NCHICA

Office of the National Coordinator for Health Information Technology (ONC)

NCHICA NHIN Trial Implementations Evaluation Plan

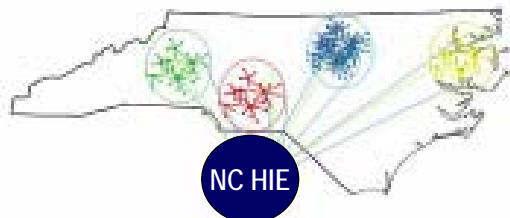**Version 1.0**

November 14, 2008

NC HIE

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1 Document Control

Summary of Changes

Version #	Version Date	Nature of Change	Date Approved
V1	11/14/2008	Initial Submission to HHS/ONC	

Document Approvals

This document requires the following approvals. Signed approval forms are filed in the Project Teamroom files.

Name	Title	Date
Holt Anderson	NHIN Project Executive and NCHICA Executive Director	11/14/08
Andrew Weniger	NHIN Project Manager	11/14/08
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Dennis Severt	IBM Project Manager	11/14/08

Document Approvals

Document owner maintains document approval for this document.

Document Review Plans

This document will be reviewed and updated, if necessary as defined below:

- As required to correct or enhance information content

- Following any organizational changes or restructuring

- Following an annual review

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Document Distribution

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2 Introduction

2.1 Purpose of the Evaluation Plan – Task #11

The purpose of this document is to present an evaluation of NCHICA's performance against the contract deliverables and requirements in the Nationwide Health Information Network Trial Implementations Contract HHSP23320074109EC and Statement of Work, and to outline a plan for evaluating future NCHICA HIE initiatives.

Task 11 of the Statement of Work (SOW) states, "The Contractor shall develop and complete an evaluation plan of the trial implementation of the NHIN. Suggested items for inclusion are: technical (standards adoption and scalability), functional, governance and relationship to technical/functional/operation efficiency, feasibility and fit in emerging market/environment, consumer satisfaction, provider satisfaction and perceived value."

Because the NCHICA HIE is not yet in a production phase, the focus of this evaluation pertains to successful completion of the NHIN Trial Implementations contract requirements and deliverables. However, this Evaluation Plan deliverable also represents a "living" methodology that will be utilized in the option years.

2.1.1 Parent Documents

The parent documents for the NHIN Trial Implementations Evaluation Plan include:

1. NHIN 2 Trial Implementation Contract with NCHICA

2. NCHICA Response to Request for Proposal No: 07EASRT 070057, Nationwide Health Information Network Trial Implementations, Volume I – Technical Proposal (July 23, 2007), (as a subordinate document).

3. NCHICA NHIN Trial Implementations Project Work Plan

4. NCHICA NHIN Trial Implementations Business Plan

3   The NHIN Trial Implementation Contract

3.1   Purpose of the NHIN Trial Implementations Project

The stated purpose of the NHIN Trial Implementations Project was for state, regional and non-geographic health information exchange (HIE) consortia to become components of the "network of networks" that forms the Nationwide Health Information Network (NHIN). The nine awarded HIE consortia were expected to develop and demonstrate an inclusive organizational governance and trust relationship among their members comprised of disparate provider organizations, competing healthcare markets, and participating consumers. Through the NHIN Trial Implementations project, each HIE would demonstrate interoperability across the various involved stakeholder environments through use of a variety of consumer applications, and provide health exchange activities and technical expertise such as that previously demonstrated in the Nationwide Health Information Network Prototype Architecture project.

NCHICA has worked closely with the other awarded HIE contractors to cooperatively develop specifications for and trial implementations of the NHIN and to test these trial implementations across the disparate HIEs. Through these activities, ONC be assured that all HIEs have worked together to implement the interoperable "network of networks," built on top of the Internet, that forms the backbone of the NHIN. The trial implementations to date have demonstrated the contractually specified "core" services including the exchange of Patient Summary Records and supported capabilities outlined in the seven stated AHIC use cases. All work performed under the contracts have been based on common NHIN standards and published specifications.

NCHICA has worked collaboratively during the NHIN Trial Implementations project with other HHS sponsored health IT workgroups and committees including:

- The Healthcare Information Technology Standards Panel

- The Certification Commission for Healthcare Information Technology

- Health Information Security and Privacy Collaboration (HISPC)

- National Governor's Association State Alliance for eHealth

- The State-level Health Information Exchange Project

3.2   Recognition of Participants

The major successes of this project have been achieved through the dedication and significant contributions of the following participants:

- NCHICA Board of Directors

- NC HIE Council,

- NCHICA members,

- The IBM Corporation

- The participation of several key providers across North Carolina:

- Carolina NeuroSurgery and Spine Associates,
- FirstHealth of the Carolinas,
- Morehead Memorial Hospital,
- Pinehurst Surgical Center
- Southern Pines Women's Health Center

Testing events and public demonstrations of core services and use case priority information exchanges would not have been possible without the commitment of all participant groups to the planning, design, testing and demonstration of these services.

3.3 Project Scope Summary

The scope of services for NCHICA's NHIN Trial Implementation project includes:

- Implementation and governance reporting for the North Carolina Health Information Exchange (NCHICA HIE).
- Implementation of data interoperability services for the NCHICA HIE provided through an IBM subcontract for the IBM hosted Health Information Service Provider (HSP) service, as described in Volume I – Technical Proposal (NCHICA's response to the NHIN Trial Implementation RFP).
- Ongoing operations of the IBM HSP Services Solution and interface development
- Earned Value Management Services
- General NCHICA PMO services, including project kickoff and PMO start-up services, Project Work Plan development, generation of project plan documents

At the conclusion of the base year of the NHIN Trial Implementations project (January 23, 2009), the NCHICA HIE will have successfully demonstrated the NHIN core services, the exchange of summary patient records, and the demonstration of the functional requirements for the following AHIC use cases.

- EHR-Lab Result Reporting (EHR-Lab)
- Consumer Access to Clinical Information (CACI)
- Authorized Release of Information (SSA)

3.4 Tenets of Success

The NCHICA proposal outlined three fundamental tenets of success that would support ONC's goals for the NHIN Trial Implementations project.

Tenet 1: The foundation and expertise required to implement and operate a robust and sustainable statewide NC Health Information Exchange through an open and participatory governance process.

Tenet 2: A shared IT infrastructure provided by IBM and built on the adopted NHIN architectural standards

Tenet 3: A strong relationship to all health information exchange efforts through the NC NHIE structure and governance organization that can ensure broad participation and cooperation throughout the State of North Carolina.

4 Evaluation of the NCHICA HIE's NHIN Project Scope of Services

4.1 NCHICA's NHIN Project Evaluation Approach - Base Year

The base year evaluation of the NHIN Trial Implementations project focuses on the NCHICA HIE's accomplishment of contract requirements and deliverables as outlined in the HHS/ONC contract, the associated Statement of Work, and upon the three self-specified tenets of success.

During the base year of this contract, the NCHICA HIE has established a governance structure which forges the participant relationships that serve as the foundation of future statewide North Carolina HIE efforts. Additionally, the NCHICA HIE has established a technical infrastructure that supports the NHIN Trial Implementations contract requirements for core services and assigned use cases. A Project Management Office has been established, and the structure supports not only the current project but may be extended to support future option years of the contract.

Future evaluations will focus on formative process oriented metrics which will be established during the early phases of operation. Later, when initiatives have been in place for several years, summative metrics that are outcome oriented will be used. (A more detailed description of these two evaluation methodologies is presented in section 7.)

The three NCHICA tenets of success have been demonstrated through accomplishment of the overall project requirements, project management effectiveness, collaborative workgroup contributions and preparation for long term sustainability of a state-wide NHIE.

4.2 Tenet 1

(Develop) The foundation and expertise required to implement and operate a robust and sustainable statewide NC Health Information Exchange through an open and participatory governance process.

Evaluation Topic	Accomplishments	Evaluation Measurement

Governance	Governance Structure has been established
	
	• **NC HIE Council**
	   o Policy Development Committee
	   o HIE Development & Technical Operations Committee
	   o Finance & Administration Committee
	   o Stakeholder Relations Committee
	   o Quality of Care & Evaluation Committee
	   o NHIN Trial Implementations Steering Committee
	   o Consumer Advisory Council
		Establishment of NC HIE Council, Mission & Charter, Committees,
		
		Used the NHIN Trial Implementations project as an initiative convening activity

Evaluation Topic	Accomplishments	Evaluation Measurement
Governance	Established the Project Management Plan based on IBM's proven project methodology (deliverable #1) • EVMS measurements (deliverable #1) • Monthly Status reports (deliverable # 4) • Subcontract agreements (6) • Established business agreements with participants • Established test DURSA (deliverable #5) • Established effective participant and vendor relationships	Comparison of the deliverables schedule to actual deliverable dates Weekly status meetings with the NCHICA team, NC participants and vendors to maintain open and effective working relationships

4.3   Tenet 2

(Implement and Utilize) A shared IT infrastructure provided by IBM and built on the adopted NHIN architectural standards and meets the needs of and the NHIN Trial Implementations Project and the NCHICA HIE

NCHICA established the NCHICA HIE architecture, using the IBM hosted Health Information which uses the NHIN-compliant Community Hubs that are operated by IBM in a hosted service provider model. The same IBM Health Information Service Provider (HSP) service enabled the NCHICA HIE to offer connection and interoperability services to the Community HIEs across the state, as well as providing interoperable gateway services to other states and vendors.

Evaluation Topic	Accomplishments	Evaluation Measurement
Technical Standards	• Compliant with AHIC/ONC standards and industry standards • Integration of 5 OEM software products • Reduced time/cost/risk to integrate with OEM software products through design, development and implementation of a standards-based architecture • Collaborative work group participation (Core Content, DURSA, Leadership, Security & Technical, Testing, Consumer and Provider use cases) (deliverables # 7, 8, 11, 12)	Comparison to AHIC/ONC requirements Contribution to work group deliverables and feedback from workgroup participants on NCHICA/IBM team performance/leadership
Feasibility and fit in the emerging market	• Successfully developed and tested Core Services • Successful completed use case testing • Successfully completed demonstration events (deliverables #10 and 13) • Established interoperability with multiple NHIEs	Results of testing events Results of demonstration events

In addition to the accomplishments above, several NCHICA/IBM team members served as workgroup participants and leaders, and made substantial contributions to the development of work products such as:

- "NHIN Core Content Specification for Exchange of the Summary Patient Record" (Primary author)
- SSA "Authorized Release of Information technical specification updates (Primary author)
- Standardization of document metadata across NHIN cooperative, HITSP and IHE - organizer
- NHIN Core Services Test Scenarios - primary author
- XDS Test Tool Conformance Test Plan – primary author

4.4   Tenet 3

(Establish) A strong relationship to all health information exchange efforts through the NCHICA HIE structure and governance organization that will ensure broad participation and cooperation throughout the State of North Carolina.

Evaluation Top-ic	Accomplishments	Evaluation Measurement

Feasibility and fit in the emerging market	• Established methodology to select NCHICA HIE participants based on interest, commitment, capability, value and partici-pant requirements as stated in the contract
	
	  o Selected 5 participant organizations out of 10 potential candidate organizations evaluated for the NHIN project
	
	• Participated in NC government entity, NC healthcare industry, and national healthcare organization meetings
	
	  o Attendee & Presenter in all categories
	
	• Attended ONC Forums (deliverable #13)
	
	  o Log of attendance maintained for all meetings. Maximum number of attendees (and beyond) at every meeting.
		Selection of NC partici-pants based on contract requirements
		
		Final listing of 5 participant organizations in the NCHICA HIE
		
		Attendance Log maintained

Feasibility and fit in the emerging market	• Established the NCHICA HIE sustainable Business Plan (deli-verable #9) covering:
	
	  o Strategic Direction,
	
	  o Incentives For Adoption,
	
	  o Key Stakeholder Financial Support,
	
	  o Funding Opportunities,
	
	  o Adapting To Emerging Market Trends And Research Opportunities
	
	• Provided ongoing mechanism for continual update of the Business Plan and Sustainability Model by the Finance & Administration Committee, reporting upward to the NC HIE Council
		Completed Business Plan
		
		Completed and submitted Sustainability Model (5 Year ROI)

5 Lessons Learned

Lessons learned represent knowledge gained through experience –positive or negative. Unless lessons learned are examined honestly and shared openly there is significant chance of repeating avoidable pitfalls in the future with little hope of enhancing future project success.

Numerous lessons have been learned by the NCHICA teams working on the NHIN Trial Implementations project. Lessons range from the difficulty of coordinating virtual teams that represent a wide range of stakeholders, to maintaining effective ONC workgroup relationships, to dealing with the impact of contract changes.

Lessons learned should be significant, valid and applicable to future projects. We offer the following lessons learned as they relate to NCHICA's three tenets of success for this project in the spirit of continual improvement.

5.1 Challenges Establishing a NCHICA HIE

- The technical ability to securely store, move and share health information in standards based electronic form across an HIE is readily demonstrable, and can be implemented with a variety of vendor systems in heterogeneous provider environments.

- The project confirmed our understanding of the misalignment between the Financial and Value Incentives of those stakeholders who invest in the implementation of HIE systems versus those who stand to gain from their use. This fact alone contributes to slow creation and adoption of HIE systems.

- The ability to store, move and share health information in electronic form across an HIE raises concerns about the privacy and security of the health information, while contributing to the slow adoption of HIE systems.

- Consistent use of data and technical standards will enable the (NHIN and NCHICA HIE) network. Inconsistency in how to transmit and receive health information *between different HIT systems* increases the cost and risk of developing and achieving interoperability, and in gaining support of the regional and state level HIE.

- Availability of NC State public funds and support would significantly accelerate the NCHICA HIE adoption and implementation. (Statewide networks require support of the Governor of the State.)

- Clinicians remain committed to the improved patient care that is possible from improved secure access to clinical information as provided by an HIE.

- Preventive care, such as the coordinated care that can be provided through the Patient Centered Medical Home model, is predicted to become increasingly dependent upon access to more complete clinical information. This will be more critical moving forward than the information that can be provided by any one health system enterprise, hospital, physician practice or other "bounded" entity.

5.2 Tenet 1

The foundation and expertise required to implement and operate a robust and sustainable state-wide NC Health Information Exchange through an open and participatory governance process.

5.2.1   Contract Management

- Overhead associated with the EVM component of this contract has incurred a 10-15% cost, removing several hundred thousand dollars from problem solving and development for HIE. These costs were not necessary given the complexity and term of the project.

5.2.2 Security and Privacy

- Developing a NC specific patient consent policy has been an important part of NCHICA's involvement in the HISPC project, and is expected to result in overall guidance which will be useful for future HIE implementations.

- There is widespread divergence between HIEs regarding consumer control over access to data. This lack of agreement makes sharing of health information between HIEs difficult to perform in a manner consistent with all consumer directives.

- The NHIN cooperative has over-architected security solutions for this phase of the project increasing complexity, cost and time lost in regard to development of the fundamental requirements.. The participants (collectively) have not accomplished some basic, required functions which are a prerequisite to definition of the required security solutions.

- DURSA issues were much more complex and difficult to resolve within and between HIEs than anticipated by ONC. Examples include, "opt in vs. opt out" repercussions when sharing data between HIEs; allowing expression of physician preferences; defining what an "emergency" situation is that warrants "break the glass" action; and federal agency participation. DURSA continues to need more focused attention with the ONC facilitating ongoing cooperative discussions to establish best practices in this area.

5.2.3 Legal Issues

- Through involvement in the HISPC InterOrganizational Agreement (IOA) Collaborative, NCHICA has developed an approach to establishing the agreements necessary between participants in HIE within NC. The IOA is closely linked to the DURSA developed by the NHIN project.

- The legal framework for widespread sharing of data within and across state lines remains a barrier to the free flow of health information, due to logistical issues exercising these agreements as well as the underlying development of trust and legal tenets.

- State specific and CLIA barriers remain that will inhibit the sharing of lab results within and between NHIEs. Priority should be focused upon resolution in these areas.

5.3 Tenet 2

A shared IT infrastructure provided by IBM and built on the adopted NHIN architectural standards and meets the needs of NHIN2 and the NCHICA HIE

5.3.1 Interoperability Standards

- The ability to exchange information in a secure standards-based method has been proven by the NHIN Trial Implementations project.

- Major issues remain, even with leading EMR vendors, in how to capture data in standard formats. Vendors are struggling to keep up with requirements and will need funding and time, as well as customer demand, for true interoperability to be realized.

5.3.2 Testing

- Although the project has achieved some success in the testing exercises, more tools are needed to efficiently test conformity of the interfaces between entities. There are only two tools available from NIST for conformance testing - XDS and Document Validators. Tools need to be developed for Subject Discovery, CPP, Audit Log query and so on.

- More testing needs to be performed with live data. Test data is structured to get positive results but more (test and live) data needs to be incorporated for exception testing.

- Improved collaboration between the Technical and Security workgroup and the Testing workgroup is required if we are to enrich the test cases and achieve compliance with the technical requirements.

- Performance testing needs to be performed. Statistical data on performance must be collected to develop the performance criteria for various interfaces.

- More focus on testing the security aspects of the interfaces was needed. The NHIN Trial Implementations project tested functional aspects of these interfaces but have not really focused on validating the security. Security tools should be used to perform the conformance testing on security.

- Testing phases should be extended by a month so that a thorough level of testing could be performed among HIE collaboratives.

5.3.3 Cooperative Workgroup activities

- Co-chairs of the use case workgroups had a difficult role to play in coordinating deliverables and demonstration related activities. They did an effective job of helping to divide the work equitably among participant groups and allowing sub-groups to manage the details of specific deliverables. They were also helpful in communicating concerns to ONC and encouraging ONC participation on the calls.

- Leadership of NHIN Cooperative workgroup activities appears to have been beyond the resources of some volunteering participants. Leadership criteria should be explored prior to future phases.

- NHIEs were not sufficiently funded to organize and lead NHIN Cooperative Workgroup activities. Leadership funding should also be explored prior to future phases.

- ONC needs to take a more active, project management based and formal leadership role in workgroup activities (ensuring equitable work distribution, dealing with low-performing participants, ensuring milestones are met, etc.)

- ONC needs to take a more active and participatory, project-management structured role in the management of delivery of the required standards in a timely fashion. The lack of this posture made it difficult and more costly for technical teams to meet testing and demonstration deadlines.

5.4 Tenet 3

(Support and provide) A strong relationship to all health information exchange efforts through the NC NHIE structure and governance organization that can ensure broad participation and co-operation throughout the State of North Carolina.

5.4.1 Participant Management

- There has been significant knowledge transfer to the NCHICA HIE's participating organizations, the NC HIE Council members, vendors and NHIN contract participants about; state and national NHIE initiatives, the importance of a standards-based technology approach(es), sharing of architectural approaches, emerging market trends, effective workgroup and testing processes, etc. This transfer of knowledge will enhance future NHIN Trial Implementations project efforts.

- The methodology used to identify five qualified and competitive participants for the base year of this contract was sound. Going forward, however, it might be more efficient to focus on one or two integrated communities. A single high value initiative will have a better chance to attract start up funding and strong community support.

- Methods should be explored to communicate the status from the NCHICA HIE team (and the project team) to the participant providers. While regular meetings have been held, communication needs to be more complete, timely, and regularly expected. (Weekly e-mails, weekly calls, etc.)

- Planning for next steps during the course of the current project could have been more formal and coordinated. ONC expectations were slow to develop and difficult to plan, communicate and coordinate for.

6 North Carolina Market Environment

Over $60 billion is spent annually on healthcare in North Carolina. Costs to provide healthcare to an increasing elderly, chronically ill and uninsured population is expected to rise faster than the GDP if drastic measures at local, state and national levels are not taken in the immediate future. To drive more value for North Carolinians and all healthcare stakeholders, a more secure, modern, connected approach to providing clinicians with patient information is required. This integrated approach is referred to as Health Information Exchange (HIE) which is the electronic movement of health-related information among organizations according to national standards. North Carolina has pockets of momentum already underway in enterprises and communities across the state but they are for the most part siloed by individual corporate interests. The NHIN Trial Implementations project under the NCHICA HIE seeks to identify and implement complementary initiatives for the overall improvement in the quality and efficiency of care delivered to all North Carolinians over the next four to five years.

There is no magic formula for the implementation of functionalities or services across all HIEs. The uniqueness of various communities of care in North Carolina will require solutions that will be supported by area business, healthcare and consumer leadership in order for the benefits from HIE to accrue to the residents statewide. However, these priorities are likely to differ across the medical trading areas. Some large and influential IDNs may select administrative data exchange as their top priority initiative while others may have an expressed need for a physician portal for the exchange of summary patient data and peer to peer communications. These various solutions may also require slightly different metrics and evaluation methods for data collection but the framework set forth by the UHF will guide the design and implementation of all evaluation efforts.

Ten HIT functionalities were identified as initiatives having potential value to stakeholders across North Carolina during the base year of the contract. The initiatives presented in the diagram below are suggestions for consideration by key business, healthcare, consumer and state government leaders for inclusion in an approved implementation plan. They were selected for inclusion in the list of possible options based upon priority initiatives executed by HIEs that have reached a moderate level of sustainability; feedback from members of the NC HIE Council, and the current state of HIE in North Carolina. The final decision selecting priority initiatives will depend upon results from a key stakeholder survey and input from business leaders who share responsibility for providing the necessary governance, technology and operations of a statewide NHIE. Implementation will require significant policy and system work to ensure that the implementation is effective and tracked.

The financial model is described in the NC Trial Implementations Business Plan. This model is centered on a program of seven staged initiatives, falling into three distinct categories: Core, Value-add and Transforming. These initiatives have support in North Carolina and have been identified by many successful HIEs across the country as being critical to sustainability. However, these program initiatives depend upon and will connect with many existing independent initiatives identified among our ten healthcare content areas. The overall statewide financial model highlighted is an attempt to construct an optimal path of initiative adoption. A detailed review of the value proposition and barriers for each of the first seven initiatives can be found in Appendix 6.3 of NCHICA's NHIN Trial Implementations Business Plan.

Illustration 6.1 Potential NHIE Initiatives

CORE + QUICK HITS
1. Summary Patient Record Exchange (ER, Out-Patient, In-Patient, Consultant)
2. Test Results Reporting (Lab and Radiology)
3. Medication Management (Meds History, ePrescribing, Meds Reconciliation)

EXTEND VALUE
4. Federal Agency Program Automation (SSA, Wounded Warrior)
5. Consumer / Provider Comm. (Permissions, Access, Secure eMail, Requests)
6. Provider / Provider Communication (Secure eMail, Referral Workflow)

TRANS-FORM
7. Patient Centered Medical Home Automation (Phys. Portal Dashboards)
8. Administrative Health Plan Data Exchange (Eligibility/Auth., EHR-Lite)
9. Population Health Automation (Registries, Case Reporting, Immunization)
10. Health Analytics (Quality Measures and Decision Support)

7 Future Evaluation Approach

7.1 Overview of HIE Evaluation Strategy

Evaluation is a key step in continual improvement of any solution, particularly one with as many stakeholders and facets as the NHIN Trial Implementations. There is a clear need to utilize standardized evaluation methodologies across all participating HIEs to determine the effect of HIE on the quality and efficiency of care and to determine the return on investment for stakeholders and society at large. That defined methodology is lacking in the NHIN Trial Implementations project.

The purpose of a standard and specific evaluation process is to:

- o   Measure usefulness of the NHIN Core Services

- o   Measure usefulness of the Use Case methodology

- o   Measure implementation effectiveness for purposes of improving community healthcare

- o   Provide recommendations that might shape the future direction of the NHIE solution across various medical trading areas (MTA).[1]

An HIE evaluation approach was proposed in August 2007 by the United Hospital Fund (UHF). The approach would establish a common set of evaluation strategies to be used by all HIEs. The value of using a common approach across HIES is that common data elements can be aggregated and shared to influence future state, regional and national healthcare policies. The following evaluation priorities set forth by the UHF are presented in relative order of complexity and time to complete. These priorities will be considered key elements in evaluations conducted by the NCHICA HIE as the NHIN Trial Implementation project moves forward into its next stages. [2]

1. *Platform evaluation*
   (confidentiality, accuracy, timeliness and completeness of data transfer services)

2. *Usage studies*
   (who is using the system, how much are they using the system and how satisfied are
    they with the system)

3. *Immediate business case*
   (direct costs and measurable projected financial benefits)

4. *Assessment of clinical and administrative impact*
   (quality and process improvements)

5. *Unintended consequences*
   (both positive and negative consequences)

6. *Comprehensive return on investment*
   (after direct and indirect costs are estimated and clinical and administrative is measured
    and assigned a value)

7. *Program evaluation*
   (aggregation of individual project results, correlating overall funding model
    and requirements to individual project success) [3]

During the first option year of the NHIN Trial Implementations, an initial evaluation will be conducted with key stakeholders who participate in the first option year. The evaluation will be specific to initiative(s) to be implemented. This evaluation will be formative in nature, focusing on processes and perceived value rather than outcomes. This initial evaluation, as well as any additional formative evaluations, will be scheduled to permit incorporation of recommendations supporting timely improvements in technical, functional and operational cost effectiveness. Later evaluations may be outcome focused as summative evaluations judge the worth of a program at the end of specific project activities.

7.2 Formative Evaluation Criteria – Option Year One

The initial NCHICA HIE Trial Implementations formative evaluation will be conducted through surveys and key stakeholder interviews; the survey will be conducted after approved initiatives are under way. Subsequent formative evaluations will be conducted judiciously as they can be costly and time consuming. The expected allotment for future evaluations will be no more than10% of the project budget.

These evaluations will address topics suggested by ONC in contract Task 11 and are listed in the table below along with probable evaluation methods.

7.3 Summative Evaluation Criteria – Option Year Two and Beyond

The Institute of Medicine Quality Chasm report identifies six features in a quality framework: safe, effective, patient-centered, timely, efficient, and equitable. The Ambulatory Care Quality Alliance (AQA) has developed 26 quality measures, and these (along with the IOM features) *may be* relevant to include in an NHIE summative evaluation process. Summative evaluation must allow for enough time to pass from the start of an initiative to gather meaningful data. For example, clinical effects may not be seen for 18 months or more from the start of a project; data gathering alone can take up to 6 months. However, baseline data should be collected early on to both help design each initiative and to identify components that will need to be evaluated in order to measure project success.

Additionally, the NHIE evaluations will draw upon quality initiatives already underway in North Carolina such as the NC Healthcare Quality Alliance and the Community Care of North Carolina programs. Information used to drive those programs is generated or handled by the NCHICA HIE. Potential key performance measures for summative evaluations are provided in Appendix A. The final list of measures to be studied will be determined by which initiatives the NHIE undertakes over the next four years and upon information gathered during baseline assessments. Appendix 9.1 provides a list of summative evaluation criteria that will be considered in the development of project analysis tools.

8   Summary

- NCHICA's role as a convener in North Carolina, the NHIN Trial Implementations project has provided a specific mechanism to focus HIE efforts. The NCHICA Board and the NC HIE Council have actively embraced their responsibility to develop and create policies and guidance for HIE across NC.

- NCHICA has made solid strides in establishing a neutral convening body for the state of North Carolina. This body encompasses the necessary experience and breadth of representation to successfully support NHIE efforts across the state. Additional endorsing leadership from the state legislature is now underway, and support from the incoming Governor is being solicited. The NC HIE Council is prepared to provide this support.

- Knowledge transfer benefit has been a significant outcome of this project for the NHIN Trial Implementations Steering Committee, ,the NCHICA Board of Directors, the NC HIE Council and supporting committees, individual members and other key healthcare stakeholders across NC.

- The NCHICA Board of Directors is updating the organization's Strategic Plan to build on the momentum for a state-wide NHIE. This update is based on the foundation NCHICA has established during this project.

- NCHICA is poised to provide additional support for community and nationwide HIE efforts within NC, and looks forward to "option year" NHIN activities.

- The NC HIE Council Quality of Care and Value Committee is expected to select one or two initiatives for which baseline evaluation data may be collected for future formative and summative evaluation efforts.

9 Appendices

9.1 Initiative Key Performance Measures for Future Summative Evaluation

Measure	Output
Results Reporting	
Adoption/Usage	• Statistic from providers
Amount of electronic laboratory orders	• Usage statistics
Cost	• Efficiency • Effectiveness • Workflow process
Duplicative procedures	• Fewer duplicated tests • Observe trends over time
Time to receive test result reports	• Measure the difference in time to receive reports • Measure of reporting efficiency • Observe trends over time
Completeness of reporting	• Completeness of patient records • Treatment effectiveness and efficacy
Patient Record Exchange	
Emergency record exchange	• Frequency of patient visits • Improved public health reporting
• Inpatient discharge summaries • Physician follow-up • Treatment adherence	• Medication management • Health outcomes • Medical errors
Outpatient summaries	• Patient follow-up

Measure	Output
Provider To Provider Exchange	
Email Messaging	
• Adoption rates	• Usage statistics
• Cost	• Effectiveness and efficiency
• Patient satisfaction	• Patient surveys
• Provider satisfaction	• Provider/staff surveys
Referrals and transfer of care	
• Patterns for referral	• Formulate medical trading areas
• Patient satisfaction	• Determine areas in need of resources
• Provider satisfaction	• Provider/staff surveys
	• Patient surveys
SSA Disability Process Automation	
Time to receive approval or denial	• Track patient accounts
	• Observe workflow processes
	• Measure efficiency
	• Cost-effectiveness
	• Observe trends over time

[1] George Hripcsak a, Rainu Kaushal, Kevin B. Johnson, Joan S. Ash, David W. Bates, Rachel Block, Mark E. Frisse, Lisa M. Kern, Janet Marchibroda, J. Marc Overhage, Adam B. Wilcox. Journal of Biomedical Informatics 40 (2007) S9.

[2] George Hripcsak a, Rainu Kaushal, Kevin B. Johnson, Joan S. Ash, David W. Bates, Rachel Block, Mark E. Frisse, Lisa M. Kern, Janet Marchibroda, J. Marc Overhage, Adam B. Wilcox. Journal of Biomedical Informatics 40 (2007) S8.

[3] George Hripcsak a, Rainu Kaushal, Kevin B. Johnson, Joan S. Ash, David W. Bates, Rachel Block, Mark E. Frisse, Lisa M. Kern, Janet Marchibroda, J. Marc Overhage, Adam B. Wilcox. Journal of Biomedical Informatics 40 (2007) S8.