health requires looking beyond just HIT and the traditional practices of healthcare providers and payers to create a virtual "health home" where care is coordinated and collaborative. Prevention is the key. It must be a shared commitment of public and private employers, government non-governmental organizations, communities and individuals.

Privacy and security must be guaranteed. Individual personal health information must be protected. Consumers will accept sharing sensitive personal information if it is done on their behalf to assure that the right information is shared at the right time and for the right reasons. At times this means immediate and secure access to certain critical information from any location in the system.

Automating what we already do will not work. We cannot expect to get better health outcomes by simply applying information technology on top of the existing system of inefficiencies, silos and uncoordinated care. A reengineered HIT system seeks to eliminate the costs associated with redundant care or care not supported by clinical/scientific evidence.

HIT investments must support improved individual health as well as population health. Use the federal stimulus funds to drive the changes needed in the overall system that will create sustainable and continuous quality health improvements. The new HIT system and policies should leverage existing investments in technology, take advantage of innovations, and identify opportunities for new investments.

The system must be inclusive and comprehensive. The system must be standards based. Whether physical or behavioral health, long term or acute care, public or private provider, insured or uninsured, veteran or civilian, rural or metropolitan, all can be part of the system. The HIT system is provider and insurer-neutral. Its design and implementation does not favor or disadvantage any provider type, practice setting, or insurer.

The system must be collaborative. No single entity can accomplish the HIT vision alone. Working together, North Carolina's hospitals, providers, therapists, laboratories, pharmacists, in-home care providers, educational institutions, public agencies and non-profit organizations will improve the health of residents and communities. Collaboration among communities will enhance North Carolina's response to public health threats, disasters, and state and national emergencies.

Effectiveness and continuous quality improvement is fundamental. The ability to analyze and share data across entities will reduce duplication of services, identify best practices, better utilize resources, reduce health disparities, lead to better practice management, and inform future policy and planning decisions and expenditures.

Innovation will be required. Ongoing research and analysis of changing needs and technologies will keep the system dynamic and timely. Implementation and continuous improvement strategies will require an iterative approach that maximizes resources and follows national standards and certification requirements.

Sustainability is the key. The system will be sustained by a support network providing technical and professional education, training and consultation. The long term stability of HIT will be built upon financial incentives and value-added functionality rather than a mandate to participate.

This is a marathon not a sprint. HIT systems will be built incrementally. Every stakeholder in the process must be able to move ahead from where they are on the continuum from minimum HIT involvement to fully electronic and interoperable networks. This means that the implementation process will accommodate a broad range of participants including the small independent community practitioner as s/he decides to implement an EHR in the practice, as well as a large hospital health system with an existing sophisticated HIT system.

2. Environmental Scan

2.1 Overview

To date, the North Carolina market has been characterized by multiple uncoordinated HIE initiatives, most of which are in early stages of development. These initiatives are attempting to address specific regional needs or the needs of a specific health system and have resulted in valuable lessons learned. However, a coordinated statewide governance approach is required to meet North Carolina's vision and goals for HIE to take advantage of significant federal investment in health IT, and to create a policy infrastructure that allows North Carolina's providers to meet the goals of meaningful use including the ability to exchange health information.

In the spring of 2009, a statewide HIT Task Force of key public-private stakeholders developed a Health Information Technology ("HIT") Report for Improving Health and Healthcare in North Carolina. This report represents a process of engaging stakeholders throughout North Carolina to identify guiding principles for HIE and the strategic action steps to realize those principles. The HIT Task Force Report created an excellent starting point for HIE development in our state.

In order to develop a coordinated approach, Governor Perdue designated the North Carolina Health and Wellness Trust Fund Commission ("HWTF"), a division of the North Carolina Department of State Treasurer, as the State Designated Entity (SDE) and established the North Carolina HIT Collaborative as an interim governing body in July, 2009.

Since then, HWTF/NC HIT Collaborative and its partners have performed an environmental scan of the North Carolina market place as well as surveyed approaches of multiple other states to leverage lessons learned. The NC HIT Collaborative actively engaged North Carolina stakeholders to understand their interests and requirements.

Intent to build on North Carolina's history of vision, ambition, and unprecedented potential, the NC HIT Collaborative has developed a new vision of health in which information technology systems are used as powerful tools to achieve outstanding quality in healthcare delivery, resource coordination, cost

efficiency, and patient safety. North Carolina's health and information technology leaders, both public and private, are convinced this work is essential and now is the time to make it happen.

2.2. Assessment of Current HIE Capacities that Could be Expanded or Leveraged

North Carolina is assessing potential opportunities for leveraging existing HIE initiatives to begin building HIE capacity across the state. At the core of this strategy is the "Community HIE". Building upon initiatives with an established collaborative HIE focus and providing these communities with a shared technical service infrastructure for health information exchange, creates an optimal deployment environment and is an efficient and cost effective strategy for rapidly expanding capacity across North Carolina. Immediate potential opportunities for leveraging existing initiatives to begin building HIE capacity across the state are described below, as well as other opportunities that can contribute to building a solid, comprehensive HIE Program.

Community HIE Efforts

Western North Carolina Health Network (WNCHN Data Link) In 2006, 16 hospitals serving western North Carolina collaborated to identify options for the purpose of securely and efficiently exchanging electronic patient medical information. By September 2008, Data Link, one of 32 HIEs in the US, was fully deployed and provides authorized providers and clinicians access to a virtually integrated view of a patient's electronic records from across all WNC hospital systems. Upon request, WNCHN Data Link searches all of the WNCHN hospitals' information systems for a patient's records and collates them in a standardized format in real time. Clinicians can access the records through any internet connected device. Patient-centric data includes admission/discharge information, lab results, microbiology reports, radiology reports, medications, allergies, discharge summaries, history & physicals and other transcribed reports.

For Phase II of the Data Link project, medical images which include radiology, nuclear medicine, tomography and ultrasound images will be added, as well as images of medical mappings such as EEGs, EKGs, or ECGs and access to outpatient medication history. The goal for adding the medication history is to facilitate medication reconciliation. In addition, Phase II includes providing access to Data Link specific to outpatient settings such as clinics, physician offices and health departments. A longer term goal is to provide access to patient-centric information collected by ambulatory providers.

Providing technical services to WNCHN that would facilitate Phase II is an ideal opportunity to demonstrate the value of a statewide shared services model by providing an existing HIE needed functionality for building HIE capacity within an ambulatory setting. The NC HIE Shared Services infrastructure would provide access to outpatient medication history, as well as provide integration services to virtually integrate outpatient and inpatient data.

Action: Conduct an in depth current environment and needs assessment in collaboration with WCNC and key stakeholders. Report findings to the HIT Collaborative.

Coastal Connect In 2007, the CIO Committee of Coastal Carolinas Health Alliance (CCHA), which consists of representatives from eleven hospitals on the coast of North and South Carolina, began discussing patient-centric data exchange. The Alliance represents nine counties with seven in North Carolina and two in South Carolina and approximately one million residents.

In January of 2009, the committee voted to explore the creation of a regional HIE and research was conducted specific to technical HIE environments. In order to identify region-based functional HIE requirements, a needs assessment was conducted. Upon completion of this assessment, the vendor facilitated a workshop for the Alliance hospital members and all interested stakeholders. Based on feedback during this meeting, it was determined that CCHA was the right entity to lead the establishment of an HIE which has been named **"Coastal Connect"**.

A Governance Workgroup has been formed and met in September of this year to begin development of a governance framework. Extensive analysis has also been conducted to identify Privacy and Security Framework models, existing trust agreements that can be leveraged such as DURSA and how a Statewide Shared HIE Services model could meet their HIE technical requirements. In addition, Coastal Connect will submit a grant proposal to HRSA on September 14, 2009 to fund development of a Sustainability Plan. During the fourth quarter of 2009, Coastal Connect will be executing a memorandum of understanding between all provider participants.

CCHA has overcome one of the greatest obstacles so often experienced by HIE initiatives; stakeholder participation and support. With the formation of an HIE entity, along with foundational components already in place or in the final stage of planning, Coastal Connect presents an optimal opportunity for the State of North Carolina to begin implementation of a Statewide Shared Services infrastructure focused on providing technical services specific to health information exchange.

Action: Review Needs Assessment findings in detail with Coastal Connect team. Conduct a detailed current technical environment assessment and report findings to the interim governing body.

Sandhills Community Care Network Health Information Exchange (SCCN) The Sandhills Community Care Network is a regional component of the NC Community Care system which provides case management services to the Carolina Access Medicaid recipients in Harnett, Hoke, Lee, Montgomery, Moore, Richmond and Scotland counties. SSCN has proposed to build on its foundation to establish a community health information exchange. The success of the project is contingent upon the support of all those involved with a common desire to provide enhanced ***access, quality, and efficient*** healthcare.

The SCCN network consists of multiple entities of varying size, with quite desperate IT capabilities. Providers have multiple stand-alone product-centric applications. As such, SCCN faces inefficiencies stemming from the silos of irretrievable information caused by this understandable evolution in healthcare technology.

This project seeks to eliminate these barriers through deployment of EHR's. As noted, some practices already have EHRs in place SCCN has formed an HIE Committee comprised of both Board members and SCCN staff. SCCN has invested \$130,000 over the last two years working with consultants to establish present needs and capabilities and future objectives. The SCCN HIE Committee has interviewed several cost-effective, web based, CCHIT certified electronic medical record vendors, and has narrowed its search to a short slate of vendors. Our goal is to match practices in the SCCN network to the appropriate vendor depending on each practices level of IT sophistication.

Moving forward, the goal of SCCN is to provide a low-cost, certified, Web-based EHR for physicians while at the same time building a health information exchange to allow communication across practices, hospitals and other members of the community. SCCN anticipates working on two parallel tracks and is immediately ready to implement EHRs in an identified group of practices, while simultaneously working with a hospital and large group practices on a pilot HIE project.

Action: Analyze findings of the Needs Assessment completed by SCCN. Conduct a detailed analysis of the current technical environment and report findings to the HIT Collaborative.

Southern Piedmont Partnership for Public Health (SoPHIE): This initiative is led by the Southern Piedmont Partnership for Public Health (SoPHIE). It is designed to be a model "HIE" that puts the patient/consumer in a position to manage the data flow and use of their available health record for the purpose of being more involved in managing their health in collaboration with professional and lay providers. The collaborative effort consists of the SPPPH, DMA, Duke and UNC researchers, First Health of the Carolinas, Cabarrus Health Alliance, Cabarrus Family Practice, NC Institute for Public Health, CCNC representatives, and others. The focus is on the information needs of public health clinical providers and others who need to communicate with public health organizations specific to population health

activities. Providing technical services through a statewide shared services infrastructure is an ideal opportunity to demonstrate how this type of model could support domain-specific initiatives such as this.

Action: A thorough assessment of this initiative needs to be conducted which includes a Needs Assessment, as well as a current environment evaluation. Findings of both will be reported to the HIT Collaborative.

1.1 Collaboration Opportunities

North Carolina is uniquely positioned to evolve a model of health that can more effectively serve our nation. The critical elements for success already exist: a culture of collaboration and innovation, successful pilot projects and programs, substantial IT investments and infrastructure that exist today, thought leaders that reside in our academic medical centers, a robust biomedical research community, private funding partners who have a track record of investing in HIT, large military bases and VA medical centers, the Eastern Band of the Cherokee Indians, a strong underpinning of safety net providers, and strong core public health programs at the state and local levels.

The resources available through ARRA represent not only an unprecedented opportunity to help forge these unique elements into a truly cooperative and aligned system of care, but comprise a substantial body of stakeholders that can drive North Carolina to the needed “HIE tipping point”.

Stakeholders

- **Academic Medical Centers:** Duke University Health System, University Health Systems of East Carolina, University of North Carolina Health System, Wake Forest University Health Sciences
- **Area Health Education Centers of North Carolina:** Carolinas Center for Medical Excellence
Community Care of North Carolina
- **Hospital Systems:** Carolinas Healthcare System, Mission Health Systems, Moses H. Cone Memorial Hospital, and Wake Med Health and Hospitals
- **Healthcare Payers:** State Health Plan, Blue Cross Blue Shield of North Carolina, United Health Care
- **Mental Health Association of North Carolina**
- **North Carolina Medical Society**
- **North Carolina Nurses Association**
- **North Carolina Hospital Association**
- **North Carolina Association of Local Health Directors**
- **North Carolina Health Quality Alliance**
- **North Carolina Center for Public Health Quality**

Stakeholders

- **North Carolina Center for Hospital Quality and Patient Safety**
- **North Carolina Healthcare Information and Communications Alliance**
- **University of North Carolina Gillings School of Global Public Health**
- **North Carolina Department of Health and Human Resources:** Division of Public Health; Division of Medical Assistance (Medicaid); Division of Mental Health, Developmental Disabilities, and Substance Abuse Services; Division of Rural Health and Community Care; Office of the Secretary
- **Private Foundations:** Blue Cross and Blue Shield of North Carolina Foundation, The Duke Endowment, the Golden LEAF Foundation, Health and Wellness Trust Fund of North Carolina, Kate B. Reynolds Charitable Trust
- **Carolinas Center for Medical Excellence**
- e-NC-Authority-a state entity devoted to broadband service diffusion and affiliated MCNC and ERC Broadband non-profits

Collaboration with Medicaid

NC Medicaid is the single largest payer of health services within North Carolina. Medicaid is actively collaborating and aligning its HIE efforts with the statewide NC HIE plan. The core strategy is to leverage funding opportunities obtained by Medicaid and the NC HIT Collaborative to produce a more robust, combined HIE capability that benefits not only Medicaid and underserved populations but the entire patient population in the state.

- North Carolina DHHS has established a committee (DHHS HIT Workgroup) to direct the HIT and HIE activities of Medicaid and all associated DHHS agencies including Public Health, Mental Health, and Rural Health. The NC HIE Strategic and Operational Plan will be established through a continuous coordination with this committee.
- Division of Medical Assistance (Medicaid) has established a timeline for creation of a written HIT and HIE Plan to be submitted to CMS as part of their responsibility for enabling and monitoring Meaningful Use in North Carolina. That timeline results in a Medicaid HIT plan by May, 2010. The NC HIE Operational Plan will be aligned with the CMS HIE Plan.
- Currently there is a portal for the care and treatment of high-risk Medicaid recipients is managed by NC's Office of Rural Health. Community Care of North Carolina (CCNC) and Medicaid use this portal as a case and pharmaceutical management system for the 900,000 Medicaid recipients (out of 1.3 million) currently participating in the medical home model utilized by CCNC.
- Medicaid is also focused on providing education to clinicians on EHR technologies and to assist them in achieving meaningful use by collaborating with the state designated Regional Extension Center. This group, led by the existing Area Health Education Centers (AHEC), consists of organizations that currently have a role in continuing health education of providers that includes EHR implementations and utilization of E-Prescribing. The strategy is to jointly develop a

training education curriculum and contract with AHEC to perform the on-site training implementation services.

Action: Continue to actively align DHHS' HIE Strategy with NC HIE Strategy. Identify specific functional requirements needed by DHHS to build out HIE capacity. Based on requirements and further analysis, design a comprehensive HIE solution to meet public and private needs.

Collaboration with Community Care of North Carolina (CCNC):

North Carolina's unique care coordination network, Community Care of North Carolina (CCNC) is a well respected and successfully implemented patient-centered enhanced medical home model for improving care and controlling costs. CCNC is a network of 14 healthcare communities, includes 3200 physician participants and is operated by community physicians, hospitals, health departments, academic medical centers, and departments of social services. CCNC covers more than 900,000 Medicaid beneficiaries, many who are dually eligible as aged, blind and/or disabled through Medicare. As part of North Carolina's implementation strategy, this network of providers will be leveraged to convene and organize early community-based HIEs .

Action: Continue to work closely with CCNC to define potential geographic Community HIEs, as well complete development of the Community Engagement & Support Toolkit.

Collaboration with CCNC Informatics Center:

CCNC has launched an informatics center focused developing an electronic data exchange infrastructure to automate its healthcare quality initiative that supports patient care coordination; facilitates disease management, population management, and pharmacy management initiatives; enables communication of key health information across settings of care; monitors cost and utilization outcomes; and monitors quality of care. In the near future, the Informatics Center will be 1) incorporating additional information sources to support these initiatives, including real-time hospital data, point-of-care pharmacy data, laboratory results, and Medicare claims; and 2) expanding our user community to allow direct access to information by external providers involved in the care of program participants. This valuable state asset could potentially be a rich source of data that can be accessed and utilized by other organizations through the NC Shared HIE Services environment.

Action: Conduct a detailed analysis of CCNC's data warehouse, including data models, database environment and inventory of available data.

Collaboration with Division of Mental Health, Developmental Disabilities, Substance Abuse Services, NC Department of Health and Human Services

There are two ongoing HIT projects within the Division of Mental Health that can be leveraged:

- 1) Community Electronic Health Record - Web Infrastructure for Treatment Services (WITS)
- 2) State Operated Facilities Electronic Health Record/Electronic Medical Record (EHR) - Veterans Health Information Systems and Technology Architecture (VistA)

Community Electronic Health Record (CEHR) Initiative: The Community Electronic Health Record project has just been approved to move forward. This initiative will result in better coordination of services for consumers, improved data quality, standardization, data availability, and improved administrative efficiencies across the system. The objective of this initiative is to develop a community electronic health record system that will ensure continuity of care for MH/DD/SAS consumers across all types and levels of care by providing standardized data collection and interoperability among community service providers, Local Management Entities (LMEs), and state operated MH/DD/SAS facilities.

For this initiative, NC DMH/DD/SAS has selected the Web Infrastructure for Treatment Services (WITS) system as the solution for managing care in community settings. It is primarily for community providers' planning and delivery of services, and secondarily for LMEs' management and oversight of services.

State Operated Facilities Electronic Health Record / Electronic Medical Record (NC VistA) Initiative: Each of the State Operated facilities will use VistA (Veterans Health Information Systems and Technology Architecture) for the Electronic Medical Record. VistA will interoperate with our existing Quadramed Admission, Discharge, and Transfer (ADT) and Billing system. Together, these solutions comprise the Electronic Health Record for our State Operated Facilities.

The NC VistA Request for Proposal (RFP) for Implementation Services is in the final stages of State Information Technology Department reviews. Posting of this RFP is planned for end of 2009. The NC VistA RFP specifies commencement of the VistA implementation at two acute care hospitals in the geographically central part of NC in 2010, followed by implementation at the two eastern acute care hospitals beginning in 2011. The first implementation of the VistA initiative will be at Central Regional Hospital. The first implementation of the WITS initiative will be at an LME that shares many patients with Central Regional Hospital. The third initiative is the HIE and we will partner with an HIE for VistA and WITS to improve patient care through standards-based interoperability specifications.

Next Action: **Continue to actively collaborate with the Division of Mental Health on aligning their HIT Strategy with the NC HIE Strategy. Identify specific functional requirements needed by the Division to implement its ongoing efforts.**

Collaborations with the NC Public Health:

HIE in Public Health in North Carolina is organized under the concept of the Public Health Information Network (PHIN) and is consistent with the National Health Information Network (NHIN) standards. Following a thorough assessment, North Carolina intends to expand access to the following data sources through deployment of shared services infrastructure:

- **North Carolina Immunization Registry (NCIR):** This system was implemented to record patient history of all required childhood immunizations and assists the provider in making clinical decisions regarding necessary treatment.
- **Early Event Detection and Surveillance (NC DETECT):** This system provides services for situational awareness, case finding, contact tracing and timely surveillance related to injuries, chronic diseases, environmental exposures and other public health concerns. Data from sources include: the State's hospital emergency departments, NC's poison control center, and other key source indicators, such as the statewide emergency medical system (EMS), hospital EDs, State Public Health Lab, a wildlife station and other facilities.
- **NC Electronic Disease Surveillance System (NC EDSS):** NC EDSS is a disease surveillance, outbreak/case management and early detection system that allows public health users to receive, manage, process and analyze electronic data from public health entities, clinics, laboratories, hospitals and healthcare providers. NC EDSS services include support for required case or suspect case reporting of reportable diseases, electronic lab reporting, outbreak management, emergency situational awareness and GIS mapping capabilities.

Action: Perform an analysis of NCIR, NC EDSS, & NC DETECT to determine potential for leveraging data or the provision of services through the NC Shared HIE Services environment.

Collaboration with North Carolina Hospital Emergency Surveillance System (NCHESS) to Create North Carolina Hospital Exchange (NCHEX)

As a result of the events of 9/11 and the October 2001 anthrax case in North Carolina, the North Carolina Department of Health and Human Services Division of Public Health (DPH) partnered with the North Carolina Hospital Association (NCHA) to support the passage of General Statute 130A-480, mandating that all NC hospital-based emergency departments electronically report defined data elements to DPH. NCHA collaborated with DPH and the University of North Carolina, Department of Emergency Medicine to formalize a proof-of-concept project already underway with the North Carolina Health Information and Communications Alliance (NCHICA). Using funding provided by the U.S. Department of Homeland Security through the Centers for Disease Control, the North Carolina Hospital Emergency Surveillance System was developed in 2004, and was cited as a state-level model by the American Health Information Community of the U.S. Department of Health and Human Services, Office of the National Coordinator for Health Information Technology, at its meeting on January 17, 2006.

NCHESS is a statewide clinical data surveillance program that captures real-time clinical data from hospital information systems and analyzes that data to quickly and accurately identify public health emergencies at specific hospitals, in certain geographic locations, or across the state. The NCHESS Emergency Department Data Interface (EDDI) is in place at 111 of 112 hospital emergency departments statewide and provides syndromic surveillance, situational awareness, and clinical information of public health interest. In addition to the surveillance function, NCHESS Investigative Monitoring Capability (IMC) is in place at 48 of 112 hospitals representing 63 percent of emergency department visits. The IMC allows epidemiologists at DPH and at hospitals the ability to electronically “reachback” into hospital data systems to access electronic data on individual patients as needed to further investigate specific public health concerns.

NCHESS-IMC servers at each facility currently receive clinical data from a hospital’s various health information systems. Many hospitals use NCHESS-IMC for more than NCHESS public health reporting purposes, however, including quality and patient safety monitoring, HIS backup, and physician/clinician real-time patient monitoring and alerts. Hospitals with these existing capabilities can be directly expanded to meet HIE requirements in a timely manner to satisfy meaningful use requirements for hospital incentive payments under ARRA HITECH.

NCHESS hospitals that do not have the enabling IMC technology can also be incorporated into the proposed NCHEX exchange, but it will be more resource intensive and may require additional HIS upgrades to achieve.

Action: Explore a potential pilot project using three or more NCHESS hospitals based on NCHESS-IMC technology.

Collaboration with the NC Telehealth Network (NCTN)

The Southern Piedmont Partnership for Public Health, facilitated by the Cabarrus Health Alliance, has been leading a set of projects to address broadband needs since 2007. The group includes collaborators from e-NC (a state authority devoted to broadband adoption), the NC Association of Local Health Directors, the state Division of Public Health, the NC Association of Free Clinics, the NC Hospital Association, NC Medical Society, the Southwestern Commission, Albemarle Health, and University Health Systems of Eastern NC. The overall goal is to create a dedicated broadband network for health in NC. The project set leverages \$12.1M in broadband discounts from the FCC's Rural Health Care Pilot Program. The NCTN is now three projects. The NCTN-PH supports a broadband network for public health agencies and free clinics in NC; it is now in an RFP response phase and is expected to be active early in 2010. The NCTN-H is a similar (and connected) broadband network for hospitals in NC; it is expected to be active in the fall of 2010. The NCTN-AMB is devoted to developing a broadband network component for private ambulatory practices in NC that interconnects with the NCTN-PH and NCTN-H. The NCTN-AMB is in a planning stage now.

Action: [Integrate NCTN into the NC HIE strategy to align efforts and to assure the availability and responsiveness of networked resources.](#)

Other resources that can be leveraged:

Blue Cross and Blue Shield of North Carolina: For years BCBSNC has championed electronic connectivity to providers, and the vast majority of providers in its network are now taking advantage of its electronic data interchange offerings. BCBSNC's influence in health IT also extends to numerous boards, commissions and industry associations in which company officials serve, including the National Committee on Vital and Health Statistics.

HealthSpan: HealthSpan is an enterprise EHR application managed by the University Health Systems of Eastern Carolina and runs on Epic Enterprise software suite. Currently, six hospitals and three clinics actively use HealthSpan and have access to approximately 1.2 million patient records. In order to expand HIE capacity across this community, HealthSpan could be utilized as a core data source accessed through an HIE platform provided by a statewide shared services infrastructure. This is an opportunity to leverage an existing, rich source of patient-centric data due to the broad adoption of EPIC across UHS facilities by providing access to providers who are non-EPIC users such as the public health department and those in neighboring communities.

1.2 Human Capital

HIT Task Force

North Carolina Health Information Technology Strategic Planning Task Force (HIT Task Force) was established in early 2009 to forge a new vision of how health and healthcare can be improved by enhancing the use of health information technology. Dempsey Benton, Director of the Office of Economic Recovery & Investment, charged the Task Force to engage stakeholders to develop a set of strategic guidelines by which North Carolina could apply for, and most effectively use, resources made available through the American Recovery and Reinvestment Act (ARRA). The HIT Task Force was composed of 17 members. However, more than 65 subject matter experts, staff, and members of the public were invited to participate in the seven open meetings that were held from April thru June 2009.

North Carolina is fortunate to have existing expertise in health information technology. The Task Force benefited greatly from the participation of: the North Carolina Healthcare Information and Communications Alliance, Inc. (NCHICA), the Western North Carolina Health Network's (WNCHN), individual medical practices, Duke University Health System, University Health System-Greenville, UNC Healthcare, and Wake Med Health and Hospitals.

Educational Resources

North Carolina also has an expansive network of entities available to assist in efforts to inform, instruct and train users of the NC HIE. The State has a long history of regional education and outreach through its Agricultural Extension Program and the NC System of Community Colleges and their adult educational programs. Additional organizations which can participate in HIT education include: the 8 Area Health Education Centers, the 58 campuses of the Department of Community Colleges, the Senior Centers available in all 100 counties, the 14 Community Care of North Carolina regions, Area Aging Councils, the Senior Health Insurance Program (SHIP), Health Insurance Information Program and its volunteer network, as well as the North Carolina Association of Free Clinics. Other governmental agencies, quasi-governmental entities, educational institutions, and private and non-profit organizations will be asked to share information with the people they serve.

Quality Improvement Initiatives

In addition, North Carolina has comprehensive medical quality programs, which can facilitate HIT-related improvements in quality of medical treatment, better patient outcomes and financial efficiencies. The North Carolina Healthcare Quality Alliance and the Carolinas Center for Medical Excellence (the Medicare peer review organization for North Carolina) actively participated on the Task Force and will play an integral role in the executing the Regional Extension Center strategy for North Carolina. The NC Center for Public Health Quality will facilitate population health reporting and continuous quality improvements in local public health departments across the state.

1.3 HIE Readiness

North Carolina's current HIT efforts can be segmented into two categories: 1) large health systems, affiliated providers and ancillary service providers who have implemented integrated EHRs, and 2) community-based HIE efforts focused on ensuring ubiquitous availability of data within a region.

Community HIE Efforts: One community-based HIE initiative is currently operational, which is located in the Western part of the state. However, there are several efforts currently in the planning stage, with some transitioning to an implementation phase of development. Other efforts continue to organize stakeholders and are in the process of assessing various approaches to HIE. Most of the community HIE efforts who are in the planning phase of development, while share a common mission to improve healthcare in their communities through HIE, the efforts do not all share a common technical approach. The majority of these HIE efforts are pursuing some variation of a federated technology model with one initiative pursuing a centralized model. Viable sustainability models remain as a challenge and top priority of community HIEs that are planning to move to an implementation phase.

2 HIE Development & Adoption

2.1 Overview

The American Recovery and Reinvestment Act (“ARRA”) provides a tremendous opportunity to rapidly expand and advance HIE in North Carolina. The Act commits billion in grants, loans, and incentives to encourage meaningful use of Health IT in a secure, patient-centric environment. In a July 2009, by Executive Order, Governor Perdue designated the North Carolina Health and Wellness Trust Fund Commission, a division of the North Carolina Department of State Treasurer, as the State Designated Entity (SDE).

Central to the long-term restructuring of the healthcare delivery system is the active engagement of patients. While dedication to patient engagement on the part of providers is critical, an HIE Governance Entity has an important role to play as it reviews and sets statewide standards, policies, and guidance. The HIE Governance Entity must ensure that standards, policies and guidance support the access to and use of patient records.

This Strategic Plan represents a balance of State requirements with the requirements outlined by the Office of the National Coordinator in its “State Health Information Exchange Cooperative Agreement Program”. Therefore, North Carolina’s Strategic Plan establishes a set of immediate actions including:

Action: Develop statewide HIE capacity that is driven by health outcome goals focused on improvement in individual and population health status governed by and implemented cooperatively through collaborative efforts of the public and private sectors.

Action: Develop and enforce HIE policy requiring all statewide participants to comply with a common set of privacy and security guidelines and policies.

Action: Develop an approach for sustainability financing that does not rely on federal, state, or private grant-based funds.

Action: Develop an integrated approach with DHHS Medicaid and State public health programs to enable information exchange. Support provider participation in HIE as required for Medicaid meaningful use incentives.

Action: Implement a permanent Governance Framework by end of 2009.

2.2 Vision

The HIE vision for North Carolina is safe and secure access to patient health information which benefits the health, safety, efficiency and quality of care for all – a future in which all residents of North Carolina are afforded ready access to and equal opportunity for accurate and secure health information whenever and wherever it is needed. This strategic plan is supported by the following six objectives.

2.3 Goals & Objectives

1. Promote, facilitate and support the development and implementation of health information exchange systems that provide interoperability among healthcare providers.
 - Harmonize HIE activities across the state to build capacity
 - Develop and implement shared services by November 2010
 - Identify mechanisms to connect clinical care and population health systems by Oct, 2010
 - Facilitate services provided by and coordinated with NC AHEC's Regional Extension Center
2. Promote statewide deployment and use of electronic health records, especially among priority providers working with medically underserved populations.
 - Facilitate services provided by and coordinated with NC AHEC's Regional Extension Center
 - Deploy EHR support services by December, 2011
 - Develop and implement EHR loan program for priority providers by June, 2010
3. Safeguard privacy and security of electronic health information

- Establish privacy and security policies and procedures by March, 2010
- 4. Develop a framework for implementation and sustainability of health information technology
 - Finalize business plan, including sustainability plan, by March, 2010
- 5. Conduct robust evaluation of both process and outcome at end of year 2 and year 4
 - Contract for an independent evaluation team by Sept, 2011
 - Finalize evaluation plan by June, 2010, including measures and baseline metrics
- 6. Develop policy, processes, and technology to support informed consumer engagement in HIE flow.
 - Conduct an evaluation of PHR options and best practices.
 - Pilot PHR adoption in selected communities.

2.4 State-level HIEs

ARRA provides a foundation for healthcare reform efforts by accelerating the transition of the nation's health records from paper to electronic format and ensuring that health information can be readily exchanged securely, accurately and in a timely fashion via interoperable electronic health networks. Despite the evidence of its value in improving the quality, safety, effectiveness, and efficiency in care, HIE has grown slowly.

Recognizing the potential for creating a shared infrastructure that meets the collective needs of all stakeholders, state-level HIE initiatives are advancing interoperable HIE. States across the country have been working to solidify collaborative governance and accountability frameworks and address the fundamental policy, technical and financing challenges to advancing interoperability. Today, organized state-level HIE efforts are in various stages of operations in forty-nine states.

Serving as a bridge between the public and private sectors, state-level HIE efforts offer distinct and important contributions to advance the interoperable exchange of health information:

- Ensure that exchange develops beyond narrowly-defined interests to serve statewide public interests;
- Identify the boundaries for cooperation and competition.
- Mobilize public and private resources for effective collaboration
- Create opportunities for cost-effective, shared investments across stakeholders
- Serve state public policy interest and consumer protection concerns by facilitating consistent, reliable HIE practices.

States vary, characterized by distinct populations, geographic boundaries, government organization, policies, economies and marketplace dynamics, and cultural norms for how things get done. Despite these variations, at the state level, stakeholders share common interests and a need for a collective framework to develop, implement and assess health, healthcare and healthcare reform. In support of a statewide organizing capacity, state-level HIE entities serve two important and distinct roles:

- **Governance:** develop consensus, coordinate policies and procedures to secure data sharing, and lead and oversee statewide HIE.
- **Technical operations:** An optional and variable role to manage and operate the technical infrastructure, services, and/or applications to support statewide HIE. The table below identifies the functions and core tasks across the governance and technical operator roles.

Role	Governance		Technical Operations
Function	Convene	Coordinate	Operate/Manage
Task	<ul style="list-style-type: none"> ➤ Provide neutral forum for all stakeholders ➤ Educate constituents & inform HIE policy deliberations ➤ Advocate for statewide HIE ➤ Serve as an information resource for local HIE and health IT activities ➤ Track/assess national HIE and health IT efforts ➤ Facilitate consumer input 	<ul style="list-style-type: none"> ➤ Develop and lead plan for implementation of statewide solutions for interoperability ➤ Promote consistency and effectiveness of statewide HIE policies and practices ➤ Support integration of HIE efforts with other healthcare goals, objectives, & initiatives ➤ Facilitate alignment of statewide, interstate, national HIE strategies 	<ul style="list-style-type: none"> ➤ Serve as central hub for statewide or national data sources and shared services ➤ Own or contract with vendor(s) for the hardware, software, and/or services to conduct HIE ➤ Provide administrative support & serve as a technical resource to local HIE efforts

2.5 State-Level Infrastructure Development

Developing and sustaining efforts to bring interoperability statewide requires state-level HIEs to address an array of interrelated issues that comprise a statewide HIE infrastructure, including:

- Governance and Accountability
- Health System Improvement Goals and Priorities
- Privacy and Security Policies

- Financing (Governance and HIE Related Services)
- Technical Design
- Health IT Adoption

The table below highlights the key milestones between “planning” and “implementation.”

Milestones for State-level HIE Infrastructure Development

	Planning Milestones	Implementation Milestones
Governance	<ul style="list-style-type: none"> ➤ Develop a framework that defines the relationships and accountability among the stakeholders. 	<ul style="list-style-type: none"> ➤ Qualified State-designated entity incorporated State government entity or multi-stakeholder nonprofit organization empowered with governance role launched and appropriately empowered with governance role launched and fully staffed
Health System Improvement	<ul style="list-style-type: none"> ➤ Establish the health improvement goals and identify the use cases required to achieve goals. 	<ul style="list-style-type: none"> ➤ Data exchange in support of identified use cases has begun
Privacy & Security Policies	<ul style="list-style-type: none"> ➤ Initial assessment of threshold privacy and security issues launched. 	<ul style="list-style-type: none"> ➤ Threshold privacy and security issues being addressed and statewide policies in development.
Financing	<ul style="list-style-type: none"> ➤ Develop a business plan supported by the majority of the healthcare entities and HIE stakeholders ➤ Funding for convening & coordinating elements <i>secured</i> ➤ Funding for development of statewide HIE infrastructure and/or pilot projects <i>identified</i>. 	<ul style="list-style-type: none"> ➤ Implementation proceeding according to business plan and tied to a business model leading to sustainability ➤ Funding for statewide HIE technical infrastructure and/or pilot projects <i>secured</i>.
Technical Design	<ul style="list-style-type: none"> ➤ Consensus on technical design and approach, service design analysis complete. ➤ RFP(s) for technical implementation released. 	<ul style="list-style-type: none"> ➤ Vendor selected, contract signed and development underway. ➤ HIE technical infrastructure in development. ➤ Deployment sites launched and operational
Health IT	<ul style="list-style-type: none"> ➤ Levels of health IT adoption across 	<ul style="list-style-type: none"> ➤ Mechanisms and programs to address

	Planning Milestones	Implementation Milestones
Adoption	various care settings have been measured and gaps identified. ➤ Strategies, mechanisms and programs to address health IT adoption gaps have been developed and designed.	health IT adoption gaps are operational and funding and resources have been committed to accelerate adoption ➤ Coordination initiated with NC Regional Extension Center and NC Medicaid to leverage efforts and resources.

2.6 Implementation Roadmap

In determining the sequence of implementation, state-level HIEs typically assess candidate services and use cases across the following criteria: (1) the clinical value generated, (2) the degree of competition for the service, (3) the breadth and depth of potential clients, (4) anticipated net revenue and return on investment, (5) technical difficulty; and (6) vendor interest, capabilities, and costs for service provision.

North Carolina will align its health information exchange implementation and priorities with the current federal definition of meaningful use to ensure that its eligible providers are able to demonstrate meaningful use and are positioned to receive the maximum incentive reimbursement and avoid future reimbursement penalties. With reaching meaningful use as an imperative, the following, immediate priorities are delineated to support Medicare and Medicaid providers:

- Electronic eligibility and claims transactions
- Electronic prescribing and refill requests
- Electronic clinical laboratory ordering and results delivery
- Electronic public health reporting (e.g. immunizations, notifiable laboratory results)
- Quality reporting
- Prescription fill status and/or medication fill history
- Clinical summary exchange for care coordination and patient engagement

In order to achieve meaningful use in an efficient and cost effective manner, the NC HIT Collaborative is assessing a shared services approach for HIE implementation. This model supports and nurtures nascent and existing community efforts, while providing core HIE services to providers and communities where such infrastructure is not present.

Special attention will be given to underserved, small and rural communities to facilitate meaningful use throughout the State, regardless of geographic location.

The NC HIT Collaborative, in concert with key stakeholders, has planned a four phase approach for developing and implementing the NC HIE. This approach is not linear, since certain phases will occur concurrently.

Phase One – Plan HIE Development and Implementation

North Carolina's HIE and EHR development and implementation planning process is nearly complete. This planning process was comprised of 5 components which included:

1. An assessment of in-state assets, willingness and capacity
2. A technical architecture specific to HIE and E.H. R. support
3. A governance model
4. A sustainability model
5. A community engagement and organization model

Planning: 1. Assessment of in-state assets, willingness and capacity Status: Complete

To date, HIE in North Carolina can be characterized by multiple uncoordinated initiatives, most of which are in early stages of development. These initiatives are attempting to address specific regional needs or the needs of a specific health system and have resulted in valuable lessons learned. However, in order to expand HIE capacity, North Carolina must develop a cohesive HIE strategy by aligning value propositions and focusing on prioritized goals and objectives.

Planning: 2. Technical Model Development Status: In Process

Given limited funding and compressed time lines for complying with meaningful use criteria, significant economies of scale across North Carolina must be achieved by leveraging a shared services technical environment. Use of common, comprehensive, scalable, standards-based technology solutions will facilitate health information exchange and lay the foundation for achieving meaningful use, as well as participation the Nationwide Health Information Network.

Planning: 3. Final Governance Model Development

Status: In Process

Detailed in Section Three of the Strategic Plan is the permanent Governance Model for the HIE initiative of North Carolina. This Governance Model is being created through a multi-stakeholder process. The model includes provisions for Policy, Legal, Privacy and Security, Architecture, Evaluation, Business and Technical Operations and Stakeholder engagement. An interim governance body has been put in place.

Planning: 4. Business Model Development

Status: In Process

In January of 2009, significant initial work was completed by NCHICA as part of their NHIN Trial Implementation Contract to develop a sustainability and business plan for North Carolina. Section 4.3 provides an overview of that work. During Q1 2010, this work will be expanded centered around the NC Shared Services model.

Planning: 5. Community Engagement and Organization Model

Status: In Process

The key organizing principle for creating a comprehensive, statewide HIE strategy is the “Community HIE”. Healthcare delivery is local and the core foundational component upon which any health information exchange initiative is built is the community. The success of health information exchange is not dependent upon technology. Deploying the most sophisticated and innovative technology solution in no way guarantees a successful outcome. Success is dependent upon the dedication, focus and collaborative spirit of stakeholders within a community itself. It is with this focus that North Carolina will build and deploy a statewide HIE strategy.

A Community Working Group has been formed by NC HIT Collaborative and charged with creating a model for convening and organizing health exchange initiatives, as well as the identification of specific geographic communities across the state.

2.7 Coordination of Other ARRA Programs

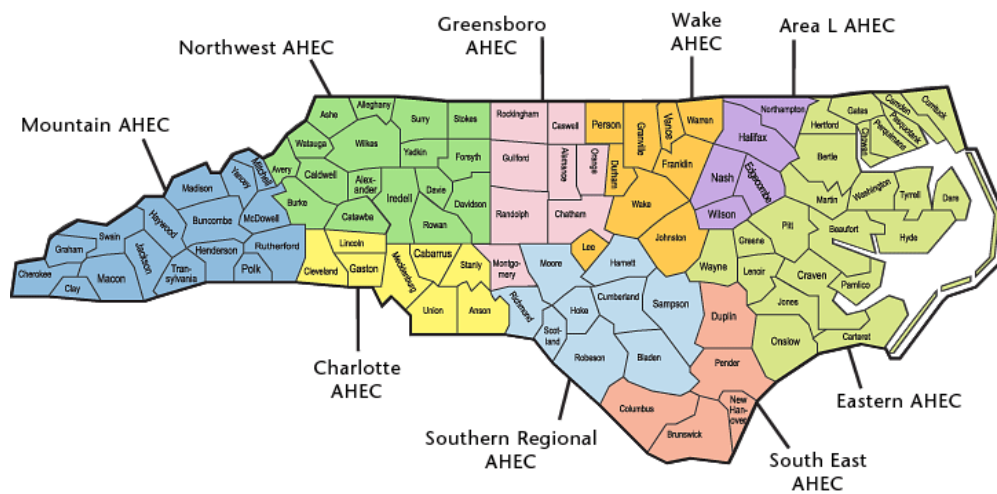
The NC HIT Strategic Planning Task Force recognized the advantage in leveraging the significant referral and enterprise networks established by the academic medical centers and health systems across the state, along with the related broadband and educational activities and the ongoing activities of the following organizations:

- NC Medicaid and NC Community Care of NC Network (CCNC)
- North Carolina Healthcare Information and Communications Alliance, Inc. (NCHICA) and the NC HIE Council and the NC Consumer Advisory Council on Health Information
- NC DHHS Division of Public Health
- NC Health Care Quality Alliance

- NC AHEC Program
- NC Medical Society Foundation

From the beginning of NC’s HIE application planning, NC recognized the opportunity in leveraging broadband funding provided by ARRA and began to align the NC HIE strategy with MCNC and the e-NC Authority to support their applications for middle mile capacity. These initiatives will enhance and strengthen the existing NC-Research and Education Network that connects universities, community colleges and over 2500 public schools with high-speed broadband in every community across the State of North Carolina for healthcare purposes.

North Carolina will look to the North Carolina Area Health Education Center (“NC AHEC”), whose mission is to meet the state’s health and health workforce needs by providing educational programs, in partnership with academic institutions, healthcare agencies, and other organizations committed to improving the health of the people of North Carolina. Started in 1972 thru a combination of Federal, State, and local funds, NC AHEC has nine regions and multiple well respected educational programs. NC AHEC is the lead applicant for the NC Regional Extension Center and will marry its depth of knowledge in workforce education with funding to provide education and training to a variety of healthcare providers and others to facilitate meaningful use.



Also key to implementation and adoption will be last mile connectivity and EHR adoption. NC HIT Collaborative will work closely with NC AHEC and their Regional Extension Center as well as with e-NC, MCNC, and ERC Broadband and others on middle mile and last mile broadband initiatives to coordinate deployment so that a Community Health Information Organization (“CHIO”) has maximum opportunity for providers to achieve meaningful use by having EHRs that are connected to broadband and that they have access to HIE services that are of high clinical value to them.

According to definitions of the North Carolina Rural Economic Development Center, over half of North Carolinians lived in rural areas in 2006 and received primary care close to home. As we look to improve access and quality of care for this large segment of our population, we need to develop models of health information technology that not only take advantage of economies of scale but are also designed to enhance local and regional systems of care and recognize that small rural practices may require additional support to fully implement this technology. The NC HIE model of shared services provides the best approach for efficient and cost effective deployment of HIE throughout North Carolina.

Phase Two - HIE and EHR Services Development and Implementation

Phase Two represents transitioning to the Development Phase of HIE services in North Carolina. It is a multi-stage process, for which a high level timeline for Year One is provided below.

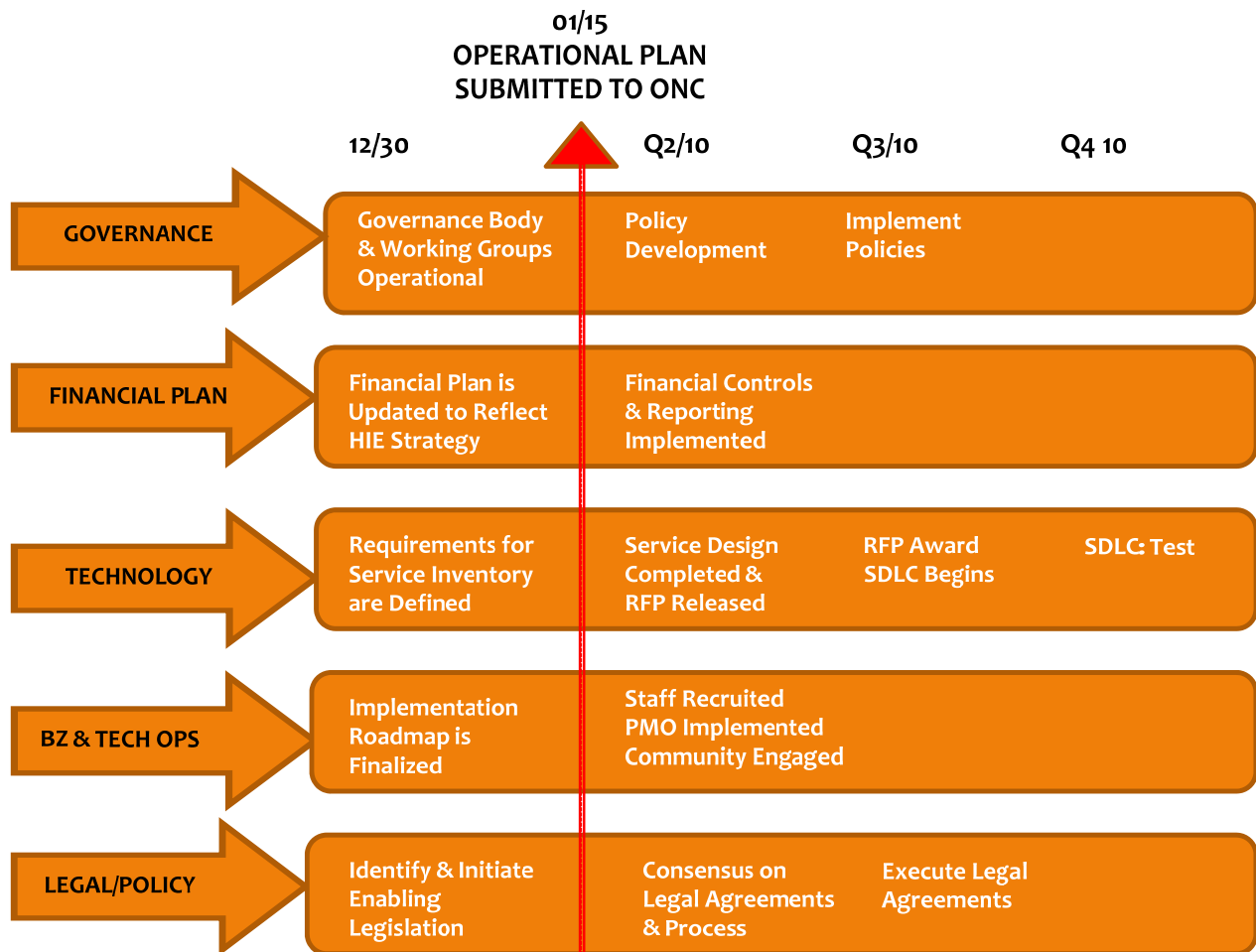


Figure 1: Year One Timeline

The timeline above depicts a high level view of parallel work streams and represents very aggressive deliverables. But, in order to meet meaningful use requirements, an aggressive timeline is necessary. The challenge is developing several key foundational components for building HIE capacity, which typically requires 12-18 months of focused work effort. However, with a focused and well organized work plan, as well as dedicated resources and stakeholders, meeting these deliverables is possible.

3 Governance

3.1 Overview

State-level HIE governance is a role that must address the diverse, dynamic and often divergent needs of local stakeholders yet also align statewide strategies with directions under the national strategic plan for HIE. Achieving HIE implementation to meet healthcare improvement goals requires an effective structure for sustained collaboration and coordination across sectors and among diverse stakeholders. This collaborative structure provides a critical piece of infrastructure – a mechanism for negotiating HIE solutions among diverse interests (e.g., providers, payers, purchasers, researchers, consumers, policy makers) taking into account pragmatic implementation challenges, and balancing these against the public interest in health system improvements.

This is a new and challenging role to achieve in practice; it requires “operationalizing” an effective public-private partnership structure to address financing, technical approach, data exchange policies, communication and education. The state-level HIE Governance Body must have the resources, authority and social capital to develop an effective collaborative HIE governance framework, necessary to ensure consistent policy, technical, and financial approaches to advance interoperability.

With guidance from the NC HIT Collaborative, as well as a Governance Workgroup, a governance framework is currently under development and will be deployed by November 15, 2009. This framework will be executed through a statewide HIE governing body that establishes the roles, responsibilities, and relationships between parties; organizes, promulgates and oversees activities among stakeholders across the state; and oversees development and implementation of accountability mechanisms.

3.2 Governance Structure

An important component of North Carolina’s HIE strategy is the organizational governance structure currently under development. This infrastructure is comprised of a policy and governance framework, collaborative processes, as well as accountability mechanisms.

State Designated Entity/North Carolina Health and Wellness Trust Fund (HWTF) /HIT Collaborative

In July 2009, Governor Bev Perdue, by executive order, designated HWTF as the “state designated entity” (SDE) who is charged with coordinating health HIE programs and policies across the public and private healthcare sectors to enable quality improvements in healthcare delivery with the ultimate goal of improving health outcomes for all North Carolinians.

These programs and policies serve to establish the health HIE infrastructure and capacity to support clinicians in quality and population health improvement, new models of care delivery along with prevention and wellness initiatives. The health IT transformation program is a part of the state’s agenda to advance patient-centered care and enable improvements in healthcare quality, affordability and outcomes for each person, family and business in North Carolina.

North Carolina Governance Body

The NC HIT Collaborative, established within HWTF, will serve as the interim governing body and is currently in the process of developing a statewide public-private partnership and governance body that will play an integral role in advancing North Carolina’s overall health IT strategy. Depicted below in Figure 2 the proposed structure and the key responsibilities of the governing body would include the following:

- (1) Convening, educating and engaging key constituencies, including healthcare and health IT leaders across the state;
- (2) Facilitating a two-tiered governance structure for interoperable health information exchange that includes: at the state level setting health information policies, standards and technical approaches, and at the community level implementing such policies by CHIOs;
- (3) Evaluating and establishing accountability measures for North Carolina’s health IT strategy.

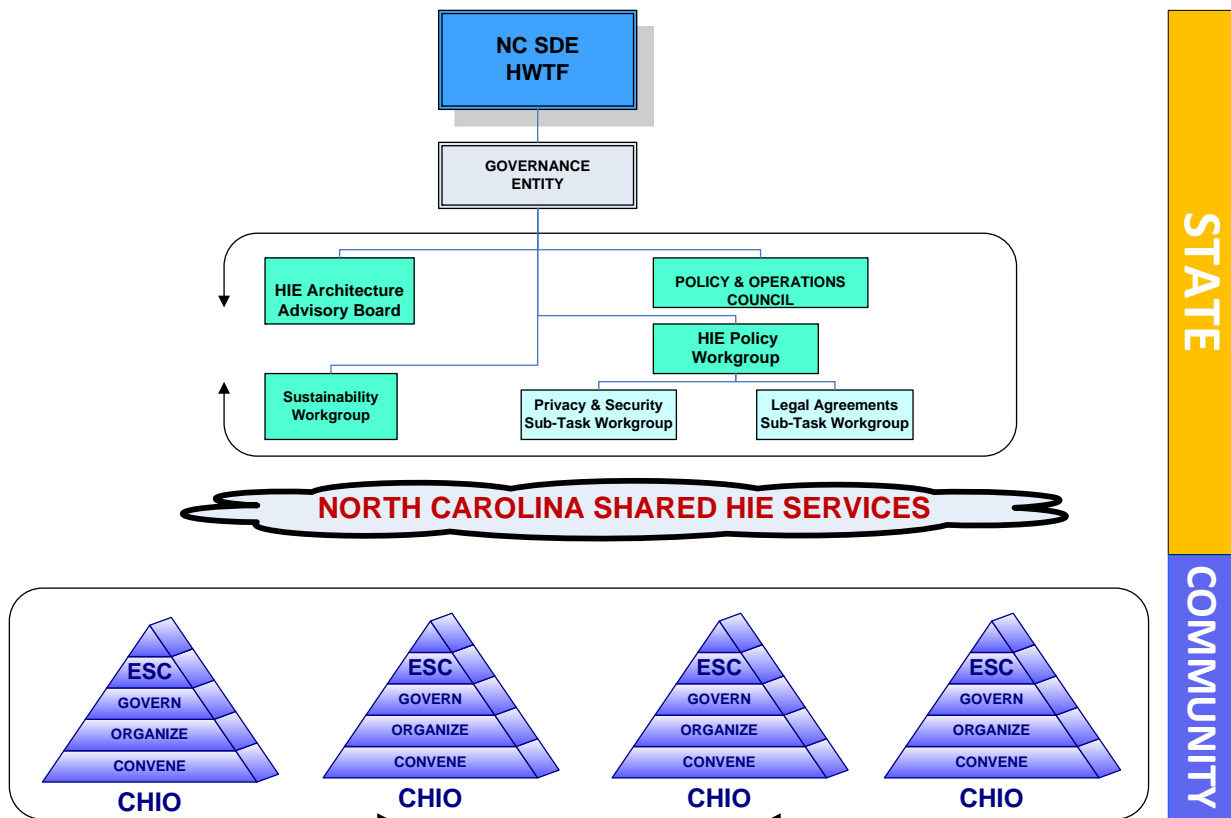


Figure 2: Proposed Governance Framework

3.3 Governance Process

North Carolina Collaboration Process (NCCP)

When the new governing body is operational, health information policies, standards and protocols and other technical approaches governing the HIE infrastructure will be developed. This is collectively referred to as **Statewide Policy Guidance**.

The Governance Body will lead the development of Statewide Policy Guidance through an open, transparent, and consensus driven process to which all contribute to ensure a comprehensive policy framework to advance health IT in the public’s interest. This governance process is referred to as the North Carolina Collaboration Process (NCCP) and will be driven by the efforts of workgroups who recommend Statewide Policy Guidance to the Governance Body.

Community Health Information Organizations (CHIOs)

Underlying the Statewide Collaboration Process and central to the successful implementation of the statewide HIE strategy are Community Health Information Organizations. CHIOs, working with their stakeholders and constituents must create an environment that ensures effective health information exchange organizationally and technically through a solid governance structure. CHIOs are a part of the Statewide Collaboration Process and are required to participate in setting Statewide Policy Guidance and then implement and ensure adherence to such guidance. Serving as trusted brokers, CHIOs are multi-stakeholder collaborations that facilitate the secure and interoperable exchange of health information with a mission of governing its use in the public's interest and for the public good. A representative from each CHIO will hold a seat on the Governance Body.

NC Shared HIE Services

North Carolina's framework for implementing a statewide health information infrastructure for an , interoperable health information infrastructure is affirmed on differentiating between the responsibility for driving policy, which is the responsibility of the state designated entity facilitated through a transparent governance process, and the responsibility for implementing health information policies is the province of CHIOs. The setting of information policies, standards, protocols and other technical approaches or Statewide Policy Guidance is tied to the actual implementation of the technical infrastructure. In other words, the governance process of setting Statewide Policy Guidance, changing and evolving it when necessary and holding stakeholders accountable to it requires a well orchestrated and seamless process and must be aligned with technical implementations.

The distinction between policy, governance and the provision of technology services in building HIE capacity via the NC Shared HIE Services is crucial for understanding exactly what accountability mechanisms should be in place. Given the central governance role model played by NC HIT Collaborative and CHIOs in North Carolina, it is essential they be held publicly accountable. For North Carolina to be successful, all stakeholders – state and local governments, providers, payers, and consumers – must have confidence that the CHIOS serve the public good and perform the duties expected of them in a transparent manner that earns public trust.

Policy Interoperability

The seamless flow of information sharing requires interoperability at both a technical and policy level. Policy interoperability is critical to facilitating a chain of trust that exists among the multiple networks comprising the statewide HIE infrastructure. Creating a consistent set of statewide HIE policies that are also aligned with federal data sharing policies ensures that participants can map their workflow and technical implementation to one consistent interpretation, thereby reducing development and operational costs. A common state-wide privacy and security framework across all care settings and types of HIE also eliminates complexity.

Oversight and Enforcement

While strong privacy policies are necessary for facilitating HIE, without a structure in place to ensure compliance, they alone are not a sufficient means by which to guarantee the protection of a patient's personal health information. Statewide accountability and enforcement mechanisms are critical to ensure statewide interoperability.

Implementation Steps

Collaborative development of data sharing policies and practices is one of the most important tasks when implementing an HIE strategy. These policies and practices are the ways in which privacy and security requirements are "operationalized" and effective controls over data access and use are maintained in practical terms across diverse healthcare settings and organizations.

As an essential component of HIE, building consensus for consistent, practical data sharing policies across independent healthcare entities is a challenging proposition. It typically has evolved through a phased sequence of implementation steps that begins with crafting a framework of agreed upon interoperable policies and practices.

Action: **Identify and resolve threshold issues to put into place high-level guiding principles that serve as a foundation for the subsequent development of a set of more detailed privacy policies and procedures. Engage stakeholders to collaborate and build consensus around those detailed privacy policies and procedures.**

Action: **Align interoperable policies and procedures to support compliance with statutory and regulatory requirements and oversight mechanisms for ensuring privacy and security protections.**

Action: **Establish organizational roles capacity, and institutional roles and functions must be established to manage policy monitoring and development on an ongoing basis.**

Action: **Develop a credible deliberation process to ensure that policies iterate to address current conditions and ensure that emerging best practices are incorporated as part of ongoing HIE governance.**

Action: **Develop statewide accountability and enforcement mechanisms are critical to ensure statewide interoperability.**

3.4 Deliverables

Deliverables specific to developing the Governance Framework is captured in the table below. In order to deploy these processes and procedures effectively and efficiently, the work effort will have to be focused, organized and well managed.

Governance Deliverables	Year 1	Year 2
➤ Establish a governance structure that achieves broad-based stakeholder collaboration with transparency, buy-in and trust.	✓	
➤ Set goals, objectives and performance measures for the exchange of health information that reflect consensus among the healthcare stakeholder groups and that accomplish statewide coverage of all providers for HIE requirements related to meaningful use criteria to be established by the Secretary through the rulemaking process.	✓	
➤ Interoperable policies, procedures and oversight mechanisms are aligned to support compliance with statutory and regulatory requirements.	✓	
➤ Organizational role capacity and institutional roles and functions are established.	✓	
➤ Process for policy monitoring and development is established.		
➤ Deliberation process to ensure that policies iterate to address current conditions has been developed.		✓
➤ Accountability and enforcement mechanisms are in place.	✓	
➤ Ensure the coordination, integration, and alignment of efforts with Medicaid and public health programs through efforts of the State Health IT Coordinator.	✓	✓
➤ Establish mechanisms to provide oversight and accountability of HIE to protect the public interest.	✓	
➤ Account for the flexibility needed to align with emerging nationwide HIE governance that will be specified in future program guidance		✓

3.5 HIT Coordinator

Holt Anderson, Executive Director of the North Carolina Health Information and Communications Alliance (NCHICA), has been appointed as the North Carolina HIT Coordinator on an interim basis. By January 15, 2010, a permanent HIT Coordinator will be named.

The NC HIT Coordinator, in collaboration with the Office of Governor Bev Perdue and her Cabinet, the Council of State, the General Assembly, Federal Agencies, and private sector stakeholders, will oversee and coordinate efforts to enhance existing programs and to support deployment and operation of additional capabilities and policies that will enable all of the residents of North Carolina to receive high-quality, safe, and efficient care enabled through electronic health records and secure health information exchange wherever they might require services in North Carolina. The goal will be to establish North Carolina as “First in Health”.

4 Finance

4.1 Overview

For many, the magnitude of funding from the ARRA has created the impression that the financial obstacles for health IT have been resolved. While the funds represent an unprecedented investment, they will not address the persistent challenges to sustaining a health information infrastructure that meets the demands of a high performing healthcare system. As stakeholders begin the process of creating or updating their statewide plans, it will be critical to avoid the temptation of addressing short term financial needs at the expense of the longer term systemic considerations that will ultimately determine the success of the stimulus investment. States need to act now and engage public and private payers and purchasers in a dialogue to develop the financial mechanisms needed to ensure the long term viability of these efforts.

4.2 Financial Controls and Reporting

The State of North Carolina, by General Statutes, requires all agencies, institutions, departments, bureaus, boards, commissions and officers of the State to develop and implement financial policies and procedures for the receipt, deposit and disbursement of moneys coming into their control and custody. A uniform statewide cash management plan is overseen by the State Controller, State Treasurer and State Budget Office. The statewide cash management plan outlines the policies, duties, responsibilities of each agency, department and institution to prepare a cash management plan that meets both the requirements of the statewide plan and the unique financial cash management needs of the individual agency, department or institution. The cash management plan must identify all financial policies, procedures and controls and must be in compliance with all generally accepted State and Federal accounting principles. The cash management plan must be updated, reviewed and approved by the NC State Controller each year.

As the State's applicant for the State HIE Cooperative Agreement Program, the Health and Wellness Trust Fund Commission will be the financing authority and serve as the single point of contact and fiscal agent to compile and submit reports to ONC.

The Health and Wellness Trust Fund Commission is a State entity within the NC Department of State Treasurer. The NC Department of State Treasurer (NCST), Federal Tax ID Number 56-1545517, will govern all HIE federal funds. All Federal funds will be processed through the NCST Cash Management Plan and in accordance with all State and Federal audit requirements and all relevant OMB circulars.

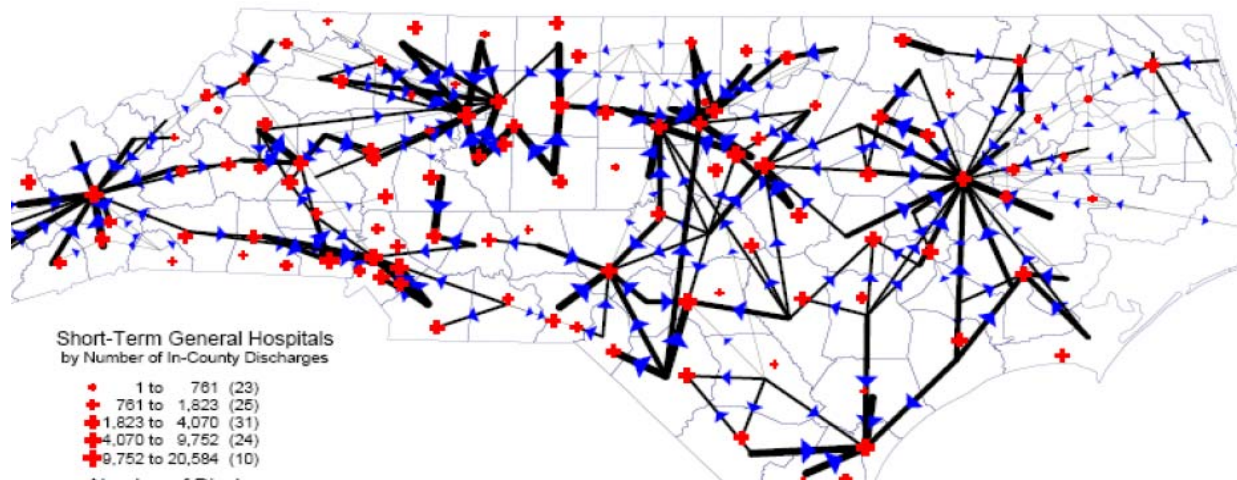
HWTF is a state agency that receives 25 % of the state's share of the tobacco settlement dollars. It has an annual budget of over \$40 million which it uses to fund over 300 healthcare grants and programs with non-profit and governmental agencies. It also enters into service contracts with for-profit vendors for statewide social marketing and interactive services that are identified through a competitive bidding process. HWTF provides comprehensive oversight of these large public funds through active fiscal and programmatic monitoring. It ensures that all of its funded programs are in compliance with applicable state and federal audit standards on an ongoing basis.

4.3 Sustainability/Business Plan

In January of 2009, significant initial work was completed by NCHICA as part of their NHIN Trial Implementation Contract to develop a sustainability and business plan for North Carolina. The following analysis was included in this work effort.

Medical Trading Area Analysis

This MTA analysis assists in determining the number and location of potential customers for the CHIO. This analysis is used to determine what clinical service providers and specialty procedure and testing physicians would be needed as participants in a CHIO to provide the vast majority of the clinical results, reports, and documents necessary to meet the goals of the CHIO's users. The —region□ covered by a CHIO must be big enough to support expense and resource requirements. Within North Carolina, several of the potential Regional breakdowns possible are indicated by these maps, drawn from available information. A more thorough analysis may provide further insight to the types of HIE initiatives best suited to meeting the needs of each region. The first map was drawn by the Cecil G. Sheps Center for Health Services Research at UNC – Chapel Hill based on hospital discharges, and shows that the major hospitals in the state draw the majority of their patients from some form of —geographic funnel, with the clearest illustration being the referrals to Greenville.



North Carolina Map of Discharge Summaries (Sheps Center)

Financial Modeling and ROI Scenarios

NCHICA conducted an extensive process of developing revenue and expense assumptions, modeling those assumptions, and running return on investment scenarios. The financial analysis modeled the multi-tiered relationship of patients, physicians, hospitals, and community HIOs spanning the entire state to construct scenarios based on various scaling parameters. Through this work, NCHICA demonstrated that in Year Four the NC HIE, through a combination of local HIOs and the statewide coordinating HIO, cumulatively would reach breakeven and that subsequent years would deliver benefits in excess of costs. Based on assumptions for costs and benefits, average net per capita benefits from HIE in NC could total almost \$700 annually by 2015. Likewise, if standards-compliant HIEs are made pervasively available, the healthcare spending for North Carolina could be reduced by almost \$1.5B a year by 2015. All these financial benefits are accrued beyond those realized through improvements in quality of care and effectiveness, giving evidence that quality can also cost less.

Creation of Business Model Scenarios

Through its NHIN work, NCHICA identified multiple business models that could be implemented in North Carolina. They are as follows:

- **Free Market** models are at the private funding end of the continuum where a separate business such as a community portal would provide enough value for people to pay for its use.
- **Recaptured Waste** which is a cost avoidance model is next on the continuum toward public funding options where savings from streamlined clinical and administrative processes flow back into HIE operations.

- **HIE-Generated Revenue** or —pay to play² is a model where subscription and/or transaction fees are charged for use of the exchange by hospitals, physician practices, data sources and research organizations.
- **Value-based** models require stakeholders to pay fees based on value received from participation in the HIE.
- **Employer-based** model is near the public end of the continuum and is a way for employers to provide funding support for an HIE through premium surcharges.
- **Public Good** models represent the other end of the continuum from Free Market models and apply taxes or surcharges, spreading cost across the largest number of stakeholders

Although significant, cutting-edge work has been completed by NCHICA, this analysis requires some modification, post ARRA passage, as well as the incorporation of operational details. NC HIT COLLABORATIVE, with assistance from NCHICA, will be developing the final business and operational plan for submission to ONC in the first quarter of calendar year 2010.

Next Action: **Utilize the modeling tool that was used for the analysis summarized above with modified parameters and variables. Model a statewide shared services implementation.**

5 Technical Infrastructure

5.1 Overview

North Carolina is committed to the overall goal of improved healthcare delivery through information integration across communities of physicians, hospitals, labs, payers and the like. North Carolina is also committed to facilitating the adoption of electronic health records by providing the technical infrastructure needed to build out capabilities specific to “meaningful use” criteria. The goal of realizing “meaningful use” is challenged by several factors. First, the current funding potential will not support the deployment of multiple HIE platforms across several regions. Second, the time frame for realizing meaningful use is very compressed and those states just beginning HIE deployment will be pressed to fully support these initiatives. Third, the variability of technical environments across healthcare organizations is something that has plagued information exchange between disparate systems for decades. Given these current challenges, an innovative and cost effective strategy is critical for achieving the aggressive goals set before healthcare organizations.

Requirements of Health Information Exchange

At a high level of abstraction, there are three core requirements of health information exchange: 1) the ability to resolve a patient's identity across disparate data sources; 2) the ability to integrate data across disparate data sources; 3) the capability to control access to patient-centric information. Although when you move to a lower level of abstraction the complexity expands, the basic requirements for exchanging healthcare data remains the same. What this means is that whether you are building technical services specific to HIE within an urban community or rural community; whether you have twenty healthcare providers who want to exchange data or five, the three core requirements must be met. Therefore, given there are these core requirements, regardless of location, a technical solution that meets these requirements can be leveraged across multiple environments. Services that provide the needed functionality do not have to be built for each instance of need, but can be "shared". Although this is an over simplification of a complex technical challenge, the same holds true even as complexity increases and with complexity comes a need for flexibility and adaptability.

Solution Development: Shared Services

The ability for communities of healthcare providers to share HIE services is a strategy being adopted by several states and encouraged by ONC. In order to reduce risk and overall costs, state-level HIEs are aggressively pursuing implementation strategies for scalable architectures and shared infrastructure across multiple data providers and consumers. A key component to building the technical framework to advance interoperability is the recognition that state-level HIEs offer the potential to create and leverage shared services across a wide range of stakeholders. Use of IT in other industries demonstrates that shared services, when implemented effectively, can: 1) provide process rationalization, repeatability and predictability; and 2) decrease redundancy and complexity, further reducing costs and improving reliability and improve the use of scarce, often expensive, resources.

The trend towards implementing a shared services framework to centralize back office and finance functions began in the 1980s. The driving force behind the vast majority of firms that embraced the shared services trend was the benefit of cost savings via:

1. Improved efficiencies, manifested in a reduction in cost;
2. Elimination of redundant activities and processes
3. Realization of economies of scale
4. Enhanced ability to leverage technology

Solution Development: Web Services Implementation of Service Oriented Architecture (SOA)

Shared Services are an important step towards SOA since the practice of sharing is already agreed upon. Shared services are SOA candidates. Once a SOA service is implemented, outsourcing becomes an option too since interfaces and SLAs are already in place.

SOA represents an **open, extensible, federated, composable** architecture that promotes service-orientation and is comprised of autonomous, QoS-capable, vendor diverse, interoperable, discoverable and potentially reusable services, implemented as Web services. Individual units of logic that exist autonomously are “services”. Benefits of a service oriented environment are well documented and include:

- Increased Intrinsic Interoperability
- Increased Business & Technology Domain Alignment
- Increased Federation
- Increased ROI
- Increased Vendor Diversification Options
- Reduced IT Burden
- Increased Agility

Therefore, the ability to share common services based on common needs by provisioning a shared services environment, coupled with the flexibility of a service-oriented platform, economies of scale can be realized which has great value in the current environment. Given the challenges outlined above a solution for meeting a business need by leveraging technical services that are shared and deployed via Web services is being proposed as a statewide solution for HIE.

5.2 Deploying HIE Across North Carolina: Communities

The key organizing principle for creating a comprehensive, statewide HIE strategy is the “community”. Healthcare delivery is local and the core foundational component upon which any health information exchange initiative is built is the community. The success of health information exchange is not dependent upon technology. Rather, success is dependent upon the collaborative spirit of stakeholders within a community itself who agree to health information exchange. It is upon this foundational component that North Carolina will build and deploy a statewide HIE strategy.

Given the current environment as discussed above communities may choose to leverage a shared service environment being provided by the SDE for North Carolina. However, in no way does sharing services imply that the community focus is absent or community identity negated. Indeed, communities retain the ability to define HIE requirements and priorities. But, for those communities who are able to fund the development, implementation and management of an HIE infrastructure, NC HIT Collaborative

fully supports that choice and will provide the standards for interoperating with the state's Shared HIE Services environment.

5.3 Deployment Topology: Federated Architecture

In support of community-based health information exchange, as well as data security and privacy concerns, the preferred deployment topology for the NC HIE infrastructure is federated. In a federated architecture, there is no centralized database where all patients' medical data would be stored. Instead, in the federated approach, each healthcare organization has **ownership** and **local control** of their patient's healthcare data (the data is stored locally).

An edge server that sits behind an organization's firewall can be deployed at each participant organization's firewall, and stores an index of patient identifying information and clinical data and provides software components for matching and integrating patient-centric data.

The rationale behind the choice of a federated architecture includes:

1. Distributed patient database and clinical data repository
2. Participant organizations maintain local control and ownership of their data
3. Scalable architecture: easy to expand
4. Reusable architecture: easy to deploy value-added services on top of the core service infrastructure
5. Flexible Architecture: easy to be integrated with other standard based networks

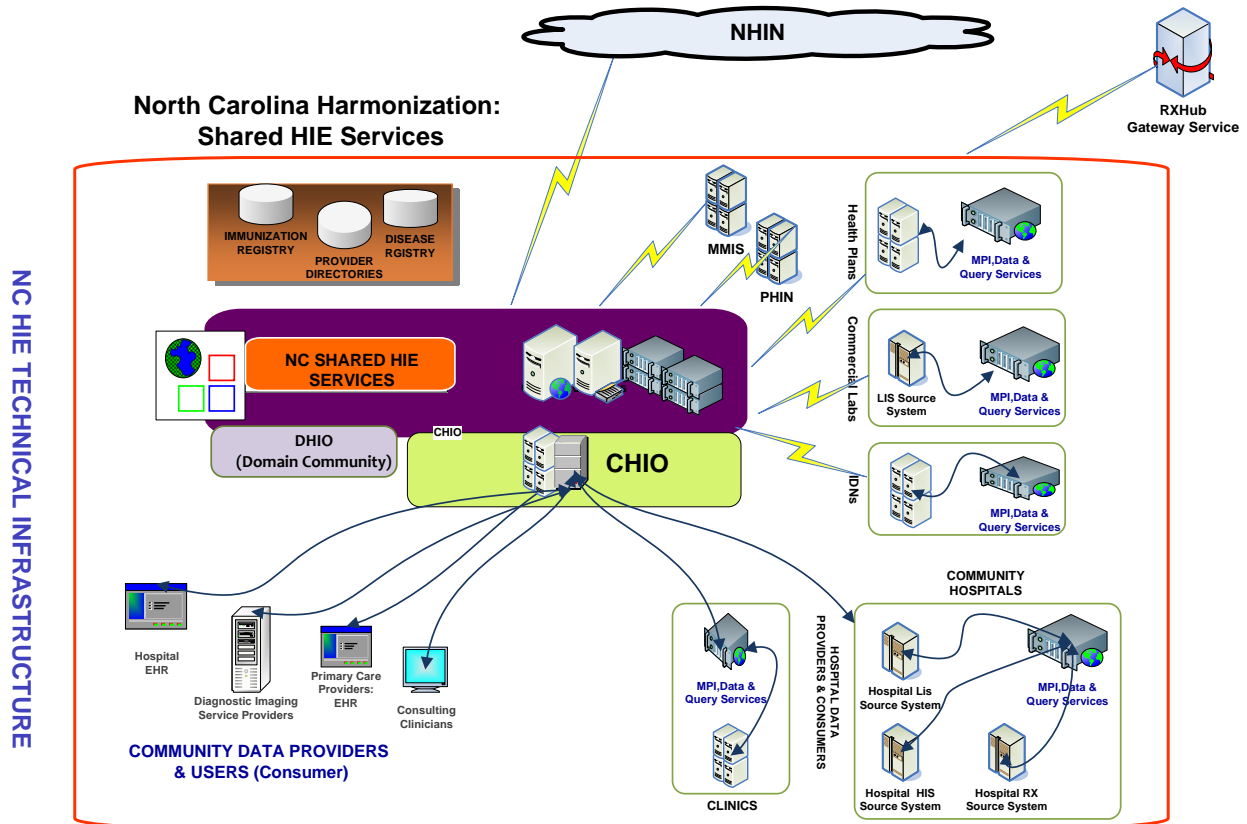


Figure 3: NC HIE Technical Infrastructure

Figure 3 shows the proposed technical infrastructure of the NC HIE at a high level. The following description below provides an overview of the deployment topology as well as potential participants by type of organization or provider.

Community Health Information Organization (CHIO): healthcare information exchange among stakeholders within a defined geographic area within a federated, but shared services environment. An example of a CHIO would be “Coastal Connect”, an initiative described earlier in this document. To support the development of Community HIEs, a Community Working Group has been formed by NC HIT COLLABORATIVE and charged with creating a model for convening and organizing health exchange initiatives, as well as the creation of specific geographic communities across the state based on the CCNC network of providers.

Each defined community will be designated as a “Community Health Information Organization” (CHIO). The CHIO Support Model below represents the components being developed by the Community

Workgroup. This work is expected to be completed by mid October. The support model will include modules on:

CHIO Support Model

1. Support & Tools for Convening & Organizing a Community
2. Governance Framework
3. Standard Data Use & Reciprocal Agreements
4. Technical Services:
 - a. Core HIE Exchange Services
 - b. EHR Support Services
 - c. Web-based Query Application

Domain Specific Health Information Organization (DHIO): health information exchange among stakeholders that have a special interest or focus. For example, “SoPHIE” described earlier in this document would be designated as a domain specific HIE.

NC Shared HIE Services: all services specific to HIE – application, data, integration, security and infrastructure services are provided to Community and Domain specific HIEs within a shared services environment to leverage “economies of scale”.

National Health Information Network (NHIN): through the NC HIE, access is provided to the NHIN for the exchange of data across state boundaries and federal agencies.

Integrated Delivery Networks: groups of healthcare providers who are organized based on geographic location or clinical specialty. An IDN may connect directly to the state to access specific state-based data sources and services, as well as exchange data with Community or Domain specific HIEs.

State Agencies (NC Medicaid and Division of Public Health): interoperability across state agencies

Data Providers/Consumers

Participating provider organizations within a community can act as data providers, data consumers or both. For example a hospital might act as a provider of ADT data, but act as a consumer of outpatient clinical data such as lab results or medication history when treating a patient presenting in the emergency department.

In the near term, physicians will more likely be data consumers, rather than data providers given the nascent implementation of EHR applications. This will change as EHR applications are deployed and adoption increases as a result of support from North Carolina's Regional Extension Center. Other community based participating organizations could include other ambulatory providers such as radiology facilities, regional labs or outpatient surgical centers.

Statewide Data Providers/Consumers: There is an opportunity to leverage data providers that serve patients across the state such as commercial labs. Another state asset that will be leveraged is the informatics center CCNC. CCNC has launched an informatics center and will be an important data provider for the state of North Carolina. In the near future, the Informatics Center will be 1) incorporating additional information sources to support these initiatives, including real-time hospital data, point-of-care pharmacy data, laboratory results, and Medicare claims; and 2) expanding our user community to allow direct access to information by external providers involved in the care of program participants. Other major payers in the state include BCBSNC, the State Health Plan, Cigna, United, Aetna, and others must be included in a comprehensive plan for sharing quality data and clinical information for improving the health of ALL North Carolinians.

5.4 Technical Architecture

North Carolina's Approach to Technical Design of Information Infrastructure

While the promise of shared services is widely embraced, the options for bringing full interoperability to scale vary and are influenced by the configurations of healthcare providers, purchasers, payers and supporting organizations, which can differ significantly from state to state.

Moreover, state-level HIEs must navigate the various technical implementations, business cases, and operational scale from a range of existing and emerging data networks including local exchanges, integrated delivery networks, aggregators of data for public health and quality purposes, clearinghouses, disease registries, and regional and national data processors. In this complex environment, sound architectural design principles, standards and proven design patterns must be leveraged, all of which is directed by "Guiding Principles".

5.5 Guiding Principles

The following are guiding principles for developing the technical architecture of the NC Shared HIE Services:

- The NC HIE architecture must be flexible and adaptable to accommodate existing and emerging HIE implementation scenarios.

- Given the potential total funding amount available to North Carolina, funding multiple HIE platforms is not feasible.
- The NC HIE strategy must be aligned with “meaningful use” criteria as defined by the federal government.
- The NC HIE architecture must align with NHIN core services and specifications.
- The HIE platform will be vendor and technology neutral. Service-oriented architecture will be in alignment with but neutral to major vendor SOA platforms.
- Privacy and security services will comply with all HIPAA requirements and applicable federal and state regulations.
- Community HIOs across North Carolina will be able to exchange health information, as well as connect to the NHIN through the NC Shared HIE Services environment.
- Access and exchange services will be provided in order to leverage existing statewide information assets such as CCNC INC, PHIN, MMIS, commercial laboratories, and IDNs.

5.6 Objectives/Defining & Prioritizing Services

Objectives. The technical infrastructure will be driven by statewide healthcare objectives and priorities. In order to first define and rank the goals and then build the necessary consensus to support deployment, North Carolina’s governance structure must be implemented and stakeholders engaged.

Defining Shared Services. Core services and functions that are valued across a wide range of stakeholders and don’t pose disruptive or competitive challenges to existing and planned systems must be defined.

Selecting and Prioritizing Technical Services. Often HIE initiatives face difficult decisions between supporting near-term HIE solutions and investing in services that would advance the longer term goals of full interoperability. In evaluating technical services maximizing value vis-à-vis the costs for creating systems to support statewide interoperability must be considered. The following criteria will be used to assess candidate services across the following criteria: (1) the clinical value generated (e.g. quality improvement), (2) the degree of competition for the service, (3) the breadth and depth of potential clients, (4) anticipated net revenue and return on investment, (5) technical difficulty; and (6) costs for service provision.

Action: Through a collaborative process driven by the NC HIT Collaborative, define and prioritize statewide HIE services to be developed.

5.7 Supported Services

A core set of capabilities are needed to promote the secure exchange of data among stakeholders in North Carolina. This list of services is roughly based on the list of HIE core services identified in the summary report of the NHIN Architecture Prototypes and are described below:

Type of Service	Service
Data	Services that facilitate the exchange of clinical and administrative data.
Stakeholder Services	Services in this category allow entities connected to the NC HIE to discover the identities of the other users and organizations with the network.
Consumer Services	Creating a patient-centric HIE requires services to allow patients to access their clinical data, and to control access to their clinical data.
Security	The NC HIE must provide services to ensure that security is enforced in all operations of the HIE.

5.8 Meaningful Use Services

North Carolina will align its health information exchange implementation and priorities with the current federal definition of meaningful use to ensure that its eligible providers are able to demonstrate meaningful use and are positioned to receive the maximum incentive reimbursement and avoid future reimbursement penalties. With reaching meaningful use as an imperative, the following, immediate priorities are delineated to support Medicare and Medicaid providers:

- Electronic eligibility and claims transactions
- Electronic clinical laboratory: ordering and results delivery
- Electronic public health reporting
- Prescription fill status and/or medication fill history
- Clinical summary exchange for care coordination and patient engagement
- Quality Reporting

5.9 NHIN Gateway Function

One of the core functions will be to act as a gateway to the NHIN for Community HIEs. This does not imply that other HIEs operating within North Carolina are barred from becoming an NHIE if they qualify. Although the mechanism does not exist today, it is expected that the Department of Health and Human Services Office of the National Coordinator for Healthcare IT (ONC) will establish standards that HIEs must meet to become and remain a Certified NHIE, that is, an HIE that has been certified by the ONC to be a registered member of the NHIN and thus designated as an NHIE.

5.10 Patient Identity Management

Patient Identity Management is a key requirement for any HIE. Patient Identity Management is the ability to ascertain a distinct, unique identity for an individual (a patient), as expressed by an identifier that is unique within the scope of the exchange network, given characteristics about that individual such as his or her name, date of birth, gender, address or prior addresses, and identifiers such as medical record numbers or driver's license number. By Q1, 2010, the Governance Body and applicable workgroups will establish policies for performing deterministic matching of patient identities, such as confidence intervals for asserting a matched identity. These policies will include how ambiguous matches are handled, and how erroneous data can be corrected in the statewide MPI.

5.11 Identity Proofing

The Governance Body of North Carolina will determine the policies and procedures specific to a patient's ability to access to their own healthcare information and potentially the information of others for whom they act as a "care manager", through the NC HIE, using a PHR or similar application. The NC HIE must adopt policies describing the requirements for patients to be identity proofed before being granted access to the NC HIE. A similar policy should describe the requirements for identity-proofing clinicians and other users of the HIE, though this is usually less problematic as the employers of these types of users can be expected to have procedures to verify the credentials of an individual before granting them access to systems containing patient records. It will also be necessary to support a de-credentialing process when a provider/employee changes status.

Access Control/User Management

The purpose of an HIE is to allow a set of individuals referred to as "users" to access healthcare information about another set of individuals referred to as "patients." These are not disjointed sets of individuals, since: a) doctors, nurses and other healthcare providers ("users") may also be patients, and b) patients who are not healthcare providers have rights to access their own healthcare information (and those of their children/dependents), and may be granted rights to access information about others

whose care they manage (such as an elderly parent). In this context, the person accessing the information would be considered a “user.”

User Identity Management

The NC Shared HIE Service will leverage the North Carolina Identity Service (NCID). NCID is a standard identity management and access service operated by the North Carolina Office of Information Technology Services and provided to state, local government, business and citizen users. The service allows organizations to use a common identity across connected applications for purposes of controlling access to online resources.

NCID acts as an identity provider for the federated identity management domain being established in state government. NCID handles user account provisioning by sending account updates (including password changes) to affiliated applications.

NCID provides the ability for administrators to manage user IDs for users within their organizations. So an administrator within one organization (the NC Department of Agriculture, for example) has the authority to create or modify user IDs for employees of the Department of Agriculture, but not for employees in the Department of Corrections.

User Identity Management and NHIN Standards

The NHIN Cooperative Technical and Security Committees have defined a common security header for all transactions on the NHIN. This security header (defined in the NHIN Trial Implementations Authorization Framework specification) requires the use of the Secure Access Markup Language (SAML)

Access Consent

A person-centric approach is currently being considered. A person-centric approach means that patients have significant control over who may access their healthcare information and for what purpose. There are a number of factors that may influence the degree to which the concept of a “patient-centric” HIE may be put into practice which include: 1) State or federal laws that may compel access or deny access in certain situations; 2) Healthcare providers who may have strong desires to restrict access to certain information until they have reviewed that information with consulting specialists or with the patient; and 3) Community HIEs and organizations may choose to give patients differing rights to participate in the HIE network.

Given these potential competing factors, the technical architecture must be provisioned to support a wide variety of access consent policies. The facilities and protocols to exchange policies across organizations must be developed.

Clinical Data Content

The following Clinical Document content types will be used as foundation standards for exchanging information in North Carolina. A Technical Standards workgroup will be created who will review and assess the standards below and then make a formal to the Governance Body.

1. **Summary Documents:** The recommended standard for Summary Documents is the Continuity of Care Document (CCD), defined by HL7, and profiled by HITSP and the NHIN Cooperative. The committee recommends that CCD documents be created to encapsulate information from a single “patient encounter. The Medication History and Allergies document can also be encoded using the HL7 CCD.
2. **Laboratory Results:** This information should be encoded as described in the IHE XD-Lab Document standard. Although Lab Results can be included in the CCD, the XD-Lab document has specific profile elements that describe how to encode unique elements related to the laboratory domain, such as the origin of specimens and the relationship between the specimen and the results.
3. **PHR documents:** This information should be encoded using the HL7 CCD and the other formats listed here when the corresponding data type is being presented. This capability should be developed to support the ARRA requirement that health information about a person in electronic form be transmitted to that person in electronic form upon request.
4. **Scanned Documents:** These documents should be encoded as described in the IHE XDS-Scanned Document profile. This profile describes encoding a PDF document or plain text document as binary-encoded data inside the “non-structured” section of a CDA document. This standard calls for the use of the same structured metadata that applies to other document types to apply to scanned documents, allowing for robust searching and management of this inherently unstructured data.
5. **Radiology reports and images:** This clinical information will follow the content standards prescribed by the standards of the Digital Imaging and Communications in Medicine (DICOM), including the DICOM Structured Reports standard for reports. The format for images may follow

the DICOM standards, or may simply use images viewed in a web browser, depending on the protocols used for exchanging these images.

Coded Healthcare Vocabularies

Providing healthcare data in a common structured format is the first step in enabling an EHR system to process and understand information created in a different EHR system. To enable complete “semantic” interoperability, a common vocabulary must be used between the two systems. Standard healthcare vocabularies, often referred to as “coded” vocabularies, because of their use of alpha-numeric codes rather than English words or mnemonic phrases, are used to represent such concepts as symptoms, diagnoses, laboratory tests and results, admission types and medications.

A set of standard vocabularies have been published by the same standards agencies that defined the document formats. Adoption of these vocabulary standards is likely not achievable in the short term. Nonetheless, the NC HIE should set a target for the use of standard healthcare vocabularies wherever possible, and should assist providers, their vendors and Community HIEs in achieving compliance with these vocabulary standards. The use of these common coded vocabularies is necessary to move beyond the mere exchange of healthcare information towards a more robust use of healthcare information in both treating individual patients and in analyzing population data to discover trends, track outcomes and improve quality.

The NC Shared HIE Services will provide a healthcare vocabulary service that can be accessed by all participants. This service can serve as a centralized “reference” repository for the vocabulary standards recommended for use in the NC HIE, and can also provide translation services to map non-standard vocabularies to the recommended standards.

5.12 Shared Directories & Registries

North Carolina will develop shared directories and technical services, as prioritized by the Governance Body and include: 1) Providers (e.g., with practice location(s), specialties; 2) Radiology Service Providers; and 3) Immunization Registry

		2010	2011	2012	2013	CHIO 1
	UTILITY SERVICES					
Core Services	Patient Id Resolution Svc: MPI & RLS					2010
	Access Control/Security Services					
	Integration Services					
	EMR Data Service					2011
	Healthcare Vocabulary Service					2011
	Provider Registry				2013	2013
	Immunization Registry				2013	2013
	NHIN Gateway				2013	2013
	TASK SERVICES					
	Electronic Eligibility and Claims				2013	2013
	Electronic Prescribing and Refills					2011
	Electronic Clinical Lab ordering and Results					2012
	Electronic Public Health Reporting				2013	2013
	Quality Reporting				2013	2013
	RX Fill Status and/Med Fill History					2011
	Clinical Summary Exchange (CCD)				2013	2013
GOVERNANCE						
Master Consent/Participation Agreement					2010	
Master Data Sharing Agreement (DURSA)					2010	

Table 3: Service Implementation Estimate

5.13 Service Implementation Projected Timeline

Table 3 above depicts a projected timeline for deployment of specific services. Task services are business process centric, while utility services are cross-cutting services. The actual deployment of specific services will be driven by priorities set forth by the NC HIT Collaborative based on community needs.

5.14 HIE Services Deployment Scenarios

Given the compressed time frame for meeting meaningful use requirements, every state is challenged achieving aggressive HIE objectives and rapid expansion of E.H.R. capacity. If both components are in a nascent state, then a parallel development strategy based on an incremental approach must be adopted to reach all geographies and providers across the state. The success of this approach is contingent upon the ability to leverage existing HIT resources, funding opportunities and alignment of strategies across state agencies and the private sector.

NC SHARED HIE SERVICES CAPABILITY DEVELOPMENT LIFECYCLE

	NHIN-COMPLIANT HIE SERVICE	HIE SERVICE BUILD-OUT		
NCSHS	CORE HIE SERVICES & ACCESS TO CLINICAL DATA VIA WEB APPLICATION	ADDITIONAL CLINICAL DATA SOURCES	REAL TIME CLINICAL ORDERS/ RESULTS	EXCHANGE OF PATIENT DATA ACROSS PROVIDERS

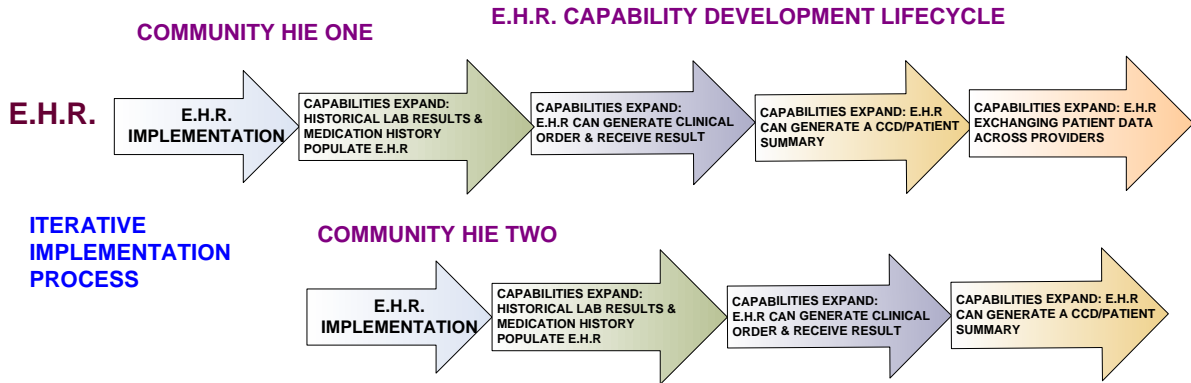


Diagram 4 BUILDING HIE SERVICE AND E.H.R. CAPABILITIES SIMULTANEOUSLY TO RAPIDLY EXPAND CAPACITY

Diagram 4: Capacity Expansion

The diagram above depicts a parallel development and deployment strategy to rapidly expand HIE and E.H.R. capacity. Although deployment of statewide HIE services will begin in parallel with E.H.R. deployment, specific HIE services could be targeted for early development that would facilitate more rapid adoption of E.H.R applications.

For example, one of the challenges of building adoption among users of newly deployed E.H.R. is the fact that these applications do not arrive in a provider’s office “shovel ready”. There is no historical information and very little, if any, basic patient demographic information. By providing a data stream of historical lab results and medication history to clinicians who are in the process of installing an E.H.R., adoption curves may increase at a more rapid pace than has been seen before. As a next step, real time lab orders and results could be deployed leveraging a statewide commercial lab which is contracted with the state to provide services and has a substantial market presence in North Carolina.

This is just one example of a deployment scenario. A deployment roadmap will be developed based on priorities set forth by the Governance Body during development of the operational plan.

Action: The Technical Infrastructure Group will develop a deployment roadmap and present the recommendation to the NC HIT Collaborative.

6 Business & Technical Operations

6.1 Statewide Services Operations

Under the leadership of the NC HIT Collaborative, a governing body will be established with the authority and responsibility to support HWTF in its role as the technical operator of the NC Shared HIE Services that will be responsible for the following operational activities.

- Development of the NC Shared HIE Services solution in collaboration with the Architecture Advisory Board (under the Governance Board)
- Securing consensus on technical design and approach
- Direct and manage the design and development of the service architecture, service inventory and service design
- Develop and manage RFP and processes
- Contract and with vendors for the hardware, software and services to implement HIE. Manage vendor contracts
- Deployment /management of TOGAF (framework for developing enterprise architecture)
- Service as the central hub for statewide or national data sources and shared services

6.2 Services Provided to Community HIEs

- Development and management of the CHIO support model
- Technical support to Community HIEs

CHIO Support Model

1. Support & Tools for Convening & Organizing a Community
2. Governance Framework
3. Standard Data Use & Reciprocal Agreements
4. Technical Services:
 - a. Core HIE Exchange Services
 - b. EHR Support Services
 - c. Web-based Query Application

The services depicted in the diagram represent an example. The Governance Body, which is currently being developed, will prioritize the service offering and determine the deployment roadmap for HIE service build-out. Further, these priorities and overall strategy will have to be aligned with the HIT strategy of DHHS (Medicaid/Medicare) and North Carolina's REC. That alignment is currently in process.

6.3 Business Operations and Administration

The business operations of the NCHIE will require strong financial management in the form of grant management, federal funding accounting, oversight and management. The communications, committee support and education process will be managed by the Operational Lead for the organization. HTWF has a strong management and operational team already in place to support federal contract management and accounting functions. They are also a well respected leader in communications, collaborations, planning and resource management. The operations will further be supported by consultants and contractors.

7 Legal & Policy

7.1 Overview

The efforts of many volunteers in the public and private sector in North Carolina over the past five years have culminated in the beginning of a shared vision for enhancing the use of information technology in North Carolina that can be implemented in the next three years. That vision was proposed by the North Carolina Health Information Technology Strategic Planning Task Force¹, (hereinafter, “HIT Task Force”). In this report, the vision was articulated as a set of high level recommendations for the utilization of health information technology to improve health and healthcare in North Carolina:

“Create a shared state vision for HIT that will:

- a. Assure privacy and security of health information;*
- b. Improve healthcare quality and coordination – behavioral and physical;*
- c. Improve healthcare safety;*
- d. Reduce healthcare costs or create efficiencies;*
- e. Assure the education of NC health professionals (current and future) to incorporate HIT into their practices;*
- f. Enable individuals, providers, and communities to make the best decisions for improving consumer and population health; and*
- g. Enable appropriate health services research.”*

This vision is a result of years of stakeholder input that provides the basis for the development of a comprehensive privacy and security framework to implement core privacy principles, adopt model trust agreements, harmonize privacy and security policies and enact oversight and accountability mechanisms to support the implementation of HIE in North Carolina.

Currently a Governance Body is being developed as there was no formal governance structure for HIE in North Carolina. The Health Information Security and Privacy Collaboration (HISPC) has accelerated and broadened the reach of earlier efforts to bring key stakeholders together to formulate and implement intra-state and inter-state privacy and security policies to advance regional, state and national electronic health information exchange.

¹ Improving Health and Healthcare in North Carolina by Leveraging Federal Health IT Stimulus Funds: Health IT Strategy for Electronic Health Records (EHR), Health Information Exchange (HIE), Enabling Laws and Policies (Quality) – A Report From the North Carolina Health Information Technology Strategic Planning Task Force, June 24, 2008.

A formal governance structure is currently being developed for HIE privacy and security in North Carolina. The Health Information Security and Privacy Collaboration (HISPC) has accelerated and broadened the reach of NCHICA's efforts to bring key stakeholders together to formulate and implement intra-state and inter-state privacy and security policies to advance regional, state and national electronic health information exchange.

The Governance Body will leverage the work and the lessons learned through HISPC to formulate a Privacy and Security policy development strategy. The mission of the Governance Body is to ensure that appropriate policies are in place to foster the meaningful use of HIE in North Carolina for the purpose of improving the quality, safety, and efficiency of healthcare.

As a first step, a workgroup formed by NC HIT Collaborative was charged with reviewing the guiding privacy and security principles developed by the HIT Task Force in July 2009 in order to begin the foundational work needed for creating a more formal structure under a larger Governance Framework. In addition, the workgroup was to ensure that these principles were consistent with the HHS National Privacy and Security Framework published in late 2008. The revised Task Force's Guiding Privacy and Security Principles are as follows:

- The HIE system must be transparent.
- Healthcare consumers should be given a clear and understandable statement of the purposes for which their information will be used and disclosed.
- Consumers should have access rights that permit them to see and obtain copies of their health information in a simple and timely fashion².
- Consumers should retain the "right to amend"³ their records as appropriate to ensure accuracy, completeness, and timeliness⁴.

² This principle is not to be construed as a recommendation for abrogation of existing exceptions to the right of access as codified at 45 C.F.R. § 164.524(a).

³ As defined by the HIPAA Privacy Rule.

⁴ This principle is not to be construed as a recommendation for abrogation of existing exceptions to the right of access and amendment as codified at 45 C.F.R. § 164.526(a)(2).

- Consumers should retain the right to request and receive, in a timely manner, but without imposing an undue burden on responding entities, information regarding the actual collection, use and disclosure of their health information.
- The timely availability of accurate, complete and current health information is essential to improving the quality of healthcare delivery and results. Policies and procedures should support this need.
- Entities that create and manage consumer health information must take reasonable steps to ensure it is complete, accurate, and up-to-date to serve its intended purposes.
- Consumer health information should be accessed, collected, used and disclosed only to the extent necessary to accomplish permitted purposes.
- Procedures to enact consumer permission to use and disclose individual health information should be developed and used. Such policies should be consistent with applicable law and state-wide policies regarding appropriate use and disclosure of health information.
- Technical, administrative, and physical safeguards for confidentiality, integrity, and availability of protected information should be built into the system.
- Transparent accountability and enforcement of compliance with security processes are essential to maintain confidence and the widest possible use of HIT.

7.2 Privacy & Security

A top priority of North Carolina's health information exchange strategy is ensuring that policies protect privacy, strengthen security, ensure affirmative and informed consent and support the right of North Carolinians to have greater control over and access to their personal health information as foundational requirements for interoperable health information exchange.

These policies will also serve to build consumer trust in health IT and HIE by reassuring consumers that their health information will be shared securely and only for purposes permitted or required by law or as authorized by the consumer. Public confidence in privacy and security standards requires both that the standards fit our principles and the ordinary consumers can readily see that the standards protect their interests in the privacy of their health information. This requirement to be visibly and actually protective from the consumer's viewpoint will foster trust and confidence in health information exchange.

The development of privacy and security policies, as well as standards will ensure that healthcare providers are able to obtain needed patient health information in a timely manner without undue cost and administrative burdens.

One of the first tasks for the Privacy and Security workgroup will be to convene and propose changes necessary to interpret these principles in the context of both existing law and the principles set forth in HHS' "Nationwide Privacy and Security Framework for Electronic Exchange of Individually Identifiable Health Information".

The above principles are aligned with the following HIE principles articulated by the Task Force intended to guide the development and implementation of the NCHIE:

- **Appropriate privacy and security must be guaranteed.** *Individual personal health information must be protected. Consumers will accept sharing sensitive personal information if it is done on their behalf to assure that the right information is shared at the right time and for the right reasons. At times this means immediate and secure access to certain critical information from any location in the system.*
- **Adherence to strong ethical standards.** *The full trust and support of stakeholders will be enhanced by adherence to strong ethical standards, conflict of interest, and full disclosure in all business operations involving HIT.*

7.3 State Laws

Current North Carolina privacy and security laws are scattered throughout the General Statutes and the North Carolina Administrative Code. For example, the confidentiality of medical information is addressed generally in the state physician-patient privilege law (GS 8-53), but laws that more specifically govern use and disclosure of information are addressed in different parts of the state statutes that apply to different healthcare providers (e.g., G.S. 90-21.20B applies to most healthcare providers, G.S. 130A-12 applies only to public health departments, while confidentiality provisions in G.S. Ch. 122C are specific to mental healthcare providers), or that address specific categories of health information (e.g., G.S. 130A-143 addresses communicable disease information, G.S. 143-518 addresses EMS information). Variations exist with respect to when and under what circumstances individually identifiable health information may be exchanged. There are also variations in allowable and mandatory disclosures, depending on the type of information, the intended recipient of the information and the purpose of the disclosure. In sum, North Carolina law generally does not provide a single, consistent approach to privacy and security. Also, North Carolina law still contemplates paper-based third party exchanges, and is assumed to apply to information in either electronic or non-electronic formats.

- The HISPC collaborative in North Carolina identified state privacy laws in various codes and case law which may support or hinder the safeguarding of privacy and security of personal health information and the flow of information electronically. When North Carolina performed a HIPAA preemption analysis in 2001, dozens of provisions in state law were found to vary significantly from, but not in conflict with federal law, and thus not preempted. The coordination of the existing and future state statutes with federal law and with the laws of other states is vital to the success of HIE in North Carolina.
- The next steps with respect to harmonizing North Carolina laws will be to ensure North Carolina laws comply with the new laws enacted in the ARRA legislation; identify laws that are more stringent than HIPAA, and determine the extent to which such laws act as barriers to HIE; finalize the interstate agreements and/or DURSA for North Carolina and ensure that all state level trust agreement templates used by NCHIE participants are harmonized with the HIPAA security and privacy rules.
- Work will also be conducted to prioritize the public health and federal agency data sharing requirements and develop policy on enforcement of privacy and security rules for North Carolina. These areas are considered high priority in enabling the current health information exchange efforts to proliferate quickly, but consistently with standards that are promulgated by all stakeholders.

Near Term Priorities

A designated workgroup, under the direction of the Governance Body, will be charged with the following tasks:

- Review the privacy and security principles set forth by the NC HIT Collaborative working group through an open, collaborative and transparent process
- Conduct a thorough review of NC policies, laws, operations and business practices and develop recommendations for new or amended policies, laws and business practices that are consistent with the HHS National Privacy and Security Framework Comprehensive. Specifically, the workgroup will:
- Outline current NC laws, trust agreements and regulations that are in place or have been proposed that serve to advance appropriate HIE in North Carolina, including laws related to third-party disclosure and direct to consumer disclosures;
- Outline current laws, trust agreements and regulations that are outdated, overlapping, and/or impede appropriate HIE in North Carolina and identify changes expected or needed: The priority legal and policy issue areas include:

- Proposing amendments to State law to expand, in a responsible manner, the list of persons and entities to which a clinical laboratory may release test results, beyond the ordering provider as recommended by the HIT Task Force.
- Consumer privacy, including consent policy and methodologies where applicable, data use parameters, access controls, etc.;
- Model inter-organizational data sharing agreements;
- Privacy issues affecting public health;
- NHIN compatible data use reciprocal and support agreements;
- Harmonization of state law with federal legal and regulatory requirements, including, HIPAA, ARRA, 42 CFR Part 2 and the Red Flag Rule and NC ID Theft Protection Act requirements;
- Legislative and contractual solutions that address intrastate barriers to HIE, such as outdated or inconsistent state statutes;
- Legislative and contractual solutions to advance interstate HIE, including, but not limited to model safe harbor legislation for release of, or access to, health information stored in another state and ensuring accommodation of CLIA requirements for lab data exchange in all agreements;
- Conduct a detailed use case analysis for determining the efficacy of proposed legal and policy recommendations with respect to operating an HIE in North
- Develop recommendations regarding the enforcement of privacy and security regulations, agreements and policies across HIE initiatives in North Carolina of the NCHIE.

7.4 Policies & Procedures

North Carolina has long recognized the need to balance privacy concerns with ensuring broad participation in HIE. The privacy and security policies and procedures specific to HIE in North Carolina will set clear parameters for access, use and disclosure of personal health information and will adopt and enforce these and other statewide privacy and security principles that will guide all exchanges of electronic health information.

During 2008-2009, North Carolina stakeholders, through their participation in the Intrastate and Interstate Consent Policy Options Collaborative⁵ (Consent Collaborative) of the Health Information Security and Privacy Collaboration (HISPC) examined a variety of consent policy alternatives in an effort to determine what amount of choice consumers should have about the electronic access, use and disclosure of their health information, and also examined the relative utility of four legal mechanisms

⁵ For additional information, see <http://privacysecurity.rti.org/Portals/0/HISPCConsent2v6.pdf>

which states might enact to facilitate interstate HIE. In pursuing this research, stakeholders on the Consent Collaborative identified and evaluated various factors that affect the delicate balance between consumer privacy interests and affordable provider access to reliable health information through HIE. North Carolina stakeholders did not reach consensus on which of the intrastate consent alternatives evaluated might be the single best alternative. This is probably appropriate, given the complexity of the social and legal issues surrounding consent. There is still much to be learned about the legal, clinical, public health, and financial implications of permitting consumers to consent for their health information to be exchanged through an electronic HIE system.

7.5 Trust Agreements

North Carolina's involvement from the outset in the Health Information Security and Privacy Collaborative (HISPC), NCHICA's early involvement in the NHIN, co-chairing the DURSA workgroup (which is drafting the form agreement for execution by all NHIN participants), and which initially identified issues that arose in the exchange of information, has placed North Carolina in the forefront of developing and implementing standardized data exchange agreements aimed specifically at minimizing barriers to implementation of HIEs. When HISPC was extended, under "HISPC 3," North Carolina became involved in the "Inter-organizational Agreements" (IOA) Collaborative, which addressed agreements between organizations. The stated purpose of the IOA Collaborative was to develop forms for broad use, which could lessen the burden of drafting, make adoption of HIE easier, and standardize HIE agreements and the division of risk. This collaborative drafted a public-to-public form agreement that has been adopted by the American Immunization Registry Association ("AIRA"), and a point-to-point, private-to-private form agreement that was piloted in North Carolina among participants in the regional HIE that participates in the NHIN. (See the final HISPC 3 report for more information.⁶)

Based on the success of the public-to-public agreement, NCHICA assisted the states of South Carolina and North Carolina in drafting an agreement for the sharing of epidemiological data in the greater Charlotte metropolitan area (including data from hospitals in both South and North Carolina), which work was undertaken with the involvement and assistance of the CDC.

While the DURSA and HISPC 3 work had developed a number of forms for general use, one type of form was clearly missing, i.e., a form for sharing of information between a private and public entity. Serendipitously, a need for just such an agreement arose in North Carolina. Community Care of North Carolina is a system of 14 networks throughout North Carolina that provide primary care services under a "medical home" model. CCNC has created the North Carolina Community Care Network (NCCCN), a separate, private entity for the exchange of data among the 14 networks of CCNC. NCCCN and North

⁶ For additional information, see <http://privacysecurity.rti.org/Portals/0/HISPCIOAv3.pdf>

Carolina's Medicaid determined that healthcare in the state could be significantly improved through the sharing of data. After a modification to state law, NCHICA began to assist DMA and NCCCN in creating such an arrangement. At that time, HISPC 3 was extended, and the IOA Collaborative decided to draft a model public-and-private agreement. This agreement was then piloted in North Carolina and adopted by DMA and NCCCN.

The next steps for the development of Trust Agreements for the Legal Sub-committee will be to:

- Identify and examine various policy approaches that could be used to resolve barriers to interoperable HIE due to the wide variability in privacy and security requirements for HIE between networks in North Carolina and across state boundaries;
- Finalize the model inter-organizational agreements and/or the DURSA (Data Use and Reciprocal Support Agreement) for North Carolina, and to ensure that current trust agreements being utilized in North Carolina are harmonized with the revised HIPAA security and privacy rules and other applicable law;
- Work to ensure that public health and federal agency data sharing agreements are executed according to the policies and procedures established by NCHIE and Federal requirements;
- These areas are considered high priority in order to enable the current health information exchange pilots to proliferate quickly, but consistently with strong privacy and security standards that are promulgated with the meaningful input of all stakeholders.

7.6 Oversight

Whereas most 20th century state laws addressing privacy and confidentiality requirements for health information made sense in the paper-based records system, the push toward nationwide adoption of electronic health records (EHRs) and creation of a Nationwide Health Information Network has revealed the inapplicability and ineffectiveness of most of these laws to electronic health information exchange (HIE). Since the enactment of the HIPAA Privacy and Security Rules, many research efforts have acknowledged a wide variety of reasons behind the slow adoption of EHRs and healthcare providers' limited willingness to participate in HIE. A widely acknowledged barrier to interoperable HIE is the significant variability of state privacy and security requirements for HIE and the resulting variability in provider release of information practices. The variability exists among laws addressing disclosure or re-disclosure of information, disclosure of "sensitive" patient information, and disclosure of public health information, and states also have varying consent and authorization forms and requirements for release of information. Further research is needed on the different types of multistate solutions that might further HIE by harmonizing some of these laws while maintaining the heightened privacy and security protections which electronic exchange requires.

Maintaining appropriate policies and procedures supporting the secure exchange of information serves to enhance the patient and provider trust in the HIE. Without the balance of strong privacy and security rules with advanced data sharing enabling technology, the HIE would not be sustainable into the future. A critical feature for the balance of policy and implementation is the oversight and enforcement mechanism that will be provided to the system to ensure confidence in the use of electronic health information exchange. While legal harmonization, policy and procedure rationalization and provider and patient education are required, oversight and enforcement is a key component.

North Carolina has put in place mechanisms for appropriate oversight of HIE for North Carolina. The Health and Wellness Trust Fund (HWTF), was designated as the State-Designated Entity to apply for the State's share of the federal HIE grant. Since 2001, the Health and Wellness Trust Fund has established an excellent reputation in managing State and federal grants and meeting objectives and proposed timetables.

The next steps for developing appropriate Oversight and Enforcement:

- Identify and examine current systems of oversight and enforcement to leverage the policies and regulations already enacted in North Carolina
- Adopt as necessary regulations and functions within the state to harmonize the oversight already in place with those necessary to oversee ongoing HIE in North Carolina.
- Work to ensure that the public and private sector agree on an open and transparent process that support HIE while ensure the privacy and security of the individual.
- Develop policies and procedures for tracking HIE and all necessary reporting to support ARRA Breach notification requirements.
- Develop an oversight body/mechanism to create guidelines, best practices and educational materials for the oversight and enforcement of privacy and security policy.