State Health Information Exchange Program

The Office of the National Coordinator for Health Information Technology

State HIE Bright Spots Synthesis

Capacity Building Approaches

Themes and Lessons from Capacity Building Bright Spots

December 2012

About this Document

The Bright Spots Initiative is designed to help identify and disseminate successful implementation practices and approaches that are worth spreading. Check out more detailed implementation briefs at http://statehieresources.org/bright-spots/.

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Bending the HIE Cost and Adoption Curves through Capacity Building

Health information exchange (HIE) is a fundamental enabler of coordinated health care. While many current incentives and reimbursement structures do not inherently encourage providers to share health information across the care continuum, new care delivery and payment models are beginning to change that. As grantees of the Office of the National Coordinator for Health Information Technology (ONC) State HIE Cooperative Agreement Program work to enable statewide exchange in support of enhanced care coordination, meaningful use of health information technology (HIT), and new payment models, some are taking an approach that puts funding directly into the hands of HIE entities and providers to rapidly pull the HIE cost curve down and inch the adoption curve up.

What is Capacity Building and How Does it Promote Exchange?

Health information exchange has its greatest value when a full complement of data trading partners participates and is fully capable of sending, receiving, and using electronic patient information. Within the context of the State HIE Program, capacity building is a strategy that involves states or state designated entities working toward this goal by distributing federal program (and sometimes state and local) funding to reduce barriers to HIE expansion and adoption. **Capacity building programs are characterized by grantees contracting with or making sub-awards to (1) existing, operational sub-state exchange entities to enhance services provided or expand coverage areas, and/or (2) health care delivery organizations, including but not limited to clinics, hospitals, laboratories, provider practices, or radiology centers, for exchange-related technical assistance or to establish connectivity.** Though the specifics vary by state and are tailored to each state's respective environment and goals, these programs are designed to leverage existing operational exchange assets within states (rather than building new infrastructure from

scratch) and to develop exchange capabilities among the critical mass of participants necessary to make real impact in the care delivery system and on patient outcomes. We've provided a table in **Appendix A** that highlights a sampling of diverse capacity building programs.

By design, capacity building programs usually focus on relatively short-term objectives intended to rapidly expand HIE adoption and increase transaction volume; they are not generally intended to serve as long-term mechanisms for HIE sustainability. These programs promote the exchange of health information by directly or indirectly reducing the financial barriers associated with the adoption of technology or exchange services needed to send health information electronically. Once a sufficient number and the right *mix*[1] of participants are actively exchanging health information, both the incremental costs for adding new participants and the time that it takes for new entrants to realize the value of HIE are reduced. Capacity building programs can therefore have a limited lifespan and still generate the needed momentum to put HIE on a sustainable path.

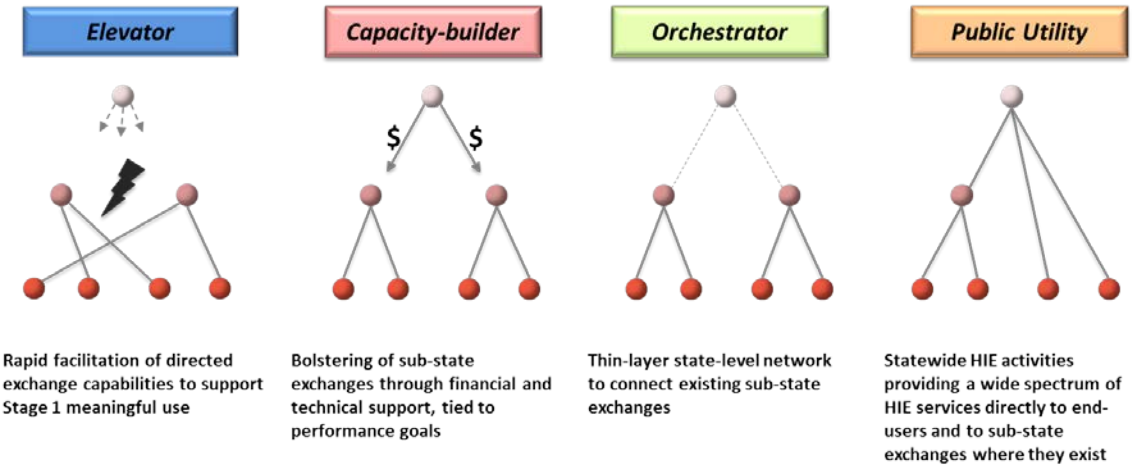
This is not to say that capacity building programs cannot play an enduring role in a state's overall HIE strategy. Though an individual campaign within a capacity building program may focus on short-term objectives, the overall program—those, for example, established on renewable funding sources such as a revolving loan program or an endowment—may have a longer lifespan that changes focus over time to target new areas that are in "start-up" mode.

Capacity Building as a Model for Statewide HIE

Capacity building as a fundamental model for establishing and cultivating health information exchange is not a new concept. When ONC analyzed approximately 25 grantees' HIE strategic and operational plans approved relatively early in the program (see HIE plan model report), it identified four basic strategy/plan constructs (see **Figure 1**) —"Elevator," "Capacity Builder," "Orchestrator," and "Public Utility"—noting that most approved plans displayed characteristics from a *combination* of these four models. At the time, ONC only identified a small handful of states—including Indiana, Texas, New Jersey, and Michigan—that had capacity building characteristics in their approved strategic and operational plans.

Over a year and a half later, a growing number of State HIE grantees are either strengthening existing or adding new capacity building efforts to their overall approaches to enabling statewide HIE (see **Figure 2**). Some of the potential benefits to this approach were recently summarized by Chris Muir, State HIE Program Manager in the Office of the National Coordinator for Health Information Technology who said, ***"Capacity building can be an efficient way to really jumpstart exchange, and can provide both financial and technical support to states. It's particularly useful in states where exchange is already happening, but they need to add new HIE capabilities and capacity in order to help providers achieve meaningful use. It's also useful to where these local exchange environments are not connected to external entities, but are only sharing internally."***

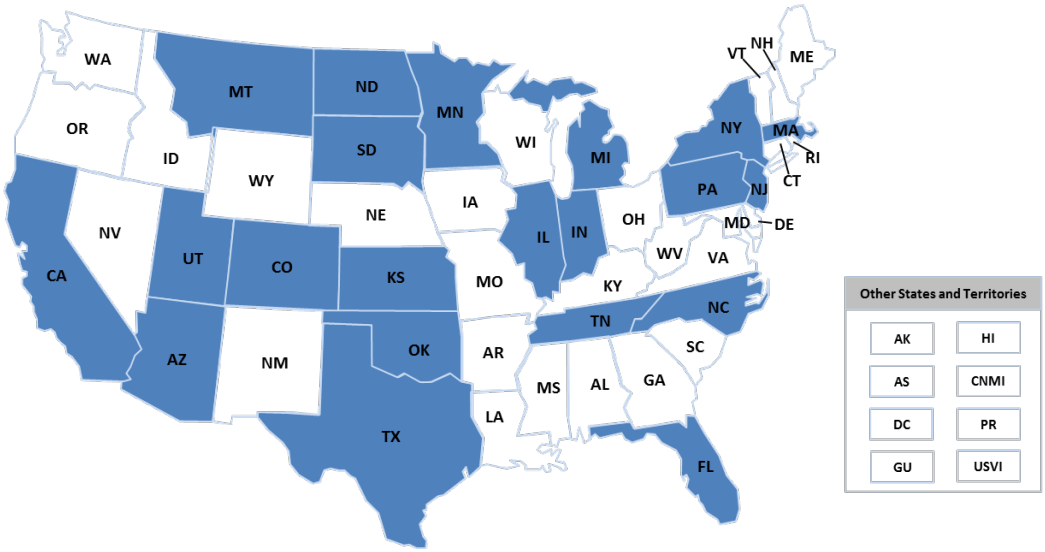
Figure 1: State HIE Strategic and Operational Plan Models



Where Are We Seeing Capacity Building Approaches?

As a component of larger strategies to enable statewide HIE, 21 states have launched capacity building programs as of September 2012 (**Figure 2**). This number represents a 425% increase from February 2011, when only four states had been identified as taking this approach in the ONC HIE plan model report. The capacity building programs identified in **Figure 2** represent over $100M in funds from federal, state, and private sources that are in various stages of distribution (including planning, approval, or release). While we do not yet have data to highlight the specific impact of all 21 state capacity building programs, the fourteen examples listed in **Appendix A** represent expanded HIE capabilities for thousands of ambulatory practices, hospitals, and other health care organizations.

Figure 2: Capacity building (contract or sub-award) efforts to enable exchange (as of September 2012)



Grantees contracting with or making sub-awards to (1) existing, operational sub-state exchange entities to enhance services provided or expand coverage areas, and/or (2) health care delivery organizations, including but not limited to clinics, hospitals, laboratories, provider practices, or radiology centers, for exchange-related technical assistance or to establish connectivity.

Where Are We Seeing Early Success?

As mentioned previously, it is difficult to calculate the specific impact of capacity building programs since most that we examined are not far enough into their programs to quantify benefits in areas such as an increase in transactions or an improvement in patient outcomes. However, early indicators from several state capacity building programs show that funding pushed out to exchange entities and health care providers is helping accelerate HIE implementation and connectivity, which assist stakeholders in exchanging patient information (see **"Spotlight on Early Success in Michigan and Texas"** below). **Table 1** below includes a sample of states that have successfully launched capacity building programs and/or have achieved some positive results by employing five promising tactics.

Table 1. Identified tactics for successful capacity builder programs

Promising capacity building tactic	States employing tactic
1. *Targeting funding to audiences that most need it and where the greatest value can be gained*	Illinois, Indiana, Michigan, Minnesota, Pennsylvania, and Texas
2. *Setting clear and consistent expectations for awardees early*	Indiana, Michigan, Pennsylvania, North Dakota, and South Dakota
3. *Deploying monitoring mechanisms to keep track of awardee progress and to maintain transparency*	Indiana, Michigan, and New Jersey
4. *Building in multiple rounds of funding in order to incorporate experiences gained and measurable results achieved through earlier rounds*	Michigan, Minnesota, Montana, North Dakota, and South Dakota
5. *Collaborating and communicating with strategic partners early and often to promote buy-in and trust*	Indiana, Michigan, Minnesota, Montana, North Dakota, South Dakota, and Texas

In the following section, we explore each of these tactics and some challenges that have arisen from capacity building efforts, as evidenced in 21 capacity building programs we reviewed, nine diverse State HIE grantees[2] we interviewed, as well as a number of recipients of capacity building funding that were interviewed throughout the research process.

Spotlight on Early Success in Michigan and Texas

The Great Lakes HIE (GLHIE), located in **Michigan**, has significantly increased the number of hospitals and providers exchanging health information by using funding from the Michigan Health Information Network's (MiHIN) Shared Services Capacity Building Grant Program to help rural hospitals, Federally Qualified Health Centers (FQHCs), free clinics, and physician practices pay for interfacing costs and subscription fees to GLHIE's infrastructure. Since inception in May 2011, Great Lakes HIE has signed up over 2,000 providers and with the help of MiHIN's program, anticipates reaching 3,500 providers before the end of 2012.

The Integrated Care Collaboration (ICC), a regional HIE entity that has been connecting providers in Travis County, **Texas** and surrounding areas since 2002, attributes its ability to greatly expand its HIE capacity to the funding received through the Texas Local HIE Grant Program. After receiving the grant, the ICC expanded its service area from an 8-county core region surrounding Austin, Texas to 47 counties in Central and East Texas. ICC HIE service lines include ICare, a query-based, bi-directional information exchange, and Texas Direct, a Direct secure messaging solution that enables providers to engage in secure point-to-point sharing of health information services that align with national standards. ICC also used grant funds to increase its already robust analytics capabilities and data storage capacity, as well as to develop interfaces between provider EMRs and the ICare HIE platform, covering the costs of interfacing on the HIE side and defraying the historically high interface costs for participating providers.

Capacity Building Tactics Worth Replicating

Over the course of our research, we identified several key tactics and approaches taken by states that have successfully launched capacity building programs. In this section, we highlight five common tactics (as previously shown in **Table 1** above) that have the greatest potential for replication by others looking to establish or refine their own capacity building programs.

1. Get the most value by focusing the program to create a "network effect"

The "network effect" is a recognized pattern of exponential value creation—where the value of participation in a network—be it for telephones, fax machines or social networks—increases exponentially compared with the cost of participation. In practical terms, the theory of network effects suggests that early adopters see less value in their participation because the costs associated with being on the network are distributed among just a few participants, and the benefit they derive is lower because there are fewer participants with whom to connect. As the network matures, costs to add each new participant decrease while the benefit to all participants increases (more participants equals more opportunities to connect).

In order for the benefits of the network effect to be realized, not only does a network need to achieve a certain critical mass of participants, it needs to have the right *mix* of participants—especially when it involves different types of medical relationships, such as those we see between emergency departments and providers or public health departments and providers. Successfully launched capacity building programs have used some of the following approaches to target different sets of participants to fill the gaps needed to begin realizing the network effect. Each state has a slightly different focus for injecting financial and technical support into the areas that most need it and where the greatest value can be gained.

Provider type

- **Indiana** has allocated a specific number of funding slots for various provider types according to where the need for incentives is greatest and the maximum benefit will be realized. The state is

allocating a total of $2.5M to up to 100 Federally Qualified Health Centers (FQHCs); 30 rural and Critical Access Hospitals (CAHs); 12 clinical labs; and 20 radiology centers.

- After determining that providers were not signing up for HIE services because their preferred data trading partners were not able to electronically exchange information, **Minnesota** expanded its initial capacity building program to include providers not eligible for meaningful use incentives—such as skilled nursing facilities and local health departments. By creating an incentive to form a community collaborative around health information exchange and allowing meaningful use-eligible providers to partner with non-eligible providers in their applications, the state was able to increase participation in the program and enhance the network effect.

Population served

- Specifically targeting HIE adoption by providers caring for underserved populations, **Pennsylvania** requires that all proposals for participation in its capacity building program contain thorough explanations of how funding will be used to achieve HIE and support underserved populations.

- Through its Health Information Exchange White Space Program, **Illinois** is targeting non-profit organizations that will help connect specific health care entities located in geographic areas and practice settings that are currently underserved by HIE services, such as Critical Access Hospitals and community health centers, to an HIE service/solution of their choosing (commercial, sub-state, or the Illinois Health Information Exchange (ILHIE) via connecting that HIE service to the ILHIE).

Geography or gap in service coverage

- **Texas** is a geographically large state with diverse regional health care systems. Though there are a variety of existing, operational sub-state HIE entities, there are also large geographical regions of "white space" where providers have no access to HIE services. Using State HIE Cooperative Agreement Program funding, Texas established a competitive Local HIE Grant Program to bolster existing sub-state exchange efforts. In addition to these efforts, Texas is encouraging providers and local hospitals to connect to certified HISPs in the state through a white space strategy that distributes vouchers to providers in order to help offset initial connectivity costs.

Potential exchange volume

- **Michigan** recognized that another way to achieve the network effect is to build HIE capacity in participants that have established paper or fax-based exchange relationships with many other providers—like regional referral hospitals, public health departments, and reference labs— that might not otherwise have incentives or resources readily available to participate in HIE. Michigan provided funding to sub-state HIE entities to expand their services to include public health reporting. Because of mandatory requirements for public health reporting, connecting with sub-state HIE entities became more enticing to providers. Once providers are able to electronically exchange information with public health, they are also able to leverage the sub-state HIE entity to exchange information with other health care stakeholders.

2. Establish clear expectations up front

The very concept of capacity building implies that the program is moving into new and uncharted territory—at least for those entities that are being targeted as participants. One component of an effective capacity building strategy is clearly defining expectations for the intended audience early on and tying those expectations to programmatic objectives. Many states we interviewed are socializing these expectations through the application process itself. By developing a straightforward process, including clear application

criteria and well defined lines of responsibility, programs can avoid creating confusion among or developing unrealistic requirements for applicants. Our interviews with states provided several examples worth highlighting:

- In its initial round of funding, **South Dakota** received excessively high funding requests because its applicants didn't understand that the focus of the program was to pay for interfaces, not to purchase electronic health record (EHR) systems. The state revamped its application guidance to highlight appropriate uses for the funding and what uses were out of scope.

> *"Without the North Dakota HIT loan program, our clinic would have had to apply for a loan from a local bank—with a significantly higher interest rate—for funding for our EHR implementation. Because of the HIT revolving loan program, we were able to move forward with our implementation at least three to five years earlier than we would have otherwise and meet the meaningful use timelines."*
>
> **Cynthia Udby, Midgarten Family Clinic**

- **North Dakota** made sure that its loan guidelines included very specific information about the application process, how applications would be evaluated, what the funding could be used for, and how the loan must be paid back.

- Through its entity responsible for implementing statewide HIE, the Michigan Health Information Network (MiHIN), **Michigan** required sub-state HIE entities to complete an application that included a list of requirements in order to be considered for funding. These requirements, also listed across multiple domains in its Shared Services Strategic Plan, included providing an annual report to MiHIN, submitting regular financial contributions to MiHIN, and committing to follow national standards for interoperability, privacy, and security.

- **Indiana** facilitated discussions with awardees and their vendors to review requirements of the program, level of effort, and project timelines. These conversations helped frame expectations with awardees' vendors and heightened transparency with the state.

- **Pennsylvania** understands that capacity building is not a short-term effort and sought out applicants that were committed to building the technical HIE infrastructure in the state. As a result, Pennsylvania requires sub-award recipients to provide significant matching funds to ensure local commitment to creating long-term HIE sustainability. Sub-awardees are expected to pay back the PA eHealth Partnership Authority with a 75% match of the total award amount ($1.5M) through in-kind (25%) and/or cash (50%) payments.

We found that establishing clear expectations requires addressing several common elements through capacity building funding announcements, applications or other communications material. An overview of this information can be found in **Table 2** below.

Table 2. Common elements for establishing clear expectations

Program element	Key considerations	Examples
Program type	Through what mechanism will the funding be distributed (e.g., sub-award or loan)?	Examples of both a sub-award and loan program: • Texas Local HIE Grant Program • North Dakota Planning Loan Program
Goals and objectives	What is the purpose of the program? What outcomes are	On page 3 of its Request for Application, Illinois clearly describes the goal of its program, to

Program element	Key considerations	Examples
	expected?	"accelerate the connection of providers delivering health care services in practice settings and geographic areas currently underserved by HIE services to obtain and use HIE services", and objectives, to "connect a minimum of 50 eligible Illinois-licensed health care providers in a minimum of five unaffiliated Illinois white space entities".
Funding amount	What is the total amount of funding available through the program? How much funding is available per awardee?	Through various funding announcement letters to targeted audiences like hospitals and health centers, Indiana explicitly states how much funding is available through the program and how much funding is available per awardee.
Funding source	What entity is providing the financial backing to the program (e.g., federal, state, private partner, etc.)?	Examples of capacity building programs funded through different sources: • Private: North Carolina HIE Grant Program with Blue Cross and Blue Shield of NC and Allscripts • State: North Dakota's Planning Loan Program • ONC: New Jersey's Funding Announcement Press Release
Funding eligibility	What health care stakeholders are eligible for funding?	On page 2 of its Program Guidance document, South Dakota describes what stakeholders (Acute, Specialty, and Critical Access Hospitals, clinics affiliated with health systems, independent clinics, Rural Health Clinics, and FQHCs) are eligible to apply for its Connectivity Program for Health Information Exchange.
Funding use and restrictions	How can awardees use the funding? What funding uses are out of scope?	On page 8 of its Program Guidance document, Arizona explicitly states how awardees are allowed to use the funding they receive through the sub-award program and what items are considered "ineligible expenditures".
Approval process	What are the selection criteria?	On page 4 of its Funding Announcement, Minnesota provides clear expectations on how each sub-award application will be evaluated based on scoring criteria that includes project description, work plan and team, and budget.
Performance Measures	What measures will the program use to track progress? What is expected of awardees in terms of outcomes, milestone achievement, reporting, etc.?	On page 5 of its Funding Announcement, Michigan defines the various measures that awardees must submit on a quarterly basis to help the state assess whether awardees are on track to meet various programmatic objectives.
Timelines	What is the awardees' period of performance? How long will the overall program run? How many funding cycles are planned over what time period?	On page 11 of its Request for Application, Illinois indicates the program period of performance is from December 2012 to December 2013, and there is a single funding cycle.
Match requirement	Is the awardee required to match any amount of funding received? If so, how much is that match, and how quickly must the awardee match the funding? Can the matching funds include "in kind"	On page 5 of its Program Guidance, Arizona describes its match requirement – a cash or in-kind match of at least 50% of the sub-award. In addition, Arizona refers applicants to the ONC Grants Management Advisory (GMA) 2011-01 and its supplement for general information about

Program element	Key considerations	Examples
	funding?	federal grants and match requirements.

3. Deploy monitoring mechanisms to stay on track and course correct when needed

Successful capacity building programs we reviewed exhibited strong coordination with awardees, including program monitoring, management and remediation to ensure performance goals are met and to maintain alignment of services, policy requirements, service levels, and pricing across program participants as appropriate to the design and objectives of the program. As with many other elements, each state approach varies; however, effective monitoring strategies are consistently tied to defined timelines and quantifiable performance measures.

Figure 3. Required quarterly measures table – MiHIN

Name of Sub State HIE	
MI Counties of Operation	

Measure	2011 Quarter 2
# of providers meeting HIE specific MU criteria by utilizing the following sub-state HIE capabilities:	
structured lab results	
CCDs	
# of hospitals/health systems meeting HIE specific MU by utilizing the following sub-state HIE capabilties:	
structured lab results	
CCDs	
# of MI providers utilizing your sub-state HIEs services	

- **Michigan** employed several monitoring techniques for the first round of capacity building efforts they launched with State HIE Program funds (completed in September 2012). Sub-state HIE awardees were required to submit quarterly reports on specific performance measures that MiHIN developed based on ONC State HIE Program priority areas (see **Figure 3**), as well as monthly financial reports to MiHIN to update the state on how they are spending funds. On a more informal level, awardees attended biweekly calls with MiHIN where they provided updates, asked questions, or addressed concerns. MiHIN also tied its available funding to the achievement of specific milestones. The application process called for each awardee to define specific payment milestones—both activities and associated payments—that would be used to determine when MiHIN would release funding. MiHIN delegated this responsibility to awardees so that each could think through how they would use the funding, maintain solvency through the implementation of the program, and anticipate any costs that it might incur, including technology purchases, staff augmentation, and other budgetary items. While arriving at mutually agreeable payment milestones took some negotiation with each recipient, MiHIN was able to arrive at an acceptable plan with each.

- Every quarter, **New Jersey** reviews progress on key programmatic performance measures reported by each of its sub-state HIE awardees, including annual enrollment targets that each HIE entity is required to meet. **Table 2** below illustrates New Jersey's tailored approach to setting annual enrollment targets, as each HIE entity's target is different and reflects an ambitious adoption goal for each. New Jersey is also planning to implement a remediation strategy in cases where an HIE entity is unable to meet its enrollment targets. The process will include a formal notification sent to the HIE entity, the development of a 90-day project plan that aims to get the organization back on track, and biweekly reporting requirements so that the HIT Coordinator can track the HIE entity's progress. New Jersey is considering a final step that would require the HIE entity to surrender its sub-award funds, activate a contingency plan, and submit a transition plan that turns operations over to another existing HIE entity if enrollment targets continue to not be met.

Table 2. New Jersey sub-state HIE entity annual enrollment targets

Sub-State HIE Entity	Enrollment Targets			
	Year 1	Year 2	Year 3	Year 4
Camden	100 physicians	200 physicians	200 physicians	Not available
HEALTHECITI	Target being revised.			
Jersey Health Connect	500 physicians	1,000 physicians	2,000 physicians	2,000 physicians

- **Indiana**'s state designated entity, Indiana Health Information Technology, Inc. (IHIT), monitors the implementation progress of participants in its capacity building program against implementation timelines and provides technical assistance to sub-awardees that experience challenges with vendors (e.g., a vendor not meeting project timelines). Technical assistance involves project management support to get the awardee and vendor on the same page as they connect to one of the sub-state HIE entities.

4. Iterate when possible

There is a temptation—perhaps done in the name of efficiency and in the interest of time—to create a single capacity building program with one round of funding. Move the money out, and let it have its effect. Our interviews with states would suggest that this approach, while efficient, may result in a lost opportunity to optimize the program. An alternative approach that several seasoned states favor is to have multiple, smaller funding rounds so that the state can modify the program design based on the experience gained with earlier rounds. Capacity building program parameters that may benefit from adjustment due to iterative rounds include:

- Funding levels
- Eligibility requirements
- Outreach efforts and target audience
- Restrictions on the use of funds
- Application requirements
- Status and results reporting requirements
- Loan terms or matching fund requirements

States that have taken an iterative approach have varying lengths of time between funding rounds, ranging from a few months to multiple years. While there is no clear pattern from our research that may suggest an optimal timeframe between rounds, the overall tactic is to capture and apply lessons learned in a nimble and flexible manner. This becomes even more important when capacity building efforts are developed and implemented in short timeframes.

Examples of states that have successfully released multiple rounds of funding include **Michigan**, **Minnesota**, **Montana**, **North Dakota**, and **South Dakota**.

- Taking the advice of stakeholders such as members of the MiHIN Board of Directors and the Michigan HIT Commission, **MiHIN** offered only $1.5M of the $3M set aside for capacity building efforts during its first round of awards to sub-state HIE entities. That reserved another $1.5M for a second round of capacity building and the MiHIN is team is glad they took this approach. They learned through their first round of capacity building that funding sub-state HIE entities to expand services and coverage areas does not necessarily translate into exchange that traverses organizational and geographic boundaries. In fact, without careful attention and advance planning, these kinds of efforts can inadvertently perpetuate and even grow information silos. MiHIN is

applying these lessons to their next round of capacity building work by determining an explicit set of standards and services for which they are willing to fund sub-state HIE entities. MiHIN will continue to use some of their successful tactics such as measurement and shared learning during this second phase; however, the scope of work taken up by sub-state HIE entities will be far more constrained than it was during the first round.

- When Health Share Montana (HSM), the state designated entity for HIE in **Montana**, first launched its health information exchange connection assistance sub-award program, it learned that the application process was unnecessarily cumbersome. Originally, the process involved multiple follow up calls to the Chief Executive Officers (CEOs) of Critical Access Hospitals (CAHs) to obtain necessary information to complete the sub-award application. In its second round of funding, Montana made the process easier by streamlining the information that applicants were required to submit.

- After an intensive first round review of the applications submitted to its planning loan program, **North Dakota** simplified the loan application process by removing some of the information it required applicants to submit. In its original iteration, North Dakota instituted a competitive loan process, allotting "points" to the applications it received because the program did not have enough money to cover every applicant. In 2011, the program was given additional funding from the state, allowing a greater number of hospitals, providers, and clinics the opportunity to receive loan funding from the program. Accordingly, North Dakota simplified the application process by removing the application ranking system. Hospitals, providers, and clinics are now only required to provide general information about their facility, their plans to purchase an EHR system, and the proposed budget for the project. Additional information is obtained from a readiness assessment that each facility is required to complete before they are allowed to access funds through the Bank of North Dakota. These changes have made the review process easier for the state, as well as applicants.

- **South Dakota** staggered the timing of when it awarded applicants funding to connect to its statewide HIE infrastructure in order to not overwhelm its HIE vendor with a large influx of new customers. In addition, with each round of applications, South Dakota refined its sub-award guidance to address questions applicants had or to clarify some of the misinterpretations applicants included in their award submission, such as how much award funding each applicant is eligible for and how the money can be used.

Lessons Learned in Minnesota

The first phase of Minnesota's e-Health Connectivity for Health Information Exchange Grant Program, released in 2011, allocated $1M in funding to meaningful use (MU) eligible professionals (EPs) and hospitals (EHs) located in rural segments of the state. During the initial round of the program, aimed at supporting achievement of Stage 1 MU, Minnesota learned that its targeted applicant pool was too narrow—the state only distributed half of its allotted funding, as it discovered that many interested parties were not eligible for MU incentives. In its next iteration of funding, Minnesota established application criteria that require EPs and EHs to submit applications in partnership with at least one other data trading partner. Data trading partners do not have to be eligible for MU, helping to expand the reach of the program to important health care providers such as behavioral health and long-term care, while also ensuring that once participants establish the capacity for electronic exchange, they have data trading partners with whom they want to exchange.

5. Communicate to raise awareness and maintain transparency

Successful capacity building programs have given explicit attention to communicating with stakeholders to (1) raise awareness among potential applicants and sub-awardees about funding opportunities, and (2) create transparency in the sub-award or contract process. Many states we interviewed stressed the importance of good stakeholder communications as foundational to a successful capacity building program. In addition to their own communication campaigns, states have also used local communication channels to build awareness about their programs and goals. Medical associations, provider groups, regional extension centers, care delivery systems, and other state agencies are examples of partners that states have worked with to effectively communicate across stakeholder audiences.

Indiana, for example, sent letters and reached out by phone directly to organizations it considered eligible entities. The state also worked with trade associations and posted blogs to drum up interest. In the end, Indiana found that its sub-state HIE entities were the most effective in building awareness and increasing participation. The **Texas** capacity builder program focused on outreach and education, but put the onus on its sub-state HIE entities to communicate the benefits of HIE and ultimately, drive adoption. Texas required that the HIE entities obtain letters of commitment from local providers and later audited those letters to measure HIE entities' performance. As local HIE initiatives have matured, Texas's emphasis on measuring performance has shifted from letters of commitment to actual measures of exchange.

Some states have utilized their regional extension centers (RECs) to help with outreach and communications to potential applicants. **Minnesota**, **Montana**, **South Dakota**, and **Texas** worked with their respective RECs to spread the word about their various capacity building programs and educate eligible applicants about the requirements of the program. This shared communications strategy reinforced the message they were sending to the health care community. Some states leveraged political (and some financial) support from the state that allowed them to start up the program and gain momentum. **South Dakota** worked with other state agencies to manage its sub-award application process, and as a result was able to create efficiencies in the design of the program so more money could be applied directly to capacity building. **North Dakota** obtained financial support from its state legislature, which appropriated $10M to support HIT adoption in the state.

Frequent and clear communications that emphasize transparency in the process are also important as they can facilitate stakeholder buy-in and reinforce trust in the program—especially when the issuance of public funds is involved. For **Michigan**, transparency through communication was a key focus of its capacity building efforts. MiHIN makes frequent presentations to the Michigan HIT Commission, the state's public, multi-stakeholder forum empowered to oversee health information exchange by state statute. Though MiHIN was not required to get approval from the Commission for each proposal submitted by sub-state HIE entities for funding, it presented each application to the board and solicited feedback.

Indiana Health Information Technology, Inc. (IHIT) uses social media to monitor progress and create transparency through blogging (see **Figure 4**). Various representatives from IHIT leadership post blog entries on health information exchange progress in the state, ranging from status updates on State HIE Program initiatives, such as public health reporting and capacity building, to op-eds on ONC guidance. The social media tool allows HIE consumers to comment and vote on the blog post and view related stories through a tagging function.

Figure 4. Indiana Health IT Blog

Capacity Building Challenges—and How to Mitigate Them

Like other models and strategies for accelerating health information exchange, capacity building comes with its own risks and challenges.

Staying on task while playing "Musical Chairs"

These are, to say the least, dynamic times in the world of HIT. Change is occurring at a rapid pace and with that change comes opportunity and shifts in roles and careers. Colleen Woods, Director of Health Information Technology for the **New Jersey** Department of Health noted that ***"the changing landscape has been a challenge as HIE standards evolve; it will take thought and effort as to how to best adapt."*** Of all the challenges cited during our interviews, the one mentioned most frequently was the challenge associated with personnel changes at the local, state, and national levels that can involve vendors, executives, government officials, and key knowledge holders. Relationships are cultivated and lost; vendor implementation timelines are set and delayed; enabling legislation is stalled after an election change; experience is gained and then walks out the front door for a new opportunity. This constant shift in personnel and responsibility takes its toll on capacity building efforts, requiring intense planning and trust building for their success.

There is no magic cure for this inevitable ebb and flow of momentum and leadership. However, deploying some of the following mitigation strategies can help states manage through change:

- Maintain discipline in documenting the program's overall strategy and progress in implementing that strategy.
- Develop and nurture a culture of inclusion and transparency to expand institutional knowledge beyond the individual contributors. With many HIE entities being small organizations—especially when in startup mode—it makes sense to spread that institutional knowledge beyond the institution by keeping volunteers, committee members, and other stakeholders informed and engaged.
- Develop and document a succession plan for key personnel. Having a rational succession plan isn't a signal of a staff member or executive's departure; it is good management.

Measurement is hard

Measuring the success of a capacity building program can be challenging—especially in the short-term. Real outcomes from capacity building may not become tangible for months or even years after the initial disbursement of funds. While process measures—milestones along the way toward achieving a capacity building program's goals—are not the ultimate objective of the program, they do provide early indicators of the program's health and can help guide leaders in making adjustments to the program as necessary.

Even making a commitment to selecting milestones and target goals can be intimidating as it creates a level of accountability to achieve a target where states don't have total control of the outcome. States need to take care in selecting the right goals and associated measures. One way to do this is to start by developing "SMART"[3] goals; then develop measures that line up with each goal. SMART goals are:

- Specific – unambiguous as to have clear meaning
- Measurable – designed so that goal attainment is clear
- Achievable – targeting a realistic goal rather than an aspirational one
- Relevant – measuring what matters by selecting goals that are clearly associated with the long-term outcome
- Timed – includes words such as "no later than" X date

Perhaps the most challenging aspect of creating measures that align with SMART goals is determining what short-term or process goals and measures are truly relevant for the long-term objectives of building HIE capacity. Relevant process or milestone measures may include:

- The number of applications received for the program
- The number of capacity building loan or sub-award recipients
- The average time it takes recipients to go from funding release to starting implementation to initiating transactions
- The number of recipients that move from funding to starting implementation to initiating transactions
- The number and type of organizations exchanging data as a result of funding
- The percent or proportion of a regional or geographic target connected/exchanging health data as a result of funding

Once selected, goals need to be measured and, once measured, acted upon. So states should look at the measurements they are considering and ask, "What action will we take if we don't achieve the goal?" If states will not be able to change direction or make adjustments in the program, then there is not much point in measuring these interim steps on the way to the goal. So for each goal, states should establish in advance what potential actions they could take in response to an unreached goal (for example, increasing outreach in response to a lower than expected number of submitted applications). **New Jersey** recently reduced the adoption targets for its sub-state HIE entities because the HIE entities were having difficulty reaching original goals set due to a laggard EHR adoption rate among ambulatory providers in the state.

Conclusion

In essence, HIE capacity building provides the necessary tools to help fulfill health care stakeholders' overall mission and objectives. It evens the playing field between those that are resource rich and those that need extra assistance to get over the adoption hump. It's a creative strategy that aligns with many of ONC's core beliefs of making good use of existing resources, filling in the gaps, and supporting "the little guy." Indeed, we have seen that the most successful capacity building approaches embrace these overarching principles: they leverage existing operational HIE assets—such as established technology and relationships with stakeholders—and target an infusion of capital where there is the most need to get connected in order to help accelerate the value of HIE for patients and providers.

Appendix A: Examples of State HIE Capacity Building Programs

(As of September 2012)

This appendix contains a sample of capacity building programs organized by two broad targeted audience categories: 1) sub-state HIE entities, data intermediaries or EHR vendors and 2) care delivery organizations. This is not an exhaustive compilation of capacity building programs, but is instead intended to provide a snapshot of approaches across a diverse range of geography and funding sources. An (*) by the state name indicates that the state was interviewed during the research process.

Sub-state HIE entities or intermediaries

State: IL* **Program Type:** Sub-award **Contact:** Laura Zaremba **Link(s):** Request for grant application	**Entities eligible for funding**	Non-profit organizations that will help connect specific health care entities such as organizations and providers in practice settings and geographic areas currently underserved by HIE services
	Funding amount	**Total: $2M** • Maximum of $500K per sub-award for one year • Up to 4 sub-awards anticipated
	Competitive application process	Yes
	Awardee match requirement	Match requirement = 10% of funding awarded
	Allowable funding uses	Connecting health care entities to HIE service/solution of their choosing (commercial, sub-state, or ILHIE); technical assistance and training; interface development
	Period of performance	December 2012 to December 2013
	Funding source(s)	ONC
State: MI* **Program Type:** Sub-award **Contact:** Tim Pletcher **Link(s):** Funding announcement	**Entities eligible for funding**	Operational sub-state HIE entities
	Funding amount	**Total: $1.5M** • $250K per sub-award for one year • As of September 2012, 5 awards have been distributed
	Competitive application process	No; proposals required, but process is not competitive
	Awardee match requirement	Follows federal match rate schedule for State HIE Program
	Allowable funding uses	Connecting health care entities to HIE services; developing and providing specific services, such as supporting CCD for transitions of care, public health reporting, or integrating with HIE entities and EHRs; e-referrals; defraying of onboarding costs
	Period of performance	Sub-awardees received funding in Fall 2011 and must complete their activities by September 30 2012, or receive written permission for an extension and agree to provide the additional match requirements.
	Funding source(s)	ONC
State: NJ* **Program Type:** Sub-award	**Entities eligible for funding**	Sub-state HIE entities
	Funding amount	**Total: $10.4M** • Range: $1M-$3.3M per sub-award • As of September 2012, 4 HIE entities have been awarded

Contact: Colleen Woods **Link(s):** Funding announcement press release	**Competitive application process**	Yes
	Awardee match requirement	• 1st year – no match • 2nd year –10% • 3rd and 4th year – 14% and 33%, respectively
	Allowable funding uses	Developing contractual agreements; constructing HIE infrastructure; purchasing HIE infrastructure and technology; developing capabilities to provide services for NJ's 5 use cases (care summary exchange; lab results delivery; medication history; medication allergies; radiology reports)
	Period of performance	Funds were made available in September 2011. Sub-awardees have until March 2014 to spend funding.
	Funding source(s)	ONC
State: PA* **Program Type:** Sub-award **Contact:** Alix Goss **Link(s):** Funding announcement press release	**Entities eligible for funding**	Health information services providers (HISPs); integrated delivery networks (IDNs); local HIE entities
	Funding amount	**Total: $6M** • $1.5M per sub-award • As of September 2012, 4 entities have been awarded
	Competitive application process	Yes
	Awardee match requirement	75% total match – 50% must be cash; 25% can be in-kind, cash or a combination of the two
	Allowable funding uses	Building Direct secure messaging infrastructure; onboarding of provider communities; finalizing organizational privacy and security framework; helping others with technical readiness to connect to community shared services
	Period of performance	August 2012 through December 31, 2013
	Funding source(s)	ONC
State: TX* **Program Type:** Sub-award **Contact:** Stephen Palmer **Link(s):** Program website	**Entities eligible for funding**	Sub-state HIE entities
	Funding amount	**Total: $19.5M** • Range: $215K to $5.6M per sub-award • As of September 2012, 12 HIE entities have been awarded
	Competitive application process	No
	Awardee match requirement	25%
	Allowable funding uses	Sub-awardees are required to use funding for building new HIE capacity, and are required to use some funds for planning and the development of Business and Operational Plans that meet specific program requirements aligned with the State HIE Cooperative Agreement Program. Examples include lab results delivery; care summary exchange; virtual and personal health record capabilities; image summary exchange; patient referrals; HIE interoperability; patient history hub; data analytics offerings; EHR lite products; etc.
	Period of performance	Sub-awards were issued by April 2011 and will continue until December 2013 or the end of the State HIE Cooperative Agreement Program
	Funding source(s)	ONC

Care Delivery Organizations

State: AZ **Program Type:** Sub-award **Contact:** Lorie Mayer **Link(s):** Program guidance	**Entities eligible for funding**	Non-profit or for-profit health care organizations that target medically underserved, low income, and needs of special populations
	Funding amount	**Total: $1.1M** • Up to $50K per organization • Up to $100K for joint applications of two or more organizations • Approximately 20 awards anticipated
	Competitive application process	Yes
	Awardee match requirement	Cash or in-kind of at least 50% of the sub-award
	Allowable funding uses	Cost(s) for consultant services, training, and readiness assessments; health information exchange services including "push" and "pull" based exchange; "one time" onboarding connection fees; interfacing costs; contract review legal fees; subscription fees; project management
	Period of performance	January 1, 2013 to June 30, 2013
	Funding source(s)	ONC
State: IN* **Program Type:** Incentive **Contact:** Andrew VanZee **Link(s):** • Hospital funding announcement • Health center funding announcement	**Entities eligible for funding**	100 Federally Qualified Health Centers; 30 rural and Critical Access Hospitals; 12 clinical labs; 20 radiology centers
	Funding amount	**Total: $2.5M** • $10K per FQHC/RHC/CHC • $40K per hospital • $25K per lab • $25K per radiology center • Up to 162 awards anticipated
	Competitive application process	No
	Awardee match requirement	Follows federal match rate schedule for State HIE Program
	Allowable funding uses	Establish connections to sub-state HIE entity selected by provider (5 options); software purchase and implementation; interfacing costs; staff time
	Period of performance	March 2012 to June 2013. Recipients have until Q1 CY 2013 to begin the implementation queue with a sub-state HIE entity. All funds will be expended by Q2 CY2013.
	Funding source(s)	ONC
State: MN **Program Type:** Sub-award **Contact:** Jennifer Fritz **Link(s):** Program website	**Entities eligible for funding**	Clinics; dental clinics; health care homes; home health facilities; hospitals; local health departments; pharmacies; skilled nursing facilities
	Funding amount	**Total: $2M** • $25K for each HIE partner site[4] • $10K per pharmacy • Approximately 10 awards (~80-100 total sites) anticipated[5]
	Competitive application process	Yes
	Awardee match	Follows federal match rate schedule for State HIE

	requirement	Program
	Allowable funding uses	HIE implementation consulting and training; interfacing costs; HIE service fees (1 year); implementation of standards-based protocols for eRx, labs, care summaries, implementation of CONNECT software; public health reporting functionality
	Period of performance	Awards are distributed on a rolling basis. The period of performance includes the date of award through September 30, 2013.
	Funding source(s)	ONC
State: MT* **Program Type:** Sub-award **Contact:** Brad Putnum **Link(s):** Please contact Marcy Johnson for funding announcement	**Entities eligible for funding**	Critical Access Hospitals
	Funding amount	**Total: $815K** • 1st round: $15K plus $5.2K waived Health Share Montana (HSM) interface fees per hospital • 2nd round: $7.5K plus $5.2K waived HSM interface fees per hospital • Approximately 20 awards anticipated
	Competitive application process	No
	Awardee match requirement	Follows federal match rate schedule for State HIE Program
	Allowable funding uses	IT consultant for HIE needs-assessment; hardware; hardware installation; initial interface costs
	Period of performance	• 1st round: from date of award until October 2012 • 2nd round: from date of award until October 2013
	Funding source(s)	ONC
State: NC **Program Type:** Sub-award **Contact:** Jeff Miller **Link(s):** Funding announcement press release	**Entities eligible for funding**	600 small, independent providers without an existing EHR system; 39 free clinics across the state
	Funding amount	**Total: $21.5M** • $13.4M funded by Blue Cross and Blue Shield of North Carolina (BCBSNC) • $8.1M donated by Allscripts • $30.7K average payout per physician or clinic
	Competitive application process	No
	Awardee match requirement	• BCBSNC to cover 85% of the cost for primary care providers (PCPs). PCPs are responsible for the remaining 15% (for a 5-year period) • BCBSNC covers 100% of the cost for 39 free clinics (for a 5-year period)
	Allowable funding uses	Costs for a hosted EHR solution (provided by Allscripts); subscription fees to the NC HIE; health information exchange services include “push” and “pull” based exchange; “one time” onboarding connection fees; interfacing costs; associated HIE support services; implementation of Patient Centered Medical Home processes and practices
	Period of performance	From date of award through December 2016; participants receive EHR hosting, maintenance and support for a 5-year period as well as connectivity to the NC HIE.
	Funding source(s)	BCBSNC and Allscripts

State: ND* **Program Type:** Revolving Loan **Contact:** Sheldon Wolf **Link(s):** Program website	**Entities eligible for funding**	Ambulance services; clinics; EMT services; hospitals; local public health departments; long-term care (LTC) facilities; network services; pharmacies; providers (MDs, PAs, NPs, CNMs)
	Funding amount	**Total: $10M** • Up to $125K for standalone practices • Up to $625K for hospitals/IDNs • Up to $1.25M for 3+ provider facilities
	Competitive application process	No
	Awardee match requirement	No match requirements; awardees to pay back loan at a 1% interest rate over 10 years
	Allowable funding uses	Purchase of HIT infrastructure (EHRs) and onsite assessments; ND expects the loan program to be used to connect providers and hospitals to NDHIE in the future.
	Period of performance	Ongoing; awardees must payback loan at a 1% interest rate over 10 years
	Funding source(s)	State
State: OK **Program Type:** Voucher/Coupon **Contact:** Val Schott **Link(s):** Please contact Val Schott for funding announcement	**Entities eligible for funding**	Critical Access Hospitals; rural providers and provider organizations
	Funding amount	**Total: $4-5M** • $7.35K for a hospital voucher level 1[6] • $17.15K for a hospital voucher level 2[7] • Approximately 90 vouchers awards anticipated for hospitals; 800 for professionals
	Competitive application process	No
	Awardee match requirement	Follows federal match rate schedule for State HIE Program
	Allowable funding uses	Onboarding connection fees, interfacing costs, and/or monthly subscription fees to any OHIET-certified HIE entity
	Period of performance	Sub-awardees have an initial 90-day period to meet each voucher level from date of award; there is an additional 90-day period for each voucher type if necessary if the recipient shows that it is making substantial progress.
	Funding source(s)	ONC
State: SD* **Program Type:** Sub-award **Contact:** Kevin DeWald **Link(s):** Sub-award guidance and application	**Entities eligible for funding**	Clinics; hospitals
	Funding amount	**Total: $2.2M** • Up to $8K per clinic • Up to $65K per hospital • Approximately 27 hospital and 71 clinic awards anticipated
	Competitive application process	Yes
	Awardee match requirement	Follows federal match rate schedule for State HIE Program
	Allowable funding uses	Hardware, software, and consulting services to connect to the SD HIE
	Period of performance	Recipients are expected to expend funding within three months of award date or by September 23, 2013

	Funding source(s)	ONC
State: UT **Program Type:** Sub-award **Contact:** Mark Bean **Link(s):** Program website	**Entities eligible for funding**	Hospitals and clinical practices
	Funding amount	**Total: $400K** • Range: $500 to $74.5K per organization • As of September 2012, 22 entities applied; 20 awards have been distributed and 2 are pending approval
	Competitive application process	Yes
	Awardee match requirement	No match requirement
	Allowable funding uses	Interfacing costs to the Utah Health Information Network
	Period of performance	September 15, 2012 to December 31, 2012
	Funding source(s)	ONC

[1] Please see section on “network effects” on page 5.
[2] States interviewed for this synthesis document include Indiana, Michigan, Minnesota, Montana, New Jersey, North Dakota, Pennsylvania, South Dakota, and Texas.
[3] Doran, George T. “There's a S.M.A.R.T. way to write management's goals and objectives.” Management Review, Volume 70, Issue 11 (November 1981); (35-36).
[4] At least two partner organizations must apply together in one application; *each site* under a partnership is eligible for up to $25K in sub-award funds.
[5] Many large community partnerships have applied for the program, which have several sites that are applying for the maximum amount of $25K per partner site. Minnesota estimates that it will award funding to 10 partnerships that include between 80-100 sites under its e-Health Connectivity Health Program.
[6] Hospital voucher level 1: Requires participating hospitals to be credentialed and have active accounts with a certified HIE entity; have looked up a patient record in the HIE system; have sent and received a secure message via the certified HIE entity’s secure messaging system.
[7] Hospital voucher level 2: Requires participating hospitals to have a live data feed established and in use with a certified HIE entity, meaning it has actively exchanged (at least) discharge summaries and patient administrative messages (ADTs) with the HIE entity.