

Project Narrative – Improving Massachusetts Post-Acute Care Transfers (IMPACT)

Section 1: Understanding of Project Purpose

The healthcare system in the United States reflects significant patient safety and quality deficiencies; many of these shortcomings can be traced to poor care transitions (Snow et al, 2009). Most health policy experts agree that the US does not receive good value for the money spent. The US spends more on healthcare than any other country in the world, and expenditures are soon expected to grow to more than 20 percent of the Gross Domestic Product (GDP). The opportunity therefore exists to make significant changes in the health care system that can enhance both quality and efficiency at the same time.

We envision a future in which care transitions in Massachusetts and around the country are organized around communities, with integrated and coordinated systems of care across settings, and where flow of patient information through the state's HIE is seamless and secure among all of a patient's providers, insurers, public health agencies and patients themselves. In order to accomplish this transformational change, the Massachusetts healthcare community will require collaboration, effective partnerships, and commitment to a paradigm shift: the creation of a patient-centered care model delivered to populations that encompasses the entire continuum of care and aligns with health information exchange (HIE).

The Massachusetts Technology Collaborative (MTC) and the Massachusetts e-Health Institute, a non-divisible component of MTC and the State HIE Cooperative Agreement Program recipient for Massachusetts, are submitting a proposal for the HIE Challenge Grant under Challenge Theme 2: Improving Long-Term and Post-Acute Care Transitions. This project is titled IMPACT – Improving Massachusetts Post-Acute Care Transfers.

The Health Information Technology for Economic and Clinical Health (HITECH) Act, which is part of the American Recovery and Reinvestment Act of 2009, appropriates an unprecedented amount of funding to enable electronic health record systems to become widely available and accessible in hospitals and physician offices. It also provides funding for states to establish and connect health information exchanges among these providers. However, providers in post-acute settings such as skilled nursing facilities, long-term care facilities, and home health agencies have a limited penetration of EHRs and are not included as eligible providers for HITECH Act payments. We are therefore excited by the opportunity to connect post-acute providers to hospitals and physician offices via the HIE Challenge Grant funding in a low-cost and sustainable way that accommodates the varying levels of technology integration within each organization.

The purpose of the IMPACT project is to connect post-acute providers to hospitals and physician offices via the HIE Challenge Grant funding in a low-cost and sustainable way that accommodates the varying levels of technology available within each organization and aligns with the state's Health IT and HIE action plans. The proposed IMPACT project has four objectives:

1. To complete development and testing of a) a paper and b) an electronic version of the state's Universal Transfer Form (UTF) based on the Clinical Document Architecture Standard (CDA)/Continuity of Care Document (CCD), to consistently and efficiently communicate all of the clinical information necessary for continuity of care
2. To develop a tool that translates clinical information into consumer-friendly language that is meaningful and easy to understand for patients and families for use in a personal health record (PHR) or printing on paper because patients are essential to the communication and execution of treatment plans

3. To establish learning collaboratives that will engage post-acute care providers; will build on existing cross-continuum teams to implement and disseminate forms and processes to assure safe care transitions
4. To deploy objectives 1-3 now, within the technology and workflows of existing HIEs and providers with varying levels of available technology in Massachusetts and align them with future Health IT and HIE initiatives, as outlined in the Commonwealth’s Health IT and HIE strategic plans.

Massachusetts has a long-standing commitment to collaborative efforts that improve the quality, safety and efficiency of health care. These include developing health information exchange capabilities and improving transitions across the continuum of care. Although Massachusetts ranks among the best states for overall healthcare quality, we rank relatively low on measures of quality relating to coordination of care, such as preventable hospitalizations for chronic conditions and hospital readmissions (source: The Commonwealth Fund, 2009). This is not just a state issue: problems related to poor care transitions are widespread throughout the country. Nationwide there are 3 million preventable or ameliorable adverse events that occur each year as a result of poor communication at the time of hospital discharges (source: Forster et al.2003).

Challenge Theme 2 identifies the need to engage LTPAC providers in information sharing, including care summaries and medication lists. That is the focus of our proposed project: to link LTPAC providers to acute care providers and physician offices via a HIE, and to deliver an electronic version of the validated UTF in the form of a CCD extended with CDA templates, collectively referred to as the “CCD+”. This CCD+ will contain medication lists, advance directives, functional status, and all other clinical information necessary for effective transitions across the continuum of care.

Section 2: Approach, Work Plan and Activities

Approach

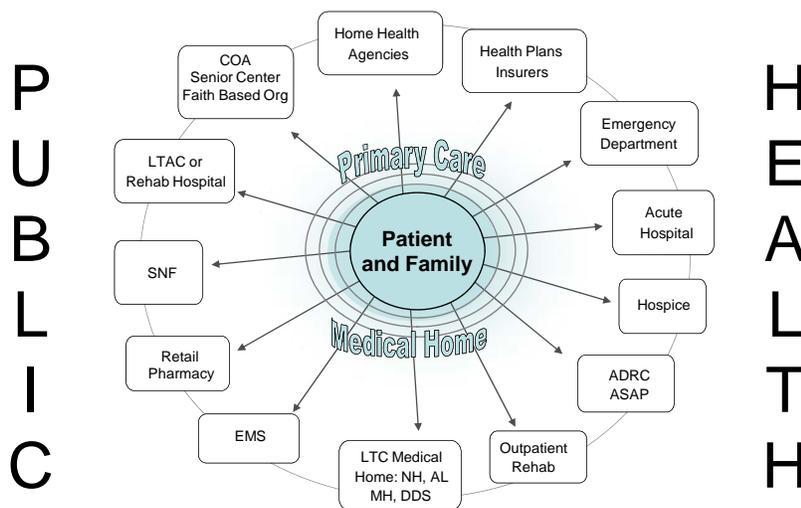
This grant will enable Massachusetts to focus on transitions between acute care facilities, nursing facilities,¹ home health agencies, and patient-centered medical homes in Worcester County, Massachusetts. This inclusion of a broad array of providers recognizes the many points of failure in the current healthcare system where ineffective handoffs can result in harm to a patient and increased healthcare expenses. It also acknowledges the need to accommodate communication methods that work for both technologically-advanced providers, as well as those who remain paper-based. The specific facilities that have already agreed to participate are identified in Section 2, Work Plan and Activities, and we are continuing to recruit additional LTPAC providers.

Figure 1 is a Care Transitions conceptual model that was developed for the Massachusetts Care Transitions Strategic Plan. This model places the patient and his or her family at the center of care, cradled within a primary care medical home, and linked to a wide array of clinical providers and community supports. The network of providers is inter-connected and sits within the context of the entire public health system, with a goal of creating a seamless system of care. During transitions and the associated handoffs, communication of the patient’s condition – including medication reconciliation, advance directives and functional status – needs to flow between these settings comprehensively, reliably and in a timely manner. This patient-centric approach recognizes another area of communication failure in current systems involving the patient and their family. Failure to properly execute treatment plans, resulting in adverse events and/or increased expenses, could often be averted if patients and their families were actively engaged in communication of these plans using language they can understand. One of the IMPACT project’s aims is to develop and distribute a tool to transform the CCD+ into language that is

¹ For the purposes of this document, “nursing facilities” includes skilled nursing facilities (SNFs) as well as traditional long term care facilities and nursing homes.

meaningful and understandable to patients and families. The architecture from this tool will support future development of translations into the patient’s primary language.

Model for Care Transitions Infrastructure



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Figure 1: Model for Care Transitions Infrastructure

Effective transitions require the cooperation of independent healthcare organizations, and critical to the success of any HIE is the ability to establish trust among stakeholders who are often direct competitors. The IMPACT project will build upon the experience and relationships the team leadership and stakeholders have developed from working on existing multi-stakeholder care transitions improvement projects, including STAAR, INTERACT, MOLST, LifeBox, BOOST, RED,² Aligning Forces for Quality, and the Patient-Centered Medical Home Initiative. The IMPACT Learning Collaborative activities described later in this document provide a strong knowledge building and communication infrastructure to support project execution and dissemination of lessons learned.

Figure 2 is a screen shot of an interactive map produced by the Institute for Healthcare Improvement indicating the providers participating in STAAR, INTERACT, MOLST, the Patient-Centered Initiative, and the state’s Aging Services Access Points. The interactive map may be found at <http://www.batchgeo.com/map/mastaarteamsmap>. This map shows that throughout much of Massachusetts, competing stakeholders have been working together, establishing the trust that will be necessary for the success of an HIE that electronically passes the CCD+ across the continuum of care.

² STAAR stands for State Action on Avoidable Rehospitalizations, INTERACT is Interventions to Reduce Acute Care Transfers Phase II, MOLST is Medical Orders for Life-Sustaining Treatment, BOOST is Better Outcomes for Older Adults Through Safe Transitions, and RED is Reengineering Discharge.

All Massachusetts Transitions Programs



Figure 2: Screen Shot of Interactive Map Produced by Institute for Healthcare Improvement

Worcester County, located in central Massachusetts, was selected as the site for this project because of its racial and ethnic diversity, types of healthcare organizations, technological capabilities of these organizations, and the breadth of transition programs already in place that are addressing this problem. Worcester County has a population of about 804,000 people over 1500 square miles. 12.6 percent of the population is over age 65, and 129,000 of the residents have a disability (16 percent). 8.6 percent are Latino, 3.9 percent are African-American, and 15 percent of the population does not speak English at home. The per capita income is about \$23,000 compared to the statewide figure of \$26,000, and significantly less than neighboring Middlesex County at \$31,000 (Source: US Census, <http://quickfacts.census.gov/qfd/states/25/25027.html>).

Patients living in Worcester County receive approximately 85 percent of their healthcare within the county. In addition, we have access to all claims data on approximately 20,000 Medicare Advantage patients living in the area from Fallon Community Health Plan, making Worcester County an ideal learning lab for this project.

We will achieve our four objectives and transform healthcare involving transitions with LTPAC providers by addressing the following components:

- Both paper and electronic version of the Universal Transfer Form (UTF)
- Consumer-friendly document in both paper and electronic form for use in PHRs
- Learning collaboratives that engage patients and consumers, as well as post-acute providers, acute care providers, and physician's office practices in exchanging clinical data
- Alignment of these initiatives with existing and future Health IT and HIEs within Massachusetts, according to the state's Health IT/HIE strategic plans.

Universal Transfer Form (UTF)

The Massachusetts Department of Public Health, along with other stakeholders, has been developing a UTF for Massachusetts (see Appendix C). The process has involved meeting with a variety of consumers

and clinicians across multiple settings and learning each type of provider's clinical data needs, to ensure that the UTF contains all the needed data fields for both sending and receiving providers. The UTF is being pilot-tested in multiple settings (hospital, nursing facility, home health) and revised based on feedback from the pilot sites. At a minimum, the UTF contains medication lists, advance directives, and the patient's functional status.

Electronic version of the UTF (CCD+ with generator and viewer)

There are many difficulties with the paper-based UTF. Clinicians within different healthcare settings require different types of information to effectively care for the transferred patient, yet merging all of the data into one paper form can make the form very long and difficult for the clinician to locate critical information. In addition, forms that are faxed or mailed can get misplaced or be in transit when the provider is seeing the patient. Handwritten forms are often difficult to read, and errors can occur as these are transcribed manually into electronic systems. Furthermore, if they are not entered into EHRs, the data these forms contain cannot be transformed into valuable information by decision support and population management systems.

Our solution for meeting these challenges is to create an electronic version of the paper UTF. An electronic format would vastly streamline the content of the paper version, allowing it to be available when and where it is needed, and displaying its content in a consistent format regardless of which institution generated the form. It can be integrated with existing EHRs acted upon by decision support systems, or reduced legibly to paper for facilities initially without electronic access.

We have begun preliminary discussions with electronic health record vendors to determine the feasibility and cost of creating a CDA template that is essentially an extension to the CCD with the necessary new data fields requested by Massachusetts clinicians from various care settings. We will review existing work by Health Level 7 International (HL7), reusing whatever is already in development, and creating an extension for the necessary data elements that are not already being supported. This CDA template will then go through the standard HL7 balloting process. This approach will allow all the CCD+ to be adaptable and scalable to other regions within the Commonwealth and to other states across the U.S.; the design specifications may be used by other EHR vendors that wish to adapt or adopt this real-world tested CCD+.

Consumer-friendly translation tool

Patient-centered care is at the core of the Massachusetts Strategic Plan for Care Transitions, the principles and goals of which are included as Appendix F. Therefore it is essential to communicate clinical data in a way that is both meaningful and understandable for patients and their families. We intend to contract with a vendor to work with consumers/patients/families to develop a software tool that will take the data in the electronic version of the UTF and transform it into consumer-friendly language. This easily understood information can then be made available to the patient and/or their family via a personal health record, the provider's patient portal, or by initially printing it on paper. The architecture of this tool will support future development of translations into a patient's primary language. The resulting tools will be designed to be adaptable by other states.

Patient engagement will be encouraged by providing opportunities for patients to learn about health data via personal health records through various care providers and systems. Massachusetts hospitals are now required by Department of Public Health regulations to have Patient and Family Advisory Councils. We will use this resource to ensure that we are meeting patients' needs and addressing their concerns related to safe transitions.

Learning collaboratives and engagement of post-acute providers

The architecture of the HIE used in the IMPACT Project (described in more detail on the next page) acknowledges that some healthcare organizations have EHRs, while others have entirely paper-based operations. Studies done by SAFE Health (Secure Architecture For Exchanging Health Information) and others revealed that providers with EHRs prefer to view clinical data from outside organizations directly within their EHR. Yet it is highly unlikely that most LTPAC providers will have EHRs within the next few years. The HIE will allow organizations with EHRs to provide electronic UTFs from within their native EHR, as well as view electronic UTFs from other organizations, simply by looking in their EHR. At the same time, LTPAC providers without EHRs will be able to receive UTFs through whichever mechanism they prefer (fax, secure email, or via an online portal), as well as complete electronic UTFs via an online portal for transmission to other healthcare providers.

Having clinical information transmitted via the electronic UTF will allow nursing facilities to more quickly transmit vital information on patients³ directly to the next care providers, in many cases, before the patient is even received or seen by the next provider team; e.g., with a transfer of a nursing facility patient to the emergency department. This will allow the receiving provider to be better prepared to care for the patient and have the necessary drugs on-hand and available when a patient arrives.

The IMPACT learning collaborative and other project supporting activities are critical to the success of the project activities and our ability to position this effort for rapid and broad dissemination. The IMPACT project communications structure is modeled on existing successful learning collaboratives and is designed to facilitate training, problem resolution, opportunity identification and knowledge dissemination. Beyond the activities described below, MeHI will perform a key role as the state Health IT Coordinator by aligning activities and sharing knowledge with the other initiatives cited in this grant, with an immediate focus on coordinating with STAAR teams in the Worcester area and using statewide STAAR teams to disseminate data and receive feedback on the IMPACT activities. In addition, MeHI, as the Regional Extension Center, has a direct relationship with providers in the state to help with training and education.

Deployment within existing HIE and alignment with Health IT and HIE Plans

Some Central Massachusetts providers are currently served by an existing HIE: SAFE Health. SAFE Health utilizes distributed federated databases (edge proxy servers), a consent engine, an Enterprise Master Person Index (EMPI) containing 1 million patients, and local adapters for integration with EHRs and existing physician workflows. Patients opt-in to specifically authorize which organizations can share their clinical data. SAFE Health was developed under an AHRQ grant and has been live and sustainable since June 2009.

Independent of the IMPACT Project, SAFE Health will be integrated into the statewide HIE by incorporating a Public Health Information Service Provider (HISP) Gateway. Other central Massachusetts providers that are not currently part of SAFE Health will connect directly to the statewide HIE using Public HISP Gateways funded outside of this grant.

Using existing HIEs in a “network of networks” approach is an efficient, scalable, and sustainable strategy to connecting the LTPACs to acute care hospitals and physician offices and is a model used by many states throughout the country. However, this model alone is not sufficient to meet the needs of LTPAC providers who do not have EHRs or who wish to use a CCD extended with CDA templates to embody the electronic UTF.

³ “Patients” in this document refers to patients, consumers, residents, or other terms that various stakeholders may prefer.

The IMPACT Project will develop and integrate a suite of electronic “Care Transitions Services” into the Public HISP gateways to accommodate the specific needs of all LTPAC providers. By connecting these providers to a statewide HIE augmented with “Care Transitions Services”, also referred to as the Care Transitions-augmented HIE, or “CaTHIE”, they will have real-time access to needed clinical data to care for the patients that are being transferred to their care (see Figure in Appendix E). In addition, they can use this HIE to communicate back to the hospitals, physician offices, and other providers, regardless of whether they have implemented an EHR.

There will be three Care Transitions Services developed, implemented and made available as a result of this project: 1) CCD+ Generator, 2) CCD+ Translator, and 3) CCD+ Viewer. The CCD+ Generator is a web portal designed to allow non-EHR providers to complete a UTF, generate an electronic version of the CCD+, and route it through the Public HISP. The CCD+ Translator is a computerized service that translates the clinical information within the CCD+ into language that is meaningful and understandable to patients and their families, as described previously. The CCD+ Viewer will be a standard style sheet to allow the CCD+ to be viewed in a standard web browser. This style sheet will facilitate the integration of the CCD+ into existing EHRs. Each of these tools will be provided with Implementation and User Guides. As summarized below in Figure 3, providers will use CaTHIE based on their stage of EHR readiness and deployment.

The approach for our proposal builds upon and is aligned with the Health Information Technology Strategic Plan and the Health Information Exchange Strategic and Operational Plan that have been approved by the Massachusetts e-Health Institute to the Office of the National Coordinator for Health Information Technology. The alignment with our state plans will be discussed in more detail in Section 4.



EHR Readiness	100% Paper-based workflows	Some web-based workflows	Certified EHR – can only capture standard CCD elements	Advanced EHR – can capture all Transfer Form elements
Technology Intervention	Add internet access	Non	Public HISP Gateway integration	Public HISP Gateway integration
How will they complete Transfer Form?	Hosted web-portal using CCD+ Generator and Hosted Public Gateway	Hosted web-portal using CCD+ Generator and Hosted Public Gateway	Local web-portal using CCD+ Generator. Standard CCD fields will be pre-populated from EHR	Using their EHR
How will they keep a copy for their records	Web-portal/Gateway will automatically fax back a copy of the form	Web-portal/Gateway will automatically fax back a copy of the form	Web-portal/Gateway will automatically route back copy of completed CCD+	N/A
How will they receive a Transfer Form	Fax from Hosted Public HISP Gateway	Fax from Hosted Public HISP Gateway	Using their EHR	Using their EHR
How will they view prior Transfer Forms?	Hosted web-portal using CCD+ Viewer and Hosted Public Gateway	Hosted web-portal using CCD+ Viewer and Hosted Public Gateway	Using their EHR	Using their EHR
How will consumer-friendly Transfer Form be generated	Faxed from Hosted Web-portal using CCD+ Translator and Hosted Public Gateway	Faxed from Hosted Web-portal using CCD+ Translator and Hosted Public Gateway	Printed from local web-portal using CCD+ Translator and Hosted Public Gateway	Printed from EHR assisted by CCD+ Translator service

Figure 3: Provider Workflows Based on EHR Readiness

Work Plan and Activities

The Work Plan and Activities begin with the proposed timeline for IMPACT. In addition to the major milestones in the Timeline, our activities will include weekly project team meetings to manage the project and identify and resolve issues; learning collaborative monthly meetings to develop and implement training and communication services; quarterly provider advisory group meetings to obtain feedback and expertise from providers; and annual learning collaborative training meetings to disseminate experience and lessons learned. The detailed Project Plan that is related to the Timeline may be found in Appendix H.

Activity	Start	Finish
Provider Team Recruiting	2/1/2011	3/31/2011
RFP Process for CCD+ Development and Viewer	2/2/2011	3/18/2011
RFP Process for CCD+ Generator Portal	2/2/2011	3/18/2011
Pilot Paper UTF	3/1/2011	4/29/2011
Focus Group 1	3/1/2011	3/31/2011
CCD+ Development and Viewer	4/1/2011	6/30/2011
CCD+ Generator Portal	4/1/2011	8/31/2011
Baseline data collection	4/1/2011	5/31/2011
Self-evaluation Training	4/1/2011	6/30/2011
RFI Process for CCD+ Translator	4/4/2011	5/18/2011
IMPACT Provider Collaborative Monthly Call	4/7/2011	12/5/2013
IMPACT Collaborative Annual Meetings 1	5/3/2011	5/3/2011
RFP Process for CCD+ Translator	6/1/2011	7/22/2011
CCD+ Translator	8/1/2011	5/1/2012
Public HISP Gateway Interfaces	9/1/2011	12/30/2011
HIE Gateway for LTPACs from SAFE Health	9/1/2011	12/30/2011
Viewer and Portal Rollout	9/1/2011	12/31/2013
Submit first progress report	10/3/2011	10/3/2011
Translator Rollout	11/1/2011	12/31/2013
Year 1 Evaluation	11/1/2011	1/31/2012
Submit first financial report	12/1/2011	12/1/2011
Focus Group 2	4/2/2012	4/30/2012
Submit second progress report	4/3/2012	4/3/2012
IMPACT Collaborative Annual Meetings 2	5/1/2012	5/1/2012
Submit third progress report	10/3/2012	10/3/2012
Year 2 Evaluation	11/1/2012	1/31/2013
Submit second financial report	12/3/2012	12/3/2012
Submit fourth progress report	4/3/2013	4/3/2013
IMPACT Collaborative Annual Meetings 3	5/7/2013	5/7/2013
Year 3 Evaluation	10/1/2013	12/13/2013
Final Conference	12/3/2013	12/3/2013

The Logic Model of the IMPACT project is illustrated in Figure 5. The Inputs are the numerous participants in the IMPACT private/public partnership, led by MeHI and MDPH, including the members of the Care Transitions Forum, providers, and the provider associations. Other

contributing organizations include the HIEs in the state, and the Massachusetts Health Data Consortium. IMPACT is aligned with the Health IT and HIE Plans and the Care Transitions Strategic Plan, and therefore these documents are included as Inputs.

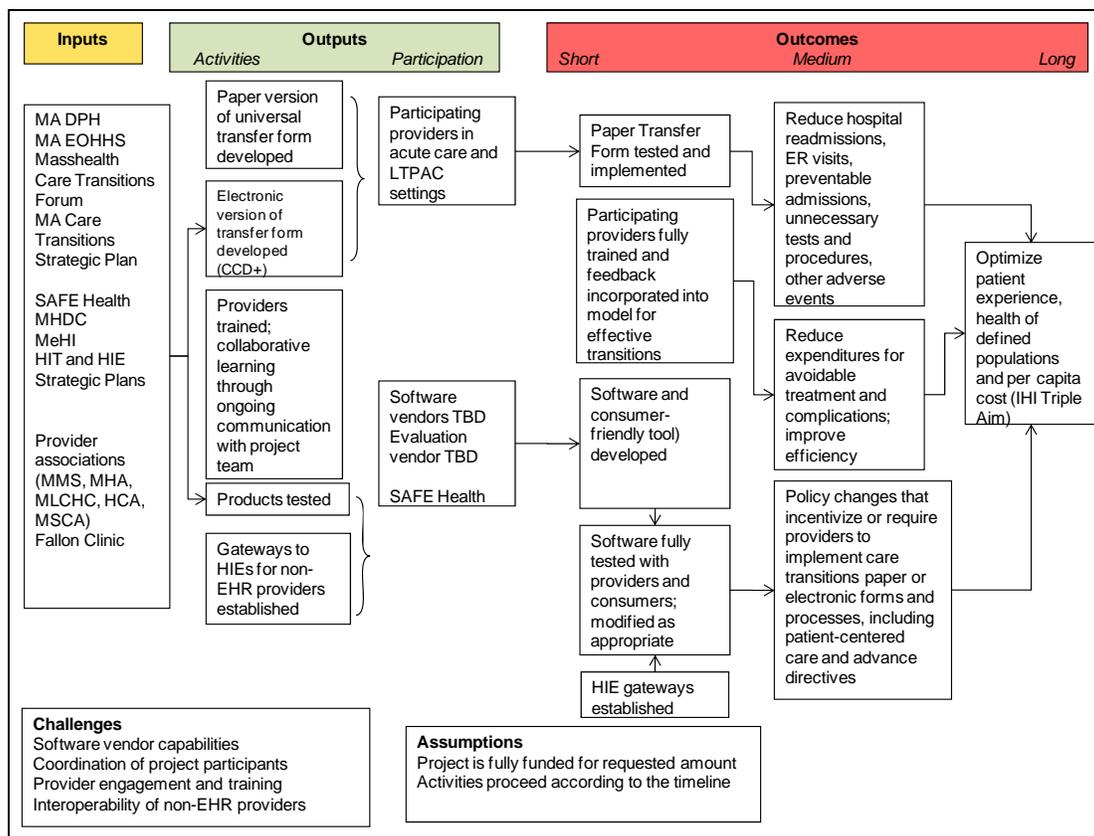


Figure 4: IMPACT Logic Model

The LTPAC provider-focused Outputs are to develop a paper UTF and an electronic UTF, and to offer ongoing training and collaborative learning so that these tools are used effectively. The technology-oriented Outputs are to develop a suite of Care Transitions software products, to test them with providers and consumers, and to integrate them into the gateways to the HIE to enable LTPACs to effectively participate.

The Inputs and Outputs are designed to lead to Outcomes that improve the quality, safety and efficiency of healthcare in the Commonwealth, which in the long-term will meet the IHI Triple Aim of optimizing the patient’s experience, improving the health of the transitioning population, and reducing costs for these patients. In the short-term, we will test and implement the paper UTF, train participating providers and use their feedback to continuously improve our model, develop the consumer tool and fully test and modify it, and test the gateways to the HIE for the LTPACs. In the medium timeframe, the desired outcomes are to improve quality by reducing hospital readmissions and other avoidable and adverse events, creating a more patient-centered care environment, and reducing expenditures for avoidable treatments and complications.

Targeted Patients and Participating Organizations

In 2009, there were about 36,579 patients discharged from Saint Vincent Hospital, UMass Memorial Medical Center and LTPAC to either skilled nursing facilities, home health care, rehabilitation facilities, or to long-term care hospitals (source: Massachusetts inpatient discharge database). With ER visits included, there will be 90,000 transfers/year, with 45,000 unique patients/year. This population forms the core of our target population.

We have a diverse collaboration of stakeholders and providers to meet the needs of these patients. The project team that has developed this proposal and will be instrumental during the implementation phase is comprised of the Massachusetts Technology Collaborative and its non-divisible component the Massachusetts e-Health Institute (official applicant), the Massachusetts Department of Public Health, Fallon Clinic, the Home Care Alliance of Massachusetts, the Institute for Healthcare Improvement, the Massachusetts Health Data Consortium, the Massachusetts Hospital Association, the Massachusetts League of Community Health Centers, the Massachusetts Senior Care Association, Partners HealthCare System, and SAFE Health. In addition, Massachusetts has an established Care Transitions Forum (see Appendix A for a list of the Care Transitions Forum organizational members). The Care Transitions Forum will work with MeHI and their governing organizations and together be responsible for monitoring and overseeing the implementation of the IMPACT project.

Several leading providers and healthcare organizations in Worcester County have already indicated their willingness to participate. The two hospitals that are currently participating are UMass Memorial Medical Center and Saint Vincent Hospital, both in the city of Worcester. The primary care providers with patient-centered medical homes participating are Fallon Clinic and the Worcester Family Health Center. The home health agencies participating are Overlook VNA and the VNA Care Network of Worcester. The nursing facilities that we are recruiting are Beaumont Westborough, Blaire House, Christopher House, Jewish Health Care, Knollwood Nursing Home, Life Care of Auburn, Masonic Home, and University Commons Beaumont.

The major Massachusetts healthcare associations supporting this proposal are the Board of Registration in Medicine, the Home Care Alliance, the Hospital Association, the League of Community Health Centers, the Medical Society, and the Senior Care Association. In addition, the Partners integrated delivery network, the Meyers Primary Care Institute, and the Seven Hills Foundation are committed to the project.

While we are very pleased with this initial level of support and interest in participating, we will continue to recruit other providers, particularly community hospitals and LTPAC providers in Worcester County. We have a close relationship to the STAAR (State Action on Avoidable Rehospitalizations) project, which uses cross-continuum teams to reduce readmissions. UMass Memorial Medical Center and Saint Vincent Hospital are already participating in STAAR, and we will use the STAAR network in Massachusetts as both a dissemination and expansion strategy for IMPACT.

Solutions to the Project Challenges

In the context of the proposed project, it is essential to understand the challenges and to articulate how they will be addressed. The four challenges that the IMPACT project faces are vendor capabilities, interoperability of non-EHR providers, provider engagement and training, and coordination of project participants. The following discussion addresses the challenges and the proposed solutions.

Vendor Capabilities

MeHI will lead in the development of a Request for Proposal, along with the Department of Public Health and key team members, who will clearly specify the data fields and standards to be used for the software tools, with understandable expectations regarding outcomes, timelines, and expenditures. MeHI will also

oversee the vendor selection process to ensure that the best qualified software development firm is engaged. Ongoing oversight will be performed by MeHI, Department of Public Health and other key project team members. We expect the electronic version will be an iterative process and will continually be improved during the course of the grant, as we learn from experience and refine the tool. A number of healthcare organizations in Massachusetts have already developed and tested an electronic transfer form, and their experience will inform the RFP-development process.

We recognize that EHRs have been developed and deployed using a diverse array of software platforms. However most have the ability to display HTML (web-based) documents, and most have or soon will have the ability to display CCDs. By building a Templated CDA extension to the CCD along with associated style sheet for display, we increase the likelihood that most EHRs will be able to display the CCD+ with minimal or no modification to the EHRs. Indeed, CCD+ documents in conjunction with the style sheet would be viewable using any web browser.

To our knowledge, a consumer-translation software tool has not previously been developed. MeHI will issue a Request for Information prior to releasing the RFP to seek input from vendors and patient advocates. The draft RFI and RFP will be reviewed by technology experts before issuance. MeHI will oversee the vendor selection process. The design and development of this tool will be co-directed by consumer advocates along with the project team and vendor using a learning collaborative approach.

Interoperability of Non-EHR Providers

The Public HISP Gateways envisioned in the state's Health Information Exchange Strategic and Operational Plan, and SAFE Health are already architected to enable multiple providers to participate. Massachusetts has expertise in deploying health IT systems and using an HIE, and we will call upon the knowledge of MeHI and Masspro (the Medicare-funded Quality Improvement Organization for Massachusetts, and one of the original DOQ-IT pilot QIOs), as well as the Implementation Optimization Organizations that are working with the Regional Extension Center, to assist the LTPAC providers in interoperating with the CaTHIE.

For providers that do not currently have an EHR, the Public HISP Gateways are designed to reduce electronic documents into print, fax, or email. Similarly, the CCD+ generator tool that will be developed during the IMPACT Project is specifically designed to allow non-EHR providers to complete and create an electronic UTF. Thus, the HIE gateways and the technical assistance will enable us to serve any LTPACs that wish to participate, regardless of current health IT capability level.

Regarding obtaining patient consent to transmission of their health data, although transmission of the paper and electronic versions of the UTF are covered by HIPAA as part of treatment/payment/operations, we believe that primary care physicians in the patient centered medical home should be apprised of the patient should be informed to the extent possible. SAFE Health has established a consent model for its existing operations known as the SAFE Health Policy Engine, and we will work with advocates and others in the community to ensure that patients are informed and comfortable with the process. We also have a team of legal experts and consumer representatives in MeHI's ad hoc Workgroup on Privacy and Security to call upon for advice and expertise in deciding upon policies for consent and data flows. Massachusetts's HIE experience has also taught that it is crucial to start marketing to patients the benefits of the HIE log before they are asked to give consent. Proactive education can result in consent rates as high as 95 percent.

Provider Engagement and Training

Our partners in this effort – the Department of Public Health, the Home Care Alliance of Massachusetts, the Massachusetts Hospital Association, and the Massachusetts Senior Care Association – will be essential in communicating information to their members. The Regional Extension Center will coordinate with these partners to avoid duplication of effort and to maximize the efficient use of the providers' time.

We will use a combination of off-site, on-site, and web-based training tools to inform providers about how to use the Transfer Form and enhanced CCD. The number of participating providers will grow over time during the course of the grant, so we can phase-in the training as providers join the project. The learning collaborative approach will enable the early adopters to mentor the later additions to the project.

The training and technical assistance efforts will explain to providers how to collect the data, and we will use funding and the regulatory authority of DPH to ensure compliance. The project team will analyze the data and write the project performance evaluation. We will contract with an external firm with the necessary competencies in evaluation for the proposed project while leveraging IMPACT project participants who have the proper level of expertise.

Coordination of Project Participants

MeHI, the Care Transitions Forum, and other members of the project team have extensive experience and proven results in conducting successful multi-stakeholder projects. Examples include STAAR, MOLST, INTERACT, the development of the Health IT and HIE Strategic Plans and Aligning Forces for Quality. While we do not minimize the challenge of the coordination role, we have no doubt that we will succeed in running the project effectively.

Performance measurement and evaluation

The performance metrics we are using are based substantially on the work of the Joint Commission for Transforming Healthcare project to improve communication during transitions of care. The measurement aspects of IMPACT are critical, because reliable data will determine the effects of the project on patient safety, cost, and efficiency of transitions, and will provide a measure of the process of implementing timely standardized data transmission. These data results are crucial for justifying expanding the project statewide and for use as a model for other communities around the country.

The process goals are to increase the number of facilities that can transmit data electronically, to increase the number of patients transferred with some clinical data on a timely basis, and to increase the number of patients transferred with all clinical data on a timely basis.

The efficiency measures are the number of patients received with “defective” transitions, whether the defect is major or minor, and what the facility had to do and how long it took to resolve the defect. See Appendix C for the Partners Continuing Care Tool that is being used in the Transforming Healthcare project. These metrics are currently in pilot at Partners Healthcare and are an attempt to evaluate workarounds in the current process of clinical transitions. An outcome goal for the efficiency measure is to eliminate workarounds in the clinical transition process and to improve the efficiency of the process as well. This goal offers the benefits of patient safety and cost reduction.

The outcome goals are as follows:

- Improve patient safety across transitions of care
- Decrease avoidable readmissions, emergency department visits, and other adverse events (e.g., delay in treatment, adverse drug reactions, lapse in adequate pain management, errors in anti-coagulation management)
- Improve the efficiency of processes to provide essential clinical data at transitions of care
- Reduce the total cost of care with specific measures including:
 - percentage change in hospital readmission rates (30-day Medicare all cause readmissions)
 - percentage of transitions with the electronic version of the Transfer Form
 - length of time that it takes to transmit this data from the sending to the receiving provider, and
 - total cost of care.

Baseline data will be collected and held to analyze the success of the project across multiple measures,

Participation in ONC Learning Communities

We look forward to the opportunity to participate in a community of practice established by ONC. We anticipate sharing our experiences and lessons learned with the other HIE Challenge Grant recipients. The Regional Extension Center's learning communities tool will be a useful asset for disseminating information about the project.

In addition to the other grantees, we plan to help mentor other communities in Massachusetts and the rest of the country that wish to replicate our approach or develop a similar model. We plan to hold a conference in late spring 2013 to present our findings to the Massachusetts community, and will disseminate a summary of this conference via multiple websites and other venues to interested parties.

Section 3: Applicant Capabilities

The following section addresses the exceptional capabilities of Massachusetts as an applicant for this grant: Public/Private partnerships, Care Transitions Strategic Plan, Health Information Exchange: Demonstration of support, Organizational resources and the Regional Extension Center.

Public/private partnerships

Massachusetts has a well-established history of multi-stakeholder policy collaboration involving partnerships among public sector, private sector, and non-profit organizations. A prime example is the Care Transitions Forum (CTF), a statewide community of interest formed over three years ago that now includes well over 100 organizations. The CTF coordinates and integrates numerous individual care transition projects by various public and private partners throughout the state. Bi-monthly meetings bring together clinicians, researchers, consumers, vendors, government agencies and others to ensure that efforts are coordinated and information is shared throughout the Commonwealth. The CTF has been effective in weaving together many disparate initiatives in various regions and in speaking with one voice to communicate about this work to the legislature and administration. Several members of the CTF are also leaders on the IMPACT team, and have demonstrated an ability to work together successfully to achieve project goals and keep key stakeholders informed of care transitions and HIE progress throughout the state. The CTF will help direct and oversee the IMPACT project, and will communicate with members about the project, our progress, and our findings.

Another example of public/private partnership is the ad hoc workgroups formed by MeHI to address topics such as Clinical Quality and Public Health, Consumer Engagement, Privacy and Security, Regional Extension Center/EHRs, Health Information Exchange, and Workforce Development. These ad hoc committees will serve as a resource to help the IMPACT team address complex implementation and policy issues.

As a result of extensive multi-stakeholder work on identifying and addressing the challenges of care transitions, the Commonwealth of Massachusetts has an in-depth understanding of the issues and challenges relating to care transitions. Our experience with creating sustainable HIEs has given us knowledge of the breakthrough ways in which electronic health information exchange can provide potential operational and policy solutions to meeting these challenges. In addition, there is strong support for care transitions and HIE initiatives at the highest levels of state government (see discussion on state policy changes on page 21).

Care Transitions Strategic Plan

The Massachusetts State Quality Improvement Initiative, funded by The Commonwealth Fund and Academy Health, was responsible for the research and writing of the Massachusetts Strategic Plan for Care Transitions. See Appendix F for the Principles that were part of the Principles, Recommendations, and Action Steps of this Plan. One of the action steps was the development of the paper version of the Universal Transfer Form, which is the first step in the IMPACT project work plan.

Health Information Exchange

Massachusetts has several successful and sustainable HIEs. Two of the key thought leaders for HIE in Massachusetts, Dr. John Halamka and Dr. Larry Garber, are both part of the IMPACT project team. The state's HIE experience is also valuable because a similar technology and standards project was used to create the regional Quality Data Center, using the CCD and XDR to exchange and aggregate data from multiple EHRs.

Demonstration of support

We have obtained letters of support from several providers in Worcester County, along with state provider associations, government representatives, and key subject matter experts (see Appendix B). We will continue recruiting community providers during the initial phases of IMPACT, and we are confident that we will get sufficient participation, as many of our target providers are already participating in STAAR and other cross-continuum initiatives.

Organizational resources

The budget description in Section 5 details our spending plans. We offer the administrative support of MeHI and its offices and staff, the knowledge and dissemination abilities of the Care Transitions Forum and its members, and the expertise of individual IMPACT project team members, such as Dr. Larry Garber, Dr. John Halamka, and Dr. Terry O'Malley. We also have the commitment to statewide dissemination and the regulatory authority of the Massachusetts Executive Office of Health and Human Services, including the Department of Public Health.

Regional Extension Center

The Regional Extension Center makes available numerous services, including individualized and on-site assistance, clinical and administrative workflow analysis and redesign, unbiased consultative services to help clinicians choose the right EHR software for their needs, pre-negotiated discounts from preferred EHR vendors and Implementation and Optimization Organizations, alignment with financial institutions offering healthcare IT financing, effective oversight of providers' EHR implementation, assistance with meeting Meaningful Use criteria to receive maximum federal incentive payments, access to MeHI member forums and community of practice and webinars, guidelines and best practices for Privacy and Security policies, and assessment of EHR interoperability for health information exchange.

Section 4: General Funding Requirements

The following discussion addresses the aspects of the General Funding Requirements for IMPACT: Openness and Transparency of Technology Product Development, Conformance to standards, Alignment with state Health IT and HIE Plans, Alignment with Federal Health IT Plans, Applicability and Replicability of Model and Tools, and Dissemination of Tools and Lessons Learned throughout Massachusetts and the US.

Openness and Transparency of Technology Product Development

Development of the paper UTF has already demonstrated some of the techniques that will be used to maintain openness and transparency throughout the project. The process we are proposing will be fully inclusive of multiple organizations, providers, state agencies and the private sector. All documentation, including meeting minutes and presentations, will be available on a public website and several public forums will be held to disseminate information and gather feedback, as well as web conferences to accommodate those with travel limitations.

The IMPACT project design includes a formal evaluation by an outside party. MeHI will call upon experts in evaluation design from the academic community to develop the RFP for this task. By using an outside party to do the evaluation, we can be confident that our results are unbiased.

Conformance to standards

We are confident that we will meet all of the EHR technology standards and implementation specifications adopted by the Department of Health and Human Services and ONC, including those related to the Nationwide Health Information Network (NHIN). Should the IMPACT project identify any gaps in standards via our efforts, we will certainly communicate our proposed solutions and contribute to the health IT standards development process.

The electronic UTF tool will have the oversight MDPH in consultation with John Halamka, MD, the co-chair of the HIT Standards Committee and former Chair of HITSP, and others. We will ensure that it will be compliant with the implementation guidelines specified in the final Standards and Certification Rule. In particular, the implementation guide for the CCD+ will be the HITSP Summary Documents Using HL7 CCD Component HITSP/C32 extended using HL7 CDA Release 2 templates. The IMPACT Project will take advantage of any applicable HL7 CDA templates already in development or use and will work with HL7 leadership to ensure coordination with their efforts should gaps be identified. The resultant CDA template for the CCD+ will then go through formal HL7 balloting which is a national, multi-stakeholder process. We have received a letter of support from Dr. Robert Dolin, Chair of Health Level Seven, endorsing the approach of IMPACT.

Members of the IMPACT project team are closely involved with the Direct Project (formerly known as the NHIN Direct project) and will ensure IMPACT's interoperability with the Direct Project transport and security standards that are selected for production implementation.

Alignment with state Health IT and HIE Plans

The project will be conducted through the state's HIE Governance and Project Management Process, which will ensure alignment with all statewide implementation goals. The IMPACT project is perfectly consistent with the goals, objectives, and strategies of the Massachusetts Health Information Technology Strategic Plan and of the Health Information Exchange Strategic and Operational Plan.

In the Health IT Plan, the vision is for providers to electronically document the care they provide and to access pertinent health information. Goal 1 of the plan is to improve access to comprehensive, coordinated, person-focused healthcare through widespread provider adoption and meaningful use of certified EHRs, and the related objective is to increase the number of patients whose care is coordinated across disparate delivery systems within the state. Goal 2 is to demonstrably improve the quality and safety of healthcare across all providers through health IT that enables better coordinated care, provides useful evidence-based decision support applications, and can report data elements to support quality measurement. Strategy 3 is to implement interoperable health records *in all clinical settings* and assure they are used to optimize care. Strategy 4 is to develop and implement a statewide HIE infrastructure to support care coordination, patient engagement, and population health. Strategy 6 is to monitor success, and among the outcome and quality measures are to reduce emergency room usage and hospital readmission rates, and to improve care coordination by exchanging meaningful clinical information among providers of the healthcare team and between providers and patients.

Goal 1 of the HIE Plan is to facilitate the flow of health information at the community and state level, and the related objective is to ensure that the statewide HIE can be modified and expanded to integrate new components, services, interfaces, and features (such as enabling LTPAC providers to participate). The technical infrastructure calls for bi-directional interchange, as well as the exchange of standardized clinical data summaries. Goal 3 calls for identifying emerging health care trends and provide an accurate

view of the patient. The CaTHIE model used in the IMPACT Project is consistent with these goals and objectives.

Goal 2 of the HIE Plan is to put the patient at the center of the health care delivery system by supporting the ability of patients to use and access their health information. The CCD+ translator that will transform the CCD+ into patient-friendly terms for use in PHRs is perfectly aligned with this goal. Furthermore, the participating hospitals' Patient and Family Advisory Councils will serve as a resource to ensure that IMPACT is as patient-centered as possible.

IMPACT is complementary to the Massachusetts Community First Olmstead Plan. This plan “embraces a vision of choice and opportunity that requires the deliberate development of more accessible and effective long-term supports in local communities.” In particular, IMPACT resonates with the Community First Plan's objective for implementing additional mechanisms for facilitating transitions from institutional settings.

Alignment with Federal Health IT Plans

As mentioned above, the IMPACT Project will conform to all current federal Health IT standards. The IMPACT Project is also well aligned the vision of a “universal exchange language” described in the President's Council of Advisors on Science and Technology (PCAST) report, with the metadata-tagged elements that are the basis for the Templated CDA that will be used for the electronic UTF.

The IMPACT Project is similarly aligned with SMARt (Substitutable Medical Apps Reusable Technologies), one of ONC's Strategic Health IT Advanced Research Projects (SHARP) Program participants. IMPACT's modular approach to the suite of Care Transition Services makes them conducive to evolving into SMARt Apps in the future.

Federal plans also strive to promote meaningful use of EHRs. Indeed, functional HIEs can facilitate the implementation of EHRs because they rapidly provide added value through more efficient data transfer workflows. It also enables Eligible Professionals and Eligible Hospitals to meet some of their “Meaningful Use” objective measures. The success of HIEs is dependent on their ability to provide value. With the suite of Care Transitions Services described above, the CaTHIE model provides significant added value with limited cost, increasing the likelihood of success and sustainability of both the HIE and the EHRs.

Healthcare reform movements in the US now point towards the promotion of Accountable Care Organizations (ACOs). The success of these ACOs hinges on efficient, safe and effective processes across the continuum of care. The IMPACT Project will facilitate the ability of ACOs to achieve their goals.

Applicability and Replicability of Model and Tools

State health policy interventions associated with this project include the creation of incentives and/or requirements at the state level (via the Executive Office of Health and Human Services and MDPH) for organizations to use the UTF and potentially other enhanced care transitions processes. Through the learning collaboratives, health care organizations, consumers, and government agencies will work together to validate the UTF. We will test providers' satisfaction with and acceptance of the new UTF and will measure compliance through MDPH oversight processes (e.g., hospital, nursing home and home health surveys). As the state survey agency under contract with CMS, MDPH has the authority to require use of the electronic UTF at any point during the project or in the future. The support and engagement of multiple MA state agencies at the highest levels is a model for how other states can apply and replicate regulatory and statutory levers when needed to drive state health policy regarding care transitions.

The IMPACT Project model and tools are completely applicable to, and replicable in, other communities and states. The transparent, collaborative, multi-stakeholder effort that has been used to develop and real-

world test the UTF, makes the paper UTF and CCD+ instantly applicable and valuable throughout Massachusetts as well as to most other states in the country. By conforming to the CDA standard and providing a suite of Care Transition Services designed to streamline the incorporation of the CCD+ into existing HIEs and EHRs, the success in Massachusetts would be highly replicable throughout the country. This includes the consumer-friendly language translation tool that will be made available to any state that wants to use it.

Similarly, the collaborative learning environment that was used to develop trust along with the tools is a strategy that would be effective in other communities throughout the country. This is particularly relevant at this point in time were all states are trying to roll out effective and sustainable health information technology, in part to meet “Meaningful Use” requirements.

Dissemination of Tools and Lessons Learned Throughout Massachusetts and US

The STAAR project will act as a foundation for growth of the IMPACT Project’s model and tools to other communities throughout Massachusetts. These multi-stakeholder groups provide the foundation of trust in a community upon which the CaTHIE can grow and be successful.

The IMPACT project will make our training materials, implementation guides, and suite of Care Transition Services available throughout Massachusetts and to any state that wishes to review and use them. Representatives of SAFE Health and the Public HISP will be pleased to inform other HIEs about how they linked up the acute care providers to the LTPAC providers, and the specifics of the technology involved. IMPACT will hold a media launch event along with Governor Patrick’s second annual Health IT conference in late April 2011, to encourage other states to get a head start on implementing trust-building projects within their communities in anticipation of an HIE and the suite of Care Transition Services. Our project plan and budget include a public meeting and web-conference to present the findings and evaluation both locally and nationally at the end of the contract period.

The IMPACT project will use a time-tested Model for Improvement supported by a cross-institution Learning Collaborative to develop, cross-institutionalize and disseminate information. Furthermore, the project will apply the Framework for Spread used by the Veteran’s Health Affairs Administration and others to promote and accelerate the adoption of system, knowledge and work flow improvements. MeHI, in close coordination with DPH, will lead the collaborative activities.

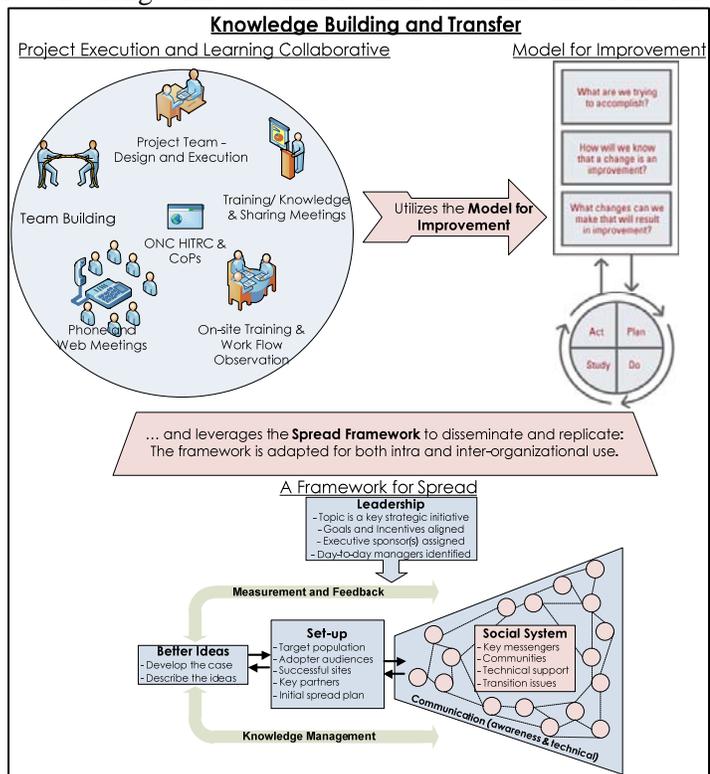


Figure 5: Knowledge Building and Transfer

The IMPACT Learning Collaborative will provide the meeting and knowledge sharing infrastructure to conduct the Plan, Do, Study, Learn activities that are central to the Model for Improvement. The collaborative schedule and activities are described earlier in this document. The graphic below describes how project activities and actors collaborate to build knowledge and disseminate that knowledge to create broad system change.

Sustainable Training

The Learning Collaborative develops a core set of knowledge and training resources. The IMPACT project will use a train-the-trainer approach to extend training resources beyond the central project team in a sustainable manner. Collaborative participants are trained both in the subject matter and also given tools to become effective trainers to other provider organizations.

Leveraging ONC Communities of Practice

MeHI participates in all of the ONC REC and HIE Communities of Practice (CoPs). Because MeHI is leading the Learning Collaborative activities, it is the ideal organization to cross-pollinate ideas between the Challenge Funding team and the rich set of national experts that participate in the ONC CoPs. The CoPs will also provide a starting point to develop a national dissemination network for project best practices as they emerge.

DPH as Natural Dissemination Channel

Given DPH's position in the state as a trusted knowledge source and regulator, DPH will provide a platform for communicating best practices as well as developing regulations to underpin those best practices. DPH is also a trusted convener that can very effectively bring a broad set of stakeholders to the table and positively influence stakeholder decision-making. Evidence of this can be found in other multi-stakeholder initiatives and public-private partnerships, such as the MDPH-led Nursing Home Antipsychotic Drug Reduction Task Force; a 3-year AHRQ-funded grant on improving patient safety in outpatient practices; healthcare acquired infection (HAI) technical advisory group; and Best Practices related to reducing serious reportable events (SREs) posted and shared on the Betsy Lehman Center for Patient Safety website.

Building the Business Case

The Learning Collaborative will seek opportunities, early and often, to create and strengthen the Return on Investment business case that will drive long-term institutional buy-in. IMPACT activities are well within Meaningful Use requirements. Clearly defining the business case for facilitating providers' ability to meaningfully use their EHR systems, consistent with Federal Meaningful Use, will be defined early in project and refined throughout the project.

Regional Spread

MeHI represents Massachusetts in the Northeast States HIE regional group of states that includes Rhode Island (Beacon), Vermont, Maine (Beacon), New Hampshire, Connecticut and New York. Many of these states, including Massachusetts, have signed a memorandum of understanding to work together to identify common goals and projects. This existing close multi-state partnership provides us with an immediate opportunity to explore options to test best practices as well as testing inter-state usage of the IMPACT form, knowledge and, potentially, systems.

Collaborative Technology

In addition to leveraging the Health Information Technology Research Center collaborative environment, MeHI is in the process of procuring collaborative capabilities (e.g. SharePoint, Webex) in order to apply state-of-the-art technology and business process to our collaborative efforts. SharePoint is currently being used by other states to provide appropriate access to documents and data. MeHI will configure SharePoint to support this public-access capability. This capability will be provided to the project at no-cost and is therefore a significant value-add to promoting secure and ubiquitous access to project documents and data.

Section 5: Budget, Level of Effort, and Justification

The total project budget is \$2,398,568 which calls for a federal portion of \$1,998,283 and is broken down as follows:

Project management

MeHI, in combination with DPH, will provide project management for the Impact project. Project management will be overseen and supplemented by existing MeHI State HIE resources including the State Health IT coordinator, a program manager, legal and finance support. Project management resources will be responsible for the implementation of the technical project, as well as the collaborative and knowledge building activities. Direct costs for project management will fund a .75 FTE at MeHI and .75 resource at DPH for a total resource cost of \$421,313, the cost of a laptop at \$2,000 and office space facility rent charge at \$21,465.

CCD+ Development and Viewer

The CCD+ is a CDA template extension of the CCD, designed to accommodate added data elements for the UTF. Developing the CCD+ involves review of existing CDA templates, design of a new CDA template, iterative testing, creation of an Implementation Guide, and iterative balloting through HL7. Subsequently a style sheet will be developed that allows for easy viewing of the CCD+. The development, testing, Implementation Guide, HL7 balloting, and style sheet development will take two CDA experts two months at a total cost of \$50,000 in Year 1. A style sheet Users Guide will also be developed by a technical writer one week at a total cost of \$3,000 in Year 1.

CCD+ Generator Portal

This piece of software is part of the suite of “Care Transitions Services” that will be developed, implemented, and made available to other states, as part of the IMPACT Project. It will allow LTPAC providers who do not have EHRs, or providers who do not have EHRs capable of capturing all the data elements necessary for the UTF, to enter these UTF data elements directly into a website that would then generate a CCD+ for transmission to other organizations. Iterative development and testing will take two developers 16 weeks each at a total cost of \$96,000 in Year 1. A technical writer working with these developers will take an additional four weeks to develop Implementation and User Guides at a total cost of \$12,000 in Year 1.

The CCD+ Generator Portal will be hosted by a trusted authority for these non-EHR users. The cost of the production and test servers along with operating system software and support will be \$11,000 in Year 1, and \$640 in each of Years 2 and 3.

CCD+ Translator

The CCD+, being an electronic version of the UTF, is designed for viewing by trained clinicians. As part of the suite of “Care Transitions Services” for the IMPACT Project, software will be developed, implemented, and made available to other states to translate the CCD+ into consumer-friendly terminology. This will involve consumer focus groups, iterative software development and testing, and development of Implementation and User Guides, at a total cost of \$200,000 + \$3000 in usability testing.

SAFEHealth and Public HISP Upgrades to Support Suite of Care Transitions Services for CCD+

The suite of “Care Transitions Services” for the CCD+ consists of a CCD+ Generator, a CCD+ Translator, and a CCD+ Viewer. These new services need to be integrated into existing gateways/adapters services that are part of SAFEHealth and the Public HISP. This integration will take two developers working ten weeks each at a total cost of \$60,000 for SAFEHealth in Year 1, and a total cost of \$25,000 in Year 1 and \$25,000 in Year 2 for the Public HISP.

Learning Collaborative Costs

The learning collaborative will facilitate monthly update and training meetings with providers, quarterly advisory meetings with a broad set of Massachusetts stakeholders and an annual on-site training and knowledge sharing meeting. A final event will be held to engage a broad audience around the lessons learned and dissemination approach for expanded activities. Training materials will be produced to support these activities. All meeting and training material costs add up to \$66,000.

Subject-Matter Expert Project Leadership and Total Claims Data Analysis

Fallon systems, human resources and data bases will be used to facilitate claims-related data collection. Fallon will provide particular expertise as it relates to Long Term Care facilities, which is a primary institutional focus of this project. The total cost for Fallon activities is \$328,748. Fallon has agreed to provide in-kind services, adding substantial non-monetary value to this grant application.

Data collection

The data collection needed for both clinical transaction and project evaluation purposes will be burdensome to the participating provider teams. We therefore propose to give each of 11 the participating provider teams \$1,400 a month to support the data collection and reporting effort as well as collaborative activities. The total expenditure over the course of the contract for provider data collection is \$462,000.

Evaluation

Because we want the evaluation of IMPACT to be as objective as possible, we will contract with an outside evaluation organization. We will contract with two vendors: the first vendor will focus on evaluating project execution and the effectiveness of the learning collaborative for a cost of \$65,000; the second vendor will focus on evaluating the epidemiological information for a cost of \$300,000.

General Administration, Travel and Indirect Costs

General administrative costs, including postage, are \$1000. Travel costs are \$15,000. The indirect cost for the MeHI project resources is \$169,762.

Revenue and payment

All grant revenue from ONC would flow to the Massachusetts Technology Collaborative, the official State HIE Cooperative Agreement grant recipient.