The Statewide Collaboration Process

New York eHealth Collaborative (NYeC)

State HIE Cooperative Agreement Program

Strategic Plan

Achieving meaningful use of health information in New York

Modified from the New York State March 2009 Health IT Strategic Plan to align with the format of the Office of the National Coordinator for Health Information Technology, State Health Information Exchange Cooperative Agreement Program, Funding Opportunity Announcement

October 15, 2009

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Introduction

The New York eHealth Collaborative submits this application based on a well-developed strategic plan which includes many components of an operational plan. This reflects the fact that New York is now implementing its strategic vision through multiple years of investment as part of its Health Care Efficiency and Affordability Law for New Yorkers Capital Grant Program (the HEAL NY program). New York believes that it already has in place a fully operational governance process, a fully developed technical architecture, and a fully developed set of policies and procedures governing privacy and security and other critical operational issues (referred to as "Statewide Policy Guidance").

As more fully described herein, New York's regional health information organizations (RHIOs) have already made substantial progress on sharing data consistent with Statewide Policy Guidance, and it is from this strong operational foundation that we plan to continue to build. New York intends to further develop and refine its operational plans through further definition of key activities and allocation of funds during the first quarter of the grant period. The resulting final operational plan for New York's HIE program will present a comprehensive and coordinated approach that will utilize and get maximum leverage from the combined investment of State funds through phase 10 of the HEAL program (HEAL 10), and federal funds through the State Health Information Exchange Cooperative Agreement Program (State HIE Program), the Regional Extension Center (REC) program, and Medicaid health IT initiatives (including enhancement of existing systems and administrative activities supporting implementation of the meaningful use incentive payments).

Through this approach, NYeC will ensure that the state benefits from a holistic approach to planning across programs and funding sources and that it gains input and buy-in from a broad cross section of New York's health care stakeholders regarding the use of State HIE program funds through its multi-stakeholder governance process, the Statewide Collaboration Process (SCP). New York intends to make investments that not only deepen the breadth and depth of its current infrastructure, but connect directly to New York's goals of using health information to make measurable improvements in the quality and cost efficiency of health care services.

Since 2006, New York State has been investing in technology, operational capacity, and collaborative governance structures and processes to mobilize statewide health information exchange to improve the quality, safety, efficiency, and affordability of health care. This investment has involved not only considerable state resources -- over $260 million to date -- it has also inspired considerable private investment totaling almost $300 million. The time, effort, and resources that have gone into the last five years of health IT work have laid an optimal foundation for achieving the goals of the State HIE Program.

The expected opportunities from New York’s health IT investment overall include:

- Improvements in Efficiency and Effectiveness of Care: Provide the *right* information to the *right* clinician at the *right* time regardless of the venue where the patient receives care.

- Improvements in Quality of Care: Enable access to clinical information to support improvements in care coordination and disease management, help re-orient the delivery of care around the patient, and support quality-based reimbursement reform initiatives.
- Reduction in Costs of Care: Reduce health care costs over time by reducing the costs associated with medical errors, duplicative tests and therapies, uncoordinated and fragmented care, and preparing and transmitting data for public health and hospital reporting.
- Improvements in Outcomes of Care: Evaluate the effectiveness of various interventions and monitor quality outcomes.
- Engaging New Yorkers in Their Care: Lay the groundwork for New Yorkers to have greater access to their personal health information and communicate electronically with their providers to improve quality, affordability and outcomes.

Through New York State's health IT initiatives, much has been accomplished to enable the exchange of health information. New York is the state with the third largest population, with a "health care community" that comprises more than 230 hospitals, more than 30,000 physicians and 19.5 million people statewide. Given the size, diversity, number of RHIOs and maturation of health IT in the state, New York serves as a laboratory and model for health IT policy and implementation nationwide.

Environmental Scan: Current HIE Capacity

New York is ready for large scale health information exchange (HIE) implementation. The state has pioneered the governance, operational, and technical aspects of information exchange at both the regional and state levels. All key stakeholders are engaged in functional collaboration activities. A base of human capital is in place that can launch transformation at all levels, from strategic planning to process redesign to technical implementation. New York is ready to rapidly build upon its solid foundation of learning and experience. With additional financial support from the federal government, New York can translate its initial foundation of operational HIE services into a robust production level system that supports statewide exchange of meaningful health information.

This environmental scan details many of the activities underway over the last 5 years to support health information exchange. This section will provide those new to New York the necessary background information to understand how far the state has progressed in standing up the governance, organizational, and technological systems for information exchange. Following the environmental scan is an analysis that points out the opportunities for moving from New York's current state to a desired state of widespread meaningful use of health information.

Health Care Efficiency and Affordability Law for New Yorkers

The Health Care Efficiency and Affordability Law for New Yorkers Capital Grant Program (the HEAL NY Program) was established in 2004 to invest up to $1 billion over a four year period to reform and reconfigure New York's health care delivery system to achieve improvements in patient care and increase efficiency of operation. Over 25% of the HEAL NY budget is devoted to health information technology (IT), which has been executed in three rounds of funding totaling $260 million by the New York State Department of Health (NYS DOH). Further, these public funds have been used to leverage an additional $290 million of private sector matching funds so that, all told, public and private spending on health IT and HIE in New York State under the HEAL NY umbrella will exceed half a billion dollars. Table 1 details the HEAL program investment by New York State.

Table 1 HEAL NY funding summary

Funding round	Year	# projects	State Funds	Private Funds	Total Funds
HEAL 1	2007	26	$53M	$148M	$201M
HEAL 5	2008	19	$95M	$47M	$142M
HEAL 5	2008	1 (NYeC)	$5M	na	$5M
HEAL 10	2009	9	$60M	$85M	$144M
HEAL 10	2009	1 (NYeC)	$35M	na	$35M
HEAL 10	2009	1 (HITEC)	$5M	na	$5M
Total			$253M	$280M	$532M

The HEAL 1 grants were announced in October 2005 and awarded to 26 grantees across the state in March 2006. HEAL 5 marked the beginning of the development and implementation of the key organizational, clinical and technical building blocks that are the basis for New York's health information infrastructure strategy today. In March, 2008, the State awarded $105 million to 19 community-based health IT initiatives to advance this statewide strategy over the two-year grant period from August 2008 to August 2010. Providers are expected to demonstrate the use of an interoperable EHR, a web portal or other tools with the ability to share information across settings as well as initial quality and efficiency gains. Approximately 1500 physicians, 96 hospitals and 56 long term care facilities should benefit as early health IT adopters from HEAL 5.

It is a vivid demonstration of New York's ongoing commitment to advancing the improvement of health care through technology adoption that even in these difficult times, Governor Paterson on September 25, 2009 announced $60 million in grant awards in the HEAL 10 funding cycle. The focus of HEAL 10 is to use the infrastructure created by HEAL 5 to make a leap forward to a new care delivery and reimbursement model – the patient-centered medical home (PCMH). The nine projects awarded HEAL 10 grants will thus be explicitly responsible for achieving meaningful adoption of electronic health records (EHRs) and exchanging key clinical information through existing RHIOs to improve quality-based outcomes and care coordination and management.

Laying a foundation for HIE is not just about infrastructure – it requires governance structures and processes, policy development and implementation guidance. The HEAL NY program also invested in the creation of a public-private governance model operated by NYeC, and a collaborative research and evaluation platform, the Health Information Technology Evaluation Collaborative (HITEC). Both of these efforts will receive additional funds through HEAL 10.

New York's HIE readiness has also been advanced through federal funds from the Centers for Disease Control and Prevention (CDC) and ONC. New York received a $20 million CDC grant in 2008 to improve public health situational surveillance and reporting through health information infrastructure. In addition, NYeC received a $4.7 million contract from the U.S. Department of Health and Human Services to support the Nationwide Health Information Network (NHIN) Trial Implementations Project.

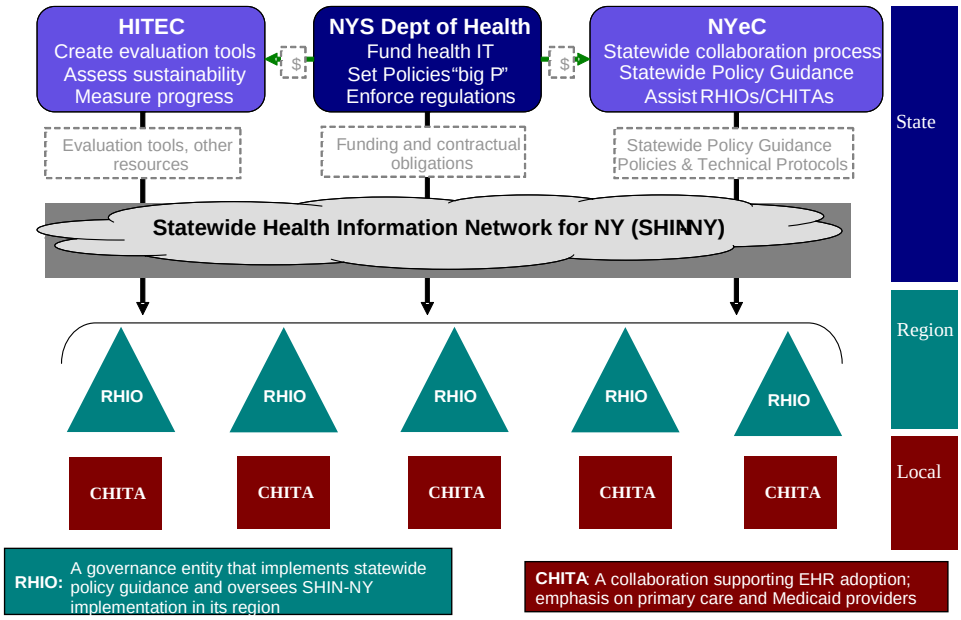
As described above, New York has invested considerable public and private resources in building a statewide health IT and health information exchange infrastructure, which has been complemented by grant funding from the federal government. Those investments have put the state in a position of high HIE readiness to meet the goals of the State HIE Program, not only in terms of having a foundation of technical infrastructure upon which to build, but also in terms of having an established collaborative, statewide governance and policy development infrastructure. Because New York is a very large, complex, and diverse state, even after the considerable investments that have been made to date, additional resources are required to achieve the State HIE program goals.

The following text describes the various components of the existing HIE and health IT capacity in New York. An HIE Progress discussion follows that identifies key opportunity areas for extending the breadth and depth of HIE in New York.

Governance and organization infrastructure

The alignment of governance, policy and technical implementation activities is one of the notable characteristics of New York's approach to developing HIE capacity. In addition, New York's approach does not consider health information exchange to be separate and distinct from EHRs – meaningful exchange of health information requires meaningful adoption of EHRs. Thus, the organizational and technical architecture for health IT and HIE in New York comprises four integrated layers as depicted in Figure 1; governance (which oversees policy and evaluation), the operation of statewide and regional health exchange services, and local EHR/HIE adoption services.

Figure 1 - HIE Organization Infrastructure



New York eHealth Collaborative (NYeC)

The New York eHealth Collaborative (NYeC) is a statewide public-private partnership and governance body which plays a major role in advancing New York State's health IT strategy. NYeC's key responsibilities include:

1. Convening, educating and engaging key constituencies, including health care and health IT leaders across the state;

2. Facilitating a two-tiered governance structure for interoperable health information exchange through the Statewide Health Information Network for New York (SHIN-NY) that includes setting health information policies, standards and technical approaches at the state level, and implementation of such policies at the regional and local levels; and
3. Evaluating and establishing accountability measures for New York State's health IT strategy

NYeC will serve as the State Designated Entity for the purposes of health information exchange infrastructure as defined in the American Recovery and Reinvestment Act 2009 and as communicated in the letter from the office of Governor David A. Paterson to Dr. Blumenthal dated September 9, 2009.

New York State Office of Health Information Technology Transformation (OHITT)

In January 2007, the New York State Department of Health created the Office of Health Information Technology Transformation (OHITT) to be led by a Deputy Commissioner for Health Information Technology Transformation. The current Deputy Commissioner, Rachel Block, has been designated by the Governor's office as the State HIT Coordinator for purposes of implementing the State HIE program.

OHITT is charged with coordinating health IT programs and policies across the public and private health-care sectors to enable improvements in health care quality, affordability and outcomes for all New Yorkers. These programs and policies will establish the health IT infrastructure and capacity to support clinicians in:

1. Quality and population health improvement,
2. Quality-based reimbursement programs,
3. New models of care delivery, and
4. 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 New York.

NYeC will work closely with NYS DOH to coordinate efforts linking State health information systems with the SHIN-NY. The initial focus will be on completing implementation of the Universal Public Health Node as well as implementation of the HEAL 5 public health use cases. In addition, Medicaid will be developing policies and technical services for health information exchange utilizing a new data warehouse system as the foundation. Both of these efforts will leverage national standards as well as SHIN-NY architecture principles.

NYS DOH is also chairing the NYS Health and Human Services CIO Council which was established in May 2009 to gather and share information as necessary to promote adoption of common policies and standards across health and human services programs and agencies. These State agencies have developed a conceptual model for linking their systems to the SHIN-NY, and New York will pursue further design and implementation activities in that direction.

Statewide Collaboration Process (SCP)

New York is developing health information policies, standards and protocols and other technical approaches governing the health IT infrastructure – collectively referred to as Statewide Policy Guidance. NYeC, in partnership with the DOH, is leading 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.

The Statewide Health Information Network for New York (SHIN-NY)

New York's health information exchange infrastructure is called the SHIN-NY. The SHIN-NY is still in the early stages of development and implementation, because of the advanced state of our governance and policy models, New York is prepared to meet the anticipated HIE infrastructure requirements of the State HIE program. The SHIN-NY is a common network of networks that utilizes the Internet combined with specialized software and services to deliver results to providers' electronic health records from outside sources -- such as lab results, medication histories, and hospital reports -- and to facilitate the exchange of clinical summary records among inpatient and outpatient EHRs, PHRs, and other health IT systems.

As will be described in greater detail later in this document, the SHIN-NY is not "a thing", but rather, it is a set of agreed upon protocols, standards, and policies which, when adopted by regional and local entities, will allow clinical data exchange across their systems. It is thus similar in structure to the Nationwide Health Information Network (NHIN) architecture, and indeed, the SHIN-NY has been specifically designed to incorporate and extend NHIN standards.

RHIOs

The RHIOs are orchestrating HIE service development and implementation according to SHIN-NY policies and guidance. RHIOs are independent governance entities comprised of multiple stakeholders in order to support secure and interoperable exchange of health information. Their mission is to govern the use of health exchange for the public good by supporting improvements in health care quality, affordability and outcomes. Currently, there are 10 RHIOs which are part of the SHIN-NY governance structure and have been funded under HEAL to provide health information exchanges or sub networks of the SHIN-NY through contracts with HIE vendors over the next two years. Other RHIOs that did not receive grants as part of the HEAL Phase 5 program (HEAL 5) are complying on a voluntary basis. Through their participation in state-level governance and agreement to follow statewide policies, RHIOs will be conferred benefits in terms of eligibility for grants, contracts for providing core services and other "shared services" to the other members of the SHIN-NY, and access to various data sources, both public and private.

Community Health Information Technology Adoption Collaboratives (CHITAs) (future Regional Extension Center Agents)

CHITAs provide "feet on the street" implementation and "wrap-around services" to providers adopting EHRs. CHITAs work with providers to ensure proper configuration and implementation of EHR and HIE systems as well as effective use of health information to attain quality and efficiency goals. CHITAs will be critical components of the statewide Regional Extension Center (REC) approach, serving as extension agents that support front line provider implementations.

New York Health Information Technology Evaluation Collaborative (HITEC)

HITEC is a multi-institutional, academic collaborative of New York State institutions including Cornell University, Columbia University, the University of Rochester, and the State University of New York at Albany, and serves in a research and evaluative role with respect to health IT initiatives in New York State. HITEC was formed to evaluate and develop evaluation instruments for health IT initiatives, including interoperable health information exchange and EHR adoption across the State. HITEC has been charged with providing evaluation services for HEAL NY Phase 5 grantees in a consistent and objective manner across all funded projects.

HITEC is providing the RHIOs with standardized surveys, standardized outcome measures, consulting on study design and other research methods for evaluation, statistical consulting, data analysis, and reports summarizing each RHIO's findings (with anonymous comparisons to other RHIOs). HITEC will also conduct cross-RHIO evaluations, thereby generating more findings that may be generalized. Regional and national dissemination of these findings will be a top priority.

HITEC is also facilitating evaluations of the impact of HIE on consumer expectations of and satisfaction with HIE (including any concerns about privacy and data security); and provider's use of and satisfaction with health IT and HIE (including unintended consequences and effects on workflow, patient safety and health care quality, and financial impact as driven both by efficiency and safety/quality savings).

HITEC will lead some of the first large-scale quantitative and qualitative evaluations of the impact of HIE on health care. The results of these evaluations will inform HIE adoption and provide insights into the impact of state policy on health IT adoption and health IT-related changes in health care. HITEC will be able to serve as a model of health IT evaluation centers nationwide.

HIE progress

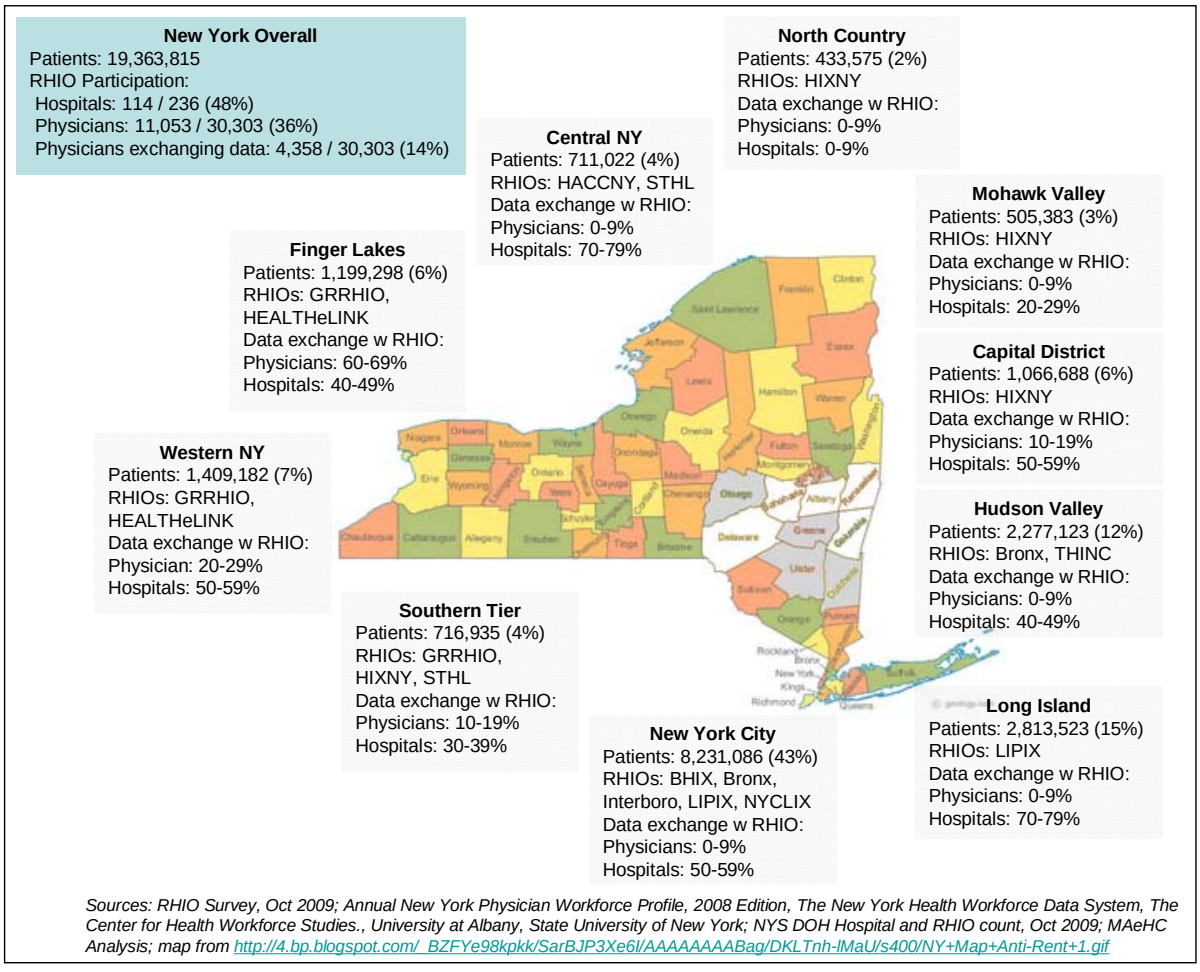
While considerable investment has been made in New York already, there is still much to do to achieve the goal of ubiquitous "meaningful use" through broad deployment of HIE and

interoperable EHRs across the state. This can be measured in terms of the breadth and depth of HIE services available to providers today.

All 62 counties of New York State are currently covered by at least one RHIO, so in terms of geographic breadth, today's infrastructure provides a gateway for local access to the SHIN-NY from every corner of the state. A large number of the state's hospitals and physicians are participating in the RHIOs as illustrated in Figure 2 below.

According to recent NYS DOH surveys, 114 of the 236 (48%) hospitals in the state are participating in at least one of the State's RHIOs. 11,053 of the estimated 30,303 (36%) active physicians in the state are participating in a RHIO with 4,358 (14%) exchanging data with the RHIO. In terms of patients, the RHIOs currently cover geographic areas representing almost 40% of New York's 19.5 million citizens.

Figure 2 - RHIO Participation by Region



Sources: RHIO Survey, Oct 2009; Annual New York Physician Workforce Profile, 2008 Edition, The New York Health Workforce Data System, The Center for Health Workforce Studies., University at Albany, State University of New York; NYS DOH Hospital and RHIO count, Oct 2009; MAeHC Analysis; map from http://4.bp.blogspot.com/_BZFYe98kpkk/SarBJP3Xe6I/AAAAAAAABag/DKLTnh-lMaU/s400/NY+Map+Anti-Rent+1.gif

New York has identified specific hospitals that are not participating in HIE via the RHIOs. The majority of non-participating hospitals are those with fewer than 200 beds. Table 2 provides a current estimate of the number of Hospitals participating in RHIOs segmented by number of hospital beds.

Table 2 - Hospital Participation in RHIOs by Hospital Size

		Small hospitals (1–200 beds)	Large hospitals (201-1200 beds)	Total
Participating hospitals	#	34	80	114
	%	14%	34%	48%
Non-participating hospitals	#	87	35	122
	%	37%	15%	52%
Total	#	121	115	236
	%	51%	49%	

New York State RHIOs have varying degrees of functionality and readiness. Table 3 lists New York's RHIOs and their operational status.

Table 3 - New York RHIOs and Operational Status

RHIO	Status
Adirondack Health Information Exchange (ARCHIE)	Pilot
Bronx RHIO	Operational
Brooklyn Health Information Exchange (BHIX)	Operational
eHealth Network of Long Island	Operational
Greater Rochester RHIO (GrRHIO)	Operational
Health Advancement Collaborative of Central New York (HAC-CNY)	Planning
Health Information eXchange of New York (HIXNY)	Operational
HealtheLink	Operational
Interboro RHIO	Operational
Long Island Patient Information Exchange (LIPIX)	Operational
New York Clinical Information Exchange (NYCLIX)	Operational
Southern Tier Health Link of New York (STIHL)	Operational
Taconic Health Information Network and Community RHIO (THINC)	Operational

Table 4 provides information on the stakeholder types that are exchanging information with the RHIOs.

Table 4 - Stakeholders Exchanging Information with RHIOs

	Total	BHIX	Bronx	HACCNY	HEALTHeLINK	HIXNY	Interboro	LIPIX	NYCLIX	Rochester	STHL	THINC
Physician Practices (inc hospital outpatient clinics)	390	6	12	-	100	3	-	2	15	200	40	12
FQHCs	11	-	4	-	2	-	-	-	1	3	-	1
Total No. of Outpatient Physicians	3,132	6	24	-	700	400	1,000	5	100	600	150	147
Hospitals (inpatient)	72	6	2	-	13	7	2	12	12	11	7	-
Home Care Agencies	12	5	1	-	1	-	1	1	1	2	-	-
Nursing Homes	26	4	2	-	1	-	1	-	-	18	-	-
Long Term Care Facilities	1	-	-	-	1	-	-	-	-	-	-	-
Skilled Nursing Facilities	3	-	-	-	3	-	-	-	-	-	-	-
EMS Agencies	3	-	-	-	-	-	-	1	-	2	-	-
Laboratories (free standing and hospital based)	54	-	1	-	6	-	4	13	12	12	2	4
Radiology Practices	31	-	-	-	8	1	4	-	-	18	-	-
Public Health Depts	4	-	1	-	1	-	-	-	2	-	-	-
Total No. of Clinicians	4,358	20	36	-	750	555	150	400	150	2,000	150	147
Health Plans/Payors	8	-	-	-	3	3	-	-	1	1	-	-
Patients	-	-	-	-	-	-	-	-	-	-	-	-

Table 5 provides information on the types and volumes of data exchanged by the RHIOs each month and progress with patient consent and lab integration.

Table 5 - RHIO Information Exchange by Type and Volumes

Data Use	Total	BHIX	Bronx	HACCNY	HEALTHeLINK	HIXNY	Interboro	LIPIX	NYCLIX	Rochester	STHL	THINC
Number of clinical results routed directly to ordering physicians per month	217,000	-	-	-	52,000	-	-	-	-	150,000	not yet live	15,000
Number of referrals submitted through the RHIO per month	-	-	-	-	-	-	-	-	-	-	not yet live	not yet live
Number of patient queries submitted through the RHIO per month (look-up in MPI)	43,350	-	50	-	6,400	3,800	-	1,000	100	32,000	not yet live	not yet live
Number of patient queries submitted through the RHIO per month (clinical data accessed)	17,974	2,270	50	-	800	3,824	-	1,000	30	10,000	not yet live	not yet live
Consent												
Number of patients providing consent to at least one provider institution	302,759	44,000	450	-	33,000	14,409	-	900	140,000	70,000	not yet live	not yet live
Percentage of patients providing affirmative consent	88%	92%	92%		97%	94%		85%	65%		not yet live	not yet live
Lab												
Number of clinical laboratories serving people within the RHIO market (claimed counties) that are actively supporting electronic ordering and results reporting	46	-	2	-	18	15	-	4	-	3	not yet live	4

In addition to the RHIOs, New York has supported the launch of CHITAs. CHITAs are synonymous with Regional Extension Center Agents and exist to assist providers to implement EHRs, exchange information, and achieve meaningful use. Table 6 provides a list of New York's CHITAs.

Table 6 - New York CHITAs and Operational Statuses

CHITAs
Adirondack Regional Community Health Information Exchange (ARCHIE)
Columbia Memorial Hospital
Community Health Electronic Health Record Exchange
Continuum of Care Improvement Through Information Exchange NY
Dr Moore & Associates
Four County Management
Greater Rochester IPA
Health Information Alliance of Syracuse
Hudson Information Technology for Community Health (HITCH)
New York Care Connect
New York Community Home Health Interoperability Project
Primary Care Health Information Consortium (PCHIC)
Samaritan Physicians Community HIT Collaborative
Taconic IPA
Trudeau Health Systems

HIE Development and Adoption: New York's Vision for HIE and Health IT

Introduction

While New York has established a strong foundation of HIE capacity, there is still a long way to go before information is broadly available and used in a meaningful way by the majority of health care providers and consumers. New York has identified 3 dimensions for growth:

- Increase number and diversity of stakeholders sharing electronic health information;
- Improve the value of participation (improved benefits and reduced costs) through implementation of so-called "shared services" and coordination with Medicaid health IT efforts; and
- Increase the types of information (i.e., patient history, lab, medication) being exchanged; this can be accomplished by determining a level set or minimum floor for information exchange and bringing all participants up to this level.

Strategic Goals

New York seeks to meet the following strategic goals for health information exchange:

1. Meaningful exchange of health information by the majority of practicing health providers across settings and disciplines, and consumers
2. Creation of a highly valuable system for information exchange – one where benefits of provider participation outweigh costs of participation
3. Exchange of all information sets required to meet meaningful use requirements
4. Technical infrastructure in place to enable interoperable electronic health records for Clinicians, interoperable personal health records for Consumers, and interoperable information portals for the Community
5. Clinical Informatics Services (CIS) and tools in place for the aggregation, analysis, decision support and reporting of data for purposes of quality improvement and public health
6. SHIN-NY in place to provide architecture, common health information exchange protocols and standards to enable health information sharing between providers, patients, public health personnel, and other relevant health care stakeholders
7. Technical infrastructure aligned with emerging NHIN design, standards, and certifications to enable future health information exchange beyond NY State

Vision for Health Information Exchange

The goal of New York's health information exchange initiatives is to improve the safety, effectiveness, quality, and affordability of health care delivery through the widespread adoption of an interoperable health information infrastructure.

To deliver safe, effective, high quality and affordable care in the 21st Century, strategic adoption of an interoperable health information infrastructure is needed to transform health care from today's largely paper-based, disconnected system to an electronic, interconnected health care

system. Accordingly, as one of its principal health care reform initiatives, New York has engaged in the development and implementation of a health information infrastructure.

Broad adoption and use of health IT is vital to the Governor's vision for health care in several ways. It plays a significant role in our progress to ensure that clinical information is in the hands of clinicians and New Yorkers so that it guides medical decisions and supports the delivery of coordinated, preventive, patient-centered and high quality care. Health IT can gather more precise and timely information about what works in the real world to refine health care policies, monitor health status and safety and guide physician and patient treatment choices. Health IT can replace expensive, stand-alone health surveillance systems with an integrated infrastructure to allow for seamless health information exchange for many public health purposes. Health IT can provide timely information about choices, prices, quality, and outcomes – information essential to a patient-centered health care system.

However, health IT alone will not result in the expected quality and population health improvement and efficiency goals. Key alignment of health IT with public health and clinical practice models, new quality and outcomes-based reimbursement models, prevention and wellness initiatives as well as services to support clinicians in learning how to consistently use information to realize the value are essential to improve quality, affordability and outcomes for all New Yorkers. Coordination with Medicaid, other state health programs and private payers is essential to achieve this broader objective.

The successful development and implementation of New York's health information infrastructure will be defined by how beneficial health information is in improving quality, reducing health care costs and improving health outcomes. Electronic health records (EHRs), for example, are essential but not enough to ensure effective use of information and improved health for New Yorkers. An environment must be created and substantial efforts made to utilize the information and enable clinicians to learn how to consistently realize the benefits from vastly improved availability of health information.

The high level objectives for New York's HIE initiatives are as follows:

- *Improvements in Efficiency and Effectiveness of Care*: Provide the right information to the right clinician at the right time regardless of the venue where the patient receives care.
- *Improvements in Quality of Care*: Enable access to clinical information to support improvements in care coordination and disease management, help re-orient the delivery of care around the patient and support quality-based reimbursement reform initiatives.
- *Reduction in Costs of Care*: Reduce health care costs over time by reducing the costs associated with medical errors, duplicative tests and therapies, uncoordinated and fragmented care, and preparing and transmitting data for public health and hospital reporting.
- *Improvements in Outcomes of Care*: Evaluate the effectiveness of various interventions and monitor quality outcomes.

- *Engaging New Yorkers in Their Care*: Lay the groundwork for New Yorkers to have greater access to their personal health information and communicate electronically with their providers to improve quality, affordability and outcomes.
- *Improvements in Public Health*: Integrate health care delivery information with public health surveillance systems to support public health goals

Fulfilling objectives as ambitious as these will not happen without coordination and buy-in at all levels. New York's plan includes the standards-based technological building blocks, management, technical, and clinical capacity, and governance and policy solutions necessary to advance health IT in a way that will drive widespread improvements in health care quality, affordability and outcomes. In a health care system criticized for fragmented care, interoperable EHRs and other health IT tools are a necessary substrate to support the integration and coordination of care.

New York's health IT strategy is being advanced in the public's interest, with clinical priorities and quality and population health improvement goals leading the way. The strategy includes key organizational, clinical and technical infrastructure as well as cross- cutting consumer, financial and regulatory strategies.

To deliver safe, effective, high quality and affordable care in the 21st Century, strategic adoption of an interoperable Health Information Infrastructure is needed to transform health care from today's largely paper-based system to an electronic, interconnected health care system. As one of its principle health care reform initiatives, New York has engaged in the development and implementation of New York's Health Information Infrastructure, which comprises three interrelated components – organizational, clinical, and technical – to harness the power of health information to support patient care improvements.

Vision for Technical Infrastructure

The SHIN-NY is a bedrock component of the state's health IT infrastructure that is essential to supporting New York's broader health care goals. Other components of the technical infrastructure include electronic health records, personal health records, and clinical informatics services (i.e., the tools required for the aggregation, analysis, decision support and reporting of data for various quality and public health purposes).

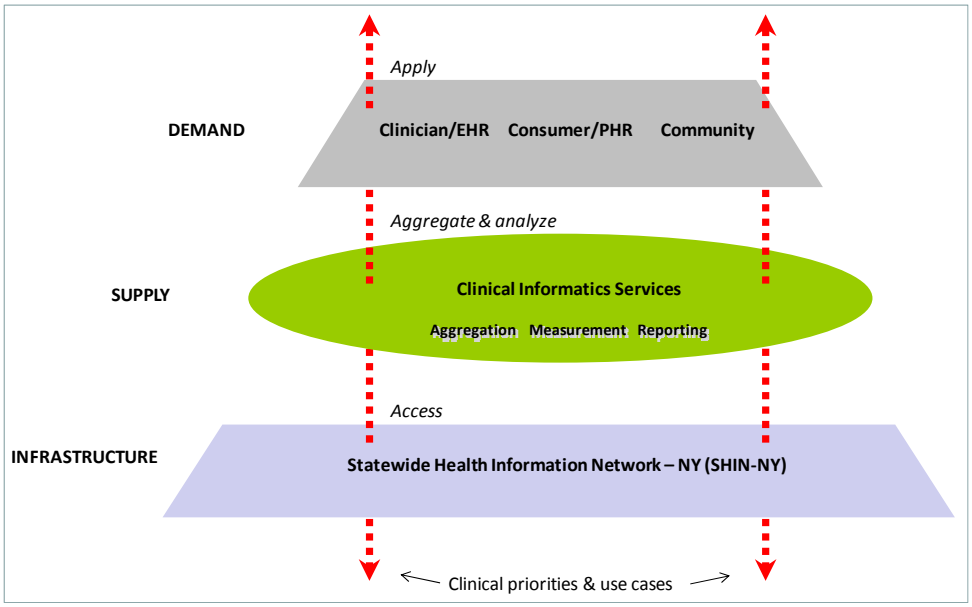
A key principle driving the implementation of New York's health information infrastructure is: *Design Globally, Implement Locally*. This means that the infrastructure is being built upon common statewide information policies, standards and protocols and other technical specifications embodied in the SHIN-NY or "information highway" and electronic health records.

The SHIN-NY or "information highway" will allow clinicians and consumers to make timely, fact-based decisions that will reduce medical errors and redundant tests and improve care

coordination and the quality of care. The successful implementation of the SHIN-NY will result in improving health care quality, reducing costs, and improving outcomes for all New Yorkers.

There are two overarching strategies to achieving benefits from New York's health information infrastructure: (1) advancing three interrelated building blocks – organizational, clinical and technical infrastructure and (2) advancing focused vertical interoperability that integrates these building blocks, as depicted in Figure 3 below.

Figure 3 Building Blocks of Technical Infrastructure



The technical infrastructure of the SHIN-NY comprises three interrelated building blocks: (1) the 3C's: interoperable electronic health records for Clinicians, personal health records for Consumers, and Community information portals; (2) Clinical Informatics Services (CIS) which refer to the tools required for the aggregation, analysis, decision support and reporting of data for various quality and public health purposes; and (3) the SHIN-NY providing an architecture, common health information exchange protocols and standards to share information among providers and with patients and mobilize information for public health and quality reporting.

Among the many challenges of implementing health information technical infrastructure is that the core requisites of meaningful exchange -- demand, supply, and infrastructure -- are all nascent. They are also all inter-related. Clinicians and patients don't know which clinical information services to demand because they have no concrete examples to draw from, and potential suppliers of such clinical information services don't have the infrastructure to create concrete products and services, and the infrastructure doesn't exist because there isn't enough well-articulated demand from clinicians and patients to attract investors to fund it.

The vertical interoperability approach stops this vicious cycle by building and connecting pieces of each of the technical building blocks – SHIN-NY, Clinical Informatics Services, and Clinician, Consumer, and Community – to serve a specific clinical use case. In this way clinical users can derive benefits from these focused vertical services without having to wait for the entire technical infrastructure to be built. A major goal of New York's health IT strategy has been to support opportunities amenable to this approach, specifically, the Clinical Investment Priority Use Cases.

Aligning technology investment with strategic goals: Clinical Investment Priorities

Effectuating the strategic objectives outlined above requires that clinical and public health priorities and measurable outcomes drive technology implementation. Accordingly, NYS DOH defined a broad set of clinical investment priorities to focus the HEAL NY grant program.

- HEAL Phase 5 goals over the two year grant period from August 2008 – August 2010 is to establish and mature the organizational, clinical and technical building blocks to produce an initial level of health information liquidity or free flow of information among providers.
- HEAL Phase 10 goals over the two-year period from Jan 2009 – Jan 2011 are to continue to advance New York's health information infrastructure based on clinical and programmatic priorities and specific goals for improving quality, affordability and outcomes, while at the same time aligning health information infrastructure as an underpin to a new care delivery and reimbursement model - patient-centered medical home.

Providers are expected to demonstrate the use of an interoperable EHR, a web portal or other tools with the ability to share information across settings as well as initial quality and efficiency gains. To ensure the achievement of clinical benefits, HEAL 5 investments are channeled into clinical investment priorities, each of which has a corresponding use case that articulates clinical and business requirements to guide policies, infrastructure design, and technical implementation. Clinical requirements for implementation of each use case have been developed through the statewide collaboration process managed by NYeC. This process includes an analysis of clinical workflow for each specific use case as well as alignment with both NYS and federal guidelines when available. Clinical requirements are then used by other collaborative groups within NYeC to help develop and refine policies, standards and technical requirements.

The HEAL 5 clinical priorities and corresponding use cases are:

*Medication Management***:** Sharing medication history information with clinicians emphasizing medication management and electronic prescribing as the initial priority. This includes medication history information from Medicaid as well as additional sources of medication history information from pharmacies and pharmacy benefit managers to enhance clinical

decision support capabilities, such as drug-drug interaction checking. This use case will be based on Medicare electronic prescribing standards.

Connecting New Yorkers and Clinicians: Providing the capacity to connect New Yorkers to their clinicians and providers to share clinical results, care management programs, as well as provide New Yorkers with personal health records tools, including access to health information exchange audit trails and consent forms.

Health Information Exchange for Public Health: Improving situational awareness and reporting for public health purposes and reducing administrative costs of preparing and transmitting data among providers and public health officials. This use case includes the development of the UPHN, incorporating Federal standards emerging from biosurveillance best practices and connections to the SHIN-NY.

Immunization Reporting through EHRs: Interfacing EHRs with the NYS DOH and NYCDOHMH Immunization Registries to enhance their use and improve safety and efficiency. The use case incorporates NYS IIS standards and incorporates criteria set forth by the Centers for Disease Control and Prevention (CDC) and the national Certification Commission for Healthcare Information Technology (CCHIT).

Quality Reporting for Prevention through EHRs: Implementing EHRs with embedded population health and prevention metrics supporting registry and alerting functions to improve preventive care.

Quality Reporting for Outcomes: Providing quality-based outcome reports based on clinical information from an interoperable EHR as well as other data sources to all payers and providers to improve quality and support new payment models. Utilization of the SHIN-NY and the CIS is incorporated into this use case as well as Federal and state priorities and requirements with respect to quality measures and approaches.

Clinical Decision Support in a HIE Environment: Providing analytic software to guide medical decisions and facilitate quality interventions either by providing a service via the SHIN-NY infrastructure and/or utilizing EHR analytics.

The SCP features a workgroup structure whereby clinical priorities described above are detailed and translated into technical requirements and approaches to ensure health IT produces the expected value with respect to improvements in health care quality, affordability and outcomes. The Clinical Priorities Work Group consists of subgroups targeted to the clinical priorities from HEAL NY projects. This work group also includes close coordination with other efforts within the NYS DOH to promote improved health care for New Yorkers. Key to this strategy is coordination of state wide health information technology efforts to promote and support implementation of the PCMH model as well as other reforms in reimbursement, long term care as well as public health initiatives.

The specific goals of HEAL 10 build upon HEAL 5 from a health information infrastructure perspective and go much further with respect to aligning key health reforms included in the

PCMH model to improve care. This policy alignment is essential not only to advance and sustain the technical building blocks of New York's health information infrastructure, but also to ensure that the clinical capacity is established for providers and patients to be prepared and held accountable for new reimbursement models based on quality based outcomes and care coordination and management.

Focusing on meaningful use and FOA priorities

New York's HIE vision has been highly focused on clinical investment priorities and use cases designed to have high impact on the quality, safety, efficiency, and affordability of care. With the passage of ARRA, and the advent of "meaningful use", strategic and operational focus will now be placed on aligning HIE and health IT activities with the requirements of meaningful use.

This alignment toward meaningful use will not entail new strategies or programs, but rather, will merely require rearrangement of priorities in order to fulfill the meaningful use objectives on the required timelines. Indeed, New York has arguably been on the path to meaningful use since well before the passage of ARRA and the formalization of the term.

In considering how to make most effective use of FOA funding for HIE expansion, New York considered two competing axes of investment: "depth" and "breadth". Clearly, the overall value of the SHIN-NY will derive both from the richness of the services it provides (depth) and the number of participants consuming those services (breadth). These goals will be mutually-reinforcing: The greater value of the services to the network, the more participants will want to join the network; the greater the number of participants, the greater the value of the services. Striking the optimal balance of resource allocation and sequence of efforts in seeking both enhanced services ("depth") and increased participation ("breadth") will be critical to the sustainability of the SHIN-NY.

Established RHIOs in the state now include as participants approximately half (over 100) of all hospitals in the state as well as almost one-third (over 11,000) of practicing physicians representing over one-third of patients (over 7 million). While there is obviously much work to do to increase the penetration of HIE services to all clinical settings and patient populations, the State has a solid base to build upon.

The "public good" nature of health information exchange has in the past been a barrier to providers' seeking HIE services on their own. The value proposition for providers has been unfavorable because the cost of participating has been too high, and the tangible benefits have been too low.

On the benefits side, Medicare and Medicaid incentives in ARRA may change that dynamic significantly. With approximately $45 billion in incentives tied to meaningful use and demonstrated health information exchange, the benefits to providers of participating have increased dramatically. And with tight timelines for garnering those incentives, providers' sense of urgency for health information exchange is likely to increase as well. At the same time, federal efforts to tighten interoperability standards and certification of EHR products and

interoperability components should lower the cost of connectivity for providers. Thus, there is strong reason to believe that current market forces and government initiatives will play a strong role in improving the value proposition for HIE among providers and thus drive greater breadth of the SHIN-NY.

The same may not hold true for driving greater depth, however. Provider incentives are unlikely to fund the capital requirements needed to develop and launch more HIE services, considering that the incentives phase in over time and only after providers are already supposed to demonstrate meaningful use. Thus, there is strong reason to believe that even with the ARRA incentives at play, market forces will neither provide the level of capital needed nor reflect the urgency with which it is needed.

By investing to make the HIE lower cost and higher value with a richer set of robust and reliable services, New York believes that a "virtuous cycle" can be established that will make the HIE more attractive to providers at a time when they will be receiving relative large incentives to use such services. The more services New York can establish under the State HIE program, the less expensive it will be to attract additional providers to participate, and the greater the likelihood that the program will achieve its ultimate goals.

Through the State HIE program as well as other federal and state funding streams, a central goal to further advance this Strategic Plan would be to invest in a number of shared services (consistent with the goals of the FOA), described in more detail in the Technical Infrastructure section, that would expand and align the considerable health IT and HIE efforts that are already underway in the state with newly emergent meaningful use requirements and FOA guidelines and priorities.

As described in the Governance and Technical Infrastructure sections, New York has a formalized governance and decision-making process for making key decisions regarding the SHIN-NY. These recommendations will be confirmed and completely specified for implementation during the collaborative governance and operational refinement process in the first quarter of 2010.

The following candidates for shared services were considered for this proposal:

- Electronic eligibility and claims transactions
- E-prescribing and refill requests
- Electronic clinical lab ordering and results delivery
- Electronic public health reporting
- Quality reporting
- Prescription fill status and/or medication fill history
- Clinical summary exchange for care coordination
- Patient identity/locator service
- Security services/2-factor authentication
- Clinician identity
- Consent management

- Terminology service
- Directories/Registries
    - Providers
    - Patients
    - Consent
    - Laboratory
    - Radiology
    - Diagnostic imaging service providers
    - Health plans
- Clinical decision support
- Transfer of care form
- Personal health records
- Medication reconciliation
- Secure routing
- Advance directives and messaging
- Minor consent application
- Immunizations
- Clinical analytics

New York considered the following screening and prioritization criteria to decide which shared services were most important:

- Alignment with FOA guidelines and priorities
- Ability to assist physicians with achieving meaningful use as soon as possible
- Priorities of RHIOs
- Synergies with ongoing and currently funded programs

Taking into consideration the FOA priorities, in September NYeC surveyed the RHIOs to obtain an understanding of their priorities for statewide shared services. The following figures show the relative preferences of the RHIOs for shared services and core services:

Figure 4 - Value of Shared Services as Rated by NY RHIOs (October 2009)

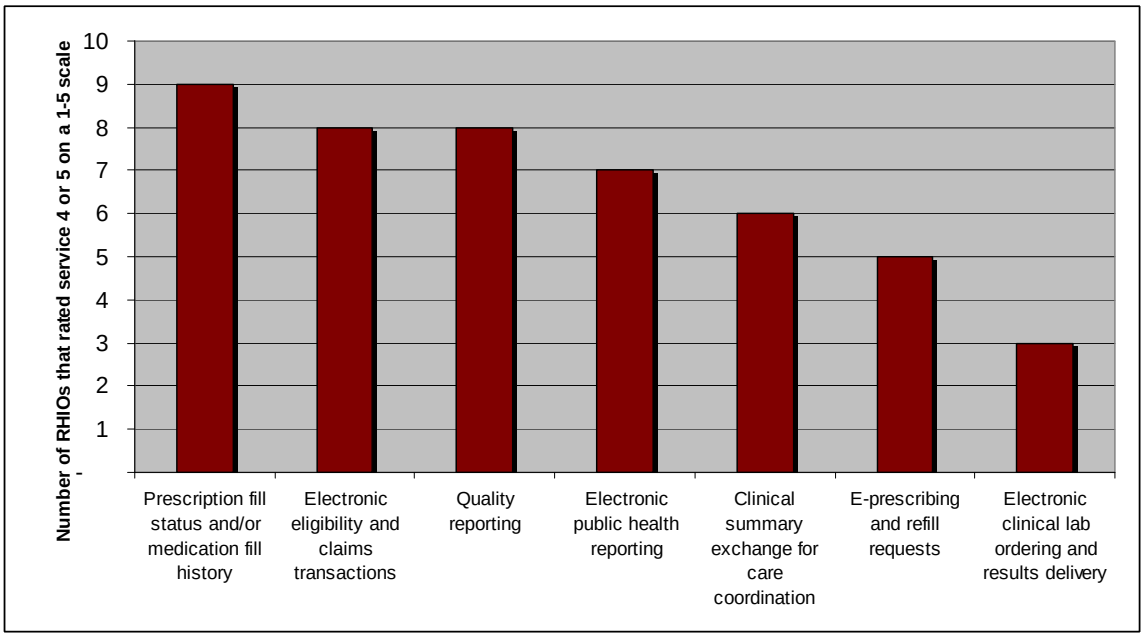
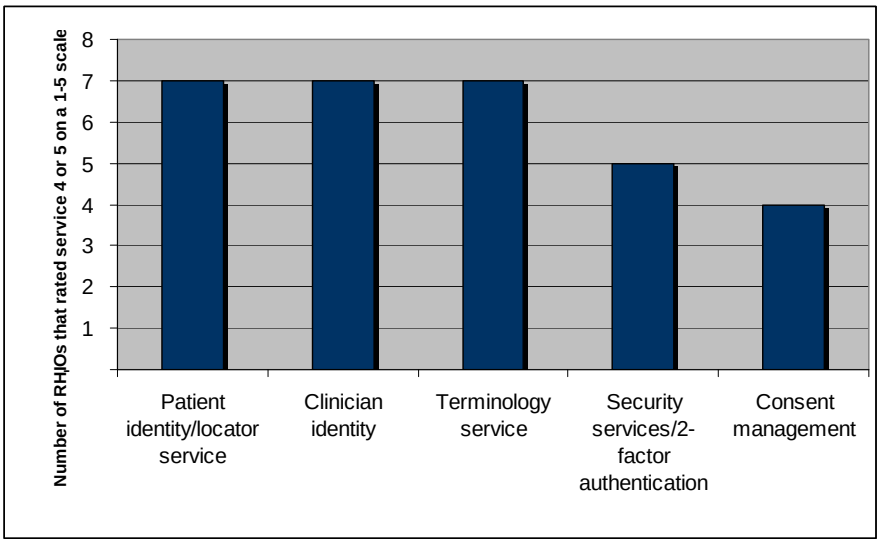


Figure 5 - Value of Core Services as Rated by NY RHIOs (October 2009)



Pending decisions coming from the SCP, NYeC anticipates prioritization of state level services for the following shared services:

Eligibility and claims status	$4.6M
Security (2-factor authentication)	$4.5M
Identity (patient/clinician/facility)	$9.3M
Consent management	$3.5M
Lab terminology services	$4.7M
Universal Public Health Node	$4.3M

Total	$30.9M

The total funding required for these services obviously exceeds New York's allocation under the FOA. This is as far in the decision-making process as the collaborative governance structure will allow within the timelines of the FOA application. During the operational refinement period of Q1 2010, New York will undertake to:

- Set priorities among these options based on criteria specified earlier, FOA and meaningful use priorities, and any other guidance and feedback received from ONC or CMS
- Develop more fine-grained budget estimates
- Reduce the estimated pricing through more thorough due diligence than the current timing allowed and through competitive bidding among the RHIOs and their vendors

As noted, another key consideration in prioritizing the shared services is ability to assist physicians with meaningful use requirements and alignment with FOA priorities and guidelines. In the following tables we describe how the current and proposed New York efforts address the interoperability requirements of meaningful use and FOA requirements.

Table 7 - Efforts to Address MU and FOA Interoperability Requirements

MU Year	Meaningful Use Requirement	New York program to address MU requirement
2011	Incorporate lab-test results into EHR as structured data	• Terminology services shared service • HEAL 5 and HEAL 10 use cases
	Generate and transmit permissible prescriptions electronically (eRx)	• Medication management shared service • HEAL 5 and HEAL 10 use cases
	Electronic claims and eligibility checking	• Electronic claims and eligibility shared service
	Capability to conduct immunization reporting	• HEAL 5 use case
	Capability to conduct quality reporting	• HEAL 5 and HEAL 10 use cases • QRDA Level 1 specification development for HEAL 5
	Capability to exchange key clinical information among providers of care and patient authorized entities electronically	• HEAL 5 and HEAL 10 exchange requirements • CHIxP Level 1/2/3 exchange requirements
	Capability to send electronic syndromic surveillance data to public health	• Universal Public Health Node shared service • HEAL 5 use case
2013	Access for all patients to PHR populated in real time with clinical data	• HEAL 5 use case
	Retrieve and act on eRX fill data	• Medication management shared service • HEAL 5 and HEAL 10 use cases
	Perform medication reconciliation at each transition of care	• Medication management shared service • HEAL 5 and HEAL 10 use cases
	Retrieve immunization histories from immunization registries	• Not currently identified
	Provide sufficiently anonymized electronic syndrome surveillance data to public health agencies with capacity to link to personal identifiers	• Universal Public Health Node shared service • HEAL 5 use case
	Produce and share an electronic summary care record for every transition in care (place of service, consults, discharge)	• HEAL 5 and HEAL 10 use cases • CHIxP Level 1/2/3 exchange requirements
	Compliance with HIPAA Privacy and Security Rules	• New York Statewide Policy Guidance • Two-Factor Authentication, Consent Management, and Identity Shared Services
	Compliance with fair data sharing practices set forth in the Nationwide Privacy and Security Framework	• New York Statewide Policy Guidance • Two-Factor Authentication, Consent Management, and Identity Shared Services

Source: Office of the National Coordinator, *Final Meaningful Use Objectives and Measures: 2011-2013-2015*, August 14, 2009.

FOA requirements	New York program to address FOA requirement
Electronic eligibility and claims transactions	• Electronic claims and eligibility shared service
Electronic prescribing and refill requests	• Medication management shared service • HEAL 5 and HEAL 10 use cases
Electronic clinical laboratory ordering and results delivery	• Terminology services shared service • HEAL 5 and HEAL 10 use cases
Electronic public health reporting (i.e., immunizations, notifiable laboratory results)	• Universal Public Health Node shared service • HEAL 5 use case
Quality reporting	• HEAL 5 and HEAL 10 use cases • QRDA Level 1 specification development for HEAL 5
Prescription fill status and/or medication fill history	• Medication management shared service • HEAL 5 and HEAL 10 use cases
Clinical summary exchange for care coordination and patient engagement	• HEAL 5 and HEAL 10 use cases • CHIxP Level 1/2/3 exchange requirements

A final consideration that will be given greater attention during the operational refinement period is "level-setting" RHIO services to provide a floor or baseline of HIE services across the state that supports physician and hospital requirements for demonstrating meaningful use in 2011, 2013, and 2015.

Please see the Technical Domain section below for more detailed descriptions of the proposed shared services.

Strategic Priorities Moving Forward

1. ***Meaningful exchange of health information by the majority of practicing health providers across settings and disciplines, and by consumers***

As identified in the environmental scan, there are many providers that are not yet connected to RHIOs for the exchange of health information. New York will use its Statewide Collaboration Process, coordination with the Regional Extension Centers, and coordination with state Medicaid incentives to cultivate market-driven expansion of HIE penetration to the greatest extent possible.

To the extent that investments may be required to expand the breadth HIE service areas, consideration will be given to prioritization of Priority Primary Care Providers in alignment with the RHITEC program.

2. ***Creation of a highly valuable system for information exchange – one where benefits of provider participation outweigh costs of participation***

To support this goal, NYeC will identify and implement services that will either significantly raise the value of the overall health information exchange network and/or will reduce hurdles at the RHIO level. NYeC will also examine "level-setting" RHIO functionality across the state to ensure that every RHIO is minimally capable of supporting meaningful use interoperability requirements.

Coordination between the State HIE Program and Other State and Federal Activities

Introduction

There are a broad range of health information programs currently operating and planned across the landscape of health programs and services in New York. Coordination of the programs ranges from basic awareness on one end of the spectrum to formal governance and structured collaboration on the other. NYeC's proposal for the State HIE program recognizes that greater coordination of state health information programs will increase the value of the network as more programs are connected and through resource efficiency.

NYS DOH will lead efforts to coordinate state programs with shared goals around health information exchange, and promote use of common protocols and standards based on the SHIN-NY. Moving forward, the state will identify opportunities for both new and improved coordination across a broad range of stakeholders including:

- Medicaid
- Public health
- Medicare and Federally Funded, State Based Programs
- Federal care delivery organizations (VA, DoD, IHS)
- Organizations involved with other ARRA programs

Strategic Goals

The broad strategy for New York is focused on improving care and outcomes through broader use of the network. The following activities support this strategy:

1. Education and communication about major health information programs operating in the state and coordination among these programs where program goals overlap in a significant way
2. Adoption of common policies, common use case requirements, and common technical standards across programs where appropriate

Coordination Efforts Currently Underway

Coordination with Medicaid

Coordination with Medicaid - In NYS, Medicaid is housed within NYS DOH Office of Health Insurance Programs (OHIP) run by the NYS Medicaid Director. Senior staff discussions between Medicaid, OHITT and NYeC are underway to coordinate both the NYS Health IT Strategic Plan and the State Medicaid Health IT Plan, resulting in a more cohesive approach to implementing Medicaid Meaningful Use incentive payments and achieving statewide adoption of health IT.

NYS Medicaid is already an integral component in current HIE efforts through the implementation of the statewide medication history and e-prescribing initiative. Promoting adoption and use of certified electronic medical records has been an important focus through existing state funding efforts. Within NYS DOH, OHITT and Medicaid are now focused on

coordinating efforts to support health IT "meaningful use" through the Medicare and Medicaid programs, and align our respective health IT and HIE plans. Medicaid's policy and implementation efforts will build on NYeC's current governance, policy, and operations framework, and Medicaid administrative funds and meaningful use incentive payments should factored into the overall financial sustainability plans for HIE. As an example, Medicaid is considering leveraging regional "extension agents" to ensure that the maximum value for provider meaningful use payments is achieved and that health IT adoption is realized. OHITT and NYeC will coordinate with Medicaid to develop common policies, standards and procedures as necessary to ensure alignment of strategic goals and operational activities, including but not limited to data exchange activities to be supported by the new Medicaid data warehouse slated for implementation in 2010.

Coordination with Public Health

Coordination with Public Health - NYS DOH coordinates efforts linking State health information systems with the SHIN-NY, with initial focus on completing implementation of the Universal Public Health Node (current funding support provided by CDC). Establish a governance and operational structure for NYSDOH Public Health Informatics (includes all NYS DOH departments and programs). This includes a process for governance and prioritization of the development and implementation of NYS DOH program-area specific use cases for data exchange through the UPHN, including a data validation, certification, and integration plan. Program area modules currently planned are:

1. Child Health Information Integration (CHII) Project
2. Infectious Disease Integration
3. Chronic Disease/Environmental Health Data System Integration

This also includes updating NYS DOH and local public health policies and procedures to incorporate the exchange and use of new data. (See the Technical Infrastructure Shared Services Expansion section of this proposal for further details on the UPHN.)

Coordination relating to Long-Term Care Populations and Services to Promote Health IT - As part of HEAL 5, the Continuum of Care Improvement Through Information Exchange New York Project (CCITI NY) in New York City is developing a clinical decision support tool to help manage the care of older and disabled patients in long-term care settings. As a HEAL 5 awardee and a health IT project in NYS, CCITI NY is part of the larger Statewide Collaboration Process (SCP) leveraged to, among other goals, ensure that state and federal priorities for long-term care are met. The SCP is also utilized to integrate CCITI's activities into NYS' broader state agency coordination effort mentioned above. NYS continues to support innovation in long-term care through separate HEAL NY investments.

Coordination with Medicare and Federally Funded, State Based Programs

New York State Health and Human Services Chief Information Officer Council - NYS DOH is also chairing the NYS Health and Human Services CIO Council to disseminate and promote

adoption of common policies and standards across health and human services programs and agencies. These State agencies have developed a conceptual model for linking their systems to the SHIN-NY, and the State will pursue further design and implementation activities in that direction. The CIO Council is evolving a governance and operational structure for cross-cutting NYS DOH/Interagency Health IT Plans (a "Policy and Operations Board") that will include current as well as new agency and agency bureau members.

Coordination with CDC on the Epidemiology and Laboratory Capacity Cooperative Agreement Program (CDC) - This is being addressed through the NYS DOH's current grant with CDC to develop the UPHN. The UPHN will allow public health reporting by health care institutions through the Statewide Health Information Network for New York (SHIN-NY). The UPHN will enhance public health functions within NYS DOH and become more dynamically valuable to health care providers including, but not limited to, population health and laboratory reporting.

Coordination with HRSA on HIV Care Grant Program Part B States/Territories Formula and Supplemental Awards/AIDS Drug Assistance Program (ADAP) Formula and Supplemental Awards - The NYS AIDS Institute within the NYS DOH, Office of Public Health, is an active participant and contributor to the SCP. Senior representatives from the Institute are ardent supporters of the NYS health IT strategy and stand ready to assist in further enriching the process of developing sound health information standards and policies. Further, the Institute on behalf of NYS DOH has received a Ryan White Part B Base Supplemental Award. This award is for areas of severe need in the AIDS community and is to be used for allowable Part B activities, such as client services and ADAP. Part B funding is used to assist States and Territories in developing and/or enhancing access to a comprehensive continuum of high quality, community-based care for low-income individuals and families living with HIV. A comprehensive HIV/AIDS continuum of care includes the following core medical services: outpatient and ambulatory health services, AIDS Drug Assistance Program (ADAP) treatments, AIDS pharmaceutical assistance (local), oral health care, early intervention services, health insurance premium and cost sharing assistance, home health care, medical nutrition therapy, hospice services, home and community-based health services, mental health services and medical case management, including treatment adherence services and substance abuse outpatient care. Activities under this grant will be coordinated through the Institute's participation in the SCP and will be incorporated into statewide health IT planning as part of the broader interagency coordination effort led by OHITT.

Coordination with HRSA on Maternal and Child Health State Systems Development Initiative programs - The Division of Family Health within NYS DOH, Office of Public Health is responsible for promoting the health of families by assessing needs, promoting healthy behaviors and providing services to support families. The division's primary focus is to improve the health of women, children and adolescents. Its programs touch new mothers, adolescents considering sexual activity, children with disabilities, rape victims and children with asthma, lead poisoning or lack of access to dental services. Programs promote healthy behaviors while also assuring access to quality health care. The division provides access to primary medical and dental care and preventive health services for migrant farm workers and Native Americans living in reservation communities. The division also receives and administers several HRSA grants on behalf of the NYS DOH including:

- Maternal and Child Health Services Block Grant;
- Universal Newborn Hearing Screening and Intervention Program which will, among other goals, develop and enhance the capacity of the UNHS Program to integrate with other state systems that provide screening, tracking, and surveillance programs identifying children with special health needs;
- State Systems Development Initiative which will establish or improve the data linkages between birth records and 1) infant death certificates, 2) Medicaid eligibility or paid claims files, 3) WIC eligibility files, and 4) newborn screening files;
- Effective Follow-up in Newborn Screening program which will focus on the use of electronic health information exchange to improve the newborn screening system, with attention to both short and long-term follow up per the guidance in the Statement of the Advisory Committee on Heritable Disorders in Newborns and Children on Long-term Follow-up after diagnosis resulting from newborn screening;
- Children's Oral Healthcare Access Program which will strengthen the State's oral health program infrastructure through collaborative activities and programs with relevant State and local programs, agencies, organizations and key stakeholders to improve the oral health of low income infants and children and their families and reduce oral health disparities.
- Residency training Dental Public Health which supports two or more dentists to be trained in the practice of dental public health per year.

The Division of Family Health is currently participating in statewide health IT planning as part of the broader interagency coordination effort lead by OHITT and will incorporate activities related to its federally funded programs.

Coordination with HRSA on State Offices of Rural Health Policy - The NYS Office of Rural Health, housed in NYS DOH, has been active in developing Telemedicine initiatives across the state. Efforts are underway to incorporate these initiatives into the SCP and broader interagency coordination effort. NYS has advanced many telemedicine initiatives including pilot projects, the stroke program, clinical reimbursement for the use of telemedicine in rural health care settings and coordinated efforts to secure telemedicine funding through the FCC. The Western New York Rural Area Health Education Center (WNY R-AHEC) has been active in coordinating with local RHIOs and active in the SCP.

Coordination with SAMHSA on State Mental Health Data Infrastructure Grants for Quality Improvement (DIG) - The NYS Office of Mental Health (OMH) operates psychiatric centers across the State, and also regulates, certifies and oversees more than 2,500 programs, which are operated by local governments and nonprofit agencies. These programs include various inpatient and outpatient programs, emergency, community support, residential and family care programs. OMH is actively working with DIG grant recipients to expand the use of Web-based data entry for provider and consumer surveys, enabling OMH to collect a greater number of responses, with lower cost, improved data quality and shorter report preparation time, integrate descriptions of providers and the services they offer into a master program directory that is regularly audited against fiscal and survey data systems and used to generate public reports and collaborate with State and local planners on use of data for planning and quality improvement and expand the use of administrative data for State and local reporting of performance measures. OMH is currently

participating in statewide health IT planning as part of the broader interagency coordination effort led by OHITT and will incorporate activities related to OMH federally funded programs.

Coordination with HRSA on State Offices of Primary Care - Within NYS DOH is the Office of Primary Care. The office is responsible for efforts promoting, protecting and preserving NY's "safety net" health care facilities which care for the state's medically indigent and underserved populations. The office provides technical assistance to primary care providers, manages/designates HRSA shortage areas, and manages primary care and planning grant programs, among other activities. HEAL 6 and 9 provide funding to primary care settings for the purposes of local health planning. This will reinforce the foundation in primary care necessary to advance NYS PCMH initiatives, which include an emphasis on health IT. The office will be incorporated into statewide health IT planning as part of the broader interagency coordination effort led by OHITT.

Coordination with HRSA on Emergency Medical Services for Children Program - The NYS Bureau of EMS within NYS DOH, Office of Health Systems Management, is responsible for coordinating all EMS activity in NYS. EMS in NY is governed by state legislation described in Article 30 of NYS Public Health Law (PHL) Chapter 614 of the Laws of New York State. PHL Article 30a mandates NY's EMS Board known as State Emergency Medical Services Council (SEMSCO). SEMSCO meets four times a year and advises the Health Commissioner on virtually all aspects of EMS, including establishing minimum standards for ambulance services, the provision of pre-hospital emergency care including education and training of providers, and the development of a statewide EMS system. Article 30c of the statute establishes NY's EMS for Children (EMSC) Advisory Committee. The EMSC Advisory Committee meets quarterly and advises the Commissioner on all aspects of emergent care for critically ill or injured Children. Funding under the EMSC Program has a long history in NYS that dates back to 1986. The funds have allowed for NY to focus on pediatric pre-hospital care protocols, continuing education for pediatric pre-hospital care, development of a curricula on pediatric pre-hospital care, support and involvement with child injury prevention programs, and development analysis of statewide health care databases as it relates to pediatrics. Activities under this program will be incorporated into statewide health IT planning as part of the broader interagency coordination effort lead by OHITT.

Coordination with NHIN Trial Implementations program - NYeC is currently participating in the NHIN Trial Implementations program. One of the benefits of this program is that it provides a single, standardized, national architecture for federal organizations to participate in state and regional HIE activities. NYeC expects that it will eventually use this program as a way to pursue HIE activities with federal delivery organizations.

Coordination with SSA Programs - As stated above, NYeC views its participation in the NHIN Trial Implementation project as a vehicle for participating in HIE activities with federal partners. NYeC recently submitted a proposal to participate in the SSA MEGAHIT program which uses the NHIN for such purposes. In its proposal, NYeC laid out a plan to leverage its SHIN-NY infrastructure to facilitate exchange between SSA and various New York RHIOs. One of the New York RHIOs would stand up an "NHIN Gateway" that would facilitate queries for data from SSA and route them to various other RHIOs in New York.

Coordination with Federal care delivery organizations (VA, DoD, IHS)

Coordination with IHS on tribal programs - Through the Office of Rural Health, NYS DOH develops and deploys rural health initiatives statewide. Among the initiatives is the FCC Broadband grant program coordinated by the Office of Rural Health. FCC Broadband grant recipients form an integrated network across NYS. The projects are encouraged to reach out to and integrate every aspect of the rural community in their respective service areas. In Western NY the WNY R-AHEC is providing services to the Seneca Nation. WNY R-AHEC is enabling the Seneca Nation to take advantage of much needed broadband and IHS stimulus funding to improve broadband connectivity and care coordination services in rural NY communities. WNY R-AHEC's participation in the SCP will enable coordination with the broader NYS health IT vision.

Similarly, the Fort Drum Regional Health Planning Organization (FDRHPO) is another FCC Broadband recipient. Additionally their efforts have been further recognized by NYS through the HEAL 10 grant program which will advance NYS PCMH goals as well as facilitate their organizational and technical integration into the SHIN-NY.

Coordination with Organizations involved with other ARRA programs

Coordination with ARRA Regional Extension Centers under ONC RHITEC Cooperative Agreement Program – NYeC has been invited to submit a full application to become a Regional Extension Center for New York State with the exception of New York City. If NYeC is granted the RHITEC award, the REC program will be tightly integrated with the State HIE program. NYeC collaborates closely with the organization seeking the New York City RHITEC award and will work closely with this organization to provide an integrated statewide approach.

Coordination with ARRA Workforce Development initiatives - Affiliated with the NYS DOH is the SUNY Albany School of Public Health (SPH). SPH staff and faculty are shared between the two organizations in an effort to create continuity between academia and public health practice. OHITT and the capital region RHIO, HIXNY, will serve in advisory and participatory roles in the SPH application for workforce development stimulus funds. If awarded, the project will enhance health IT education in RHIO communities across the state. Similar coordination with workforce funding is occurring in the New York City region. The SCP will provide RHIOs and the workforce development projects with appropriate and consistent health IT policy and messaging.

Coordination with HIPAA Privacy Protections - The ARRA legislation also places a focus on privacy, requiring the Secretary of HHS to appoint a new Chief Privacy Officer and expanding current federal privacy and security protections under HIPAA. Many of these changes will have a direct impact on organizations participating in HIE in New York. New York is doing an analysis vis-à-vis the current version of the statewide privacy and security requirements

established through the Statewide Collaboration Process managed by NYeC and approved by NYS DOH. The ARRA privacy provisions include:

- Extension of HIPAA to Business Associates
- Security Breach Notification Mandate
- New Restrictions on the Use and Disclosure of Protected Health Information
- Additional Patient Rights
- Increased HIPAA Enforcement

New York is at the forefront of clinical excellence and health IT and is well positioned to make effective use of the ARRA of 2009 funds as well as play a significant leadership role and inform the overall policy and regulatory framework developed by the Federal Department of Health and Human Services.

Strategic Priorities Moving Forward

1. ***Awareness of major health information programs operating in the state and coordination among these programs where program goals overlap in a significant way***

2. ***Alignment of policies, funding flows, and technical standards across programs where appropriate***

To meet coordination goals, NYeC will identify programs in the state with shared goals around health information exchange. NYeC will determine the key stakeholders involved in each of the programs and will invite them to participate in coordination activities. Programs that have significant overlap in goals will be asked to integrate into NYeC's governance structure and processes as described in the Governance section below. Programs that have less significant goal overlap will be asked to participate in regular communications to keep all stakeholders informed of initiatives underway in the state.

New York recognizes that exchange of health information is reliant upon the coordination of many disparate stakeholders. Only with a collaborative system level approach can the state align policy, funding flows, and technical requirements to achieve meaningful use of health information across the state. NYeC will continue to work to identify system level hurdles and will engage partners to diagnose and remedy these hurdles in a way that aligns shared goals and benefits the stakeholder community at large.

Operational priorities moving forward

Coordinate state activities: OHITT is charged with addressing organizational health IT coordination challenges within DOH. OHITT will lead efforts to coordinate state programs with shared goals around health information exchange, and promote use of common protocols and

standards based on the SHIN-NY. Moving forward, the state will identify opportunities for both new and improved coordination across a broad range of stakeholders including:

- Medicaid - OHITT and NYeC will coordinate both the NYS Health IT Strategic Plan and the State Medicaid Health IT Plan, resulting in a more cohesive approach to implementing Medicaid Meaningful Use incentive payments and achieving statewide adoption of health IT.

- Medicare and Federally Funded, State Based Programs – Leverage the state HHS CIO Council and internal working groups and governance to create a structure for, remain aware of and integrate health IT aspects of all of its programs and offices.

- Federal care delivery organizations (VA, DoD, IHS) – Use the same approach to integration described for Medicare and Federally Funded, State Based Programs above.

- Organizations involved with other ARRA programs – Leverage the infrastructure established for other NYS applications for funding, like RHITEC, and membership in the SCP to reach out to and integrate organizations involved in other relevant ARRA programs.

Coordinate with other ARRA Programs: In addition, NYeC in cooperation with DOH, will leverage its Statewide Collaboration Process to coordinate other ARRA funding initiatives, including but not limited to the SSA MEGAHIT initiative and the RHITEC initiative.

Pursue Discussions with Border-States: NYeC and DOH will use their participation in the State HIE program to pursue discussions with border states on how to advance HIE among their states.

Five Domains Supporting the Program

Governance

Introduction

New York has developed and implemented a collaborative governance and policy framework for a comprehensive, interoperable health information infrastructure which includes a multi-stakeholder governance entity (NYeC), leadership and coordination within state government for health IT, and a transparent, inclusive, consensus-based decision making process (SCP). Within this framework, responsibility for setting strategy and general policy direction falls to NYS DOH in consultation with the NYeC board; responsibility for setting specific detailed policies is managed by NYeC through the SCP; and responsibility for policy implementation is managed by RHIOs, and CHITAs, Health information exchange software and technical services vendors participate in policy development, implementation and compliance related activities through their contracts with the RHIOs, CHITAs, and NYeC.

Strategic Goals

New York's governance strategy moving forward will build upon the functioning governance framework and processes that are currently in place and to accomplish the following strategic goals:

1. Regularly evaluate and improve the governance framework and SCP
2. Identify emerging health information exchange initiatives and stakeholders within the state, coordinate with these initiatives, and integration them in the SCP
3. Align regional, state, and national governance
4. Pursue HIE activities in a transparent and accountable way so that it is done in the best interest of New York's citizens

Governance Structures and Processes Currently in Place

Governance Framework

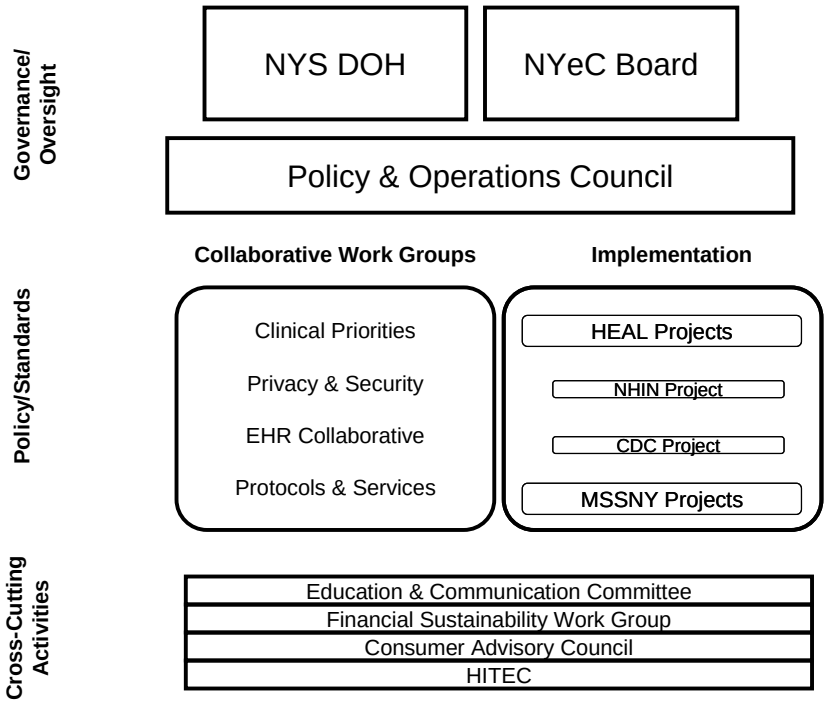
- New York State Department of Health: NYS DOH defines the overall state health IT strategy and provides leadership for the state health IT governance and regulatory framework. NYS DOH establishes the scope for SCP products and provides final approval for these products. The Deputy Commissioner for Health IT Transformation, Rachel Block, has been formally designated by the Governor's Office as the State HIT Coordinator for purposes of this program.
- New York eHealth Collaborative (NYeC): NYeC works closely with NYS DOH in defining state health IT strategy and the state health IT governance and regulatory framework. NYeC also approves SCP products coming from the Policy and Operation Council (POC) prior to their being submitted to NYS DOH. The NYeC Board is comprised of leaders from multiple sectors of the health care industry including consumers, physicians, hospitals, health plans, employers, and public health agencies.

- Policy and Operations Council (POC): The POC is comprised of the leaders of the RHIOs and CHITAs. The POC reviews and approves recommended work group policies and products for presentation to NYeC and NYS DOH. The POC also reviews and makes recommendations about the SCP structure and processes and supports NYS DOH/NYeC leadership in making strategy decisions
- RHIOs: RHIOs provide multi-stakeholder governance of HIE policies and activities at the regional level across New York State.
- CHITAs: CHITAs support provider adoption activities, and provide a mechanism to link state requirements to EHR contracts.

Statewide Collaboration Process (SCP)

New York is developing health information policies, standards, protocols, and technical approaches governing the health IT infrastructure through the SCP. NYeC, in partnership with the NYS DOH, manages the SCP in order to forge consensus on requirements in the form of Statewide Policy Guidance (SPG). Developing policies and mechanisms to coordinate implementation through this open, transparent, and consensus driven process to which all contribute will ensure that the comprehensive policy framework advances health IT in the public's interest. Figure 6 illustrates the components of the SCP to date.

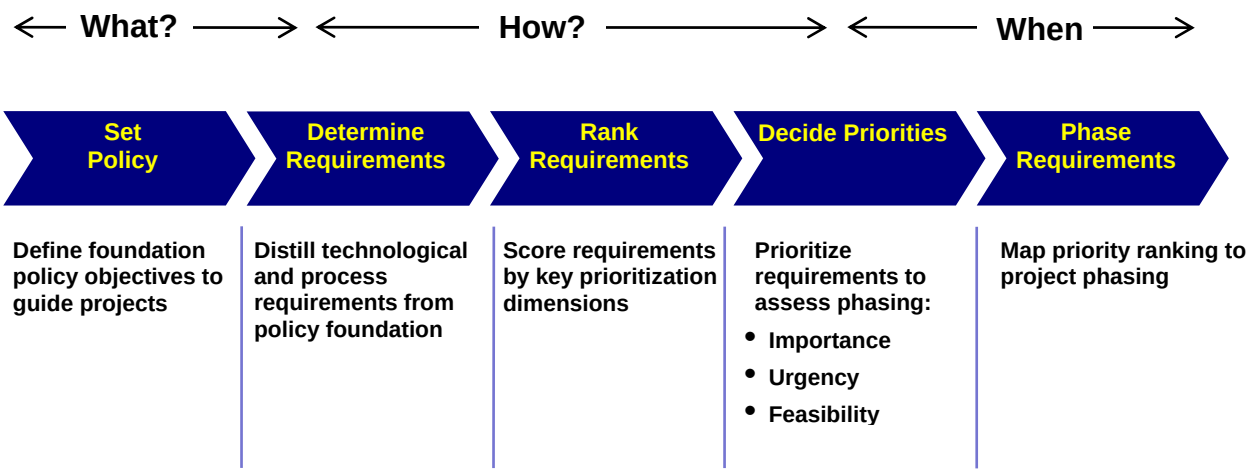
Figure 6 - Statewide Collaboration Process Components



The SCP is driven by the efforts of four workgroups which are responsible for developing the policies and requirements that are collectively known as the Statewide Policy Guidance (SPG). The four workgroups are:

- Clinical Priorities Work Group: Develops clinical requirements, based on end-user work flow steps, for all the clinical use cases being implemented by the awardees
- Privacy and Security Work Group: Develops privacy and security policies and procedures, including those related to consent, authentication, authorization, access and audit.
- EHR Collaborative Work Group: Develops policies, standards, technical approaches, and services necessary for successful and sustainable adoption of interoperable EHRs.
- Protocols and Services Work Group: Develops technical specifications for health information exchanges (HIEs) to facilitate connectivity to the SHIN-NY

To date, workgroups have developed requirements and policies using the process illustrated below:



Policy Approval Process

There are four key stages to development and approval of a policy under the governance process:

- Policy Development: The SCP work groups develop policies by consensus. For major policies, a public comment period is conducted to ensure maximum public input.
- POC Review: The work groups first advance the policies to the POC for consideration, summarizing the key issues and decisions in a "decision memo." The POC considers the policies and votes whether to recommend its passage or not.
- NYeC Board Review: The results of this vote are advanced together with the policy and decision memo to the NYeC Board. The NYeC Board votes whether to approve the policy or not.
- NYS DOH Review: Upon approval by the NYeC Board, the policy, including the decision memo and votes, is advanced to NYS DOH. NYS DOH has final approval.

Policy Amendment Process

One of the key principles of New York's strategy is that there should be an opportunity to regularly review policies based on experience gained from implementation of those policies. NYeC has initiated a semi-annual review process for this purpose. The community is provided the opportunity to suggest amendments to the existing SPG. Those requests are then submitted

to the respective work groups and a similar process to the one described above for initial development of policies.

Strategic Priorities Moving Forward

1. Regularly evaluate and improve the governance framework and SCP

The state's governance structure is still evolving. NYeC and NYS DOH will regularly review the effectiveness of the SCP, the work group structure, and the constituent organization roles and will make improvements as required.

2. Identify emerging health information exchange initiatives and stakeholders within the state, coordinate with these initiatives, and integrate them in the SCP

NYS DOH and NYeC will identify new initiatives and entities that share health information exchange goals and bring these entities into the governance framework and SCP where there is significant overlap in program goals. Many of these initiatives have been identified earlier in the strategic plan and include:

- Patient centered medical home (PCMH) projects that were recently awarded grants through the HEAL 10 project, as well as Medicaid incentive payments for PCMH to be implemented in 2010;
- Medicaid health information initiatives;
- Medicare and Federally Funded State Based health information initiatives;
- State government agencies that will be playing a growing role with the state's health IT infrastructure (may include Office of Alcoholism and Substance Abuse Services (OASAS), Office of Mental Retardation & Developmental Disabilities OMRDD, NYS DOH, Department of Corrections (DOCS), Office of Mental Health (OMH), Office of Temporary and Disability Assistance (OTDA), Office of Children and Family Services (OCFS), DOH Office of Health Insurance Programs (OHIP/Medicaid), Department of Labor (DOL), Department of Motor Vehicle (DMV), Governor's Office of Employee Relations (GOER), and Taxation and Finance;
- VA, DoD, and IHS health information initiatives; and
- Health information initiatives under other ARRA programs including the "extension agents" operating under the prospective RHITEC cooperative agreement

3. Align regional, state, and national governance

As the scope of policy and operations expands from regional to state and then to national level activity, governance alignment will be required. Currently New York has functioning regional governance through the RHIOs and state governance through NYS DOH and NYeC. The emergence of Federal governance of health information will require further alignment from top to bottom while maintaining proper governance roles at each level.

New York will work closely with all affected stakeholders to understand required changes in governance as information exchange expands and make appropriate adjustments to the

governance framework and processes. NYeC and NYS DOH look forward to participating in national discussions on how the nationwide HIE model will emerge. NYeC currently participates in the NHIN Trial Implementations project, which offers one avenue to pursue those discussions, and it expects there will be further avenues within this project. There are several lessons learned from New York's governance model that might be applicable to the nationwide model.

4. ***Pursue HIE activities in a transparent and accountable way so that it is done in the best interest of New York's citizens***

New York has already put in place the framework and processes to ensure pursuit of health information activities that are in the best interest of New York citizens. The process is inclusive and transparent. To improve accountability, the SCP will develop a contractual and legal framework to support New York's health information infrastructure. This contractual and legal framework will provide additional accountability authority and is discussed further in the Legal/Policy section of the strategic plan.

Operational Priorities Moving Forward

Operational Goal 1 - Maintain, evaluate and improve governance framework and SCP

Under HEAL 10, NYeC is funded to continue convening all the parts of its governance and policy development structure including the work groups, the SCP operations staff, the POC and the NYeC Board. It plans to evolve the existing work group structure to advance new requirements and policies for the PCMH projects and SHIN-NY infrastructure and services funded under that program.

Under the State HIE Program, NYeC will pursue the following tasks:

- Manage SCP to Support State HIE Program: NYeC will leverage its existing structure to conduct its work under the State HIE program. New personnel resources will be needed to oversee management of the SCP related to the additional set of services being built under its State HIE program.
- Manage Planning Period to Design State HIE Funded Services: NYeC will use the SCP structure to conduct a planning period between Jan-April 2010 to finalize the services being funded under the State HIE program and further define the scope and design plans related to those services.
- Develop SPG for New Services: NYeC will need to develop new policies related to the shared services it funds. It will utilize the existing work group structure for that purpose. This will require additional personnel resources, so it will allocate a certain proportion of work group staff time and NYeC staff time for development of SPG related to those services in proportion to the additional workload the work groups undertake.
- Review SCP Structure: NYeC and NYS DOH will annually evaluate New York's health information governance framework and processes. To do so, they will draft a clear set of desired outcomes and evaluation criteria and request multi-stakeholder input. NYeC and

NYS DOH will then evaluate the effectiveness of health information governance and use the evaluation to inform ongoing improvements to structure, processes, and participation.

Operational Goal 2 - Identify emerging health IT initiatives and stakeholders within the state, coordinate with these initiatives, and integrate them in the SCP

Under HEAL 10, NYeC will incorporate into the SCP the new patient-centered medical home projects funded under the state HEAL 10 program. It will also work with NYS DOH to figure out the best ways to involve State Agencies, including Medicaid, into the SCP, as these agencies have expressed an interest in leveraging the SHIN-NY infrastructure for their agency purposes.

Under the State HIE Program NYeC will pursue the following tasks:

- Identify Other Health IT Initiatives and Stakeholders: The State HIE FOA calls attention to various other state and federal initiatives and programs that have a stake in how New York's infrastructure evolves. In addition, there are several other health IT projects and initiatives in New York that are not yet part of the SCP. NYS DOH and NYeC will work together to identify those initiatives and figure out opportunities to include them in the SCP.
- Convene Regular Meetings of Other Initiatives: NYS DOH and NYeC will work together to convene stakeholders representing the major health IT initiatives in the state in order to identify shared goals, opportunities for resource sharing and collaboration. Following the meeting, NYS DOH will convene regular coordination calls to keep all programs informed of one another's activities.
- Coordinate with Medicaid: OHITT and NYeC will work with Medicaid on three broad areas of coordination: implementation of a new Medicaid data warehouse that will make health information collected by NYS available for clinical purposes in providers' offices; alignment between the State HIE Strategic and Operational Plans, and the State Medicaid Health IT Plan; and standards for PCMH incentives and requirements in early 2010.

Operational Goal 3 - Monitor federal governance policy and ensure New York's alignment with those policies

Under HEAL 10, NYeC is scheduled to continue work with the HEAL-funded projects and other health IT projects to learn from their implementation experience. It has developed a process to periodically revisit and refine the SPG based on implementation experience. NYeC is also committed to analyzing the best role to play within the NHIN and how that affects the New York SPG and development of the SHIN-NY.

Under the State HIE Program NYeC will pursue the following tasks:

- Monitor Federal HIE Governance Policy: NYeC and DOH will continue to monitor developments at the federal level on national HIE governance structures. NYeC will designate staff resources to monitor the work of all the federal work groups, and track developments on governance issues in the NHIN Trial Implementations project. NYeC will regularly include agenda items at POC meetings to inform the POC of emerging changes in developments on federal level.

Operational Goal 4 – Advance models to ensure that will ensure that health information exchange activities are managed in a transparent and accountable way in the best interest of New York's citizens

Under HEAL 10, NYeC will continue to operate an open, transparent SCP governance process, and to develop a legal and contractual structure to operate the SHIN-NY.

Under the State HIE Program NYeC, in cooperation with NYS DOH, will pursue the following tasks:

Review Ways to Ensure the Accountability of NYeC and RHIOs: NYeC and the RHIOs play important roles within New York's infrastructure. NYS DOH is considering legislation that will codify in law the roles, responsibilities for NYeC, NYS DOH, RHIOs, and the SCP in building and operating the SHIN-NY. Core aims of the legislation include enabling the department to promulgate regulations to establish:

- Requirements for health information exchange;
- Defining categories of data to be exchanged and measures required for "public good" purposes (e.g., quality reporting, public health);
- Requiring provider and state agency participation in the SHIN-NY; and
- Financing mechanisms for the SHIN-NY

NYS DOH will explore the need for a broader regulatory regime in conjunction with this grant for state HIE activities. It is important to expand access to and use of the SHIN-NY to additional segments of the broader health system (e.g., mental health and social services agencies). However, clear statutory authority is required to apply these policies more broadly. Legislation will therefore be advanced that would grant broad authority to NYS DOH to define requirements, and formally establish a process in law for policy development and accountability.

Finance

Introduction

New York State has provided foundational funding to develop a strong statewide health IT and HIE infrastructure, recognizing that it has the hallmarks of a public good that requires start-up public financing. This funding has been complemented by private sector contributions to each of New York's RHIOs. This funding is providing the opportunity to New York to stand up the necessary services that will demonstrate sustainable value. Moving forward, NYeC intends to explore business models for the support of health information governance and operations that are self-sustaining while ensuring that proper financial management, control, and reporting functions are in place.

Strategic Goals

New York seeks to accomplish the following strategic goals with regards to Finance:

1. Financial sustainability of health information governance and operations for the public good; and
2. Sound financial management, control, and reporting for health information governance and operations.

Background

As part of the HEAL 5 program, NYS DOH required RHIOs to submit 5-year financial sustainability plans. The RHIOs submitted those plans in July 2009 and will be submitting audited financial statements going forward. NYS DOH is currently analyzing these plans and will work through the SCP to recommend ongoing financing policies and mechanisms based on the results.

As indicated in the business plans, the RHIOs have each demonstrated success in developing funding models that involve public and private contributions towards their projects from multiple stakeholders. Eight of New York's RHIOs have received some level of funding from health plans.

In 2009, NYeC convened a work group involving all of the RHIOs to collaborate on development of their financial sustainability plans. This work group served as a forum for RHIOs to share a common business plan template as well as to develop content and discuss ideas in preparing their plans. The RHIOs have also agreed to share key information from their business plans with one another to advance collaborative work on a statewide sustainability plan.

More work is now needed to evolve those plans into a structure that scales as part of a broader statewide framework. NYeC has previously undertaken various activities in this area. In early 2008, NYeC and the Business Council of New York State, which represents a large number and cross-section of employer interests, established a Health IT Sustainability Work Group which began to tease out a long term financing model for health information infrastructure. The work group was structured into sub-groups based on three broad categories of work as described below:

- Cost and Benefit Analysis: This sub-group oversaw activities to detail the costs and benefits of providing interoperable health IT across New York State. The analysis has estimated the distribution of these costs and benefits among the various groups of stakeholders, with the primary goals of identifying the qualitative and quantitative value proposition for each stakeholder group.
- Financial Instruments and Policy: This sub-group developed concepts to finance the various costs associated with HIE deployment and EHR adoption, including defining policies and mechanisms for financial investment in health IT, both from broad value-driven activities and existing or potential financing sources and methods. It produced several issue papers explaining the conceptual framework for providing reimbursable value to carefully selected categories of stakeholder congruent with the priorities of the state wide collaborative process.
- Business Support and Communications: This sub-group developed recommendations to enlist the support of the business community in the statewide health information strategy. A major focus was to communicate the need for this support and the justification for it to the business community. Specific deliverables considered regular correspondence to business leaders, organization of seminars/meetings to address business concerns, and meetings with the business community to address specific issues.

Strategic Priorities Moving Forward

1. Financial sustainability of health information governance and operations

The current public and private funding can be considered foundational funding which is allowing the RHIOs the opportunity to implement HIE services and demonstrate value. As health information functionality matures, RHIOs will be better able to determine the value of their services and will be encouraged to test and implement funding mechanisms that capture that value. (Funding models to test may include transaction fees, membership fees, fees for services, fees to other stakeholders deriving value, and reimbursement sharing among others.)

As exchange of health information moves from a regional activity to a statewide activity, a new layer of operations and governance will require financial support. New York needs to find ways to both sustain the statewide network (the "big buses" that constitute the SHIN-NY), which will be the vehicle for RHIOs to access and offer many critical services, and regional networks (the so-called "little buses") through which RHIO participants will access the SHIN-NY. As part of that SHIN-NY infrastructure, there will be certain services that are shared among network participants. This will drive the need for some common business models to support maintenance of the overall SHIN-NY core infrastructure and pricing for those shared services.

2. Sound financial management, control, and reporting for health information governance and operations

The magnitude and complexity of the financial management function is expected to increase substantially over the next 5 years driven by an increase in numbers of stakeholders involved, a shift from regional to interconnected statewide activity, and the introduction of federal funding.

To ensure sound financial management, control, and reporting, NYeC and NYS DOH will work together to undertake the following activities:

- Identification of shared financial principles;
- Development of consensus-based finance policy;
- Identification of financial control measures and processes to ensure accountability

Operational priorities moving forward

Operational Goal 1 – Develop statewide model for sustainability of health information governance and operations

Under HEAL 10, NYeC will fund economic analysis of the opportunities arising from the development of the state and regional health IT infrastructure. This will be vital to ensure sustainability of this infrastructure beyond the lifetime of these funding opportunities. One critical area requiring analysis will be the competing opportunities for "shared services" that can be advanced for common use through the SHIN-NY.

Under the State HIE Program NYeC will pursue the following tasks:

Develop Statewide Sustainability Model: Under its State HIE program, NYeC and NYS DOH will explore ways to work with the RHIOs to develop the framework for cohesion of their different business models into a statewide business plan and sustainability model. NYeC and NYS DOH will review the existing work group structure, which includes separate work groups working on shared services and sustainability, with a view to developing a new coordinated structure within the SCP to focus on business plans and financial sustainability.

Develop Pricing Plans for Shared Services: While NYeC advances pilot implementations of shared services under the State HIE program, it will need to develop pricing plans for those services. It will work within the SCP and POC structures to develop a pricing framework for shared services, and specific pricing plans for each individual service.

Operational Goal 2 – Sound financial management, control, and reporting for health information governance and operations

NYeC, in cooperation with NYS DOH, has established a foundation of internal structures and processes to ensure sound financial management, control, and reporting for health information governance and operations. This includes general Board oversight of finances, including monthly review of NYeC's financial condition by a Board finance committee; development and maintenance of a detailed budget; strong internal processes related to day-day management of finances; rigorous contract management and competitive procurement policies for subcontractors; maintenance of a policies and procedures manual; and oversight of its finances through annual audits.

Under the State HIE Program NYeC will pursue the following task:

Maintain Financial Controls and Submit Financial Reports: NYeC and NYS DOH are well-positioned to maintain effective financial management of the State HIE program, similar to the role they have undertaken for its other state and federal projects. NYeC and NYS DOH will demand strict accountability from all subcontractors and require regular, detailed progress and spending reports. NYeC will work with NYS DOH to prepare and submit the required project reports ensuring compliance with generally accepted accounting principles and all relevant OMB circulars. NYeC will also provide a single point of contact between New York and ONC for the purposes of submitting periodic progress and spending reports.

The Governor and DOH will require detailed reporting from NYS DOH per the state's participation in the grant. The reporting process will include a description of the basis and method of funds distribution and supporting documentation required for payments. The process will allow for maximum transparency and be compliant with GAAP and OMB guidance. Quarterly programmatic and financial reports will be provided and made available for public consumption per the process established by OMB and the state. DOH and NYeC will report quarterly on elements including, but not limited to:

- Names and locations of the recipients of funds;
- Type of recipient;
- Amount of recovery funds awarded and disbursed;
- Project period and current status;
- Primary performance location;
- Name of project or activity;
- Amount of recovery funds received and expended;
- Description of the project or activity;
- Evaluation of completion status;
- Employment impact; and
- Rationale for funding.

Technical Infrastructure

Introduction

New York's health IT framework is built upon common statewide information policies, technical standards, and protocols, as well as regional "bottom-up" implementation approaches, to allow local communities and regions to structure their own efforts based on clinical and patient priorities. This framework promotes innovation across the full range of New York's diverse health care delivery settings – from solo-physician offices and community health centers to large academic medical centers and nursing homes, and from Manhattan to rural upstate towns – with vastly different market conditions and health care needs.

The vision for the clinician or other authorized users is to experience one big exchange without actually creating a single exchange, either virtually or physically. In reality there are many health care organizations and systems participating in HIE services at different levels, and the user's ability to seamlessly traverse these exchanges creates the illusion of a central exchange, thus simplifying the clinician experience. For example, a physician desiring the prescription (Rx) history of a patient should only need to 'press a button' to fulfill the request. Underneath, the Rx service may have to traverse many HIEs or sub-networks which comprise the SHIN-NY to obtain the information.

In order for users to experience the SHIN-NY as a single exchange, it must be an adaptive infrastructure that enables widespread and seamless interoperability among disparate healthcare systems. And in order for it to be seamless – that is, consistent and coherent across large numbers of users and settings and geographies – the infrastructure must accommodate two types of "seams": 1) heterogeneity of systems, and 2) rapid and continuous changes in systems. Heterogeneity and change will be constant and it is essential that the infrastructure have flexibility to accommodate unanticipated components and retirement of existing components without significant disruption to the overall system. In short, the "system" should not let the user know that it is cutting across systems or networks, and it should never go down.

While this may seem to be a distant vision, we do, in fact, have a very good example of this today: It's the Internet. By building on the internet, and using fundamental design principles that make the internet adaptive over systems and time, the SHIN-NY will provide an infrastructure that will increase data "liquidity" without dictating that users have the same components or vendors, either now or in the future.

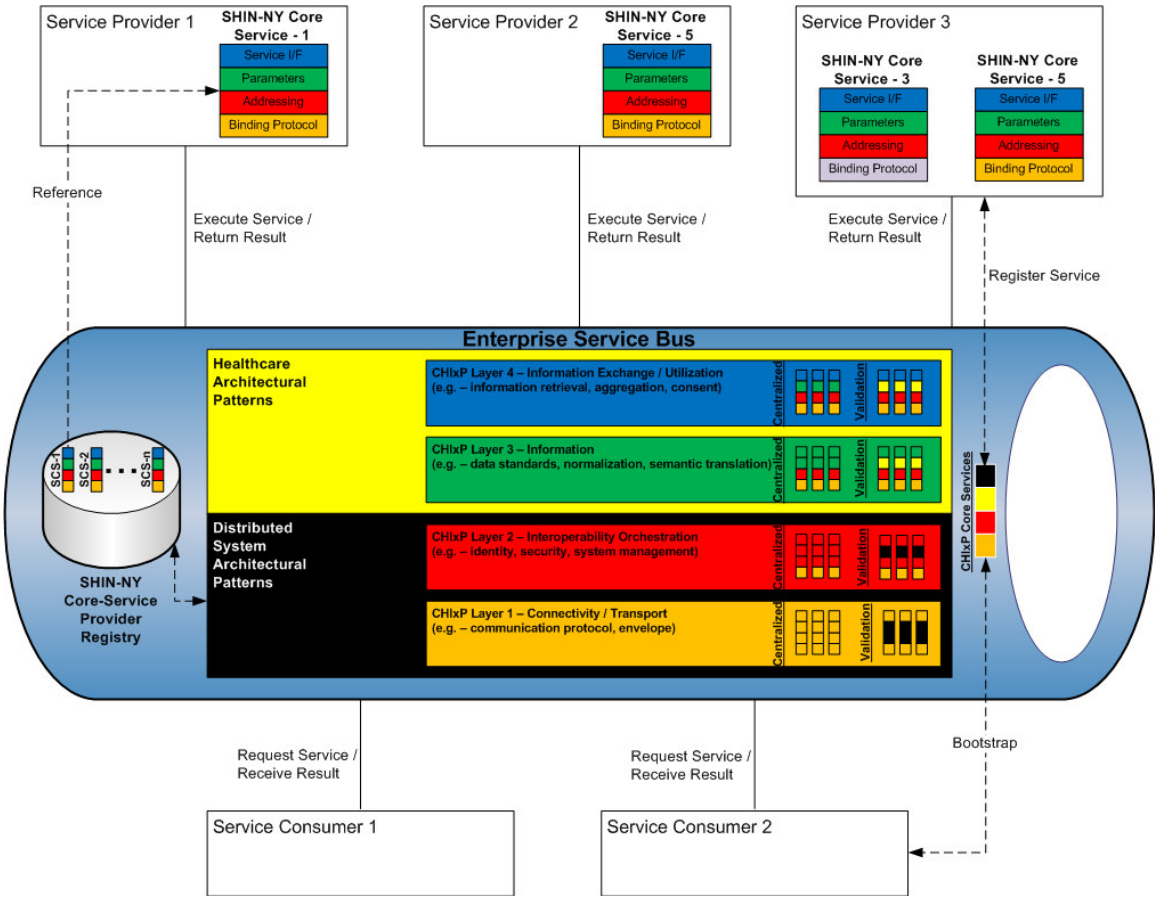
The SHIN-NY creates an adaptive infrastructure by identifying and instantiating infrastructure patterns – common services that apply across EHR systems, PHR systems, and other user applications – rather than trying to cater to the vendor-specific needs of each of these applications. By building an infrastructure pattern that is geared toward the *requirements* of health care delivery but adaptive to the *technologies* of health care delivery, implementation of the SHIN-NY may be accomplished using any applicable technology components. The SHIN-

NY specifications only espouse technical standards, protocols, and architectural patterns and are thus vendor agnostic and technology agnostic. The goal is that the implementation of the prescribed architecture provides a framework that sets boundaries or "guard-rails" on the dimensions of technical implementation to let innovation flourish while at the same time ensuring interoperability and consistent operation.

The SHIN-NY Service-Oriented Architecture

The SHIN-NY is based on a service-oriented architectural paradigm (SOA), implemented through web services operating through an enterprise service bus (ESB), with a four-tier protocol stack (see Figure 2).

Figure 7 - High-level architecture depiction



The protocol stack, called the Common Health Information eXchange Protocol (CHIxP), divides the protocols into categories, with the lower two corresponding to system architecture patterns, and the upper two dealing with healthcare architecture patterns. CHIxP Layers 1 and 2 describe protocols required for any distributed system architecture, such as transport, security, identity, and orchestration. CHIxP Layers 3 and 4 are protocols specific to health care, such as clinical data standards, semantic normalization, and consent.

The SHIN-NY SOA defines two types of services: Core Services, which are not tied to healthcare-specific clinical use cases or business requirements, and Functional Core Services, which are tightly coupled to healthcare-specific business requirements.

Services that have been funded by the HEAL-NY program to date are:

- Core services
  - Patient discovery (PDQ)
  - Query for document (XCA)
  - Retrieve document (XCA)
  - Audit log query
  - Universal Description, Discovery, and Integration
  - Consumer preference (consent)
  - Digital certificate authority
  - Echo test (availability)

- Functional core service (i.e., shared service)
  - Medicaid medication management
  - Universal public health node

Functional core services are also loosely called "shared services" when deployed at the SHIN-NY level, to indicate that they are not provided at the application-level or RHIO-level and instead reside at the statewide infrastructure-level. This definition of shared services corresponds with definition in the FOA. While Core Services also reside at the statewide infrastructure-level, these are distinguished from shared services by the fact that they are required as a matter of policy to be part of the SHIN-NY infrastructure, whereas shared services are functions are presumed to reside at the RHIO- or application-level unless they are specifically designated as shared services. These services and their implementation paths are outlined in the current version of the SHIN-NY specifications as part of the Statewide Policy Guidance (SPG).

SHIN-NY Federated ESB Model

The SHIN-NY ESB is a federated (or "distributed") ESB, allowing multiple physical ESB instantiations to be exposed as one logical instantiation. In other words, rather than a single, centrally administered ESB implementation, the SHIN-NY ESB will be executed as multiple, identical ESB implementations at the RHIO-level which, working together and in synchrony, will constitute the SHIN-NY ESB.

These RHIO-level physical instantiations of the SHIN-NY ESB are referred to as SHIN-NY ESB nodes. Several RHIOs will be called upon to implement and operate SHIN-NY ESB nodes to support statewide transactions. In addition to RHIO instances of the ESB, there will be domain-specific ESB nodes focused exclusively on specific domains, such as Medicaid data through a Medicaid node and public health functions through the Universal Public Health Node.

Currently, eMedNY is the New York State Medicaid program claims processing system. The NYS DOH has elected to make available to Medicaid providers the ability to submit NYS Medicaid proprietary claims and HIPAA claim transactions and receive payments electronically to the Medicaid Management Information System (MMIS). eMedNY offers several innovative technical and architectural features, facilitating the adjudication and payment of claims and providing extensive support and convenience for its users. However, NYS DOH and NYeC will work with Medicaid who will be implementing a new Medicaid data warehouse that will make health information collected by NYS available for clinical purposes in providers' offices. The data warehouse architecture and operation will be aligned with SHIN-NY policies and standards.

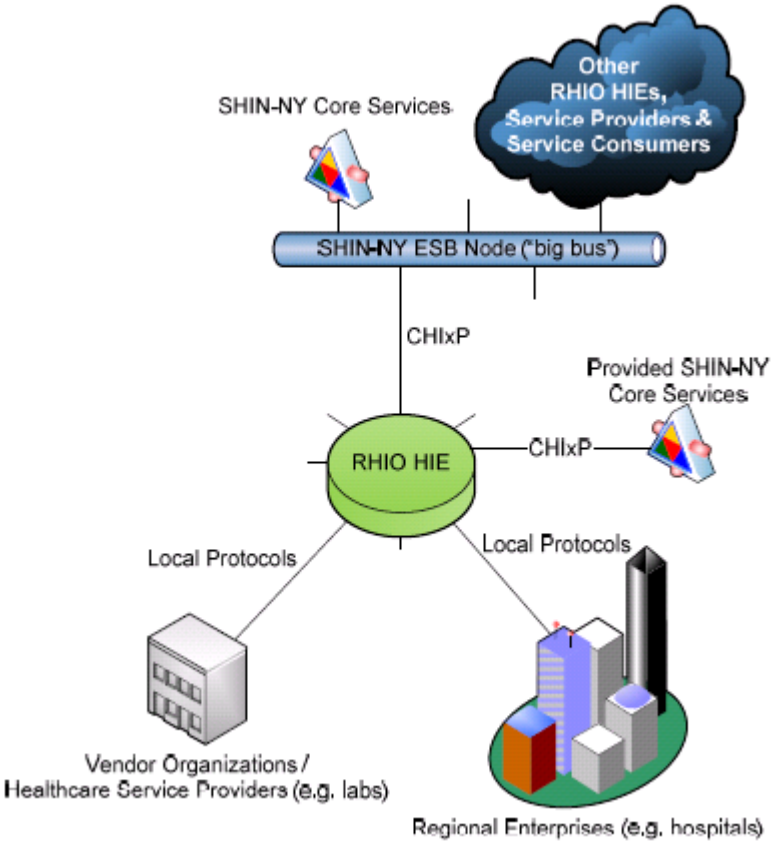
While New York State's goal is to have standards-based data exchange among all systems connected to the SHIN-NY, there is recognition that it is financially and operationally unfeasible for all clinical users to "rip and replace" their systems right away. There are three levels of implementation of the ESB topology that allow for progressive migration to ubiquitous use of CHIxP standards over time. The approach is thus to create a "glide path" to ubiquitous adoption of standards that allows RHIOs to connect using local protocols where necessary but requires migration to CHIxP standards within the RHIO over time as legacy systems are retired and replaced with modern ones. The approach allows three levels of implementation which build upon one another.

CHIxP Level 1 – RHIO-to-RHIO interoperability

The first level of SHIN-NY compliance is the RHIO HIE interaction with the centralized SHIN-NY ESB nodes as a service provider and/or service consumer. This means that the RHIO HIE will communicate with the SHIN-NY ESB nodes in the prescribed manner for the registration, invocation, and use of SHIN-NY Core Services. In the case where the RHIO HIE is a service provider for SHIN-NY Core Services, those services will be made available via CHIxP compliant protocols. The connections to all local nodes connected to the RHIO HIE, as well as any local functionality at the RHIO HIE level, are implemented in any manner expedient to the RHIO HIE (see Exhibit 3).

As a practical matter, there are likely physical manifestations implied. Further, given some of the chosen business rules, certain physical manifestations are precluded. For example, technically, any RHIO HIE could use the SHIN-NY "big bus" as its local bus, and have the ESB node be domain-restricted to allow shielding of its local services.
However, since the SHIN-NY ESB nodes (as specified) are available to all, those services would be visible beyond the intended scope, so a local implementation of a "little bus" to service the RHIO HIE is better. Further, the little bus allows more straightforward governance by the RHIO over local transactions and policies.

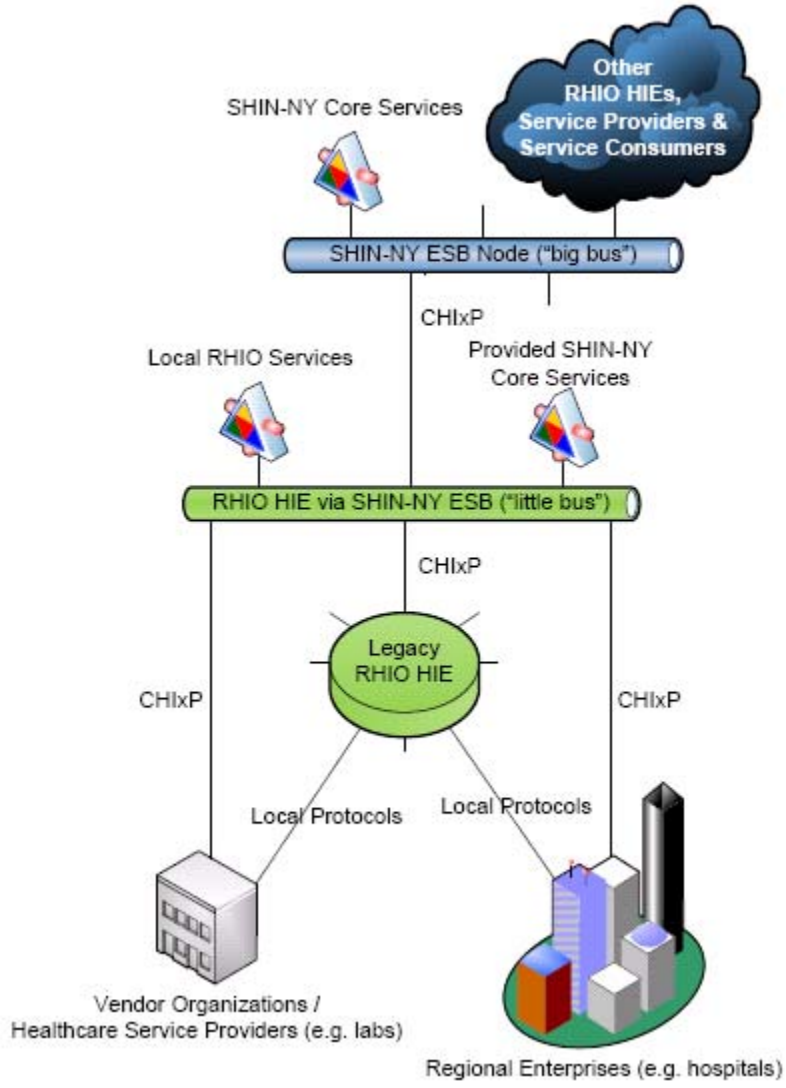
Figure 8



CHIxP Level 2 – Launching "Little Buses"

The second level of SHIN-NY compliance is implementation of a SHIN-NY ESB locally by the RHIO HIE (a.k.a. a "little bus"). This local RHIO-HIE ESB serves as a gateway to the SHIN-NY ESB nodes, exposes any SHIN-NY Core Services it is responsible for, and also connects local nodes using SHIN-NY compliant connections (i.e. CHIxP). Level-2 SHIN-NY compliance requires at least one or more internal RHIO HIE connections that are CHIxP compliant. There may be some local nodes that need to connect via legacy, non-compliant means, and the local HIE bridges those differences until all internal interfaces can become compliant. Further, local services are offered to the RHIO through the local RHIO-HIE ESB in a manner consistent with the prescribed means for the SHIN-NY ESB (see Exhibit 4).

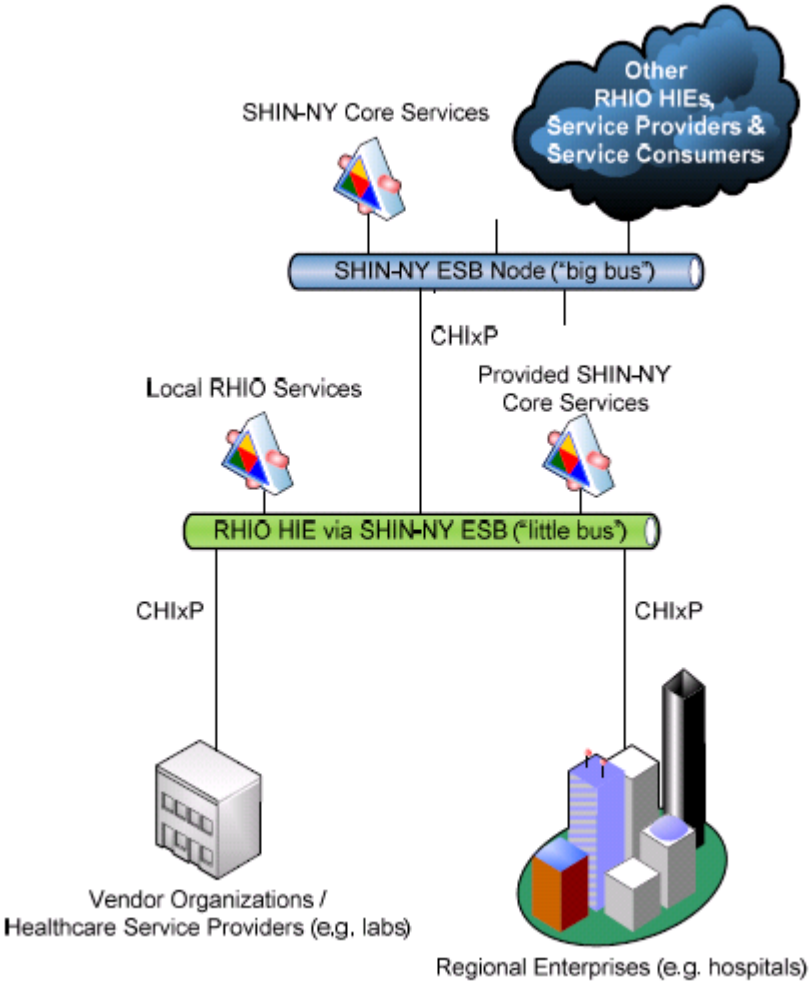
Figure 9 SHIN-NY Level 2 deployment



CHIxP Level 3 – Complete adoption of CHIxP protocols

The third level of SHIN-NY compliance is complete implementation of the RHIO HIE as a SHIN-NY ESB, with CHIxP compliant connections both internally to all local nodes, as well as externally to the SHIN-NY ESB nodes. Further, local services are offered to the RHIO through the local ESB in a manner consistent with the prescribed means for the SHIN-NY ESB (see Exhibit 5).

Figure 10 SHIN-NY Level 3 deployment



The HEAL-NY program has funded all RHIOs to CHIxP Level 2. With HITECH funding and significant incentives for meaningful use being made available, it is our expectation that focused federal efforts to certify EHR interoperability components coupled with physician incentives to meaningfully interoperate will allow market forces to motivate CHIxP Level 3 implementation in ways that have not been achievable in the past.

Current federal efforts will motivate market forces to support the SHIN-NY architecture because the SHIN-NY has, since its inception, had an overarching principle to be compliant with the national standards for healthcare interoperability recognized by the Secretary of the Department of Health & Human Services (HHS). Specifically, HHS recognizes interoperability specifications containing harmonized standards published by the Healthcare Information Technology Standards Panel (HITSP), and as such, the SHIN-NY ESB is a HITSP-compliant and HITSP-consistent (where no direct conformance criteria exist) architecture. Similarly, HHS has sponsored a large-scale development effort to build a nationwide health information exchange capability called the Nationwide Health Information Network (NHIN) which instantiates the HITSP standards into

real networks and systems. The SHIN-NY leverages the work of the NHIN effort in its architectural framework. New York State is committed to keeping the SHIN-NY compliant with emerging federal standards as developed through HITSP, the NHIN program, or any other bodies or processes sanctioned by HHS.

This is not to say that there aren't some differences in strategy between the SHIN-NY and the NHIN. While the NHIN trial implementation focused on peer-to-peer transactions among NHIN Health Information Exchange (NHIE) participants, the SHIN-NY, as mentioned above implements services that are brokered by Enterprise Service Bus (ESB) nodes that are both centralized (SHIN-NY ESB, a.k.a. a "big bus") and local (RHIO -HIE ESB, a.k.a. a "little bus"). This allows services to be orchestrated or choreographed at the ESB level. For example, a service consumer can invoke a query to the ESB, which launches multiple queries to various service providers, receives all of the results, aggregates them into one response, and returns the unified response to the service consumer. Due to this architectural difference with the NHIN, some core services as defined by the NHIN require modification in order to function within the SHIN-NY. New York is committed to making those modifications in ways that are fully consistent with federal goals for nationwide interoperability.

Shared services expansion

As described in the HIE Vision section of this plan, shared services expansion will be the focus of New York's response to the FOA. The New York strategy has from the beginning incorporated a process for deciding and implementing shared services, as described earlier in this section. As noted earlier, two shared services have already been identified as part of the SHIN-NY: Medicaid Medication Management Service and the Universal Public Health Node (UPHN). The medication management service has been funded by the HEAL-NY program and a pilot project is currently underway. The UPHN project is described below along with the shared services under consideration for expansion.

Universal Public Health Node (UPHN)

The Universal Public Health Node (UPHN) provides a standards-based architecture for bi-directional health information exchange between clinical care providers and public health via the SHIN-NY. In addition the proposed project will create and advance the necessary governance structure, policies, technical services and informatics infrastructure to ensure that the UPHN Services can be implemented in a coordinated and secure manner based on the NYS Health IT Strategic Plan. Previous funding by CDC for the UPHN was targeted at supporting data exchange for a targeted implementation of the Biosurveillance use case. This funding established the essential base capacity and collaborative processes essential to future operation of the UPHN. Further development, testing and implementation of the infrastructure and functionality for the UPHN are needed to benefit expanded public health and clinical practice. This includes data exchange using the SHIN-NY with RHIOs and other projects funded by the HEAL 5 programs targeting specific use cases for immunization, chronic disease and communicable disease surveillance.

The goal of the requested funding is to support completion of the infrastructure of the UPHN resulting in a fully operational connection to the SHIN-NY as well as support for pilot data

exchange with clinical providers, RHIOs and HEAL 5 projects testing and validating the SHIN-NY interface and UPHN functions for specific targeted use cases. The funding would provide the critical investment needed to build upon the foundational UPHN work achieved to date through previous CDC funding and assure the realization of public health benefit from this uniquely innovative system.

Data exchange for the purposes of reporting for public health has been identified as one of the top priorities of RHIOs and other providers surveyed. Projected future clinical/business benefits of the UPHN services include:

- Reduced duplicate reporting
- Improved quality of care
- Reduced mandated reporting burdens
- Improved patient safety
- Increased access to clinical care data for public health at both state and local levels
- Improves data accuracy, timeliness and consistency through standardized data format and transport
- Earlier identification of disease trends and gaps in disease prevention and intervention
- Improved ability for public health to communicate with clinical and patient communities
- Providing clinicians with public health prevention and control recommendations, alerts, and advisories to improve identification and management of disease and conditions of public health importance
- Improved access for the clinical community to disease screening, medical management, or care coordination recommendations from DOH (e.g. cancer screening eligibility, asthma treatment guidelines)

Current systems are redundant, require a large amount of manual data entry and do not capture direct clinical information in forms and formats appropriate for ideal use. When this service is completely implemented and validated there will be significant cost savings by decreased redundancy and manual data input and significant clinical benefit by extending access to a much larger amount of clinical information from the point of care. One of the areas included in proposed federal requirements to meet "meaningful use" is data exchange for the purposes of improving public health. This project specifically includes the areas currently proposed for "meaningful use" regarding public health including biosurveillance, public health reporting and management of chronic disease.

Stakeholders involved with UPHN are NYSDOH and its programs, the Office of the National Coordinator for Health Information Technology (ONC) Federal Health Architecture, Medicaid and other NYS state agencies, RHIOs and their stakeholders (hospitals, labs, physician practices, nursing home, long term care facilities, pharmacies, technical vendors, etc…), Local health departments including NYCDOHMH

Eligibility and claims status

The goal of this service would be to have a service that any provider can utilize across New York State whereby they can identify the insurance eligibility of their patients, the patients' financial

responsibility and status of a claim payment for any insurer with whom they conduct business. The goal would be to reduce the administrative burden within the provider's office for determining patients insurance eligibility, allow for the collection of the patient responsibility at the time of service and also reduce the administrative burden on the insurer as well. The results are improved cash flow, reduced administrative costs and improved patient satisfaction.

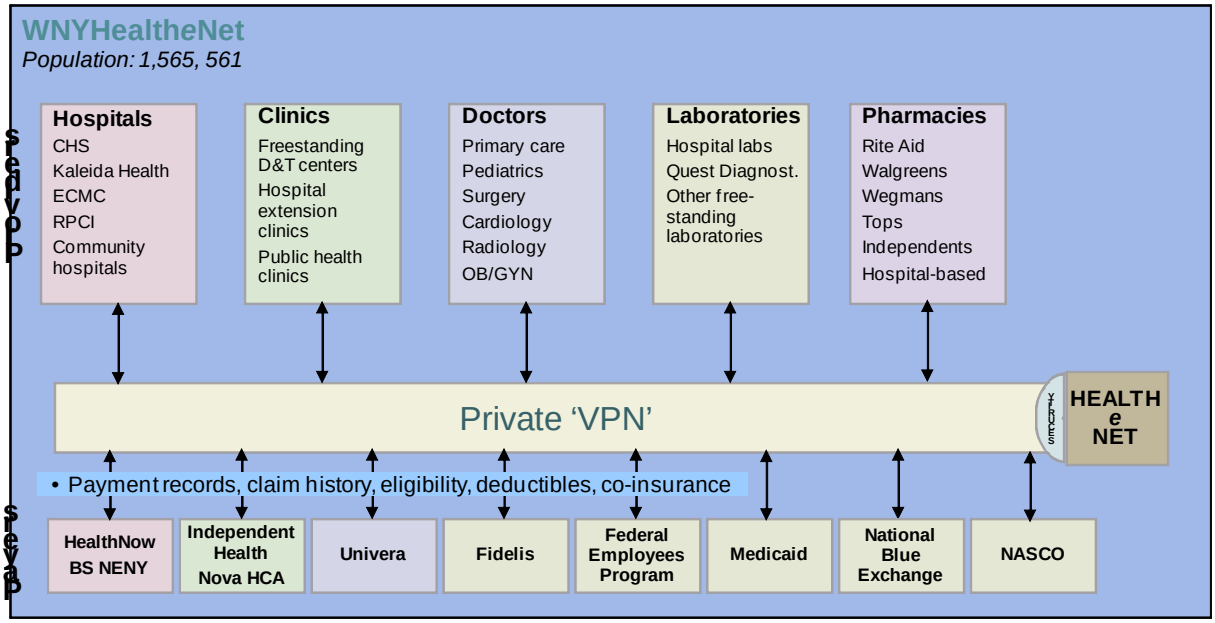
The services would be delivered via the SHIN-NY's big bus and connect to each NYS RHIO. Providers could access the service either through a web interface or through a direct connection into their patient management systems. Plans would connect directly to the service which would then provide the plan-specific benefit and eligibility information to users across the entire state.

There is already one RHIO in the state – HEALTHeLINK, operated by WNYHealtheNet – that has a sustainable all-payer claims status and eligibility service which it has operated in Western New York since 2002. Users are able to choose from among ten X12 compliant transactions connecting to seven payers including BCBS of WNY's national business. These transactions include:

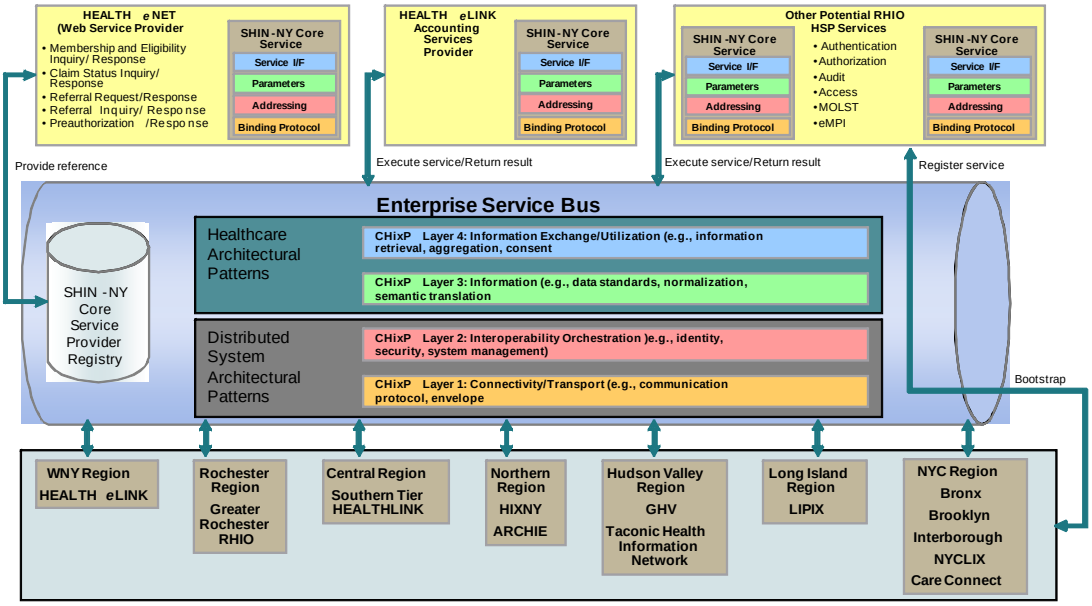
- Eligibility inquiry and response
- Authorization inquiry and response
- Claims status and response
- Provider inquiry and response
- Referral request and response
- Provider demographic inquiry
- Referral inquiry and response

Also available is a tier 2 security capability that establishes one provider authentication table for all participating payers so that each payer will no longer have to maintain and support their own individual instance.

The following figure shows the current participants in WNYHealtheNet.



The following figure displays the potential alignment of the system with the SHIN-NY ESB.



This description of the WNYHealtheNet eligibility and claims processing solution is included for illustrative purposes only to demonstrate that New York already has considerable capability in this area. Whether this particular RHIO and vendor would be chosen to provide the shared service is a decision that would need to be made through the collaborative governance process.

Security – Two-Factor Authentication (2FA)

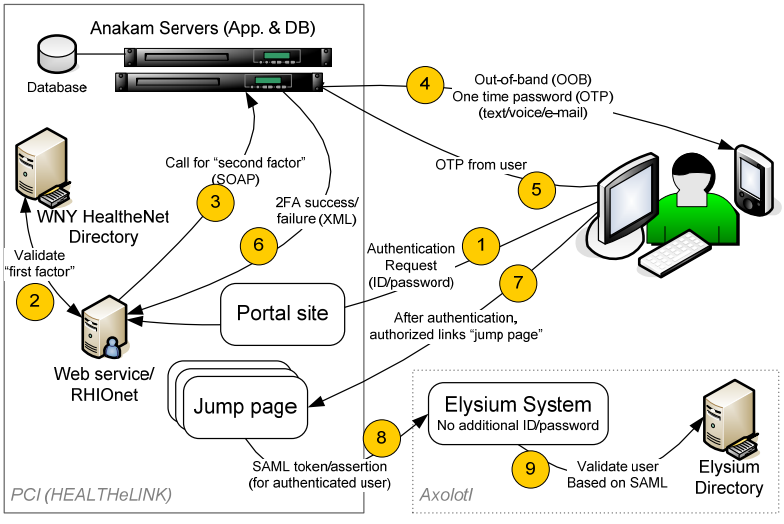
Security is a cornerstone of health information exchange. New York has made path-breaking progress in the areas of both privacy and security, as described in great detail in

As SHIN-NY traffic increases both in volume and in quality of data, there will be an increasingly greater need for robust security. Two-factor authentication will begin to meet that need; however, there are several barriers to adoption that have prevented widespread adoption of such solutions. These barriers include the high cost of current solutions, the transition costs from existing solutions, and clinical user resistance to such solutions particularly for users who move among a variety of clinical settings. A 2FA solution could be used for network access as by individual organizations for wider groups of users and for applications beyond those originally contemplated such as non-clinical applications could overcome many of the current adoption barriers.

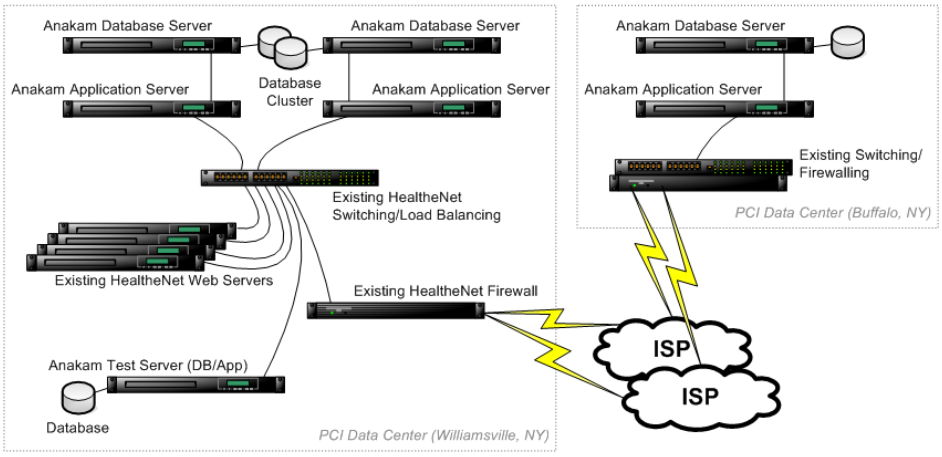
HealtheNet is developing one such solution Western New York that will be considered for promotion as a statewide shared service. The service is being built based on a web services model and therefore can be extended to a registry/directory of services that can be consumed by other SHIN-NY compliant requestors.

The project would implement a "Community Portal" using 2FA as well as a verifiable mechanism to pass authenticated identities to the RHIO without a second (one factor) authentication. Once completed, RHIO users will be able to migrate from existing organization-specific solutions (such as RSA tokens) to eliminate redundant authentication requirements.

The authentication process for the Community Portal implemented in the WNY HealtheNet RHIO is illustrated below:



The HealtheNet technical architecture for the Community Portal is shown in the following diagram:



In this model the RHIO would extend 2FA to allow authenticated providers to access other clinical data applications from the Community Portal without a second authentication as well as implement features to allow identity management for a broad range of information systems and applications for sponsoring members and the provider community.

This description of the WNYHealtheNet 2FA solution is included for illustrative purposes only to demonstrate that New York already has considerable capability in this area. Whether this particular RHIO and vendor would be chosen to provide the shared service is a decision that would need to be made through the collaborative governance process.

Laboratory terminology services

Electronic laboratory results are likely to be key components of 2011 meaningful use requirement. Yet, there are considerable barriers to widespread adoption, one of which is the lack of consistency of lab nomenclatures in a decentralized laboratory market. This presents barriers because it increases the cost of EHR/HIE implementations, which have to accommodate multiple non-standard dictionaries and undisciplined, idiosyncratic updating processes, and lowers user acceptance because of the complexity of having remember multiple lab nomenclatures.

Laboratory results represent the patient's physiologic state and therefore are a key driver of decision making in health care. Laboratory results also are a common and ubiquitous component of health information exchanges because such data are generally easy to obtain in an electronic form. However, when creating electronic transactions for patient test results, laboratories almost always represent the laboratory test idiosyncratically, i.e., by a proprietary name or other identifier that has meaning only that that laboratory and not to any other system. Certain potential benefits of health information exchange -- for example, clinical decision support, the ability to do pharmaco-surveillance, quality reporting, and public health analyses -- depend on

having the patient's laboratory data represented in a standardized manner so that data can be aggregated across laboratories and analyzed appropriately.

Representing laboratory results consistently requires assuring that both the "structure" (syntax) of the electronic laboratory message, as well as the "meaning" (semantics) of the content of the message adheres to agreed upon standards. Whereas most laboratories use the HL7 standard to structure their laboratory result messages, almost no laboratory uses the terminology that the Meaningful Use Committee has recommended be used to represent laboratory concepts – the Logical Observation Identifiers Names and Codes, or LOINC codes (www.loinc.org).

This proposed service would translate an organization's proprietary laboratory terminology into the LOINC standard. The output of this service, i.e., a translation table, then could be used to allow the participant organization's laboratory data to be represented according to an emerging standard and to participate in activities that require standard representation of laboratory data.

Such a service will be needed even if source laboratories move towards using LOINC as a native terminology. First, such migration may move according to an uneven timeline and the benefits of standardized laboratory representation might be needed more urgently. Second, research has shown that implementations of LOINC can be notoriously inconsistent. For example, two labs, working independently, may well choose different LOINC codes for what is in fact the same test. Assuring that the same concept is represented by a single code requires a coordinated process. Third, creating translation tables for laboratory results is not a "set and forget" activity. "Terminology drift" is a well-known principle ("Embracing change in a health information exchange," Vreeman, et al., AMIA 2008) and as new tests are added, processes to keep up with change must be in place.

This service would use lexical parsing tools, terminology expertise, and expertise in laboratory medicine that would take proprietary laboratory result terminologies from participating laboratories as input and generate consistent translation tables to LOINC representation codes. This will be of value to the organizations participating in the SHIN-NY because (a) it will create a resource that has been broadly acknowledged as "high need" clinically as well as to demonstrate meaningful use, (b) it will offer expertise that would be difficult, time-consuming, and expensive for most of the SHIN-NY participants to assemble on their own, (c) it would offer significant economies of scale, because many of the activities, e.g., lexical parsing, terminology curation, and review by laboratory experts can be batched and made efficient by centralization, and (d) it would assure consistency in the implementation of LOINC codes across the SHIN-NY, which will align with our statewide approaches to HIE and Regional Extension Center activities.

Figure 11 Architectural overview

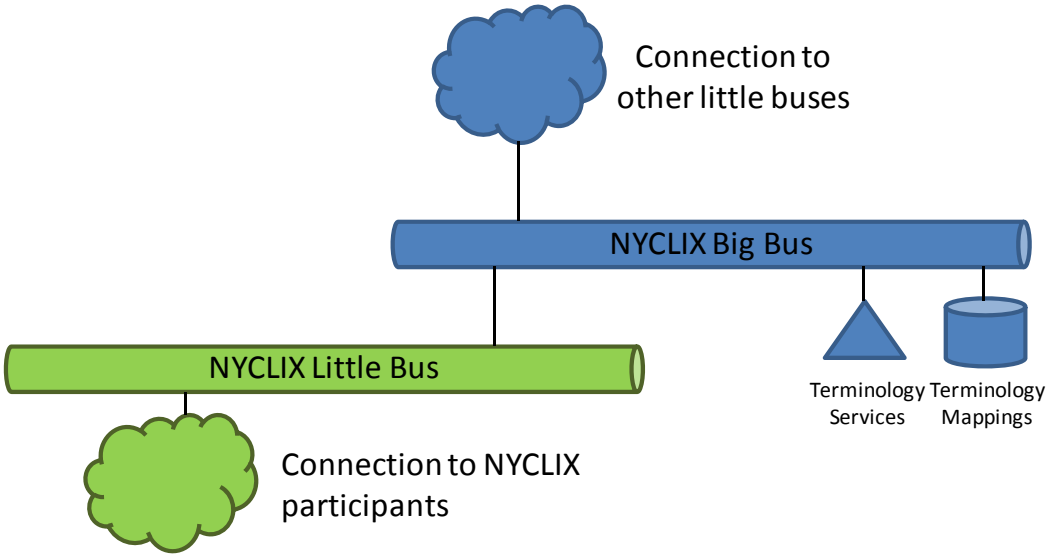
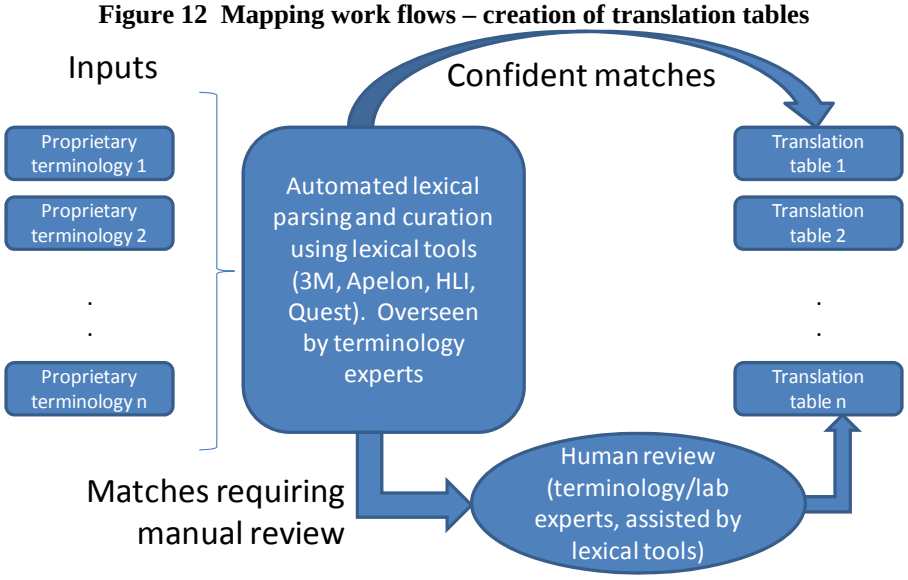


Figure 1 depicts the fact that the services that will be created will be SHIN-NY big bus services. These services will leverage mappings that will be created. By leveraging a web services approach as espoused by the SHIN-NY, the solution can be decomposed into modules with clear interface boundaries. These boundaries exist within the RHIO's technical infrastructure and extend out to the SHIN-NY big bus interfaces.

The overall solution comprises five primary components, each with its own set of capabilities: (1) terminology management services, (2) mapping workflow services, (3) lexical analytic services, (4) external web-services, and (5) auditing and drift monitoring services

1 Terminology management services. Keep track of the different lab compendia, their version numbers, and any supporting metadata describing the test names and their associated results. This component receives updates from the mapping workflow as terminology specialists update the various terms that have been mapped from within compendium.
2 Mapping workflow services. This component orchestrates the creation of the mappings from the proprietary terminologies to LOINC and results in the creation of "translation tables". The general dataflow for this module is illustrated in Figure 2 below.

Figure 12 Mapping work flows – creation of translation tables



3 Lexical analytics tools. These tools consist of the LOINC reference materials as well as a number of NLP and lexical matching tools to facilitate the mapping from the proprietary lab results to their LOINC representation. They are depicted in Figure 2.

4 External web-services. These are responsible for publishing and responding to the various web service requests from the constituents who are benefiting from the mappings. These services will be delivered via the SHIN-NY big bus, and will follow CHIxP conventions (such as extensive use of subscribe-notify). The initial SHIN-NY web services will include the bulk download of mapping tables (Figure 3), subscriptions to mapping table updates, and will also include a high speed transaction based mapping service (Figure 4) to map an array of lab results at a time. Other possible web services include automated registration, and the possibility of returning mapping audit logs from the sites that apply the mapping tables *in situ*.

Figure 13 Bulk mapping data flow

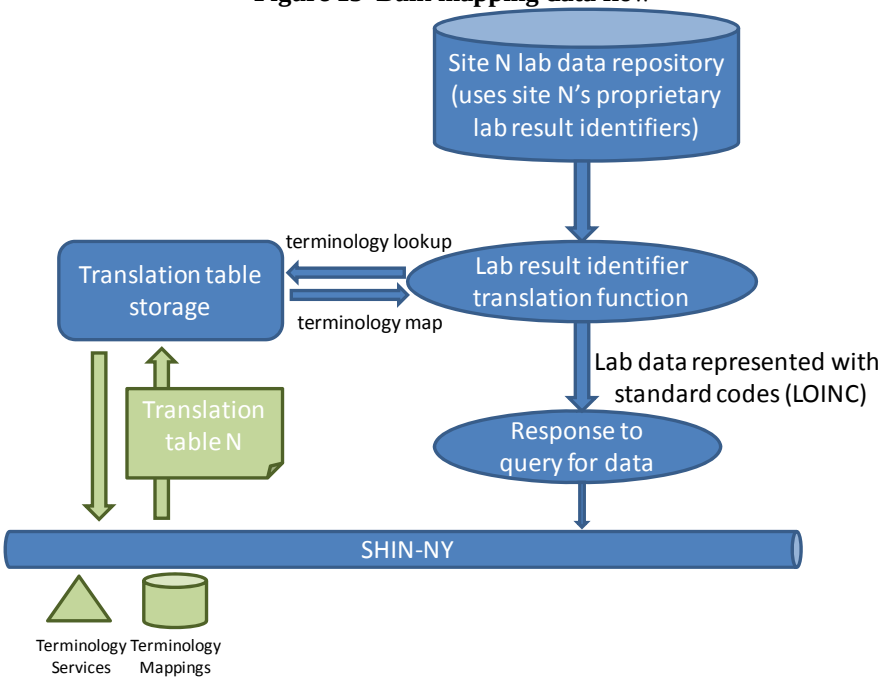
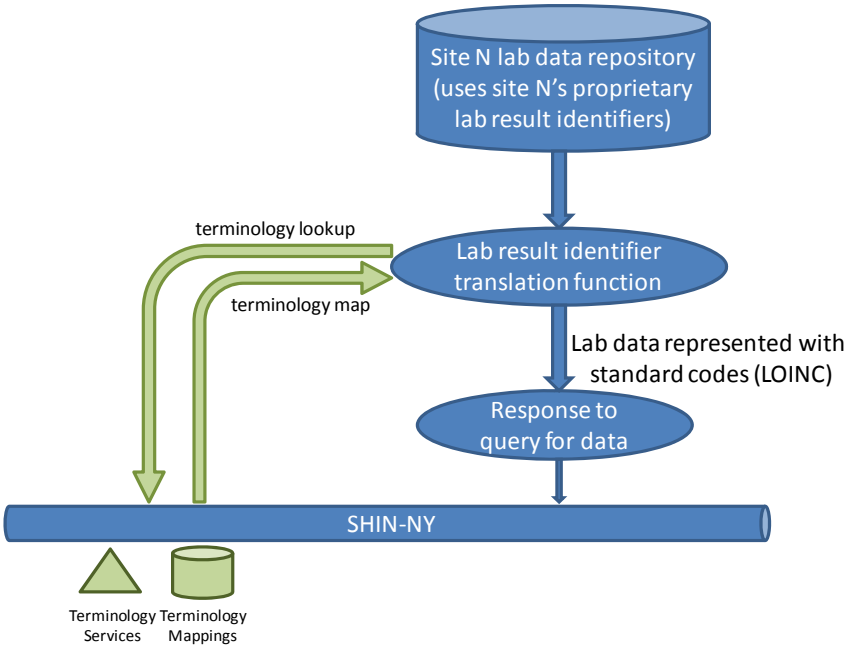


Figure 14 Transactional web service data flow



5 Auditing and Drift Management: This module represents a key innovation within the NYCLIX approach, the notion of capturing feedback from the mapping processes to

prioritize new elements that need to be mapped (either because they were omitted during previous mappings or because they represent a new test)

NYCLIX has done analysis of how to provide terminology for its own membership. As part of that analysis, NYCLIX leadership have drawn lessons learned from leaders at other organizations that have undertaken similar initiatives (e.g., Regenstrief Institute) to get input on budgets and possible vendors and to understand what the expectations of embarking on such an initiative should be. The results of that analysis would extend in a fairly straight forward manner to providing the terminology services as a big bus service. Providing the services using the CHIxP protocols would be fairly straight forward.

This description of the NYCLIX laboratory terminology services solution is included for illustrative purposes only to demonstrate that New York already has considerable capability in this area. Whether this particular RHIO and vendor would be chosen to provide the shared service is a decision that would need to be made through the collaborative governance process.

Patient Identity and Registry Service Proposal

A statewide SHIN-NY big bus service for patient identity would support New York's alignment with FOA guidelines, clinical data exchange objectives, quality improvement goals, federal meaningful use requirements, and broader healthcare reform goals. The patient identity service operates as an underlying protocol and requires implementation of core services including patient registry, document registry, auditing, and consent registries to realize effective information exchange. The physical storage of patient identities, as needed, is included in this service offering in the form of a registry.

The goals of this service are to provide underlying mechanisms that support clinical information exchange and provide a consistent mechanism for searching and loading patient identities and associated demographics.

Project clinical and business benefits of the service include:

- Consistent patient identity loading and matching across multiple sources according to specific protocols
- Consistent patient search and results returns e.g. PIX Query, PDQ, NHIN Subject Discovery
- Effective thresholds for patient identity linking and unlinking
- Establishing and operating patient identity resolution processes
- Coordinating access to and results from MPIs across RHIOs
- Link associated services that rely on consistent patient identifiers
- Resolve and forward updates based on identity resolutions

Existing gaps include:

- Continue to be multiple patient identifiers that are linked within an RHIO but not across RHIOs

- No orchestration or identification of patients across RHIOs

This project advances state strategy by:

- Providing consistent approach for entities looking to query for clinical data across New York
- Leveraging existing design, develop and implementation of HEAL 5 BHIX and SHIN-NY identity efforts e.g. PIX Query, PDQ, NHIN Subject Discovery Requests or XCA gateway requests
- Creating foundation for other services
- Providing consistent statewide approach so that connected New Yorkers can access their clinical data
- Offering a patient registry that loads a consistent schematic for patient identities based on specified use cases across New York

BHIX will offer a consistent framework for patient identity which will accelerate adoption by lowering barriers to entry for participants, thereby facilitating meaningful use.

The project will offer benefits to a number of stakeholders, including the following.

Stakeholders	**Roles & Responsibilities**
RHIOs	Provide connectivity and information exchange to support identity exchange transactions and requests Consume / facilitate use of statewide shared service via little bus to big bus connections
Providers	Access and contribute identity data to RHIOs Consume statewide shared service via EMR to little bus
Plans	Provide claims data to clinicians through shared service Enable systems to reply to and support shared service requests
Consumers	Request and provide identity information through PHRs
Vendors	Incorporate CHIxP into patient identity applications / modules

BHIX supports CHIxP through its Enterprise Service Bus (ESB) as a little bus and big bus. These service buses are responsible for orchestration, provisioning, and hosting of functional services and registries. Clinical applications and systems, such as interoperable EHRs and other RHIOs, may provide and consume services published on the BHIX ESB. The BHIX ESB, based on InterSystems Healthshare, is designed to support loosely coupled, asynchronous and synchronous web services which allow for core services, directories and registries thereby enabling clinical data exchange.

The patient identity statewide shared service is provided via SHIN-NY compliant web services based messaging. BHIX is currently building out-patient identity interactions via IHE PIX and PDQ protocols and would support enabling standards based transactions with additional networks and vendors operating in the state of New York. BHIX is looking to further develop its

patient identity service and registry by providing a consistent web service that would enable organizations internal or external to New York to add, update or merge patients while tracking the identifier and source context of the identity.

BHIX looks to support core IHE patient identity services based on HITSP and IHE proposed services. These include PIX add, update, merge and PIX and PDQ query in a statewide context including working with existing PIX managers via XCA protocols. As a foundational service, these can be extended to support a range of other shared services such as medication management, quality reporting clinical decision support, and clinical summary exchange services. These identities are stored in a database that includes a patient identity and audit history schema forming the actual patient registry.

Clinician Identity and Registry Service Proposal

Clinician identity, like patient identity, is an important enabler of a variety of other services, including security and document exchange. In the current environment lack of centralized clinical directories presents a number of barriers to greater use of HIE services.

- Provider identities and care team information are often based on incomplete data
- Clinician information is not cross-referenced with existing databases from AMA or federal sources
- Inconsistent clinician data is collected and utilized across RHIOs
- Each clinician is treated as different users when practicing across organizations
- Lack of mechanism to communicate directly between consumers and providers
- No orchestration or identification of clinicians across RHIOs

A statewide SHIN-NY big bus service for clinician identity would support FOA guidelines and goals, New York's clinical data exchange objectives, quality improvement goals, federal meaningful use requirements and broader healthcare reform goals. The clinician identity service stores crucial demographics and links clinician identifiers such as DEA and NPI numbers. The service exposes specific web services to the clinician registry.

The goals of this service are to provide underlying mechanisms that support clinical information exchange and provide a consistent mechanism for searching and loading clinician identities and associated demographics. As a foundational service, these can be extended to support a range of other shared services such as secure messaging / routing, subscribe/notify services, medication management, quality reporting, clinical decision support, and clinical summary exchange services.

Project clinical and business benefits of the service include:

- Supporting clinician preferences
- Providing a basis for provider authentication, authorization, messaging and communications
- Consistent clinician identity loading and matching across multiple sources according to specific protocols

- Enabling consistent clinician search and results returns
- Establishing effective thresholds for clinician identity linking and unlinking
- Establishing and operating clinician identity resolution processes
- Linking associated services that rely on consistent clinician identifiers
- Linking to New York clinician licensing databases or services would provide all connecting RHIOs to additional clinician data

This project advances state strategy by:

- Providing consistent approach for entities looking to associate clinicians for care coordination across New York
- Leveraging existing design, develop and implementation of HEAL 5 RHIO and SHIN-NY identity efforts
- Creating the foundation for other services
- Providing consistent statewide approach so that connected New Yorkers can coordinate their care with clinicians

BHIX will offer a consistent framework for clinician identity which will accelerate adoption by lowering barriers to entry for participants, thereby facilitating meaningful use.

Stakeholders that would specifically benefit from this service include:

Stakeholders	**Roles & Responsibilities**
RHIOs	Provide connectivity and information exchange to support clinician identity exchange transactions and requests Consume / facilitate use of statewide shared service via little bus to big bus connections
Providers	Access and contribute identity data to RHIOs Consume statewide shared service via EMR to little bus
Plans	Provide clinician identifiers through shared service Enable systems to reply to and support shared service requests
Vendors	Incorporate CHIxP into clinician identity applications / modules

The technical approach for a BHIX implementation would be as follows. BHIX supports CHIxP through its Enterprise Service Bus (ESB) as a little bus and big bus. These service buses are responsible for orchestration, provisioning, and hosting of functional services and registries. Clinical applications and systems, such as interoperable EHRs and other RHIOs, may provide and consume services published on the BHIX ESB. The BHIX ESB, based on InterSystems Healthshare, is designed to support loosely coupled, asynchronous and synchronous web services which allow for core services, directories and registries thereby enabling clinical data exchange.

The clinician identity statewide shared service is provided via SHIN-NY compliant web services based messaging. BHIX is currently building out clinician identity interactions via proprietary

formats and would support enabling standards based transactions with additional networks and vendors operating in the state of New York. BHIX is looking to further develop its clinician identity service by providing a consistent web service that would enable organizations internal or external to New York to add, update or merge patients while tracking the identifier and source context of the identity.

The clinician identity service is intended to serve as a place to collect clinician master file data including practices, organizations, clinician identifiers, DEA information and can be linked to other registries / directories for various purposes including user registries, patient/provider relationships, provider authentication, system messaging and is viewed as a foundational service for SHIN-NY to realize functional goals such as referrals or transfers of care. The clinician identity service and registry operate as underlying protocols and requires implementation of core services including patient registry, document registry, auditing, and consent registries to realize effective information exchange.

Strategic Priorities Moving Forward

1. ***Technical infrastructure in place to enable interoperable electronic health records for Clinicians, interoperable personal health records for Consumers, and interoperable information portals for the Community***
2. ***Clinical Informatics Services (CIS) and tools in place for the aggregation, analysis, decision support and reporting of data for purposes of quality improvement and public health***
3. ***SHIN-NY in place to provide architecture, common health information exchange protocols and standards to enable health information sharing between providers, patients, public health personnel, and other relevant health care stakeholders***
4. ***Technical infrastructure aligned with emerging NHIN design, standards, and certifications to enable future health information exchange beyond NY State***

Operational Priorities Moving Forward

This section will address the following operational goals:

- Confirm shared service recommendations and decide on implementation entities through Statewide Collaboration Process
- Orchestrate and Align HEAL-NY implementations and FOA shared services efforts
- Launch agreed upon shared services

Tasks and Deliverables Under State ("HEAL 10") Contract and Federal ("State HIE") Program

Based on the Strategy Plan, NYeC will accomplish the following Operational Goals to fulfill the FOA guidelines and requirements.

Operational Goal 1: Confirm shared service recommendations and decide on implementation entities through Statewide Collaboration Process

Under the HEAL 10 program, NYeC plans to develop a production-level, statewide medication management information service connecting network participants with Surescripts and Medicaid data feeds. To enhance this service and ensure further value, NYeC will add additional medication data sources from the RHIOs (such as hospitals) as well as data normalization services to make sure that the data is delivered in standard ways.

Advance Other Shared Services: Under its State HIE program, NYeC will have the opportunity to advance other shared services as part of the statewide network. As described in the Strategy Plan, NYeC is forwarding the following shared services as priority candidates for FOA funding pending deliberations in the collaborative governance and decision-making process in Q1 2010.

- Eligibility and claims processing
- Consent management
- Two-factor authentication
- Patient and clinician identity
- Laboratory terminology services
- Universal Public Health Node

The federated ESB architecture of the SHIN-NY envisions that shared services be implemented by participating RHIOs and registered as statewide services for consumption by other RHIOs choosing to participate in the shared service offering. The Legal/Policy Domain section described the contracting and business framework that will be developed for these shared services among NYeC, the implementing RHIOs, the consuming RHIOs, participating vendors, and participating users.

During the Q1 2010 refinement period, NYeC will facilitate consideration of each of these shared services in the collaborative governance model. This consideration will build on the work of the Shared Services Business-Governance Committee which was launched by NYeC in 2008 to consider and vet proposed shared services. Because New York has a federated ESB structure and a collaborative governance model, consideration of shared services must go through the following considerations:

- Which functions should be statewide shared services (vs. locally-provided services within each RHIO)?
- Which RHIOs and/or vendors will provide these services?
- What are the business terms among the service-providing RHIO, consuming-RHIOs, consuming users, vendors, data providers, and NYeC?
- What will be the architecture for service hosting and provision?

Key business criteria developed by the Committee to decide which services should even qualify as statewide shared services include the following:

- Economies of scale – can the service be provided more efficiently as a statewide shared service?
- Economies of scope -- can it be combined with other state-level services in a way that will make it and the other services more valuable?
- Quality and consistency – can it be provided and/or managed at higher overall quality and consistency if managed centrally?
- High demand – is it a service that will be consumed by a large number of users across multiple RHIOs?

These criteria will be more fully developed and institutionalized as part of the formalization of the governance and contracting framework described earlier.

Work effort before and during the refinement period will involve:

1. Confirmation of prioritization and decision criteria for shared service decision-making
2. Analysis of candidate shared services against business criteria described above
3. Orchestration of stakeholder meeting to review analyses, discuss shared service options, prioritize and rank options according to decision-criteria, and gain consensus on recommendations
4. Finalize business and contracting framework for shared services
5. Develop and approve requirements documents for shared services and issue RFPs
6. Design, launch, and execute competitive bidding process to decide on shared service providers
7. Review bids and select RHIOs/vendors
8. Complete statements of work and final contracts

Operational Goal 2: Orchestrate and Align HEAL-NY implementations and FOA shared services efforts

NYeC will be advancing core SHIN-NY functionality and several shared services through its HEAL 10 and State HIE programs at the same time. Many of these services will be inter-dependent in terms of how they will work together. NYeC will need to develop and maintain a system-level view of the SHIN-NY and make sure that these projects are orchestrated in a way that the services work together on a policy and technical level.

Successful adoption of shared services will also require technical integration from the source of the service through the statewide and regional networks down to the end user. This will involve key roles of each of those levels, and on a programmatic level, will be an important coordination point between NYeC's State HIE program and REC program. NYeC recently launched an Interoperability Work Group to identify opportunities for common integration of services between RHIOs and end-users' EHRs. This work group could play an important role to ensure this level of integration between different layers of the network.

Operational Goal 3: Launch agreed upon shared services

Detailed operational plans are not feasible at this time for any particular shared service because it is not possible to identify the implementation RHIOs and/or vendors until the collaborative governance process makes such decisions. In addition, detailed operational plans will vary depending on the sequencing of implementation for the shared services that do get forwarded because New York would want to take advantage of any synergies possible across planned and existing operational activities.

Business and Technical Operations

Introduction

New York's business and technical operations are conducted through a distributed model. NYeC and NYS DOH share responsibility for overseeing New York's general progress in meeting New York's business and technical goals. New York's RHIOs working with their technical vendors are responsible for implementing HIE functionality and broadening HIE adoption and use across New York. Together, NYeC, NYS DOH and the RHIOs will now focus their efforts on providing HIE services that will help providers meet meaningful use HIE requirements.

Strategic Goals

New York endeavors to accomplish the following strategic goals with regards to Business and Technical Operations:

1. Maintain effective and accountable distributed statewide HIE business and technical operations model
2. Monitor evolution of statewide health IT infrastructure, specifically progress on meaningful use criteria
3. Advance technical assistance capacity

Background

New York's HIE infrastructure operates via a distributed network for its business and technical operations. As detailed in the environmental scan, NYS DOH has funded several RHIOs to implement regional HIE services. This has resulted in the development of strong regional HIE capacity across New York. Under the HEAL 5 program, the RHIOs were required to implement various clinical use cases, many of which are closely aligned with the meaningful use HIE requirements.

Separately, NYS DOH has funded NYeC to lead the planning and design of New York's HIE policy and technical infrastructure through the SCP. As part of that role, NYeC provides technical assistance to the RHIOs and CHITAs implementing the SPG, and monitors their general progress in developing that HIE functionality and meeting the HEAL 5 deliverables. It regularly meets with the RHIOs and their associated CHITAs to review their implementation plans and discuss any challenges. NYeC also conducts statewide surveys of all the RHIOs in order to understand New York's progress against key statewide goals of improved HIE adoption and use.

Under New York's HEAL 10 program and the federal State HIE program, NYeC will be directly responsible for overseeing the next phase of development of the SHIN-NY. Under that role, NYeC will take on a more active role in contracting with RHIOs to develop statewide and regional HIE functionality and ensure general progress toward comprehensive statewide coverage of the services that constitute the meaningful use HIE requirements.

Critical to evolution of an efficient and effective health IT infrastructure will be identification of "shared services." The potential priority shared services and process for selecting these services

are discussed elsewhere in this application. NYeC's governance structure and process provide an ongoing vehicle for New York's RHIOs to discuss and advance these opportunities, exchange best practices and discuss how to best implement New York's HIE infrastructure.

NYeC and various New York's RHIOs have also participated in the NHIN Trial Implementations project. NYeC continues to use its participation in that program to stay abreast of national standards, and to leverage those standards for its statewide work.

Strategic Priorities Moving Forward

1. Maintain effective and accountable distributed statewide HIE business and technical operations model

Maintenance of a distributed operational network like New York's requires clear roles and responsibilities, effective communications among team members, and strong accountability mechanisms. NYeC will further strengthen its internal capacities to clearly identify those responsibilities, outline them in its contracts and hold its contractors accountable to them. It will also continue to maintain and evolve its communications with all of its partners to ensure constant awareness of common goals, and of risks and issues.

2. Monitor evolution of statewide health IT infrastructure, specifically progress on meaningful use criteria

NYeC will use its state and federal projects as key opportunities to advance the statewide HIE infrastructure to help providers meet meaningful use HIE requirements. The RHIOs working with their vendors will continue to have the responsibility of developing regional HIE functionality. NYeC, working with NYS DOH, will have responsibility for ensuring that the state as a whole and all the regions are continuing to make consistent progress in developing that functionality and providing those HIE services to their provider participants. It will develop survey tools to regularly review that regional and statewide progress and, where it lags, identify and pursue remediation plans.

3. Advance technical assistance capacity

As NYeC develops the SHIN-NY and the associated services, there will be an increased need for it to provide technical assistance to the RHIOs to participate in the SHIN-NY and integrate those services regionally. It will be important for NYeC to develop long term plans and regularly review its models for assisting the RHIOs.

Operational Priorities Going Forward

Operational Goal 1: Maintain effective and accountable distributed statewide HIE business and technical operations model

Under HEAL 10, NYeC will evolve its project management and contract management capacity to handle its newly expanded contracting responsibilities. It will develop master project management structures that aggregate all the individual activities it is funding into one view, and document its progress against milestones and deliverables, as well as the associated risks and issues. NYeC will also require all its contractors to submit detailed written reports with their invoices document their activities and demonstrate how they have met specific contract deliverables. Payments will only be made for tasks and deliverables completed.

Under the State HIE Program, NYeC will pursue the following tasks:

Enhance Communication Structures to Ensure Coordination of Activities: To enable cross-coordination across its various activities, NYeC will continue to convene weekly conference calls of an operations group consisting of representatives of all of its working groups. These calls ensure that the activities of the different workgroups remain aligned with one another, and that each group knows what they need to know about how their work affects the work of other groups and vice versa. As part of this project, NYeC will also continue to explore other web and software tools to facilitate collaboration among consultants and staff.

Review Contracting Plan to Involve State HIE Subcontracts: NYeC will be integrating the activities it funds under the State HIE program into a similar master project plan as described above. It will also pursue similar contracting relationships within the State HIE program as it is for its HEAL 10 program. NYeC will advance its internal contract management to be compliant with all applicable federal and state requirements and to the maximum extent possible maintain a consistent contracting framework across projects.

Operational Goal 2: Develop and maintain survey tools to monitor evolution of statewide health IT infrastructure, specifically progress on meaningful use criteria

Under HEAL 10, NYeC plans to regularly survey the RHIOs in order to track how the state and individual regions are progressing in terms of adoption and use of HIE services, including data exchange to support meaningful use.

Under the State HIE Program, NYeC will pursue the following task:

Develop Survey that Tracks New York's Progress in Providing "Meaningful Use" HIE services: NYeC and NYS DOH will evolve these survey plans to regularly monitor New York's statewide and regional progress in making available HIE services for providers striving to meet meaningful use criteria, as well as providers' adoption and use of those services. This will include operational data regarding use of the Medicaid data warehouse, which will be developed and implemented to facilitate data exchange in conjunction with meaningful use.

Operational Goal 3: Advance technical assistance operations

Under HEAL 10, NYeC will continue to provide technical assistance to those projects implementing the SPG. The need for technical assistance will grow as the SHIN-NY emerges. NYeC will continue to review and adapt its models for providing technical assistance.

Under the State HIE Program, NYeC will pursue the following task:

Evolve Technical Assistance Program to Incorporate Services Funded through State HIE Program: Successful implementation of the services anticipated under the State HIE program requires full integration from the statewide network to the regional network to the end-user. NYeC will grow its capacity to provide the necessary technical assistance to the RHIOs and also continue to develop methods for the RHIOs to share best practices. It will explore opportunities to coordinate its work with the CHITAs and extension centers that are working with the end-users on implementation of their health IT systems.

Legal/policy

Introduction

Through the SCP, NYeC and NYS DOH have developed the Statewide Policy Guidance (SPG), which includes a comprehensive set of privacy and security policies and procedures. These issues are often the most complex and have the greatest potential to undermine the trust vital to the effective operation of a statewide network. NYeC is now working on other pieces of a comprehensive Legal and Policy framework for comprehensive interoperable health information exchange. New York is now focusing on developing a long-term legal and contractual framework to maintain the collaborative multi-stakeholder trust that has been nurtured in the creation of those policies. It is also focused on an education and communication strategy, which is critical to gaining the support and adoption of key constituencies.

Strategic Goals

New York's Legal/Policy strategy moving forward is to build upon the framework and processes that are currently in place and to accomplish the following strategic goals:

1. Implement health information exchange that is secure and protects patient privacy;
2. Orchestrate levers of state policy to advance health information exchange;
3. Advance State law, policies, and procedures that are aligned with secure health information exchange within and beyond state borders;
4. Advance trust agreements that enable parties to share and use data;
5. Pursue strong oversight and enforcement to ensure compliance with federal and state laws and policies applicable to health information exchange; and
6. Ensure strong education and communication program to engage key constituencies

Background

Through the Statewide Collaboration Process (described above in the governance section), New York has created a comprehensive set of health information policies, standards, and protocols and other technical approaches for the SHIN-NY and interoperable EHR adoption, collectively known as Statewide Policy Guidance. This includes a comprehensive set of privacy and security policies and procedures. All state funded health IT initiatives are required not only to comply with the Statewide Policy Guidance but also participate in the governance process which develops it. The current version of Statewide Policy Guidance is located here:

http://www.nyehealth.org/SCP-policies

Privacy and Security Policies

New York State offers a fragmented legal and regulatory framework governing the exchange of health information. The legal requirements are not organized into a single regulatory scheme, but are spread across dozens of statutory and regulatory provisions. Gaps in legal and regulatory guidance could result in varying interpretations and consumer consent policies across the State, which would present barrier to interoperability and prohibit consistent privacy and security protections. Accordingly, NYeC determined that it was essential to develop a comprehensive,

standardized set of privacy and security policies and procedures as the foundation upon which a successful HIE network could be developed. The goal of the Privacy and Security Workgroup as part of the Statewide Collaboration Process is to develop policies that will protect privacy, strengthen security, ensure affirmative and informed consent and support the right of New Yorkers to have greater control over and access to their personal health information as foundational requirements for interoperable Health IT.

The current version of privacy and security policies and procedures for New York's health information infrastructure include procedures governing interoperable health information exchange via the SHIN-NY as well as interoperable EHRs. The scope includes the full range of privacy and security policies for interoperable health information exchange, including: authorization, authentication, consent, access, audit, breach and patient engagement policies.

The initial work on privacy and security began with NY's participation in the Health Information Security and Privacy Collaboration or HISPC, a federally funded program through ONC and AHRQ, designed to examine how privacy and security laws impact business practices related to electronic HIE. In the second phase of HISPC New York focused on developing a consumer consent solution through a standardized consent process that would inform a comprehensive set of health information privacy and security policies. The stakeholder meetings were attended by consumer advocates, health care providers, RHIO executive and clinical leadership, and others, a successful precursor to development of the SCP work groups. The resulting policy recommendations were summarized in a Consent White Paper. There was a public comment period before the final recommendations were turned into a set of policy and procedures.

As part of the full suite of privacy and security policies, NYS established an affirmative written consent policy and statewide standardized model consent form whereby patients may authorize provider organizations to access all of their protected health information including sensitive health information. To comply with New York State law – which, unlike HIPAA, does not provide exceptions to consumer consent requirements for treatment, payment or health care operations - the policies provide that affirmative consent must be obtained by each provider and payer organization before accessing health information through the SHIN-NY governed by the RHIO. A single consent may be obtained to exchange all health information, including sensitive health information such as HIV, mental health and genetic information. In addition, the policies provide that once a provider or payer organization obtains consumer consent, it may access the information of all RHIO data suppliers unless the RHIO has voluntarily established additional restrictions on disclosures. Further, consumers must be able to prevent any or all providers and payer organizations from accessing their personal health information via the SHIN-NY governed by a RHIO without being refused treatment or coverage, and providers or payer organizations may not condition treatment or coverage on the consumer's willingness to provide access to the consumer's information through a RHIO. Finally, consistent with existing New York law, the policies do not require providers to obtain consumer consent to upload or convert information to a RHIO's HIE or SHIN-NY sub network as long as the RHIO does not make the information accessible to other entities without consumer consent.

In addition to consent, the privacy and security policies establish standards for authorization, i.e., the process of determining whether a particular individual has the right to access health

information through the SHIN-NY governed by a RHIO. RHIOs are required to utilize role-based access standards that take into account an individual's job function and the information necessary for the individual to carry out that function, and define the purposes for which access may be granted, as well as the types of information that may be accessed.

The privacy and security policies also address authentication, which is the process of verifying that an individual who has been authorized and is seeking to access health information through the SHIN-NY governed by a RHIO is who he or she claims to be. Currently, the policies require RHIOs to use Authentication Assurance Level 2, as established by the National Institute of Standards and Technology ("NIST") for an interim period, with the goal being to transition to NIST Level 3 pursuant to a timetable to be established through the SCP.

The privacy and security policies establish access controls that govern when and how a patient's information may be accessed. Specifically, the privacy and security policies require RHIOs to implement minimum behavioral controls to ensure that (i) only authorized individuals access health information through the SHIN-NY governed by a RHIO and (ii) that they do so only in accordance with the requirements set forth in the privacy and security policies, including requirements regarding patient consent.

The privacy and security policies also require RHIOs to maintain audit logs that document all access of health information through the SHIN-NY governed by a RHIO, and to conduct periodic audits of such access to ensure compliance with the privacy and security policies. RHIOs must provide their participants with access to this information. Further, RHIOs are required to provide (or require their participants to provide) consumers with information on who has accessed a consumer's health information through the SHIN-NY governed by a RHIO.

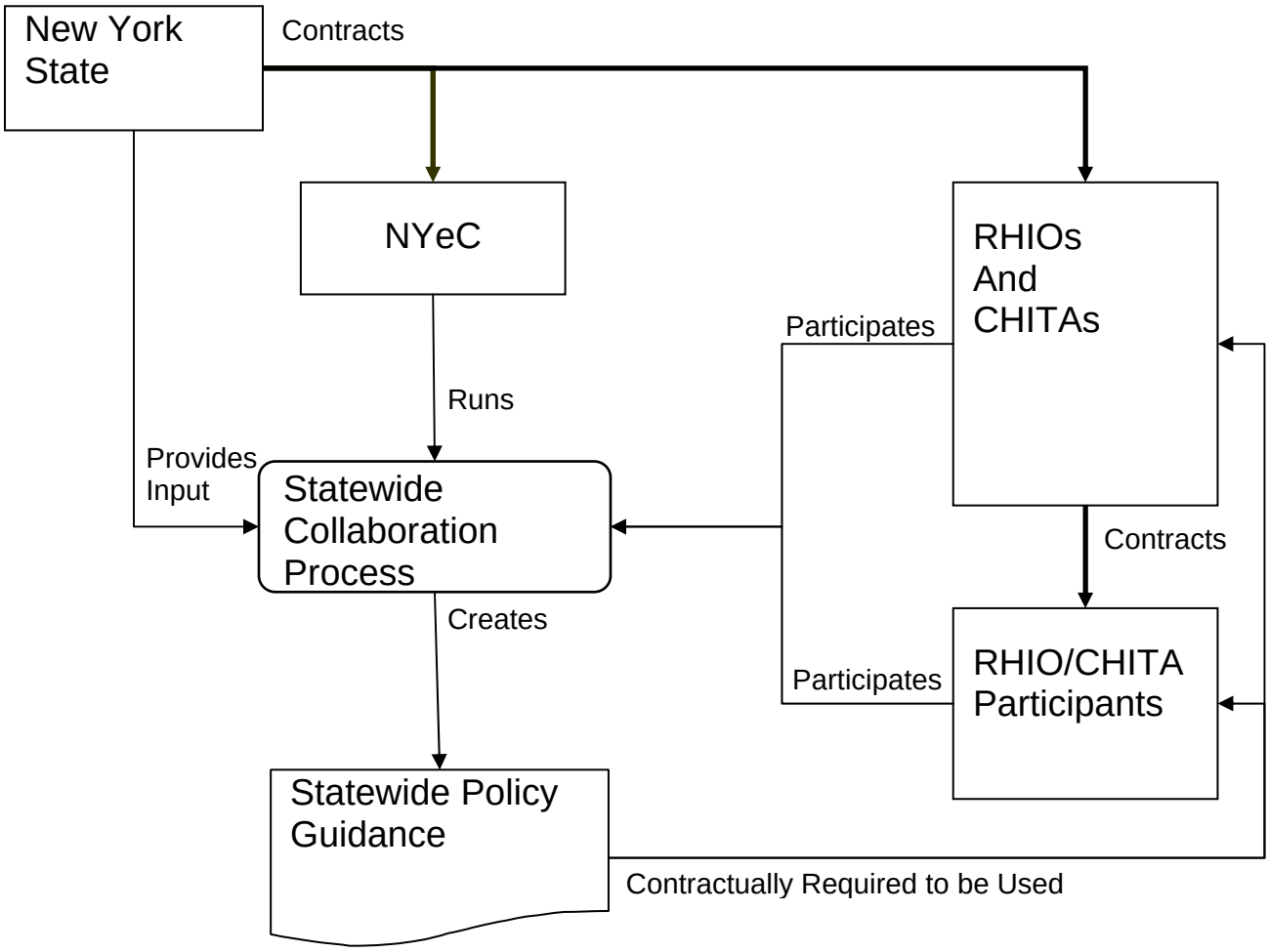
Finally, recognizing that the consent, authorization, authentication, access and audit policies outlined above have little weight if RHIOs and their participants are not held accountable for violations, the privacy and security policies establish minimum standards RHIOs and their participants must follow in the event of a breach. The standards require RHIOs and their participants to notify each other of any actual or suspected breaches, investigate and mitigate any actual breach, and notify affected consumers of such breaches as required by applicable law. RHIOs are also required to establish sanctions that apply to participants in the event of a breach.

Process for Amendment of Privacy and Security Policies

To ensure that the Privacy and Security Policies are consistent with evolving federal and state laws and regulations, and that they reflect implementation experience, NYeC has established a formal process for considering amendments to the policies on a twice-yearly basis. Privacy & Security Workgroup members, along with members of other SCP workgroups and the general public, will be invited to suggest proposed changes in August and February of each year. The Privacy & Security Workgroup will review the proposed changes and make recommendations to the POC and the NYeC Board/NYS DOH, consistent with existing SCP processes. Any more urgent amendments that need to be addressed outside of this twice-yearly cycle will be addressed on an as-needed basis.

Intra-State Contractual and Legal Framework
Currently Statewide Policy Guidance is binding upon RHIOs that received HEAL 5 grants pursuant to the terms of their grant agreements with NYS DOH. NYS DOH is responsible for enforcing the terms of the grant agreements, and there is no contractual mechanism for NYeC to achieve efficiencies by contracting for statewide shared services.

The following is a depiction of the current contractual structure for the development and enforcement of Statewide Policy Guidance:

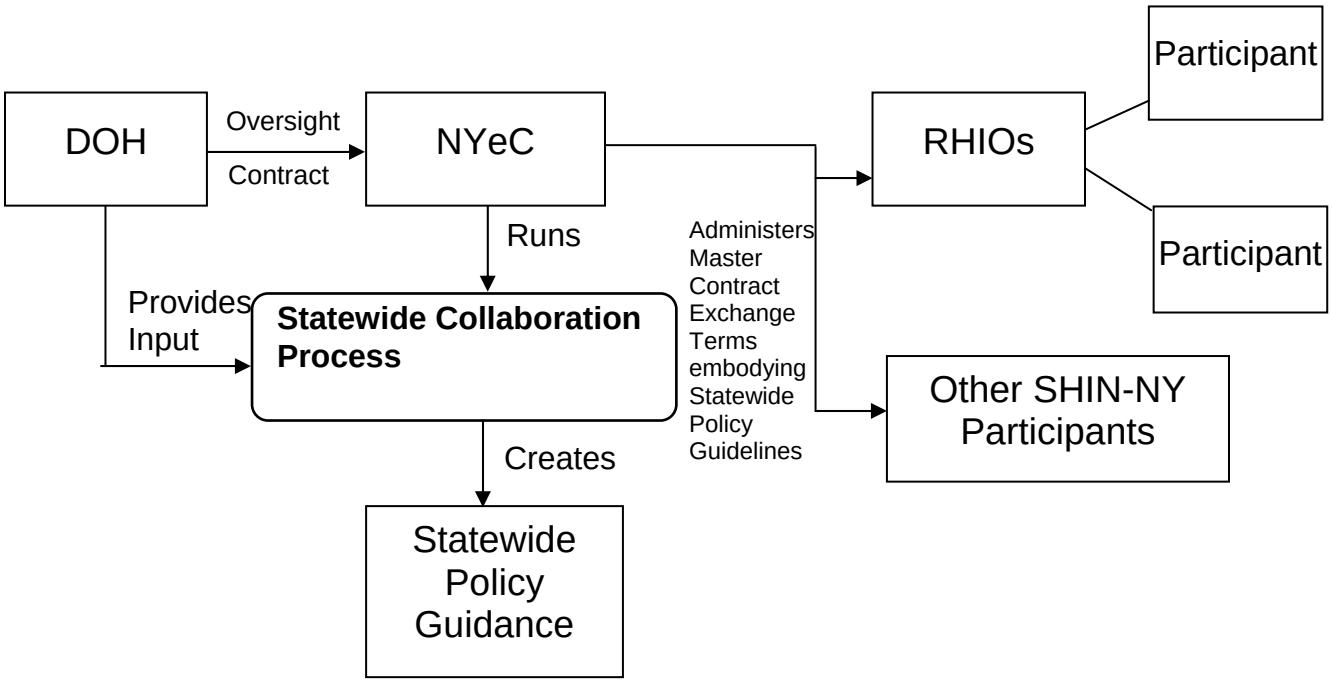


NYeC is developing an institutionalized contractual framework to replace the current grant agreement-based framework and that will create a publicly-accountable and self-regulatory structure for adherence to Statewide Policy Guidance. NYeC believes that this new framework is consistent with the multi-stakeholder collaborative nature of the Statewide Collaborative Process, and represents the most efficient framework for sharing information by qualified participants through the SHIN-NY. Under the new framework, NYeC (not NYS DOH) will administer Statewide Policy Guidance subject to the terms of a NYS DOH contract that will ensure that State public policy goals and specific requirements are met. Consequently when the existing HEAL 5 grant agreements with RHIOs expire, the mechanism for implementation of Statewide Policy Guidance will remain in place and will be perpetuated.

Under the new framework, NYeC would have the following expanded roles:

- To serve as contracting agent and administrator for the health information exchange with the authority to enforce uniform adherence to the Statewide Policy Guidance
- To serve as contracting agent and administrator for shared services, such as:
    - Medication management services
    - Authentication services
    - Patient identity reconciliation services
    - Provider identity services
    - Consent management services

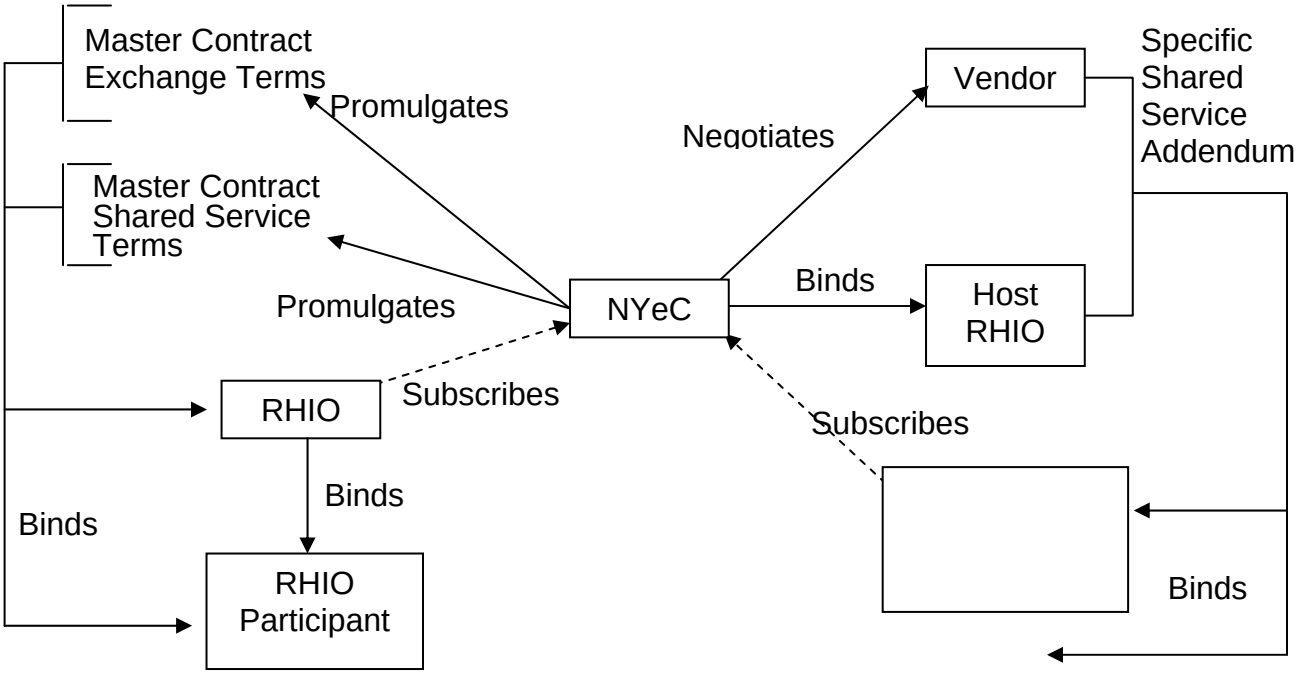
The following is a depiction of the new contractual framework:



To implement this new contractual framework, NYeC will take the following steps:

- NYeC will establish a set of master exchange terms (the "Master Contract Exchange Terms"), which will bind all participants in the SHIN-NY to adhere to Statewide Policy Guidance;
- NYeC will establish a set of master shared service terms (the "Master Contract Shared Service Terms"), which establishes a framework under which each specific shared service will function;
- NYeC will negotiate individual shared service addenda (the "Shared Service Addenda") to govern each specific shared service within the framework of the Master Contract Shared Service Terms;
- Each RHIO, each participant of each RHIO and each participant in the SHIN-NY who does not participate through a RHIO (each such RHIO and participant, a "SHIN-NY Participant") subscribes to and binds itself to the Master Contract Exchange Terms, the Master Contract Shared Service Terms and each Shared Service Addendum

The following is a depiction of how NYeC will implement the new contractual framework:



NYeC believes that the new contractual framework will have the following benefits that will support and enhance statewide HIE in New York:

- Permanency: perpetuating a comprehensive contractual framework beyond the expiration of HEAL 5 grant contracts;
- Simplicity: minimizing the number of separate contracts required;
- Flexibility: accommodating the addition of participants and the evolution of services over time;
- Certainty: implementing a comprehensive structure to resolve disputes and effect enforcement; and
- Equity: establishing a mechanism through which fair and equitable business terms can be established in a transparent, non-conflicted way.

Development of Trust Agreements for Interstate Data Sharing

New York recognizes the importance of establishing trust or data sharing agreements with other states for the use and disclosure of an individual's protected health information. NYS DOH has met informally with some of its border states to begin discussions of sharing information with other states that treat a subset of the same patient population. Patients from New Jersey and Connecticut often receive care in the NY Metropolitan Area because of the residential and employment patterns, as well as the availability of specialized services. Additionally, because of the lack of tertiary care in certain areas of upstate New York, New York residents regularly travel to Vermont, Massachusetts and Pennsylvania for certain types of specialized care. NYeC is also an active participant in the NHIN Trial Implementations project, which has focused on developing a data use and reciprocal support agreement for HIEs participating in the NHIN.

Oversight and Enforcement

In 2008, NYeC engaged Manatt, Phelps and Phillips to conduct research into the potential opportunities for an accreditation program for New York RHIOs. As part of that project, the team convened an expert panel, and interviewed exiting accreditation organizations to learn more about the potential opportunities and challenges of using such a process. The final product was a white paper which detailed that research and summarized the findings. This will be an important input into further discussions about the best mechanisms to ensure accountability of New York's health IT infrastructure. Moving forward, NYS DOH will seek state legislative authority to establish a regulatory framework for HIE activities, defining the roles and responsibilities of RHIOs and specifying how the SHIN-NY will operate and be funded to address the public good.

Education and Communication

A strong education and communication process, both internally among NYeC's constituents and externally between NYeC and other stakeholders, is fundamental to the success of the state's strategy. Development of the state's health information infrastructure contains great value for various constituencies - consumers, providers, health plans, employers. However, there is still a broad lack of awareness among many people within each of these constituencies about health IT. It is this lack of awareness and understanding that could undermine the state's strategy in the event of inadequate or even negative publicity. Good communications will enhance broad

understanding of, and trust in, the state's strategy. These communications will need to happen both at the state level for those communications requiring consistent messages across all RHIOs, and at the regional level, where RHIOs for communications more tailored to an individual region.

Consumers are perhaps the most key constituency. Their trust in the system will drive whether they participate in HIE and adopt consumer-facing health IT technologies. Consumers seek assurance that they have a meaningful level of control over who is able to access their protected health information. They want choices and they want to have enough information in the consent process and enough understanding of the privacy and security policies to make that choice meaningful and knowing. There is an opportunity to create an environment that supports the right of consumers to have greater access to and control over the use of their own personal health information. New York is taking advantage of the significant opportunity to expand the way in which we have traditionally thought about regarding consumer rights to access and use their own personal health information.

An essential cornerstone of New York State's health IT strategy is to ensure that consumers are appropriately educated about how their health information can be shared and to provide consumers with the informed opportunity to decide whether or not they desire to have their information accessible via the SHIN-NY. The strategy targets outreach and education efforts to the public and legislature, as well as key stakeholder segments including employers, health plans, health care professionals and organizations.

The educational efforts for consumers are focused on the implementation of a Consumer Advisory Council (CAC) whose mission is the development of a set of guiding principles to assist policymakers, health providers, and health consumers and advocacy organizations to develop policies and practices related to eHealth initiatives in order to promote progress and safeguard confidentiality and consumer autonomy. The CAC is developing a network of organizations throughout New York State – the Consumer Advocacy Network for eHealth – to participate in ongoing education and outreach efforts. While consumer or patient education is important in any setting in which health information is being shared electronically, systems that include consumer consent have an even greater responsibility to communicate effectively about what they are doing and why. Without an understanding of the general benefits and risks of health IT, as well as the specifics associated with the full range of privacy and security policies, consumers are not able to make truly informed decisions.

Materials and Tools

The New York Consumer Advisory Council, the NYeC Communication and Education committee and NYS DOH, with funding from the Health Information Security and Privacy Collaborative (HISPC), a federally funded contract through ONC, and the New York Health Foundation have worked collaboratively to develop an initial set of consumer education materials on health IT.

The materials are:

- **eHealth Brochure** – The brochure includes basic information about ehealth in New York, including the definition and purpose and the primary benefits. It also has a section about privacy and answers basic questions about consent and accessing your own information through ehealth.
  Visual advertisements –There are two versions, one emphasizing the value of eHealh in an emergency, and the other the convenience it can bring every day.
- **Radio Spots** – There are two 30-second radio spots, again emphasizing the emergency and convenience messages.
- **Video** – NYS DOH adapted the video produced by members of the HISPC Consumer Education and Engagement Collaborative from Oregon by adding additional footage: an introduction and concluding comments by Dr. Richard Daines, New York State Health Commissioner.
  Website – The website www.ehealth4ny.org is hosted by the Legal Action Center, which also organizes the CAC and Consumer Advocacy Network for eHealth. The website incorporates the materials described above and also provides more in depth information such as updates about upcoming events, more in-depth questions and answers about eHealth, and information about the CAC and specific health IT initiatives in New York.
  Model Consent Form – Although this form was developed through the Statewide Collaboration Process and is part of the current version of the Statewide Policy Guidance, it is the mechanism through which consumers choose to participate in eHealth in New York. It is designed for use by provider organizations participating in health information exchange in NYS.
- **Toll Free # -** A toll free number for consumers was created for questions related to eHealth and privacy and security policies. The # is printed on both the eHealth brochure and the Model Consent Form. The # is housed at NYS DOH and professional staff will respond to all inquiries.

Other Education Activities

The NYeC Education and Communication Committee is responsible for overseeing state-level outreach activities to other constituencies. It involves representatives from all the major health-related trade associations in New York. Its first focus was developing education materials for legislators. It developed a health IT information packet for legislators, which it distributed at a New York HIMSS educational event in spring of 2009. It is now developing a Q&A document detailing the answers to questions commonly asked by various stakeholder constituencies about health IT. NYeC also regularly hosts educational webinars for various stakeholder groups across New York.

Strategic Priorities Moving Forward

1. Pursue health information exchange that is secure and protects patient privacy

NYeC will continue to convene the Privacy and Security Workgroup and use it as a key vehicle to evolve its legal and policy framework. This will include periodic review of the existing policies and procedures based on implementation experience, and ongoing analysis of important outstanding policy issues, including those related to minor consent.

2. Orchestrate levers of state policy to advance health information exchange

New York State has various policy levers at its disposal to advance its strategic health IT goals. It will continue to explore all such levers to advance its health IT strategy. For example, it has started requiring that institutions submitting their capital health IT projects for approval under the Certificate of Need program connect their health IT systems to the SHIN-NY. It can also use the SHIN-NY as a gateway for physicians to access Medicaid data on their patients.

3. Advance State law, policies, and procedures that are aligned with secure health information exchange within and beyond state borders

NYeC and NYS DOH realize the importance of being able to share information about patients across state lines so that clinicians providing treatment can have the most complete information at the point of care. Now that the health IT infrastructure is in place and the RHIOs in New York are operational, they will reach out formally to border states as well as those states that provide care for large numbers of NY residents during seasonal relocation to begin discussions about common definitions, policies, laws and regulations that impact the interstate exchange of health information. NYeC will also continue to use its participation in the NHIN Trial Implementations program as a way to monitor progress on this front on the federal level.

4. Advance trust agreements that enable parties to share and use data

NYeC will advance discussions among the RHIOs on a long term contractual agreement for operation of the SHIN-NY. This is a critical endeavor to ensure ongoing adherence by the RHIOs and their participants to Statewide Policy Guidance and a foundation for agreements on shared services.

5. Pursue strong oversight and enforcement to ensure compliance with federal and state laws and policies applicable to health information exchange

NYS DOH will build on the existing analysis that has been done to develop a long-term plan for oversight and enforcement of the state's HIE infrastructure. Important oversight and enforcement mechanisms will also be built into the trust agreements that get executed among NYeC and the state's RHIOs. This will be essential to maintain trust that the SHIN-NY is being operated in the public's interest.

6. Ensure strong education and communication program to engage key constituencies

NYeC plans to review its education and communication activities and develop a comprehensive education and communication outreach program. This will focus on educating consumers, providers and other stakeholders about New York's health IT program, and developing champions within each of those constituencies to help spread the message and get their feedback.

Operational priorities moving forward

Operational Goal 1: Continue to advance and refine privacy and security policies and procedures

NYeC will continue to convene the Privacy and Security Workgroup and use it as a key vehicle to evolve its legal and policy framework. NYeC plans to regularly provide guidance on its policies and procedures and document this guidance for everyone's benefit. As described in the Governance section, it will periodically revisit and refine the SPG based on implementation experience.

Operational Goal 2: Orchestrate levers of state policy to advance health information exchange

NYS DOH will continue to explore various means to advance the state's health IT strategy. Some of those means include:

Certificate of Need: Public health law grants the NYS DOH broad regulatory powers over the health care system in NYS. Specifically under PHL Article 28 hospitals, nursing homes, diagnostic and treatment centers and other facilities are regulated. One of the ways regulatory power is exercised is through the CON process. The CON process requires health care providers to apply to the NYS DOH when they are considering facility construction, expansion or renovation, the acquisition of major medical equipment, the addition of services, transfer of ownership or updating or implementing health IT systems.

NYS has recently added the health IT project approval process that must occur with any CON application that has a health IT component. That process requires that applicants use the aforementioned language with their vendors. Thresholds triggering the requirement for CON approval for health care facilities are strict in NYS. Many hospitals in NYS are planning on updating their enterprise systems in the near future resulting in a noticeable volume of CON applications. Since January 2009, billions of dollars in project applications have been submitted to the

Medicaid Meaningful Use Incentives: At over $44 billion annually, NYS spends more than any state in the nation on Medicaid. In addition NYS is the recipient of the most Medicaid ARRA grant funds than any state at over $2 billion. All Medicaid incentive payments will be required to be conditioned upon the inclusion of the aforementioned contract language into all contracts between vendors and the providers receiving Medicaid payments. It is anticipated that over time all Medicaid funds will carry the same requirement.

State Designation of RHIOs: NYS DOH will be developing a plan and process for formally recognizing RHIOs in NYS. Recognition is necessary to establish a baseline for determining accountability standards for health information exchange participation in NYS.

Contracts: Over half of $1 billion in state and private sector funding has been provided to the health care community in NYS for health IT. NYS will continue a substantial funding commitment to statewide health IT. In order to enforce state policy specific contract language has been drafted and implemented with contractors with the state and between health care providers and their contractors (EHR, HIE and other health IT contractors). As condition of a signed contract and ultimately payment, all EHR contracts must incorporate the following language: Other boilerplate language exists that require RHIOs to comply with SPG as well. The language and associated Statewide Policy Guidance meets and exceeds the federal government's meaningful use requirements.

For all grants, New York State reserves the right to approve any and all vendors or subcontractors that grantees select. Per this authority, all grantees are required to include standard language in their contracts.

Operational Goal 3: Advance laws, policies, and procedures that establish data exchange beyond state borders

Under its NHIN Trial Implementations project, NYeC is continuing to participate in the NHIN Data Use and Reciprocal Support Agreement (DURSA) Workgroup and provide its input from New York's perspective and track versions of the DURSA that gets issued.

Under the State HIE Program NYeC, in cooperation with NYS DOH, will pursue the following tasks:

Pursue Discussions with Border States: NYeC will use its participation in the State HIE program to pursue discussions with border states on how to advance HIE among their states.

Track Federal Regulations: NYeC will continually track regulations and policies emerging from the federal government and align the SPG to ensure that New York's policies are consistent with federal policies and regulations (and resulting policies within State departments such as Medicaid).

Operational Goal 4: Advance trust agreements that enable parties to share and use data

Under HEAL 10, NYeC will pursue collaborative work among all the RHIOs to continue developing a contractual model and the necessary agreements to support their participation in the SHIN-NY and adherence to the SPG once their HEAL contracts have expired. NYeC will also develop an accompanying governance framework to ensure the necessary oversight and enforcement of these agreements.

Under the State HIE Program NYeC will pursue the following task:

Pursue Legal Agreements For Shared Services Funded through State HIE Project: Currently, state funds have supported development of regional HIE services which will operate according to the common policies and standards developed for the SHIN NY. A major focus of the State HIE

program will be development and implementation of shared HIE services that would be operated by one entity and used by many entities. This requires development of a new legal policy framework that will address the roles and responsibilities associated with SHIN NY shared services.

Operational Goal 5: Develop oversight and enforcement to ensure compliance with federal and state laws and policies applicable to health information exchange

Advance Analysis of Oversight and Enforcement Options: NYS DOH will explore oversight and enforcement policies as part of the discussions on advancing the legal and contractual framework that can maintain trust in the effective operation of the SHIN-NY.

Operational Goal 6: Ensure strong education and communication program to engage key constituencies

Under HEAL 10, NYeC plans to expand its existing education and communication activities. The new funds will be used to do the necessary analysis and then develop a strategic plan to identify the communication activities, media channels and timelines necessary to reach diverse audiences. It will also implement a health IT awards program that recognizes persons and institutions for outstanding use of health IT. It will also undertake a stakeholder partnership program that identifies ways to keep key stakeholder constituencies aware of emerging health IT policies.

Under the State HIE Program NYeC will pursue the following task:

Engage Other States in State HIE Program on Education and Communication Activities: As part of the State HIE program, NYeC anticipates that there will be opportunities to advance collaborative projects with other states in developing strong education and communication campaigns.

Conclusion

The prospects in front of New York are extremely exciting yet highly complex. Significant funding streams from the state level HIE program, HEAL 5 and 10, Medicaid IT programs, the regional extension center program, and Medicare and Medicaid incentives offer tremendous opportunity to deploy technology to make significant leaps forward in the quality, safety, efficiency, and affordability of health care. New York intends to develop a holistic strategic approach with its broad-based governance foundation to make investments that not only deepen the breadth and depth of its current infrastructure, but connect directly to New York's goals of using health information to make measurable improvements in the quality and cost efficiency of health care services. Over the next six months we will conduct an engaged strategic planning process through the Statewide Collaboration Process to recalibrate our strategic planning and develop concrete operational plans to address the new opportunities that lie ahead. With careful and thoughtful consideration through the collaborative governance structure, New York will then be in a position move forward with confidence that the best use is being made of federal and state dollars.