



eHEALTH INITIATIVE

Real Solutions. Better Health.

2011 REPORT ON HEALTH INFORMATION EXCHANGE

SUSTAINABLE HIE IN A CHANGING LANDSCAPE

● ● ● ● **SUSTAINABILITY REPORT** ● ● ● ●

WORKFORCE DEVELOPMENT REPORT

FULL REPORT

EXECUTIVE SUMMARY

CHART BOOK

MARKET REPORT & HIE VENDOR LIST

*Based on Results from eHealth Initiative's Eighth
Annual Survey of Health Information Exchange*

About eHealth Initiative

eHealth Initiative (eHI) is a Washington D.C.-based, independent, non-profit organization whose mission is to drive improvements in the quality, safety, and efficiency of healthcare through information and information technology. eHI is the only national organization that represents all of the stakeholders in the healthcare industry. Working with its membership, eHI advocates for the use of health IT that is practical, sustainable and addresses stakeholder needs, particularly those of patients.



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I | ACKNOWLEDGEMENTS

The eHealth Initiative would like to acknowledge and extend its thanks to the 24 sustainable health information exchange initiatives who allowed us to share their names, progress and challenges. A complete list of the 24 is provided on the next page.

We are also grateful to several HIE leaders who agreed to be interviewed to provide us with insight about their experiences: Dick Thompson, Quality Health Network; Chris Giancola, NEHEN; Michael Matthews, MedVA; Zach Finn, Big Bend HIE; and Mark Jones, SMRTNET.

Special thanks go to Gina Bianco Perez and Jason Goldwater for managing the writing, interviewing and editing; and Alex Kontur for supporting the field survey and creation of the final report.

II LIST OF SUSTAINABLE EXCHANGES

Initiative or Organization Name	States
Lewis And Clark Information Exchange	Iowa Kansas Missouri Nebraska
North Carolina Community Care Informatics Center	North Carolina
Santa Cruz Health Information Exchange	California
MedVirginia	Virginia
SMRTNET Northeast Oklahoma	Oklahoma
Sandlot	Texas
Bronx Regional Health Information Organization	New York
Mississippi Health Partners - MHPConnect	Mississippi
HealthBridge	Indiana Kentucky Ohio
Quality Health Network	Colorado
Michigan Health Connect	Michigan
HEALTHeLINK - Western New York's Clinical Information Exchange	New York
Inland Northwest Health Services	Idaho Washington
MSO OF Puerto Rico	Puerto Rico
Big Bend Regional Healthcare Information Organization	Florida
Bay Area Community Informatics Agency (BACIA)	Oregon
NEHEN	Massachusetts New Hampshire Rhode Island
Whatcom Health Information Network, LLC (HInet)	Washington
Indiana Health Information Exchange	Illinois Indiana Kentucky Michigan Ohio
Strategic Health Intelligence, LLC	Florida
Michiana Health Information Network	Illinois Indiana Michigan Missouri Texas
GOCHC (Greater Oklahoma City Hospital Council) / SMRTNET	Oklahoma
SAFEHealth	Massachusetts
LIPIX, Inc	New York



III | INTRODUCTION TO SUSTAINABILITY

In recent years, the Federal government has expressed unprecedented support for health information exchange (HIE). Title XIII, also known as the Health Information Technology for Economic and Clinical Health Act (HITECH) of the American Recovery and Reinvestment Act, underscores this level of Federal commitment to HIE. HITECH requires that electronic health records (EHRs) be 'connected in a manner that provides for the electronic exchange of health information to improve the quality of healthcare' in order for providers and hospitals to be eligible for any incentive payments.¹ Further, the Office of the National Coordinator for Health Information Technology (ONC) has strongly advocated for HIEs through a number of initiatives, including the development of an infrastructure to support the Nationwide Health Information Network (NWHIN) as well as a comprehensive grant program to support State cooperative agreements for the development and implementation of HIEs in each state.

Though federal support for HIE has only intensified over the last few years, development efforts for HIE have been ongoing for the past two decades. Many organizations have attempted to implement and facilitate HIE. HIEs face a number of challenges and barriers including governance of the exchange; physician and stakeholder buy-in; privacy and security issues around the electronic transmission of personally identifiable health information; and sustainability, among others. In particular, sustainability continues to pose the most significant challenge to maintaining an HIE and realizing the benefits of an interoperable exchange. Sustainability can best be defined as when an HIE can be funded and maintained through sources that are directly attributable to the advantages accrued by an HIE, such as transaction fees for the electronic exchange of information, instead of through outside sources, such as federal or state grants.

WHAT MAKES SUSTAINABILITY DIFFICULT?

Sustainability is challenging because it is difficult to calculate a clear, measurable return on investment (ROI) for providers, which makes them less inclined to participate and share clinical data. A few studies have pointed to a quantifiable value proposition that demonstrates significant improvements in quality and coordination of care.² There is data indicating the benefits of an HIE, such as reduced duplication of tests and therapies; better medication management; reduced hospital readmissions; improved patient engagement; accountability and transparency; and better transitions and coordination of care. However, these benefits relate to risk avoidance, which are very difficult to measure.

1 Vest, J & Gamm, L. "Health Information Exchange: Persistent Challenges and New Strategies." *The Journal of the American Medical Informatics Association*. 2010. Vol. 17, pg. 288

2 Dixon, B; Zafar, A and Overage, JM. "A Framework for Evaluating the Cost, Effort and Value of Nationwide Health Information Exchange." *Journal of the American Medical Informatics Association*. 2010. Vol. 17, pg.295.



Additionally, the initial start-up and administrative costs for an HIE usually come from a disparate set of hospitals, health plans, physicians and other stakeholders that express a desire to share patient data. Often, however, the perceived loss of competitive advantage associated with sharing their data dissuades groups from participating. In addition, the lack of evidence demonstrating both the financial and clinical benefits of an HIE, leaves many potential funders wary of financing an HIE.

It is possible to start an HIE by acquiring funding from a third-party source. Many seek funding from a grant making organization or federal entity. However, the time limitations on the use of those funds creates the expectation that the HIE will eventually become sustainable on its own once funding ends. Unless a successful business model and revenue source is created, it is unlikely that the HIE will continue past that cycle of funding, especially without support from other stakeholders

As such, HIEs often rely on a sense among stakeholders that, "it's the right thing to do" as the impetus for information exchange and the belief that, "it's part of how we do business" as a sustaining factor. If HIE initiatives do not keep up with the changing healthcare environment and the requirements placed on providers who participate, it is unlikely that they will be able to achieve and maintain a sustainable business model.

The eHealth Initiative, a leader in the assessment and understanding of HIEs, recently conducted its 2011 Annual Survey to determine, among other items, the number of current HIEs that were sustainable. Out of the 196 HIE initiatives responding to the survey, only 24 (12%) currently reported being self-sustaining. This report explores what makes HIE initiatives sustainable and highlights best practices and lessons learned from a number of initiatives that can assist HIEs in developing both revenue models and value propositions, which are key components in creating a sustainable HIE.

IV | KEY SURVEY FINDINGS

The results of the 2011 HIE survey demonstrated the following:

- ◆ Physicians, hospitals, payers and clinics are most likely to be involved in HIE governance and pay for HIE services.
- ◆ Hospitals and health systems finance the greatest proportion of HIE initiatives.
- ◆ Nine initiatives indicated that they were operational within one year. The majority were operational within 3 years.
- ◆ Very few (7) HIEs became sustainable in one year. Only half of the 24 sustainable initiatives indicated it took them three years or less to be sustainable.
- ◆ Sustainable HIEs are slightly more likely to have a hybrid architecture model, which has both centralized and federated components as well as some centralized health data.
- ◆ A majority of the sustainable HIEs receive ongoing funding through a combination of sources, mainly hospitals, provider practices and payers.
- ◆ The use of membership fees is the most common revenue model amongst these initiatives.
- ◆ The majority of sustainable HIEs provide connectivity to EHRs, electronic lab reporting and a master patient index. The most exchanged data are lab results/reports, care summaries, emergency episodes and medications.
- ◆ The majority of sustainable HIEs report that they will implement the Direct capabilities into their HIE in some fashion.
- ◆ Most sustainable HIEs report having an opt-out model.
- ◆ The top three stakeholders providing and receiving data in the sustainable initiatives (hospitals, primary care providers, and specialty providers) are the same as in all initiatives responding to the survey, but the similarities end there. Independent laboratories, outpatient/ambulatory surgery centers, and independent radiology centers are exchanging data in a high number of the sustainable initiatives, but not in all initiatives who responded to the 2011 survey.
- ◆ In the most recent fiscal year, 13 of the sustainable initiatives earned more than \$1 million in revenue, one of which earned more than \$30 million (via a health plan funded model).
- ◆ HIEs with a single funding source report the lowest revenues—under \$1 million—with one exception that reports being solely funded by fees from payer sources. HIEs that have diversity in revenue sources are more likely to report having higher annual revenues of between \$5 and \$15 million annually.
- ◆ The percentages of sustainable HIEs exchanging lab results, care summaries, and emergency department episodes are significantly higher than the group of advanced initiatives who are not sustainable. Sustainable HIEs are exchanging more data types than non-sustainable HIEs.
- ◆ Sustainable initiatives report a wide range of financial expenditures on vendor costs. Three (3) initiatives indicated they spent less than \$100,000 and three (3) spent more than \$1 million in the last fiscal year.



In addition to analysis of the 2011 survey, this report also features case studies of five current sustainable HIEs with different business models. The case studies and examples are intended to demonstrate factors and practices which can be employed by other HIEs to overcome the sustainability challenge. Each of these initiatives has different revenue models. In addition, each met the following criteria:

- 1.) Each HIE currently uses a specific business model that generates enough revenue to allow the HIE to operate after any public or grant funds were exhausted.
- 2.) There is significant stakeholder buy-in to each of these HIEs, with enough providers contributing data to make data exchange services valuable to physicians or other users.
- 3.) Each HIE can be considered a mature organization that is actively exchanging data.

While most of the 24 sustainable initiatives fit these requirements, the HIE initiatives featured in this report include the following:

- » Big Bend Regional Health Information Organization in Tallahassee, Florida
- » MedVirginia, based in Richmond, Virginia
- » NEHEN - New England Healthcare Exchange Network, Boston, Massachusetts
- » SMRTNET (Secure Medical Records Transfer Network), Oklahoma City, Oklahoma
- » Quality Health Network, Grand Junction, Colorado

COMMON SUSTAINABILITY FACTORS

In studying the sustainable HIEs and interviewing the five mentioned above, several commonalities were identified. All of these initiatives are:

- » **Robust and mature initiatives**, in existence for between six and 13 years.
- » **Non-profit organizations**, which act as a neutral third party with the ability to convene competing organizations to participate in the HIE in some capacity.
- » **Full-functioning** health information exchanges, which were started in response to a community need—either clinical or administrative.
- » **Providing diverse service offerings and data** sources to physicians and hospitals to help them achieve meaningful use and improve workflow processes to realize greater efficiency and manage costs.
- » **Making participation affordable** by keeping operating costs as low as possible, leveraging resources, and expanding revenue streams so as to achieve economies of scale; thus passing the savings onto their customers.

V | OVERVIEW OF THE EXCHANGE LANDSCAPE

The eHealth Initiative (eHI) identified 255 known health exchange initiatives in 2011. Through the survey process, eHI collected data on 196 initiatives—a 77% response rate. Respondents to the 2011 Annual Survey on Health Information Exchange included state grantees, state designated entities (SDEs), statewide HIE initiatives, community-based HIE initiatives (non-profit and for-profit), integrated delivery networks (IDNs) and health systems.

COMMUNITY BASED HIE INITIATIVES

The last year brought significant change in the health information exchange environment. There were 255 HIE initiatives in 2011, up from 234 in 2010. Of these, approximately 10 new HIE initiatives were just starting operations at the time of the 2011 survey and declined to complete the survey given their limited development. Forty-six (46) initiatives that responded in 2011 indicated that they had not responded to a previous eHI survey.

Despite the rise in initiatives, eHI also identified 10 initiatives that are no longer operating for several reasons: some closed down operations (4), others consolidated with other HIE initiatives (4), and two for-profit organizations were purchased and HIE operations have closed.

In 2005, eHI developed a framework for assessing and tracking health information exchange development. eHI identified seven stages of development that most initiatives will move through, at varying paces. For 2011, eHI updated the stages of development to reflect the advanced services that some initiatives are offering. Stage 7 has been updated to reflect that an initiative is not only sustainable, but has also expanded its service offerings to include value-add services, such as analytics, quality reporting, Picture Archiving and Communication System (PACs) reporting, etc. Refer to Figure 1 (pg. 8) for eHI's seven stages of development.

HEALTH INFORMATION EXCHANGE STAGES OF DEVELOPMENT

A D V A N C E D H I E S	STAGE 7 INNOVATING	Sustainable and fully operational health information organization. Demonstration of expansion of organization to provide value-add services, such as advanced analytics, quality reporting, clinical decision support, PACs reporting, EMS services.
	STAGE 6 SUSTAINING	Fully operational health information organization; transmitting data that is being used by healthcare stakeholders and have a sustainable business model.
	STAGE 5 OPERATING	Fully operational health information organization; transmitting data that is being used by healthcare stakeholders.
	STAGE 4 PILOTING	Well under way with implementation—technical, financial and legal.
	STAGE 3 PLANNING	Transferring vision, goals and objectives to tactics and business plan; defining your needs and requirements; securing funding.
	STAGE 2 ORGANIZING	Getting organized; defining shared vision, goals, and objectives; identifying funding sources, setting up legal and governance structures.
	STAGE 1 STARTING	Recognition of the need for health information exchange among multiple stakeholders in your state, region or community.

FIGURE 1.

SUSTAINABLE INITIATIVES

eHI used survey criteria to identify the sustainable initiatives. Each of the 24 sustainable initiatives included in this report reported that they are:

- 1.) Advanced (Stages 5, 6, or 7),
- 2.) Not dependent on federal funding in the last fiscal year, and
- 3.) Broke even through operational revenue alone.

eHI identified 24 sustainable initiatives in 2011. However, the 2011 survey showed a 33% increase in sustainable initiatives over the 18 sustainable initiatives in 2010.

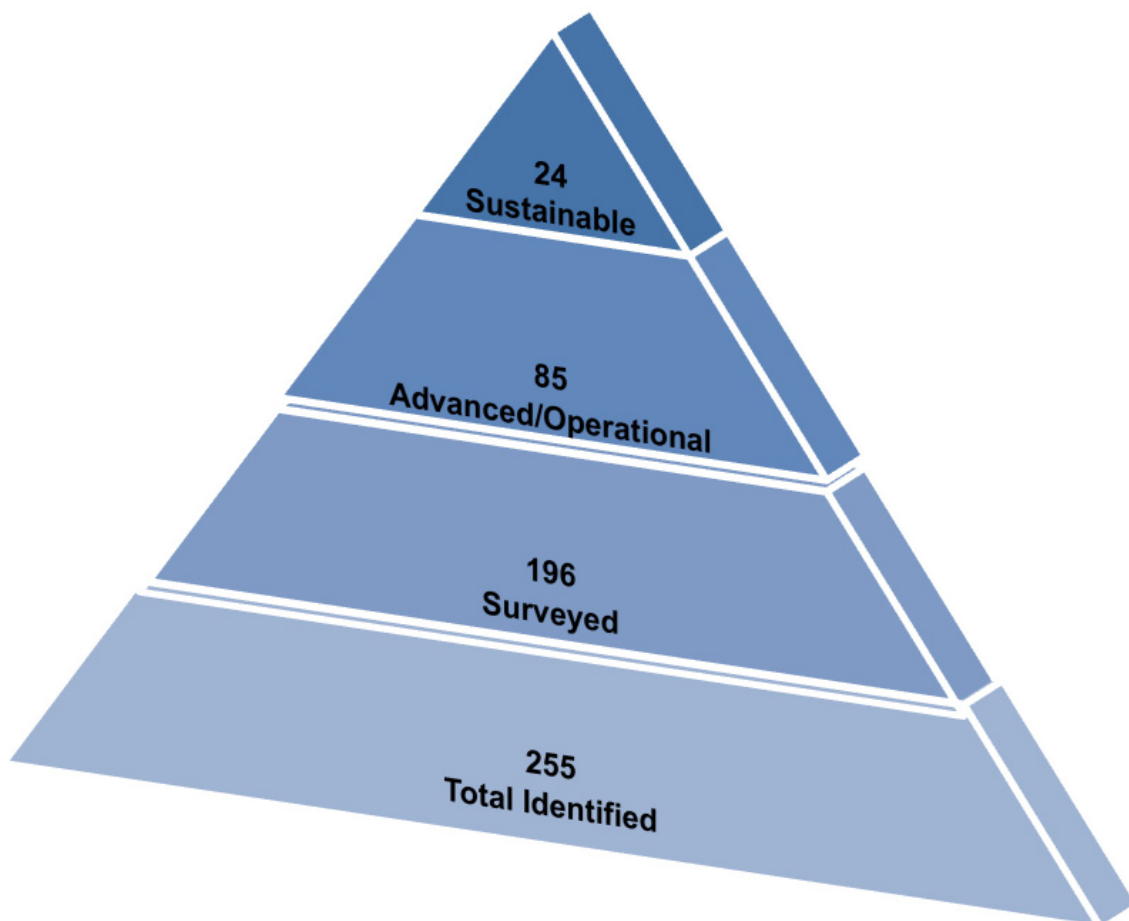
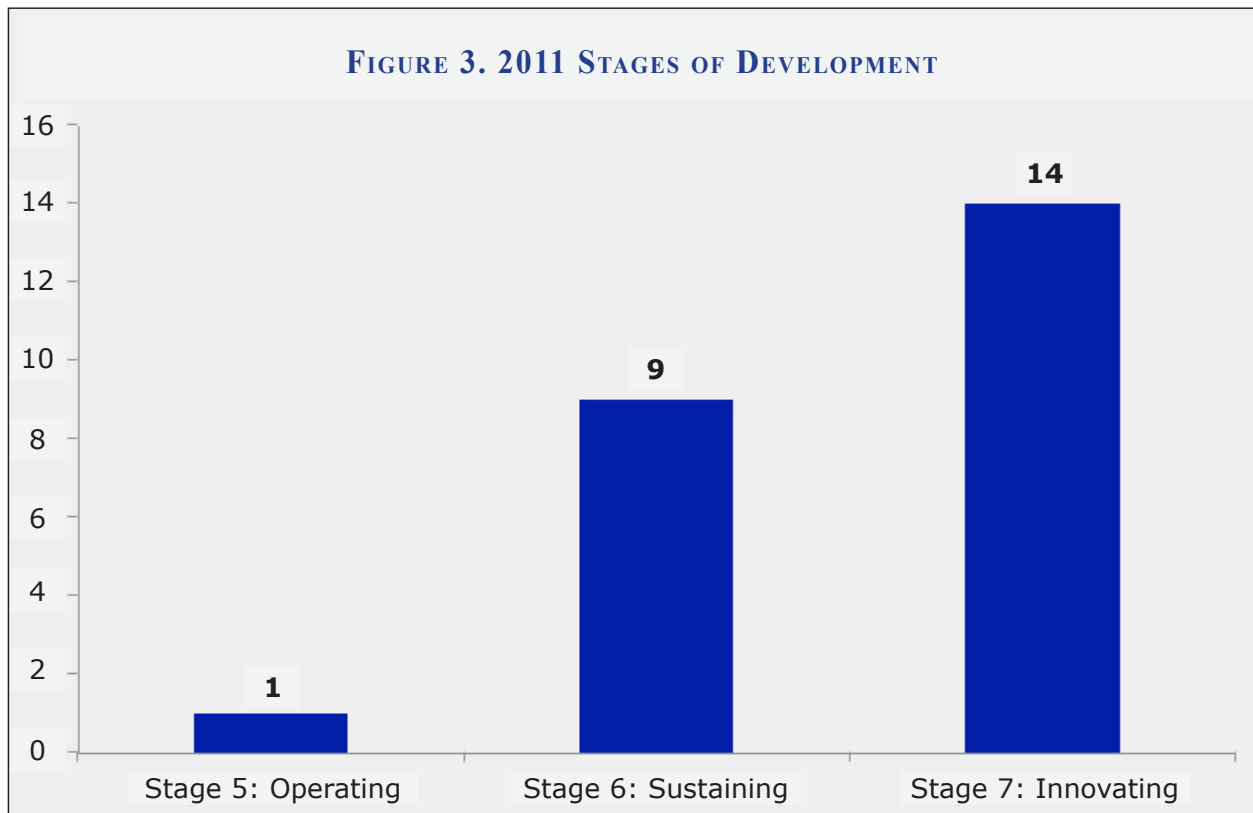


FIGURE 2.

The sustainable initiatives predominantly reported being at Stage 7, with 14 indicating they operate at the “Innovating” level. Figure 3 below details how many sustainable initiatives are at each stage of advanced development.



TYPES OF INITIATIVES

The sustainable initiatives can be stratified across three categories. Community-based, non-profit initiatives are the principal type of sustainable HIEs (17). Six (6) indicated they are community-based for-profit exchanges, and one (1) initiative indicated they are a hospital-based or integrated delivery network (IDN) exchange. While none of the sustainable initiatives indicated they are the state designated entity or statewide HIE, a number indicated they received some federal funding in the last fiscal year. It should be noted that IDNs may be underrepresented in the eHI survey. IDNs were defined as being hospital-based. Often IDNs do not consider themselves as health information exchange initiatives, despite the fact that many are exchanging data with stakeholders outside of their networks. Other recent surveys focusing specifically on exchange activities in the private sector identified more activity amongst IDNs.³

³ KLAS Report, “Health Information Exchanges: Rapid Growth in an Evolving Market.” 2011.

WHAT MAJOR CHALLENGES ARE SUSTAINABLE INITIATIVES FACING?

The majority of all HIE initiatives responding to the 2011 survey report that developing a sustainable business model and defining value are their biggest challenges. Though these challenges are less common for sustainable initiatives, they report an overall list of challenges that is very similar. This result suggests that even sustainable HIEs must continue to address many of the governance, policy, technical and operational challenges that all HIEs must face, regardless of their stage of development. Defining value, addressing organization and governance issues, privacy and confidentiality issues, and technical aspects of HIE remain top challenges for sustainable HIEs, with 19 initiatives indicating these to be very difficult or moderately difficult challenges.

Figure 4 below details the top challenges faced by the sustainable initiatives. The superscript numbers (1-20) represent the ordinal ranking of challenges by all HIE initiatives in the full survey, illustrating the similarities in challenges faced by sustainable HIEs as compared to all HIEs responding to the 2011 survey.

FIGURE 4. CHALLENGES FACED BY SUSTAINABLE INITIATIVES	
	2011
Addressing Organization and Governance Issues ⁽⁹⁾	19
Addressing Privacy and Confidentiality Issues - Hipaa and Other ⁽⁵⁾	19
Addressing Technical Aspects Including Architecture, Applications and Connectivity ⁽⁴⁾	19
Defining Value ⁽²⁾	19
Addressing Government Policy and Mandates ⁽³⁾	18
Systems Integration ⁽⁶⁾	18
Engaging Practicing Clinicians ⁽⁷⁾	16
Managing Growth ⁽¹⁶⁾	16
Addressing Other Legal Issues ⁽¹⁰⁾	15
Engaging Health Plans ⁽¹¹⁾	15
Accurately Linking Patient Data ⁽⁸⁾	14
Developing a Sustainable Business Model ⁽¹⁾	14
Engaging Laboratories ⁽¹³⁾	13
Engaging Purchasers ⁽¹²⁾	12
User Management ⁽¹⁵⁾	12
Engaging Hospitals ⁽¹⁷⁾	11
System/Technology Procurement ⁽¹⁸⁾	8
Securing Upfront Funding ⁽¹⁴⁾	7
Obtaining State Charter/Authorization ⁽²⁰⁾	5
Securing Tax-Exempt Status ⁽¹⁹⁾	5

VI | STAKEHOLDERS TAKING THE LEAD

WHO ARE THE KEY STAKEHOLDERS INVOLVED IN GOVERNANCE?

The stakeholders involved in governing sustainable initiatives mirror the stakeholders in all of the initiatives who responded to the annual survey, which would include hospitals (22), primary care physicians (17), and specialty care physicians (12). Figure 5 below provides a full list of the stakeholders involved in governing the sustainable initiatives.

FIGURE 5. KEY STAKEHOLDERS INVOLVED IN GOVERNING SUSTAINABLE INITIATIVES	
	2011
Hospitals	22
Primary Care Physicians	17
Specialty Care Physicians	12
Payers	9
Community and/or Public Health Clinics	8
Consumers	7
Patient or Consumer Groups	7
Employers or Health Care Purchasers	6
Local Public Health Department	6
Outpatient/Ambulatory Surgery Centers	6
Behavioral or Mental Health Providers	4
Long-Term Care Providers	4
Quality Improvement Organizations	4
State Public Health Department	4
Independent Laboratories	3
Skilled Nursing Facilities	3
Independent Radiology Centers	2
Indian or Tribal Health Centers	2
Military and/or VA Medical Facilities	2
School-Based Clinics	2
State - Governor's Office	2
Healthcare IT Suppliers	1
Medicaid	1
Pharmacies	1

HOW MANY STAKEHOLDERS ARE INVOLVED?

It is important for an HIE to reach a critical mass of stakeholders to be sustainable, though that number will differ for each initiative. How many stakeholders are needed for sustainability can vary based on geography, population size, and number of competitors. Sustainable initiatives tend to have a robust mix of stakeholders sending information to the HIE (hospitals, labs, etc.) and using the information from the exchange (physicians, long-term care, etc.). However, some have only a few hospitals involved, but a large number of providers. Because the survey does not differentiate those who have zero (0) stakeholder participants in a specific category from those that have more than one, it is difficult to draw conclusions as to the significance of the number and types of stakeholders and the impact on sustainability.

Figure 6 details how many stakeholders are involved in the sustainable initiatives.

FIGURE 6. 2011 NUMBER OF STAKEHOLDERS INVOLVED IN SUSTAINABLE INITIATIVES								
	0-10	11-20	21-30	31-40	41-50	51-60	61+	Total Initiatives
Behavioral or Mental Health Providers	17	5	1	0	0	0	1	24
Hospitals	10	4	3	1	3	1	1	23
Primary Care Physicians	0	2	1	1	0	0	19	23
Specialty Care Physicians	4	1	1	0	0	0	17	23
Independent Laboratories	21	1	0	0	0	0	1	23
Payers	23	0	0	0	0	0	0	23
Independent Radiology Centers	20	1	1	0	0	0	0	22
Long-Term Care Providers	18	1	0	1	1	0	1	22
Outpatient/Ambulatory Surgery Centers	16	4	0	0	0	1	1	22
Pharmacies	16	0	1	1	0	0	4	22
Employers or Health Care Purchasers	20	1	0	0	0	0	0	21
Skilled Nursing Facilities	20	0	1	0	0	0	0	21
School-Based Clinics	21	0	0	0	0	0	0	21
Consumers	16	0	0	0	0	0	4	20



WHICH STAKEHOLDERS ARE EXCHANGING DATA?

While stakeholder involvement varies across initiatives, hospitals and primary care physicians were involved in one form or another in all of the 24 sustainable initiatives (i.e., governance and/or data exchange). This likely reflects the expanded role associated with advanced HIE development and the capacity of these initiatives to offer services beyond simple data sharing amongst providers. Figures 7 and 8 below show the stakeholders providing and receiving data in the sustainable initiatives.

FIGURE 7. STAKEHOLDERS PROVIDING DATA IN SUSTAINABLE INITIATIVES	
	2011
Hospitals	22
Primary Care Physicians	22
Specialty Care Physicians	20
Independent Laboratories	17
Outpatient/Ambulatory Surgery Centers	15
Independent Radiology Centers	14
Community and/or Public Health Clinics	11
Long-Term Care Providers	9
Payers	9
Pharmacy Benefit Management Companies	9
Pharmacies	8
Behavioral or Mental Health Providers	7
Military and/or VA Medical Facilities	6
Skilled Nursing Facilities	6
Local Public Health Department	5
Medicaid	4
State Public Health Department	4
Medicare	3
Quality Improvement Organizations	3
School-Based Clinics	3
Consumers	2
Employers or Health Care Purchasers	2
Healthcare IT Suppliers	2
Indian or Tribal Health Centers	2
State - Governor's Office	2
Patient or Consumer Groups	1
Center for Disease Control	0

FIGURE 8. STAKEHOLDERS VIEWING OR RECEIVING DATA IN SUSTAINABLE INITIATIVES	
	2011
Hospitals	22
Primary Care Physicians	22
Specialty Care Physicians	21
Community and/or Public Health Clinics	18
Outpatient/Ambulatory Surgery Centers	16
Behavioral or Mental Health Providers	14
Skilled Nursing Facilities	14
Independent Radiology Centers	13
Local Public Health Department	13
Long-Term Care Providers	13
Independent Laboratories	12
School-Based Clinics	9
Military and/or VA Medical Facilities	8
Payers	8
Pharmacies	8
Consumers	6
Indian or Tribal Health Centers	6
Quality Improvement Organizations	6
State Public Health Department	6
Medicaid	5
Patient or Consumer Groups	5
Employers or Health Care Purchasers	3
Medicare	3
Center for Disease Control	2
Pharmacy Benefit Management Companies	2
State - Governor's Office	2
Healthcare IT Suppliers	1



ARE SUSTAINABLE INITIATIVES PLANNING ON SUPPORTING ACCOUNTABLE CARE ORGANIZATIONS?

Since the passage of the Affordable Care Act, Accountable Care Organizations (ACOs) have received significant attention from the medical community. Since the May 2011 release of the notice of proposed rulemaking that defined the requirements and structure of an ACO from the Centers for Medicare & Medicaid Services (CMS), there has been lively discussion on the rule's finer points. CMS has received innumerable comment letters from across the healthcare industry. Because patients involved in the program are not required to stay within a specific network, care coordination and health information exchange will be critical to successful ACOs. Hospitals and providers in an ACO will need to exchange information not just within their own network or practice, but also with those outside of their organizations. They will also need a holistic view of their patients' health histories to ensure they can manage and improve the quality of patient care while reducing costs.

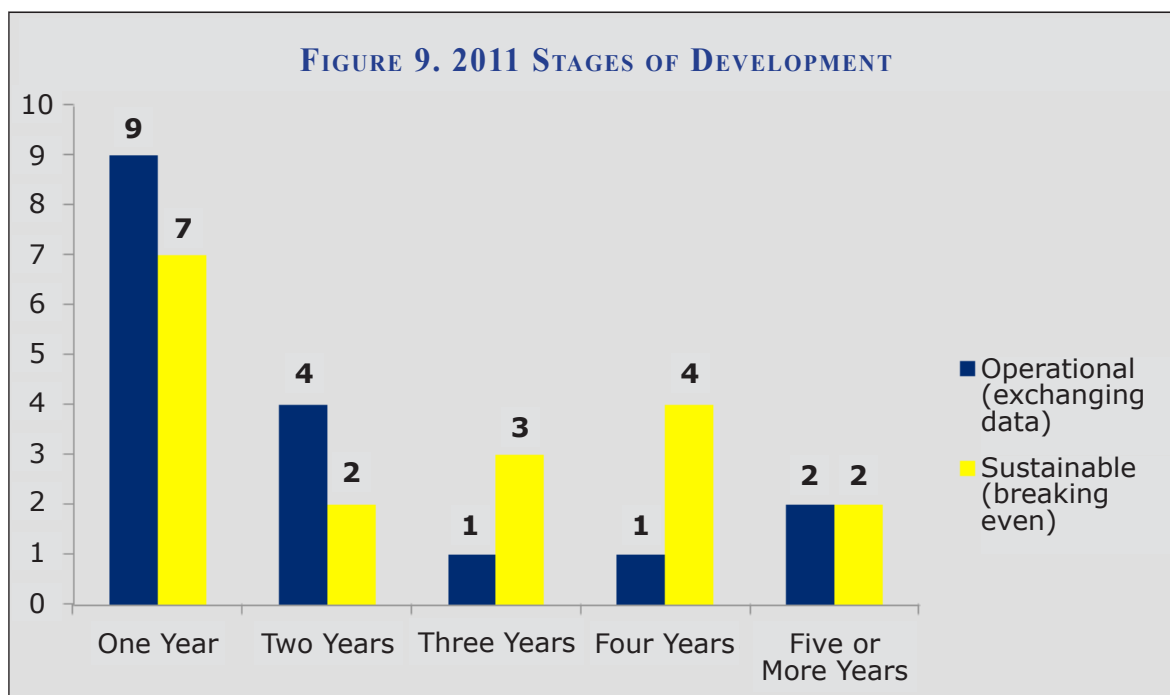
Some HIE initiatives may be positioned to act as an intermediary to facilitate the exchange of clinical information among disparate systems, providers and patients to support ACOs. When asked if they plan on participating in an ACO, 13 of the 24 sustainable initiatives indicated that they will participate in an ACO, and 1 indicated they would not participate. Ten initiatives are unsure of their plans regarding ACOs. A specific type of HIE (e.g. community based non-profit) does not appear more likely than others to plan to participate in an ACO.

VII CHANGING BUSINESS MODELS

HOW LONG DID IT TAKE TO BECOME OPERATIONAL AND SUSTAINABLE?

Sustainable initiatives were asked how long it took them to become operational and sustainable. Operational initiatives are defined as groups that are actively exchanging at least one type of data with stakeholders outside of their network. The eHI survey identified 85 HIE initiatives which are operational. Of that 85, only 24 were also sustainable. Nine initiatives indicated that they were operational (9) within one year. The majority were operational within 3 years.

The path to sustainability can also be long. Very few (7) HIEs became sustainable in one year. Only half (12) of the group indicated it took them three years or less to be sustainable. Many of the groups identified were early adopters of health information exchange, which may help explain the long time period. Figure 9 below demonstrates the length of time initiatives took to be operational and sustainable.



WHO IS FUNDING THE SUSTAINABLE INITIATIVES?

HIEs commonly turn to a number of sources for funding. Grants often help nascent HIEs overcome substantial start-up costs, but are not good sources of long-term sustainability. For ongoing expenses, HIEs typically look to the stakeholders that are benefitting from the exchange: providers, hospitals, payers, etc. As expected, 23⁴ of the sustainable initiatives indicated they have received funds from a customer, and the majority indicated that charge providers and hospitals to participate in the exchange. Figure 10 details which groups are being charged a fee to participate by the sustainable initiatives.

FIGURE 10. 2011 SUSTAINABLE HIEs CHARGING GROUPS TO PARTICIPATE

	Yes	No
Physicians	16	8
Hospitals	21	3
Payers	15	6

Because the exchange of health information is so imperative to recent developments in the healthcare industry, the services offered by HIEs are in high demand. For initiatives that manage to reach sustainability, HIE can be a profitable enterprise. None of the 18 sustainable initiatives that responded to the 2010 survey indicated that their revenue was more than \$10 million; but in 2011, two (2) initiatives indicated their revenue was more than \$10 million. Figure 11 shows how much the sustainable initiatives are charging physicians, hospitals, and payers annually to participate. Predictably, hospitals and payers carry the heavier burden in comparison to physicians. Not all initiatives that responded to whether or not they are charging groups to participate (Figure 10) provided the annual charge to each group (Figure 11).

FIGURE 11. 2011 AVERAGE ANNUAL CHARGE PER GROUP (SUSTAINABLE INITIATIVES)

	\$0	\$1-100	\$101-250	\$251-500	\$501-1,000	\$1,001-5,000	\$5,001-10,000	Over \$10,000
Per Physician	7	4	3	2	4	1	1	0
Per Hospital	2	1	0	0	0	2	0	18
Per Payer	3	1	0	0	0	0	1	12

⁴ The remaining initiative did not answer the survey question.



The initiatives were also asked to detail the percentage of their revenue that comes from each stakeholder group. Four out of 21 initiatives indicated they receive their revenue from a single source. The other initiatives received revenue from multiple stakeholders, mainly hospitals, provider practices, and payers. Six initiatives are receiving a portion of their funding from federal funds, most likely the ONC HIE Cooperative Agreement, Regional Extension Center, and Beacon Community programs. None of the initiatives indicated they receive any funding from pharmacies. Additionally, while much of the discussion about what makes an HIE sustainable focuses on little or no reliance on federal funding to sustain HIE, it is not uncommon for sustainable HIEs to receive some money from the government:

- » Six (6) report receiving Federal funds representing up to 40% of their revenue
- » Two (2) are more than 80% reliant on funds from State government and Medicaid

WHAT TYPES OF REVENUE MODELS ARE SUSTAINABLE INITIATIVES USING?

HIEs receive funds from stakeholders in different ways. An initiative may charge stakeholders a membership fee to participate in the exchange, fees for every time the exchange is queried, or fees for additional services offered by the HIE, among many others. To create a sustainable business model, HIE initiatives must determine the type of revenue model they will use. The model(s) chosen will typically reflect the initiative's stakeholders, and their view of the value of health information exchange. Of the 19 sustainable initiatives that reported the percentage of their revenue they receive from different revenue models, four (4) indicated that a single model accounts for 100% of their revenue. The remaining sustainable initiatives use a combination of different revenue models to create a sustainable business model. The most common revenue model assesses membership fees on participating stakeholders. 10 initiatives include membership fees as part of or the entirety of their revenue stream. Only two (2) initiatives charge usage or transaction fees. Interestingly, nine (9) initiatives charge fees for HIE services that are beyond basic services, such as a PHR portal, analytics, or quality reporting.

EXAMPLES OF FEE MODELS

The five featured HIEs detailed below all use a combination of fees from more than one stakeholder group. Some of them also charge a start-up fee and most use a tiered or sliding scale approach for ongoing subscription or participation fees. Figure 12, highlights these models; a more complete description is provided in each HIE's profile.

FIGURE 12. OVERVIEW OF HIE INITIATIVE FEE MODELS			
HIE Initiative	Start Up Fees	Ongoing Fees	Special Features
Big Bend RHIO	Training and Setup; EMR integration fees	Monthly membership fees based on licensed beds and number of licensed providers	Three-tiered fee structure based on the size of the participant organization
MedVirginia	Volume-based implementation and maintenance fees for hospitals and health systems	Monthly fees based on number of users enrolled, number of and complexity of systems connected, and the volume of data	Hospitals and health systems pay for physician EHR interfaces on a fixed price basis depending on the system. Physicians do not pay for participation
NEHEN	Members may be charged one-time assessments for additional costs, including technology improvements, legal fees, and other unplanned costs	Hospitals, health systems and providers pay subscription fees based on gross patient revenue. Insurances pay subscription fees based on premium revenue. Portal users pay tiered monthly subscription fees based on relative size	Tiered fee structure based on revenue. Started as an administrative data HIE
Quality Health Network		All participants share in the relative cost by dividing the HIE operational costs (plus a small margin to cover future capital expenses) by the number of physicians and physicians extenders within a "medical neighborhood"	"Collaborative integration unit" (per physician per month) within each medical neighborhood
SMRTNET	Connection fee based on connectivity through an HL7 interface (higher rate) or via a standard continuity of care document (lower rate)	Subscription fee model for hospitals/health systems based on size; clinics and physician practices pay based on number of prescribing providers	Network-of-networks utility model where all participants are charged the same price for the same service and each network pays based relative subscription fees



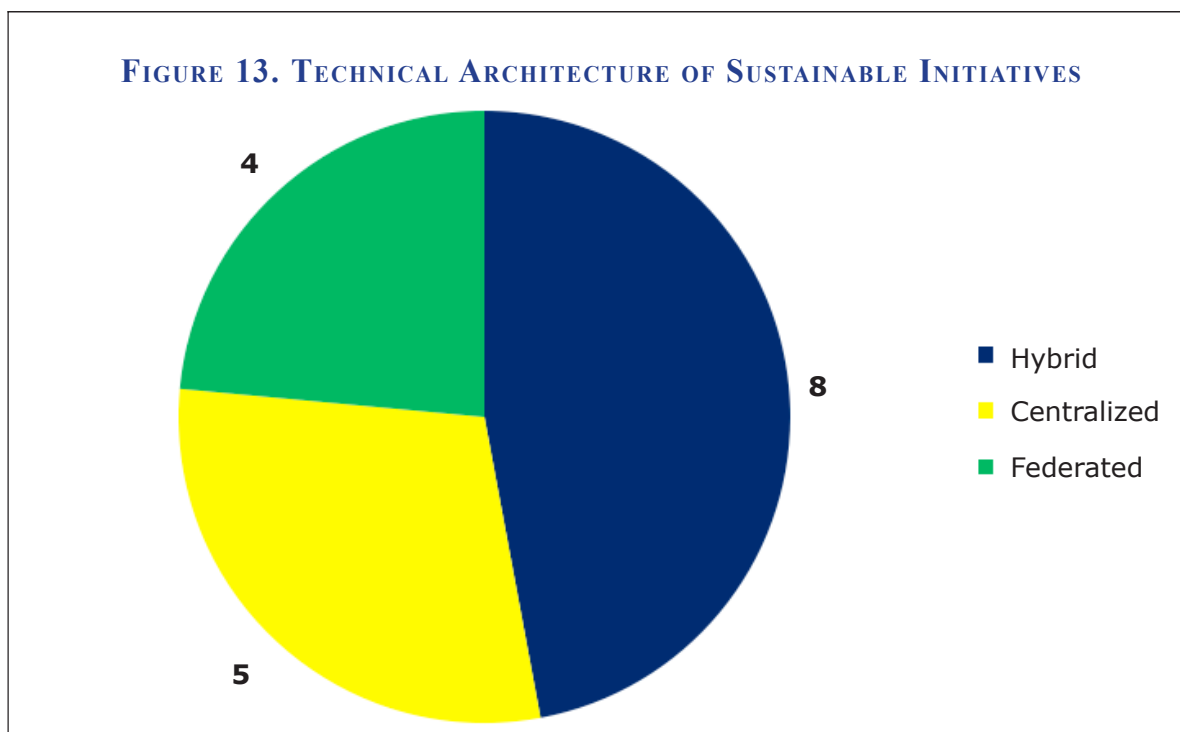
VIII | TRANSFORMING HEALTHCARE THROUGH FUNCTIONALITY AND SERVICE

WHAT IS THE TECHNICAL ARCHITECTURE OF THE SUSTAINABLE INITIATIVES?

Health information exchange initiatives may structure their technical architecture and data systems in different ways. HIEs generally fall into one of three architecture models:

- » Centralized – characterized by health information and data that resides in one central location.
- » Federated – health information is stored at the local or regional level with the HIE services acting as a conduit for exchange between other entities.
- » Hybrid – a combination of centralized and federated, often a central repository of information with “edge servers” utilized for data storage.

Sustainable initiatives utilize all three of these models, but the predominant model is a hybrid architecture (8). Figure 13 shows the breakdown of architectural models being used by the sustainable initiatives.



HOW PREPARED ARE SUSTAINABLE INITIATIVES TO SUPPORT MEANINGFUL USE REQUIREMENTS?

One way that HIE initiatives can move towards sustainability is to offer services that stakeholders desire. The Federal Meaningful Use incentive program represents a road map for HIE services that will likely see heightened demand in the coming years. An HIE that offers data exchange capabilities designed to help providers and hospitals meet meaningful use requirements is well poised to draw support in its area of operation. Sustainable initiatives appear to be capitalizing on this notion by providing a large suite of Meaningful Use related services.

This year has seen an increase in the number of sustainable initiatives providing services that fall under Meaningful Use Stage 1 and the HIT Policy Committee proposed Stage 2 requirements. It is interesting to note that of the functionalities offered and data being exchanged, sustainable initiatives tend to focus on care coordination services, rather than services that support administrative functions, such as claims and eligibility information.

Figure 14 details the number of sustainable HIE initiatives that report they are exchanging data which will help eligible providers and hospitals meet Stage 1 and proposed Stage 2 meaningful use requirements. The table is broken down by the stages of meaningful use and the data types associated with each (or not associated at all with meaningful use requirements). All of the featured sustainable HIEs report that they are focusing on providing meaningful use services to help their eligible provider and hospital users attest in Stage 1 and demonstrate compliance for Stages 2 and 3. Lab results (23), care summaries (21), emergency department summaries (21), medication data (20), and allergy info (19) are the top five types of data exchanged by the 24 sustainable initiatives.

The types of data exchanged by the sustainable initiatives are similar to the data exchanged by the 51 advanced HIEs surveyed who are not sustainable.

FIGURE 14. DATA EXCHANGED BY SUSTAINABLE INITIATIVES	
2011	
Stage 1 Meaningful Use Items	
Laboratory Results	23
Care Summaries (Demographics, Encounter History, Medications, Etc.)	21
Emergency Department Episodes/Discharge Summaries	21
Medication Data (Including Outpatient Prescriptions)	20
Allergy Info	19
Outpatient Episodes	17
Retail Pharmacy	10
Additional Stage 2 Proposed Meaningful Use Items	
Outpatient Laboratory Results	21
Inpatient Discharge Summaries	20
Radiology Results	20
Physician Notes	19
Laboratory Ordering	13
Enrollment/Eligibility	11
Claims: Pharmacy, Medical, and/or Hospital	9
Radiology Images	7
Patient-Reported Data	4
Advance Directives	4
Non-Meaningful Use Items	
Inpatient Diagnoses and Procedures	20
Cardiology	19
Gastroenterology	18
Pathology	18
Dictation/Transcription	17
Pulmonary	17
Elder Care Information	5
VA Data	3

FIGURE 15. DATA EXCHANGED BY INITIATIVES

	Advanced But Not Sustainable (n=51)	Sustainable (n=24)
Stage 1 Meaningful Use Items		
Laboratory Results	80%	96%
Care Summaries (Demographics, Encounter History, Medications, Etc.)	61%	88%
Emergency Department Episodes/Discharge Summaries	57%	88%
Retail Pharmacy	18%	42%
Additional Stage 2 Proposed Meaningful Use Items		
Outpatient Laboratory Results	65%	88%
Inpatient Discharge Summaries	57%	83%
Radiology Results	67%	83%
Physician Notes	51%	79%
Laboratory Ordering	33%	54%
Radiology Images	18%	29%
Advance Directives	24%	17%
Non-Meaningful Use Items		
Inpatient Diagnoses and Procedures	61%	83%
Medication Data (Including Outpatient Prescriptions)	71%	83%
Allergy Info	67%	79%
Cardiology	39%	79%
Gastroenterology	25%	75%
Pathology	49%	75%
Dictation/Transcription	41%	71%
Outpatient Episodes	49%	71%
Pulmonary	33%	71%
Enrollment/Eligibility	29%	46%
Claims: Pharmacy, Medical, and/or Hospital	22%	38%
Elder Care Information	14%	21%
Patient-Reported Data	12%	17%
VA Data	2%	13%



WHAT FUNCTIONALITIES ARE OFFERED MOST FREQUENTLY?

The top functionalities offered by sustainable initiatives are slightly different than those offered by advanced HIEs exchanging data. Figure 16 and 17 (pg. 24-25) details the number of sustainable HIE initiatives that report they are providing functionality which will help eligible providers and hospitals meet Stage 1 and proposed Stage 2 meaningful use requirements. The tables are broken down by the stages of meaningful use and the functionality associated with each.

ARE SUSTAINABLE INITIATIVES OFFERING NON-CLINICAL & VALUE-ADD SERVICES?

While more than half of the sustainable initiatives are offering a number of support functions, fewer are offering non-clinical value-add services. As providers and hospitals tend to represent a significant portion of a given HIE's revenue, it is not surprising that sustainable initiatives have focused on clinical services and support before branching out to add non-clinical value-add services. Still, such value-add services not only benefit an HIE's customers, they also help support user adoption and HIE utilization among healthcare providers and hospitals in an HIE's service area. For example, reducing the number of electronic health record (EHR) interfaces that a hospital or lab must develop and maintain saves participating members money while also increasing the value of the HIE for stakeholders that are not currently participating. In this example, small independent physician practices may be more likely to join the HIE if it means that their past efforts at EHR adoption will not require them to spend additional money building new interfaces to connect to the HIE. Thus support functions and value-add services demonstrate value to potential stakeholders, making the HIE more viable.

FIGURE 16. CURRENT FUNCTIONALITIES FOR SUSTAINABLE INITIATIVES	
	2011
Stage 1 Meaningful Use Items	
Connectivity to Electronic Health Records	21
Health Summaries for Continuity Of Care	18
Alerts to Providers	17
Clinical Documentation	16
Alerts to Providers-Drug-to-Drug	14
Alerts to Providers-Drug-to-Allergy	12
Clinical Decision Support	12
Electronic Prescribing	12
Medication Reconciliation	11
Ambulatory Order Entry	10
Connectivity to Other HIEs, IDNs, RHIOs, Etc.	10
Public Health: Syndromic Surveillance Reporting	9
Immunization Registry	8
Alerts to Providers-Drug-to-Food Allergy	7
Public Health: Electronic Laboratory Reporting	7
Claims or Eligibility Checking	7
Additional Stage 2 Proposed Meaningful Use Items	
Results Delivery (e.g. Laboratory or Diagnostic Study Results)	17
Provider Directory	14
Disease or Chronic Care Management	9
Disease Registries	8
Image Exchange	6
Reminders	6
Populate PHRs	3
Patient Access to Information Through The Exchange/Patient Portal	3
Patient-Provider Communication - Other	3
Quality Performance Reporting for Purchasers Or Payers	3
Patient-Provider Clinical Data Exchange	2
Patient-Provider Email	2
Non-Meaningful Use Items	
Master Patient Index	20
Analytics	15
Consultation/Referral	13
Record Locator Service	13
Electronic Referral Processing	9
Visiting Nurses Accessibility	8
Quality Improvement Reporting for Clinicians	6
Emergency Medical Services (EMS) Connectivity	5
Public Health Alerts	5
Medical Device Interoperability	4
Public Health: Case Management	4
VA Connectivity	3
Home Monitoring	2



FIGURE 17. CURRENT FUNCTIONALITIES FOR INITIATIVES

	Advanced but not Sustainable (n=51)	Sustainable (n=24)
Stage 1 Meaningful Use Items		
Connectivity To Electronic Health Records	76%	88%
Alerts To Providers-Drug-To-Drug	33%	58%
Alerts To Providers-Drug-To-Allergy	33%	50%
Clinical Decision Support	25%	50%
Electronic Prescribing	39%	50%
Medication Reconciliation	22%	46%
Ambulatory Order Entry	20%	42%
Connectivity To Other HIEs, IDNs, RHIOs, Etc.	18%	42%
Public Health: Syndromatic Surveillance Reporting	10%	38%
Immunization Registry	14%	33%
Alerts To Providers-Drug-To-Food Allergy	27%	29%
Public Health: Electronic Laboratory Reporting	12%	29%
Additional Stage 2 Proposed Meaningful Use Items		
Results Delivery (e.g. Laboratory Or Diagnostic Study Results)	59%	71%
Provider Directory	43%	58%
Disease Registries	20%	33%
Image Exchange	24%	25%
Reminders	20%	25%
Patient Access To Information Through The Exchange/Patient Portal	14%	13%
Patient-Provider Communication - Other	10%	13%
Populate PHRs	10%	13%
Non-Meaningful Use Items		
Master Patient Index	78%	83%
Health Summaries For Continuity Of Care	49%	75%
Alerts To Providers	37%	71%
Clinical Documentation	39%	67%
Analytics	22%	63%
Consultation/Referral	39%	54%
Record Locator Service	49%	54%
Disease Or Chronic Care Management	24%	38%
Electronic Referral Processing	37%	38%
Visiting Nurses Accessibility	16%	33%
Claims Or Eligibility Checking	24%	29%
Quality Improvement Reporting For Clinicians	20%	25%
Emergency Medical Services (EMS) Connectivity	8%	21%
Public Health Alerts	6%	21%
Medical Device Interoperability	10%	17%
Public Health: Case Management	2%	17%
Quality Performance Reporting For Purchasers Or Payers	6%	13%
VA Connectivity	2%	13%
Home Monitoring	4%	8%
Patient-Provider Clinical Data Exchange	8%	8%
Patient-Provider Email	4%	8%



Figures 18 and 19 provide a list of the support functions and non-clinical value-add services the sustainable initiatives are providing. Data from the 2010 and 2011 HIE surveys is provided for comparison. "N/A" denotes a functionality that was not in the 2010 response options.

FIGURE 18. SUPPORT FUNCTIONS SUSTAINABLE INITIATIVES PROVIDE		
	2010	2011
Technical assistance for implementation with clinicians	14	19
Workflow modification guidance for clinicians	11	19
Dissemination of best practices and research	10	17
Hosting a support hot-line for providers	9	16
Liaison between public and private health IT efforts in service area	10	15
Technical assistance for implementation in hospitals	10	15
Vendor-neutral advice on purchasing decisions	9	15
Workflow modification guidance for hospitals	6	15
Provide implementation guides for health information exchange	12	14
Supporting quality improvement or performance reporting for purchasers and/or payers	7	10
Coordinating financial incentives within the market	4	8
Provide patient or provider data management services	N/A	8
Recommendations for specific vendors	6	7
Group purchasing	4	3

FIGURE 19. NON-CLINICAL VALUE-ADD SERVICES PROVIDED BY SUSTAINABLE INITIATIVES		
	2010	2011
Performing analytics for stakeholders	N/A	11
Providing services that reduce interfaces for EHR vendors	3	11
Distribution services, such as distributing reports to physicians	6	9
Services to assist with data loads into electronic health records	5	9
Electronic medical record hosting or EHR-Lite	6	7
Hosting Nationwide Health Information Network (NwHIN) Gateway/Connecting EHRs to NwHIN	2	7
Quality reporting	5	7
Charges for providing access to provider and provider related databases	2	5
Provider directory services	N/A	5
Patient identity management reports	N/A	3
Printing services	1	3
Routing services for personal health records	2	3
Billing Services	1	2
Credentialing services	0	1
Providing access to clinical trial database	0	1
Telecom management services	1	1

IX VENDORS

WHICH VENDORS SUPPORT THE SUSTAINABLE INITIATIVES?

Initiatives typically engage in a long, complex process to choose a vendor. Choosing the right vendor is an integral part of a successful initiative because most initiatives simply do not have the time or money to spend experimenting with different exchange solutions. Nine (9) of the sustainable initiatives evaluated up to three vendors before choosing their current vendor. Only four (4) initiatives indicated they evaluated 7-10 vendors.

Sustainable initiatives were asked who their primary HIE vendor is. Some of the sustainable initiatives utilize more than one vendor. In total, 18 vendors or homegrown systems provide the technology or infrastructure for the sustainable initiatives. OptumInsight (formerly Axolotl), provides services and infrastructure to the most sustainable initiatives (6), with Cerner being the second most utilized at four (4) initiatives. Three (3) of the sustainable initiatives indicated they use a homegrown system. Figure 20 provides a ranking of all 18 vendors identified in the survey responses by the number of sustainable HIE initiatives that named them as their vendor or who reported having a homegrown system.

	2011
Axolotl (now OptumInsight)	6
Cerner	4
Homegrown System	3
Medicity	2
Mirth	2
Browsersoft	2
Avocare	1
Cogon Systems	1
GE Healthcare	1
IBM	1
Intersystems	1
Microsoft	1
Oracle	1
Orion Health	1
RelayHealth	1
Sandlot	1
Verizon	1
Wellogic	1



WHAT IS THE COST?

The cost of data exchange can vary substantially based on many factors, such as functionality, data types (and the number of source systems), interface complexity, number of data sources, architecture and data storage, capacity of HIE and reliance on the vendor, among others. Some vendors help make HIE more affordable by performing work and discounting license fees in the early stages of implementation, with the cost increasing over time as the HIE matures and becomes self-sustaining.

Figure 21 details the amount sustainable initiatives have spent on their vendors in the last fiscal year.

	2011
\$0-100,000	3
\$100,001-200,000	2
\$200,001-300,000	0
\$300,001-400,000	1
\$400,001-500,000	2
\$500,001-600,000	0
\$600,001-700,000	0
\$700,001-800,000	1
\$800,001-900,000	0
\$900,001-1 million	2
Over \$1 million	3

X | INCORPORATING THE DIRECT PROJECT

In March 2010, the Office of the National Coordinator (ONC) launched an initiative known as the Direct Project. The Direct Project is a key component of the Nationwide Health Information Network (NwHIN), developed to specify a simple, secure, scalable, standards-based way for participants to send authenticated, encrypted health information directly to known and trusted recipients over the Internet. Internet protocols represent an easy-to-use, secure method to replace mail and fax transmissions amongst providers and other stakeholders, such as labs and public health departments. Additionally, the Direct Project aims to overcome the lack of interoperability between disparate EHRs by alleviating the need to build EHR-specific custom interfaces. HIE initiatives that serve providers that are paper-based or have uncertified EHRs may be able to use the Direct Project to meet their health information exchange needs.

While the Direct Project is currently in a pilot phase, HIE initiatives can incorporate its standards and methods into their service offerings. In fact, initiatives under the State HIE Cooperative Agreement program were required to define an implementation strategy for Direct in their State operating plans in order to obtain ONC approval for implementation funding. In 2011, 18 of the sustainable initiatives responded that they will be incorporating Direct into their service offerings. None of the initiatives indicated that they do not plan to include Direct services. Respondents were also asked what use cases they are or will be using the Direct Project to solve. See Figure 22 below for a list of the use cases being used or considered.

FIGURE 22. 2011 DIRECT PROJECT USE CASES FOR SUSTAINABLE INITIATIVES

	Currently Using	Planning to Use	Considering Whether to Use	Decided Not to Use
Transitions of Care (Clinical Summary from Hospital to PCP, PCP to Specialist, Specialist to PCP)	6	7	4	0
Exchange of Lab Results (Lab Results from Laboratory to PCP)	3	6	5	3
Sending Information to Patients (Health Information from PCP to Personal Health Record)	2	2	8	1
Public Health Reporting (Immunization Data from PCP to Public Health Department)	1	8	6	2

XI | PATIENT SERVICES

While most HIE initiatives do not directly interact with patients, some of the sustainable initiatives are offering functional support services for patients. Currently, six (6) sustainable initiatives allow patients to provide consent via the exchange and six (6) allow patients to review audit histories detailing which HIE users have accessed their record(s); three (3) of these six (6) initiatives provide both services. With Stage 2 of Meaningful Use focusing more on patient interaction, the number of initiatives offering services such as connectivity with personal health records, patients' ability to report health information and/or view summaries of care is likely to increase within the next two to four years. Figure 23 provides a view of the services that sustainable HIE initiatives report that they are currently offering patients.

FIGURE 23. SERVICES OFFERED TO PATIENTS BY SUSTAINABLE INITIATIVES

	2011
Authorize the Sharing of Their Healthcare Information	6
Review Audits of Access to Their Healthcare Information	6
Access Educational Information on Health and Healthcare	3
Download Their Health Information	2
Electronic Interactions with Their Care Providers	2
Make New Appointments	2
Request or Refill Prescriptions	2
Add Information on Their Health Status	1
Check Eligibility	1
Request Referrals	1
Review Appointment History	1
Review Their Health Data	1
Review Progress for Chronic Diseases	0
Schedule Lab Tests	0

ENHANCING PATIENT PRIVACY

Under HITECH, the Office of Civil Rights (OCR) was required to update the Health Insurance Portability and Accountability Act (HIPAA) regulations. This update expanded the business associate requirements of HIPAA to include health information exchanges, while also enhancing rules for accounting for disclosures to take into account the expanded role of EHRs in healthcare.

Although the HIPAA Privacy Rule does not require express patient consent or authorization for the exchange of health information for many routine purposes, HIE initiatives have typically implemented policies that promote patient privacy by giving patients some choice about whether or not their health information is included in or can be exchanged through the initiative. Furthermore, state laws often require specific consent or authorization for the disclosure of all or certain types of health data. Providing patients with the right to either opt-in (consent provided before the information is included in or exchanged by the initiative) or opt-out (the patient's information is part of the exchange initiative unless the patient expressly requests that it not be exchanged) may be required by applicable law or may come at the discretion of the treating provider or participating organization.



Initiatives were asked at what level they offer either opt-in consent or opt-out choice. Opt-out is still the predominant type of privacy model used by sustainable HIEs. Additionally, many of sustainable HIE initiatives provide consent options at the provider or organization level. However, a number of the initiatives are providing more granular levels of consent at the encounter or data level. See Figure 24 below for details on the level of consent provided by sustainable initiatives.

FIGURE 24. 2011 LEVEL OF OPT-IN/OPT-OUT CHOICE FOR SUSTAINABLE INITIATIVES		
	Opt-in	Opt-out
By Provider	3	12
By Sending Organization (Hospital, Lab, Etc.)	5	10
By Data Type (Lab, Radiology Results, Etc.)	1	7
By Encounter	1	7
By Data Field or Individual Data Element (Demographic Information)	1	6
Sensitive Data (Mental Health, HIV, Etc.)	4	4

WHO IS RESPONSIBLE FOR SECURING CONSENT?

Many initiatives rely on providers and their staff to educate patients about their choices with regard to health information exchange and to obtain their opt-in consent or opt-out request, if applicable. The majority of sustainable initiatives (16) are not responsible for managing consent, while eight (8) initiatives are responsible. The initiatives were also asked if they have an electronic means for obtaining consent. Ten (10) initiatives indicated that they do have an electronic means, while fourteen (14) said they do not.

XII | CASE STUDIES

The five HIEs featured below demonstrated key features that made them sustainable. These initiatives and their reasons for success are highlighted in this section as well as best practices and lessons learned for other HIEs who strive to become self-sustaining.

BIG BEND REGIONAL HEALTH INFORMATION ORGANIZATION (RHIO)

Big Bend RHIO received an initial allotment of State funding to help provide a base for engaging stakeholders, selecting an HIE vendor and developing a framework for exchange. Ongoing costs are currently covered by private revenue from customers. A three-tier fee structure is used for this sustainability model, which includes a one-time fee for training to use the HIE as well as set-up; integration fees to connect the practice's EHR to the HIE; and monthly membership fees based on the type of services being used and the size of the organization (e.g., number of beds in a hospital or number of licensed providers in a practice). Because of the cost the HIE incurs when working with EHR vendors to connect to physician practices, the HIE may need to additionally increase its cost for EHR connectivity. Thus, the Big Ben RHIO continually adjusts its revenue model to ensure that it is raising enough revenue to keep the HIE sustainable, but low enough to encourage participation from the medical community.

MEDVIRGINIA

In 2000 a group of physicians turned to MedVirginia to oversee the development of an interoperable health information exchange network. MedVirginia has a relationship with a large number of healthcare stakeholders and implemented continuing education programs (e.g., HIPAA training) as well as group purchasing of medical malpractice and programs related to health information technology and secure messaging. Health information exchange (HIE) became a natural progression from the work already done, and in 2006, through pilot start-up funding from Bon Secours Richmond Health System, their HIE was implemented. MedVirginia uses a fee-based approach for hospitals and health systems, which includes a monthly fee based on the number of users enrolled in the system; the number of systems connected to the HIE and the volume of data contributed and used. Up front implementation and maintenance fees are also collected and are derived off of volume, data and the complexity to connect and maintain the interface(s). Health systems/hospitals also pay for interfaces to physician EHR systems, which are based on a fixed price and depend upon the EHR system. As a result, physicians pay nothing for use of the HIE.

NEHEN (NEW ENGLAND HEALTHCARE EXCHANGE NETWORK)

In 1998 in response to HIPAA, the New England Healthcare Exchange Network (NEHEN) started as an administrative exchange among three integrated delivery networks (IDN) and two insurance companies in Massachusetts and Rhode Island. NEHEN now has over 55 participating IDN members in Massachusetts. NEHEN's revenue model is based primarily on a tiered fee structure in which providers, including IDNs, pay a subscription fee based on their gross patient revenue. Insurance companies also are subject to a tiered subscription fee based on subscriber premium revenue. The members may also be charged one-time assessments for additional costs that the HIE may incur in any given year, including technology improvements, legal fees, and other unplanned costs. Users of the provider portal pay a tiered monthly subscription fee set on a sliding scale depending on their relative size.

SMRTNET (SECURE MEDICAL RECORDS TRANSFER NETWORK)

Secure Medical Records Transfer Network (SMRTNET) was founded on an Agency for Health Care Research and Quality (AHRQ) Transformation grant in 2005, which provided capital funding of \$500,000 for each of three years. The network pioneers included hospitals, community health centers, Native American tribes, a federal hospital, a University School of Optometry as well as public health and mental health agencies in Oklahoma City. Upon the completion of the federal funding, SMRTNET became self-sustaining through a member-based fee structure. SMRTNET uses a revenue model where all participants are charged the same price for the same service. They charge each of the networks based on their relative subscription fees. The low entry and subscription fees allow each of the networks to charge their own members/participants additional maintenance fees to keep each network sustainable as well as pay their fees to SMRTNET. They also use a subscription fee model for hospitals based on the size of the hospital/health system and for clinics and physician practices based on the number of prescribing providers. A one-time connection fee is charged based on whether the organization will be establishing connectivity through an HL7 interface or will be sending data via a standard continuity of care document (CCD).

QUALITY HEALTH NETWORK (QHN)

Funded by private seed capital of \$2.75 million from five healthcare organizations, including a health plan, hospitals, physicians and specialty care facilities, Quality Health Network (QHN) was formed to focus on improving quality, cost and efficiency ; with the deployment of HIE technology as the initial project. QHN quickly developed critical mass of users and data sources and by the end of its third year (2007), it became cash-flow positive. QHN's revenue model is consistent across communities, but how each community

apportions the costs are decided by themselves and the market share or value received by each stakeholder involved. These are referred to as “medical neighborhoods”. QHN pricing is based per physician per month (PPPM), but many different stakeholders within the medical neighborhood apportion the physician per month fees with physicians paying only a small portion of the PPPM. The PPPM pricing model has declined over time as the HIE achieves economies of scale and is defined by dividing the HIE operational costs (plus a small margin to cover future capital expenses) by the number of physicians and physicians extenders within a medical neighborhood and then splitting the PPPM costs among the stakeholders. For example, a neighborhood may be comprised of a hospital that pays 50% of PPPM costs, a health plan that pays 25% of PPPM, and providers (including safety net providers) that pay a combined total of 25% of PPPM.

ADVICE FROM SUCCESSFUL HIE LEADERS

Leaders from five sustainable HIE initiatives provided the following guidance to others striving to achieve financial viability:

- » **Evaluate the market**-Define services for providers that have the greatest value and deploy them with a plan for sustainment from the outset. There ought to be a perceived value and return on investment in everything the HIE does. Consider administrative exchange to start with given the strong business model.
- » **Identify value offered**- Given the lack of resources, if there is insufficient perceived value or insufficient volume to sustain the proposed HIE component or project, then its implementation should be seriously questioned.
- » **Understand local needs**-Every HIE is different. Although one model may work in one community it may fail in another. One must adapt to the needs of the locality in which they are providing products and services.
- » **Have clear direction**-Always ask three questions before taking action: What are we trying to do? How will we know we have succeeded? What measure will we use to track progress? If these questions cannot be adequately answered then it is probably not worth doing.
- » **Align vendors with the vision**- Make sure the relationship with vendors and the infrastructure ramp up are aligned with customer service needs. Look for opportunities to be creative with the vendor to keep costs low. For example, as new customers join the HIE, share fees with the vendor in order to minimize up front expense and align incentives to grow.
- » **Stay close to physicians** - Help physicians understand and appreciate the value of HIE. Even if the HIE is sustainable, if physicians do not use it then it is not making a difference toward improved patient care and quality.
- » **Focus on Patients**-Keep the value proposition focused on patients, such as the disabled, uninsured, and veterans and not on the technology.
- » **Run it Like a Business**- Do not rely on grant funding to sustain the HIE. Ensure that you are offering a valuable service that customers will pay for.

BIG BEND HIE

BACKGROUND

In 2005 a group of physicians in Tallahassee, Florida were joined by two hospital systems that contributed data to the HIE. Beginning in 2006, the Big Bend RHIO received state grant funding for each of three years totaling over \$800,000. Of the 10 RHIOs funded by the State, Big Bend is the only remaining HIE and the only functional community wide HIE in the state.

Big Bend provides classic HIE services, including a master patient index (MPI), record locator service (RLS), secure physician portal and connectivity with EHRs. Since 2007, Big Bend has provided secure messaging allowing for provider-to-provider transport of clinical information and email-style discussions for coordination of patient care. The system also supports eReferrals using a standard referral form and a referral queue for monitoring receipt of the information and action taken. Additionally, the system allows users to browse and upload documents from their EHR (including digital certificate). These documents are securely published to the HIE, where they are captured and indexed to a patient, and can be attached to a referral or secure message. Providers not on the network can receive the information via an automated fax process.

REVENUE MODEL

The State funding provided a base for engaging stakeholders, selecting a vendor and developing an HIE framework. Ongoing costs are covered by private revenue from customers. A three-tiered fee structure is used, which includes one-time training and set-up; integration fees to connect the practice's EHR to the HIE; and monthly membership fees based on the type of services being used and the size of the organization (e.g., number of beds in a hospital or number of licensed providers in a practice).

Because of the cost the HIE incurs when working with EHR vendors to connect to physician practices, the HIE may need to increase its cost for EHR connectivity, which is a constant balance of keeping costs low enough to encourage participation, but ensuring they are sufficient to cover the cost of doing business.

VALUE PROPOSITION

The demographic data in the HIE can help providers bill for services when they are not in direct contact with the patient (e.g., pathologist). Because providers are able to support an eReferral from their EHR they save on printing, faxing and administrative time by not having to print relevant documents from the EHR, look up the referred-to provider's fax number, and fax the referral and documentation. Additionally, the ability to track the referral for receipt and action by the referred-to provider saves time and



improves coordination of care for the patient. Additionally, HIE is required for physicians and hospitals to achieve Meaningful Use Stage 2 and 3. Using a HIE to share electronic lab data and clinical summaries as well as for syndromic surveillance and immunization reporting to public health saves costs and improves efficiencies.

RELIANCE ON FEDERAL FUNDING

Big Bend has no reliance on federal funding.

SUCCESS FACTORS

Big Bend is founded on the commitment of its members to ensure its success and provide services that meet the needs of providers and their patients. Stakeholders initially focused on gaining a critical mass of data to encourage user adoption.

Big Bend maintains a low overhead cost, which is passed along to its members. Its product offering is based on leveraging what is already in place and not duplicating the functions that EHRs can already provide. It also considers whether added services will prevent the user from having to fax information, leave their desk or pick up the phone. These are the workflow efficiencies that Big Bend finds to be most important for gaining user adoption.

ADVICE TO OTHER HIEs

- » Make sure the relationship with vendors and the infrastructure ramp up are aligned with customer service needs.
- » Look for opportunities to be creative with the vendor to keep costs low. For example, as new customers join the HIE, share fees with the vendor in order to minimize up front expense and align incentives to grow.
- » Pay close attention to the relationship with providers, vendors and stakeholders. These are critical success factors.
- » Make the benefits clear and sell it. Just because you build it does not mean they will come.

MED VIRGINIA

BACKGROUND

In 2000 a group of physicians turned to MedVirginia to oversee the development of an interoperable network. As the network was being defined and the technology framework developed, MedVirginia (who had a trusted relationship with a myriad of healthcare stakeholders) implemented continuing education programs (e.g., HIPAA training) as well as group purchasing of medical malpractice and programs related to health information technology and secure messaging. Health information exchange (HIE) became a natural progression to the work already done. In 2006, through pilot start up funding from Bon Secours, MedVirginia's HIE went live. Data being exchanged by MedVirginia includes: discharge summaries, lab results, radiology reports and images, pathology reports, operative notes, medications, allergies, and problems received from physicians through EMR interfaces. MedVirginia has also been a pilot site for connectivity with the Veteran's Administration and the Social Security Administration through the federal NwHIN Gateway.

REVENUE MODEL

Diversified revenue sources that are in place today and the capacity to fill in missing critical functions is the heart of the MedVirginia revenue model. MedVirginia uses a fee-based approach for hospitals and health systems, which includes a monthly fee based on the number of users enrolled in the system, the number of systems connected to the HIE and the volume of data contributed and used. Up front implementation and maintenance fees are also collected and are driven off of volume, data and the complexity to connect and maintain the interface(s). Health systems/hospitals also pay for interfaces to physician EHR systems. This is based on a fixed price and depends upon the EHR system. Physicians pay nothing for use of the HIE.

MedVirginia's HIO professional services are offered to other health information exchange organizations based on an hourly and/or fixed price rate. All of MedVirginia's policies are made available to marketplace for use at a fee. Federal funds support the build out of new functions and are not used to support operational costs.

VALUE PROPOSITION

For health systems and hospitals, MedVirginia provides one connection to all doctors' EHRs as opposed to the hospitals/health systems having to build point to point interfaces directly with each practice office. Additionally, participation with the Social Security Administration (SSA) means getting to the NwHIN faster and having data available for referring and admitting doctors.



The true value to physicians will come when HIE becomes a standard of care for physician adoption. It is difficult to measure value for docs even with SSA connectivity. To the degree health care reform takes place, Accountable Care Organizations (ACO) and population health will transform HIE funding, under which the benefits of HIE will align. HIEs are in an excellent position to sit in the middle, provide needed services, and to tap into revenues streaming to provider organizations.

RELIANCE ON FEDERAL FUNDING

MedVirginia receives federal funding through its work with NwHIN. The federal funding received by MedVirginia is used primarily to support the development of new functions and services. Operations are funded by private sector member fees.

SUCCESS FACTORS

MedVirginia began by providing other services to the medical community and thus, developed trust. When the HIE was rolled out, they were able to keep its operating costs low and leverage other service offerings/functions of the organization. This has allowed MedVirginia to keep the cost to entry of a physician at no cost and therefore, promote user adoption.

MedVirginia also is planning to support providers in meeting meaningful use requirements for stage 1 and 2 as it rolls out its system upgrade in 2012, to include EHR connectivity, NwHIN Direct connectivity capability, as well as a suite of professional services.

ADVICE TO OTHER HIEs

- » Get close and stay close to physicians to help them understand and appreciate the value of HIE.
- » Even if the HIE is sustainable, if physicians do not use it then it is not making a difference toward improved patient care and quality.
- » NwHIN gateway and tapping into federal partners is critical.
- » Keep the use case conversations on patients – disabled, uninsured, wounded warrior, disease management, etc... and not on the technology.
- » For HIE leaders, balance is necessary: patience vs. impatience and burnout vs. productivity.

NEW ENGLAND HEALTHCARE EXCHANGE NETWORK (NEHEN)

BACKGROUND

In 1998 in response to HIPAA, the New England Healthcare Exchange Network (NEHEN) started as an administrative exchange among three integrated delivery networks (IDN) and two insurance companies in Massachusetts and Rhode Island. Developing a home-grown software application, the participants were neither beholden to clearinghouses nor technology vendors' product roll-out schedules. NEHEN now has over 55 participating IDN members in Massachusetts. NEHEN acts as a neutral convener among competing organizations.

NEHEN currently has four product lines: 1) administrative data exchange (classic), which supports all HIPAA transactions (claims and remittance, eligibility verification, etc.); 2) small provider portal—offering administrative functions for unaffiliated providers; 3) clinical HIE including a provider directory and CCD routing for continuity of care, public health reporting, and quality reporting; and 4) an ePrescribing gateway allows hospital core systems to participate with SureScripts.

REVENUE MODEL

NEHEN's revenue model is based primarily on a tiered fee structure. Providers, including IDNs, pay a subscription fee based on their gross patient revenue. The largest revenue-grossing organizations pay more than the smallest ones. Insurance companies also are subject to a tiered subscription fee based on subscriber premium revenue.

The members may also be charged one-time assessments for additional costs that the HIE may incur in any given year, including technology improvements, legal fees, and other unplanned costs.

Users of the provider portal pay a tiered monthly subscription fee set on a sliding scale depending on their relative size.

VALUE PROPOSITION

Members get a seat at the table for product development and their cost for administrative data exchange (e.g., claim submission) is 25% of what they would each pay to a clearinghouse. NEHEN indicates that little financial ROI can be demonstrated for the clinical exchange products other than cost avoidance. Accountable Care Organizations (ACO) will realign value and necessitate the use of HIE. Insurers stand to gain the greatest benefit from reduced recidivism and redundant diagnostic testing and will likely pay for these services.

RELIANCE ON FEDERAL FUNDING

NEHEN does not rely on federal funding for operational costs. If federal funding is available, they only use it for research and development activities.

SUCCESS FACTORS

The HIE has over a decade of success and stakeholder commitment that fosters local innovation and investment. The NEHEN member community is on the leading edge of health care and implementing a shared cost model.

NEHEN was sustainable from the beginning because it was never reliant on federal funding and started with a fee structure that all of its members defined and agreed to support. NEHEN members believe in the work of the HIE and have a common vision that clinical exchange is needed to support health care reform and improving quality of care.

ADVICE TO OTHER HIES

- » Develop business plan.
- » Consider administrative exchange to start with given the strong business model.
- » Do not rely on grant funding to sustain the HIE.
- » ACOs and bundled payments will change everything—there will be a much greater focus on HIE.
- » More focus needs to be placed on quality of care.

QUALITY HEALTH NETWORK

BACKGROUND

Funded by private seed capital of \$2.75 million from five healthcare organizations, including a health plan, hospitals, physicians and specialty care facilities, Quality Health Network (QHN) was formed to focus on improving quality, cost and efficiency –with deployment of HIE technology as the initial project. QHN quickly developed critical mass of users and data sources and by the end of its third year (2007), it became cash-flow positive.

QHN connects all sorts of providers including acute care, ambulatory care, long-term care, behavioral health, pharmacies, extended care hospitals, hospice, urgent care, and government programs. In its initial service area of Mesa County, 92% of providers are connected. QHN is undergoing expansion to connect all providers with the 40,000 square mile of the western Colorado medical trade area.

QHN's extensive service offerings can be grouped within three broad categories:

- » "Shipping and Receiving" - clinical results routing supported by a patient index to EMR and other systems; a patient-centric virtual health record along with electronic referrals and care coordination processes, public health alerts and disease reporting, Electronic lab orders are available with one hospital and an EMR lite product includes ePrescribing and is CCHIT certified for meaningful use.
- » Data warehouse and mining – population health management tools for chronic and preventive care as well as pay-for-performance and other data aggregations.
- » Re-engineering and practice transformation – supporting providers as they move from paper-based to electronic records. Specialists assess practice readiness, provide plans and guidance on how to implement EMR, gain lower costs and create efficiencies.

REVENUE MODEL

QHN's revenue model is consistent across communities but how each community apportions the costs are decided by each community and the market share or value received by each stakeholder involved and refers to these communities as "medical neighborhoods". QHN pricing is portrayed on a per physician per month (PPPM) basis – but many different stakeholders within the medical neighborhood apportion the per physician per month fees with physicians paying only a small portion of the PPPM. The PPPM pricing model has declined over time as the HIE achieves economies of scale and is defined by dividing the HIE operational costs (plus a small margin to cover future capital expenses) by the number of physicians and physicians extenders within a medical

neighborhood and then splitting the PPPM costs among the stakeholders. For example, a neighborhood may be comprised of a hospital that pays 50% of PPPM costs, a health plan that pays 25% of PPPM, and providers (including safety net providers) that pay a combined total of 25% of PPPM.

VALUE PROPOSITION

The value proposition of QHN varies.

Sources of data benefit from making only one connection to the HIE versus having an individual connection to every practice office and provider location. This saves the entity time and simplifies the data exchange process.

Receivers of data benefit from having a single source of truth. They receive and access data simply through one pipe and access one site versus many. They also benefit from having a longitudinal patient view of clinical data and from clinical messaging across providers, which reduces faxing and phone calls. Interfaces between their EHR and QHN allow clinical results from data sources that are connected to QHN to flow directly into the EHR eliminating the need for scanning and managing multiple interfaces to these organizations individually. Furthermore, nearly 65% of every organization that participates with QHN provides progress notes (e.g., history and physical, medications, care plan, procedures, etc), which otherwise would not be available to anyone except the treating provider, allowing for a more complete picture of the patient and therefore better treatment decisions.

EMR vendors and data sources benefit from the standard QHN discrete data interfaces with which they can develop one time and deploy to many practices.

Physicians/providers and health plans benefit from the population health management tools, which improves access to information that identifies patients at risk, identifies gaps in care, communicates care summaries to patients, and encourages better chronic and preventive care management for all patients.

Public Health Agencies benefit from distributing alerts through QHN, eliminating the need for them to disseminate thousands of faxes when a public health alert is issued. Communicable disease reporting is also provided to local public health agencies through QHN.

RELIANCE ON FEDERAL FUNDING

While QHN has received federal funding under the Regional Extension Center and Beacon Communities grants, they only rely on this funding for enhancing the services, functions, and infrastructure of the network. This funding is not used to support ongoing operations.

SUCCESS FACTORS

Critical mass of participants and data has afforded QHN the benefit of becoming an important factor in doing the business of healthcare in its service area. QHN also recognized the importance of continuously improving and enhancing its service offerings to keep up with the changing needs of health care providers and organizations. For example, QHN continues to build its warehousing capabilities to support quality reporting and care management; and they recently were approved for Nationwide Health Information Network connectivity.

QHN also has developed strategic relationships with philanthropic organizations, such as the Colorado Health Foundation, who is providing seed capital money to neighborhoods and providers who have not yet connected to QHN. The seed capital is made available to participating organizations provided that these organizations agree to pay the ongoing subscription fees needed to sustain QHN ongoing operations.

As revenue streams grow and become more diverse, QHN anticipates that its unit costs will continue to decrease making ongoing participation even more affordable.

ADVICE TO OTHER HIEs

- » Evaluate the market and define services that have greatest value and deploy them with a plan for sustainment from the outset. There ought to be a perceived value and ROI in everything the HIE does. Given the lack of resources, if there is insufficient perceived value or insufficient volume to sustain the proposed HIE component or project, then its implementation should be seriously questioned.
- » Every HIE is different. Although one model may work in one community it may fail in another.
- » One must adapt to the needs of the locality in which they are providing products and services.
- » If the HIE does not have a plan for the future, they will likely have no future.
- » Always ask three questions before taking action: What are we trying to do? How will we know we have succeeded? What measure will we use to track progress? If these questions cannot be adequately answered then it is probably not worth doing.

SMRTNET – SECURE MEDICAL RECORDS TRANSFER NETWORK

BACKGROUND

SMRTNET – Secure Medical Records Transfer Network—was founded on an AHRQ Transformations grant in 2005, which provided capital funding of \$500,000 for each of three years. The network pioneers included hospitals, community health centers, Native American tribes, a federal hospital, a University School of Optometry as well as public health and mental health agencies in Oklahoma City. Upon the completion of the federal funding, SMRTNET was self-sustaining through a member-based fee structure. SMRTNET is unique in that it helps groups to rapidly build self-governed networks that share data with other networks in SMRTNET across Oklahoma. Today, SMRTNET consists of eight self-governed networks in a “network of networks” with data across two thirds of the Oklahoma population including all 77 counties and 68 Oklahoma towns. The networks share a common public non-profit management body and all access 35 network support services provided through the AHRQ grant and subsequent efforts. SMRTNET has also assisted groups in several other states to build sustainable networks.

SMRTNET is capable of supporting both pull – data query, and push – results delivery technology; and also supports direct EHR connectivity. SMRTNET is currently piloting data analytics and clinical decision support.

REVENUE MODEL

SMRTNET keeps their prices and their overhead very low—using a utility model where all participants are charged the same price for the same service. SMRTNET charges each of the networks based on their relative subscription fees. The low entry and subscription fees allow each of the networks to charge their own members/participants additional maintenance fees to keep each network sustainable as well as pay their fees to SMRTNET.

SMRTNET uses a subscription fee model for hospitals based on the size of the hospital/health system and for clinics and physician practices based on the number of prescribing providers. A one-time connection fee is charged based on whether the organization will be establishing connectivity through an HL7 interface or will be sending data via a standard continuity of care document (CCD).

VALUE PROPOSITION

SMRTNET’s model is based on developing a tailored approach to HIE for each of its member networks using a set of proven tools and strategies. One important part of this process is to help each network define the value they will derive from HIE based on the services and functions that are important to the community. For example, a community that is interested in reducing the duplication of care provided to the uninsured was



able to demonstrate that it would reduce unnecessary hospital stays by 5% and realize reductions in emergency department usage and duplicate tests totaling \$14 million in savings.

RELIANCE ON FEDERAL FUNDING

SMRTNET is solely reliant of fees from its participants and has been financially independent for three years. It may be named by its network members in their grant applications and therefore enter into contracts that are supported by federal funds, but SMRTNET does not currently receive state or federal funding directly. The SMRTNET planning process and the SMRTNET “network of networks” have helped Oklahoma networks to obtain a Beacon community, Challenge grant, IMPACT grant and AHRQ projects.

SUCCESS FACTORS

SMRTNET has followed the philosophy of starting small and building critical mass of data and participating organizations/networks. There were six original sites for SMRTNET in one city in one network and now there are 115 sites in 68 cities across eight networks. They have focused on those organizations with the largest amount of data to quickly grow the value of the network, which now includes two-thirds of the patient population. They are currently focusing on engaging smaller practices who will likely benefit from 60-90% of their individual patient population having data available in the HIE upon query.

ADVICE TO OTHER HIEs

- » Those getting started should talk to HIEs who are sustainable and learn all they can. Today, most networks are relying too much on their software vendors and others who have not built or operated a network to help them become operational and sustainable rather than learning from those who have successfully done this before.
- » Think about how to teach and involve users in discovering the unique value of the HIE for them – if you just state the value, you will not be as successful.
- » It is important to have credible spokespeople—key providers talking to others about the value.
- » Start small and build capacity. Learn what works and does not work and continuously train staff.

XIII | RECOMMENDATIONS FOR MOVING FORWARD

Securing private funding is crucial for the sustainability of an HIE. As a result, the reliance on federal funding has historically been a leading indicator in determining whether an HIE will continue to operate after the public funds are exhausted. However, many of the sustainable HIEs in this study report that they relied on public funds – Federal and/or State (including Medicaid) for their initial start-up costs. The five featured HIEs within this report all stated that federal funds were only used to support initial capital outlays and do not currently support the operating costs of the HIE. Sustainability in a single fiscal year does not ensure sustainability over the long-term. This is the case for many HIEs that may lose significant public funding in a later year. Sustainable HIEs are continuously looking for creative ways to support HIE operations and improve their service offerings for continued viability.

Diversity in funding sources and revenue models seems to also be a key factor in HIE sustainability. There is a clear dependency between the fee structure chosen and the culture of the community in which the HIE operates and the services they provide. Given that membership fees are the most commonly used revenue model, it is important to understand the common elements that define the value proposition of an HIE in a specific community. Membership in an HIE is determined by the hospital, provider, payer or other entity seeing a tangible and demonstrable benefit that increases the value of the services that are provided. For example, the ability to effectively use the HIE to assist in both care coordination and care transitions must be shown in a manner in which potential members can understand the value and apply it to their own setting.

As a result, more study is necessary to understand the various value propositions of these HIEs and how to effectively measure the return on investment in order for participants to adequately assess potential cost savings. Each of the highlighted HIEs has successfully created a revenue model that is balanced with the overall value proposition to participants. It is necessary to further explore the elements that make these HIE initiatives sustainable and how those models and successes can be translated to other HIEs. The value that participants gain from an HIE's services has direct impact and influence on the HIE's revenue model. A clearer understanding of this value and how it translates to revenue for the HIE is still needed.

The cost of HIE also needs to be further reviewed, as there are many factors that affect this element, such as transaction and data types exchanged, vendor choice, number of data sources, etc. For HIEs in the early stages of development, it might be helpful to understand the cost drivers of HIEs and how to manage these costs to enhance an HIE's chances for rapid and long-term sustainability. Additionally, it is also necessary to study how these costs should be fairly allocated among participants, as well as how new participants in the HIE should share these costs.



Given that the start-up and initial operating costs can be defrayed by grant funding at either a federal or state level, it is also expected that these funds will expire over time. It is incumbent on the HIE to develop a revenue model that will continue the operation and administration of the HIE past the public funding cycle. However, if there are shortfalls in revenue, then it is important to know what rules need to be set by the HIE to govern how participants will fund those shortfalls. It is important to further study the business and revenue models to determine their adaptability to varying economic situations.



XIV | METHODOLOGY

The 2011 Eighth Annual Survey of Health Information Exchange was launched on May 17, 2011 and closed on June 20, 2011. Announcement of the survey was communicated through newsletters, mailing lists, and meetings to a wide range of audiences in order to elicit responses from national, state, regional, enterprise, and community-based initiatives working on health information exchange.

Each response was reviewed carefully, and significantly incomplete responses, duplicates, or responses from organizations not directly involved with health information exchange were excluded. Responses to the survey were self-reported by participants. While responses were reviewed by eHealth Initiative staff for reasonableness, in most cases they were not verified.

After review, a total of 196 initiatives were included in the results. It should be noted that not all respondents answered each question, so a selection bias may exist. To view a list of initiatives, please visit <http://www.ehealthinitiative.org>.

Repeated attempts were made to contact all of the organizations who participated in the 2009 and 2010 Annual Surveys of Health Information Exchange. Personal emails were sent to individuals listed as organizational contacts, and follow-up phone calls were made to organizations that did not respond prior to the survey completion deadline. eHealth Initiative staff was able to verify that an additional 59 initiatives that either responded in previous years or were provided by a State HIT Coordinator or vendor, are still pursuing HIE. Additionally, staff members were able to verify through phone calls and emails that 10 advanced initiatives that responded to the 2010 survey are still advanced in 2011.