

State of Connecticut Health Information Technology and Exchange Project

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There are many local and regional health information exchange efforts underway in Connecticut. A number of initiatives are well developed, building stakeholder support and developing business plans with the expectation that they will move to implementation in the near future. The Connecticut HIT Plan, published in June 2009, provides a roadmap to reaching statewide HIE among health care providers and addresses many, but not all, of the critical strategic components specified in ONC ARRA Cooperative Agreement Announcement. The Connecticut Department of Public Health Connecticut was designated in statute as the lead health information exchange organization in the state in July 2009. The Department is convening the Connecticut Health Information Technology and Exchange Committee on October 27, 2009 to begin revising the existing plan and developing an operational plan.

ABSTRACT

The Connecticut Department of Public Health (the Department) will develop, implement, and sustain statewide capacity for a health information exchange system and meaningful use of electronic health records. The Department will oversee the revision of the State of Connecticut Health Information Technology Plan, published in July 2009, to comply with the Office of the National Coordinator's requirements for a Strategic Plan. In addition, the Department will develop and manage the implementation of an approved Health Information Operational Plan. The Department, as the State Regional Health Information Organization, will lead the establishment and maintenance of a multi-stakeholder collaborative process to develop both Plans. The specific objectives are to identify and manage sustainable financial resources, develop the technical infrastructure needed to support the secure exchange of health information statewide, and create a common set of rules to enable inter-organizational, statewide and interstate health information exchange. From January 2010 through March 31, 2010, Project funds will allow the State of Connecticut to revise its existing State Health Information Technology Plan and develop an approved Strategic Plan and an approved Operational Plan. The approved plans will be developed by the Department in concert with the multi-disciplinary Health Information Technology and Exchange Advisory Committee established by state statute. On or after April 1, 2010, implementation funding will be used to develop and implement statewide capacity for health information exchange and meaningful use of electronic health records. The specific performance measures, operational strategies and timeframes will be developed as part of the planning process, but it is anticipated that the capacity for the sustainable, statewide exchange and subsequent meaningful use of health information will be developed by December 31, 2011. Anticipated products include approved strategic and operational plans, annual legislative reports, and development and sustainability of a robust, statewide health information exchange. Anticipated outcomes include improved patient outcomes, reduction of medical errors, improved access to and coordination of care, and increased efficiency of the health care delivery system.

Introduction

The State of Connecticut Health Information Technology and Exchange Development Project (the Project) will promote the development, implementation and sustainability of statewide capacity for health information exchange and meaningful use. Specific objectives include the revision of the State of Connecticut Health Information Technology Plan, development of an approved Health Information Technology Operational Plan, establishment and maintenance of a multi-stakeholder process, identification and management of sustainable financial resources, development of the technical infrastructure needed to support secure health information exchange statewide, and the creation of a common set of rules to enable inter-organizational and interstate health information exchange. First, the Project will support the revision of the existing State Health Information Technology Strategic Plan and the development of an approved Operational Plan. This will be accomplished by building up new capacity within the State, by collaborating with the newly established Health Information Technology and Exchange Advisory Committee, and by contracting for subject matter expertise. Next, the Department will leverage the multiple concurrent health information exchange (HIE) initiatives across the state and regionally. Steps include conducting a statewide environmental scan and using the state convening authority to facilitate collaboration. Finally, the Project will develop, enhance and facilitate the sustainability of the needed infrastructure in the governance, policy, business, technical and financial domains to allow for the secure electronic exchange and consequent use of health information to improve the quality and coordination of care. The Department may leverage contract mechanisms to address the development and interoperability of an exchange system. The State will work towards providing a framework for public accountability for privacy and security (confidentiality, integrity and availability), fiscal accountability and governance.

HIE Strategic and Operational Plans

During the initial period of the Project, the Department will revise the existing Connecticut State Health Information Technology Plan (CT HIT Plan – attached in Appendix 4) and develop approved Strategic and Operational Plans for Connecticut. The general approach to these activities is guided both by the existing CT HIT Plan and statutory language signed into law on July 8, 2009. Strategic and Operational Plans will be completed by March 31, 2010.

To promote health information exchange capacity in the State, the Connecticut General Assembly passed Public Act 07-2, “***An Act Implementing the Provisions of the Budget Concerning Human Services and Public Health***” in the 2007 legislative session. This legislation authorized the Department, in consultation with the Office of Health Care Access, to contract through a competitive bidding process for the development of the CT HIT Plan.

The CT HIT Plan was developed through an extensive information gathering process of focus groups, provider surveys, steering committee meetings, stakeholder interviews and research on other states’ best practices. The CT HIT Plan provides a roadmap to transform the State’s healthcare system and addresses many, but not all, of the critical components specified in the Detailed Guidance for Strategic and Operational Plans, Appendix B of the ONC ARRA Cooperative Agreement Announcement. Since the existing CT HIT Plan is not totally consistent with federal parameters, funding is requested to revise the CT HIT Plan for strategic and operational approval.

In order to further refine the CT HIT Plan and to develop operational strategies, elected officials codified a governance structure in State statute. On July 8, 2009, Connecticut Governor M. Jodi Rell signed Public Act 09-232, “***An Act Concerning Revisions to Department of Public Health Licensing Statutes***” (the Act). Section 75 of the Act designated the Department as the lead health information exchange organization for the State. (See Appendix 1) The Department was tasked with the implementation and

periodic revision of the CT HIT Plan, including the implementation of an integrated statewide health information infrastructure for the sharing of electronic health information between health care facilities, health care professionals, public and private payers and patients.

The Act also established a Health Information Technology and Exchange Advisory Committee (HITE Advisory Committee). The HITE Advisory Committee is authorized to advise the Commissioner of Public Health regarding the operational implementation of the CT HIT Plan.

The Department, the HITE Advisory Committee and additional stakeholders will collaborate in the revision of the existing CT HIT Plan and the development of an Operational Plan. The first meeting of the HITE Advisory Committee is scheduled to be held on October 27, 2009 with additional monthly meetings to be scheduled. In order to complete these planning efforts by April 1, 2010, the Department is seeking funding to contract for subject matter expertise, to support 2.5 staff, and to support the work of the HITE Advisory Committee.

Health Information Exchange Capacity

On or after April 1, 2010, implementation funding will be used to develop and implement statewide capacity for health information exchange and meaningful use of electronic health records. While the Department may leverage contract mechanisms to address the development and interoperability of an exchange system, the Connecticut Department of Information Technology (DOIT) will work towards providing a framework for public accountability for privacy and security (confidentiality, integrity and availability). The State and the Department will maintain public accountability for fiscal integrity and overall responsibility for the HIE planning and implementation.

To date, the State of Connecticut has developed and executed a detailed implementation strategy for meeting HIPAA Privacy and Security requirements. Using strong executive-branch support, the State

assembled a broad-based team of experts from a number of agencies to formulate and execute the HIPAA strategy. This approach was successful and has led to a full implementation of HIPAA requirements at a granular level, ensuring that all HIPAA agencies fully comply. DOIT, as the facilitating agency, has taken a key role in continuing collaborative HIPAA compliance with HIPAA affected agencies using both “leadership” and “governance” principles.

The specific performance measures, operational strategies and timeframes for capacity building will be developed as part of the planning process, but it is anticipated that this capacity for the sustainable, statewide exchange and subsequent meaningful use of health information will be developed by December 31, 2011. Under its codified state agency governance model, the Department, DOIT, the Governor’s Office, and State agencies will ensure the development and adoption of a statewide exchange system to enable providers to meet the HIE meaningful use criteria by ensuring adequate progress across the five domains discussed below.

Performance Measures and Reporting

1. Governance

As recommended in the CT HIT Plan, the Connecticut State Regional Health Information Organization (CT State RHIO) is responsible for coordinating health IT/HIE activity among healthcare providers and across the State. The July 8, 2009 signing of Public Act 09-232, “*An Act Concerning Revisions to Department of Public Health Licensing Statutes*” officially designated the Department as the CT State RHIO. Responsibilities include overseeing, developing and managing the statewide exchange of health information related to the meaningful use criteria to be established by the Secretary. While the Department may utilize contract mechanisms to assist in this effort, the State will maintain overall governance responsibility for the exchange of health information.

In addition to the CT State RHIO, the CT HIT Plan and the ONC Cooperative Agreement Announcement both called for a multi-disciplinary governance body reflecting both the public and private sectors to achieve broad-based stakeholder collaboration, transparency and trust. Public Act 09-232 establishes the HITE Advisory Committee, a broad-based governance structure responsible for advising the Department on HIE matters. Specifically, the HITE Advisory Committee is authorized to advise the Commissioner of Public Health regarding the operational implementation of the CT HIT Plan. In addition, the HITE Advisory Committee is tasked with developing, in consultation with the Commissioner of Public Health, appropriate protocols for health information exchange, and electronic data standards to facilitate the development of a statewide, integrated electronic health information system. The Act mandates that such electronic data standards shall include provisions relating to security, privacy, data content, structures and format, vocabulary, and transmission protocols, and that all standards be compatible with any national data standards in order to allow for interstate interoperability. These electronic standards must also permit the collection of health information in a standard electronic format and be compatible with the requirements for an electronic health information system, as defined in subsection (a) of section 19a-25d of the Connecticut General Statutes, as amended by the Act.

HITE Advisory Committee membership is also defined in the Act and reflects a multi-disciplinary, multi-stakeholder governance model. The HITE Advisory Committee consists of twelve members, including the Lieutenant Governor and eleven appointees, including representatives of a medical research organization, an insurer or representative of a health plan, an attorney with background and experience in the field of privacy, health data security or patient rights, an individual with background and experience with a private sector health information exchange or health information technology entity, and an appointee with expertise in public health. Other appointees include a representative of hospitals, an integrated delivery network or a hospital association, one representing federally qualified health centers, a primary care physician whose practice utilizes electronic health records, a consumer or consumer advocate, a pharmacist or other health care provider that utilizes electronic health information exchange,

and a representative of a large employer or business group. Committee membership is consistent with those stakeholders responsible for developing the CT HIT Plan.

In addition, the State Commissioners of Public Health, Social Services (the Medicaid agency), Consumer Protection and the Office of Health Care Access, the Chief Information Officer, the Secretary of the Office of Policy and Management, and the Healthcare Advocate, or their designees, shall be ex-officio, nonvoting members of the HITE Advisory Committee. As both the State Medicaid and the State Public Health Departments are represented on the Advisory Committee, interagency collaboration and coordination is ensured.

The Department will convene the first meeting of the HITE Advisory Committee on October 27, 2009, and schedule additional meetings on a monthly basis. Per State Statute, all HITE Advisory Committee members are deemed public officials, and are required to adhere to the Code of Ethics as set forth in Connecticut General Statutes. The Department and the HITE Advisory Committee are part of state government and subject to requirements of due process, open meetings and public records. All HITE Advisory Committee meetings will be open to the public and noticed in accordance with State requirements, and the public will be provided an opportunity to provide input to the HITE Advisory Committee during meetings. Proceedings of all HITE Advisory Committee meetings will be available to the public, and posted on the Department's website (www.ct.gov/DPH).

In order to assure adequate progress across all five domains, the Department will recommend the establishment of HITE Advisory Subcommittees to reflect the five essential domains of governance, finance, technical infrastructure, business and technical operations, and legal/policy. These subcommittees will allow for the participation of additional stakeholders to further promote broad-based input into and oversight of the Strategic and Operational Plans. The Department plans to contract for services of a subject matter expert to manage the development of approved Strategic and Operational

Plans in the three month time frame specified in the Announcement, and has included these costs in the proposed budget.

The Department is requesting funding to establish and fill critical positions to manage and support this governance structure. Most significant is the position of State Health Information Technology Coordinator, a senior manager within the Department who will be responsible for overall project management, including the development of approved Strategic and Operational Plans (see Appendix 2). The State HIT Coordinator will also be responsible for ensuring the coordination, integration and alignment of efforts among State agencies and stakeholders in the public and private sector. In addition, the Department is requesting funding to establish and fill the position of Technical Manager to provide subject matter expertise regarding technical architecture and design standards and security operations. Finally, the Department is requesting funding to support a part time fiscal position to coordinate all financial oversight and reporting requirements.

Effective April 1, 2010, the Department's Statewide HIT Coordinator and the Advisory Committee will be responsible for overseeing the implementation efforts needed to ensure that adequate progress has been made across all domains to assure that HIE is sufficient to meet meaningful use criteria. Funding is requested to provide continued support of a Statewide HIT Coordinator, the Technical Manager and funding for a part-time fiscal position, and to support the work of the HITE Advisory Committee. Additional funding will be used to provide for the development and implementation of the appropriate and secure electronic exchange and subsequent use of health information.

Security governance is an ongoing responsibility, which the State takes seriously. At the implementation point, an Initial Risk Analysis compliant with FISMA and NIST standards will be undertaken, according to DOIT's Risk Analysis Methodology, to identify initial gaps and to assist in establishing the standards that will be adopted for the level of ongoing review required of the participating entities. Periodic review

of the requirements and the cooperation of the IT community will continue to drive a high level of compliance. The governance role will require “eternal vigilance” at both the architectural level and the governance level. This responsibility is seen as an ongoing, dynamic responsibility.

To meet this responsibility, it is proposed that the Connecticut HIE governance structure include a Certification and Accreditation Authority (the Authority) located at DOIT, separate from the HIE Operational entity which will be responsible for ensuring that all privacy and security operational requirements included in the “*The HHS Privacy and Security Framework Principles*” are met by applicants for connection to the HIE and the HIE itself. The Authority will be composed of State agency security personnel, and will be responsible for assuring public accountability through appropriate monitoring and other means and methods to report and mitigate non-adherence and breaches. Such reports shall be delivered independently and formally on a regular basis regarding accreditation issues to the Advisory Committee.

2. Finance

The Department is a unit of state government and is the entity designated as the single state entity to administer the State Health Information Exchange Cooperative Agreement. In addition, the Department is the governmental entity responsible for regulating and licensing Connecticut’s health care practitioners and health care facilities. The Department has managed and administered state and federal funding since its inception and as a result has developed and implemented financial policies and procedures consistent with state and federal requirements. Given its role in administering both federal and state health care programs, the Department has the experience in receiving revenue from both public and private organizations.

The need for startup funding and models for long term sustainable revenue are noted in the CT HIT Plan as two of the most significant barriers to HIE development. Project funds will be used to develop

governance capacity, including both staff positions and support for the HITE Advisory Committee.

Project funds will also support the development of approved HIE Strategic and Operational Plans, and evaluation mechanisms for the length of the cooperative agreement. Most significantly, the bulk of the project funding will be used to develop and implement statewide capacity for health information exchange and meaningful use of electronic health records.

While the particular fee model for generating and assuring sustainable revenue to support the statewide HIE will be developed as part of the planning process, the CT HIT Plan notes the need to leverage the significant activities already being funded in both Connecticut's public and private sectors, including sister state agencies, hospitals, and the payer community. It is anticipated that revenues generated will lead to sustainability on or after January 1, 2011, and revenue is used to offset a small amount of matching support in Year 4.

In addition, the Department and the HITE Advisory Committee will leverage other federal grants supporting Regional Extension Centers, workforce training, incentive payments and broadband technology. Monitoring and coordinating these and other resources will be critical to long term sustainability. In addition, the Act mandates that the Department seek private and federal funds, including funds made available pursuant to the federal American Recovery and Reinvestment Act of 2009, to support statewide health information exchange.

Connecticut's HIT strategic plan will be revised in the first three months after the grant award, and will include a sustainable financial solution plan. The Department anticipates the formation of a Financial Subcommittee to catalogue and calculate the costs and measurable financial savings of HIE projects. The group's mission is to determine the benefit realization model based on the predicted outcomes of HIE projects. The deliverables should be incorporated into a report submitted to the HITE Advisory Committee. A financial model will be developed to adequately fund both the initial investment (start-up

costs) and the ongoing operational costs of the HIE network. The framework to be utilized will encourage and support the effective use of investments, including: (1) Leveraging existing and planned investments in health information exchange, public health, Medicaid, and other programs; (2) Leveraging Medicaid administrative funding for provider incentives; (3) Leveraging other programs which support health information exchange, workforce development, and broadband development; and (4) Identifying sources of grant funding to fund start up costs and accelerate implementation; and review budget and HIE cost effectiveness on a regular basis.

3. Technical Infrastructure

DOIT has developed an Enterprise-Wide Technical Architecture (EWTA) to ensure that the State has the most cost-effective and secure IT solutions to business needs. The EWTA is composed of nine domains: Application Development, Collaboration and Directory Services, Data Management and Data Warehouse, Enterprise System Management, Platform, Security, Web/eGovernment, Middleware and Network. These domains cover the entire spectrum of technical operations, providing a base for all State agencies. In concert with the HIPAA policies and technical requirements noted above, the EWTA provides a strong base for creating and maintaining a network capable of supporting the significant amount of highly sensitive traffic, which will move through the state eHealth network.

The adoption of FISMA and NISR standards and the development of the EWTA places the State of Connecticut in a good position to meet the requirement that “States will also be expected to use their authority, programs, and resources to develop state level directories and enable technical services for HIE within and across states.”

Architecture and security planning and oversight will be required to identify components which the HIE network requires and to keep the technology requirements up-to-date and work with the governance staff to respond to technical questions. Since the standards for interchange, including communications with

other states and the federal government, are evolving, the architecture area will be an on-going critical component of the eHealth environment.

As recommended in the CT HIT Plan, the development and assurance of technical security infrastructure will require hiring a Technical Manager. This position will support the certification of entities connecting to the HIE and the on going monitoring of compliance with certification requirements. The technical security controls would include but not be limited to the following capabilities:

- Identify Management
- Log Collection and Correlation
- SIEM (Security incident and event management)
- DLP (Data Loss Prevention)
- NIDPS (Network Intrusion Detection and Prevention System)
- HIDPS (Host Intrusion Detection and Prevention System)

It is also recommended that the Technical Manager convene and chair the HITE Technical Subcommittee.

4. Business and Technical Operations

Implementing an integrated network of disparate systems and aligning it to “emerging standards” will be a challenge for the CT State RHIO and HITE Advisory Committee. The State will arrange for a Project Manager to begin the effort according to the Systems Development Methodology (SDM) required by Governor Executive Order #19. The SDM process has been developed by DOIT to ensure that IT projects are managed properly, ensuring a cost-effective solution to the documented business issues.

It is critical that the Project Manager be engaged in time to be a part of the business needs development so that he or she can be on the team developing the Operational Plan. This is important if the State is to use its authority, programs, and resources to remove barriers and create enablers for HIE, particularly those

related to interoperability across laboratories, hospitals, clinician offices, health plans and other health information trading partners.

The Project Manager and the history DOIT has with cooperative implementation of the HIPAA rules will be key to meeting the goals of the Funding Announcement. States will also be expected to use their authority, programs, and resources to coordinate an integrated approach with Medicaid and state public health programs to enable information exchange and support monitoring of provider participation in HIE as required for Medicaid meaningful use incentives.

Some of the Business Operations issues that the State must address are the “barriers to entry” for a variety of potential users. The CT State RHIO will work with the designated Regional Extension Center to develop appropriate introductory awareness and education materials and training programs.

Connecticut’s experience in supporting partnerships required to implement HIPAA across a variety of agencies will provide a base for this effort. The CT State RHIO will use all resources to identify the barriers and develop strategies to overcome them. In coordination with the Connecticut Regional Extension Center, the CT State RHIO will target technical support staff, office managers, practitioners and para-professionals with good information about the goals and useful training to make the process acceptable.

5. Legal/Policy

Connecticut’s recent legislation established the Department as the lead health information exchange organization for the State. The legislation charges the Department with developing standards and protocols for privacy in the sharing of electronic health information. Such standards and protocols shall be no less stringent than the “Standards for Privacy of Individually Identifiable Health Information” established under the Health Insurance Portability and Accountability Act of 1996, P.L. 104-191, as

amended from time to time, and contained in 45 CFR 160, 164. Such standards and protocols shall require that individually identifiable health information be secure and that access to such information be traceable by an electronic audit trail. In addition, the HITE Advisory Committee is tasked with developing protocols for health information exchange and electronic data standards to facilitate the development of a statewide, integrated electronic health information system. These standards are to include provisions relating to security and privacy, with the privacy standards consistent with the standards and protocols for privacy described above. The Department anticipates the formation of a Legal Subcommittee to assist in addressing the mandates of this legislation and to ensure that all standards and protocols developed are in compliance with state and federal requirements for health information technology.

The Subcommittee will be able to build on the significant work already accomplished in addressing privacy and confidentiality issues in Connecticut. The Connecticut Health Information Security and Privacy Initiative, or CT-HISPI, was a three stage project, completed in April 2007, which assessed the current health information security and privacy environment in Connecticut, identified barriers to the flow of electronic health information, proposed solutions and developed a proposed plan of action. The CT HIT Plan analysis of patient privacy and confidentiality issues incorporates the CT-HISPI assessment and includes issues raised by stakeholders in recent interviews and focus groups. It also incorporates the Department of Health and Human Services Privacy and Security Framework principles and discusses the expansion by the American Recovery and Reinvestment Act of 2009 of current HIPAA patient health information privacy and security protections, especially as such information is electronically transferred through health IT systems.

As noted in the CT HIT Plan, the State will develop comprehensive legal and policy guidance to set the foundation for health information exchange on a State level. Areas to be addressed include HIE for treatment, payment and operations purposes for HIPAA covered entities, HIE for authorized secondary

data uses as authorized by HIPAA, establishment of a uniform statewide electronic patient consent/authorization process for the exchange of highly sensitive personal health information, establishment of uniform information exchange policies and business agreements including but not limited to business associate agreements (BAA), and establishment of a healthcare workforce identification management and authentication system to ensure accountability and appropriate use of the state HIE.

Project Management

1. Organizational Capability Statement

The Office of Research and Development (ORD) will manage the Department's health information technology and exchange project efforts. In 2005, the ORD was tasked with similar statewide responsibilities with respect to the design and implementation of a publicly funded stem cell research program. Since then, ORD has managed the granting of \$40 million in support of State stem cell researchers.

Warren Wollschlager, ORD Chief and Acting State Health Information Technology Coordinator, reports directly to the Office of the Commissioner. Representatives from the Administration Branch, Office of Government Relations, Operation Branch, Planning Branch, and the Commissioner's Office provide subject additional matter expertise. ORD will provide support to the HITE Advisory Committees and will provide managerial accountability for the ONC Cooperative Agreement. Other critical Department staff include Meg Hooper, Chief of the Department Planning Branch and the Department's designee on the HITE Advisory Committee, and Marianne Horn, Director of Legal Services in the Office of Research and Development. (See Appendix 3 - Resumes of Key Personnel.)

The Connecticut Department of Information Technology (DOIT) brings technical expertise, experience, and leadership to the Project. Deputy Chief Information Officer Richard Bailey is the DOIT

representative to the HITE Advisory Committee. DOIT will assure the development of technical infrastructure requirements and technology standards, and auditing the exchange of information.

The Connecticut Department of Social Services (DSS) is the Medicaid Administrative Agency. The Medical Operations Director with DSS will manage the integration of Medicaid health information exchange activities with the CT State RHIO.

The Acting State Health Information Technology Coordinator has overall responsibility for monitoring and tracking progress on the project's tasks and objectives. The HITE Advisory Committee and the Subcommittees will review domain progress on a regular basis.

2. State Agency Expertise in Health Information Technology and Exchange

The Department has been moving towards informational exchange interoperability for several years. Recently, the Department launched a new *on-line elicensing system*, in coordination with the Connecticut Department of Consumer Protection's (DCP) already existing system. This system will allow for the citizens of Connecticut the convenience of renewing their physician, surgeon and dentist licenses on-line. Currently, the Department is working towards providing this functionality for all practitioner licenses and facility licensing. Residents can access the website: <https://www.elicense.ct.gov/> to renew their practitioner licenses, and the general public can verify a license for any of the DCP and the Department professions.

There are a number of other exchange capacities existing or under construction within the Department. In February 2008, the Department acquired a vendor-supported, commercial off-the-shelf (COTS) application, *Maven*, to implement statewide, web-based reportable disease surveillance, HAN local health tracking, hospital emergency department syndromic surveillance (HEDSS), and environmental public health surveillance and tracking (EPHT). Maven is in production for four areas (vaccine-preventable

diseases, occupational health, EPHT metadata, and HEDSS). HEDSS receives chief complaints from 21 acute care hospitals using a file upload. Planning has begun for electronic messaging. Full implementation of influenza surveillance will be completed in 2010. Maven has outbreak management capacity planned for implementation later this year. Currently, outbreaks are managed using existing applications, such as Epi Info. Maven is capable of receiving and generating HL7 or xml formatted messages. Certification for Varicella and TB messaging will be completed by the new CDC deadline of December 2009.

The Department Laboratory Information System (LIMS) will provide real-time laboratory results to the private sector, state and federal officials to prevent illness, disease and death. LIMS, currently under construction, will support the data and data transmission standards developed by the federal CDC classified as PHIN standards. The Department PHIN Messaging Project allows public health officials to rapidly and securely exchange sensitive health information over the Internet.

The recently implemented EMS/Trauma registry system allows State based EMS providers to upload data for all 911 calls and allows trauma hospitals to upload trauma data. Also implemented is the Department Electronic HIV/Aids Registry System, a surveillance system by which the Department collects data and transmits the de-identified data monthly to the CDC database. Also, the Department Health Alert Network provides public health preparedness, response and service data on a 24/7 basis to ensure rapid and timely access to emergent health data.

The Connecticut Vital Records Office has secured federal and state funding to develop and implement the Electronic Death Registry System. This project involved the migration of historical death records onto one server system. The Department led the coordination with reporting hospitals, nursing homes, physicians, and municipal registrars of vital statistics to implement the immediate reporting of deaths in Connecticut.

Partner agencies are also implementing and constructing HIE efforts. The Department of Social Services' Medicaid Transformation Grant is implementing ePrescribing which will electronically route up-to-date patient eligibility, medication history, and information about how the different pharmacy programs cover specific medications at every point of care. Connecticut Medical Assistance Program licensed authorized practitioners, clinics and hospitals with a valid National Provider Identification number (NPI) can access real-time patient data at the point of care. The prescriber can select medications on the formulary that are covered by the patient's pharmacy benefit, be informed of lower cost alternatives such as generic drugs, assure that the staff in the pharmacy receives a "clean" script, and eliminate unnecessary phone calls from pharmacy staff to physician practices related to drug coverage.

DSS' Medicaid Transformation Grant is also supporting a pilot project to demonstrate the technology, functionality, and benefits of an HIE for healthcare providers, purchasers, payers, consumers, and health policy makers. The pilot project will include infrastructure components that are the basic elements of an HIE that are required to enable the user applications (EHR/EMR systems). The first phase of the project will include 1-2 FQHCs, 1-2 hospital(s) and 1-2 physician group(s) to demonstrate the benefits of primary and acute care data sharing. It is possible that the network can be scaled over time to support statewide information exchange among all providers and for all residents of Connecticut, as they become ready, willing and able to join the HIE.

In addition, via the Medicaid Transformation Grant, DSS is collaborating with the University of Connecticut School of Pharmacy and the CT Pharmacists Association (CPA). This collaboration is building a comprehensive, active medication profile (CAMP), developing an E-Rx quality pilot program and assessing the quantitative and qualitative impact of the E-Rx medication information exchange within the HIE/E-Rx MTG project.

The steps that DSS has taken utilizing the Medicaid Transformation Grant will prove beneficial to the Department's statewide HIT initiatives. Also, under the stimulus package, Medicaid will be providing financial incentives to providers to engage in the adoption of electronic health records. The Connecticut Departments of Developmental Disabilities, Children and Families, and Mental Health and Addiction Services also have health exchange efforts planned or implemented.

In addition to these executive branch agencies, the University of Connecticut (UConn) has secured federal, state and private funds to support a number of HIT initiatives. In particular, UConn has developed expertise related to health information exchange and meaningful use across ambulatory care and hospital sites within our State. UConn has developed expertise and tools to assist in this process over the last several years and is interested in collaborating both with executive branch agencies and the designated state level Regional Health Extension Center.

Through the Safety.Net Grant, UConn has created a clearinghouse (through a secure web-based wiki portal) that allows for the exchange of ideas, policies and best practices between its' members regarding HIT adoption and expansion. This has been used as a collaborative tool for sharing best practices in HIT adoption and expansion between the SafetyNet partners and could be expanded to include additional members and shared resources for learning and collaboration within the State.

UConn's Translating Research Into Practice and Policy (TRIPP) Center has experience with solutions related to HIT adoption in small primary care practices and underserved training sites and has recently had grants from the CT Health Foundation focused on getting SafetyNet providers such as community health centers and FQHCs to adopt HIT. UConn has also developed a newly formed BioMedical Informatics Center (BMIC) that is part of the Connecticut Institute of Clinical And Translational Research (CICATS – <http://cicats.uchc.edu>). The BMIC will have as one of its major aims the further development of an HIT Adoption and Optimization Resource Center in collaboration with the TRIPP

Center. This HIT Resource Center is focused on the optimal setup and utilization of HIT to ensure best outcomes for patients. This is currently funded by UConn for the 2009/2010 academic year ending in June 2010. The BMIC faculty leaders have expertise in BioMedical Informatics, Continuing Medical Education, Distance Learning, EMR oversight and planning, Personal Health Records, Information System Security and Software setup / development. The BMIC is actively recruiting faculty with skills in Medical Informatics and is currently running a training program called “Grow Your Own Informatician” which is sponsoring the training and mentorship of ten UConn faculty scattered throughout the State in Biomedical Informatics. The HIT Resource Center currently has servers and additional hardware in place for development of an EMR and other HIT testbed environment.

3. HIT/HIE Activities in Connecticut

There are many local and regional health information exchange efforts underway in Connecticut. While many are still in the early planning stages, a number of initiatives are well developed, building stakeholder support and developing business plans with the expectation that they will move to implementation in the near future. Several of these are collaborations between hospitals and their affiliated providers; the goal being to help providers implement a single electronic health record that would provide data exchange between them, the hospital, and other connected providers. While this is viewed as a relatively straightforward and efficient model within a single hospital system, concerns still exist. The single product model makes it potentially more difficult for providers who choose to use other systems to connect to the hospital and to other providers. Of greater concern is that the single product model will give the participating hospitals a competitive advantage over other hospitals in the region through its role in the development and ongoing management of the data exchange capacity. However, other Connecticut stakeholders see this model as a realistic and feasible approach to provide EHR capacity to small- and medium-sized practices that lack the financial and technical expertise to adopt on their own. Conversely, some raise concerns about limiting the options of these providers and tying them too closely to a single hospital system.

According to the CT HIT Plan, the perception in Connecticut is that while many of the regional efforts show promise, some lack the funding or leadership required to successfully mount local HIE efforts that can ultimately integrate into a statewide HIEN. This concern stems in part from the lack of required financial resources and current economic conditions.

In addition to financial concerns, competition among organizations and the lack of a collaborative history among providers all represent potential barriers to statewide activity and collaboration. Due to the competitive nature of healthcare, many of the healthcare providers in the state historically have been reluctant to share patient data. In Connecticut, this is more of an issue for the private practice organizations than for hospitals. However, there are several existing collaborating groups of healthcare organizations that are pursuing health IT/HIE opportunities to improve the State's healthcare system.

Electronic medical record adoption by Connecticut providers mirrors the national trends of 10 - 15% (DesRoches et al., 2008; Jha et al., 2006; Jha, et al. 2009). A majority of the provider community is exposed to electronic data exchange through their relationships with hospitals as well as laboratory, radiology and pharmacy vendors. Because many of these relationships rely on proprietary systems, the benefits of these systems are offset by the disparate sources of data being managed by their administrative staffs. In addition, several independent physician associations (IPAs) are supporting the development of EHR and registry systems and providing technical assistance for health IT adoption to their members.

The majority of the state's thirteen community health centers have adopted electronic health records, and are beginning to use these systems not only for patient care, but for reporting to funders and state and federal agencies, and for quality improvement efforts. In 2006, community health centers in Connecticut provided comprehensive, community based primary and preventative health care for more than 230,000 persons, or 6.6% of the population. Department data indicates that 77% of health center patients have

family incomes under 100% of the Federal Poverty Level, 49% of the patients were Hispanic/Latino, 24% are African American, 24% are white, and 2.1% are Asian/Pacific Islander. Nearly half of the patients are Medicaid beneficiaries and 28% are uninsured.

One of these providers, the Community Health Center, Inc., recently was awarded one of five national awards for an innovative HIT quality improvement project focusing on the use of HIT to reduce health disparities in African Americans. This organization has also been selected by eHealth of Washington, DC, to develop and test innovative models of care in patients with chronic disease. While there is support among the leadership of the community health centers for increased health information exchange, concerns about the protection of immigration status and data about substance abuse and mental health issues from payers and public agencies is a key concern of these organizations. The Department intends to collaborate with CHC, Inc., and the community health center provider community as a group in addressing these concerns and targeting medically underserved populations. One of the appointees to the HITE Advisory Committee is the President and CEO of one of the state's largest community health centers, ensuring that these providers' perspectives and needs will be addressed by the Department.

Payers play a significant role in Connecticut because of the large historic presence of the insurance industry in the State, and their influence in setting the State's healthcare agenda. Acknowledgement of the role that payers will contribute to building increased health information exchange is tempered with privacy concerns about increased payer access to data. One appointee to the HITE Advisory Committee represents the payer community.

Anecdotal information indicates that Connecticut's long-term care industry is adopting electronic medical records, but the Department supports the need for an environmental scan of HIE capacity among the providers of long term care. The ability to electronically manage nursing home to hospital admissions and returns is critical to the industry from both a fiscal and quality of care perspective. The Department will

coordinate electronic medical record capacity development in the long-term care industry with DSS and with the proprietary and not for profit trade associations, and has initiated HIE capacity discussions with both the Executive Directors of both associations.

4. Evaluation

The Department intends to contract for evaluative services throughout the period of the cooperative agreement. The evaluation component of this grant will: 1) provide continuous feedback on project progress through ongoing documentation and monitoring of grant-related activities; and 2) determine the extent to which the key grant objectives have been achieved.

The key grant objectives to be evaluated include those of: 1) governance, 2) finance, 3) technical infrastructure, 4) business and technical operations, and 5) legal/policy. Methods, tools, and techniques used to track and maintain project information include both qualitative and quantitative methods as outlined below.

Qualitative methods – include the use of key informant interviews, participant observation, and focus groups. In addition, detailed documentation will be maintained of all efforts to engage stakeholder groups in HIE, and all stakeholder meetings will be transcribed and meeting minutes will be maintained as part of the project records.

Interviews of selected key informants, such as state health IT coordinators, and representatives of and users in laboratories, hospitals, clinician offices, and health plans, will be conducted during the first two years of the grant period. A series of focus groups with these stakeholders will also be conducted. These two strategies will provide the project with important contextual information regarding the barriers to implementing HIE and the extent of support for and willingness to participate in the implementation of statewide HIE. Participant observation of the project's efforts to engage a broad array of stakeholder

groups will provide valuable information regarding its success in achieving a critical mass of providers who participate in HIE.

Quantitative methods - A survey will be conducted of key stakeholder groups at the beginning and conclusion of the project. Specific aims of the first survey will be to: 1) identify readiness and willingness for a statewide approach to HIE; 2) identify barriers for HIE, particularly those related to interoperability across institutions; and 3) identify potential legal obstacles; and 4) obtain feedback on and suggestions for revisions of the current state strategic plan. Specific aims of the second survey conducted at the end of the grant period will be to: 1) assess stakeholders attitudes re: implementation of state HIE; 2) determine the extent to which stakeholders support ongoing HIE; 3) identify which barriers to implementation have been removed and which still exist; 4) identify what legal obstacles still exist; and 5) assess attitudes toward and willingness to participate in the state strategic plan as revised during the grant period.

The combined use of qualitative and quantitative methods in the evaluation of statewide HIE will provide important contextual information as well as a quantifiable assessment of the implementation of the five project objectives.