



SECRETS OF HIE SUCCESS REVEALED

Lessons from the Leaders



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Most of the credit goes to the executives from the 12 organizations profiled in this report. We celebrate their leadership, vision, business acumen, perseverance, and above all, their deep sense of mission. We thank them for their generosity with the time they devoted to this project. These organizations are improving healthcare quality, access and cost performance in their communities and setting a national standard for excellence. We appreciate their candor and willingness to contribute to a growing body of knowledge that will help all healthcare stakeholders continue the journey toward nationwide interoperable health information exchange to improve healthcare for all Americans.



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EXECUTIVE SUMMARY

The environment for building and growing a health information exchange (HIE) organization has never been better. Government funds are flowing, HIE is a key component of electronic health record (EHR) meaningful use requirements, and information communication technologies are becoming increasingly more powerful and less expensive. However, concerns about the long-term sustainability of HIE organizations persist, and questions remain about the impact and value of exchanging health information. To help the healthcare community better understand these issues, and work together towards common solutions, National eHealth Collaborative (NeHC) recently conducted a study of 12 fully operational HIEs that demonstrate through their innovative strategies and business models that HIEs can benefit multiple stakeholder groups, and can, in the process, become growing, self-sustaining business enterprises.

BACKGROUND

The 12 HIE enterprises profiled in this report represent a diverse group of operational HIEs across the country. Eight are non-profit organizations with public-private governance structures. Three are commercial, for-profit enterprises. The U.S. Department of Veterans Affairs is a government entity. Seven of the profiled HIE organizations were formed as a result of collaboration among multiple stakeholder groups (e.g., providers, payers, local government agencies), three were founded by healthcare providers, one by payers, and one is supported by a federal government agency. The selection process considered the origin, governance model, and service area characteristics of each HIE to achieve representation of the full spectrum of geographic markets (e.g., urban, rural, urban core with surrounding rural communities, and national presence). Most of these HIE organizations (10) have been operational for at least three years, with three up and running for a decade or more.

NeHC's project researchers conducted structured group interviews with senior executives representing the business, clinical, and technical areas of each HIE. The results from these

discussions were supplemented with follow-up conversations, information about the organizations appearing in literature, conference presentations, and their websites. A detailed profile for each HIE organization appears in this report.

CRITICAL SUCCESS FACTORS

Aligning stakeholders with HIE priorities is an intensive and ongoing effort. With diverse, evolving, and often competing groups of stakeholders determining the future of each HIE, creating a shared vision that is enabled by strategies that all stakeholders can embrace is a widely recognized cornerstone of success. These successful HIEs have been able to engage their stakeholders across numerous business facets in order to foster a trusting and learning environment, contributing to the “win-win” collaboration that is essential to maintaining alignment and being able to resolve differences that arise during the development and evolution of the organization. HIE leaders specifically emphasized the importance of ongoing and effective stakeholder engagement.

These HIEs work hard at establishing and maintaining a consistent brand identity and role as a trusted, neutral entity committed to protecting the interests of participants. This framework of trust has two dimensions: data use and data integrity. The culture, policies, and procedures of the HIE regarding data usage must assure participants that no stakeholder will gain a competitive advantage at the expense of others. Consent and security policies and mechanisms must meet the requirements of various types of stakeholders and, in some cases, variations in regulations among multiple states. The HIE's information infrastructure and operations must also ensure that patient information is accurate and reliable. Managing the framework of trust can be daunting for an HIE, as data originating from a variety of disparate locations must be verified in a way that is simple and efficient, with no margin for error. One executive interviewed calls health information exchange a “zero-defect” business.

Achieving and maintaining alignment requires making difficult strategic choices.

Assessing the extent of alignment among stakeholders is a determining factor when deciding whether to pursue new initiatives. Regardless of how promising a source of funding may have initially appeared, many of the HIEs studied deliberately chose not to pursue grants or business opportunities that seemed to lack unified stakeholder support or did not appear to advance the organization toward its shared vision. Rather, they pursued initiatives that best addressed common needs and featured a value proposition strong enough to support the goals of all participants.

Structural characteristics and dynamics of the HIE's market, especially in the early stages of development, are important determinants of success.

For these HIEs, geography, stakeholder composition, or resource capabilities have created markets (i.e., service areas) that are large enough to provide the critical mass needed to launch and sustain an HIE, but not populated or diverse enough to raise competitive issues that could be a barrier to initial growth efforts. Stakeholder organizations that compete with other participants in these HIEs have concluded that the benefits of sharing IT infrastructure and patient information outweigh the potential risks.

HIEs serving rural markets seem to have a natural advantage over urban HIEs in their ability to attract otherwise competing providers to participate in health information exchange. As rural communities often have a sparse health IT infrastructure, they have a strong need for efficient methods to share information with others in their community, as well as with medical centers in urban areas. Unlike urban providers, the decision made by rural providers to join an HIE organization is more likely to be based primarily on the core value proposition, and less likely to be encumbered by competitive or political issues or competing health IT priorities.

These successful HIEs value their core competencies of understanding clinical workflows and managing change.

HIE implementation and training personnel work closely with clinicians and office staff to understand the impact of HIE applications and to identify opportunities to improve practice efficiency. For several HIE organizations, managing change means integrating applications into existing workflows with minimum disruption to the practice

and bringing users – including clinicians – online as quickly as possible. Although redesign of the physician practice organizations and processes may be necessary to achieve significant gains in quality and efficiency long-term, this is beyond the scope of what most of the HIE organizations profiled are seeking to achieve.

BARRIERS TO GROWTH AND SUSTAINABILITY**Policies and procedures designed to meet complex privacy requirements tend to impede an HIE's efforts to achieve the critical mass of patient records needed to accelerate adoption.**

Managing patient consent in particular is a major challenge that gains complexity as the footprint of these HIEs expands. With one exception, the HIE teams raising consent as an issue believe that requiring patients to opt-in to the HIE is a barrier to progress. In contrast, operating in an environment where opt-out consent is accepted by the community was identified as an important factor of success.

Gaps in interoperability standards and lack of rigorous adherence to existing standards are drains on HIE resources.

Disparate methods of implementing the Healthcare Information Technology Standards Panel (HITSP) C32 standard and the Clinical Document Architecture (CDA) were often cited as examples of problem areas and are sources of frustration. A lack of the standards necessary to achieve true semantic interoperability of clinical documents is a potential barrier to growth for these HIEs long-term as they work on expanding their services and revenue streams. Continuously having to invest considerable resources to achieve consistency of data and presentation diverts time and money from activities to grow the enterprise. Although these HIEs are generally leveraging standards and standards-based services to the greatest extent possible, it is the proprietary technology they have developed or licensed that enables them to advance their strategic interoperability and connectivity objectives in their quest to grow.

BUSINESS MODELS

All but three of the 11 HIEs receiving funding from the private sector are currently self-sustaining, with fees from participants covering operating

expenses. A common practice of the self-sustaining HIEs is to manage money received from grants separately as a fund to finance new ventures, grow services or expand geographic footprints. A few HIEs have revenue mix targets, which are allocated by organization type and that are used to guide the business fee structure of the HIE and optimize long-term sustainability.

A prevalent philosophy is to charge all private sector participants for using the HIE. Nine of the HIEs currently charge physician organizations or have plans to implement fees in the future. This is evidence that clinician consumers of data, as well as distributors, are receiving sufficient value from HIE services to justify the additional expense. The subscription fee model is the most popular because, unlike transaction fees, subscriptions are relatively easy to administer and do not discourage use of the HIE's services. Although these and other common elements are evident across the HIEs profiled, every revenue model does have its own differentiating characteristics, exemplifying the local, community-based nature of the HIE business.

Despite a minority of the HIEs presently receiving financial support from payers (3), several more believe that this source of revenue is essential to the long-term sustainability of the HIE business. HIEs with payer financial participation have convinced payers of the benefits of the HIE's services in terms of cost savings achieved through reductions in services utilization. The business case for one HIE owner's investment may be a signal of future payer participation as value-based payment models gain traction. In this case, better cost management of at-risk managed care contracts is attributed to the avoidance of expenses for duplicate or unnecessary tests because of use of the HIE by clinicians. These benefits significantly influence this HIE management's ability to raise capital. Building a stronger value proposition for payers is clearly a motivating factor underlying several of the HIEs' decisions to invest in studies to measure the value of their services and to develop population health management capabilities. At the same time, a common view of the HIE organizations not currently engaged with payers is that the longer payers in their markets stay on the sidelines, the less leverage they will have when they finally realize the significant value of the health information available from the HIEs and reach out to participate.

PORTFOLIO OF SERVICES

The HIEs profiled are incubators of innovation. All of the organizations in this report offer the basic HIE services of collection, management, and distribution of patient health information, delivery of patient clinical care summaries, and connectivity to electronic health records. Driven by a concern that these basic services will become commodities, a desire to unlock the value of the large and growing patient populations available through their health information exchanges and a search for new revenue streams, most of these organizations are rapidly evolving from data interchange businesses to application solutions providers. Helping their hospital and physician participants achieve EHR meaningful use criteria by filling gaps in the capabilities of EHR systems is also an important catalyst. Examples are found throughout the profiles of creative strategies to fund the development of new applications and to take advantage of the unique model of a community-wide health record made possible with an HIE.

The power of the comprehensive, longitudinal record of a patient's health that is available from an HIE can make decision support applications far more useful to clinicians than programs when operating within the limits of a provider-centric electronic medical record. Thus, patient/disease registries, medication reconciliation, and population health management are emerging in several of these HIE organizations' portfolios as "premium" services with potentially compelling value propositions that may be available for an additional fee. The reporting of performance on various quality measures, which can span multiple physician practices and multiple patient cohorts, is another service being planned or developed by several organizations. HIEs involved in Beacon Communities are taking advantage of the requirements and funds from the Beacon grants to build new applications in these as well as other areas (e.g. applications for patient engagement).

The role of HIEs in providing consumers/patients with access to their data is a work in progress. Three of the HIEs profiled currently (or have near-term plans to) offer patient portals. The myriad personal health record (PHR) offerings by healthcare providers, payers, and commercial enterprises, plus privacy concerns, contribute to the conservative approach to patient-facing applications evident among HIEs. Providing standards-based access to an HIE's data for populating third-

party PHRs or PHR-type repositories (e.g., health record bank, Microsoft HealthVault) is an approach being pursued by some organizations to leverage the basic value-add of an HIE. With regard to patient engagement, some HIEs consider that to be the role of the providers, whereas other HIEs are offering a range of patient engagement tools for their connected providers. In addition to portals and PHRs, this includes patient education.

Reduced data distribution costs and increased staff productivity are the major reasons why participants are willing to pay for the services offered by these HIEs.

A few HIEs are promoting a reduction in service utilization and therefore cost savings by having better information about patients at the point of care. Conveying an evidence-based, quantified return on investment to support these value propositions is the exception. Most organizations are in the planning stage of embarking on quantitative studies to measure the value of their services. Competing priorities, cost, and disruption to their participants' operations are reasons given for the limited progress in this area.

STRATEGIES TO CREATE VALUE

Interest in the Nationwide Health Information Network spans the continuum, with HIEs participating in Beacon Community initiatives or motivated to connect to the U.S. Department of Veterans Affairs leading the way. Five of the profiled HIEs are currently connected to the Nationwide Health Information Network Exchange, three anticipate connecting in the future, and the remainder have no definitive plans to participate. The same group of HIEs currently involved in or planning Nationwide Health Information Network Exchange participation are also implementing the Direct Project's standards and services. Although the HIEs investing in Nationwide Health Information Network activities deem this initiative strategically important to enhancing the quality and completeness of patient health information, none of the HIEs consider the Direct Project or the Nationwide Health Information Network Exchange to be key contributors to sustainability. Concerns were raised that Direct may not be robust enough to support the interoperability requirements of meaningful use long-term.

Leaders of these HIEs are cautiously optimistic about the emergence of Accountable Care Organizations (ACOs), seeing potential opportunities but also concerned about their potential impact. Several executives interviewed exhibited confidence that their organizations will have a major role providing information infrastructure for ACOs. Established HIEs have compelling advantages in this area when compared to other options such as building the information infrastructure to support its network. Readiness of the infrastructure needed to launch an ACO as quickly and cost-effectively as possible is a major advantage of leveraging an HIE. The HIEs profiled have already established themselves as trusted, neutral entities with broad networks of providers that would in, most cases, span beyond an ACO's network, facilitating the beneficiary mobility that is likely to occur and the need for robust referral management. Furthermore, the HIE organizations' experience connecting disparate systems and helping healthcare providers meaningfully use EHRs is a valuable asset that will be difficult and expensive for most ACOs to replicate.

Lurking beneath the surface of this optimistic view, however, among HIE leaders in markets with multiple large healthcare systems, is uncertainty regarding ACOs' influences on competitive dynamics. If ACOs are used by healthcare organizations to gain a competitive advantage, then the willingness of stakeholders that currently support the HIE's sharing of data may diminish.

FUTURE OUTLOOK

Raising capital to steadily grow is key to long-term sustainability. All of the HIEs profiled in this report have significant opportunities for growth in and beyond their existing markets. The leadership teams of these organizations also see opportunities to expand their technology service offerings. Applications to leverage patient information and attract payers and ACOs are clearly driving the technology development priorities of many of these HIEs. Offering data analytics capabilities to support population health and quality management functions is a strategic priority for most. Extracting new value from the patient information available via the HIE is considered key to keeping existing participants engaged, attracting payers, and creating new revenue streams.

As the HIE grows, its stakeholder community becomes more heterogeneous, making governance more challenging and complex. Leaders of all of the HIEs represented believe they have the governance structure in place that is needed for the long-term, with some anticipating the composition of their boards evolving to include payer representation. These profiles suggest that establishing a stable yet adaptable governance structure early in the HIE's life cycle is a key indicator of future sustainability.

CONCLUSION

The 12 organizations profiled in this report are blazing trails to achieve sustainable enterprises built on the value created by efficiently exchanging health information and mobilizing its effective use at the point of care. As the profiles on the following pages reveal, these are organizations that have a laser focus on building a successful HIE through innovation, continuous learning, and business discipline with the end goal of improving quality, care coordination, and cost effectiveness of healthcare. Although each organization's business model and strategy is unique, reflecting the local, community-based nature of healthcare, each profile offers a rich source of ideas and guidance to help HIE organizations that are at earlier stages of their life cycle succeed.

SUMMARY OF ORGANIZATION PROFILES

Critical Success Factors	Business Models	Barriers	Value Add Services	Future Outlook
Availity				Founded in 2001, For-profit
Stakeholder Collaboration, Integration with Physician Practice Workflow, Integrating Clinical Information with Business Information	Health Plans Pay to Deliver Information to Providers, Providers Pay Fees for Some Clinical Services	Patient Consent, Concerns about Data Accuracy, Latency of Claims Data	Identity Management, Secure Messaging, Access to Availity from Mobile Devices	Geographic Expansion, New Clinical and Business Information Services
Big Bend RHIO				Founded in 2005, Non-profit
Effective Stakeholder Engagement, Conducive Market Size and Structure, Committed Community Leaders, Efficient and Responsive Operations and Technology Infrastructure	Hospitals and Physicians Pay Fees	Variable Use of Standards, Patient Consent Management, Provider Concern about Cost Burden	Analytics, ACO Support	Increase Payer Engagement, Demonstrate Value
HealthBridge				Founded in 1997, Non-profit
Provide Services with Business Model, Conducive Market Size and Structure, Provide Increasingly Valuable Services	Hospital Subscription Fees, Lab Fees Based on Volume, EHR Data Exchange Fees Paid By Recipient and Data Source	Federal Funds Inhibiting Stakeholder Progress	Exploring Offering PHR, Making Data Available to Patients, Aggregate and Analyze Data to Support ACOs, Assisting Practices with Implementation, Quality Improvement Projects	Increase Payer and Employer Engagement, Be Aware of Disruptive Technologies, Reduce Costs, Add Services
HealthInfoNet				Founded in 2006, Non-profit
Shared Vision, Stakeholder Collaboration, Build Trust, Demonstrate Value, Consensus on Patient Consent Management	Providers, Payers, Government Entities Contribute Fees, Provider Subscription Fees, Grants	Access to Funding, Payers Unwilling to Pay, Small Practices Unwilling to Pay	Consumer Engagement and Education, Help Providers Achieve MU, Support ACOs and PCMHs, Medication Management, Prescription Drug Monitoring, Statewide Medical Images Repository	Concern About Access to Capital, Hope to Demonstrate Positive Impact on Outcomes, Demonstrate Value
Inland Northwest Health Services				Founded in 1994, Non-profit
Shared Vision, Shared EHR and HIE, Value of Comprehensive Repository of Patient Information, Neutral Trusted Party, Stakeholder Engagement	Customers Pay Monthly Fees	Variable Use of Standards, Continuous Focus on Improving Consistency and Presentation of Shared EHR Data	Health Record Bank for Consumer Engagement, Assist Providers With MU, May Support ACOs	Expand Services, Increasingly Heterogeneous Governance, Develop Analytics to Support Disease Management and Quality Reporting, INHS' Applications on Mobile Platforms
MedVirginia				Founded in 2000, For-profit
Trust, Provide Extensive Functionality, Partner with Federal Agencies on Ground-breaking Initiatives, Visibility as Thought Leader, Segregate Grant Funds from Operations	Data Suppliers Pay Fees	Need for Interoperability Among Disparate Systems, Financial Performance, Evolving Technologies, Partnering with Competitors	Assist Providers in Achieving MU, Support Provider Engagement with Patients, Population Health Management, Care Coordination, Support ACOs	Concern About Failed HIEs, Provide More Value Add Services, Receive Subscription Fees for Operating Gateway to Nationwide Health Information Network Exchange, Receive Professional Fees to Help HIEs Become Operational

Critical Success Factors	Business Models	Barriers	Value Add Services	Future Outlook
Quality Health Network				Founded in 2004, Non-profit
Build Critical Mass, Deliver Results, Shared Vision, Stakeholder Engagement, Trust, Valuable Content	Revenues from Hospitals, Health Plan, Other Providers	Trust, Privacy, Security, Difficulty Getting EHR Vendors to Interoperate with HIE, Variable Use of Interoperability Standards	Subsequent to Connected Critical Mass of Providers will be Patient Portal for Secure Communication, Support PCMHs, Medical Neighborhoods, ACOs	Broaden Governance, Quality Improvement Projects, Strengthen Infrastructure, Expand Geography, Population Health Management, Patient Engagement
Rochester RHIO				Founded in 2006, Non-profit
Stakeholder Commitment and Funding, State Grants Supported Growth (Not Operations), Opportunistic Approach to Adding Participants	Payers Contribute Most of Operating Expenses, Revenues from Data Suppliers	Competition Among Providers, Complexity of Patient Privacy and Consent	Patient Portal, PHRs, Support PCMHs and ACOs	Expand Network and Volume of Patient Data, Data Analytics, Transition of Care Support, Grants to Fund New Development, Quantifying Value of Current and Future Services
Sandlot				Founded in 2005, For-profit
Physician Engagement, Value of EHRs and HIEs, Comprehensive Community Record, Emphasis on Care Coordination and Adherence to Care Guidelines	Funded Largely by NTSP (Created Sandlot), Labs and Hospitals Pay Fees Based on Size and Volume	Competition and Politics, Limited Quantitative Analysis of Benefits, Challenge of Transforming Care	Risk Management, Tools to Help Providers and Patients Manage Chronic Conditions, Quality Reporting for PCMHs, Support Emerging ACOs	Increasing Role in Care Transformation, Demonstrate Value to Increase Adoption, Deeper Market Penetration, Expand Geography
SMRTNET				Founded in 2004, Non-profit
Network of Networks, Broad Stakeholder Collaboration, Trust, Shared Vision	Revenues from Member Fees (Mostly Hospitals) and Contributions from Networks in Development	Trust, Ensuring Comfort for Data Suppliers, Manage Conflicting Needs	Patient Portal with PHR Interoperability, Patient Education and Social Networking, Assist PCMHs	Increase Payer and Employer Engagement, Concerned About Reimbursement Cuts and Potential Lawsuits Related to Data, Increase Role Assisting Providers with Chronic Care Management
THINC				Founded in 2005, Non-profit
Support Patient Care Across Multiple Settings, Effective EHR Implementation, Improve Clinical Care and Efficiency, Clinical Workflow Integration, Focus on Participants' Needs, Continuous Improvement, Multi-Stakeholder Engagement	Close Contractual Relationship with MedAllies, Subscription Fees from Participants, Grants	Continuous Stakeholder Engagement, EHR Interoperability, Balancing Need for Functionality with Value	Assist Providers in Achieving MU, Support PCMHs, Collect and Analyze Quality and Outcomes Data, Educate Stakeholders on ACOs, Foster Open Exchange of Patient Data	Ongoing Emphasis on Stakeholder Engagement, Managing Conflicting Interests of Participants, Work Toward Incentive Alignment to Lower Barrier to More Coordinated, Affordable, High Quality Care
U.S. Department of Veterans Affairs				VLER Launched in 2009, Federal Agency
Widespread Adoption of Vista, National Presence, Expectation for Continuous Improvement in Quality, Availability of HIT	Federal Funds for VLER Pilots are Small Part of VA's IT Budget	Variable Adoption of Interoperability Standards, Patient Consent Requirements	Robust Clinical Decision Support Applications, My HealtheVet Portal, Blue Button	Expand Beyond Read-only Care Summary to Menu of Options, Include Information from Nationwide Health Information Network Exchange and Direct Partners into Robust Clinical Decision Support Applications, Connect Every VA Hospital to Nationwide Health Information Network Exchange in 2012

HEALTH INFORMATION EXCHANGE PROFILE

AVAILITY

BACKGROUND



The Availity Health Information Network provides health information exchange among multiple healthcare stakeholders across the country. Availity was

launched in Florida in 2001 as a multi-payer Web portal providing physicians with real-time access to patient information such as eligibility, benefits, and claim status. The network has grown to include batch clearinghouse capabilities and multiple real-time service offerings such as member liability estimators and a longitudinal patient care record. A single, secure network, Availity provides business and clinical services, supporting both real-time and batch electronic data interchange via the Web and business-to-business integration. More than 200,000 physicians, 1,000 hospitals, and 1,300 health plans use Availity. Availity also offers revenue cycle management solutions for physicians

through RealMed, an Availity company. More than one billion transactions annually are exchanged through the Availity network.

TYPE OF HIE: Commercial for-profit

HIE SERVICE LAUNCH: Availity was launched in Florida in 2001.

MARKET SERVED: Availity has expanded its geographic reach nationally with its clearinghouse solutions and serves nearly 20 states with its portal.

GOVERNANCE: Availity is a joint venture between Blue Cross and Blue Shield of Florida, Inc., Blue Cross and Blue Shield of Minnesota, Health Care Service Corporation (HCSC), Humana Inc., and WellPoint, Inc.

CRITICAL SUCCESS FACTORS

Stakeholder collaboration. Key stakeholders – healthcare providers, health plans, and health IT vendors – must be equally engaged in the sharing and exchange of health information to achieve the industry's goals of improved quality and outcomes, and reduced costs.

Seamless integration with physician practice workflows. Integrating information flowing from Availity into the physician practice's workflow is viewed by Availity's leadership as essential to gaining sustained adoption. To achieve this, the Availity team works closely with electronic health/medical record (EHR/EMR) and practice management system vendors to make their applications interoperable with Availity's information services. Availity staff knowledgeable in practice operations work closely with physicians and their support staff to incorporate Availity applications into the existing business and clinical workflows of the practice.

Growing need to integrate clinical services with business information. The business (administrative and financial) information services provided by Availity are considered pivotal to adoption of its clinical services by physicians based on two key factors. First, eligibility verification and claims management services are essential to the practice's operations, improving its cash flow. Physicians already realizing benefits from these services have been more receptive to implementing Availity's longitudinal patient care record and other clinical information services. Second, as physician reimbursement models transition from fee-for-service to outcomes-based, the need to deliver clinical information as part of the revenue cycle process increases, which drives demand for clinical integration in the business workflow.

“Key to our success is always asking: ‘What information service needs can Availity meet so that we are central to the physician practice’s success?’”

– Russ Thomas, President and Chief Operating Officer

BARRIERS TO GROWTH AND SUSTAINABILITY

Data accuracy concerns. Adoption of Availity services – especially those used to make decisions about patient care – may be slowed by end-user concerns regarding accuracy and reliability of the information. Assimilating health information from disparate sources requires Availity to demonstrate that data originated from trusted sources in a way that is simple and does not hinder its efficient distribution and use.

Data latency. Patient care records derived from claims data serve a vital role in a fragmented healthcare system characterized by relatively low levels of EMR adoption. However, use of this information by clinicians is constrained due to the timeliness and completeness of the data. Including real-time data that originates from clinical information systems (e.g., lab results), a strategy currently underway, will significantly enhance the usefulness and value of Availity’s longitudinal patient care record.

Patient consent. Managing patient consent is a significant challenge that will persist and become more complex as Availity’s geographic footprint and number of users expands. Tracking consents and revocations at the source of the data in a multi-state environment where laws, policies, and preferences often vary, requires significant investments in expertise, collaboration with stakeholders, and education of distributors and consumers.

BUSINESS MODEL

Portfolio of services: Availity’s portfolio includes a range of applications – from basic to premium – to support the business and clinical information needs of its physician and health plan customers. Availity’s basic services offer on-demand access to patient eligibility and benefits, claim submission, claim status, referrals and authorizations, and patient responsibility estimation. Premium business services include patient payment collection tools and a revenue cycle management solution. This application integrates and automates multiple administrative functions for practices,

resulting in optimized speed to payment. It also offers real-time edit and error management tools, as well as analysis of key practice patterns and trends.

Availity’s clinical applications provide a longitudinal view of a patient’s care history and enable clinicians to send prescriptions electronically. Value adds for these applications include alerts highlighting treatment opportunities and potential drug-drug and drug-allergy interactions.

Measuring value: Availity has done customer-specific studies that demonstrate significant savings to its health plan partners and physicians, and is currently validating the full scope of these savings to be shared publicly.

Sources of revenue: Fees from health plans for basic services comprise the foundation of Availity’s revenue model; these basic services are offered at no cost to providers. Premium services are offered to physician practices for a fee. This signifies the beginning of Availity’s efforts to diversify its revenue base beyond health plans with value-based information services to healthcare providers. Availity is a profitable enterprise today. Revenues from health plan and provider customers fund the operations.

CONNECTIVITY STRATEGIES

Availity invests in connectivity initiatives that address the needs of the healthcare community by helping to facilitate improved quality, better outcomes and reduced costs. Examples include:

State of Florida: Providers caring for Medicaid patients have access to a claims-based electronic patient care record. The Florida Agency for Health Care Administration (ACHA) collaborated with Availity to implement this service at no cost to providers or Florida taxpayers.

Nationwide Health Information Network: Availity is involved in a proof-of-concept project with Harris Corporation to demonstrate that they can utilize CONNECT after a few modifications to their platform. Availity is standards-based

and supports the Nationwide Health Information Network Exchange effort.

Direct: Avality is tracking the Direct Project's standards and services and is interested in participating in potential pilots.

Other connectivity projects: Avality has participated in several proposals around the country to serve as a subcontractor on various HIE efforts. They support an open network approach.

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Avality is investing in solutions to strengthen the usability and trust of health information exchange among its stakeholders. Identity management, single sign-on, secure messaging, and access from mobile devices are services receiving research and development funding.

Avality plans participation in the Nationwide Health Information Network Exchange as it becomes more widely accessible and adopted. The Avality network will bring value as a significant point of concentration for connections, facilitating the exchange of health information among health plans and providers.

Collaborating with additional state Medicaid agencies to make its services available to providers treating Medicaid beneficiaries is viewed by Avality as strategically valuable. However, a revenue model that works for the public sector needs to be developed. Whether or not Avality pursues another "no fee" program like Florida's will depend on the nature of the relationship and benefit to Avality and the market.

FUTURE OUTLOOK

Avality is focused on two market/product strategies that are intended to drive growth and long-term sustainability:

Market expansion: Within its health plan owners' geographic markets alone, Avality can address a market of physicians in 20 states serving over 60 million members, which provides significant opportunity for growth. As of May 2011, 130,000 users spanning 11 states are registered to use Avality's longitudinal patient care record. Avality plans on expanding this service to five more states in 2011. Avality also will continue entering into strategic partnerships with EHR/EMR vendors, HIEs, and other organizations committed to driving the adoption of health information technologies.

New clinical and business information services: New clinical and business information services support the changing model of the physician practice. The growing share of healthcare costs assumed by consumers requires physician practices to more accurately estimate and collect fees at the point of care. This shift in reimbursement to outcomes-based models is changing the patient care paradigm towards proactive management of a population's health and increased emphasis on care coordination. Avality views these emerging business needs as opportunities for new information services that build on its current suite of clinical applications.

"We align our pricing with who receives the value. We charge physicians for those services that improve the financial performance of their practices."

— Russ Thomas, President and Chief Operating Officer

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION
Availity CareRead Swipe patient ID card and auto-populate eligibility and benefits screen	Administrative simplification and time savings for physician practices .
Eligibility and Benefits Inquiry Confirms eligibility and benefits including covered services, co-pays, and deductibles	Improves the physician practice's cash flow and reduces collection costs by enabling accurate out-of-pocket charge calculation and collection at time of service.
Availity CareCost Estimator Estimates patient responsibility for fees	Providers who use Availity's revenue cycle management services: • Make 10-12% fewer calls to health plans • Send up to 60% cleaner claims • Send nearly 10% fewer paper claims
Availity CareCollect Processes patient payments while patient is still in office	
Health Care Services Review and Inquiry Real-time submission of referral and authorization requests that integrates with electronic medical records and practice management systems	Streamlines referrals and authorizations for physicians and patients , improving practice efficiency, reducing the frequency of avoidable non-covered services, and improving the patient experience.
Availity CareProfile Real-time access to claims-based care history, including support for clinical alerts & treatment opportunities via Web-based portal	Improve quality and reduce costs of healthcare by helping clinicians : • Detect possible adverse drug events • Reduce ordering of duplicate and unnecessary medications and tests • Better coordinate care
Availity CarePrescribe Electronic prescribing service	Physicians can realize incentives and share in savings by improving performance based on quality measures; payers are better positioned to achieve quality and medical cost targets.

HEALTH INFORMATION EXCHANGE PROFILE

BIG BEND RHIO

BACKGROUND



The Big Bend Regional Health Information Organization (RHIO) is a non-profit corporation

based in Tallahassee, FL, serving Tallahassee and the surrounding region. The health information exchange (HIE) is branded as BigBendHealth.com whose mission is “to improve the safety, outcomes, privacy and efficiency of healthcare.” Big Bend’s objective is to leverage technology as an effective tool in quality improvement, access to care and changes in the healthcare delivery model.

The Big Bend organization is led by Dan Kaelin, MD, Chairman of the Board, and Allen Byington, Executive Director, both unpaid volunteers. Big Bend’s Director Zach Finn is an employee of Big Bend Health, LLC, the local health information technology company that has the contract to develop and implement software solutions for Big Bend RHIO and other community HIEs.

Big Bend RHIO was founded in October of 2005. Between 2006 and 2008, Big Bend was awarded three rounds of funding from the Florida Agency for Healthcare Administration’s Florida Health Information Network Grants Program totaling \$810,375 and has been self-sustaining on

HIE services revenue since July 2008. Big Bend has about 500,000 individuals in its master patient index (MPI) and expects this number to grow to about 550,000 by the end of 2012. There are approximately 600 active physician portal users and this number is expected to grow to 800 by the end of 2012. Two hospitals contribute data to the HIE and an additional three are expected to join in 2012.

TYPE OF HIE: Regional non-profit

HIE SERVICE LAUNCH: Pilots started in 2006 with full production starting July 1, 2008.

MARKET SERVED: Big Bend RHIO serves the “Big Bend” area of the Florida panhandle around the city of Tallahassee, including Gadsden County, Franklin County, Jefferson County, Leon County, Liberty County, Madison County, Wakulla County, Taylor County, and Dixie County.

GOVERNANCE: Big Bend RHIO is governed by a Board of Directors that is comprised of community leaders representing primary care and specialty physician groups, hospital systems, critical access rural hospitals, a medical society, a local health plan, and area colleges.

CRITICAL SUCCESS FACTORS

Shared vision. The most important success factor for Big Bend has been a shared vision with local physicians and hospitals, along with a commitment to creating a sustainable, functional HIE that meets the needs of providers and patients. Big Bend was able to recruit the key decision makers from each of the most important medical practices and hospitals in the area. By the fifth month after its start up, Big Bend had recruited fourteen board members, all medical practice managers or CEOs whose healthcare organizations had existing clinical data repositories.

Conducive market size and characteristics. The size of the Big Bend region is the perfect size “Petri dish” for a community HIE. It is large enough to provide the critical mass needed to launch a RHIO, but small enough to avoid some of the competitive dynamics that could present barriers. The region had, for example, one major orthopedics group, two urban hospitals and one internal medicine group. Big Bend started with large, non-competitive stakeholders at the table, reducing political maneuvering and minimizing bureaucracy. This composition was critical to gaining rapid access to the

“In 2008, no one knew what a RHIO was, so we rebranded ourselves BigBend-Health.com after consulting with our local business development council.”

— Allen Byington, Executive Director

critical mass of clinical data required for the exchange to be considered valuable.

Commitment and persistence. Community champions were willing to commit enormous amounts of time and other resources, including personal financing at times, to ensure that Big Bend became a reality. Big Bend’s founders, Dr. Kaelin and Mr. Byington, had the conviction and persistence to ensure success was achieved by working with local providers who had a commitment to quality, access, and to transforming the healthcare delivery model.

Efficient and responsive operations and technology.

Rather than implementing a pure federated or pure centralized approach, Big Bend used an operational model and technical architecture driven by healthcare providers for the benefit of patient care and minimizing overhead. Big Bend created a federated hybrid model of independent databases for each data source on “virtual servers,” replicating all the benefits of federation while leveraging economies of scale from centralized management capabilities. Big Bend’s “virtual servers” are cost effective, scalable and protected from the outside world, providing better security, performance and reliability than would be obtained through a more conventional approach. This model also allows each provider to remain the steward of their patients’ records, fostering the trust and speed necessary to gain provider efficiency and effectiveness when using an HIE.

BARRIERS TO GROWTH AND SUSTAINABILITY

Provider workflow and patient needs. Big Bend is provider-driven and constantly attentive to providers’ workflow and patient needs. They believe that HIEs cannot function without concern for how medicine is delivered in various settings and without regard to patient population needs.

Bureaucracy equals greater costs, more obligations. Big Bend has been careful to avoid dependence on large or

expensive technical and administrative structures. Draining much needed financial resources from patient care for unnecessary bureaucracy presents a psychological barrier for many hospitals and physicians.

Variability of standards. Standards related to information exchange are inconsistent or even absent in some cases.

Provider concern about cost burden. There is distrust among providers in Big Bend’s region. Many local providers feel that the economic burden of healthcare has been disproportionately placed on them, and that the economic burden should be more evenly shared with payers, employers and other parties.

Patient education. Big Bend has found that it is necessary to help patients understand and accept the policy options related to patient opt-in versus opt-out models.

BUSINESS MODEL

Portfolio of services: Big Bend’s services include two key elements: pMAN Connectivity, which is a dedicated fiber-based private medical area network and VPN gateway, and the Core HIE Platform. The Core HIE Platform is comprised of the hardware and software that support secure data sharing of electronic patient medical records among different healthcare providers, and includes:

- The Web Portal and Patient “Phonebook,” which is a secure web interface for physicians and staff that offers a single login to community health information and provides a longitudinal view of a patient’s record
- A Data Sharing service, which includes access to patient demographics, EHR data, laboratory data, radiology data, and scanned paper documents

Future services in development include a physician directory and on-call listing, electronic home healthcare orders, improved access to medical images, patient education and integration of various medication reconciliation modules.

Sources of revenue: Big Bend RHIO revenues come from participating physicians and hospitals and include:

- A one-time setup/training fee which varies based upon the size of the healthcare provider.
- If the participant has an EHR, a one-time interface fee. Big Bend tries to keep this fee as low as possible and there may be a separate interface charge from the participant's EHR vendor. The interface fee is per interface and is not based on the size of the healthcare provider.
- A monthly membership/support fee based on the number of providers for practices, or the number of beds for hospitals. For imaging providers, the cost is based on the number of practices that the imaging provider supports.

The single monthly fee from Big Bend covers all HIE services, including referrals, patient lookup, record access, clinical messaging, and document retrieval. Big Bend does not use a transaction-based fee model because that approach would require excessive administrative overhead.

CONNECTIVITY STRATEGIES

Big Bend intends to work with Florida's State Designated Entity (SDE), the Agency for Health Care Administration (AHCA) and their contractor Harris to connect to state and national infrastructures when feasible. Additionally, Big Bend is connecting to the Centers for Disease Control and Prevention (CDC) via the Florida Department of Health (FDOH) Public Health Information Network Messaging System (PHIN-MS) Route not Read (RnR) Hub project. Big Bend RHIO is also a "Direct registered trading partner" on FDOH RnR Hub. This interface and agreement allows Big Bend RHIO customers to securely report data electronically to

the FDOH as required by Florida Administrative Code 64D-3 for notifiable disease reporting.

Big Bend participants do not see much value in gaining access to claims data via connectivity with the Florida Medicaid database. Big Bend participants prefer the benefits of having real-time clinical data and, given historical perceptions of Medicaid claims errors and backlogs, would have little trust in the information provided.

Zach Finn of Big Bend Health, LLC has been a representative to multiple different Direct Project advisory groups. Big Bend considers itself to be very involved with and aware of Direct's capabilities. Big Bend's leaders and membership have concerns that Direct may be seen as a substitute for full HIE and that Direct could in this way become a barrier to some providers receiving their full meaningful use incentives in later years.

Because some EHR vendors are developing the ability to accept a Direct message natively into their EHRs, Big Bend is exploring how Direct could be used to "wrap" secure messaging to help achieve additional integration with EHR platforms. Big Bend hopes to be able to use this approach to prevent Direct from becoming a standalone silo that does not integrate into providers' workflows.

Big Bend sees CONNECT as offering an open source platform for HIE. Long-term, CONNECT may offer greater benefits, but like any other open source code base, it takes additional integration work.

Big Bend anticipates connecting to the local VA hospital through the Nationwide Health Information Network Exchange when that service becomes available.

"We first started Big Bend RHIO in January of '05. We were able to pull in the local healthcare provider decision makers from the key stakeholders that had electronic repositories at that time. By October that same year, we had 14 board members with a mission and an operational plan."

— Allen Byington, Executive Director

“The payers stand to benefit the most, but have contributed in a very limited financial capacity... Big Bend’s hope is that the payers will soon see the light and be willing to come to the table. By then, the providers should be in a position to negotiate a fair financial arrangement in exchange for streamlining the exchange of data.”

— Allen Byington, Executive Director

TECHNOLOGY PARTNERS

In 2006, Avocare was contracted by the Big Bend RHIO to develop the state’s first community-based HIE. During the development, Avocare and Big Bend RHIO spent thousands of hours in round-table discussions, interviews, and open-forum sessions determining exactly what problems existed in healthcare communications. Based on those discussions, Avocare developed the current Big Bend technology. In January 2011, Avocare’s HIE division executed a license agreement with Big Bend Health, LLC allowing them to exclusively develop and leverage the enhanced HIE technology. In addition to the custom developed technology components, Big Bend uses open source technology and closely follows national standards. Examples of open source solutions include Open Health Tools, Mirth, and CONNECT.

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Healthcare consumer/patient engagement: Engaging patients directly is viewed as politically challenging by Big Bend. Big Bend believes that until physicians have a ubiquitous exchange of records, it is not practical to directly engage patients. Also, because of Big Bend physicians’ sensitivity to workflow changes, there is limited ability to include patients in the electronic workflow. The lack of payment mechanisms to compensate physicians for the time they would spend engaging with patients electronically presents a negative value proposition for Big Bend’s providers. Big Bend also has concerns about the legal liability they might incur by engaging directly with patients under the current operational environment. Consequently, Big Bend feels that there is significant foundational work to be done before there is a direct role for Big Bend in patient engagement.

New care delivery models: Big Bend is not currently engaged with a formal patient-centered medical home (PCMH). Big Bend plans to support one or more accountable

care organizations (ACOs) that may form in their service area because they believe that if they can provide the necessary interoperability and analytics, any new ACO will not feel a need to create their own HIE functionality. Due to the small size of the Big Bend market, it may not be financially feasible for an ACO to replicate Big Bend’s infrastructure and develop its own HIE functionality.

FUTURE OUTLOOK

Governance and stakeholders: Big Bend’s governance will not likely change unless there is a change in leadership. Big Bend would like to see payers engaged but they will wait for them to ask to be included. Big Bend would also like to see mental health providers engage; this is likely to begin within the next year or two.

Persistent barriers: Allen Byington says, “There is only one barrier. It’s the money.” Although there are funds available to form HIEs at the present time, there are no funds available to sustain HIEs and maintain their local exchange infrastructure. While all of Big Bend’s operations are paid for by stakeholder fees, Dr. Kaelin and Allen Byington do not take a salary and Big Bend does not have a physical office. Fortunately, Big Bend’s revenues will grow as they increase their penetration into the provider community over the next 24 months.

Business model for long-term sustainability: While payers benefit most from Big Bend’s services, they have only contributed financially in a very limited capacity. Long-term, Big Bend would like to see payers join with, and invest in, their effort. By that time, Big Bend hopes that providers will be in a position to negotiate a fair financial contribution in exchange for sharing data.

Value measurement is a weak area for Big Bend because they believe research would impose an unacceptable burden on provider efficiency. Big Bend has been very careful to improve

practice efficiency, so they are unwilling to ask practices to do extra work to collect cost savings data at this point in adoption. For example, they do not want to make their physicians' staff track time on the phone in order for Big Bend to measure and take credit for any reduction associated with the HIE.

Big Bend is now concentrating on analyzing the data the RHIO already collects as a means of extracting value. For example, Big Bend is analyzing referral patterns to determine what categories of patients are being referred out of the community. Using this data, Big Bend can help physicians and hospitals find ways to treat patients locally, thus providing an economic benefit to the community. Big Bend will also use its own existing data to measure their HIE-enabled healthcare system's performance. For example, they will be able to report how long it takes for a specialist to engage with a referred patient.

Big Bend views itself exclusively as an HIE and does not want to compete with EHR vendors. Consequently, they do not plan to offer an EHR Lite product. They will continue to focus outside the walls of the practice.

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION
pMAN Connectivity Dedicated fiber-based Private Medical Area Network and VPN gateway	Participation in physician and hospital owned infrastructure benefits entire community and payers . Reduction of state run monopoly influence benefits community .
Web Portal and Patient Phonebook Secure web interface for physicians and staff that offers a single login to community health information outside participating practice walls Data Sharing • Patient demographics • EMR data feeds • Laboratory data • Radiology data • Scanned paper documents	Reductions in office administrative costs (paper printing, mailing and postage) benefits physicians and hospitals . Increase in staffing efficiencies due to reduced time handling faxes and phone calls benefits physicians, hospitals and patients . Consolidation and reduction of data interface costs benefits physicians and hospitals . Reductions in employee recruitment and hiring costs benefits physicians, hospitals and patients .
User Access and Audit Control Detailed audit logs across the entire system	Provide privacy, security, and a method of ensuring that actual use is in compliance with policies and procedures, ultimately building trust and benefits the community and the RHIO .
Patient Portal and Download Unified intake form	Additional convenience for patients and improved efficiencies for physicians and hospitals .
Secure Messaging	Increased workflow efficiency due to reduced time handling faxes and phone calls and improving provider access to patient information, benefits physicians, hospitals and patients .
Referral Management	Improved efficiency, control, analytics and ease of use managing referrals, benefits payers, physicians and patients .

HEALTH INFORMATION EXCHANGE PROFILE

HEALTHBRIDGE

BACKGROUND



HealthBridge was founded in 1997 as a community effort to share health information electronically

in the Greater Cincinnati-Northern Kentucky tri-state area. HealthBridge's HIE network now includes more than 50 hospitals and more than 7,500 physicians in three states. The network transmits approximately three million electronic messages per month, including clinical lab results, radiology reports, operative notes, discharge summaries and other clinical information. HealthBridge provides services for over 80 percent of physicians and acute care hospitals within its service area. HealthBridge believes that it has reduced healthcare costs in its service area by more than \$20 million annually.

TYPE OF HIE: Multi-state regional non-profit

HIE SERVICE LAUNCH: 1997

MARKET SERVED: Greater Cincinnati-Northern Kentucky tri-state area; HealthBridge also supplies technology services to four other HIEs in Kentucky, Indiana and Ohio.

GOVERNANCE: HealthBridge is organized as a non-profit corporation. Its initial funding came from investments from two health plans and five health systems. Each of these organizations has a seat on the HealthBridge Board of Directors, alongside a variety of community stakeholders including employers, physicians and representatives of public health.

CRITICAL SUCCESS FACTORS

Provide services that solve business problems.

HealthBridge was formed at a time when the market was significantly less conducive to health information exchange (HIE) formation. In 1997, no significant grant funding was available and an employer-originated Community Health Information Network (CHIN) effort in the Cincinnati area had recently failed. Because of these circumstances, HealthBridge had to provide services that were demonstrably useful, solving clearly defined business problems. HealthBridge's value propositions and financial models are well defined, having been refined by fifteen years of experience. To survive, they learned to continuously communicate their value to hospitals, physician practices, and imaging centers, in terms that were meaningful.

Conducive market size and characteristics. HealthBridge believes that the Cincinnati area healthcare market was the perfect location to start an HIE. It is the right size and it

has several competing healthcare systems with a significant amount of patient and physician movement among those systems, creating a demand for information exchange and the need to provide physicians with standard access methods.

Continually move up the value chain. HealthBridge continues to produce value because they have been able to continually move up the value chain. In the late 1990s, value was provided by using the Internet via a collaborative portal. In 2000, value was provided by implementing clinical messaging. In 2011, a broad portfolio of HIE services, clinical applications, and process redesign services is contributing to the quality improvement and practice transformation objectives of the Greater Cincinnati Beacon Collaboration and supporting patient-centered medical homes. In the future, value creation will be in the form of providing a comprehensive HIT infrastructure to support ACOs and other innovations and reforms in healthcare delivery.

“When HealthBridge was formed there weren’t any grants available so we were forced to provide services that were useful and would solve a business problem and that organizations would pay for.”

– Keith Hepp, Interim Chief Executive Officer and Vice President of Business Development

BARRIERS TO GROWTH AND SUSTAINABILITY

HealthBridge believes that the substantial growth of federal grants for HIEs has caused a slowdown in communities making their HIE decisions. In HealthBridge’s view, communities and their stakeholders now have to choose among several options, including forming their own HIE, waiting for the state HIE to build out, engaging with a vendor-based HIE or joining another community’s HIE.

BUSINESS MODEL

HealthBridge began with investments from two health plans and five health systems. Within five years, HealthBridge was breaking even. Since 2003, HealthBridge has earned 5 percent to 8 percent over expenses each year. Each contract or service line has its own financial performance goals and must contribute to the cost of running the overall organization. Grant funds are treated as seed money for new ventures.

Portfolio of services: HealthBridge offers a wide variety of technology services, including a regional extension center (REC), quality improvement services such as a disease registry and workflow redesign, and health information exchange services. The HIE services include EHR integration, results delivery, order entry, e-prescribing, summary record exchange, public health reporting, syndromic surveillance and electronic claims check and eligibility verification.

Sources of revenue: Before the passage of the American Recovery and Reinvestment Act, 97 percent of HealthBridge’s revenues came from fees, with only 3 percent coming from grants. In 2010, HealthBridge received three large federal awards, but grant funding remains less than 50 percent of funding. HealthBridge employs several different pricing models to charge hospitals and physician practices for its services. Pricing varies among the various communities they serve.

- Hospital subscription fees are determined by taking the portion of HIE expense that management has determined should be covered by hospitals, and then allocating that portion of expense among the various participating hospitals based on each organization’s gross expenses.
- Lab fees are based on the number of lab specimens processed.
- Fees for eligibility inquiries may be included in the overall subscription fee or charged on a per-transaction basis, which varies across HealthBridge’s different communities.
- Fees for EHR data exchange are paid by both the recipient and the provider of the data because HealthBridge has determined that both sides benefit from the transaction.
- For Physician Quality Reporting Initiative (PQRI) services, physicians pay because physicians benefit.

In determining the basis for pricing, HealthBridge is careful to consider the possible impact on behavior. For example, transaction fees may motivate a participant to reduce usage. When that is a concern, HealthBridge uses a subscription fee approach.

CONNECTIVITY STRATEGIES

As a multistate HIE, HealthBridge operates in Ohio, Kentucky and Indiana. The dynamics of HIT and policy development in the three states requires that HealthBridge adopt an aggressive connectivity strategy.

In 2008, HealthBridge received a Nationwide Health Information Network Exchange grant to develop and test its capability to exchange data with other HIEs around the country. In 2010, HealthBridge expanded their Nationwide Health Information Network Exchange capabilities, participating in two major health IT initiatives:

- The Centers for Medicare and Medicaid Services' CARE Health Information Exchange Project is helping to validate national standards for data interoperability and secure data exchange using the Nationwide Health Information Network Exchange CONNECT Gateway.
- The Social Security Administration's *Medical Evidence Gathering and Analysis through Health Information Technology Project* uses the Nationwide Health Information Network Exchange for disability determination.

HealthBridge plans to incorporate CONNECT and Direct standards and services into the HealthBridge architecture and to become a HISP (Healthcare Information Service Provider). They feel that supporting Direct will soon be a market necessity. HealthBridge plans to use Direct for point-to-point messaging to facilitate improved care coordination among providers.

Indiana is providing incentives to hospitals to connect to regional HIEs and then plans to interconnect the HIEs. Kentucky used a Medicaid transformation grant to create a separate HIE. HealthBridge is focusing on implementing a Direct connection to Kentucky's HIE to send immunization information to the state immunization registry. Ohio created a new organization to launch its State HIE effort. HealthBridge is trying to find specific use cases on which they can work together with the Ohio State HIE.

HealthBridge's infrastructure can be used to connect healthcare providers in communities that are far away from HealthBridge's traditional service area. This capability may be used for others in the future. For example, GE has expressed interest in sponsoring HealthBridge connectivity in other communities where GE has employees as a way for GE to help introduce pay for performance programs.

TECHNOLOGY PARTNERS

HealthBridge contracted with Axolotl (now part of OptumInsight, owned by United Health) to deploy its clinical messaging system in 2000. In addition to Axolotl, HealthBridge uses software from Mirth (systems integration), WellCentive (registry), and Atlas (order entry).

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Healthcare consumer/patient engagement: HealthBridge is exploring patient engagement services by conducting a personal health record (PHR) connectivity project under the Indiana HIE Challenge Grant, and by conducting a project with an HIE partner, HealthLINC, to use Nationwide Health Information Network Exchange standards for sharing data directly with patients. These pilots will help HealthBridge gather data and experience as they develop a longer-term strategy in this area.

New care delivery models: HealthBridge is planning to be a resource for online data analytical services, providing aggregation and synthesis of raw data for accountable care organizations (ACOs). As part of this strategy, they are connecting to and gathering data from non-physician offices and non-hospital places of care, such as long-term care facilities and homecare agencies. They are also ensuring that their master patient index (MPI) can integrate data from retail and employer-based clinics such as The Little Clinic from Kroger.

HealthBridge, HealthLINC, Collaborating Communities HIE, NeKY RHIO and the University of Kentucky were awarded federal funding in February 2010 to serve as the Tri-State Regional Extension Center, serving parts of Indiana, Kentucky and Ohio. HealthBridge and its partners are working together to help more than 1,700 clinicians use technology

"There is no magic bullet for sustainability or business success. Our leadership believes that we can never go wrong by being so close to our customers and understanding what makes them tick. We need to keep our organization lean. Grant funding is short lived and needs to be used very smart and well so you are ready to move beyond it."

— Trudi Matthews, Director of Policy and Public Relations

meaningfully and qualify for federal incentives. More physicians using EHRs and connected to HIE helps further embed and facilitate HealthBridge's services.

On September 2, 2010, HealthBridge and a group of five community partners were awarded a \$13.75 million Beacon Community cooperative agreement from the U.S. Department of Health and Human Services (HHS). HealthBridge is working with four other Beacon Communities to help the Office of the National Coordinator for Health IT (ONC) define standards for transport and content to and from EHRs for quality improvement. HealthBridge believes that the Beacon program is critical to HealthBridge's future because results delivery will ultimately become a commodity. HealthBridge believes that their value contribution in the future will come primarily from helping to improve quality and decrease healthcare costs.

introduce new services, and consequently raises the barrier for potential competitors. HealthBridge is also investing in its own future by broadening its portfolio of services and by developing new tools that will help stakeholders prepare for accountable care and payment reform.

FUTURE OUTLOOK

Governance and stakeholders: Payers were involved at the early stage of HealthBridge's development, but for various reasons, did not perceive the value of the HIE to be compelling enough to become active participants in the ongoing data exchange. Going forward, HealthBridge believes that combining claims data with real-time clinical data will provide a valuable analytic opportunity. In anticipation of more participation in the future from both employers and health plans, HealthBridge recently changed their governance structure to accommodate more stakeholders.

Persistent barriers: One major hurdle from a business perspective is the need to be prepared for constantly changing regulations and standards. Another hurdle is the need to constantly be aware of potentially disruptive technologies that could erode HealthBridge's value.

Business model for long-term sustainability: HealthBridge believes that physicians will adopt technology in large numbers if the cost of adoption is low enough and if there are clear benefits in terms of workflow and cost savings. Historically, HealthBridge's high adoption helped bring on other physicians who did not want to be left out. HealthBridge's continued saturation of the market will help ensure its sustainability as it reduces the cost and time to

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION
Internet Portal	Gateway for physicians to access inpatient information systems. Gives physicians a one-stop site where they can login to access information from various hospitals. Demonstrated that, rather than each hospital building and investing in its own infrastructure, collaboration among competing stakeholders in the community could result in a better outcome for the end user.
Clinical Messaging	More efficient workflow for primary care and specialist physicians. HealthBridge asked CFOs to help quantify savings by sharing their costs, the number of labs sent out and the cost of sending each. Analysis showed that the manual methods (fax, delivery and physical mail) cost on average \$0.75 per result versus \$0.12 per result for HealthBridge's services. Automated delivery also saved participants' staff time. One medical group's internal lab, which supports 55 physicians and sends out 37,000 labs a month, saw a 50 percent reduction in phone calls after HealthBridge was implemented.
Single Connection for Delivering Results Electronically into EHRs	Physician practices have to deal with just one connection into their EHR rather than multiple disparate systems. Each EHR data feed can cost up to \$10,000 for each lab and each hospital. For one practice, this could be 6 x \$10,000 onetime fee plus 10 percent per year maintenance. One connection to HealthBridge provides each participant with more data from more sources for less money. Data is also codified coming into the EHR and therefore is more valuable for quality reporting and analytics.
Disease Registry	Better population health management benefits patients and payers . Higher quality care and improved patient engagement around recommended care for providers .
Regional Extension Center Services • EHR Selection and Implementation Assistance • Meaningful Use Education • Guidance on Applying for Incentive Payments • Supported and Hosted Meaningful Use Solutions • Privacy and Security Assistance	More effective EHR adoption. More practices achieving meaningful use benefits physicians and enables them to provide higher quality and more cost effective care, benefiting patients and purchasers . Eligibility for meaningful use incentive payments for physicians and hospitals .
Electronic Order Entry	More efficient hospital and physician workflow.
Electronic Prescribing	More efficient physician workflow. Eligibility for electronic prescribing incentives for physicians . Fewer medication errors benefiting payers and patients .
Web-based EHR Lite	Less expensive, more connected EHR option reducing costs for physicians . Improved physician practice quality management. Increased ability to obtain quality incentive payments. Less staff time pulling data manually.

EXAMPLES OF VALUE PROPOSITIONS (CONTINUED)

SERVICE	VALUE PROPOSITION
Quality Reporting	Improved physician practice quality management. Increased ability to obtain quality incentive payments. Less staff time pulling data manually.
Workflow Redesign	Improved efficiency and quality in physician practices benefiting physicians, patients and payers .
Data Analytics	Improved information on quality and cost of care benefits payers and patients .
HIE Consulting & Outsourced HIE Technology Support	Increased value derived by the hospital or physician practice by improving end users' proficiency and use of HIE services.
Billing and Eligibility Verification	Improved financial data for physicians .
Public Health Reporting & Syndromic Surveillance	Improved data for public health improves care for patients .
Nationwide Health Information Network Gateway & Connectivity	Improved access services for HIEs and federal agencies .

HEALTH INFORMATION EXCHANGE PROFILE

HEALTHINFONET

BACKGROUND



HealthInfoNet is a health information exchange (HIE) chartered with providing health information

technology services across the state of Maine. The organization emerged in 2006 from the Maine Health Information Network Technology project, a multi-stakeholder effort that concluded Maine was ready for a statewide health information exchange. HealthInfoNet is also the operator of the Maine Regional Extension Center (MEREC) and is a major subcontractor for the Bangor Beacon Community.

Approximately 70 percent of Maine's 1.3 million residents have electronic health records in HealthInfoNet's database. 16 hospitals and 2,000 clinicians currently participate in the HIE; an additional ten hospitals are under contract to be added to the exchange in 2011. Eighteen different

organizations provide laboratory data to the HIE. HealthInfoNet's goal is to have all hospitals in the state and 80 percent of physicians connected by 2015.

TYPE OF HIE: State-wide non-profit

HIE SERVICE LAUNCH: The demonstration phase for HealthInfoNet began in December 2008. The HIE is now in the midst of a broader state-wide rollout of its services.

MARKET SERVED: HealthInfoNet's market spans the entire state of Maine.

GOVERNANCE: HealthInfoNet's 21-member Board of Directors represents doctors, hospitals, government agencies (including Medicaid and the Maine Center for Disease Control and Prevention), commercial payers, and healthcare consumers.

CRITICAL SUCCESS FACTORS

Shared vision. The organization was founded by a representative group of healthcare stakeholders in the community who collectively recognized the value of exchanging data for non-competitive uses.

Stakeholder collaboration. The Board of Directors and its committees are very active in setting the strategic priorities and driving the functional and data requirements of the HIE. This level of effective engagement is essential to maintaining alignment between HealthInfoNet and the priorities of its key stakeholders. For example, grant requirements must align with the Board's priorities for HealthInfoNet to pursue a grant.

Build trust and create value. Most funding to start up HealthInfoNet originated with a private philanthropic foundation and large healthcare providers. This created the

environment for HealthInfoNet to concurrently build trust for the exchange of data among providers while creating and demonstrating the value of HIE services to advancing quality and cost objectives.

Involve primary care providers in HIE. Operating MEREC is proving to be the catalyst for attracting primary care providers to the HIE. Historically, attracting these doctors has been more difficult than anticipated given cost and change management issues.

Consensus on patient consent management. Achieving consensus among the community's stakeholders for an opt-out patient consent model is considered to be an important factor in growth of clinician adoption. HealthInfoNet will remove all clinical data belonging to a patient who decides

“The patient-centered medical home drives healthcare toward a community-based versus an enterprise strategy. HealthInfoNet is central to this transformation because of its patient-centric database.”

– Devore Culver, Chief Executive Officer

to opt-out of the HIE. As of early 2011, approximately 6,000 patients – less than 0.6 percent of patients in the database – have opted-out of the HIE. Patients are able to opt-out of the HIE via an online form available at HealthInfoNet’s website.

BARRIERS TO GROWTH AND SUSTAINABILITY

Funding delays. HealthInfoNet’s start-up occurred 1.5 years later than planned because of challenges with raising capital. The breakthrough that enabled HealthInfoNet to start up operations occurred when key provider organizations agreed to a 2:1 matching funds program, whereby the granting party was willing to contribute \$2 million if the providers would collectively commit to \$1 million to fund the enterprise over a 24 month period.

Lack of payer involvement. Payers remain on the sidelines despite the potential value of HealthInfoNet data.

Diversify revenue model. Many physicians in small practices are unwilling or unable to pay the HealthInfoNet service fees. A larger base of participants and more diversified revenue model is needed to support a lower fee structure to attract these physicians.

BUSINESS MODEL

As the major HIE for Maine, and with support from stakeholders statewide, HealthInfoNet is positioned for the foreseeable future to sustain its operations by expanding its services to more providers across the state and by executing on three substantial government-sponsored initiatives. HealthInfoNet is a recipient of State Health Information Exchange, Regional Extension Center, and Beacon Community grants from the Office of the National Coordinator for Health Information Technology. These funding opportunities will provide the resources needed for HealthInfoNet to further diversify its portfolio of services. The HIE is currently on track to grow its revenues by almost 10

percent in 2012 and is cash-flow positive.

Portfolio of services: The core infrastructure of HealthInfoNet is a patient-centric database supported by an enterprise master patient index (MPI) and accessible via a clinical portal or by launching to the HIE from within the provider’s electronic medical records (EMR) system. EMRs currently interoperating with HealthInfoNet include GE Centricity, Cerner Millennium, Allscripts-Eclipsys, Meditech, and McKesson. End users can access a shared patient record that contains medication history, drug allergies, lab, and other ancillary test results.

Sources of revenue: All providers using HealthInfoNet’s services pay a monthly subscription fee that is based on bed size for healthcare facilities and number of physicians for medical practices.

The goal of HealthInfoNet’s leadership is a revenue model whereby providers, payers, and government entities are each contributing one-third of the total fees generated by the HIE. However, for 2012 and most likely the subsequent two years, 50 percent of HealthInfoNet’s revenues will originate from provider subscription fees for the HIE’s services. The remaining 50 percent of revenues is accounted for because of cooperative agreements and grants from federal and state governments.

CONNECTIVITY STRATEGIES

HealthInfoNet is exploring the possibility of implementing connectivity with other Beacon Communities via the Nationwide Health Information Network Exchange as part of its activities as a subcontractor of the Bangor Beacon Community.

The strategic role of the Direct Project’s standards and services in HealthInfoNet’s portfolio is unclear at this time. HealthInfoNet’s system interfaces provide more extensive capabilities and value compared to Direct. For example, HealthInfoNet’s exchange services are designed for semantic

interoperability. Clinical dictionaries and data are standardized as much as possible; data can be transferred directly into participants' EMR systems upon request. Although not a strategic focus, HealthInfoNet is open to exploring opportunities to implement Direct with organizations external to the HIE, in an effort to better understand its value.

HealthInfoNet has been working with the U.S. Department of Veterans Affairs (VA) to establish a mechanism for exchanging patient health information between the VA and the private sector. The VA and HealthInfoNet have agreed to use the CONNECT open source software to implement this connectivity with any VA location of care, including the VA Medical Center in Togus, Maine and various other VA outpatient centers around the state.

A medication therapy management project, sponsored by a self-insured employer, will connect pharmacists to HealthInfoNet for access to patient medication history and lab test results. These services are expected to improve medication management outcomes and result in more cost-effective medication utilization.

HealthInfoNet is collaborating with the New England States Consortium of Systems Organizations (NESCO) to develop a region-wide provider directory. The core proposed minimum data set for this innovative connectivity mechanism is currently being developed by NESCO.

TECHNOLOGY PARTNERS

Orion Health is the primary information technology vendor for HealthInfoNet. Consistent with HealthInfoNet's "best of breed" philosophy for adopting technologies to service its stakeholders, DrFirst provides the HIE with an electronic prescribing application, Health Language, Inc. supports HealthInfoNet's semantic interoperability with its clinical terminology management software, and IBM Initiate provides master patient and master provider indexes (MPIs).

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Healthcare consumer/patient engagement: HealthInfoNet engages consumers in governance and development of its HIE services. A consumer advisory committee provided valuable input to the opt-out consent model and helps to develop

patient education and communication programs about the HIE and its consent procedures.

- HealthInfoNet attributes patients' satisfaction with these programs to the delivery of information on the HIE through physicians' offices.
- Outreach programs to educate people in the community about HealthInfoNet are planned for additional venues, including community centers and AARP communication vehicles.
- A patient portal is slated for launch in the second half of 2011.

Meaningful Use of Electronic Health Records (EHRs):

Meaningful use criteria have heightened the level of attention given to health information exchange. The stage 2 and 3 criteria for health information exchange will be the catalyst motivating providers previously reluctant to connect to become participants of HealthInfoNet.

New care delivery models: The development of accountable care organizations (ACOs) and patient-centered medical homes (PCMH) are potential drivers of future growth for HealthInfoNet. A community-wide HIE is an essential component of any ACO's infrastructure in order to achieve the ACO mission of managing the entire continuum of care for a patient population. HealthInfoNet is currently being deployed in physician practices that are participating in the Centers for Medicare and Medicaid Services' (CMS) PCMH initiative, a critical stepping stone to future ACOs. Demonstrating the value of HealthInfoNet as the core health information infrastructure to support a patient-centered model of care is strategically important to the organization's future. HealthInfoNet's leadership anticipates multiple ACOs will emerge in its market, and the HIE will be positioned to serve all of them.

FUTURE OUTLOOK

Governance and stakeholders: The corporate structure of HealthInfoNet is expected to evolve to support a more diversified and complex business featuring new business ventures. A for-profit subsidiary may be on the horizon for particular ventures.

Persistent barriers: Access to capital is an ongoing challenge, particularly in the long-term (3+ years).

“Future healthcare policy in terms of the importance placed on ‘a person is a person for care’ will either strengthen the position of the HIE or render it expendable.”

– Devore Culver, Chief Executive Officer

HealthInfoNet’s focus is to transition from an organization with some dependency on government grants to sustaining and growing its business exclusively from the value-based services it provides to participants of the HIE.

The future role of commercial payers in HIE in Maine remains uncertain.

Emerging care delivery models may accelerate or inhibit the progress of HealthInfoNet. The extent of support for a patient-centered model of care across the state, and the approach ACOs take to managing patient populations, will be significant factors affecting the future of HealthInfoNet.

According to Devore Culver, HealthInfoNet’s CEO, if Maine can demonstrate a positive impact on outcomes resulting from community-based care delivery through the CMS PCMH initiative, HealthInfoNet will expand in overall importance as a resource for enabling continuity of care and as a vehicle for organizing new community care partners (e.g., pharmacists) into the patient-centered care model.

The development of ACOs and their impact on the competitive dynamics of the market are being watched closely by HealthInfoNet and its stakeholders. If channeling patients into a specific care organization to gain a competitive advantage becomes the primary objective of ACOs in HealthInfoNet’s region, then the open, community-wide HIE offered by HealthInfoNet may have diminished value to certain current participants.

Business model for long-term sustainability:

HealthInfoNet considers measuring the value of its services as strategically important to the long-term sustainability of the HIE. The organization has an ongoing qualitative measurement program to determine the benefit of the HIE in its role as a service that provides health information at the point of care. Four performance indicators are monitored: (1) satisfaction of end users with the service in terms of ease-

of-use, (2) level of trust in the accuracy and authenticity of the data, (3) perceived impact of the data on patient care, specifically, timeliness and access to data useful to clinical decision-making that would otherwise not be known, and (4) contribution to enhancing the provider-patient relationship.

Measurement of the more tangible benefits offered by HealthInfoNet’s patient-centric clinical database is planned in two areas. First, the avoidance of unnecessary or redundant tests resulting from access to the patient database will be analyzed. Second, changes in drug utilization associated with altered medication ordering patterns will be explored. Results from this quantitative analysis of test and medication usage will build on previous projections from HealthInfoNet regarding savings from eliminating duplicative services.¹

HealthInfoNet’s medication therapy management project is an example of a new service that is intended to deliver value to a new stakeholder population and bring additional sources of revenue into the organization. The objectives for new initiatives are to create new uses for the data currently captured or to expand the types of data collected.

A major project under development involves leveraging the HealthInfoNet enterprise master patient index (EMPI) to build a statewide medical images repository. This cloud-based service will eventually support direct access to more than 1.8 million images and help providers avoid the overhead costs associated with image archive management.

Connecting the state of Maine’s prescription management program to HealthInfoNet has the potential to create incremental value for its end users by expanding and streamlining access to the database. This opportunity is currently being pursued.

HealthInfoNet’s data can also inform health insurers designing products for the new state health insurance exchange. This potential source of future growth is also being explored.

¹ Culver, D. & Lau, L.M. (2010). Maine’s HealthInfoNet: Seeking sustainability as a statewide health information exchange. HIMSS10 National Conference. Available at: <http://www.himss.org/content/files/proceedings/2010/193.pdf>.

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION
Medication Reconciliation	Reduced time and healthcare professional resources expended on reconciling a patient's medication lists at a transition of care, improving patient safety and satisfaction, and reducing downstream healthcare costs associated with non-adherence to prescribed medication therapies.
Clinical Portal Access to a Patient-Centric Database	In an emergency situation, providers can more quickly and accurately diagnose and treat patients, improving patient safety and quality of care. Reduces the frequency of ordering duplicate tests, saving payers money and improving the patient experience.
Public Health Reporting	Enhanced identification of threats to public health. Decreased time to first receipt of lab results for mandated disease reporting helps to streamline reporting by healthcare providers to public health agencies.

HEALTH INFORMATION EXCHANGE PROFILE

INLAND NORTHWEST HEALTH SERVICES

BACKGROUND



Inland Northwest Health Services (INHS) is a diversified healthcare services company chartered

with improving the quality and cost-effectiveness of healthcare through the sharing of innovative services and technologies among its member organizations. The organization was formed in 1994 by what were, at the time, two competing integrated healthcare delivery systems in Spokane, Washington: Empire Health Services and Providence Healthcare.

Health information exchange (HIE) services are delivered through the INHS Information Resource Management (IRM) division's health information technology (HIT) network. The INHS HIT network connects 38 hospitals and 450 ambulatory organizations, including 4,000 physicians and 750 provider-based electronic medical record (EMR) systems. Twenty of the hospitals and two large reference labs provide laboratory data to the HIE. The network provides 47,000 end users with secure access to a community-wide electronic health record (EHR) system containing records for 3.5 million patients. INHS expects to

have two additional hospitals and 100 more EMR systems connected by the end of 2012.

INHS is the lead organization of the Beacon Community of the Inland Northwest. The primary focus of this Beacon project is improving care coordination for adults with type 2 diabetes.

TYPE OF HIE: Multi-state regional non-profit

HIE SERVICE LAUNCH: Exchange of health information among providers commenced when the IRM division was formed in 1996.

MARKET SERVED: Inland Northwest Health Services' market is a large region covering eastern and parts of western Washington State, northeast Oregon, northern Idaho, and western Montana.

GOVERNANCE: INHS is an independent non-profit organization; Providence Health & Services, Empire Foundation, Spokane County Medical Society and members of the community are represented on the INHS Board of Directors.

CRITICAL SUCCESS FACTORS

Shared vision. A diverse group of competing healthcare organizations with a common vision decided to join in the formation of a shared services organization. Clinical benefits realized from a shared EHR and cost savings from a shared information system infrastructure are the cornerstones of value creation at INHS. Competitors are motivated to collaborate because of the reduced infrastructure costs made possible by a shared system model.

A shared EHR. Clinicians' advocacy for a shared EHR across organizations that supports the continuum of care was a major influence on INHS' development from the beginning, and continues to be an important source of support. A clinician using INHS' shared EHR not only becomes accustomed to but expects point-of-care access to the health information that enables that clinician to better manage the continuity and coordination of care for each patient.

“The more stakeholders share information, the higher the value expectations.”

— Mike Smyly, Chief Business Development Officer

Neutral, trusted entity. INHS manages a comprehensive regional repository of patient information that is used in a variety of applications and is viewed as a source of value by its participants. As manager of the community EHR, INHS serves as the neutral trusted party that enables various healthcare providers to share patient health information.

Stakeholder collaboration. Maintaining strategic alignment with stakeholders is critical to their ongoing participation and therefore to sustainability of the IRM division's HIE services. INHS leadership makes considerable investments in working with stakeholders to develop the organization's future direction. A key element of this collaborative planning is the clear definition of why a particular initiative is important to each stakeholder. To maintain strategic alignment, INHS focuses on incremental improvements to its services portfolio to address immediate and substantive business needs of the participants. Sustainability is achieved by continuously enhancing INHS' health information technology portfolio with new and enhanced value-added services.

BARRIERS TO GROWTH AND SUSTAINABILITY

A new vocabulary standard. Current standards are deficient in providing clinicians with consistent information in a structure that is easy to comprehend and use at the point of care. For example, the lack of common vocabulary standards requires INHS to create its own semantic interoperability mechanisms to achieve the goals of a community-wide EHR and comparisons of medical information originating from various sources. Gaps in standards are a significant barrier to INHS particularly because savings from collaborative services are derived from standardization.

Lack of data consistency. INHS is continuously investing considerable resources to improve the consistency and presentation of data from the shared EHR. This tends to slow down the rollout of improvements to its applications.

BUSINESS MODEL

The IRM division of INHS operates as an HIT services vendor contracting to deliver HIT services to the integrated delivery networks (IDNs) that are its principal participants, as well as to a growing base of non-IDN customers. The IRM division's operating budget is completely funded by fees paid by its customers. Fees are based on a cost-plus model.

Portfolio of services: INHS offers a core set of “common” services to all participants and a menu of optional support services. The suite of common services includes access to a community EHR containing patient demographics, visit histories, cumulative laboratory results and other sets of data that are aggregated and saved as the longitudinal record of a patient continues to grow. The community EHR is supported by clinical applications including computerized physician order entry and a clinical documentation system.

Participants can select from a menu of optional services that include a transcription service, a community digital image repository, hosting services for a medical group's own EMR system and network management services.

Sources of revenue: All customers pay a monthly fee for use of the common services. Additional fees are charged for any of the optional support services contracted for by customers.

CONNECTIVITY STRATEGIES

INHS is an active participant in the Nationwide Health Information Network Exchange. INHS is a live participant in the virtual lifetime medical record (VLER), a pilot project in collaboration with the U.S. Department of Veterans Affairs (VA) and Department of Defense (DoD) to exchange data with the Spokane, WA VA Medical Center and Fairchild Air Force Base using Nationwide Health Information Network specifications and services. Included in the pilot is the exchange of Nationwide Health Information Network-specified content (e.g., Healthcare Information Technology Standards Panel (HITSP) C32 data sets). The Nationwide Health Information Network initiative provides INHS with

the opportunity to gain experience with implementing standards-based interoperability. This is valuable to INHS' efforts in assisting its customers as they map out their future interoperability strategies. Successfully connecting to the Nationwide Health Information Network Exchange is strategically important to INHS because management believes this will be the primary means of connecting to U.S. government entities. Thus, a Nationwide Health Information Network Exchange connection becomes a valuable asset to INHS by positioning the organization to be a major HIE hub for exchanging data with the U.S. government.

INHS is also considering implementing the Direct Project's standards and services as part of its Beacon Community efforts.

The U.S. Social Security Administration (SSA) and INHS have recently agreed to collaborate on a project to connect to SSA's disability claims system; this is another opportunity for INHS to gain experience in deploying standards-based interoperability with an entity that is external to the INHS network. INHS is delivering clinical history for use by the SSA's case management functions.

TECHNOLOGY PARTNERS

INHS uses a variety of technologies and works with several technology partners to support the shared community exchange. GE Healthcare Centricity electronic medical record (EMR) and MEDITECH MAGIC are the principal systems for the INHS-hosted inpatient and ambulatory applications respectively. INHS supports bi-directional integration with many non-hosted systems including a variety of ambulatory EMRs, imaging systems, and reference laboratories. The HIE is continually evaluating and incorporating new partners into its portfolio of offerings.

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Healthcare consumer/patient engagement: INHS has several healthcare consumer-related pilot projects underway. The INHS health record bank (HRB) project, which is one of three pilots funded by the State of Washington, is designed to provide healthcare consumer access to an HRB populated by the INHS community EHR and other sources. Patients access the HRB using the Google Health¹ personal health record (PHR) application. Google Health was chosen because of the ease of use of its application programming interfaces to support the publishing of data from the INHS community health record when a consumer requests it. This project is helping INHS answer some key questions about how to use and manage personal health records, including:

- Defining and explaining the value to providers
- Determining how to control what data can be released from the community EHR
- Deciding how to ensure the quality and trust of the information

The strategic importance of healthcare consumer engagement to INHS is reflected in the creation of a new line of business – 1HealthRecord – that is dedicated to developing a portfolio of services in this area.

Meaningful Use of Electronic Health Records (EHRs): As a provider of comprehensive health IT solutions, customers depend on INHS for guidance on the requirements, strategies, and programs for achieving meaningful use in order to participate in the Centers for Medicare and Medicaid Services' (CMS) incentive program. With INHS' support, 12 independent hospital customers have commenced the meaningful use attestation process with

"INHS has a 'platform for innovation,' which enables us to develop value-added information technology to help our stakeholders more rapidly deploy new technologies than they could do independently."

– Mike Smyly, Chief Business Development Officer

¹ As of July 2011, Google Health announced that it is exiting the PHR business.

the expectation that all will be receiving Medicare incentive payments for 2011.

New care delivery models: INHS is closely monitoring the emerging accountable care market in its region. The organization is currently in an exploratory phase to determine the needs of entities involved in accountable care organization (ACO) development. As an independent trusted entity with the comprehensive regional health IT infrastructure required by an ACO, INHS leadership believes the organization is well-positioned to serve a major role.

Other lines of business at INHS, particularly Northwest MedStar (critical care transport) and Northwest TeleHealth, also provide unique synergies for integrating health information services and creating incremental value for their community.

FUTURE OUTLOOK

Governance and stakeholders: As INHS' market continues to evolve, its stakeholder composition becomes more heterogeneous. The result is increased competitive dynamics and associated challenges.

Business model for long-term sustainability:

Maintaining a shared EHR requires extraordinary collaboration and is becoming more challenging as the INHS customer base grows.

The opportunity ahead is to leverage INHS' knowledge, experience and HIE investments to effectively adapt to a broader, more heterogeneous health ecosystem. INHS will likely evolve to offer a more varied portfolio of services and different HIE storage and retrieval models to meet the needs of its customers.

The organization has reached the stage in its life cycle where it is possible to leverage the large and growing repository of data in its analytics applications to support customers' disease management and quality reporting needs.

Availability of INHS' applications on mobile platforms for clinicians is also an important development priority.

The INHS focus on consumer strategies will increase. Connecting to and populating a Health Record Bank (HRB) and providing interoperability with portable personal health records as well as home monitoring devices are areas identified by INHS' stakeholders as important to their strategies for engaging consumers in their healthcare.

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION
Community-wide EHR	A hospital system estimated \$1.3 million in savings over a four year period by implementing a comprehensive suite of clinical applications integrated with the INHS community-wide health record and delivered in the shared services model. Participating hospitals spend approximately 2 percent of their budget on health IT infrastructure compared to the national average of 3+ percent. The INHS infrastructure includes advanced applications not always factored into the national average spend, including computerized physician order entry (CPOE), clinical documentation, bedside charting, bar-coded medication verification, and medication reconciliation. Access to the community EHR reduces the frequency of duplicate and redundant tests, saving payers money and improving the patient experience. “More complete clinical data improves clinical results”
Computerized Physician Order Entry	Medical group practices and clinics realize a reduction in labor expenses associated with processing lab orders and results.

HEALTH INFORMATION EXCHANGE PROFILE

MEDVIRGINIA

BACKGROUND



MedVirginia, headquartered in Richmond, Virginia, was established in 2000. Serving Central Virginia, MedVirginia's mission is to organize, coordinate and serve provider interests in healthcare information technology by providing a system for community-wide clinical information exchange that enables improved clinical workflow and the attainment of meaningful use of health IT. MedVirginia also helps providers utilize health IT to create and maintain patient-centered medical homes (PCMHs) for those they serve. MedVirginia was formed by CenVaNet, a leading hospital and physician-owned network based in Richmond, and MedAtlantic, an affiliate of the Virginia Urology Center. MedVirginia was

the first health information exchange (HIE) to be live on the Nationwide Health Information Network Exchange.

TYPE OF HIE: Regional for-profit

HIE SERVICE LAUNCH: MedVirginia was formed in 2000 and launched its community-based HIE in January 2006.

MARKET SERVED: MedVirginia serves central Virginia and the Hampton Roads region

GOVERNANCE: MedVirginia is organized as a Virginia Limited Liability Company (LLC) and governed by a 5-member Board of Managers.

CRITICAL SUCCESS FACTORS

Building a “framework of trust.” MedVirginia attributes its success to having built a “framework of trust.” Its founding organizations were trusted “name brands” within the community. MedVirginia has continued to operate effectively even though there have been IT platform changes at each individual hospital to which the HIE is connected. This trust is enhanced by the HIE’s physician ownership.

Flexible and functional. MedVirginia maintains flexibility while providing extensive functionality. They appeal to a broad spectrum of users ranging from sophisticated users, such as Virginia Urology, to smaller practices, which may be less comfortable with technology.

Federal partners. Federal partnerships with the U.S. Department of Defense (DoD), Social Security Administration (SSA) and Department of Veterans Affairs (VA) are critical. MedVirginia has been involved in ground-breaking initiatives

with their government partners. Delivering solutions for the privacy and security challenges inherent to public-private health information exchange further strengthens MedVirginia’s trust in the community. MedVirginia is committed to helping set national standards by serving as an example of how an HIE can comply with those standards.

Community education. MedVirginia maintains its visibility in the community as a thought leader. For example, MedVirginia provided extensive training and education on HIPAA privacy and security compliance for physician offices across the region.

Diverse revenue sources. MedVirginia has always considered grants as supplemental revenue, so the organization does not base its financial viability on grants. Ongoing operations are funded through HIE use and professional service fees.

“...when you make the conversation about a wounded warrior or a disabled person or an uninsured person, everyone can agree on the benefits of health information exchange.”

— James Ratliff, MD, Board Chair

BARRIERS TO GROWTH AND SUSTAINABILITY

Interoperability. The biggest barrier to MedVirginia’s success is also the biggest reason for its existence: the need for interoperability among disparate information systems. This barrier has been overcome by implementing state-of-the-art solutions compliant with nationally accepted standards for interoperability, privacy and security.

Sustainability. Financial performance is a constant challenge for any HIE. From its inception, MedVirginia has been fortunate enough to be supported by strong and committed partners such as Bon Secours Health System. It is also able to share overhead with its care management affiliate, CenVaNet, which was especially important during start-up.

Effectively engaging competitors. Being able to bring competing health systems into the HIE has been a continuing challenge. The original approach was to integrate new organizations by adding their data to MedVirginia’s repository. However, MedVirginia now has a federated approach that allows organizations alternative options for participation in the HIE. These options, along with keeping a focus on the fundamental purpose of HIE (i.e., enhanced patient care, especially for vulnerable populations such as wounded warriors and the disabled), support MedVirginia’s continued growth and development.

BUSINESS MODEL

Because of MedVirginia’s startup funding and the use of shared resources, they were not under as much time pressure to achieve profitability as other HIEs may have been.

Portfolio of services: MedVirginia provides a technical infrastructure to collect hospital, physician, lab, and

pharmacy data and organize it into a single electronic chart that authorized providers can access from a user-friendly, secure web portal. Lab data, radiology reports, hospital discharge summaries, emergency department discharge summaries, operative notes, transcribed reports and medications are all shared via the network.

Sources of revenue: Data suppliers pay a fee to MedVirginia to make their clinical results available. MedVirginia has developed expertise in the use of the Nationwide Health Information Network Exchange and has a Nationwide Health Information Network Exchange Gateway. They are now obtaining professional fees for helping other organizations connect to the Nationwide Health Information Network Exchange. A big part of this expertise relates to development of the Data Use and Reciprocal Support Agreement (DURSA) used by the Exchange and a standards and policy framework regarding the sharing of clinical data. Commercial payers are not a source of revenue.

CONNECTIVITY STRATEGIES

CONNECT and the Nationwide Health Information Network Exchange are key MedVirginia approaches used as tools for connectivity. While MedVirginia will continue to connect directly with additional provider entities, it will utilize the Nationwide Health Information Network Exchange to communicate with other regional HIEs. MedVirginia does not intend to have point-to-point connections with other HIEs.

MedVirginia is using the Nationwide Health Information Network Exchange to connect Centra Health’s three hospitals to the Social Security Administration (SSA) as part of the MEGAHIT project. The objective is to shorten the time period for making decisions on disability applications. MedVirginia uses the Continuity of Care Document (CCD) format to exchange disability-related information.

The Commonwealth of Virginia's HIE plan was recently approved by ONC. The Direct Project's standards and services are part of that plan. Soon Virginia will contract with an entity to form a statewide HIE through an RFP procurement process. MedVirginia plans to bid on the state contract.

MedVirginia is currently working with CenVaNet on Direct. They are helping a practice achieve recognition as a Level 3 NCQA patient-centered medical home (PCMH) by using Direct transactions to improve care management and coordination for patients with specific chronic diseases. The practice sends requests for care coordination to CenVaNet's care managers, who then return care management summaries after the patient has been seen. This will also help the practice achieve meaningful use incentives.

TECHNOLOGY PARTNERS

MedVirginia is transitioning to the Verizon HIE service and a "next generation" physician portal (developed by MedFx), which will provide physicians access to the HIE's services regardless of their location. MedVirginia's current data repository of over 1.5 million unique patient records and the system interfaces it has developed will be migrated into the new Verizon HIE service. Verizon's cloud-based approach provides MedVirginia with scalability, security, and best-of-class architecture.

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Healthcare consumer/patient engagement: MedVirginia does not have a patient engagement strategy. Its philosophy is that they are custodians of provider-generated clinical information and are therefore not authorized to independently make such data available directly to patients. MedVirginia fully supports the value of health information

for patients wherever possible, and works closely with its providers to share data and information with their patients.

New care delivery models: MedVirginia's interest in accountable care organizations (ACOs) is through its care management affiliate, CenVaNet. Population health management is viewed by MedVirginia's leadership as a significant opportunity because it requires their HIE capabilities. Care management and care coordination are provided by CenVaNet, and HIE capabilities are provided by MedVirginia. Supporting ACOs is seen as critical to the success of MedVirginia going forward. MedVirginia plans to become the "go-to" organization for achieving meaningful use, particularly for stages 2 and 3.

FUTURE OUTLOOK

Governance and stakeholders: MedVirginia will continue to be governed by its five member Board of Managers.

Persistent barriers: MedVirginia feels that great care needs to be taken because the HIE industry is growing faster than available expertise and experience. While a "rising tide floats all boats," failed HIE initiatives could negatively impact successful HIEs such as MedVirginia.

Business model for long-term sustainability:

MedVirginia's initial revenue was generated from hospitals, its core suppliers of data. They provided data which was added to the MedVirginia repository. In the future, data suppliers will continue to be the main source of revenue. There are no plans to charge physicians for basic HIE connectivity.

MedVirginia plans to provide more value-added services for its participants, such as electronic results delivery directly into a provider's electronic medical record. As the HIE enhances its existing services and creates new offerings,

"As a provider-owned enterprise, MedVirginia has not been as active in partnering with payers as some other HIEs. Its primary focus has been establishing trust with, and bringing value to, physicians and hospitals."

— Michael Matthews, Chief Executive Officer

“A custodian of a provider’s clinical information, MedVirginia will not develop its own branded PHR, but will work with its provider partners to appropriately engage consumers in the sharing of health information.”

— Michael Matthews, Chief Executive Officer

a consistent growth objective is making the use of their services simpler.

In the future, MedVirginia will offer an “EHR lite” that will generate subscription fees. However, it is critical that MedVirginia also continue to support EHR vendors and the practices utilizing them.

MedVirginia will soon begin to receive subscription fees from operating a gateway to the Nationwide Health Information Network Exchange and MedVirginia also plans to collect professional services fees for helping other HIEs become functioning HIE organizations. MedVirginia also receives federal contracting work and grant monies.

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION
Clinical Health Information Exchange that Delivers Information Via a Secure Web-Based Portal	Physicians gain access to information gathered from patient encounters at various locations from various providers improving efficiency and potentially improving the medical decision-making process.
Patient Centric Clinical Data Housed in a Community Repository	Benefits patients, physicians and hospitals by improving quality. Improved efficiency of care benefits payers .
Practice Schedule with Prioritized Task List	Improved workflow efficiency within the practice benefits physicians through cost savings.
Diagnostic Test Results	Improved efficiency within the practice benefits physicians through cost savings. Improved clinical decision-making benefits patients by improving quality.
Clinical Consults and Referrals	Improved efficiency within the practice benefits physicians through cost savings. Potentially improved clinical decision-making benefits patients .
Cost-Effective Option for EHR Integration with Practice Management Systems	Improved efficiency and reduced cost for physicians . Improved accuracy and workflow within the practice .
Links (Single Sign-On) to Hospitals for Additional Information	Improved efficiency for physicians .
Nationwide Health Information Network Exchange Gateway	Cutting the number of days it takes for a hospital to receive a disability determination helps the hospital generate additional revenue from Social Security and Medicare benefits. Connectivity with VA and DoD improves quality and efficiency.

HEALTH INFORMATION EXCHANGE PROFILE

QUALITY HEALTH NETWORK

BACKGROUND



Quality Health Network (QHN) is a non-profit quality improvement collaborative located in Grand Junction, Colorado. QHN was founded in 2004 by five organizations including St. Mary's Regional Medical

Center, Community Hospital, Hilltop Health Resources, Rocky Mountain Health Plans (RMHP), and Mesa County Physicians Independent Physicians Association (IPA). These organizations contributed \$2.75 million in initial funding to create the QHN clinical data exchange. QHN's hybrid federated network collects and distributes data to and from diverse types of healthcare providers including acute care, urgent care, long-term care, reference labs, surgical centers, behavioral health programs, public health agencies, pharmacies and independent physician practices.

QHN organizes providers based on referral patterns into geographically defined groupings, which it calls "medical neighborhoods." QHN's objective is to maximize connectivity within each neighborhood and to help each neighborhood find its own balance in terms of which entities contribute what dollar amount towards the cost of connectivity. QHN

not only supplies the connectivity within each neighborhood but also interconnects the neighborhoods.

As of May 2010, 162 organizations utilize QHN services. These organizations include more than 2,465 online healthcare users and more than 841 pharmacies, all of whom are connected via the QHN network. QHN's Common Patient Index contains over 700,000 area patients. QHN reports quality metric data for RMHP members to RMHP, where the data is used to support population health management, care coordination, and pay for performance programs.

TYPE OF HIE: Regional non-profit collaborative

HIE SERVICE LAUNCH: QHN went live in the fall of 2005

MARKET SERVED: QHN serves areas of Colorado west of the Continental Divide and eastern Utah.

GOVERNANCE: QHN's governing board includes representatives from Mesa County Physicians, RMHP, St. Mary's Hospital, Community Hospital, Hilltop Resources, Marillac Clinic (a safety net provider) and two at-large community-based physicians.

CRITICAL SUCCESS FACTORS

Achieving critical mass – quickly. When QHN was initially formed, they moved fast to build critical mass and begin delivering results. In March of 2005, QHN established a technical operations committee, a clinical operations committee, and a data and security committee. By October 2005, they were operational and immediately started connecting one practice per week on average.

Committed stakeholders. In addition to implementing and beginning to deliver value at a rapid pace, QHN was able to quickly acquire a dominant market share because one of its founding organizations was Mesa County Physicians, an IPA

with over 200 members representing 70 percent of the area's physicians. Also among the founding organizations were the two largest hospitals in the area and the region's dominant health plan.

Shared vision. Another key to QHN's success is that the founders and the participants have a shared altruistic vision. Both organizations and individual users view QHN as helping them deliver higher quality care efficiently and more cost-effectively.

Trusted to protect privacy and security. QHN realizes that, for it to function, its users must trust that the privacy and

“You have to get entities to agree that patient information exists to improve outcomes for the patient – not for competitive advantage... A lot of entities still view data as a patient catchment tool. We view data as a valuable resource that must be exchanged.”

– Dick Thompson, Executive Director

security of the data they are contributing will be maintained. Any person requesting access to the network must execute a participant agreement and file an application that is processed and validated by QHN. Authenticated users are assigned a role-based use level, with physicians having the most access, as well as a username and password. QHN monitors every keystroke to assure security and provide the ability for retrospective review.

Integrating HIE into workflow. Clinicians continue using QHN after implementation because QHN's connectivity and functionality provides them with access to the content they need in a way that is easy to use. QHN's design and implementation process involves understanding the practice's workflow and integrating the health information exchange (HIE) applications into that workflow, replacing paper workflows along the way, and providing the opportunity for more effective care processes to evolve.

BARRIERS TO GROWTH AND SUSTAINABILITY

Building community trust. Trust, privacy and security are persistent barriers to the sharing of healthcare data. Establishing and maintaining trust, and creating consensus on privacy and security policies, procedures and functional requirements takes more time than implementing the technology. QHN has found that it must create an environment where all of the participants trust how the data will be used by the other collaborating entities. Their risk must be minimized with respect to competition as well as data use and privacy and security.

Bidirectional EHR interoperability. Many electronic health record (EHR) vendors seem reluctant or unable to establish bi-directional interoperability with the HIE. This is a consistent barrier to QHN's objectives of improving population health. Fortunately, EHR meaningful use requirements are motivating vendors to better respond, improving what has been a challenging situation.

Lack of consistent standards. Lack of standards to facilitate health information exchange is also a major problem. QHN

Executive Director Dick Thompson, who came from the financial industry, observes that interoperability standards in the healthcare industry, while improving rapidly, still lack the necessary breadth and depth to get the job done. Vendors also commonly fail to completely adhere to the standards that do exist. He notes that the issues associated with the Healthcare Information Technology Standards Panel (HITSP) C32 standard and the disparate methods of implementing the clinical document architecture (CDA) continue to make data exchange difficult.

BUSINESS MODEL

Since 2007, QHN has been cash-flow positive. QHN is a non-member non-profit and, according to Dick Thompson, “Everybody plays and everybody pays something. If it is free, then that indicates its value.”

One way that QHN contributes value to participating hospitals is by enabling them to have a single interface, rather than having to interface with multiple external practices, labs and other entities. New participants join once they understand that the majority of the area's physicians are participants in QHN and that the data is not going to be used for competitive purposes, but to improve the health of patients.

QHN has adopted a subscription fee model for its services as opposed to charging on a per transaction basis. Transaction fees are viewed by QHN's leadership as counterproductive because they tend to discourage an increased use of the HIE services and require excessive overhead to administer and manage.

Only one payer is participating in QHN at this time. RMHP joined as a founder and continues to participate because they believe that QHN helps them deliver more effective care. A current study by the University of Colorado is exploring why the utilization of diagnostic exams in the areas served by QHN is below national norms; utilization of lab and radiology is significantly less than the rest of the country. In the event that health information exchange is identified as a factor, results from this study could potentially be used to encourage greater participation by payers, eventually bringing more to the table as revenue contributors.

Portfolio of services: The five acute care facilities (two more will be added in 2011) connected to the HIE provide electronic patient information associated with 90 percent of all laboratory, radiology, ADT, emergency department and surgery activities in QHN's current service area. Distribution is largely by electronic methods (86 percent) with the remainder by fax or printed report. The OptumInsight-Axolotl Elysium EHR is also available to clinicians who choose to use it. This "EHR Lite" allows a physician to view, annotate, route and order clinical results, refer, write prescriptions, and utilize population health management tools. Some physician groups need more robust systems, but for many physicians, this solution offers a good way to gain initial EHR experience.

Sources of revenue: QHN's revenue primarily comes from hospitals (50 percent) and RMHP (25 percent), with the remaining 25 percent coming from occupational health, physical therapy, durable medical equipment, extended care, hospice and physician practices. The amount a physician pays varies from \$100 to \$150 per month and is dependent upon how the primary stakeholders in each medical neighborhood allocate their HIE costs. Typically, hospital constituents in a QHN medical neighborhood are the determining force in HIE decisions, as they often shoulder a majority of the costs for HIE operations.

CONNECTIVITY STRATEGIES

QHN is involved in several connectivity initiatives, including the Direct Project's, Nationwide Health Information Network Exchange and connectivity with the Utah Health Information Network (UHIN) (which also uses OptumInsight-Axolotl technology). UHIN is establishing a Nationwide Health Information Network Exchange gateway by the end of June 2011 for the purpose of connecting to the U.S. Department of Veterans Affairs (VA). QHN will connect through a similar gateway as a means of exchanging data for the 10 percent of QHN's population who are served by the Grand Junction VA. QHN believes that the Nationwide Health Information Network Exchange offers the opportunity to gain experience with a standards-based data exchange. Although the volume will not be large, the value in terms of aiding continuity and

coordination of care for the patients involved will be significant. QHN is also establishing a robust two-way connection with Colorado Regional Health Information Organization (CORHIO), the state-designated HIE that serves the large population centers of Colorado east of the Continental Divide. This connection is especially important to support coordination of care for patients transferred to Denver's tertiary care facilities.

QHN will participate in Direct and plans to form or participate in the formation of a Health Information Services Provider (HISP). This is viewed by QHN leadership as strategically important because Direct can be another mechanism to exchange data until the wide implementation of a more robust solution for standards-based data exchange is deployed throughout the nation.

TECHNOLOGY PARTNERS

QHN selected OptumInsight-Axolotl as its vendor to provide connectivity via a clinical messaging model as opposed to relying on a centralized data repository. In the fall of 2005, QHN went live with this "hybrid-federated" model.

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Using the medical neighborhood concept, QHN organizes and connects providers in various geographically defined areas based on patient care patterns. QHN promotes the concept that "the neighborhood owns the network," which means that each neighborhood plays a key role in determining its own HIE usage and pays the associated costs for connectivity services and support. The neighborhood concept helps define and localize the value of the HIE and helps to create teams and dialogue, persuading people who might otherwise not collaborate to work together for the greater good.

Healthcare consumer/patient engagement: QHN believes that engaging patients directly is not productive until the neighborhood has been connected, because patients "think that the providers are already connected electronically." QHN believes that patients will be frustrated if they try to connect

"Workflow eats technology for lunch."

— CT Lin, MD, Senior Medical Director, Informatics, University of Colorado
(as quoted by Dick Thompson, Executive Director)

“It’s crazy that I get an email reminder from my dentist for a preventive care visit, but I do not get one from my physician.”

– Dick Thompson, Executive Director

before a critical mass of providers are connected. Large scale improvements require that the providers themselves should initially be exchanging discrete digital data regarding care and care coordination. Within the next twelve months, QHN plans to roll out an HIE-wide patient portal allowing secure communication between patient and physician. This functionality will support the download of data to a patient’s personal health record (PHR) and improve patient engagement in care processes.

New care delivery models: QHN supports patient-centered medical home (PCMH) initiatives and believes that providers in their region utilized the PCMH care model even before it was formally defined. PCMH is integral to QHN’s medical neighborhood concept, as it is with the Colorado Beacon Consortium (CBC). RMHP is the lead agency of the CBC and QHN is a sub-recipient.

Beacon grant funding is being used by QHN to support several initiatives, including:

- Enhanced population health management
- Patient engagement functionality (as described above)
- A data warehouse that will combine clinical and claims data
- Creation of a single sign-on physician portal
- Bi-directional EHR interfaces
- Acquisition and implementation of the Archimedes risk stratification and predictive modeling tool for use by physicians and patients
- Practice redesign and transformation

QHN expects that accountable care organization (ACO) development may be delayed in its market because of concerns about the Centers for Medicare and Medicaid Services’ (CMS) proposed shared risk regulations. In the event ACOs do form within the QHN service area, QHN believes its services will be essential for effective ACO operations.

FUTURE OUTLOOK

Governance and stakeholders: QHN plans to develop a broader governance structure so that the voices of patients and employers are better heard. QHN’s quality improvement initiatives and improvements in HIE infrastructure along with its geographical expansion will encourage more payers and self-insured businesses to participate both financially and operationally.

Persistent barriers: A persistent problem is extracting sharable data from EHRs immediately and replacing paper-based communications with digital workflows.

Business model for long-term sustainability: While QHN’s initial scope includes the 135,000 people of Mesa County, it is aggressively expanding its service area to include the nearly 500,000 person population of western Colorado and eastern Utah. This will allow QHN to apply its medical neighborhood strategy to an additional 18 rural hospitals and 948 physicians. Funds from the Colorado Health Foundation have been budgeted and approved to facilitate this expansion. QHN believes that population health management and direct patient engagement will be game changers and will be valuable for both chronically ill and the healthy populations.

“The neighborhood is where patients typically go to receive healthcare. PCMH is not enough because you can self-refer and self-admit. So we try to link together those organizations that comprise the usual sources of care in an area. Just connecting primary care is not enough. The Emergency Department, occupational care, hospital, long-term care and the pharmacist must all be included.”

– Dick Thompson, Executive Director

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION
Electronic Prescribing	Electronic prescribing saves staff and physician time and decreases the risk of medication errors, improving quality for patients . Cost savings are realized by payers as a result of increased compliance with formularies and detection of potential contraindications and adverse drug events by prescribers, and reduced downstream costs associated with adverse drug reactions.
Clinical Messaging including Laboratory Results, Emergency Room Notes, Medications, Discharge Summaries, Progress Notes, Radiology and Surgical Notes	Labs, radiology practices and hospitals can route results through the network to their ordering physicians, saving time and expense, and physicians can forward and message other network participants , saving time and expense and improving quality for patients . More robust information also means fewer medication errors and duplication of tests for patients seen by different physicians or different facilities, resulting in cost savings to payers .
Identification of Disease Outbreaks	Disease information is routed to the Mesa County Health Department, improving public health for patients .
Link with the Statewide Colorado Immunization Information System (CIIS)	Immunization data is routed to the Colorado Department of Health, improving public health for patients .
Electronic Referral and Authorization Systems	Improved efficiency, control, analytics and ease of use managing referrals benefits payers, physicians and patients .
EHR Lite Capabilities	Physician practices have access to an inexpensive EHR, reducing their costs.
Electronic Chronic Care and Population Management	Improved coordination of care and adherence to care guidelines improves quality of care and cost, benefiting patients and payers .

HEALTH INFORMATION EXCHANGE PROFILE

ROCHESTER RHIO

BACKGROUND



Rochester Regional Health Information Organization (RHIO) is based in Rochester, New York and serves a region comprised of 11 counties. The service area

is characterized by an urban core surrounded by mostly rural communities. The Rochester region has a rich history of collaboration among employers, providers, payers, and consumers in healthcare initiatives. Rochester RHIO was founded in 2006 with a \$4.4 million state grant and \$1.9 million in funding from local businesses, hospitals and payers. The matching of government grants by the RHIO's stakeholders is a practice that has occurred repeatedly over the years, contributing to the RHIO's growth and sustainability. Stakeholders include the Rochester Business Alliance, Monroe County Medical Society, Aetna, Excellus Blue Cross Blue Shield, and the Monroe County Health Department, as well as numerous health systems.

The RHIO's health information exchange (HIE) is based on a federated model, with a master patient index (MPI) for the region's patient population at its core. Twenty healthcare organizations supply data to the exchange; there are nearly 4,000 authorized users at 140 physician practices, 15

hospital systems, home care, long-term care and behavioral health settings connected to the HIE have access to records for over 1.2 million patients. More than 300,000 results are delivered to providers each month; many of these results are sent to the 14 electronic medical record (EMR) systems used by physicians participating in the RHIO.

TYPE OF HIE: Regional non-profit

HIE SERVICE LAUNCH: The Rochester RHIO clinical portal was launched in 2006. The initial service provided a patient care summary and test results, and interoperability with EMR systems became available the following year.

MARKET SERVED: 11 county service area around and including Rochester, NY, including Monroe, Genesee, Livingston, Ontario, Orleans, Seneca, Steuben, Wayne, Wyoming and Yates counties. Additional counties (Chemung and Schuyler) will be added later in 2011.

GOVERNANCE: Rochester RHIO's Board of Directors is comprised of community leaders representing healthcare providers, health insurers, employers, consumers, and professional associations.

CRITICAL SUCCESS FACTORS

Broad community support. Strong support from employers, health insurers, hospitals and the county medical society is essential to sustainability. Community stakeholders have provided matching funds to New York Healthcare Efficiency and Affordability Law (HEAL) grants to startup the RHIO, support EMR adoption by providers, and to expand the RHIO's services. The county medical society sponsors programs for promoting the RHIO to physicians and consumers.

Diverse, creative funding strategies. The operating expenses of the Rochester RHIO are covered by fees charged to payers and hospitals. The HEAL grants – along with community matching funds – have been instrumental in supporting the RHIO's growth strategies. The EMR adoption program in particular, which is funded by \$7 million in HEAL and community matching grants, helps the Rochester RHIO grow because physicians who adopt EMRs want to connect to the HIE.

“We think like a business but we are a community asset.”

— Ted Kremer, Executive Director

Target early adopters first. The Rochester RHIO’s diverse market of urban and rural providers provides an environment for its leadership to take an opportunistic approach to adding HIE participants. Early market development activities focused on healthcare organizations that expressed a desire to connect. Many of these early adopters were located in rural areas where information infrastructure is sparse and the need for exchange of patient data is high. This was followed by facilitating connectivity for other physicians who wanted to participate. The participation of these healthcare organizations and physicians helped Rochester RHIO reach the critical mass needed to convince the later adopters that they did not want to be left out of Rochester RHIO’s network.

BARRIERS TO GROWTH AND SUSTAINABILITY

Competition. The opportunistic approach to growth was in response to the dynamics of the Rochester urban market, where providers’ willingness to participate in the HIE was tempered by competitive issues and competing health information technology (HIT) priorities. Some providers in the Rochester RHIO’s urban market were slower to connect to the HIE compared to their rural counterparts.

Complex patient consent requirements. The complexity of policies to protect patients’ privacy and consent procedures in New York presented significant challenges that the Rochester RHIO needed to overcome to achieve its healthcare provider adoption and consumer participation goals. To streamline the consent process while making the most information available in the shortest period, the Rochester RHIO has implemented the New York Department of Health-approved patient consent model, known as “consent to view.” All patient data available electronically from the RHIO’s data distribution partners is accessible by the HIE regardless of patients’ consent. However, a specified patient’s data cannot be viewed by a user without an informed consent from the patient on file authorizing that user to access that patient’s information. With this model, as

soon as a patient grants consent, all historical information on that patient available from data suppliers via the HIE can be accessed by his or her providers. To streamline the process, patients can complete informed consents online. Leadership at the Rochester RHIO considers it vitally important to invest the resources necessary to assist physicians’ offices to operationalizing the patient consent procedures. These strategies have helped the Rochester RHIO obtain consent for more than one-third of the market’s patient population to date.

BUSINESS MODEL

Portfolio of services: Authorized providers use a clinical portal or one of 14 EMR systems with an interface to the HIE to access lab test results, radiology reports and images, medication history, and insurance eligibility. The RHIO also recently announced availability of a patient portal. A gateway for transfer of patient data to Google Health’s¹ personal health record (PHR) or Microsoft HealthVault will be available in 2011.

Sources of revenue: Rochester RHIO’s financial model is based on the premise that a large portion of the healthcare savings resulting from health information exchange is realized by payers. A majority of the organization’s operating expenses are designated for coverage by fees assessed to payers participating in the RHIO. This fee is in the form of a Rochester RHIO “surcharge” that is added to each hospital discharge claim submitted by hospital participants to payers. The hospital in turn remits the surcharge payment received from the payer to the Rochester RHIO. Surcharge amounts are calculated based on the projected operating expenses allocated for reimbursement by payers and the number of hospital discharges. The surcharge is adjusted bi-annually based on discharge volumes.

As Rochester RHIO’s participants and portfolio of services diversifies and operating expenses grow, the desired revenue mix is to generate two-thirds of fees from payer surcharges

¹ As of July 2011, Google Health announced that it is exiting the PHR business.

and one-third in the form of transaction fees from the distributors of data (e.g., hospitals delivering results). Physicians are not charged for use of the RHIO's services. Funds from grants are allocated to growth initiatives and are not used to cover operating expenses.

CONNECTIVITY STRATEGIES

Rochester RHIO will invest in connectivity projects involving external entities on a case-by-case basis in the event of interest among the organization's stakeholders and a value proposition that is sufficiently compelling to the organization. Access to Medicaid beneficiaries and connectivity to certain government entities (e.g., U.S. Department of Veterans Affairs [VA], Social Security Administration [SSA]) and HIEs in other regions are strategic opportunities of interest.

Connectivity to the New York state Medicaid beneficiary database is ready for production pending regulatory approvals. Discussions are also underway to connect with two VA hospitals in the region.

Using the RHIO's health information exchange infrastructure – supported by OptumInsight-Axolotl Elysium Exchange – implementation of connectivity to other RHIOs in New York is currently underway, including with the Southern Tier Health Link (STHL), and Health-e-Connections of Central New York. The primary goal of both pilots is for one RHIO to query another RHIO for a patient's continuity of care document (CCD).

In the future, Rochester RHIO would be interested in connecting to HIEs in regions that are popular travel destinations for Rochester residents (e.g., regions in Florida). A limiting factor to operationalizing information exchange with other regional HIEs is establishing data use agreements that meet the requirements of the respective organizations.

The Rochester RHIO does not currently have plans to engage in the Nationwide Health Information Network Exchange, though organization leadership will continue to monitor its progress. The convergence of an HIE in a geographic region of interest to Rochester RHIO and an opportunity to connect to this HIE via the Nationwide Health Information Network Exchange would be a catalyst for the RHIO to reconsider its current plans.

Similarly, the RHIO is not currently planning to adopt the Direct Project's standards and services. In the event a participating provider in the Rochester RHIO requests a provider-to-provider exchange of data with a healthcare organization that is not using the RHIO's standard interoperability services (i.e., OptumInsight-Axolotl's Elysium Exchange Framework) and the nature of the request can be accomplished with a straightforward messaging application, then the Rochester RHIO will consider implementing Direct.

Active engagement in the Nationwide Health Information Network Exchange and implementation of Direct are not viewed as significant factors contributing to the future growth or sustainability of the Rochester RHIO.

TECHNOLOGY PARTNERS

The Rochester RHIO's HIE infrastructure is supplied and supported by OptumInsight-Axolotl's Elysium Exchange. The Elysium EMR product is also made available to physicians to enable electronic prescribing, clinical messaging and other clinical applications in the practice.

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Healthcare consumer/patient engagement: Health plan and employer stakeholders are strong advocates of engaging consumers directly with the HIE. The patient portal enables patients to submit informed consents online, upload advance directives and request an audit of access to their electronic health records (EHRs). Future applications are planned to foster greater engagement of patients in their healthcare by establishing two-way connectivity to patients' PHRs. A pilot is planned for July 2011, with a general release in the fall.

Connectivity to patient kiosks and home telemonitoring devices are also being explored. Recently, hospital stakeholders have begun to show interest in patient engagement strategies. This interest is attributed to the significant focus on consumer engagement in the EHR meaningful use criteria.

New care delivery models: The Rochester RHIO is involved in supporting four patient-centered medical home (PCMH) projects. Providing a comprehensive record of patient care via the HIE is viewed as critical to the success of these PCMHs. The Rochester RHIO also has an important role in

accountable care organizations (ACOs). Regardless of the level of health information infrastructure that an integrated delivery network has in place, connectivity to providers outside of the core network – via the Rochester RHIO’s health information exchange – will be essential.

FUTURE OUTLOOK

Governance and stakeholders: The community-based Board of Directors governance model and stakeholder composition are not expected to change in the foreseeable future.

Business model for long-term sustainability: The continued expansion of the Rochester RHIO’s network and volume of patient data is the foundation for providing health IT application services to the community that complement the EMR systems in place. Lightweight applications that are not intrusive to the core workflows of participating healthcare organizations are being explored in the areas of data analytics, transitions of care support, and applications to enhance communications among the care team and patients (e.g., care alerts, referrals).

Grant opportunities will continue to be pursued to fund new applications. Prior to deployment of a new service, its operating costs must be accounted for in the RHIO’s revenue model (i.e., covered by the payer surcharge or provider fees).

Quantifying the value of current and future services is critical to keeping the Rochester RHIO’s stakeholders engaged for the long-term. The tangible value of healthcare cost avoidance is an area of particular interest to the RHIO’s stakeholders. Plans are underway to conduct a quantitative analysis of changes in services utilization using payers’ claims data as the source.

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION
Electronic Prescribing	Electronic prescribing saves staff and physician time, decreases the risk of medication errors and automatically updates the patient medication history viewed on the community health information exchange. Cost savings are realized by payers as a result of increased compliance with formularies and detection of potential contraindications and adverse drug events by prescribers.
Clinical Messaging	Labs, radiology practices and hospitals can move away from the headache of building and maintaining a complex array of interfaces. Instead, they can route results through the Rochester RHIO to their ordering physicians, and physicians can forward and message with other RHIO participants.
Virtual Health Record	"...gives authorized medical professionals fast access to the information they need to give [patients] the best care." Better continuity of care due to information following patients to more settings, including emergency departments, long-term care facilities, and home health providers. Comprehensive, high-quality patient information at the point of care facilitates improved coordination of care and better management of transitions of care, and results in avoidance of unnecessary tests and other interventions; cost savings accrue to payers.

HEALTH INFORMATION EXCHANGE PROFILE

SANDLOT

BACKGROUND



North Texas Specialty Physicians (NTSP), an independent practice association (IPA) based in Fort Worth, Texas, has been

working with healthcare organizations across North Texas to develop a health information exchange (HIE) known as SandlotConnect®. In 2005, NTSP formed Sandlot LLC, a wholly-owned subsidiary, and embarked on a two-pronged strategy to increase adoption of electronic medical records (EMRs) by its physicians while connecting physician practices, labs, and hospitals in the community to an HIE. As of early 2011, more than 1,400 office-based clinicians and staff in 12 hospitals that span across seven counties have access to over 1.7 million unique patient records. In addition to the hospitals and 350 physicians using EMRs interoperating with SandlotConnect, two national labs and two radiology groups are submitting

patient care data to SandlotConnect. Each day, more than 65,000 clinical transactions are added to SandlotConnect's patient database.

TYPE OF HIE: Commercial for-profit

HIE SERVICE LAUNCH: SandlotConnect went live in 2008.

MARKET SERVED: Continuing expansion in North Texas. Deployments of SandlotConnect are planned in other regions (e.g., Coastal Bend region of South Texas) by entities contracting to use Sandlot's solutions.

GOVERNANCE: Sandlot LLC's Board of Directors consists of NTSP senior executives, NTSP physicians, and independent members representing the healthcare community and consumers.

CRITICAL SUCCESS FACTORS

Physician engagement. The deep involvement of physicians in the strategy, design, and implementation of Sandlot's HIE is a key factor in the large number of physicians who use the system as an integral part of their clinical practices. Sandlot's service is designed for ease of use by the clinician and to be adapted to the practice's workflow. Physicians provide hands-on feedback throughout the development of new features. Education, training, and ongoing support of the physicians and their staff are conducted by Sandlot specialists who have knowledge and experience in medical practice operations. These non-technical services are viewed by the Sandlot team as critical to achieving sustained adoption of HIE by clinicians.

Value of EMRs and HIE. A concurrent push for EMR adoption and connectivity of providers to the HIE from the beginning has created an HIE where a large portion of the physician users are able to access a comprehensive community record for a patient from within their EMR systems. This integration streamlines the clinical workflow and enhances the overall value of the EMR and HIE technologies (i.e., the whole becomes more valuable than the sum of the parts).

Emphasis on care coordination and adherence to clinical guidelines. NTSP's physicians are at risk for healthcare services provided through managed care contracts, including a Medicare Advantage plan offered by a separate subsidiary. Recognition by NTSP's leadership of the need to transform its model of care to become more efficient and provide better continuity and coordination of care formed

“The high-touch, human-to-human services aspect of Sandlot’s solution is just as important as the technology.”

— Tom Deas, MD, Chief Medical Officer

the business case that led the IPA to fund the development of its HIE. The emphasis on care coordination, adherence to care guidelines, and utilization analytics that is critical to successfully managing risk at NTSP are core to Sandlot’s philosophy.

BARRIERS TO GROWTH AND SUSTAINABILITY

Competition. Overcoming the reluctance of stakeholders to participate because of competitive and political dynamics in the community is an ongoing challenge. Considerable energy is expended by Sandlot’s leadership and many of the NTSP physicians to help prospective participants understand the transformative power of HIE. The dearth of case studies and quantitative analysis on the benefits of HIE place a large responsibility on Sandlot to compile and articulate stories about how its service has helped healthcare professionals make more informed clinical decisions.

Challenge of transforming care. Although Sandlot’s product can be adapted to a physician’s practice, the larger effort of transforming the care model, including implementation of an EMR, is a major and disruptive change. This change requires a significant, long-term commitment of the practice’s physicians. The Sandlot team engages in these broader and often lengthy discussions in its quest to bring as many of the North Texas community’s providers and patients as possible into the HIE.

BUSINESS MODEL

A cornerstone of Sandlot’s business model is the medical cost savings on the 25,000 capitated lives managed by NTSP that is achieved through the improved care management made possible by its HIE. Better cost management of the more than \$350 million in at-risk contracts is attributed to the avoidance of expenses for duplicate and unnecessary tests because patient care information is made available to clinicians at the point of care. The other elements of Sandlot’s business model are fees from users in North Texas and revenues generated from the sale and use of the SandlotConnect application to other community HIEs.

Portfolio of services: Sandlot’s provider users can access a patient summary from a clinical portal or one of three electronic medical record systems with interfaces to the HIE to view lab test results, radiology reports and images, medication history, insurance eligibility, etc. Sandlot also makes Allscripts ePrescribe available to physicians in a way that is interoperable with its HIE. A quality reporting module is currently being tested in a limited release and will be made available to the wider community in mid-2011.

Sources of revenue: Sandlot currently receives a large portion of its funding for operations from NTSP. To foster adoption of EMRs and connectivity to the HIE, Sandlot pays the EMR and SandlotConnect license, implementation and support fees for NTSP physicians. Other participants in the HIE, such as labs and hospitals, pay a monthly user fee that is based on the size of the organization and the volume of transactions. As Sandlot grows its customer base of entities contracting to use their services in other communities, the revenue from this line of business is expected to become a large portion of the company’s revenue.

CONNECTIVITY STRATEGIES

As of June 2011, Sandlot was not connected to other regional HIEs. Sandlot intends to pursue connectivity with other HIEs in Texas and surrounding states using direct connectivity and possibly the Nationwide Health Information Network Exchange. In the event the Nationwide Health Information Network Exchange is an option and an HIE connectivity partner shares the objective of connecting via the Exchange, then this strategy will be pursued. Sandlot plans to adopt the CONNECT open source software as a means to broaden its connectivity capabilities beyond what its information technology supplier (Lawson) currently supports.

The Direct Project’s standards and services are not currently used by Sandlot and it is not a strategic priority at this time for two reasons. First, the Lawson Enterprise Exchange does not currently support Direct. Second, Sandlot participants and customers are not demanding it. The role of Direct in

Sandlot's product strategy will be reassessed in the event either of these conditions change.

Linking government agencies to Sandlot's HIE is a strategic priority of the company. Sandlot anticipates it will have connectivity to Tarrant County Public Health to electronically deliver public health reports by the end of 2011. Additional counties' public health agencies will likely come online in 2012.

Sandlot is working with the State of Texas in its Medicaid Health Information Exchange pilot project. The goal of this project is to supply providers with access to claims-based medication histories of Medicaid beneficiaries.

TECHNOLOGY PARTNERS

SandlotConnect uses Lawson Enterprise Exchange Technology and is interoperable with Allscripts, eClinicalWorks, Epic, and NextGen electronic health record (EHR) systems.

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Healthcare consumer/patient engagement: Consumers are represented on Sandlot's Board of Directors and are valued for their input on the direction of the HIE. Improving the quality and efficiency of provider-patient communications is viewed as a strategic opportunity. How Sandlot can best create value in an environment where a segment of patients are using personal health records (PHRs) is a work in progress. Tools to help providers and their patients with chronic conditions are of particular interest.

New care delivery models: Certain primary care practices in the IPA are qualified as patient-centered medical homes (PCMHs). These PCMHs are participants in Sandlot's HIE. Sandlot's quality reporting module is being developed with significant input from these physicians to ensure

the application helps them to track and report on clinical performance measures anticipated in future National Committee for Quality Assurance (NCQA) PCMH standards. Sandlot's leadership sees the development of accountable care organizations (ACOs) as a major opportunity for the company. A health information infrastructure consisting of EMRs connected to a comprehensive health information exchange – the Sandlot model – is essential to a viable ACO. The physicians providing input and support to Sandlot have extensive experience in delivering care in an at-risk managed care environment. As a result, Sandlot's HIE currently features the capabilities necessary to complement an EMR for effectively managing shared risk programs (e.g., referral management, quality reporting, clinical decision support, member/patient registries, etc.).

FUTURE OUTLOOK

Governance and stakeholders: The corporate structure of Sandlot is not expected to change in the foreseeable future.

Persistent barriers: The competitive and political dynamics of the Texas healthcare market will continue to present challenges to Sandlot's goals for expansion in the state. Involving the physician community from the very beginning is seen as key to overcoming inertia and gaining the support of the leaders of any HIE initiative. When physicians gain an understanding of Sandlot's role in helping to transform care, they become the most vocal champions for implementing the solution.

A related barrier is the long adoption cycle of HIE technology. Sandlot will continue pursuing growth in an addressable market that is comprised mostly of early adopters/risk takers. Sandlot believes that the business case for an HIE needs more quantitative evidence of its impact, an objective made difficult because a significant aspect of the change is measuring cost savings from interventions that do not occur (e.g., redundant tests).

"There is no question that SandlotConnect helps doctors avoid drug interactions, adverse events and ordering of redundant tests. However, it is difficult to quantify things that are avoided."

— Karen Van Wagner, PhD, Executive Director, North Texas Specialty Physicians

“Our vision is for Sandlot to be a verb in doctors’ vocabularies: ‘Let’s go Sandlot this patient!’”

– Karen Van Wagner, PhD, Executive Director, North Texas Specialty Physicians

Sandlot leadership believes that the nascent state of the HIE market and the inherent complexity of HIE makes this a “zero-defect game.” There is no margin for error in the performance of Sandlot’s HIE or the strategies and tactics of Sandlot’s business.

The value of Sandlot services to physicians caring for patients with chronic conditions in particular would increase significantly with connectivity to Medicare beneficiaries’ claims databases. The Center for Medicare and Medicaid Services (CMS) does not currently allow access to Medicare beneficiary claims by HIEs, which serves as an inhibitor to value creation.

Business model for long-term sustainability: A growing awareness of the value of the Sandlot HIE will drive additional growth in the North Texas region. The acceleration of adoption of EMRs by physicians who need HIE connectivity to achieve EHR meaningful use will contribute to SandlotConnect’s expansion.

The more patients and their care information that is available through Sandlot’s HIE database, the more valuable the service becomes to participants (the “network effect”). Achieving the critical mass of patients needed to make the service worthwhile to physicians is essential to sustainability in any market Sandlot enters.

Expansion to markets outside of North Texas is an important part of Sandlot’s business plan for the future. IPAs and other healthcare organizations that manage risk and recognize the need for an HIE infrastructure are anticipated to be priority customers as Sandlot enters new communities. The combination of Sandlot’s risk contracting expertise and HIE technology and services can accelerate the development of ACOs by these organizations. This is a niche market that Sandlot expects will be a significant part of its business moving forward.

Sandlot will invest in quantitative studies to measure change in specific healthcare quality and cost indicators.

As its quality reporting module is rolled out to Sandlot’s physician users, a baseline set of measures will be established for a particular medical practice. Sandlot’s HIE database contains a comprehensive profile of insurance claims and encounters from the connected EMR systems on NTSP Medicare Advantage members/patients to support this analysis.

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION
Patient Continuity of Care Profile Available via a Physician's EMR system or Sandlot's Physician Web Portal	Medical cost savings through avoidance of unnecessary tests made possible with access to a comprehensive patient history at the point of care. For example, a case study of a gastroenterologist's visit with a patient with chronic liver disease and unreliable self-reporting of medical history suggests \$14,000 to \$25,000 in potential savings to payers. Clinicians responsible for transitioning a patient's care from a hospital at discharge are better equipped to order the appropriate home health services, medications, etc. with access to SandlotConnect. Extra hospital days and unnecessary interventions are avoided with a smoother transition of care, resulting in an improved patient experience and avoidance of healthcare costs for payers.
Quality Reporting Module	Improves quality processes and clinical outcomes for patients with chronic conditions, thereby reducing high-cost service utilization (e.g., emergency department visits, hospital admissions): • Prospectively track patients falling outside care guidelines • Deliver care recommendations based on the patient's longitudinal health record at the point of care • Retrospectively monitor performance through the lens of the Healthcare Effectiveness Data and Information Set (HEDIS), the Physician Quality Reporting Initiative (PQRI), EHR meaningful use, and other pay for performance measures Physicians can realize incentives and share in savings by improving performance on quality measures; payers are better positioned to achieve quality and medical cost targets.

HEALTH INFORMATION EXCHANGE PROFILE

SMRTNET

BACKGROUND



SMRTNET stands for “Secure Medical Records Transfer Network.” SMRTNET was created in 2004 by seven Oklahoma health

organizations and a county government entity funded by a \$200,000 planning grant from the Agency for Healthcare Research and Quality (AHRQ). The partnership began implementing SMRTNET in 2005 with \$1.5 million from AHRQ and another \$2.5 million in in-kind resources from partner organizations. Since the grant period ended, SMRTNET has successfully replicated its health information exchange (HIE) framework in additional counties in Oklahoma.

SMRTNET is now a “network of networks” composed of seven self-governed networks that exchange data statewide using a shared set of common resources and privacy policies. Each network is economically self-sustaining without grant or government funding.

Data is shared between hospitals, Native American tribes, community health centers, laboratories, universities, private medical providers, first responders, optometrists, laboratories, public health, mental health, and several other sources.

Networks include a statewide open network for all providers, Oklahoma State Medical Association (statewide), Greater Oklahoma Hospital Council of 13 hospitals and other city providers, Health Alliance for the Uninsured, Norman Physician Hospital Organization, Oklahoma Association of Optometric Physicians (statewide), Northeast Oklahoma, and several other developing networks, including an inter-tribal network.

In 2011, 3,000 providers including physicians, nurses, paramedics and records clerks utilized SMRTNET. This number is expected to grow to between 4,000 and 5,000 by the end of 2012. The network currently includes 27 hospitals and is expected to grow by 15 additional hospitals by 2012. SMRTNET’s annual budget is approximately \$600,000.

TYPE OF HIE: Statewide non-profit network of networks. Self-defined as a “publicly owned utility company operated by its members.”

HIE SERVICE LAUNCH: March 2007

MARKET SERVED: SMRTNET networks share data on over 80 percent of the population of Oklahoma from their sources, which are comprised of over 115 sites from 64 towns and cities.

GOVERNANCE: All seven networks in SMRTNET’s network of networks are self-governed. The networks share a common management board with representatives from each network to harmonize policy, procedures, shared services, security and a common planning and network certification process. This promotes data security, lowers costs, and helps new networks get started using existing knowledge and practices. SMRTNET operates under the Oklahoma Interlocal Cooperation Act and acts as a public quasi-governmental trust. The monthly management committee meeting can be accessed statewide via videoconference.

“We decided that we wanted everybody in from the beginning: to get everyone at the table primordially. Then every potential participant knows that there has been ‘someone like you’ at the table from the beginning.”

— Mark Jones, Chief Operating Officer and Principal Investigator

CRITICAL SUCCESS FACTORS

Physician engagement. Having a broad representation of all provider types and seven networks that operate in a public and transparent way is the key to developing trust. For example, the Oklahoma State Medical Association is overseen by physicians and is open to member and non-member physicians. This encourages participation by physicians statewide.

Community trust. SMRTNET believes that its non-profit status and long-term presence in the community are critical to building trust. Having the Oklahoma State Medical Society as an owner gives the physicians confidence in SMRTNET.

Systematic planning process. SMRTNET uses a structured planning process that they believe is critical to their success. This process has been used to successfully plan eleven different HIE efforts and has involved detailed study and input from over 500 Oklahoma health experts. Their planning process “pulls everybody together, puts a structure around the process, and gives a sense of ownership.” Planning for new SMRTNET networks is organized by establishing the following five task forces:

- The Clinical Task Force identifies patient data that providers need, such as demographics, allergies and reactions, diagnoses, procedures, laboratory results, medications, and immunizations. This Task Force also establishes a plan to meet meaningful use requirements.
- The Privacy Task Force decides on the process for managing patient consent. It establishes agreement on 15 different security issues.
- The Legal Task Force studies, evaluates and recommends the use of 14 legal documents and coordinated policies relating to operation of the network and its relationship with other entities.
- The Technology Task Force develops a template of data requirements for the HIE platform and a

bidding process for acquisition.

- The Governance Task Force creates a governance structure as well as a business and sustainability plan.

Vendor selection. SMRTNET chose Cerner as their primary vendor. One reason SMRTNET’s organizers felt that this choice helped build trust among the network participants was because “Cerner already manages one-third of all the hospital data in the country.” Having Cerner hold the data in their Kansas City data center “made everyone feel more comfortable.” Each network is allowed to utilize a different HIE vendor or to use the basic HIE services offered by SMRTNET.

Network of networks. SMRTNET is a network of networks that believes that every successful HIE will eventually become a network of networks.

Shared vision. Representatives of SMRTNET networks have to be able to answer coherently and quickly in 25 words or less, “Why do we want to do this?” Their representatives must establish that the HIE and its participants have common values. SMRTNET believes that the way the value is described to the provider is very important and strongly influences how the provider perceives the value. SMRTNET describes their functionality as follows, “The HIE is the highway of the future. You do not own the highway, but you can use it.” Other core ideas that SMRTNET participants share are, “You don’t know what you don’t know,” and “All of us are smarter than any of us.”

Flexible governance structure. SMRTNET believes their governance process is a critical success factor. They require an 80 percent affirmative vote to make any decision. Stakeholders in the opposing 20 percent can opt out of the functionality being decided upon. They attribute this idea to the Regenstrief Institute.

BARRIERS TO GROWTH AND SUSTAINABILITY

Trust between networks. As a network of networks, there will inherently be some networks that are more trusted than others. SMRTNET uses a Data Use and Reciprocal Support Agreement (DURSA) with its participants and had found that it is not enough to resolve this concern. SMRTNET's data exchange policies are based on determining "what it takes for a data supplier to feel comfortable enough to share their data."

Conflict resolution. Trust has been a big issue for SMRTNET, so knowing how to resolve conflict is critical. HIE representatives must be incredibly good listeners and must be able to make reasonable adjustments to advance the common good.

Competitive issues related to data. SMRTNET has had to limit the ability of participants to generate reports because participants did not trust each other to have an uncontrolled ability to generate reports using competitors' data. As an example, due to Native American history, the Cherokee Tribe was very concerned about controlling the ability of outside organizations to analyze their data.

To promote trust, any common data report must be approved through the governance process by all of the members. The report must be made available to all members and anyone who is uncomfortable may request to have their data excluded from the report. In addition, each network may develop its own network-specific reports.

BUSINESS MODEL

Portfolio of services: SMRTNET has a master patient index (MPI) and provides access to a community record through a web portal. The community record includes demographics, diagnoses, visits, provider, medications, labs, allergies and reactions, and immunizations. It also includes all data

needed to meet meaningful use. SMRTNET supports electronic prescribing and secure messaging, including the ability to forward reports. They provide chronic condition management functionality and are implementing syndicated information feeds to members on behalf of specialist organizations, starting with ophthalmology.

In the future, SMRTNET plans to provide additional clinical intelligence by using data to provide decision support reminders to both patients and providers. SMRTNET has an active clinical decision support (CDS) system for evidence based prevention as part of an AHRQ research project. More CDS services will be added over time, in addition to support for personal health records (PHRs) and population health improvements.

Each sub-network will make its own decisions as to which functions they use. Some networks may choose to only buy specific functionality, much like someone would subscribe to a cable channel or like an individual would buy an app from the iPhone app store.

Sources of revenue: SMRTNET is financially self-sufficient, operating on member fees and contributions from networks in development; it currently receives no grant or other government funding to support its basic operations. The majority of its revenue comes from hospital participants partly because they receive significant benefit in their emergency departments. SMRTNET uses a sliding scale based on the size of the organization to establish its fees. For example, a smaller hospital would pay \$7,000 per year to participate, but a larger hospital would pay \$40,000. In the future, SMRTNET plans to charge physicians between \$30 and \$40 per month.

CONNECTIVITY STRATEGIES

SMRTNET has passed the Nationwide Health Information Network Exchange connectivity test. Their legal agreements

"SMRTNET representatives need to have the ability to teach because this concept generates so many questions from so many people. You can not be a salesperson. You have to be an educator."

— Mark Jones, Chief Operating Officer and Principal Investigator

are in place and they are willing, ready and waiting to use the Nationwide Health Information Network Exchange whenever the opportunity presents itself.

SMRTNET plans to become a contractor to the Oklahoma Statewide HIE but the details are not yet resolved. SMRTNET has patients in its database from 27 other states and plans to connect with other state and regional HIEs whenever possible.

SMRTNET is involved in providing feedback on the Direct Project's standards and services and they are conducting 90-day research projects to discover the value proposition. For example, SMRTNET is using Direct for Transitions of Care in Norman, OK, to transmit a continuity of care document (CCD) through the Office of the National Coordinator's HIE Challenge Grant program.

SMRTNET believes that Direct is appropriate for one-to-one communications and that HIE functionality is appropriate for one-to-many communications. SMRTNET believes that it is not economically possible to have a Direct-only business. An HIE infrastructure is needed to sign up offices and support them, and Direct can be added for use in referrals. Using the existing HIE infrastructure to add Direct connectivity, training, and identity proofing will be more efficient.

SMRTNET plans to help the local medical association build a HIPAA-compliant referral system using Direct. Part of the contract agreement among the SMRTNET networks is that each network will share data via the Nationwide Health Information Network Exchange when it is available. SMRTNET networks will also share data with the state health department in the same way when they are ready.

TECHNOLOGY PARTNERS

SMRTNET uses Cerner as its primary technology partner. Cerner's HIE functionality, provided by subcontractor OpenHRE, is available for use by participating SMRTNET networks. Cerner is also used to connect the various SMRTNET networks. However, each SMRTNET network is free to select its own vendor. For example, the Norman, OK, network operates on an eClinicalWorks hub and Health Alliance for the Uninsured uses CareScope.

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Key to SMRTNET's strategy is the formation of affiliated networks. There are currently seven networks, with two more in development. Each network has its own separate governance body responsible for operating that network and a representative of each network sits on the common SMRTNET Management Committee.

SMRTNET also assists HIEs outside of Oklahoma, teaching them how to use SMRTNET's methodology to plan networks using two three-hour meetings covering administration, legal, privacy, clinical, quality and technology.

Healthcare consumer/patient engagement: In the near future, SMRTNET will provide a patient portal that supports interoperability with any PHR. SMRTNET will provide HIE data to support personal health records pursuant to policies from the appropriate governance bodies. SMRTNET also intends to support social networking, customized websites for each network, and patient education functions.

New care delivery models: SMRTNET helps patient-centered medical home (PCMH) practices obtain a higher level of recognition by obtaining more points in the National Committee for Quality Assurance (NCQA) 2011 "PCMH 5: Track and Coordinate Care" categories. SMRTNET is still assessing the impact of accountable care organizations (ACOs). SMRTNET may become an ACO enabler, but is still waiting for the ACO concept to become more defined in regulation and in the marketplace. SMRTNET is concerned that ACOs could result in more closed patient data systems because some ACOs will want to keep their patients within their system and consequently may want to lock down their data.

FUTURE OUTLOOK

Governance and stakeholders: SMRTNET's planning structure and legal agreements will remain core to its governance process in the future and it will remain vendor agnostic. SMRTNET plans to include new tribes that are also payers and to allow commercial payers to participate in SMRTNET with the appropriate controls. The exception is the Cherokee Nation, which was one of SMRTNET's founders and is an important current and future stakeholder. While

the Cherokee Nation is a large-scale healthcare payer, it is unique and will probably remain the only payer included in SMRTNET governance.

Persistent barriers: SMRTNET is concerned about reimbursement reductions from private and government sources to payers that will temporarily lower prices to gain market share and then raise prices. SMRTNET is also concerned that the risk of lawsuits will grow as data migrates from closely monitored and controlled networks to other networks that may not be so well controlled and monitored. The possibility of national vendors creating their own HIEs, thereby threatening the integrity of existing regional HIEs, is also a concern.

Business model for long-term sustainability: SMRTNET plans to increase employer involvement. Employers need better care management for their employees and families with chronic conditions. SMRTNET will work with them but will not share patient-specific data with them.

SMRTNET may contract with and be paid to provide certain services to payers. One example of this would be providing assistance in the development of PCMH practices. However, SMRTNET does not expect to provide analytic services for payers and will not provide them with patient-specific data. SMRTNET, will however, advocate with state and federal agencies to enhance payments for HIE services that help lower costs to payers.

SMRTNET's governance process may determine that physicians should have additional, more expensive services, such as a shared imaging system. SMRTNET may find the capital and implement the service and then charge physicians for that service. While that would significantly increase charges for physicians, it would also provide a needed service to physicians and to the community at an overall lower cost.

SMRTNET may team with community providers to provide city-based healthcare improvement through a common community health board that can access de-identified community-specific data.

SMRTNET believes that certifying networks will be a critical success factor in the future. They plan to create their own certification process, and the criteria for certification will be the same as those used in their planning process. This process will be harmonized with state and national processes as those develop.

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION
Master Patient Index (MPI)	Enables creation of one continuous community record, improving efficiency and quality of care, which benefits the patient , physician and hospital through improved quality and the payer through reduced cost. SMRTNET's MPI currently contains 3.1 million individuals.
Electronic Prescribing	Electronic prescribing saves staff and physician time, decreases the risk of medication errors and automatically updates the patient medication history viewed on the community health information exchange. Cost savings are realized by payers as a result of increased compliance with formularies and detection of potential contraindications and adverse drug events by prescribers.
Patient Portal with Personal Health Record Function Supporting Any PHR	Benefits the patient by informing him/her about the care provided and allowing portability of his/her records.
Web Portal for Provider Access to Community Records	Gives the physician fast access to the information they need to give patients the best care. Better continuity of care due to information following patients to more settings, including emergency departments, long-term care facilities, and home health providers. Comprehensive, high-quality patient information at the point of care facilitates improved coordination of care, better management of transitions of care, and results in avoidance of unnecessary tests and other interventions; cost savings accrue to payers.
Clinical Messaging	Labs , radiology practices and hospitals can save money because they no longer need to build and maintain a complex array of interfaces.
Chronic Condition Management	Patients benefit from improved quality of care and payers benefit from reduced costs for care of chronically ill patients.
RSS Feeds to Members of Medically Oriented Associations	Physicians and medically oriented associations benefit from improved communications.

HEALTH INFORMATION EXCHANGE PROFILE

TACONIC HEALTH INFORMATION NETWORK AND COMMUNITY

BACKGROUND



The Taconic Health Information Network and Community (THINC) is a non-profit corporation dedicated to improving the quality,

safety, and efficiency of healthcare in New York's Hudson Valley. THINC's primary purpose is to advance healthcare quality improvement on a foundation of health information technology (HIT) through sponsorship of a secure health information exchange (HIE) network and the adoption and use of interoperable electronic health record (EHR) systems. THINC sponsors – and provides guidance and expertise for – the implementation of health improvement activities, including public health surveillance and reporting, and pay for performance. As of the end of 2010, 363 healthcare providers were connected to THINC. Four hospitals (soon to be eight) use the THINC HIE to deliver public health reporting electronically. Each month, 21,000 lab result transactions are processed by the HIE. Under

HEAL5¹, THINC and its technology partner MedAllies have implemented EHRs in 750 physician practices. THINC also serves as the local Regional Extension Center (REC) under a contract with the New York eHealth Collaborative.

TYPE OF HIE: Regional non-profit

HIE SERVICE LAUNCH: December 2010

MARKET SERVED: THINC services the Hudson Valley region of New York State, including Ulster, Dutchess, Putnam, Westchester, Rockland, Sullivan and Orange Counties. The population of this region is approximately 2.4 million.

GOVERNANCE: THINC is governed by a board of directors and board committees that include representatives from physician practices, hospitals, safety net providers, payers, employers, public health, quality organizations, state government, community business leaders, a consumer group and others in the healthcare industry.

CRITICAL SUCCESS FACTORS

Support patient care across multiple settings. THINC's HIE is designed to support patient care across multiple settings, including primary care, specialty care, hospitals, health centers and, in the future, long-term care. The mechanism for accomplishing this is to transmit a clinical summary point-to-point, allowing participants to have maximum control of their data.

Effective EHR implementation. THINC and its technology partner MedAllies makes certain that before an EHR is implemented, it is configured properly, data are migrated, data are preloaded, and workflows are mapped so the EHR works the first time and every time.

Improve clinical care and efficiency. THINC uses off-the-shelf EHRs and is learning about the gap between

¹ Phase 5 Health Information Technology Grants: Advancing Interoperability and Community-wide EHR Adoption, Issued by the New York State Department of Health and the Dormitory Authority of the State of New York

“THINC and its constituents have evolved over time to approximate the IT role that an Integrated Delivery Network would normally take, partially because there is no IDN in the Hudson Valley.”

— Susan Stuard, Executive Director

what providers need and what off-the-shelf EHRs provide. THINC works with MedAllies and other collaborators to find ways to improve both clinical care and office efficiency. THINC and its technology partner MedAllies ensure clinician training in the use of EHRs to support clinical workflow, enhance patient quality, safety and practice efficiencies.

Focus on participants’ needs. As new systems and capabilities become available, THINC applies the principles of change management. THINC seeks active, continual support from leadership (especially physician champions and sponsors) and understands the human side of change. The end user needs to know “what’s in it for him or her.” American Recovery and Reinvestment Act (ARRA) incentives for the meaningful use of EHRs help THINC in its mission to ensure EHR adoption by clinicians in the Hudson Valley.

Continuous improvement. THINC has been willing to try new approaches and immediately discontinue those that are not effective. THINC believes that it is critical not to hang on to initiatives that do not work.

Multi-stakeholder engagement. Payers are actively engaged with THINC, working with THINC’s provider constituents to align payment incentives with quality improvement that is based on the use of EHRs and the HIE.

BARRIERS TO GROWTH AND SUSTAINABILITY

Ongoing stakeholder engagement. One barrier is finding the resources needed for constant engagement with constituent organizations, answering the question, “Tell me again why I want to do this.” THINC devotes significant time to ensure that users understand how they can benefit from participation in the HIE.

EHR interoperability. EHR interoperability is another barrier. User organizations, particularly smaller physician

organizations, have varied and generally low capability to interact effectively with EHR vendors. THINC’s relationship with MedAllies is critical to overcoming this barrier.

Balancing need for functionality with value. Being able to pay for needed functionality is a constant barrier. THINC’s Executive Director, Susan Stuard, must repeatedly ask herself, “Is this new capability valuable enough for the user to be willing to pay for it?”

BUSINESS MODEL

THINC, a non-profit, obtains most of its funds from grants. THINC is the “convener” and MedAllies is the local technology partner. MedAllies is a private for-profit company that obtained initial seed capital for startup but has since made its money through service contracts. A large part of MedAllies’ revenues are generated by providing EHR implementation and maintenance services. Taconic IPA is a large provider organization that has been an active collaborator in many projects with THINC.

Portfolio of services: THINC provides connectivity services to local hospitals. This includes public health reporting (which the New York Department of Health sponsors through THINC) and HIEs elsewhere in New York State. THINC is also offering a community viewer function that will be available to practices at the end of 2011. This will offer (with appropriate patient consent) the ability to query for a patient summary. MedAllies is also independently pursuing a pilot and implementation of Direct Project standards and services to support transmission of a clinical message (using the Continuity of Care Document [CCD]) between and among physicians and hospitals during transitions of care from one provider to another. Examples include the patient being discharged from the hospital and returning to the primary care physician (PCP), or the PCP referring the patient to a specialist.

The THINC Community Registry & Router (CRR) indexes community data, providing record location services across disparate sources. Additionally, the CRR routes data to and from the proper locations when data are requested.

Identity Normalization (the master patient index [MPI] function) matches patient and physician identities across different healthcare organizations and care settings.

Health Data Normalization allows direct comparison of data across institutions, supporting integration of data across sources and enabling comparative analysis that is needed in a variety of circumstances (e.g., pay for performance programs).

Sources of revenue: THINC obtains its funding from state, federal and private grants and from HIE subscription fees paid by each HIE participant. THINC pays MedAllies to develop and operate the HIE, to create and implement interfaces, and to perform other ongoing technical services. MedAllies also receives payment directly from labs, physician practices and other organizations in return for performing technical services, such as implementing and maintaining EHRs.

CONNECTIVITY STRATEGIES

THINC uses traditional HIE functionality (i.e., aggregated demographic, diagnostic and encounter data on a specific patient) to support patient care via access to a patient summary through a community viewer, with patient consent.

MedAllies receives claims feeds from six payers. The data are aggregated and normalized, allowing THINC to use the data for evaluation, payment reform and quality improvement projects.

Both THINC and MedAllies embrace Direct. MedAllies serves as a health information service provider (HISP) and is conducting a Direct pilot project to push clinical information from provider to provider, initially among 16 providers at eight sites. The objective of this project is to assist with the transition of patients from one care setting to another. Providers are enthusiastic about Direct because they are able to control what data goes where, the workflow is consistent with their existing clinical practice, and the amount of data is what is required to care for the patient without data overload. THINC and MedAllies found that EHR vendors were happy to get involved with Direct because their providers were so enthusiastic.

As part of MedAllies' Direct activities, MedAllies is also implementing the full set of Nationwide Health Information Network Exchange standards, including the SMTP backbone. THINC plans to be an active participant in the Nationwide Health Information Network Exchange as it becomes more widely accessible. To accomplish this, THINC is part of the development of the State Health Information Network for New York (SHIN-NY), the New York State network that is being jointly sponsored by the New York State Department of Health and the New York eHealth Collaborative. New York State envisions that the SHIN-NY will be its key connection to the Nationwide Health Information Network Exchange and is working under the Office of the National Coordinator for Health Information Technology's (ONC) State HIE contract to plan for this connectivity.

TECHNOLOGY PARTNERS

MedAllies is THINC's primary technology vendor and is responsible for operating the HIE, as well as installing interfaces, implementing and supporting EHRs, and performing subcontracted REC services.

"It can be difficult to get providers to share data outside of their organization because some providers associate holding on to patient information with holding on to the patients. This is why providers embraced Direct. They use it to transition patients to other settings. Providers control what data goes where."

– Holly Miller, MD, Chief Medical Officer, MedAllies

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Healthcare consumer/patient engagement: MedAllies believes Direct will eventually include direct-to-patient connectivity via a feed to the patient's own personal health record (PHR) or personal health environment.

New care delivery models: THINC actively supports patient-centered medical home (PCMH) practices by helping to collect and analyze quality and outcomes data, and understands the impact of the EHR on advanced primary care models. THINC is hosting a series of educational events supported by a grant from the New York State Health Foundation for physician practices, health plans, hospitals and other health facilities in the Hudson Valley to explore the accountable care organization (ACO) concept. THINC plans to support ACO efforts in the region, with the intent to foster a continued open exchange of patient data.

FUTURE OUTLOOK

Governance and stakeholders: The challenge for THINC is to keep its stakeholders engaged and understanding why they should participate and cooperate despite competitive drivers. No significant change in governance structure is anticipated.

Persistent barriers: Handling disparate and competing demands of the various healthcare stakeholders is a constant challenge. Their interests are not always aligned.

Business model for long-term sustainability: THINC plans to thrive in the long-term as a community non-profit, never growing very large and using grant funding as its primary revenue source.

MedAllies will continue to pay for itself as a private for-profit company. MedAllies may offer a Direct service nationally as a means of generating additional income.

THINC has obtained an \$8.7 million HEAL17 grant from the New York State Department of Health to integrate the EHRs used by mental health providers into its exchange.

THINC will continue to work toward reimbursement alignment and other ways to lower the barrier to more coordinated, affordable, high-quality care. This will require THINC to do

more care coordination and to move into mental health, long-term care, skilled nursing and home care, and patient engagement tools such as PHRs to continue to integrate health information across the care continuum.

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION
Bring In Funding to Achieve Goals	THINC's primary job is to obtain grant funding, benefiting the entire HIE ecosystem .
Bring In Workforce to Help Implement EHRs	Providing community with capability it needs to implement EHRs, benefiting physicians, EHR vendors, patients .
Help With Care Transitions	Reduce costs, improve quality of care, benefiting payers, employers, and patients .
Place Care Managers in Practices	Reduce costs, improve quality of care, benefiting payers, employers, patients and physicians .
Help Facilitate Provision of Incentives	Reduce costs, improve quality of care, benefiting employers, patients and physicians .
Hospitals Pay THINC for Public Health Reporting that is Required by the State	Meet state regulatory requirements, make clinical data available for Emergency Department physicians, resulting in better care and lower costs benefiting hospitals, patients and physicians .
Hospitals Pay for Community Record Distribution	Reduce costs and improve quality of care, benefiting hospitals, patients and physicians .
Hospitals Pay for Direct Connectivity	Reduce costs and improve quality of care, benefiting hospitals and patients .
Regional Extension Center Services	Implement EHRs to improve quality, benefiting patients, physicians and payers and providing meaningful use incentive revenue, benefiting physicians .
Clinical Labs Pay to Interface with HIE and EHRs	Reduce costs of multiple interfaces and improve access to lab data, benefiting physicians and patients . Avoidance of duplicate tests benefits both patients and payers .
Preparing Scorecards for Services Using Claims and EHR Data	Evaluate quality, patient satisfaction, cost and utilization, benefiting payers, employers, patients and providers .
Technology Services Including Health Data Routing and Delivery, Identity and Health Data Normalization	Meet state regulatory requirements, make clinical data available for hospitals and physicians, resulting in better care and lower costs, benefiting physicians, payers, employers and patients . These services also help hospitals and physicians achieve meaningful use and obtain meaningful use incentive payments.

HEALTH INFORMATION EXCHANGE PROFILE

U.S. DEPARTMENT OF VETERANS AFFAIRS

BACKGROUND



In 2009, President Obama directed the U.S. Department of Defense (DoD) and Department of Veterans Affairs (VA) to work together to develop a virtual lifetime electronic record (VLER) for every service member and veteran. The vision of VLER is to have a longitudinal view of a patient's administrative, benefits and health information. VLER enables veterans who receive healthcare in VA, DoD or private sector healthcare systems to have their medical record information shared with all of their healthcare providers. VLER is a catalyst for the VA's health information exchange (HIE) initiatives with the private sector, which is made possible by VA participation in the Nationwide Health Information Network Exchange sponsored by the U.S. Department of Health and Human Services' (HHS) Office of the National Coordinator for Health Information Technology (ONC).

TYPE OF HIE: VA hospitals and clinics in pilot locations across the United States are connecting to the Nationwide Health Information Network and exchanging health information on veterans with other Nationwide Health Information Network Exchange participants.

HIE SERVICE LAUNCH: The first VLER pilot using the Nationwide Health Information Network Exchange (San Diego, California) was activated in January 2010.

MARKET SERVED: 11 regional pilots are anticipated to be online with the Nationwide Health Information Network Exchange by September 30, 2011. Nationwide deployment is planned for the summer of 2012.

GOVERNANCE: The VLER and HIE initiatives operate under the leadership of the VA's Chief Information Officer (CIO), who is the Assistant Secretary for Information and Technology and the Director of the VA VLER Enterprise Program Management Office.

CRITICAL SUCCESS FACTORS

Widespread adoption of VistA. The broad adoption of Veterans Health Information Systems and Technology Architecture (VistA) throughout VA's health system has established an environment where clinicians are accustomed to using health information technology (HIT) extensively in their clinical practice. VistA users have expectations for continuous improvement in the quality and comprehensiveness of health information made accessible to them electronically at the point of care. 98 percent of all VA clinicians use VistA's computerized physician order entry and clinical documentation applications, setting the

stage for HIE use without the resistance and hurdles that are typically present in healthcare organizations with a less robust HIT infrastructure.

National presence. The VA has a presence in every major market in the United States, with VistA online at 153 VA hospitals and more than 800 clinics. As many veterans are mobile, they receive treatment at various geographic locations within the VA system; most veterans also receive care from private sector healthcare providers. As a result, there is strong demand from veterans for VA to make their

“The VA is an ‘anchor store’ for regional HIEs. We’ll always be there with health information on a large number of patients.”

—Tim Cromwell, Director of Standards & Interoperability

health information available to any clinician providing their care, including those practicing in the private sector and the DoD.

BARRIERS TO GROWTH AND SUSTAINABILITY

Variable adoption of interoperability standards.

Several standards development organizations issue standards for health IT interoperability, but the standards that have been issued to date have not been uniformly adopted by stakeholders. The environment is made more difficult because of gaps in the standards and lack of rigor in their use from one implementation to the next. This situation results in varying levels of interpretation among the VA, other government agencies and private sector partners. An example of the challenges is in “real world” implementation of the use of the Healthcare Information Technology Standards Panel (HITSP) C32 subset, where the VA is encountering variability in inbound data from different sources. The lack of specificity and immaturity of the patient discovery specification (i.e., identification of the same person by two gateways) is another example of the problems occurring due to gaps and ambiguities in standards. VA is a committed partner in the health standards development community, however, the current state of the health standards environment adds time and cost to the VA’s HIE activities.

Patient consent requirements. Sharing of veterans’ health information with private sector entities requires patients to explicitly provide consent (i.e., opt-in). Every VA region requires a different approach and outreach to veterans to invite their participation in VLER, which is a worthy but significant effort and investment.

BUSINESS MODEL

Funds to support the HIE capabilities for VLER Nationwide Health Information Network Exchange pilots are a small part of VA’s information and technology budget (\$2.7 billion in

fiscal year 2011). VLER is one of 16 priority IT projects at the VA. Because of its strategic importance, breadth and scope, the VLER initiative provides a platform for long-term support for VA’s HIE initiatives.

HIEs in the private sector participating with the VA are responsible for their own expenses. Except for the Nationwide Health Information Network Exchange Data Use and Reciprocal Support Agreement (DURSA), VA has no direct contractual relationships with these organizations, and in most cases does not engage in point-to-point data exchange.

Portfolio of services: VA’s HIE initiatives are directed at providing clinicians practicing throughout VA’s health system with access to information that, in combination with the VistA electronic health record (EHR), moves the VA and DoD closer to realizing the vision of the VLER.

Information originating from the Nationwide Health Information Network Exchange is currently provided in view-only mode from within the web-based version of VistA and supplements VA information in major components of the VistA EHR. Providers access medication and problem lists, allergies, immunizations, vital signs, lab test results, encounters, and procedures. Discharge summaries, diagnostic result reports, and consultations are also part of the VLER initial data from the Nationwide Health Information Network Exchange that will be made available to VistA users during the VLER pilot program.

Measuring value: The effectiveness of VLER is assessed in terms of eight evaluation domains: (1) technical performance, (2) adoption and use, (3) breadth, depth and quality of the C32 content, (4) provider perceptions, (5) patient perceptions, (6) quality and safety of healthcare, (7) efficiency, and (8) costs. Most of these domains are evaluated in the pilots with a small number of targeted measures (e.g., convenience of the healthcare process as perceived by veterans).

Sources of revenue: VA does not charge any fees for the electronic exchange of health information. All VA costs are supported by the federal government's funding of VA's information and technology infrastructure.

CONNECTIVITY STRATEGIES

VA has a three-pronged connectivity strategy for HIE consisting of the Nationwide Health Information Network Exchange, participation in the Direct Project, and implementation of the Blue Button capability offered with My HealtheVet (patient portal for veterans).

The center of the VA's connectivity strategy is bi-directional HIE via the Nationwide Health Information Network Exchange in a discovery, query and retrieve model. An electronic summary of care document is generated from data retrieved from Nationwide Health Information Network Exchange participants. The data retrieved is then re-formatted into a standardized care summary containing the data modules previously described. Development of this standard format for a care summary has been one of the major achievements of the pilot program. This information is provided to VA clinicians as a read-only but consolidated view, so that, for example, medications from a private provider appear in a list alongside medications in the VA EHR.

Eleven pilots to demonstrate the exchange of health information via the Nationwide Health Information Network Exchange between VA and private sector healthcare organizations are in various stages of planning or implementation across the U.S. Four of these pilots also include DoD. Significant milestones have been reached by the five pilots that were live as of May 2011. These implementations show that health information can be accurately and reliably exchanged between the VA, DoD, and private sector healthcare organizations based on the HITSP C32 subset and using the Nationwide Health Information Network. Federal agency partners, including VA, DoD and

the Social Security Administration (SSA), worked together with HHS to develop the open source CONNECT gateway software to connect to the Nationwide Health Information Network. The viability of CONNECT to support HIE with the Nationwide Health Information Network has been demonstrated with the VLER pilots, including some private partner Nationwide Health Information Network Exchange members who are also using the CONNECT software.

VA is working with a Tennessee HIE to implement the Direct Project's standards and services for the exchange of secure messages to support referrals from VA Medical Center practitioners to specialists in the private sector¹. The VA Direct pilot in Tennessee is expected to demonstrate transmission of a referral for mammography ordered by a clinician at a VA medical center and sent to a radiology group that is connected to the HIE. The consultation report will be sent back to the ordering physician using the Direct standard.

In addition, VA will be applying the Direct specifications to particular types of messages being implemented at Nationwide Health Information Network Exchange pilot locations.

VA's Blue Button capability was developed in collaboration with the Centers for Medicare and Medicaid Services (CMS), DoD, and the Markle Foundation to provide beneficiaries with portability of their health data retained by government agencies. Patients are able to visit the VA's My HealtheVet portal and click on the Blue Button icon to download health information that is available in their personal health record (PHR) to a thumb drive or personal device (e.g., smartphone). This health record information can be printed or shared electronically or uploaded to personal health repositories that accept text or PDF files. During the first two months after the launch of the My HealtheVet Blue Button in 2010, 150,000 downloads of personal health data were completed by veterans.

"The good and the bad about standards is there are so many different ones to choose from."

— Tim Cromwell, Director of Standards & Interoperability

¹ As of July 2011, this project is on hold.

“Our group at the VA is seeing high demand from the private sector for access to veterans’ health information.”

—Tim Cromwell, Director of Standards & Interoperability

TECHNOLOGY

An adapter has been internally developed by VA’s Office of Information and Technology to extract information from VistA for use by the Nationwide Health Information Network Exchange gateway.

STRATEGIC INITIATIVES TO DRIVE VALUE CREATION

Healthcare consumer/patient engagement: The My HealtheVet portal is a popular and growing service. As VLER evolves, veterans using My HealtheVet may benefit from access to health information collected at non-VA as well as VA points of care.

New care delivery models: The growth of patient-centered medical homes (PCMHs) and emergence of accountable care organizations (ACOs) is stoking demand in the private healthcare sector for HIE with the VA system. These new models of care will be a contributing factor in VA’s future investment decisions in HIE.

FUTURE OUTLOOK

Governance and stakeholders: As the number of Nationwide Health Information Network Exchange participants increases, the stakeholder community seeking data exchange with VA becomes more diverse. For example, the VA’s planned summer 2011 initiative in Utah will be the first Nationwide Health Information Network Exchange pilot in which the VA is exchanging information with a primarily rural region.

Business model for long-term sustainability: As clinicians experience the benefits of sharing patient health information using the C32 format, VA believes that they will want access to additional health record information. VA plans to expand beyond the read-only care summary record based on the C32 to a menu of options including progress notes and specialty-specific (e.g., oncology) records.

VA would like to incorporate information received from the Nationwide Health Information Network Exchange and Direct partners into robust clinical decision support applications already in use. Investments in semantic interoperability capabilities are needed to accomplish this.

The goal of VA is to have every VA hospital connected to the Nationwide Health Information Network Exchange in 2012. To ensure long-term sustainability (and funding in fiscal year 2012 and beyond), the Nationwide Health Information Network Exchange pilot program needs to demonstrate value for VA and for veterans in each of the evaluation domains previously described.

EXAMPLES OF VALUE PROPOSITIONS

SERVICE	VALUE PROPOSITION*
VistA Care Summary Nationwide Health Information Network inbound messaging with non-VA health activities Nationwide Health Information Network Exchange Outbound messaging	Improve provider efficiency by reducing time spent collecting information at the point of care. Reduce cost of distributing clinical reports for non-VA encounters to clinicians. Improve continuity of care and quality with a more comprehensive, longitudinal view of a veteran's care across the continuum of providers and settings (DoD, VA, private sector). Reduce the likelihood of redundant or unnecessary tests, improving the patient's experience and avoiding costs.
Direct Project Messaging for Referral Management	Improve the timeliness and efficiency of sending referrals to specialist providers. Improve turnaround time and reduce the cost to VA and private sector providers when distributing non-VA specialist consultation reports.
My HealtheVet's Blue Button	Improve access and portability of a veteran-patient's personal health information, improving patient perception and appreciation of the benefits of My HealtheVet. Improve quality of care for veteran patients by sharing an electronic version of more complete personal health information with authorized persons such as the patient's providers and support system.
Clinical Decision Support	With clinical decision support that uses data from the VLER, clinicians are better able to improve quality outcomes before, during, and after the patient's VA encounter. Clinical decision support will help providers to more accurately track patients falling outside care guidelines and deliver appropriate care recommendations at the point of care.

*Value propositions incorporate VA's "evaluation domains" for measuring the effectiveness of the VLER and HIE initiatives: quality and safety, cost, efficiency, provider perceptions, patient perceptions.

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