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HMA is widely regarded as a leader in providing technical and analytical services to health care purchasers, payers, and providers, with a special concentration on those who address the needs of the medically indigent and underserved. Founded in 1985, Health Management Associates has offices in Lansing, Michigan; Chicago, Illinois; Indianapolis, Indiana; Columbus, Ohio; Washington, D.C.; Tallahassee, Florida; Austin, Texas; Sacramento, California; New York City, New York; Atlanta, Georgia; and Boston, Massachusetts.

HMA has clients across the country, including the major safety net health systems; private sector providers; and local, state, and federal governments. The firm has extensive experience and expertise in the design and implementation of health programs, particularly with respect to system development, managed care, long-term care, behavioral health care, and health information technology and exchange.

HMA brings a strong interdisciplinary expertise and a staff of 70 professional health care managers and analysts with up to thirty years of experience in health and human services, and senior-level experience in clinical and administrative leadership of health systems. Staff backgrounds include health economics, public health policy and administration, health care finance and reimbursement, clinical services, managed care, pharmacy benefit design and management, social work, program development and evaluation, and information systems.

Sustaining State Health Information Exchange: *A State Toolkit*

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Executive Summary

Without significant innovation, the United States will continue to pay more than other industrialized countries for poorer health outcomes and inadequate access to and quality of care. The health care industry is plagued by fragmented data throughout the sector and a lack of reliable information and analytics for making decisions and policy.

The U.S. health care sector compares poorly with other industrialized countries on both care quality and cost. The United States leads in health care expenditures but lags on measures of health care quality, access, efficiency, equity, and the adoption of health information technology (HIT) policies.¹

The systematic exchange of health information is essential to improving health outcomes, care quality, and slowing the growth of health care costs. The term “health information exchange” (HIE) refers to the electronic movement of health-related information among organizations such as health care providers, public health agencies, and payers, according to nationally recognized standards.

For simplification purposes, this paper will use “HIE” to refer to the electronic exchange of information in general and “health information organization” (HIO) for the entity that operates such an exchange. Although most HIOs exchange standardized clinical information electronically with health care professionals, many are also beginning to exchange information with patient engagement services and patients, to engage them and their families in managing their health and care.

This toolkit addresses how health information organizations can create and deliver value to achieve long-term sustainability. Sustainability remains the top issue of concern as states continue to develop their health information exchange capabilities.

Resources for HIE and HIO Deployment

In the last 18 months, enactment of the Children’s Health Information Plan Reauthorization Act (CHIPRA); the Health Information Technology for Economic and Clinical Health Act (the HITECH Act), within the American Recovery and Reinvestment Act of 2009 (ARRA); and the Patient Protection and Affordability Care Act of 2010 (ACA) have created profound policy shifts.

Although most associate CHIPRA and ACA with the continuation of children’s health care coverage and the expansion of insurance coverage, both also incorporate the adoption and use of health information technology as a critical enabler of health care reform. These two pieces of legislation influence the work and the direction of HIE activities under The HITECH Act. HITECH represents an unprecedented investment in both health information technology and health information exchange (HIT/HIE) to support the advancement of the health care sector into the 21st century. Through grants, incentives and program funds, the act supports the development and connectivity of the nation’s HIT/HIE networks, and encourages health care providers to adopt and “meaningfully use certified electronic health records (EHRs).”² The use of electronic health records makes provider practices more efficient, but the real value of these technologies is realized when information is exchanged across organizations and people so that a patient receives better care.

The HITECH Act provides seed funding for HIE infrastructure development and incentive funding for the Medicare and Medicaid EHR incentive programs. The investment is not sufficient, however, nor is it designed, to be the exclusive funder of statewide HIE for an extended period of time. Instead, it should be viewed as a down payment for states to establish HIE capabilities that can be sustained on their own. While these resources are sorely needed to build on initial state efforts, they come at a time of profound fiscal challenges for states. State economies are in the midst of the worst economic downturn since the Great Depression. A total of 44 states experienced budget shortfalls in their 2009 and 2010 budget years, and in the first months of the new state fiscal year, 46 states were dealing with shortfalls for fiscal 2011.³

Several states are using stimulus funds from the HITECH Act and other sources begin to build or improve on their HIE infrastructure. But all states are now confronting a financial “cliff” as those grants are phased out by 2014. That cliff threatens the sustainability of other state health reforms that depend on the progress of HIE. Thus strategies to address sustainability must be a critical part of state planning.

Summary of Lessons from the Leading HIOs and States

Based on our review of the literature, interviews with key stakeholders and analysis of selected health information organizations across the country, a number of lessons can be learned from successful and sustainable HIOs. The lessons center on the importance of participatory governance, implanting services that customers support, and the idea that incremental progress builds momentum for long-term reforms.

Challenges to Achieving HIE Sustainability

- The goal of achieving financially sustainable HIE is not achieved with implementation. HIOs must address the ongoing challenges of sustaining the infrastructure for interoperability. There are, however, many challenges, including: Many programs are siloed in their implementation and design;
- There is a lack of financial incentives for HIE; and
- Ensuring the entities that bear the costs for development will receive the benefits.

Even so, many states and HIOs have already found ways to build sustainable HIE.

Strategies for Building Sustainable HIE

Numerous methods are available to HIOs to address these challenges and achieve financial sustainability. This report highlights several HIOs that have already achieved sustainability and others that have developed business models that will ensure their sustainability in the foreseeable future.

Participatory Governance. States must begin early to make clear to private sector payers, providers, and the business community the impact that rising health care costs and a lack of care coordination are having on the state, the business community, and taxpayers. Many successful HIOs have brought stakeholders into governance and leadership to gain their operational and financial support. The more the HIO develops and delivers services based on the interests, needs,

and priorities of its local customers, the more likely it is that providers and payers will support it. Understanding customers and creating value for them increases the likelihood of winning their support. Two strategies for gaining stakeholder support appear to be particularly valuable:

Service delivery is as important as funding strategy. HIOs that have an established record of sustainability provide reliable business services that their customers are willing to pay for, even if they do not know it in the beginning. None of these HIOs started with a clear understanding of the best business or financial model to support this new business. Each was willing to engage in a process of innovation with their customers and to determine through trial and error the best balance of services of greatest value to their customers. Through a willingness to innovate, collaborate, learn, and adapt these leading HIOs use a combination of subscription fees, grants, and proportional cost sharing to create a sustainable model. Among their key funding strategies:

- Subscription fees have been the most common source of revenue among HIOs that have achieved sustainability;
- Leave no funding “stone” unturned;
- All who benefit from HIE should share in some portion of the costs; and
- Understand the culture of state regarding the need for formal policy to support sustainability.

Long-term goals and short-term deliverables. Solutions need to be local and serve local stakeholders. HIOs need to deliver results in smaller, more immediate steps, while keeping longer-term strategic value in mind. Striking the proper balance between the perfect solution, and the quick fix is a fine art of choosing the best opportunities to make progress incrementally and illustrate success and value for customers.

Transforming health and care through person-centered focus. Health information exchange is valuable for controlling costs and enhancing care quality and efficiency. Success and sustainability are tied to bringing innovation and an unrelenting focus on the health and care of people to the health care marketplace. “Patient-centeredness” (or person-centeredness), first popularized by the Institute of Medicine, is one of the primary aims of a 21st century health care system. It is central to transforming today’s fragmented, disconnected, siloed services into tomorrow’s health care system of integrated, connected, and seamless information and services. Sustainable health information organizations recognize that they are helping to build the framework for a health system that we would want for ourselves and families.

The primary issue that this toolkit addresses is how health information change, which is critical for transformative change in the health sector, can create and deliver value to achieve long-term sustainability.

I. Methodology

The focus of this toolkit is to help policy makers assess options for making health information organizations, or HIOs, sustainable. Our purpose is to create a larger awareness of the environment in which states are developing health information exchange, or HIE, infrastructure, focus on the need to implement sustainability strategies as a part of start-up, rather than grapple with them when federal grant funds end.

The National Governors Association Center for Best Practices (NGA Center), Health Division, commissioned Health Management Associates (HMA) to study HIE sustainability and make recommendations to help states develop and implement detailed plans for sustainability.

To develop this toolkit, HMA conducted an extensive literature review. Much of the research was conducted online to obtain the most relevant and up-to-date information on rapidly developing health information organizations and changing economic conditions in the states.

HMA also conducted interviews with staff members of leading HIOs around the country. The initial literature review formed the basis of the interview questions to state and HIO staff. By identifying factors that are critical to HIE design and development, HMA gained a clearer understanding of factors that increase the likelihood of sustainability. Staff of the NGA Center Health Division provided key assistance and guidance.

Through this analysis, we sought to determine how HIOs can:

- Best use HITECH funding to address core HIE capabilities, such as sharing or leveraging services;
 - Complement and accelerate the adoption of electronic health records;
 - Develop the most effective business case for customers and show measurable results;
 - Develop capabilities beyond results exchange to improve quality and efficiencies; and
 - Develop and implement a plan for sustainability.
- The literature review, interviews with state and health information exchange leaders, and research and analysis form the basis of this report. Its findings are intended to help states establish sustainable HIE infrastructures, as a critical component of health system transformation reform.

II. The Need and Opportunity for HIE

The U.S. health care system is a fragmented array of health care providers with competing priorities and payment incentives that discourage coordinated care, efficient use of services, and competitive pricing. In fact, the United States pays more for health care than other industrialized countries but has poorer health outcomes and lower levels of access and quality.⁴

Many tools have been proposed to correct the ills of the health care system, but there is likely no single solution. Instead, a collection of improvements need to be made to the health care delivery and payment systems to lower costs while improving the quality of care that individuals receive. The electronic exchange of health information is integral to any health care transformation, both because of its potential to improve efficiency and quality and as a tool for monitoring system performance. The application of technology could transform the way health care is delivered, the services provided, the way providers are paid, and the level of performance achieved. The result could be a higher-performing U.S. health care system, with measurably better outcomes and value for all Americans.

In the last two years seismic shifts have occurred in U.S. health care policy, the largest changes since the creation of Medicare and Medicaid four decades ago. Three landmark acts—the Children’s Health Insurance Program Reauthorization Act (CHIPRA); the Health Information Technology for Economic and Clinical Health Act (HITECH Act), within the American Recovery and Reinvestment Act of 2009 (ARRA); and the Patient Protection and Affordable Care Act of 2010 (ACA)—form the basis of health care reform. All emphasize the role of technology in transforming the health care system.

The HITECH Act fast-tracked efforts that many states have already initiated by providing funds to integrate technology into the health care system. It provided nearly \$2 billion in seed grants, through the Office of the National Coordinator for Health Information Technology (ONC), to develop the nationwide health information exchange infrastructure. A projected \$27 billion will be available through the Centers for Medicare and Medicaid Services (CMS) for incentive programs for eligible providers to adopt the use of electronic health records, or EHRs.

These resources are sorely needed. They come at a time of profound fiscal challenge for states, which are in the midst of the worst economic downturn since the Great Depression. States experienced the first-ever back-to-back drops in general revenues in fiscal years 2008 and 2009. Revenue levels in some states their lowest in decades.⁵

While HITECH Act funding is helping states to develop HIE infrastructure, all states confront a financial “cliff” when the federal programs and funds cease. State Medicaid agencies have access to very favorable matching rates for investments in health information exchange (90 percent federal to 10 percent state), but in some states even a 10 percent match is hard to find in the current state budget situation. Sustainability is thus the primary state concern in the development of statewide HIE.

Under these conditions, it is more important than ever for states to implement a cost-effective and sustainable HIE infrastructure that takes account of three key facts: First, states’ current financial challenges are likely to continue for at least three or four more years. Second, states must collaborate to create innovative models of governance and financing. Finally, establishing

sustainable systems for electronic health information exchange is essential to maintain the momentum that the HITECH Act engendered.

III. State HIE Responsibilities under Federal Grants and Programs

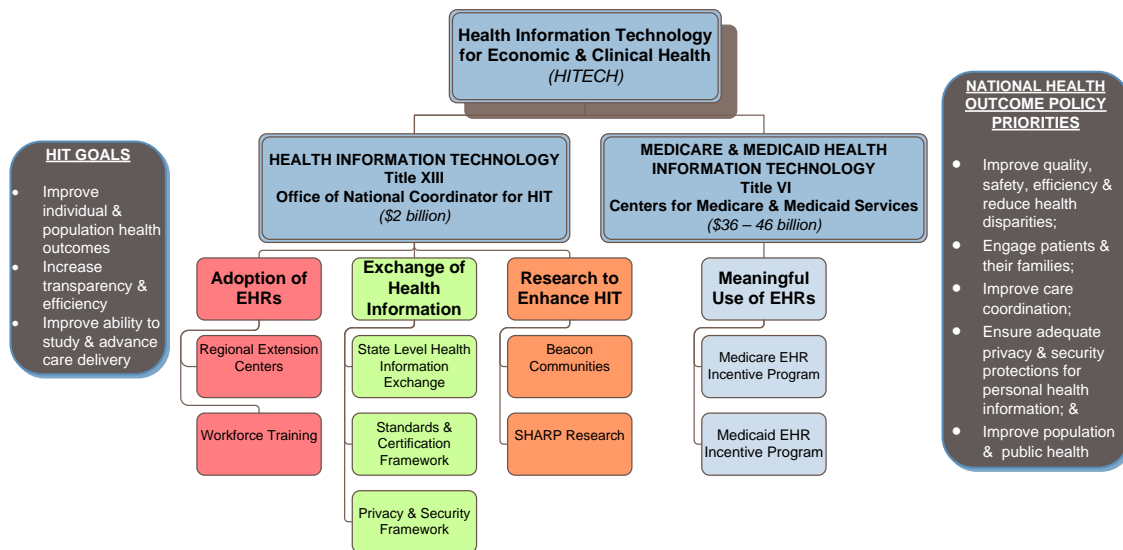
The HITECH Act provides funding for technical assistance and support for providers, enables coordination and alignment within and among states, establishes connectivity to the public health community in case of emergencies, and ensures that the workforce is trained and equipped to use electronic health records (EHRs). These programs build the foundation for every American to benefit from an EHR, as part of a modernized, interconnected, and vastly improved system of care delivery.

State responsibilities for health information exchange originate from the HITECH Act, which asks state governments to exercise the following responsibilities:

1. A HIE Cooperative Agreement program. Through this program, states develop and implement health information exchange based on a state “strategic and operational plan” approved by the Office of the National Coordinator for Health Information Technology (ONC).
2. A Medicaid Electronic Health Records incentive program. States administer the Medicaid EHR incentive program for eligible providers to adopt and meaningfully use EHR technologies, based on the State Medicaid Health Information Technology Plan (SMHP), approved by the Centers for Medicare and Medicaid Services (CMS). States can incorporate into their SMHP strategies for using enhanced federal matching to expand technical infrastructure and program resources to enable the meaningful use of EHRs and to support health information exchange interoperability.

Figure 1 provides a schematic overview of the HITECH Act’s goals, priorities, titles, primary policy objectives, and programs.⁶

Figure 1. HITECH Titles and Programs



SOURCE: Health Management Associates

In 2010, ONC awarded HIE Cooperative Agreement grants to states or State Designated Entities (SDEs) for a four-year period. No more than 10 percent, or \$1 million (whichever is less) of the award may be used for planning purposes, including the development of the strategic and operational plans. These plans describe how the state or SDE will establish HIE capabilities for the private, secure exchange of standardized clinical messaging among providers and hospitals within their state or jurisdiction. The grant requires states to align these plans with their SMHP.

The HIE Cooperative Agreement grants total \$564 million. Though that sum seems impressive, the individual grant that each state was awarded is not sufficient, and not designed, to fund statewide HIE for a prolonged period. The grants represent seed funding for states to establish HIE capabilities that can then be sustained on their own. Although some have assumed that the HIE Cooperative Agreement grant would constitute the exclusive funding for the HIE infrastructure, that is not a sustainable model. Rather, the grant is a federal investment to stimulate local innovation and growth in establishing HIE operations.

States are accountable for the management of the Medicaid electronic health records incentives program, including decisions regarding eligibility of providers and the process to manage attestation, reporting, and payment. The development of the State Medicaid HIT Plan (SMHP) provides an opportunity for states to define their longer-term “envisioned future HIT [health information technology] landscape” and align their policies, processes, and operations to achieve the future they envision.

States need to ensure that the SMHP is aligned with the HIE Cooperative Agreement strategic and operational plans, since this provides opportunities to leverage Medicaid enhanced federal financial participation or match for areas of shared interest. In addition, the SMHP must address and align the state’s Medicaid Management Information System (MMIS) and Medicaid Information Technology Architecture (MITA) assessments and plans. This also creates an

opening for system modifications and enhancements that advance state HIE and EHR program capabilities.

State Medicaid agencies can use this as a chance to focus on how the HITECH Act can help transform publicly financed health care delivery and reshape the future health care and technology landscapes. State Medicaid agencies that used Medicaid Transformation Grants to begin building HIT/HIE strategic plans and “EHR-lite” will need to realign these plans to focus on certified EHRs and sustainable HIE infrastructures.

Additionally, states can use the HITECH Act as an opportunity to align their MMIS and MITA plans with the HITECH goals and programs. Using HITECH incentives for eligible Medicaid providers and hospitals to adopt and meaningfully use electronic health records can allow state Medicaid agencies to refocus their strategic health information technology initiatives toward development of HIE infrastructure, including critical public health related IT systems, using clinical quality measures to drive quality improvements.

IV. Sustainable HIOs State Strategies

Successfully operating health information organizations (HIOs) have pursued a number of different strategies in achieving sustainability. This section addresses the chief challenges for HIO sustainability; HIO sustainability strategies; emerging options through the Nationwide Health Information Network; and private sector funding. We have included case studies of sustainable HIOs and HIE strategies drawn from interviews with successful HIOs across the country. Organizations have used differing approaches to finance start-up, implementation, and ongoing operations. All are committed to delivering value to their customers and transforming health and health care.

Chief Challenges in Achieving HIE Sustainability

The goal of achieving a financially sustainable HIE infrastructure is not achieved with implementation. State-level HIOs must address the ongoing challenges of sustaining the infrastructure for interoperability. Multiple state and federal funding streams are currently used to fund the HIE infrastructure but many are temporary in nature. States will be able to take advantage of government-funded options today but should not count on their continuing availability in the future.

Although funding from HITECH will facilitate electronic exchange of health information, it does not establish a solution for its long-term financial sustainability. The majority of HITECH funding goes to incentives for EHR use and will be focused on EHR adoption in the short term. State officials will need to focus more effort on incentives for exchanging data from electronic health records to achieve cost and efficiency benefits from an electronic health care environment. State leaders will also need to establish dedicated revenue sources for long-term HIE operations at least within state programs, and they may need to assist with broader statewide functionality.

Additionally, most of the federal grants are for individual programs, and they frequently promote the development of siloed information technology systems that are not interoperable between and within agency programs. Most of the federal and state funding streams for HIE are start-up

programs, and states are left on their own to develop sustainable business models. Generally, the business models have been federal government focused, state government focused, and private sector focused. Each model is unique and entails different financial considerations.

The most critical challenge to achieving a financially sustainable health information organization remains the lack of financial incentives for health information exchange. That certain entities benefit from the HIO, while other entities bear the costs, presents a quandary.⁷ The majority of the benefits from implementation of EHRs and HIE will come through improvements in care and better health outcomes. State-level HIOs must deliver value to their customers by reducing costs or creating revenue generation opportunities.

It is important for state-level officials to work with the health care industry to develop a sustainable business model that does not rely on state or government funding. Developing an inclusive structure, with stakeholder participation, will result in financing mechanisms that ensure the financial sustainability of HIE.

HIE Sustainability Strategies

At the heart of the sustainability question is an issue of value. This question of value is even more important because “the misalignment of financial incentives in the U.S. health care system—namely, provider payment systems based on volume and service intensity rather than quality or value—can undermine many of the performance improvement goals.”⁸ The chief challenge for HIOs is how to create a financially sustainable model based on value rather than volume of exchange.

Few would question that the health sector could benefit from the innovation and quality improvement that other sectors have experienced through the use of technology. Yet the most important information in a person’s life, their vital clinical health information, is written on paper, locked in chart rooms, and secured in siloed physicians’ offices around the country. Many argue that even with these “precautions” clinical information is not secure, and it is clearly not accessible or useful.

New Mexico’s Health Information Exchange

The New Mexico Health Information Exchange (NMHIE) began operations in 2004, as an AHRQ-funded early HIE adopter state and the recipient of a Medicaid Transformation Grant to support e-prescribing. For the first four years, the AHRQ grant covered about 50 percent of the exchange’s operating costs. Private cash and in-kind contributions, chiefly from hospitals, covered about 35 percent, and state appropriations covered the remaining 15 percent. Since 2008, federal grants have made up a majority of operating revenues—a Department of Health and Human Services grant to connect with the National Health Information Network and an HIE Cooperative Agreement grant.

New Mexico is developing longer-term sources of funding to support its HIE. New Mexico’s public health agency is now paying for exchange of reportable conditions from labs and emergency departments, and the Social Security Administration is paying for exchange of medical records for disability determinations. NMHIE is seeking to develop all-payer, per-member contributions for private financing and is working to address the following obstacles to such a model:

- The difficulty of gaining the acceptance of national insurers because of the HIE’s relatively small size;
- The absence of Medicare participation;
- The difficulty of obtaining Medicaid participation in the current state fiscal crisis; and
- Uncertainty regarding the status of insurer contributions under state and federal medical loss ratio regulation.

Minnesota HIE

The Minnesota HIE (MN HIE), created by legislation in 2004 as a not-for-profit, public-private partnership, has established a statewide, secure electronic network to share clinical and administrative data among health care providers in Minnesota and bordering states. Its purpose is to “improve the health of all Minnesotans through more informed decision-making by the provider and patient at the point of care.” Today, 4.2 million of 5 million Minnesotans and more than 325,000 Medicare members are included in MN HIE’s secure patient directory. Individuals provide consent at each visit and can opt out of sharing any clinical information. The HIE provides secure medical information for enrollees in state health care programs, including Minnesota Care, Medical Assistance, and General Assistance Medical Care.

MN HIE lets health care providers obtain clinical information from multiple data sources, including laboratory results, history data on immunization and medication, e-prescribing, and medical record information. Providers subscribe, receive a secure login, and can obtain access through electronic network and record locator services (RLS) to patient history from disparate sources through the web. Providers pay an annual fee to subscribe, based on total patient volume, amounting to about 10 cents to 12 cents per patient per month. MN HIE has reached a significant minority of the state’s physicians, but it is still competing with HIOs established by provider systems.

Although the technical and functional services provided parallel those of many successful state-level HIOs, the partnership of public and private organizations that coalesced to form MH HIE, and that continues to support its growth, is unique. Health plans, integrated health networks, and health care providers provided initial financial support for HIE start-up and infrastructure and continue to sponsor it.

Partly because of their early involvement and sense of ownership, the founding partners have committed to four more years of funding. This private sector, health insurer financing model may be hard to replicate in other states. Minnesota law limits the state’s insurance market to not-for-profit entities, and most insurer-partners were firms that were founded or have headquarters in Minnesota. HIOs in other states may encounter obstacles to insurer participation, as most multistate insurance companies are required to obtain approval from their national headquarters for significant state-level expenditures. That may create competition among state HIOs for insurer support. Other states may thus want to pursue this approach early in their HIE development and may want to consider multistate approaches with major plans. Involving insurers and other key constituents in start-up and governance helped MN HIE create a sense of participation and partnership in support of its efforts.

States confront several challenges: First, What group of stakeholders will produce sufficient input and commitment to support HIO development, coverage, and sustainability in the state? Second, How can states determine what HIE capabilities can be of greatest value to their citizens, since there are likely to be competing interests and needs? Third, How can they create and sustain a shared commitment to a set of stages that will enable them to use available grant resources most effectively and efficiently to support long term sustainability?

At a minimum, a public process to achieve a shared understanding of current public and private HIE capabilities around the state is required. Leadership is also needed to develop a collective definition of and commitment to a shared vision of improved health outcomes, care quality, and population health supported by electronic health information exchange and meaningful use of electronic health records.

Then, to close the gap between the current reality and the envisioned future, the state sponsor and SDE require the skills to prioritize and sequence key gaps and the political will to move plans from paper to reality.

To address the challenges at the state level requires a variety of knowledge, skills, and capabilities, as well as time and resources. Because of budget crises and health care reform timelines, many states are scrambling to retain staff, or to identify staff to manage ongoing operations, much less to take on sponsorship and execution responsibilities. Some states have selected a public-private partnership model to help broker resources to

address these needs. These partnerships hold real promise to bring collaboration and innovation, using the best skills from both sectors. However, a public-private partnership is not likely to be successful unless both partners are at the table in a public, open, and transparent process.

As with many state decisions, few decisions involving the HIE Cooperative Agreement program will be successful if they are based on a plan developed by a few to cover many or a one-size-fits-all solution. An effective planning process, which includes public input and participation, may be challenging but is valuable. Achieving consensus on the current and the desired state health information exchange infrastructure is necessary to gather the political and collective will to reach agreement on HIE gaps and solutions. States will need a participatory process but will not be able to linger long in broad strategy discussions without moving to create and implement a plan to produce sustainable value before the end of the HIE Cooperative Agreement grant period.

In addition to addressing the grant requirements, states must begin early to engage the private sector payer and care delivery community, as well as the business community, to develop a shared understanding of the impact of health care costs and the lack of meaningful, standardized quality measures on the state, the business community, and taxpayers.

Mature or fully functional HIOs can help contain health care costs and make quality information more transparent and understandable. HIOs provide the critical information that is missing to help citizens and business leaders become informed consumers and value purchasers. From the Business Roundtable to major health plans operating in, or interested in entering, the state, there is a growing interest in a service that can help translate data into information that enables customers, businesses, and payers to understand the nexus of cost and quality in the health care system.

Successful HIOs have learned to discern their customers' needs and tailor their message to address them. Communicating the HIE value proposition to a hospital will be different than doing so for a small physician practice. However, detailing how HIE improves the financial bottom line of each is critical to getting their attention and helping them see how the service may be valuable to them. States can help HIOs be clear about how to create value for their customers and show business case results. Doing that increases the

Utah Health Information Network

The Utah Health Information network (UHIN), a not-for-profit founded in 1993, seeks to improve the quality of health care through an electronic data exchange network. Having exchanged administrative and claims data for many years, UHIN recently expanded to exchange clinical information with hospitals, ambulatory surgery centers, national laboratories, and about 90 percent of Utah medical providers. Funding is obtained through a combined subscription approach: Providers pay membership fees that amount to about \$600 per year for physicians and are larger for hospitals, based on patient volume. Payers are charged per member per month fees.

Fees are set by UHIN's board, whose members represent providers and payers. Federal grants continue to be the primary source of HIE funding. Like other early adopter states, Utah received a \$5 million grant from AHRQ to develop HIE, representing 70 percent of UHIN's total spending thus far. Utah's HIO received a \$1 million grant from the state in 2008 and was awarded \$5.8 million for the ONC HIE Cooperative Agreement program.

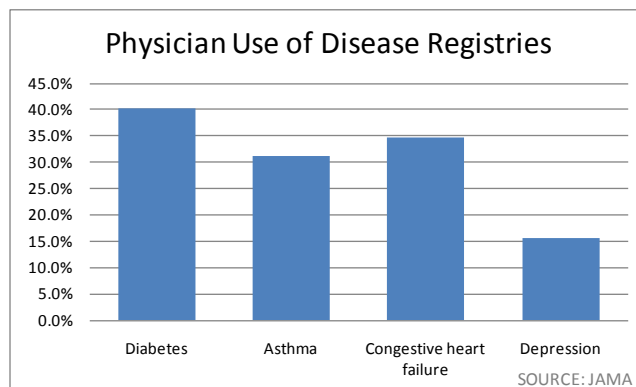
UHIN estimates its annual operating costs at \$4 million. The network is now focused on making the case for private sector funding by improving quality of care and cost effectiveness through administrative simplification for staff, payers, and hospitals. State officials have asked for a business model within six months. Through data analysis, prescription reconciliation, and reduced inappropriate hospital admissions, UHIN intends to build the case for its value and cost efficiency for providers and payers.

likelihood of moving stakeholders from passive supporters to willing payers for exchange capabilities that enable them to focus on their core mission in an effective and efficient manner.

Additionally, because health care is perceived as a local need, HIE is frequently perceived as a local service, even though technical exchange services can be performed from anywhere. Some states are focusing on supporting local exchanges and have elected to distribute ONC grant funds primarily to regional and local HIOs. This approach builds on or leverages existing local HIE infrastructure progress. The challenge in this approach is ensuring standards-based exchange and a consistent trust framework statewide.

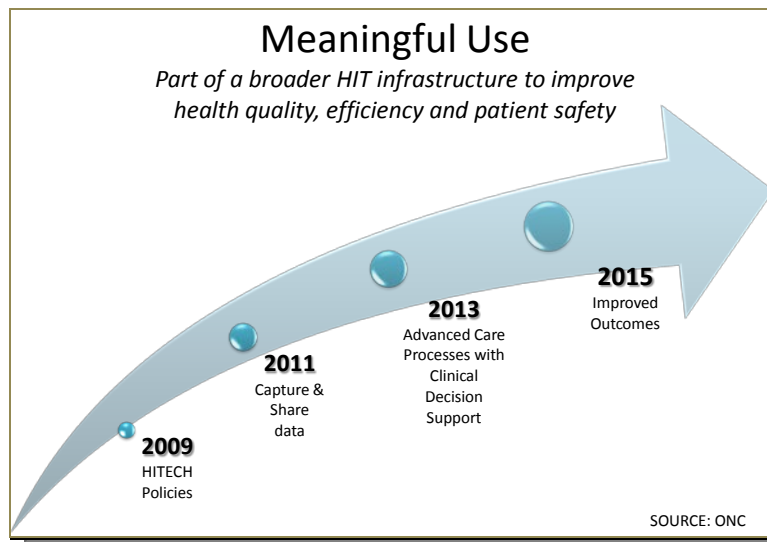
Moreover, to ensure access to health information exchange for all areas of the state, states will have to consider differing approaches for urban and rural areas. For example, it may be more difficult for rural or low-income areas to obtain private capital for start-up or ongoing HIE activities.

Figure 2. Physician Use of Disease Registries



The start-up experiences of health information organizations interviewed for this paper show that it is important for new HIOs to work with state disease and immunization registries and databases to provide access to their valuable information for providers who are early adopters of the new HIE services. This is important for at least two reasons. First, as all of the interviewees attested, it takes time to recruit customers for new HIOs. It is a process of building and gaining trust. However, physicians who are early adopters of HIE are likely to use shared information, to see it as valuable, and to communicate its value to others if clinical information is readily available through the exchange.

Figure 3. Meaningful Use Stages



Second, registries and databases often are a rich source of clinical information that is both useful and usable. More than 130 million Americans live with chronic diseases, and “medical care costs of people with chronic diseases account for more than 75% of the nation’s \$2.3 trillion medical care costs.”⁹ Disease registries provide a collection of secondary data related to patients with a specific diagnosis, condition, or procedure. The same is true for immunization registries and syndromic databases. As depicted in Figure 2, physicians surveyed 2003 reported active and regular use of registries as a part of their care management strategies in treating the most prevalent high-cost chronic care conditions.¹⁰

In this way, the HIO can use interfaces with existing registries as an early means to make valuable and usable information available through the exchange. Information from immunization registries or claims histories may also be available as a starting point. Once information is available to members of the HIO, the job of bringing new customers into the network may become easier.

Finally, states will face important decisions regarding the sequence in which exchange capabilities or services are developed. A critical component of decisions on sequencing is how to align services with customer needs. Eligible professionals and hospitals must demonstrate meaningful use of certified electronic health records technology as part of the EHR incentive payment programs. Meaningful use of EHRs, per the HITECH Act, must include using EHRs:

- In a meaningful manner, such as e-prescribing;
- For electronic exchange of health information to improve quality of health care, such as care coordination; and
- To submit clinical quality and other measures.

States need to ensure that HIE plans and development activities focus on supporting these priority exchange transactions because they are necessary to help providers meet the “meaningful use” criteria. As illustrated in Figure 3, the meaningful use requirement is staged over the next

five years. Stage 1 was defined in the CMS Medicare and Medicaid EHR incentive program final rule and sets the baseline for electronic data capture and information sharing in 2011 and 2012. Stage 2 will focus on advanced care practices and clinical decision support. Stage 3 will focus on using electronic clinical information exchange to improve health outcomes and care delivery.

Stage 1 meaningful use requires health information exchange in laboratory results, e-prescribing, clinical summary exchange, public health exchange, and quality measurement and reporting.

To support the electronic exchange of standardized clinical information and clinical quality

HEALTHBRIDGE

Since 1997, HealthBridge, a nonprofit health information exchange, has provided secure, real-time clinical information exchange for health providers across southwestern Ohio, northern Kentucky, and southern Indiana. Since its first five years, HealthBridge has had a cash-positive, sustainable business with a 5 percent to 8 percent annual return. Its business model is primarily supported by customer service fees rather than government grants. Today, 97 percent of the organization's revenue is generated from fees.

HealthBridge began working with hospitals, health systems, and large laboratories to exchange laboratory results before reaching out to physicians' offices. It created sufficient exchange volume to support operations and build a business case for the economic and clinical benefits of HIE.

HealthBridge learned the value of interacting directly with varying customer groups and the need to tailor its message to allow each customer to understand the value of HIE *from their perspective*. Rather than try to "sell" the overall benefits of HIE, HealthBridge tailors each business case to each customer's unique needs, costs, and benefits. This approach also helps HealthBridge build the trust agreements that are a foundation of successful HIOs. The customer perspective drives the organization's recruitment, relationship management, and retention.

While HealthBridge's customer strategy is local, its technology approach is not. It is standards based, enabling the organization to exchange clinical information in real time across multiple states, with 24 local hospitals and more than 5,000 physicians and other professionals at hundreds of sites; with 17 local health departments; and with labs and diagnostic centers. Because HIE start-up is particularly capital intensive, HealthBridge has developed a "franchise model" to help support other developing HIEs through technological infrastructure and consulting services.

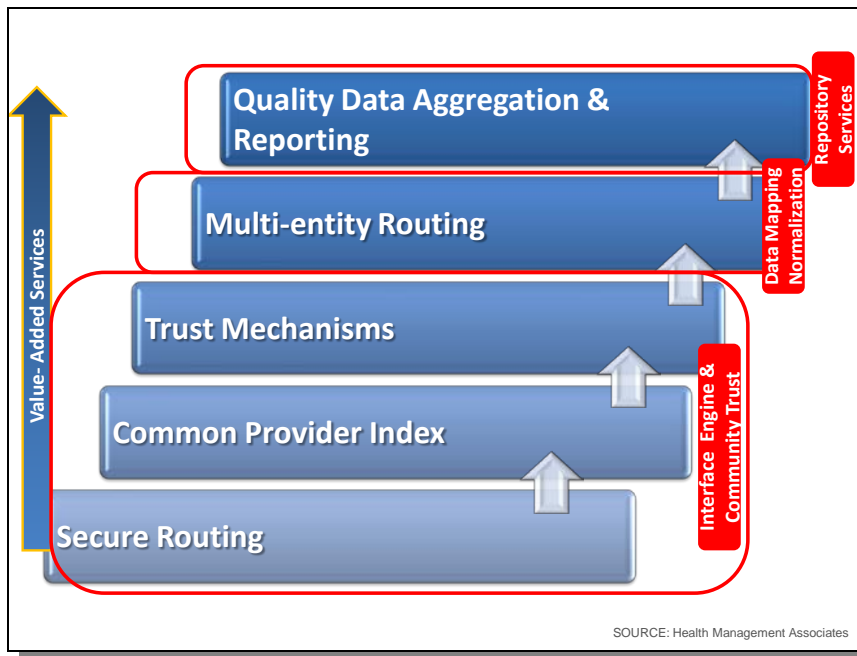
HealthBridge is a Beacon Community grant recipient and works as part of a larger community initiative to demonstrate how quality-driven, technology-supported community collaborations can bring real change to health systems. The project focuses on enabling physician practices to provide optimal care for children with asthma and adults with diabetes, on reducing preventable visits to emergency rooms and re-hospitalizations, and on improving information flow and care coordination when patients move from one care setting to another.

measures states must decide how they will develop HIE service capabilities, such as provider directories, in the most effectiveness manner. Currently, the ONC Policy Information Exchange workgroup is considering what HIE transactions or services are universally and affordably available and where there are gaps, so as to make recommendations on where development and services can be shared across a federated HIE network. States also must coordinate with state Medicaid and public health agencies. State Medicaid agencies have access to 90 percent federal matching for their efforts in promoting electronic health records adoption and health information exchange for their Medicaid EHR incentive programs. They are very interested in partnering with the HIE grantees, public health agencies, and others to ensure that adequate state HIE infrastructure is present.

State plans for HIE development should make a priority of fostering provider HIE capabilities to help providers meet the "meaningful use" criteria. Further states need to recognize that these services are capital intensive and not easily designed, developed, and constructed without significant technical and

health care knowledge. These are among the reasons that ONC has encouraged states to leverage existing HIE resources and align current state HIT assets and plans. As Figure 4 illustrates, HIE services or components are developed or sequenced over time. Although customers frequently want high-value (top layer) services first, those services cannot be implemented without the platform services first being fully functional. From the figure depicts, a range of approaches and decisions are part of developing HIE.

Figure 4. HIE Value-Adding Component Layers



To help with this development phase, some states have focused on sequencing the release of clinical data elements through the HIOs. However, as depicted in Figure 4, a health information exchange must have at least the capabilities for secure routing; common provider and patient indexing; trust mechanisms, which include a negotiated and signed data use and reciprocal sharing agreement(DURSA); and multi-routing to support two of the three criteria for “meaningful use.” Transmission of clinical quality measures (CQM) may also require that HIOs have data aggregation and reporting capabilities, if providers engage with them to fulfill that requirement.

Although there is not a single path for HIE development, most HIOs interviewed indicated that their start-up phase lasted anywhere from two to five years. Developing this entire stack of services is clearly a multiyear endeavor that may extend beyond the stages for developing “meaningful use,” as well as the HIE Cooperative Agreement grant, if states do not develop and adhere to a plan that leverages existing resources and capabilities.

A typical sequencing pathway might include the following:

- **Start-up – Interface Engine and Community Trust.** As previously discussed, early phases of HIE development focus both on how the exchange will take place, or the technical process, and on how to build trust with the broader community of providers, hospitals, patients, and constituents. While the answers to the technical questions may vary, basic services such as security, enterprise master person or provider indexing (EMPI) or directories, record locating services (RLS), and routing or exchanging fundamental clinical information can be performed by entities at the local, regional, state, or even the national level.

To clarify, an EMPI “is a software application that identifies persons in an integrated delivery network (IDN) across disparate registration, scheduling, financial, and clinical systems.”¹¹ EMPI use has grown since the 1990s as a result of “a more customer-centric focus in healthcare operations, consolidation of healthcare organizations, implementation of electronic health records, and a need to define the population being served.” Today, the term “person index” is used more frequently than “patient index.”

A record locating service directs authorized users of a HIE network to the location of a person’s health information across the network nodes, that is, the clinical data sources.¹² This service enables users to access and integrate individual health care information from the distributed sources without a national patient identifier or centralized databases. A record locating service makes it possible to have a decentralized health care information network, supported by a small set of critical technical infrastructure components to support interoperability.

The primary question is, How can states make the most effective use of limited resources by leveraging or sharing services, rather than building the services multiple times? One way is to leverage existing technical capabilities within state government. Information systems supporting state Medicaid agencies are at varying levels of maturity. States are encouraged to begin by exploring capabilities that may be available through Medicaid, such as web services, record locators, and provider or patient directories. The development of the agreement for trust appears to be a local capability that is dependent on direct communications and a tailored business case for each customer group.

- ***Exchange – Basic Patient Clinical Information.*** Basic patient information may include demographics, problem list, current medications and allergies, discharge summaries, test results, and advance directives. Some HIOs began by delivering only this type of information to emergency departments. Others, such as the Delaware Health Information Network, delivered a basic patient profile to all treating providers in their networks.
- ***Exchange - Laboratory Results.*** Exchange of laboratory results is required for stage 1 meaningful use and is of great clinical value. Multiple state HIOs, including those in Delaware and Vermont, have exchanged laboratory results early in the HIE development process.
- ***Exchange - Picture Archiving and Communication Systems (PACS) and Radiology Results.*** As with laboratory results, radiological images have both clinical value and established feasibility of exchange. They have been popular early features of both HIOs and local exchange arrangements between physicians and hospitals.
- ***Mapping and Normalization - Medication Reconciliation and Medication History.*** Medication history is both challenging and potentially expensive to produce accurately. For that reason many HIOs have deferred medication history to subsequent phases. The Minnesota HIE is a notable success story in providing medication histories early in its operations. It initially constructed medication profiles using data from participating payers, including Medicaid, which was a less-expensive alternative to medication data aggregators.
- ***Repository and Reporting - Assessment, Discharge and Transfer Information.*** When patients move between clinical settings, assessment and discharge and transfer information is often fragmented and incomplete, complicating continuity of care. This is a major source of medical

errors, adverse events, redundant tests and treatment, and cost inefficiencies. ONC National Advisory Committees had begun to examine these areas, which account for most of the high-cost care, but many of the committees have refocused on ambulatory care.

This is a missed opportunity to improve care and care coordination while saving on costs. CMS has piloted standardized tools, such as the Continuity Assessment and Record Evaluation (CARE), to develop better information on the acuity of people covered by Medicare and their post-acute service needs. However this effort has slowed, focusing more on payment bundling than on access to clinical information to improve care. Similar efforts, such as the Minimum Data Set (MDS), which is used by providers to gather and report information to CMS regarding individuals in long term care facilities, also provide opportunities for data standardization and reporting.

The Continuity of Care Document (CCD) is the emerging standard for standardizing and reporting clinical data across care and community settings. Using it requires a higher level of data analytics than is often available when HIOs begin operation, but it is critical for realizing the data's true value and supporting long-term stability and sustainability.

Although the list above lays out some key alternatives, it is important to emphasize that the sequencing of clinical data types in HIOs has been tried in a variety of ways. As described in the next section, it is critical to approach all key HIE decisions in a process that engages multiple stakeholders and is mission driven, effective, and, time-limited. The right governance and decision-making processes will support financing strategies by identifying the services that stakeholders need so as to keep them on board when financing is required.

Nationwide Health Information Network—Emerging Options

In addition to the state and local configuration options discussed above, states should consider the emerging initiatives by the Nationwide Health Information Network for their sustainable HIE infrastructure. For some, these options are welcome in widening the range of alternatives for their array of services. Others view these new services as possible infringements on the value proposition of their emerging state HIE infrastructure.

The Nationwide Health Information Network (NHIN) is a set of standards, services, and policies that enable secure health information exchange over the Internet.¹³ It is a foundation for the secure exchange across diverse entities, within communities and across the country, to achieve the goals of the HITECH Act. The NHIN is making it possible for health information to follow the consumer to assist with clinical decision making and support appropriate use of the information to improve health. It began as a number of demonstration pilots across the country to promote the secure exchange of clinical information and has grown exponentially, addressing a range of customer interoperability needs.

The accompanying box outlines three areas of NHIN growth that states may want to explore as they are developing their HIE infrastructure. First, CONNECT has been referred to as the “Gateway to the NHIN.” It is a set of services and standards that comprise the “on-ramp”—that is, the means of direct access—to the NHIN for local or national exchange operations. Second, the NHIN Exchange, developed from the first pilot, provides input and direction on NHIN governance. Third, NHIN Direct provides a “lightweight” set of standards and services that exchanges or providers can use. It is intended to develop means to help providers meet the requirements for “meaningful use.”

CONNECT ¹⁴	NHIN Exchange ¹⁵	NHIN Direct ¹⁶
<ul style="list-style-type: none"> • An open source software solution based on NHIN standards and governance to enable HIE locally and nationally. • Initially developed by federal agencies to support their health missions and now used by HIEs to share data using nationally recognized interoperability standards. 	<ul style="list-style-type: none"> • A group of federal agencies; local, regional, and state-level HIOs; and integrated delivery networks (formerly the NHIN Cooperative) that are: <ul style="list-style-type: none"> ○ demonstrating live HIE over the NHIN and ○ assisting in the development of NHIN standards, services and policies. • MedVirginia to SSA for Disability Determination 	<ul style="list-style-type: none"> • A project to use a set of standards and services in a policy framework to enable simple, directed, routed, scalable transport over the Internet. • Used for secure exchange between known participants to support meaningful use. • Develops specifications for a secure, scalable, standards-based way to establish universal health addressing and transport for participants (including providers, laboratories, hospitals, pharmacies, and patients) to send encrypted health information directly to known, trusted recipients over the Internet.

Whether these options are advantageous for a particular state depends on the state’s current HIE infrastructure its plans for future development.

Once HIOs sort through the plethora of strategic issues, they can begin to assess whether state funding is an option, whether it is a sustainable source of revenue in the short and the long term, and if so, how to access it.

Private Sector Funding for HIE

Finally, the long-term sustainability of HIOs depends on their ability to generate private sector fees. Although federal and state funds have been the primary sources of funding for HIE infrastructure start-up and development activities, it does not appear that federal funding will be extended beyond the grant cycle.

In our interviews leading health information organizations identified three primary fee sources that are described in the matrix below.

<p>Delaware Health Information Network</p> <p>Initiated in 1997, the Delaware Health Information Network (DHIN) now links all of the state’s hospitals and some of its physicians. Through DHIN’s early development, clinical priorities were based on what would help patients and be feasible in the short term.</p> <p>DHIN has been funded to this point with a mix of one-third federal, one-third state, and one-third private funding. State funding has come out of the state’s capital budget, and that appropriation required that it be privately matched dollar for dollar. Initial private funding came from three hospitals (Christiana Care Health System, Bayhealth Health System, and Beebe Medical Center) and Labcorp, as well as Blue Cross Blue Shield of Delaware. The funding formula is based on transaction volumes, so it effectively works as a per transaction fee.</p> <p>The longer-term business strategy is still being determined. It will likely involve a multipayer structure, including Medicaid, and ongoing transaction fees for hospitals, labs, and others who use the system to send data to physicians.</p>

Revenue Mechanism	Description
Transaction Fee	Data providers or data users pay pre-negotiated fees to the HIE based on transaction volume. A nominal, one-time start-up fee may be charged.
Subscription Fee	Data providers or users may pay fees to the HIE on a subscription basis in the form of annual membership, monthly subscription, or a set of fees for services.
Transaction or Subscription Fee with Value-Added Service Fee or Gain Sharing	Data providers or data users pay a transaction fee based on volume or a subscription fee. There are additional fees for value-added services, such as report cards and dashboard analytics. This option may be more complex to administer, and providers may see it as a disincentive to adoption, depending on the fee levels and the value of additional services.
Insurance / Medical Claim Assessment Fee¹⁷	Some states have legislative authority to collect a fee that is used to fund grants for HIT/HIE initiatives. Such a fund can be used for direct grants or to match federal funds available through ONC and CMS for statewide development of the HIE infrastructure. This option will require legislative authorization.

States are pursuing a range of possibilities for private sector funding from payers, providers, and health plans and insurers to support HIE operations.

- **Payers.** Several states are negotiating with private health plans to fund HIE services. New Mexico, California, Maine, Minnesota, and Rhode Island are all in the process of seeking or receiving funding from health care payers to support HIE activities.
- **Providers.** Many sustainable HIOs assess transaction or subscription fees on physicians and hospitals for using HIE services. Some have developed tiered fee structures that assess an additional fee for “value-added” services. States using model include Delaware and Minnesota.
- **Businesses and foundations.** Several states have received start-up funds for HIE initiatives from businesses or philanthropies. California, for example, has foundations that have active public-oriented missions.

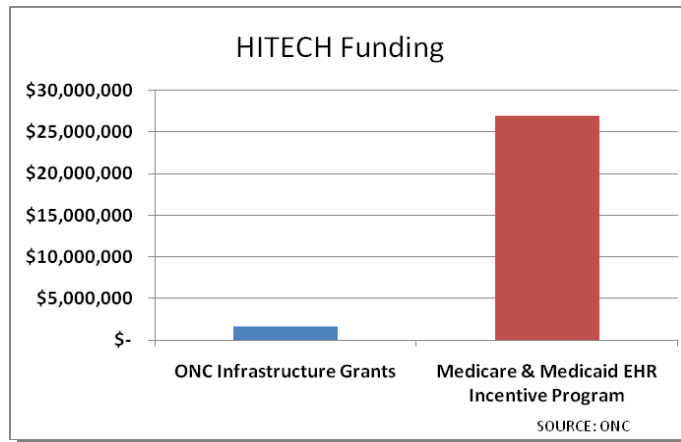
The primary distinction between public and private financing is that private sector investors expect a return on investment. Therefore, the pressure to produce value in the form of measurable outcomes is very real in the marketplace. Many investors are interested in short term, measurable results.¹⁸

In working with private sector funders, it is essential to clarify what results can be shown by when and to look for investors who can appreciate that the pay-off from health information exchange services may be of a long-term nature.

V. State HIE Financing

This section provides an overview of funding resources for state health information organizations. Although we cover funding available through the HITECH Act, Medicaid, and other state and federal sources, the importance of developing relationships and services that attract private sector investment and payment must be stressed.

Figure 5. HITECH Funding Administered by ONC and CMS



Some states have been planning for health information exchange for many years, using funds from the Agency for Healthcare Research and Quality (AHRQ) or Medicaid transformation grants. Others are beginning their HIE planning efforts as a result of funding opportunities available through the HITECH Act. It is important to understand the sources and amounts of funding available and to think strategically about how to leverage these resources for long-term sustainability. Even though the infrastructure grants have already been awarded, it is important that states have a clear perspective on how to align and leverage HITECH and other resources. Figure 5 illustrates the levels of funding available through the ONC infrastructure grants and through the CMS Medicare and Medicaid EHR incentive program.

As detailed below, the HIE and infrastructure grants are intended to seed development and linkage of HIE capabilities. ONC is working with states and SDEs to build on and link existing HIE capabilities and to help states make smart decisions concerning HIE capabilities that can be shared and are reusable. The electronic health records incentive program is meant to encourage eligible providers to adopt and meaningfully use certified EHR technologies. The program will provide matching funds to state Medicaid agencies to accelerate adoption of EHRs and the interoperable exchange of clinical information. States need to ensure alignment between these programs to get the maximum benefit of federal funding.

HIE Revenue Sources

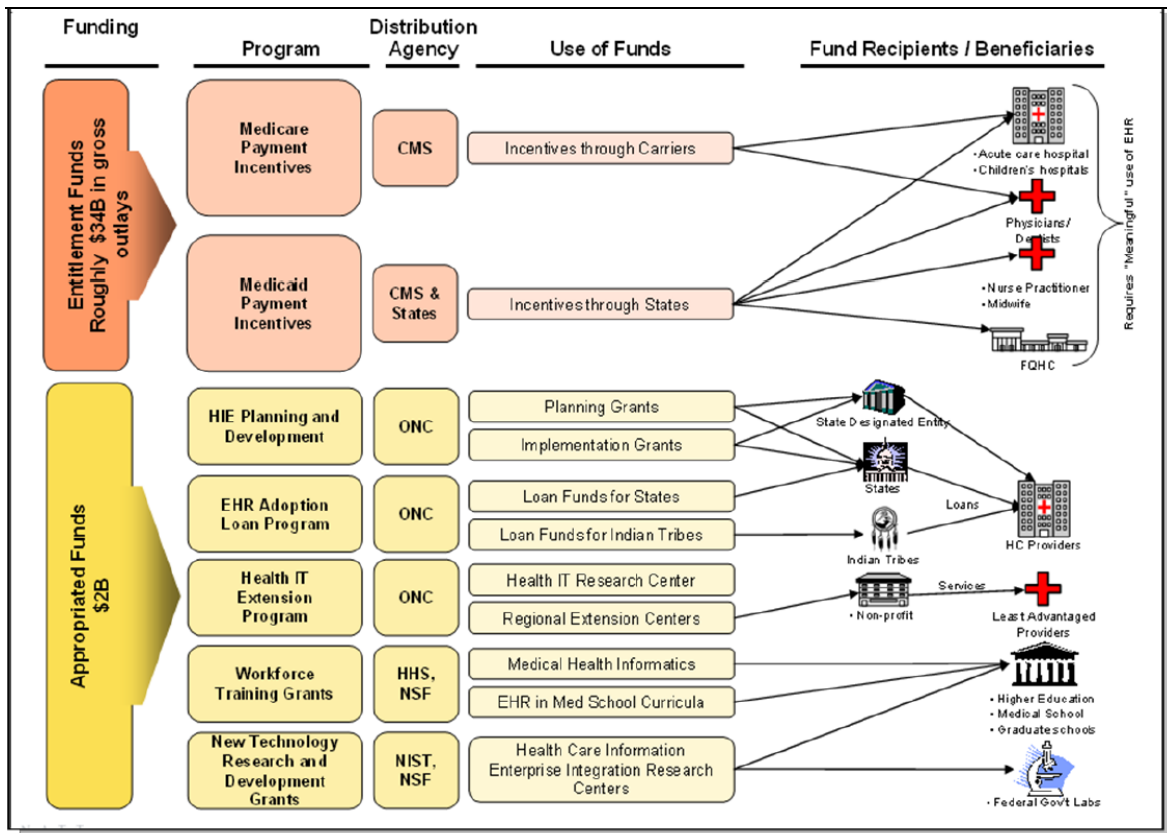
As previously described, state governments have a critical role in planning and designing sustainable business models for HIE that are capable of achieving long-term financing of both infrastructure and operations. From our case studies, it is clear that this is a complex task for states, often extending over several years. As a New Mexico HIE executive put it, “HIE financing is a journey, not an outcome.”

Therefore, it is important for senior state officials both to manage existing financial resources and to develop funding strategies, including private options, to ensure financial success in the health information technology environment.

Federal Funding Sources

The HITECH Act provides a range of funding opportunities for the advancement of health information technology, health information exchange, and electronic health records use to improve health outcomes, care delivery, and population health. Figure 6 illustrates the HITECH funding streams.¹⁹ Additional information is provided in appendix B.

Figure 6. HITECH Funding Streams



SOURCE: Advancing Effective State-level Approaches to Interoperability in the New Federal Context, Realizing State-level HIE Value and Sustainability, May 15, 2009

HITECH Title XIII – Health Information Technology

The health information technology title of the HITECH Act provides funding for five important HIE infrastructure programs:

1. State HIE Cooperative Agreement Program (\$564 million). This program provides funds for states or SDEs to create statewide HIE capabilities for the exchange of private, secure, and standardized clinical health information among providers and hospitals, payers, and individual patients. The HIE program has a four-year performance period (February 2010–February 2014). Recipients are required to match a portion of grant awards beginning in the second year of the award, 2011.

2. State HIT Regional Extension Program (\$643 million). This program provides a four-year grant (March 2010–March 2014) to establish HIT regional extension centers (RECs) to

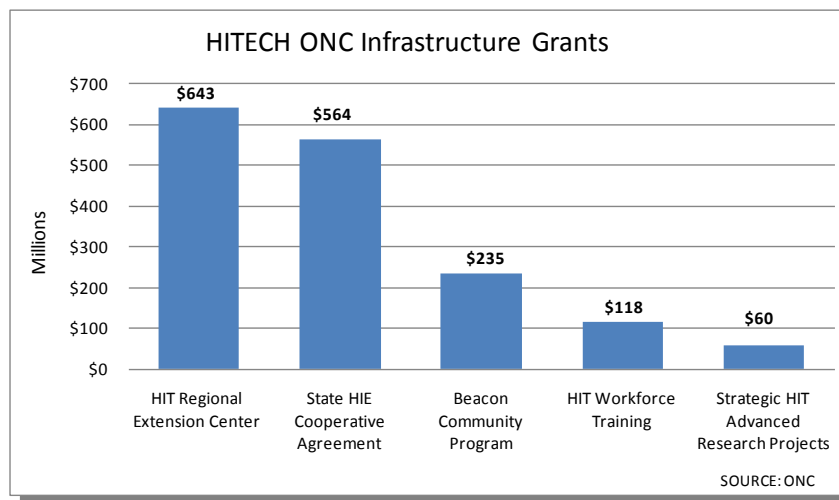
provide technical assistance, guidance, and information on best practices to support and accelerate health care providers' adoption of electronic health records. The grants are for states or other entities to focus on primary care physicians, particularly those in small practices and those serving safety net populations through participating nonprofit organizations or critical access hospitals, to help them achieve meaningful use of EHRs and make possible nationwide health information exchange.

3. Beacon Community (\$235 million). This is a five-year grant program (April 2010–April 2015) to allow early adopter communities to strengthen their HIT/HIE infrastructure and exchange capabilities and to demonstrate the vision of meaningful use.

4. HIT Workforce (\$118 million). This initiative includes a range of grants for colleges and universities to educate an HIT–literate workforce and develop testing curriculums.

5. Strategic HIT Advanced Research Projects (\$60 million). These are grants for development of a better understanding of the use of EHRs and other health IT to improve quality of care.

Figure 7. HITECH ONC Infrastructure Grants



Grants for these programs have been awarded, and work is under way on the planning and start-up of health information exchange infrastructure in states across the country. It is important to note that all indications are that further funding will not be forthcoming through ONC after these infrastructure grants end. It is essential that state HIE programs begin now to look beyond federal funding for resources to continue in a fiscally sustainable manner.

HITECH Title IV – Medicare and Medicaid EHR Incentive Program

The Medicare electronic health records incentive program is administered by Centers for Medicare and Medicaid Services (CMS). The Medicaid incentive program is administered by CMS and state Medicaid agencies. Some acute care hospitals are the only provider group eligible to receive incentives under both programs, whose purpose is to encourage providers to adopt, and meaningfully use, certified EHR technology to improve health, care quality, and cost efficiency.

State Medicaid agencies are developing their HIT plans (SMHPs), which must be approved by CMS before program initiation in 2011. These bodies must submit their implementation advance planning document (I-APD) for CMS approval to obtain access to enhanced federal funds matching—90 percent federal matching is available for activities to support EHR adoption and HIE, as well as for expenses related to the planning, administration, and oversight of electronic health records incentive payments to providers.

In addition, CMS has communicated that federal funding at the 90 percent match rate is available for state activities to “encourage meaningful use of EHRs,” that is, the use of certified EHRs in areas such as e-prescribing, electronic exchange of health information to improve the quality of care, and to submit clinical quality and other measures:

CMS also strongly encourages States to consider the activities they plan to undertake to administer their EHR Incentive Program and to identify any that may overlap with other Federally-funded activities, such as provider outreach, development of a Master Patient Index, external inquiry management, etc. Where possible, these activities should be accomplished collaboratively, in which case costs are allocated across partners.²⁰

Because “meaningful use” requires interoperable HIE, to exchange information and submit clinical quality measures, the state Medicaid HIT plans provide a key opportunity to align programs and leverage resources. Previously, under the Medicaid Transformation Grant program, CMS approved grants for HIE-related initiatives. States are encouraged to convene strategic public and private sector partners to assess their HIT/HIE landscape and develop aligned HIE and SMHP plans that create a coherent, integrated, statewide strategy and framework for HIE and EHR adoption. ONC and CMS are jointly reviewing HIE plans and SMHPs to ensure alignment and avoid duplication of effort.

In the August 2010 State Medicaid Letter, CMS states that:

“in order to qualify for the 90 percent FFP administrative match, a State must, at a minimum, demonstrate to the satisfaction of the Secretary compliance with three requirements:

- *Administration* of Medicaid incentive payments to Medicaid EPs and eligible hospitals;
- *Oversight* of the Medicaid EHR Incentive Program, including routine tracking of meaningful use attestations and reporting mechanisms; and
- Pursuit of initiatives that *encourage the adoption of certified EHR technology* for the promotion of health care quality *and the electronic exchange of health information*.

The last bulleted item has yet to be defined in detail and practice. It is within this area that states are encouraged to explore innovative ways to encourage EHR adoption that improve health care quality and HIE. CMS states that it will consider approving 90 percent matching

for EHR/HIE promotion initiatives that are supportive and not duplicative of ONC-funded activities or Medicaid Management Information System–funded activities and that:

1. Serve as a *direct* accelerant to the success of the state’s Medicaid EHR Incentive Program, such as: identification and development of tools to connect to HIOs, record locator services (RLS), secure messaging gateways, provider directories, development of privacy and governance policies and procedures, EMPI, system interfaces, including laboratory, immunization registry, public health databases, other HIOs.
2. Are consistent with the ONC long-term vision for HIE, and aligned with activities prioritized by the HIE Cooperative Agreement funding, such as: secure messaging, the electronic reporting of structured laboratory data, and enabling e-prescribing.
3. Will be normalized and integrated into the Medicaid business enterprise, such as technical bridges between Medicaid and HIOs or all-payer clinical/claims data warehouses or technologies to authenticate providers and beneficiaries, such as Master Provider or Patient Indexes.
4. Are targeted projects where the transformation of the MMIS into a clinical- and claims-based engine supports Medicaid’s broader health care reform goals, such as: design, development, and testing of a standard continuity of care record (CCR) or continuity of care document (CCD) using Medicaid claims; or building a portal between the MMIS and a clinical data repository or an immunization registry.
5. Are well-defined, time-limited projects, with specific goals to enable eligible Medicaid providers of the Medicaid EHR Incentive Program to achieve meaningful use of certified EHR technology. (Note: CMS will entertain State plan amendments on payment policies to incentivize providers to report data, such as the medical home per-member/per-month model.)
6. Are developed in accordance with Medicaid Information Technology Architecture (MITA) principles, as required by §495.332.
7. Are distributed equitably across all payers following the fair share principle. Medicaid’s contribution to HIT should be weighted and allocated based on contributions by other payers, and not be the sole or primary source of start-up or operational funding.
8. Are cost-allocated per Office of Management and Budget (OMB) Circular A-87.²¹

States may also consider options for building on Medicaid initiatives tied to “meaningful use” that are eligible for enhanced federal matching. They include:

- Development of an HIE within the Medicaid agency.²² Kentucky has embarked on an effort that is primarily Medicaid funded to build a health information exchange that will include e-prescribing, patient demographics, laboratory and image reports, medication histories, allergy histories, past medical diagnoses, dates of services, hospital stays, and immunizations, among other information. Kentucky currently plans to extend this Medicaid-based HIE statewide, leveraging in part the HIE Cooperative Agreement grant funds.
- Development of a Medicaid-based EMPI and RLS function. Such an EMPI/RLS facility could be leveraged for broader state health information exchange, depending on an

agreement with CMS on financing for costs associated with expanding its use beyond Medicaid.

- Enhanced payment for practices qualifying as Primary Care Medical Homes. There are two potential sources of enhanced Federal Medical Assistance Percentages (FMAP) funding for medical home initiatives, both of which require the use of health information technology. Section 2703 of the Affordable Care Act provides demonstration grant funds for medical homes using EHRs and HIE. Also CMS has encouraged states to explore state plan amendments to allow incentives for care delivery models that use EHRs and/or HIE, such as the “patient centered medical home” or the “accountable care organization.” States may also want to explore other programs to improve health care quality through HIE that may be eligible for enhanced federal matching funds, as outlined in the August 2010 State Medicaid Letter quoted previously.
- Technical assistance with implementation of EHRs. Using a combination of federal and city funding, New York City created an office that has helped thousands of primary care physicians and clinics convert to electronic health records. The office is now beginning to help primary care sites receive National Committee for Quality Assurance NCQA certification as Primary Care Medical Homes. New York State Medicaid has begun to offer enhanced payment for primary care sites that receive NCQA designation.

Additional information about sources of federal funding to support HIE development appears in Appendixes C.

Medicaid Management Information System (MMIS)

Medicaid and CHIP are the largest health care programs that states administer. The Medicaid Management Information System (MMIS) that supports their operation and information exchange is one of the largest health information systems and contracts that states currently manage. States are encouraged to plan and manage their MMIS as a strategic HIT asset on the pathway to interoperability for the state and its citizens. Part of the rationale of the Medicaid Information Technology Architecture (MITA) has been to encourage states to use their MMIS strategically for the Medicaid and CHIP population and leverage it for other state health or human services programs through a charge-back or other mechanism.

Since 1972, CMS has been authorized to provide state Medicaid agencies up to 90 percent federal matching for the assessment design, development, and implementation of a “mechanized claims processing and information retrieval system,” pursuant Title XIX, Section 235, section 1903 (a)(3) of the Social Security Act and defined in regulation at 42 CFR 433.11. Matching funds at a 75 percent are available for operations and 50 percent for maintenance of the MMIS.

The MMIS, as the system became known, comprised six core subsystems: Recipient (or Member); Provider; Reference (or Rules); Claims; Management and Administrative Reporting (MARS); and Surveillance and Utilization Review (SURS). Later subsystems included Third Party Liability, Managed Care, and Data Warehouse or Decision Support System.

Today, the MMIS is the largest, most complex HIT system that states manage. It is the primary technical infrastructure or backbone supporting the state Medicaid agencies and implementation of nearly all Medicaid policies. It is the source of almost all of the data available about the Medicaid program. However, most states' MMIS technical architecture is a dated, legacy systems constructed of subsystems or silos each of which performs a set of tasks that do not integrate well with other silos of data.

The majority of states contract with a fiscal agent to manage their MMIS operations and spend millions procuring and adopting similar core functionalities. In many cases, states are wholly dependent on fiscal agents to make system changes, such as those that may be required to administer the EHR incentive program. For these and other reasons, many states may experience significant difficulty combining a plethora of claim, eligibility, and encounter data with clinical data to guide program decisions and policies.

States have often added data warehouses or decision support systems to their MMIS infrastructure to aggregate and normalize the massive files of paid claims data so that they can be analyzed to improve quality oversight and identify fraud, waste, and abuse. Increasingly, states are exploring ways to make these data available in a secure and confidential manner to eligible providers and consumers, to help "push" information to the point of care. When coordinated with other systems, clinical information can have significant value in advancing providers toward EHR technologies and HIE.

The MMIS is a key strategic asset in the state's overall HIE infrastructure, and states are well advised to take full advantage of it both to modernize its capabilities and to leverage enhanced federal matching to advance the state's health information exchange capabilities.

Medicaid Information Technology Architecture (MITA)

More than a decade ago CMS started a collaborative project with the states to reengineer the MMIS. Medicaid Information Technology Architecture (MITA) was intended to provide a common framework, set of processes, and set of planning guidelines to enable states to develop a more "business-driven architecture" based on the following:

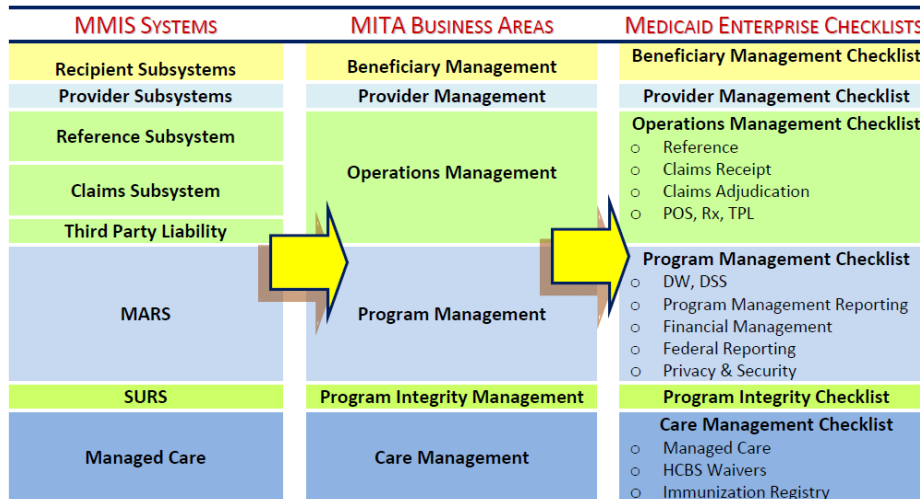
- *Interoperable, modular systems*, to enable Medicaid business processes,
- Flexible, agile architecture capable of rapid change,
- *Accessible, accurate information* to improve health care management and administration,
- *Performance Management* to link and align planning, measurement, and accountability, and
- *Strategic coordination* with partners to improve Medicaid health outcomes.

To receive enhanced federal matching, states must submit for CMS approval a Medicaid Management Information System advance planning document (APD) that is aligned with MITA. States may receive:

- 90 percent matching for MMIS design, development, and implementation activities, which may include HIT/HIE for Medicaid recipients,

- 75 percent matching for the operations of the MMIS, and
- 50 percent matching for the overall administration of the MMIS.

Figure 8. From MMIS to MITA and Enterprise Checklists



SOURCE: MITA Framework 2.0

States should explore means to take advantage of these opportunities to obtain enhanced federal matching to advance their HIE and electronic health records efforts. As was noted in the CMS August 2010 State Medicaid Letter SMD letter, states may submit one HIT Implementation APD that has a section for MMIS and a section for HITECH, in which both funding sources are being requested to implement the Medicaid EHR incentive program.

Patient Protection and Affordable Care Act – HIT Provisions

Many of the demonstration projects and quality of care sections of ACA focus on the importance of HIT, HIE, and EHRs in supporting health care reform. The demonstration projects provide varying levels of time-limited funding to further these efforts, including the following:

- Pay for performance and payment reform. The ACA contains many provisions that tie provider reimbursement to the measurement of health outcomes. In addition to specific pay-for-performance programs, the ACA modified the physician fee schedule by establishing three bodies to develop fundamental payment reform: an Independent Payment Advisory Board for Medicare, a Center for Payment Innovation across Medicare and Medicaid, and a Patient Centered Outcomes Research Institute that can fund research across the health system. The Department of Health and Human Services (HHS) is also directed to adopt new “pay for value” pilot programs. Further, the agencies are authorized to expand the projects’ duration and scope across the Medicare and Medicaid programs. Just as Healthcare Effectiveness Data and Information Set (HEDIS) measurement has driven insurers to improve coding in claims and administrative systems, the growth of “pay for value” through these initiatives is likely both to encourage EHR adoption and to support the HIE value proposition among providers.

- Delivery system reform and bundling. The ACA seeks to use the Medicare and Medicaid programs to support bundling of reimbursements across providers and even more comprehensive risk arrangements, described as “accountable care organizations” (ACOs). All of these initiatives will require providers to have HIE capacity to support coordination of care and tracking of health outcomes.
- Health insurance exchange and interface with Medicaid: The ACA requires state Medicaid agencies to develop the capacity to seamlessly redirect Medicaid applications to the new health insurance exchanges beginning in 2014. It also requires the ONC to lead the development of “interoperable and secure standards and protocols that facilitate enrollment in Federal and State health and human services programs.” Notably, although states have historically lamented the lack of 90/10 match for implementation of Medicaid eligibility systems, as soon as fall 2010 grants will be available to states to help them develop and implement exchange of eligibility information across programs. This may offer opportunities for clinical health information exchange as well, as grants can help to purchase enterprise service, indexing, and record location infrastructure that can serve both eligibility and HIE functions for state programs.

Children’s Health Insurance Program Reauthorization Act of 2009 (CHIPRA)

As part of CHIPRA, Congress emphasized the need to use the transformative power of electronic health records and electronic health information exchange to improve quality and effectiveness of care and access to care for America’s children. Most importantly, CHIPRA stressed the need to develop, refine, and implement clinical quality measures to improve children’s health care outcomes and value. In fact, CHIPRA authorized CMS to award grants to states to demonstrate the impact of multiple quality improvement strategies on children’s health care, including testing new children’s health measures, use of HIT in pediatric health care settings and evaluating the impact of a model children’s EHR format. Although CMS recognized broad authority under CHIPRA before the enactment of HITECH, the competitive grant process allows CMS to give greater emphasis to CHIPRA grant applications that focus on testing and evaluation and on HIT tools other than EHRs, to accelerate knowledge about the potential impact of HIT on pediatric health care. CHIPRA also provides a \$20 million grant program for demonstration projects in up to ten states to test the use of HIT to improve the quality of children’s health care. In February 2010, Colorado, Florida, Maine, Maryland, Massachusetts, North Carolina, Oregon, Pennsylvania, South Carolina, and Utah were awarded grants to test a recommended set of child health quality measures, implement HIT strategies, and plan to test a new pediatric EHR format under CHIP. A total of 18 states, including single- and multi-state projects, are participating in this five-year project. CMS is also permitting other interested states to participate in the CHIPRA learning collaborative.

Four of the clinical quality measures in the Stage 1 “meaningful use” criteria in the Medicare and Medicaid EHR incentive program final rule are intentionally aligned with CHIPRA clinical quality measures (CQMs) initial core set, published in the *Federal Register* in December 2009. States and SDEs will also have an opportunity to align quality improvement initiatives by implementing Optional Express Lane Eligibility for children. While states are undertaking changes in Medicaid eligibility required by ACA and implementing state health insurance exchanges, as required by 2014, they will also have the opportunity to capitalize on the options

within CHIPRA to streamline eligibility and speed organizational learning about the need for integrated health eligibility and enrollment systems. Additionally, MITA member management business processes give state Medicaid agencies the chance to plan and design member eligibility, enrollment, and related business processes with federal enhanced FMAP support.²³

For additional information on ACA and CHIPRA funding for HIT/HIE, please see appendixes C.

State Sources of HIE Funding

State governments have made significant investments in HIE in recent years through state operating budgets, capital budgets, special purpose funds, and special assessments. Future investments from state budgets, however, are unlikely given the state budget situation.

- Operating budgets. States have used legislative appropriations to support HIE development, but funding discretionary programs through legislative appropriations will be more difficult during the current economic downturn. States have also been permitted to claim in-kind match in the cooperative agreement program. Although that has helped to relieve financial pressure in the short run, longer-term sustainability cannot depend on these types of in-kind contributions.
- Capital budgets. States are using public-private partnerships to support their capital investment needs and have also raised capital by issuing bonds. Rhode Island issued a \$20 million revenue bond to create a statewide HIE capacity that is contingent on proportional contributions from stakeholders, including state government and the private health plans.²⁴
- Special purpose funds. States have received funds through special legislative appropriations that are appropriated for specific purposes and generally accompanied by enabling legislation. Examples of these special purpose funds include tobacco settlement funds (Connecticut) and 1115 Medicaid waivers that allow the state to use matching funds for purposes not otherwise allowed (New York).
- Special assessments. In 2008, Vermont established a dedicated revenue source for health information technology based on an assessment model. Each health insurer and third-party administrator in Vermont pays either a quarterly fee of 0.199 percent of all health care claims paid for members in a previous quarter, or a fee based on the insurer's proportion of overall claims in the past year. Other states are exploring the use of assessments to raise capital for state-level HIE.²⁵

VI. Key Lessons from the Leading HIOs and States

Based on the literature review and case studies described in this paper, a number of lessons can be learned from successful and sustainable HIOs. These lessons center on the importance of:

- Having a participatory governance process,
- Providing services that customers will support and pay for,
- The idea that progress builds momentum, and

- An unrelenting focus on person-centeredness to improve health care quality.

Participatory Governance. Many successful HIOs stressed the importance of stakeholder participation in governance and leadership to gain both operational and financial support. The more that HIE develops and delivers services based on the interests, needs, and priorities of its local customers, the more likely providers will have a stake in and support the HIE. Understanding customers and creating value for them increase the likelihood of their support for continuance of the HIO. Two strategies for gaining stakeholder support appeared to be particularly valuable:

- Enfranchise providers and payers through mission-driven governance and decision making. One common element among successful state level HIOs was the development of strong private sector governance structures with a sense of teamwork, dedicated to the goal of improving patient care. Payment arrangements developed on this foundation of collective commitment are much more likely to be sustainable.
- Ensure alignment with customers' needs and interests. There are many ways to stay in touch with the needs and interests of your customers, continuously learn what they believe will improve patient care and/or reduce costs, and to use these perspectives in the strategic and business planning process. Many of the sustaining HIOs use informal or formal survey processes to engage customers and solicit their input at key decision points in HIE development and in the service delivery process. Using a representative governance structure, survey techniques, and broader outreach strategies has proved essential for several successful HIOs.

Services that Customers Need and Support. HIOs that have established sustainability provide reliable business services that their customers are willing to pay for. None of them started with a clear understanding of the best business model or financial model to support this new business. Each was willing to engage in a process of innovation with their customers and through trial and error determine the best balance of services of greatest value to their customers. Through a willingness to innovate, collaborate, learn, and adapt these leading HIOs combined subscription fees, grants, and proportional cost sharing to create a sustainable model.

- Subscription fees are the most common source of revenue among HIOs that have achieved sustainability. There are a small number of these. In a recent survey of HIOs, 107 reported that they were not dependent on federal funding, an increase of 36 since 2009; 18 said that they creating operational revenue without federal funding.²⁶ An increasing number of successful HIOs use subscription fees as a primary means to support their operation. Transaction fees are deployed to a lesser extent. Fees are based on various factors that include relative value to participants. The key to leveraging investments effectively is stakeholder participation in the development of HIE initiatives. Sustainable HIOs shared a common theme that HIE initiatives become more viable as their membership and services increased.
- Leave no funding "stone" unturned. Many early adopter HIOs sought and received some form of federal grant in their initial years. Many of these have applied to be part of the Nationwide Health Information Network (NHIN) pilot and exchange and have successfully pursued state-level HIE Cooperative Agreements to aid in start-up or for operational costs.

All of the successful HIOs have come to realize that grant funds come with time limits, and they experience increasing pressures to obtain ongoing operational revenue.

- Those that benefit from HIE should share in its cost proportionally to the benefit they receive. It is important that HIOs ensure equity among the stakeholders that provide financial support for their operations. Over the long term all users, including providers, payers, and public and private organizations, need to share proportionately the costs of exchanging health information. Strategies that have been explored include incentives and volume discounts to encourage the participation of heavy users such as hospitals, physicians, and laboratories.
- Understand the culture of the state regarding the need for formal policy to support sustainability. State cultures differ regarding the need for formal policy to help innovations take hold and earn stakeholder support. Some states, such as Vermont, have adopted legislation to formalize their state's support for HIE by assessing a fee on insurance claims. Other states have sought broad stakeholder involvement to develop support for HIE sustainability. The Colorado Regional Health Information Organization discovered that broad stakeholder participation in decision making both complicated the process and encouraged widespread acceptance and support of the solution, which they believe is key to long-term sustainability. The importance of understanding and addressing state cultural issues should not be underestimated if long-term success is to be achieved.

Focus on Short-Term Deliverables and Long-Term Vision. As is true in most of health care, solutions need to be local and serve local stakeholders. Striking the proper balance between the perfect solution and the “quick fix” is a fine art of choosing the best opportunities to make incremental progress and to illustrate success and value for customers.

- Health care is local. The struggles of several high-profile regional HIOs to achieve financial sustainability raised doubts for some about the viability of the HIE business model. However, an increasing number of local HIE approaches are gaining traction in dozens of sites around the country. Although technical infrastructure and service capabilities are not tied to a geographic region, trust agreements and the leadership support that is critical to HIE success may be easier to create in medical trading areas. A growing number of sustainable HIOs have learned that is important to understand and address the needs local health care businesses as they develop their services.
- Long-term goals and short-term deliverables are important for success. Discussions with successful state HIOs showed that the traditional HIE start-up choice between “low-hanging fruit” and more comprehensive data exchange is a false dichotomy. Rather than an all-at-once design or deployment, other researchers have recommended “rapid waves of near-term (six- to twelve- month) initiatives, organized around clearly articulated longer-term (five- to ten-year) strategic direction. Each success represents a small step in the right direction. The overall cumulative effect can create radical change.”²⁷ This approach should not be confused with a quick fix; rather it focuses on delivering results in smaller, more immediate steps, to gain the trust and support of key stakeholders while maintaining a focus on longer-term strategic value. HIOs may concentrate on exchange of standardized clinical results as a foundation on which to build value-added service capabilities, such as analytics, dash boarding, or clinical decision support. This is a balanced approach that encourages

incremental delivery of value for customers while it focuses on large providers or data sources that are important to longer-term financial sustainability.

Transforming Health and Care through Person-Centered Focus. Although a variety of trust and technical questions must be addressed if an HIO is to be successful, the core mission of the HIE is to bring innovation to the marketplace with an unrelenting focus on the health and care of people. Although the Institute of Medicine has identified “patient-centeredness” as one of primary aims of a 21st-century health care system, many have urged the “normalization” of this terminology, changing the wording from “patient” to “person.” To support progress in moving from a health care sector of fragmented, disconnected, siloed services to a health care system of integrated, connected, and seamless information and services, sustainable HIOs are building the infrastructure to support a health system that we would want our for ourselves and families.

- Transparency across public and private health care sections. It is essential to have both public and private sector sponsors at the table throughout an HIE initiative. Although the tendency may be for one sector or the other to take the lead in the effort, it is important for several reasons that a public-private partnership be sustained, so that transparent clinical and population health information will be available and flowing across the sectors. First, most people will experience health care paid for by both sectors during the course of their lifetime. Data on Medicaid coverage shows that a large percentage of the population, particularly children, moves in and out of public sector coverage. Medicare provides coverage for all Americans over the age of 65. Even if they have private coverage, Medicare may pay a supplement. Second, what is referred to as the “public” or the “private” sector is typically a mix of both. Although Medicare and Medicaid are considered public sector health care, both primarily contract with private sector health care providers to deliver care. Third, as the health sectors advance toward the meaningful use of EHRs, it will be essential to report and measure quality across payer types.
- Accessible and affordable health information as “disruptive innovation” for health care. A “disruptive innovation,” according to Harvard Business School professor Clayton Christensen, “is a technology that brings a much more affordable product or service that is much simpler to use in a market.” HIE has the potential to be a disruptive innovator in health care if we can learn lessons from other industries. Certainly much work remains to seamlessly connect health care providers; however, Christensen would argue that “any program for resolving our runaway health care costs that does not have a credible plan for changing the way we care for the chronically ill can’t make more than a small dent in the total problem.”²⁸ Based on lessons from other industries, for technology to disrupt and improve health care, HIOs must develop methods to share information and information processing capabilities directly with patients and with alternative health care providers to help manage chronic conditions. Most of health care takes place outside of a hospital or physician’s office, and information is critical to effective health and care wherever it occurs.

VII. Conclusion

After nearly a decade of work with multiple stakeholders, to define, survey, and improve health and care delivery through the exchange of clinical health information, eHealth Initiative’s CEO

concludes in the organization's 2010 report, "We haven't figured out what makes an [HIE] organization sustainable. There is no set business model."²⁹

Universal HIE sustainability is the "silver bullet" that continues to elude concise definition or clear formulaic plans.

The HITECH Act offers tremendous opportunities for states to build on existing HIE efforts and create a sustainable HIE network. By aligning and maximizing HIE and EHR planning and development resources, states can jumpstart HIE infrastructure development and maximize the number of eligible providers who will achieve the meaningful using of certified EHRs.

States that act now to put HIE infrastructure plans into action and establish capabilities that enable providers to achieve meaningful use increase the likelihood of long-term success and sustainability. "Those working to build community- or region-wide HIEs must effectively address the unique legal, organizational, and technical challenges that might otherwise constrain efforts to improve the safety, quality, and efficiency of care delivery."³⁰ Although many of the key lessons included in this toolkit may appear commonsense and straightforward, clear examples exist of HIOs that understood these lessons and did not act on them.

This toolkit focuses on the lessons of success and sustainability. HIE is not merely a technical service for the exchange of clinical information. It is a foundational element of health care reform. Although HIE is a necessary component of health and care transformation, it is not sufficient without an unrelenting focus on the safety, quality, and efficiency of care delivery to improve the health and care of people.

Glossary

American Recovery and Reinvestment Act (ARRA)

The American Recovery and Reinvestment Act, also known as the “stimulus bill,” was signed into law on February 17, 2009. It includes \$787 billion in economic stimulus for the U.S. economy.

Centers for Medicare & Medicaid Services (CMS)

CMS is a federal agency in the U. S. Department of Health and Human Services whose mission is to ensure effective, up-to-date health care coverage and to promote quality care for beneficiaries. CMS administers the Medicare program and works in partnership with state governments to administer Medicaid, the Children’s Health Insurance Program (CHIP), and health insurance portability standards.

Electronic Health Record (EHR)

An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one health care organization.

Electronic Medical Record (EMR)

An electronic record of health-related information on an individual that can be created, gathered, managed, and consulted by authorized clinicians and staff within one health care organization.

Health Information Exchange (HIE)

The electronic movement of health-related information among organizations according to nationally recognized standards.

Health Information Organization (HIO)

An organization that oversees and governs the exchange of health-related information among organizations according to nationally recognized standards.

Health Insurance Portability and Accountability Act (HIPAA)

Also known as the “Kennedy-Kassebaum Act (1996),” this U.S. law protects employees’ health insurance coverage when they change or lose their jobs (Title I) and provides standards for patient health and administrative and financial data interchange (Title II). It also governs the privacy and security of health information records and transactions. HIPAA, developed by the Department of Health and Human Services, took effect in 2001 with compliance required in phases up to 2004.

Health Information Technology (HIT)

The application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making

Interoperability

The ability of HIT systems to automatically communicate within and across organizations to achieve private, secure, and seamless delivery of clinical information to improve the health and care of individuals and populations.

Meaningful Use

A criterion established by CMS for Medicare and Medicaid professionals and hospitals to receive incentives for the use of electronic health records to coordinate care, initiating the reporting of clinical quality measures and public health information.

Medicaid Information Technology Architecture (MITA)

MITA is an initiative and a framework that promotes improvements in the Medicaid enterprise and systems, consisting of models, guidelines, and principles to be used by states as they implement service-oriented architecture and enterprise solutions.

Medicaid Management Information System (MMIS)

The MMIS is an information retrieval system designed to meet several objectives, including payment of claims; member management; business analytics and decision support; provider enrollment; fraud, waste, and abuse identification; and management reporting for planning and control.

National-Level Repository (NLR)

This CMS-hosted system accepts and stores registration information for all eligible providers under the Medicare and Medicaid EHR incentive programs. Its purpose is to ensure that no duplicate payments are made by Medicare and Medicaid or by two different states to health care providers. It also covers Medicare providers' attestations and both Medicare and Medicaid incentive payment information, pursuant to HITECH Act of the ARRA.

Nationwide Health Information Network (NHIN)

A network of networks, it is a set of harmonized, standards-based specifications for health information sharing between Nationwide Health Information Exchanges.

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

The Office of the National Coordinator for Health Information Technology provides counsel to the secretary of Health and Human Services and other leaders of the department for the development and nationwide implementation of an interoperable HIT infrastructure. The ONC also provides management of and logistical support for the American Health Information Community.

Operational Plan for ONC HIE Cooperative Agreement Grantees

The Operational Plan must contain details on how the Strategic Plan will be executed to enable statewide health information exchange. The specific actions and roles of various stakeholders in the development and implementation of HIE services must be included. In addition, the Operational Plan must include descriptions of any implementation activities to date, with an explanation of how the prior activities fit into the state's future plans for HIE.

Personal Health Record (PHR)

An electronic record of health-related information on an individual that conforms to nationally recognized interoperability standards and that can be drawn from multiple sources, while being managed, shared, and controlled by the individual.

CMS Planning Advance Planning Document (PAPD)

A CMS-required document that is used by state Medicaid agencies to request funding to accomplish their IT system needs and objectives. The term “APD” is included in the contexts of a Planning APD, Implementation APD, or an Advance Planning Document Update.

Regional Health Information Exchange (RHIO)

A RHIO is health information organization that brings together health care stakeholders within a defined geographic area and governs HIE among them for the purpose of improving health and care in that community. A RHIO is a type of HIO.

State Medicaid Health Information Technology Plan (SMHP)

A Medicaid HIT vision document that includes clear targets and measurable outcomes and that contains at least four components: a current landscape assessment, a vision of the state’s HIT future, specific actions necessary to implement the Medicaid EHR incentive payments program, and an HIT road map.

State-Level Health Information Exchange Program

The state HIE (or HIE Cooperative Agreement) program comprises organized, state-level efforts to advance interoperability across the state through a range of development approaches and organizational structures. The state HIE does not require a single statewide HIE entity; instead it is an administrative infrastructure responsible for developing the State Strategic and Operational Plans that define the state’s vision, interoperability infrastructure and standards, and oversight and coordination.

Special Thanks to

-
- **Christine Nye**, Former Director, Florida Center for Health Information and Policy Analysis, Agency for Health Care Administration
- **Hunt Blair**, Director for Health Care Reform, Department of Vermont Health Access
- **Jan Root**, Ph.D., President and CEO, Utah Health Information Network
- **Jeff Blair**, Director of Health Informatics & Project Manager for New Mexico Health Information Collaborative, Lovelace Foundation
- **Paula Roy**, Executive Director, Delaware Health Care Commission
- **Trudi Matthews**, Director of Policy and Public Relations, HealthBridge

Appendices

Appendix A. – NGA Center HIE Financial Toolkit Questionnaire

This questionnaire was used as framework or guide to solicit information from key informants. Questions were illustrative of the types of information that we sought to gather and were descriptive of, rather prescriptive for, the kinds of questions that were used during the interview process. Information was gathered and reviewed by the primary authors to analyze and develop a list of lessons about sustainability. This information, along with information from the literature review, was used to format the primary lessons and leading advice.

NGA Center HIE Financial Sustainability Questionnaire

Name:	Organization:
Phone:	e-Mail:

*Please try to get as specific a response as possible for each question. Remind participants that we are trying to get **actionable advice** to share best practices and lessons learned for other states and HIOs. We are focused on trying to learn any lessons as to how to help HIOs develop capabilities for long-term value and sustainability.*

1. What funding sources have you used/planned to use for HIE? (ARRA, ACA, Medicaid, fees, private grants, other grants; business community, other)
2. What is your longer-term business plan and funding strategy for the financial sustainability of the HIE infrastructure? (Identify options/alternatives and successful funding sources such as fees, private sources, etc.)
3. What innovative strategies and steps are you exploring to ensure the financial sustainability of the HIE infrastructure? What specific lessons would you want other states to learn?
4. Have you found it is necessary or helpful for HIE development and sustainability to pursue public policy or legislative authorization to support the HIE initiative(s), or do you plan to pursue in the future?
5. What strategies and/or best practices have proven most successful in achieving improvements in health care quality and cost-effectiveness?
6. What do you view as the most financially successful HIE capabilities, services, and types of information exchanged? Are you considering changes to your business model to increase marketability or “value-added” services or information to increase financial security and sustainability?

Appendix B - Other ARRA Grants

ARRA includes the following additional funding opportunities to advance HIT:

- **Health Center Controlled Network (\$111.6 million).** This is a grant program to help networks of health centers adopt EHR and other HIT systems. HCCNs improve the operational effectiveness and clinical quality in health centers by providing management, financial, technology, and clinical support services. The networks, comprising at least three collaborating organizations, are community-based groups that support HRSA-funded health centers that provide primary health care. The grant program is provided through the Health Resources and Services Administration (HRSA). A total of \$83.9 million was awarded to health care centers in June 2010.
- **FCC Broadband grants.** ARRA provides significant federal funding for broadband infrastructure and deployment. A total of \$7.2 billion is allocated to investing in broadband, including funds for infrastructure, mapping, training, and education for rural, unserved, and underserved communities. Of the total, \$2.5 billion is provided through the U.S. Department of Agriculture (USDA), Rural Utilities Services Distance Learning, Telemedicine, and Broadband Program (RUS). The remaining \$4.7 billion is provided through the U.S. Department of Commerce (DoC), National Telecommunications and Information Administration (NTIA) Broadband Technology Opportunities Program (TOP). The purpose of these funds is to build broadband infrastructure and accelerate deployment in unserved and underserved communities as a means to promote economic development and job creation. It is important for states to link “telehealth,” broadband, and HIE investments in one strategic plan.

Appendix C – Additional HIT and HIE Funding through CMS

Medicaid Federal Financial Participation in HIE Initiatives

In its first Program Information Notice to states and SDEs concerning this program, “Requirements and Recommendations for the State HIE Cooperative Agreement Program,” the ONC recommends roles for state HIT coordinators that include but are not limited to:

1. Developing and advocating for HIT policy to achieve statewide goals, such as focusing and prioritizing activities to rapidly help providers achieve stage 1 of meaningful use requirements, and
2. Coordinating HIT efforts with Medicaid, public health and other federally funded state programs. Specifically the notice recommends leveraging various state program resources, such as immunizations registries, public health surveillance systems, and CMS and Medicaid funding, to ensure that resources are being maximized, including seeking the HITECH–authorized use of Medicaid enhanced 90/10 federal matching to support EHR adoption and HIE activities.

While these provisions are still being fleshed out in the federal policy development process, it is clear that HITECH signals a further expansion of the use of enhanced federal matching to advance HIE to improve health outcomes, care quality, and population health.

CMS recently released a letter to State Medicaid Director that details multiple elements of HITECH implementation, including additional guidance on potential uses of 90/10 Medicaid funding for HIE. Included in this guidance is a list of uses eligible for 90/10 HITECH funding: “Expenditures related to provider needs assessments, provider outreach about adoption and meaningful use of certified EHR technology, staff training, identification and development of tools to connect to HIOs, record locator services, secure messaging gateways, provider directories, development of privacy and governance policies and procedures, EMPI, interfaces for data (e.g., laboratory) that is important to Medicaid providers to be fully successful in an HIE environment, and procuring technical assistance for Medicaid providers to achieve meaningful use.”³¹

States now have a clearer set of instructions regarding the potential scope of this funding source. Possible uses of 90/10 Medicaid funding for health information exchange and related elements are detailed below:

1. **State HIE.** It is possible to leverage enhanced Medicaid matching for statewide HIE initiatives under certain conditions. New York State received a large federal Medicaid waiver in 2006, for several hundred million dollars over five years, for HIE projects. However, it appears unlikely that CMS would approve a similar request today. States should consider Medicaid funding as a potential *partial* funding source for HIE start-up costs. Conditions that would support a request to CMS to approve 90/10 funds for HIE include:
 - Medicaid is part of a multipayer funding mechanism,

- The HIE will include Medicaid providers and beneficiaries, and
 - Medicaid funds for the HIE are closely tied to EHR adoption or to linking laboratory or other data sources through the HIE, or to supporting hardware and software EHR/HIE linkages at the provider site that will support Medicaid providers' meaningful use of certified EHR technology.
2. **EMPI and RLS.** Creation of a statewide EMPI/RLS is a use of Medicaid funds that is explicitly endorsed by CMS and one that some states have been exploring through the State Medicaid HIT Plan process. A key unanswered question for these states is the potential use of a Medicaid HIE for state-level HIE or regional health information organizations serving non-Medicaid consumers. CMS has not specifically addressed how costs should be allocated if a Medicaid-based MPI/RLS system were to be used for an HIE initiative that extends to commercially insured or other non-Medicaid/indigent populations. However, CMS has clearly indicated that, on the one hand, it is supportive of states' leveraging Medicaid funding for their broader HIE initiatives, but on the other hand, it will be looking for fair sharing of these costs: "Medicaid's contribution to health information technology [to] be weighted and allocated based on contributions by other payers, and not be the sole or primary source of start-up or operational funding."
 3. **Other HIE Infrastructure.** CMS has indicated that only time-limited expenditures are appropriate for 90/10 HITECH funding, potentially including initial HIE infrastructure costs. Specifically cited in the August guidance are interfaces for specific data sources, such as labs or medication histories that are critical for ensuring EHR adoption and secure messaging gateways.
 4. **Medical Homes.** Many states have been exploring Medicaid's role in primary care practice transformation and medical home initiatives, and states including North Carolina, Pennsylvania, and New York have operational medical home initiatives. The Primary Care Medical Home model includes a significant EHR adoption component. CMS initially expressed interest in using HITECH funds to support these initiatives. However, the federal Affordable Care Act will now be providing its own source of 90 percent match funding for "medical home" projects, the Health Homes program described in Section 2703 of the ACA and scheduled to start in 2011. States considering medical home projects as part of their Medicaid and Medicaid HIT strategies should strongly consider Section 2703 funding.
 5. **Medicaid EHRs.** One of the most prominent uses of Medicaid Transformation Grant funding prior to the HITECH Act was development of Medicaid-specific EHR products. Using Medicaid claims and, in some states, immunization registries and other state public health registries, Medicaid EHRs were designed to have some of the functionality of full EHRs (in some cases including e-prescribing) and to be a "down payment" toward EHRs for providers who could not otherwise afford them. With the imminent start date for Medicaid EHR incentives, however, the future of Medicaid EHR projects is unclear. If provider adoption of Medicaid-supported, certified EHRs under HITECH is extensive, Medicaid EHRs may become a stopgap for late adopters.

Significant Medicaid HIE initiatives will likely have to be coordinated through the single state Medicaid agency, be directly relevant to eligible Medicaid providers and members, and potentially establish a cost allocation charge-back based on operational costs or transaction fees.

Toward that end, it is advised that the state Medicaid agency be in direct communication with the SDE and the HIT coordinator and be directly involved in the governance of the HIE structure for both public and public-private governance entities. The state Medicaid agency plays a key role in aligning HIE initiatives with the larger HIT or MITA framework and architecture, as well as in prioritizing and sequencing projects, use cases and clinical data to be exchanged across identified provider settings.

Additional examination and policy clarification may be needed in regard to Medicaid-related health information and whether additional privacy and security protections are required for its exchange. Although privacy and security within HIE have largely been framed as a state regulatory issue, Medicaid is unique because of states' role in administering a program guided by federal regulation. Currently, ONC and CMS have not addressed this issue.

Medicaid Management Information System (MMIS) and Medicaid Information Technology Architecture (MITA)

In addition to grants, the federal government also provides funding for the development of IT capabilities through its support of the Medicaid program's claims processing systems. In 1972, CMS was authorized, pursuant Title XIX, Section 235, section 1903 (a)(3) of the Social Security Act and defined in regulation at 42 CFR 433.11, to provide up to 90 percent federal matching to state Medicaid agencies (SMAs) for the design, development, and implementation of a "mechanized claims processing and information retrieval system." Originally, the MMIS, as the system became known, included six core subsystems—Recipient (or Member); Provider; Reference (or Rules); Claims; Management and Administrative Reporting (MARS); and Surveillance and Utilization Review (SURS). Later subsystems included Third Party Liability, Managed Care and Data Warehouse, or Decision Support System.

Today, this system is the work engine or backbone of the state Medicaid programs. It is the source of almost all of the data available about the Medicaid program. However, most states' systems are technologically dated and are constructed of subsystems or silos each of which performs a set of tasks that do not integrate well with other silos of data, so that many states experience difficulty turning data into actionable information to guide program decisions.

Data warehouse or decision support systems (DW/DSS) have often been added by states to aggregate and normalize the massive files of paid claims data for data mining and analysis. Increasingly, states are exploring ways of making this administrative data available in a secure and confidential manner to eligible providers and consumers, to help "push" information to the point of care. When these systems are coordinated with other systems and clinical information can have significant value in advancing toward EHR technologies.

For this and a variety of other important reasons, CMS started a collaborative project with states more than a decade ago to reengineer the MMIS. Medicaid Information Technology Architecture (MITA) represents a common architectural framework and set of processes and planning

guidelines to enable states to develop a more “business-driven architecture” based on a set of key principles:

- *Interoperable, modular systems* to enable Medicaid business processes,
- Flexible, agile architecture capable of rapid change,
- *Accessible, accurate information*, to improve health care management and administration.
- *Performance Management*, to link and align planning, measurement, and accountability, and
- Strategic coordination with partners to improve Medicaid health outcomes.

As a result, state plans for changes in their MMIS system, such as the required Planning or Implementation Advance Planning Document, must now be aligned with the MITA initiatives. States must submit and receive approval from CMS to receive enhanced federal funds matching.

MITA was designed to allow state Medicaid agencies to light their management information systems to address their evolving business and information needs through an integrated approach. The goals are interoperability, ease of adaptability, and data sharing.

To receive enhanced federal matching, states must submit for CMS approval a Medicaid Management Information System advance planning document (APD) that is aligned with MITA. States may receive:

- 90 percent matching for MMIS design and implementation activities,
- 75 percent matching for the operations of the MMIS, and
- 50 percent matching for the overall administration of the MMIS.

In addition, States can leverage MMIS enhanced federal financial participation to advance statewide HIE efforts for Medicaid recipients. Some states have used MMIS match to design and develop health information exchange that can be used for other populations through a charge-back, cost allocating mechanism.

Notes

1 The term “health information technology” means hardware, software, integrated technologies or related licenses, intellectual property, upgrades, or packaged solutions sold as services that are designed for, or support the use by health care entities or patients of, the electronic creation, maintenance, access, or exchange of health information, pursuant to ARRA, 115.

2 “Meaningful use” of certified EHRs means (i) use of certified EHR in a meaningful manner, such as e-prescribing; (ii) capable of electronic exchange of clinical information to improve quality of health care,

such as care coordination; and (iii) submission of clinical quality measures (CQM) and other measures selected by the secretary of the Department of Health and Human Services. Meaningful use criteria are adopted for Stage 1 in 2011, Stage 2 in 2013, and Stage 3 in 2015.

3 Elizabeth McNichol, Phil Oliff, and Nicholas Johnson, “Recession Continues to Batter State Budgets; State Responses Could Slow Recovery,” Center for Budget and Policy Priorities, updated July 15, 2010. Accessed July 25, 2010 at: <http://www.cbpp.org/cms/?fa=view&id=711>.

4 K. Davis, C. Schoen, S. C. Schoenbaum, M. M. Doty, A. L. Holmgren, J. L. Kriss, and K. K. Shea, *Mirror, Mirror on the Wall: An International Update on the Comparative Performance of American Health Care*, The Commonwealth Fund, May 2007.

5 For example, the consensus projections for Michigan state general fund revenues for 2010, adjusted for inflation using the state and local government price deflator, were the same as actual revenues were more than four decades ago, in 1965, according to the nonpartisan Citizen’s Research Council of Michigan, 2010.

6 David Blumenthal, “Launching HITECH,” NJEM, December 30, 2009. Accessed at: <http://healthpolicyandreform.nejm.org/?p=2669&query=home>. This article identified primary policy objectives.

7 *Health Information Exchange Economic Sustainability Panel: Final Report*, NORC at the University of Chicago, April 2009

8 Emily R. Maxson, Sachin H. Jain, Aaron N. McKethan, Craig Brammer, Melinda Beeuwkes Buntin, Kelly Cronin, Farzad Mostashari, and David Blumenthal, “Beacon Communities Aim to Use Health Information Technology to Transform the Delivery of Care,” *Health Affairs*, 29, no. 9 (2010): 1671–77. Accessed at: <http://content.healthaffairs.org/cgi/reprint/29/9/1671>.

9 Centers for Disease Control and Prevention, “Chronic Diseases and Health Promotion.” Accessed at: <http://www.cdc.gov/chronicdisease/overview/index.htm>.

10 Lawrence Casalino, Robin Gilles, and Stephen Shortell, “External Incentives, Information Technology and Organized Processes to Improve Health Care Quality for Patients with Chronic Diseases,” *JAMA* 289, no.4 (2003):434–41. Accessed at: <http://jama.ama-assn.org/cgi/reprint/289/4/434?maxtoshow=&hits=10&RESULTFORMAT=&fulltext=Casalino&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT>.

11 American Health Information Management Association, “Building an Enterprise Master Person Index,” AHIMA Practice Brief. Accessed at: http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_022283.hcsp?dDocName=bok1_022283#data_elements.

12 Connecting for Health Common Framework, “Record Locator Record Locator Service – Technical Background from the Massachusetts Prototype Community.” Accessed at: http://www.connectingforhealth.org/commonframework/docs/T6_RecordLocator.pdf.

13 “Nationwide Health Information Network: Overview” (2010) Accessed at: <http://healthit.hhs.gov/portal/server.pt?open=512&objID=1142&parentname=CommunityPage&parentid=4&mode=2>.

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- 14 “CONNECT: A Gateway to the NHIN.” (2010) Accessed at: http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov_connect/3005.
- 15 The Nationwide Health Information Network Exchange
http://healthit.hhs.gov/portal/server.pt?open=512&objID=1407&parentname=CommunityPage&parentid=8&mode=2&in_hi_userid=11113&cached=true
- 16 The NHIN Direct Project. Accessible at: <http://nhindirect.org/>.
- 17 Pursuant to 32 V.S.A. chapter 241 § 10301, Vermont collects a fee of 0.2 percent on insurance claims. The fee generates revenue for the state HIT fund, which provides grants to support HIT/HIE. The fund is scheduled to sunset in 2015.
- 18 American Health Information Management Association. “State-level HIE Value and Sustainability Approaches for Financing and Bringing Interoperability to Scale,” American Health Information Management Association, November 5, 2008.
- 19 For more detailed inform regarding HITECH funding stream, please see source. SLHIE, “Advancing Effective State-level Approaches to Interoperability in the New Federal Context: Realizing State-level HIE Value and Sustainability” May 15, 2009 Accessible at :
http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_045664.pdf.
- 20 CMS State Medicaid Directors Letter #10-016, “Federal Funding for Medicaid HIT Activities,” August 17, 2010. Accessed at: <https://www.cms.gov/smdl/downloads/SMD10016.pdf>.
- 21 Ibid.
- 22 CMS indicates that a state Medicaid agency is permitted to host the HIE, but CMS will not approve an APD in which the Medicaid agency is solely responsible for capitalizing the HIE or for developing an HIE only for Medicaid providers.
- 23 The ACA Medicaid expansion requirements present a similar opportunity to redesign member eligibility and enrollment for the Medicaid program.
- 24 SLHIE, “Advancing Effective State-level Approaches to Interoperability in the New Federal Context: Realizing State-level HIE Value and Sustainability” May 15, 2009 Accessible at :
http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_045664.pdf.
- 25 Interim Report, “State-level HIE Value and Sustainability: Approaches for Financing and Bringing interoperable HIE to Scale,” Foundation of Research and Education, American Information Management Association, November 5, 2008.
- 26 eHealth Initiative, *The State of Health Information Exchange in 2010: Connecting the Nation to Achieve Meaningful Use, eHI’s Seventh Annual Survey*
- 27 J. Frohlich, S. Karp, M. Smith, and W. Sujansky, “Retrospective: Lessons Learned from the Santa Barbara Project and Their Implications for Health Information Exchange,” *Health Affairs*, (2007).

28 Clayton Christensen, Jermone H. Grossman, and Jason Hwang, *The Innovator Prescription: A Disruptive Solution for Health Care*, McGraw-Hill, 2009.

29 Mary Mosquera, “Sustainability Threatens HIEs Even as Their Numbers Increase,” *Government HealthIT*, July 23, 2010. Accessed at: <http://govhealthit.com/newsitem.aspx?nid=74305>.

30 Jonah Frohlich, Sam Karp, Mark D. Smith, and Walter Sujansky, Retrospective: Lessons Learned from the Santa Barbara Project and Their Implications for Health Information Exchange, *Health Affairs*, DOI 10.1377/hlthaff.26.5.w589. Accessed at: <http://content.healthaffairs.org/cgi/reprint/26/5/w589?maxtoshow=&hits=10&RESULTFORMAT=&fulltext=santa+barbara+hie&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT>.

31 CMS. “Letter to State Medicaid Directors” September 1, 2009. Available at: http://www.cms.gov/Recovery/Downloads/SMD090109_with_6attachments.pdf.