

Building and Maintaining a Sustainable Health Information Exchange (HIE): Experience from Diverse Care Settings

May 14, 2010

Moderator:

Erin Grace

Agency for Healthcare Research and Quality

Presenters:

Mark Frisse

Patricia Fontaine

Gina Perez

**AHRQ National Resource Center
for Health Information Technology**



AHRQ

Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

The Vanderbilt HIE Experience in Memphis

Mark Frisse, MD, MS, MBA

Vanderbilt University Medical Center Department of Biomedical
Informatics



Why Memphis in 2004?

- Governor Phil Bredesen: TennCare
- A county hospital (the MED) in distress
- Wanted to explore how technology could improve care management and coordination
- High proportion of TennCare and uninsured
- Commercial insurers weren't particularly aggressive
- A history of discord among providers
- Limited exchange "competitors"
- We brought funding (\$12m)
- Memphis leaders responded to the challenge



What is the Memphis Exchange?

- Developed by Vanderbilt University Regional Informatics
- Managed by a Memphis Board; moved to commercial vendor (ICA)
- 15 hospitals; 15 ambulatory sites
- Total # of records: **>5 million**
- Total # of patients: **1,250,000**
- Monthly Encounter Data: 110,000
- Monthly ICD-9 admission codes (Chief complaints): 34,000
- Monthly labs: **2,400,000**
- Monthly microbiology reports: 25,709
- Monthly chest x-ray reports: 34,996
- Comprehensive privacy agreements
- Costs to participants less that \$50,000 per hospital
- Overall annual operating cost – under \$2.5 million



© Vanderbilt University – Do not copy or distribute



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Community Leadership: MidSouth eHealth Alliance

15 hospitals; 15 clinics

- Baptist Memorial Health Care Corp. (4 facilities)
- Christ Community Health (4 primary care clinics)
- Methodist Healthcare (7 facilities including Le Bonheur Children's Medical Center)
- The Regional Medical Center (The MED)
- Saint Francis Hospital & St. Francis Bartlett (Tenet Healthcare)
- St. Jude Children's Research Hospital
- Shelby County/Health Loop Clinics (11 primary care clinics)
- UT Medical Group (300+ clinicians)
- Memphis Managed Care/TLC (MCO)

The screenshot shows the MidSouth eHealth Alliance website. At the top, there is a navigation bar with the logo and links for Home and FAQ. Below the navigation bar is a large banner image of hands reaching together, with the text "Connecting Healthcare" and "MidSouth eHealth Alliance is working for you." To the right of the banner is a login form with fields for User ID, PIN, and Token, and a "Submit" button. Below the banner is a "Welcome" section with a paragraph of text. To the right of the welcome section is a "SPECIAL ANNOUNCEMENT" section with a link to find more information. Below the welcome section is a "Participants" section with logos for Baptist Memorial Health Care, Memphis Managed Care, The Regional Medical Center at Memphis, and Saint Francis Hospital. To the right of the participants section is a "Fact Sheet" section with a link to download the fact sheet.



© Vanderbilt University
– Do not copy or
distribute

What does the interface look like?

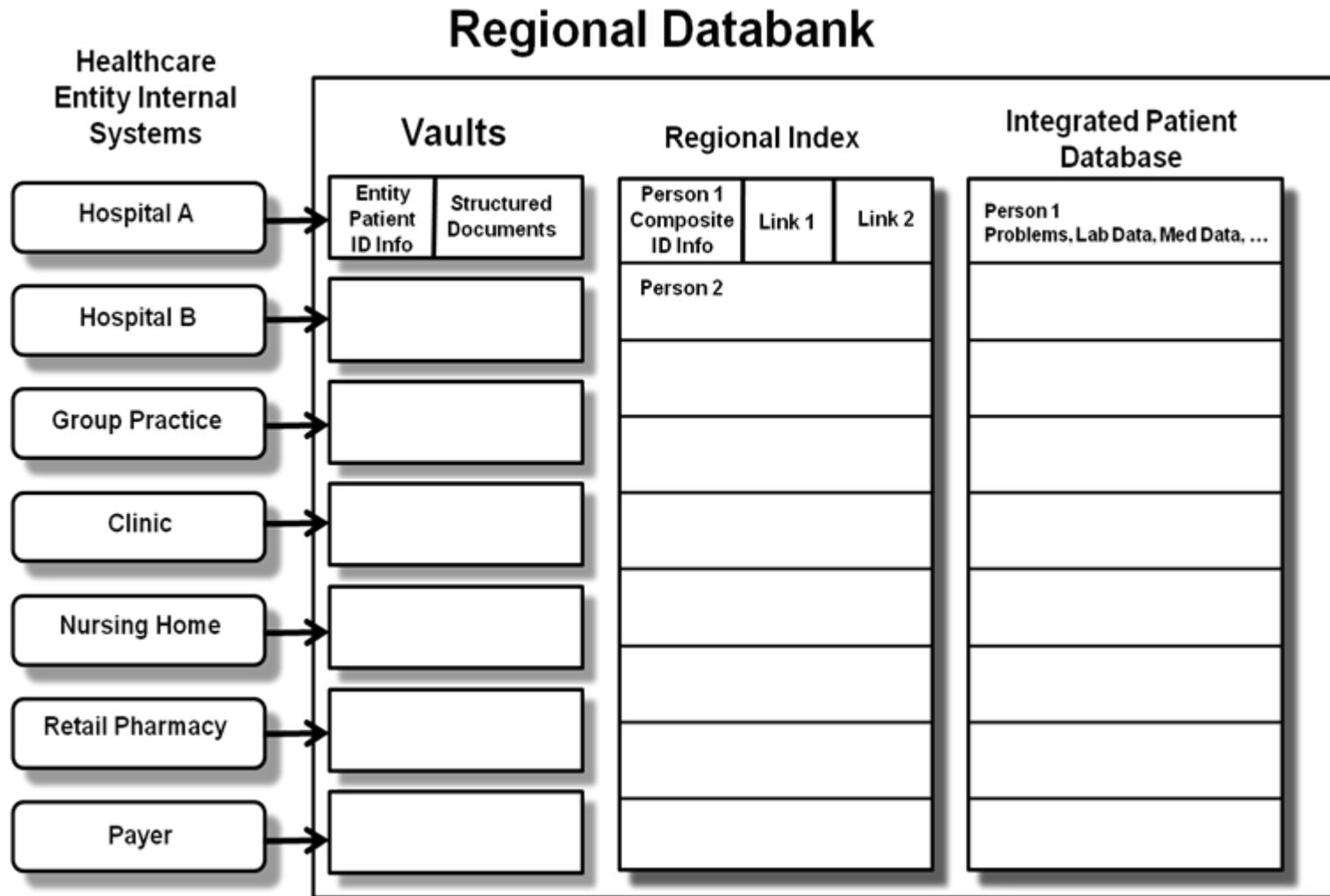
The screenshot displays a medical information system interface with several key components:

- Navigation and User Interface:** Includes 'MSeHA Policies', 'Help', 'Log Out', 'Lock', and 'Clear All' buttons. A 'Patient Search' section allows filtering by Name, SSN, or MRN, with fields for Name/DOB/Gender, First name, Last name, Date of birth, and Gender.
- Lab Panels:** A 'Lab Panels' section lists various test categories such as CMP, HEP, Lipids, CBC, PT/INR, ABG, UA, and BMP.
- Graphs:** A 'Modify Graph(s)' window shows a line graph for 'HCT (Hematocrit)' from 05/22/06 to 03/06/07. The y-axis ranges from 20.8 to 47.0. A second graph for 'HGB (Hemoglobin)' is partially visible below.
- Patient Selection:** A table lists patient records with columns for Site, MRN / DOS, and checkboxes for selection.
- CBC (Complete Blood Count) Table:** A detailed table showing lab results for various parameters over time.

Date	Location	HCT	HGB	MCH	MCHC	MCV	MPV/Platelet	RBC	RDW	WBC	
03/06/07 06:37	SFH	30.6*	10.0*	24.6*	32.7	75.4*	11.5	225	4.06	15.6*	5.28
02/26/07 04:55	BMHCC-Mem	26.7*	9.2*	25.8*	34.5	74.9*	8.7	232	3.57*	16.0*	4.9*
02/25/07 18:49	BMHCC-Mem	28.7*	9.8*	26.1*	34.0	76.6*	7.7	243	3.74*	16.6*	5.6
02/25/07 00:13	SFH	27.9*	9.2*	25.6	33.0	77.3*	7.6	225	3.60*	17.5*	4.60
02/13/07 14:35	BMHCC-Mem	28.9*	10.3*	27.4	35.5	77.0*	7.9	222	3.75*	16.7*	5.1
02/13/07 06:25	BAR	30.5*	10.1*	26.0	33.1	78.6*	7.9	240	3.88*	16.4*	4.90
02/12/07 16:58	SFH	34.1*	11.3*	26.1	33.2	78.6*	7.8	274	4.33	17.8*	5.90
01/28/07 21:32	SFH	31.9*	10.6*	26.9	33.2	80.8	7.5	264	3.94*	18.3*	6.40
01/28/07 01:27	BMHCC-Mem	32.4*	11.1*	27.1	34.4	79.0*	8.0	269	4.10	18.0*	7.2
01/26/07 01:40	BMHCC-Mem	32.3*	11.2*	27.6	34.6	79.8*	8.5	240	4.05*	17.4*	9.0
01/22/07 04:56	BMHCC-Mem	31.6*	10.8*	27.0	34.3	78.7*	8.3	204	4.01*	16.4*	3.8*
01/20/07 06:10	BMHCC-Mem	32.6*	10.9*	26.7*	33.5	79.5*	8.2	227	4.09*	16.0*	5.3
01/19/07 02:16	BMHCC-Mem	34.3*	11.5*	26.3*	33.6	78.3*	7.6	245	4.37	16.1*	6.4
01/12/07 22:00	BMHCC-Mem	32.6*	10.5*	26.1*	32.4	80.8	7.8	273	4.03*	16.5*	4.7*
01/08/07 17:35	BMHCC-Mem	35.3*	11.8*	26.3*	32.5	78.6*	7.5	338	4.50	16.4*	6.0



We brought an architecture: Vaults



Why did we succeed in the initial years?

- Sense of urgency (TennCare & a failing public hospital)
- Guiding coalition: Governor, Memphis, Vanderbilt
- Extensive, realistic planning
- Our emphasis was on trust, not technology
- Focused on “version 1.0”
- Initially emphasis only on emergency department care
- Low barrier to entry (took data in any format)
- Low, low cost (\$2m or less annually for 1 million people)
- Quick wins – literally saved lives
- Gradual evolution

Must read: Kotter, J.P., *Why transformation efforts fail*. Harvard Business Review, 1995. (March-April): 59-67.



© Vanderbilt University – Do not copy or distribute



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

What has it done?

- Saved lives (anecdotal)
- Changed workflow
- Changed test ordering behavior
- Reduced radiographic tests
- Reduced testing for some specific conditions
- Reduced admissions
- Technology model is being adopted in other regions
- Found ambulatory connectivity a great challenge
- Our lessons are applicable to Vanderbilt and other institutions
– not just to exchanges



© Vanderbilt University – Do not copy or distribute



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

What we have learned

- Sustained community leadership with a simple “why”
- Be in the trust business
- Value in a low barrier to entry, low cost, and simplicity
- Some data were not part of the HIE (e.g., eRx)
- Architecture decision are is important
- “Consumer engagement” was not critical for us
- We did not over-engineer (used the VU tagging model)
- Standards were allowed to evolve and not forced
- We built version 1.0 before building version 6.0
- Our focus was on what we could uniquely do
- Cost considerations were paramount



Predictions supported by our work

- The individual will be the primary focus of patient care
- Most patient care information will come from outside of any single traditional care delivery unit
- All individuals will become part of populations whose health can be tracked “real time”
- Exchange both verb than noun (but verb is dominant)
- Multiple exchanges will co-exist in a community (e.g., transitions in care, readmissions, quality)
- The NHIN framework can tie them together
- Value and sustainability must be considered in the context of a rapidly changing system



Memphis had learned valuable lessons

Smart Technology, Stunted Policy: Developing Health Information Networks

Paul Starr. *Health Affairs* (May / June 1997)

Failure in Vermont and Memphis

The difficulties of securing cooperation are illustrated by two...projects that ended in complete failure.

- In Memphis, the original grantee, the Memphis Business Group on Health, sought to build a CHMIS around the city's two principal hospital systems, Baptist and Methodist, which together control more than half of the market. The Business Group had a long-standing business relationship with Baptist but not with Methodist, nor did it include many other elements of the community, such as public officials. A Methodist representative was later added, and the grant was moved to a new nonprofit entity, but the effort lacked a broad community base. It collapsed when Baptist unilaterally decided to contract for network services with IMS Medacom, one of two finalists in the selection process for a vendor to build the CHMIS.
- Local physicians reportedly were nervous about the collection of data on their practices. One participant summed up the reaction of local health care providers: "If somebody is going to have my business-sensitive data, I stand to lose." (Harold Petersen, assistant director, Computing and Telecommunications, University of Tennessee, interview, 12 July 1995.)

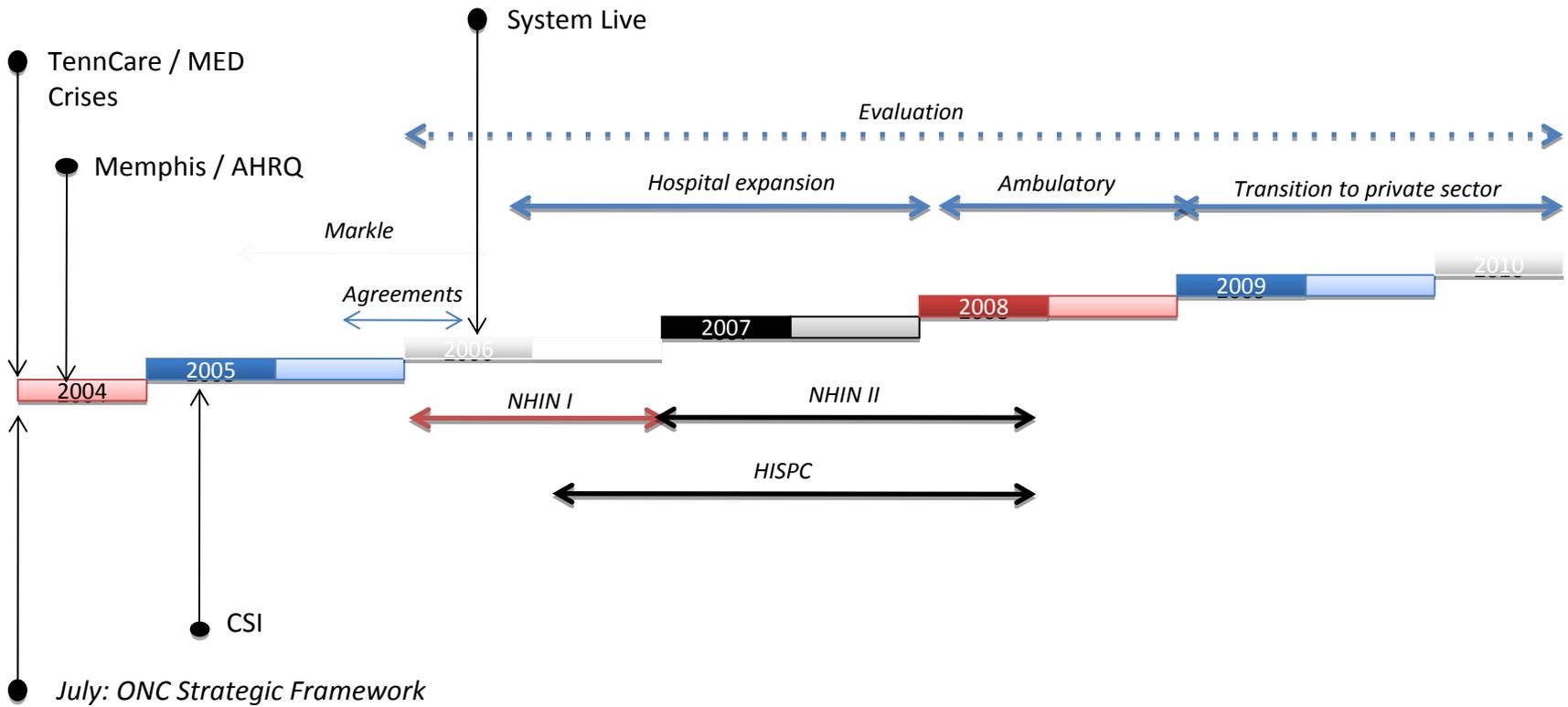


© Vanderbilt University – Do not copy or distribute



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

It took a long time



Thank You!

mark.frisse@Vanderbilt.Edu



Department of
BIOMEDICAL INFORMATICS
VANDERBILT UNIVERSITY MEDICAL CENTER



AHRQ

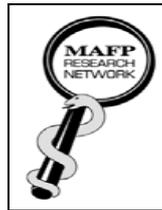
Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Health Information Exchange in Small Primary Care Practices: Someone Needs to Say “Do it!”

Patricia Fontaine, M.D., M.S.

University of Minnesota

Minnesota Academy of Family Physicians Research Network



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Background

- American Recovery and Reinvestment Act of 2009 (ARRA) will provide billions
 - to promote electronic health records (EHRs)
 - form regional centers to foster community-wide electronic health information exchange (HIE)
- Goal is a nationwide health information network
NHIN



Minnesota: Setting the Stage for HIE

- 2007 e-Health Law requires
 - Electronic claims submission by 2009
 - e-Prescribing by 2011
 - Interoperable EHRs for all hospitals and providers by 2015
- 42% of MN primary care practices have fully implemented EHRs, compared to 4% nationally^{1,2}



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM

1. EHR landscape assessment: Minnesota's primary care clinics.
<http://www.stratishealth.org/documents/ClinicEHRLandscapeAssessment0807.pdf>.

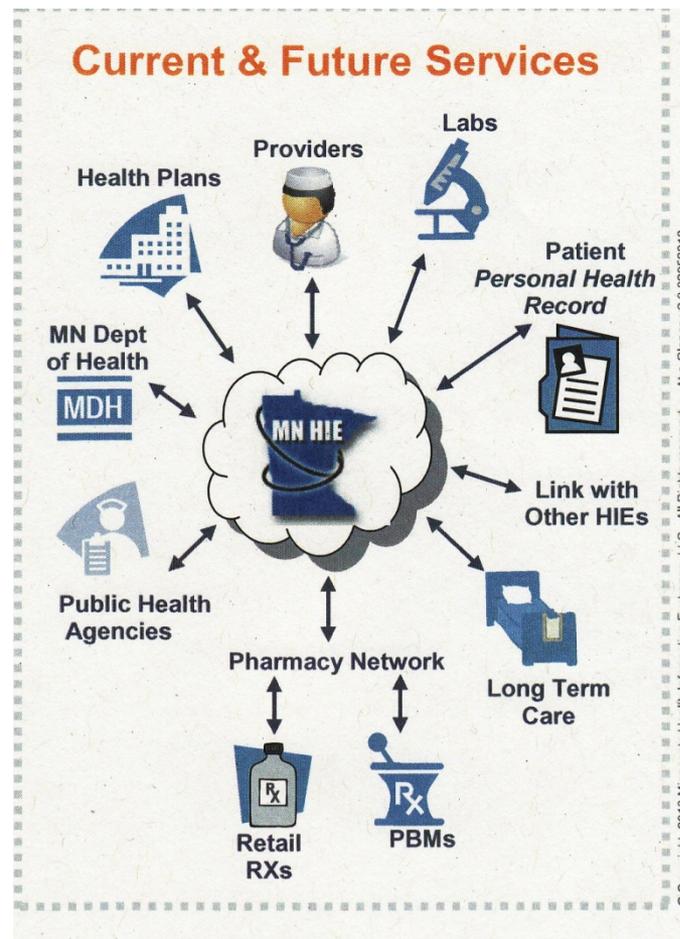
2. DesRoches CM, Campbell EG, Rao SR, et al. Electronic health records in ambulatory care: a national survey of physicians. *N Engl J Med*. 2008;359(1):50-60



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Minnesota: HIE Vision

- HIE is “the electronic movement of health-related information among organizations according to nationally recognized standards”¹
- CHIC
 - Patient Record locator service
- MN-HIE
 - Early project focused on Emergency Dept med look-up



Rationale for the Study

- Most existing studies of HIE take place in hospitals, larger health systems
- The majority of health care encounters occur in the ambulatory setting; majority of patients receive their primary care in small- or moderate-sized practices
- For the NHIN to become a reality, such practices must become involved



Specific Aims

- To assess the motivating factors and barriers that influence primary care practices to participate in community-wide HIE



Methods

- Quantitative
 - Questionnaire: practice demographics and IT (information technology) status
- Qualitative
 - Analysis of guided discussions with key informants
 - Key informants varied by clinic and included clinic administrators, medical directors, nurse managers, IT support staff, and physician IT champions.



Setting and Participants

- Conducted in 2008-2009
- Nine Minnesota primary care practices
- Purposefully selected to include
 - Urban and rural locations
 - Small practices of fewer than 20 providers
 - Varying degrees of involvement with EHRs and HIE



Figure 2: Participating practice locations

Practice Locations



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Results — IT Status (9 practices)

- EHR
 - Currently using proprietary EHR (7)
 - In process of purchasing (1)
 - Developed a relational data base (1)
- Adoption dates ranged 2001-2009
- 6 different vendors represented
- Only 1 practice had same EHR system as local hospital



Results – Information Exchange*

- Immunization registry (9)
- Laboratory test results (8)
- Radiology test results (4)
- Payers (4)
- Pharmacy (4)
- Patients (1)
- Other physician practices (0)

*Number of practices reporting electronic HIE (send/receive/both)



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Results — Motivating Factors

- External motivators
 - Legislative mandates
 - Payer incentives
 - Increasing expectations for quality reporting
- Internal motivators
 - Improved quality of care
 - Enhanced efficiency
 - Cost savings
 - Recruiting and public perception



External Motivations

- Minnesota's eHealth Law requires interoperable EHRs by 2015

“the legislation breathing down your neck, telling you what you need to do”

- Optional and mandated quality reporting

“Because quality measures were defining some of the issues of reimbursement, we felt we needed to [do this] to be competitive.”



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Improved Quality of Care

It's very difficult to achieve consistency over time with paper guidelines that people had to look up, and we just thought that maybe something that was more hard-wired into everybody's practice might help us achieve higher quality, better patient safety.



UNIVERSITY OF MINNESOTA
Driven to DiscoverSM



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

- Efficiency

Prior to the EHR, probably two out of every three visits, the medical record wasn't available. Because it was in transit, or it was in the dermatologist's office, they weren't done with it, or we don't know where it is!

We do 2000 hand audits a year. With our paper charts that's 20 minutes per chart...Do the math.

- Cost savings

By getting rid of paper charts... and reducing the number of people handling paper, we thought we would have a positive return on investment.



Results — Barriers

- Cost
- Interoperability
- Lack of shared HIE vision
- Technology infrastructure (T1 lines)
- Security/privacy concerns
- Behavioral resistance to change



Cost

- *Well, we don't have the money to participate in [the HIE] right now... It was going to be about \$6,000 a year and then it had additional startup fees*



Interoperability

Everybody has a different system and you have to be able to make it readable. That's been one of the struggles is that our system is different than clinic C's which is different from the hospital's and nobody wants to pay the cost of doing the integration.

Someone needs to say, 'Do it!'



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Conclusions

- No practice was fully involved in a regional HIE with multiple stakeholders
- HIE is proceeding by incremental stages in small practices, with EHR acquisition often a first step
- Small practices see the value of data exchange
 - with hospitals, testing centers, and specialists with whom they interact frequently
 - with outside agencies → public health, quality reporting



Conclusions

- Interoperable HIE may not be the best short-term model for data sharing for small primary care practices
 - Requires
 - further development of national interoperability standards
 - programming of multiple specific interfaces
 - establishing security/privacy policies



Conclusions

- To achieve more comprehensive HIE
 - Legislation should support regional health information organizations (RHIOs)
 - RHIOs need to provide leadership and financial incentives for community-wide, meaningful use of interoperable EHRs



Acknowledgments

The research team gratefully acknowledges contributions from

Funder: AHRQ

Project Officer: Rebecca Roper

MAFPRN Director: Kevin Peterson, MD, MPH

Advisory Board Members

Practices and Participants

Contact information:

Pat Fontaine fonta002@umn.edu

Therese Zink zink003@umn.edu



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Thank you!



UNIVERSITY OF MINNESOTA

Driven to DiscoverSM



Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov



Better Communication for Better Healthcare

Gina Perez, M.P.A.,
Advances in Management, Inc



PENNSYLVANIA

N Delaware

MARYLAND

Claymont
Wilmington
Elsmere
New Castle

Newark

Delaware
City

Middletown

Smyrna

Clayton

Dover

Harrington

Milford

DELAWARE

Lewes

Bridgeville

Georgetown

Seaford

Millsboro

Laurel

Frankford

NEW
JERSEY

*Delaware
Bay*

*Atlantic
Ocean*

39°

76°

75°



Who We Are and What We Do

- Operational health information exchange organization
- Public – Private Partnership
- State Designated Entity
- Funded by Federal, State and Private Resources (beginning in 2005)
- Live since 2007
 - Secure Results/Reports Delivery (2007)
 - Community Health Record (2009)
 - Support for Achieving Meaningful Use (2010)



What Providers Said They Need

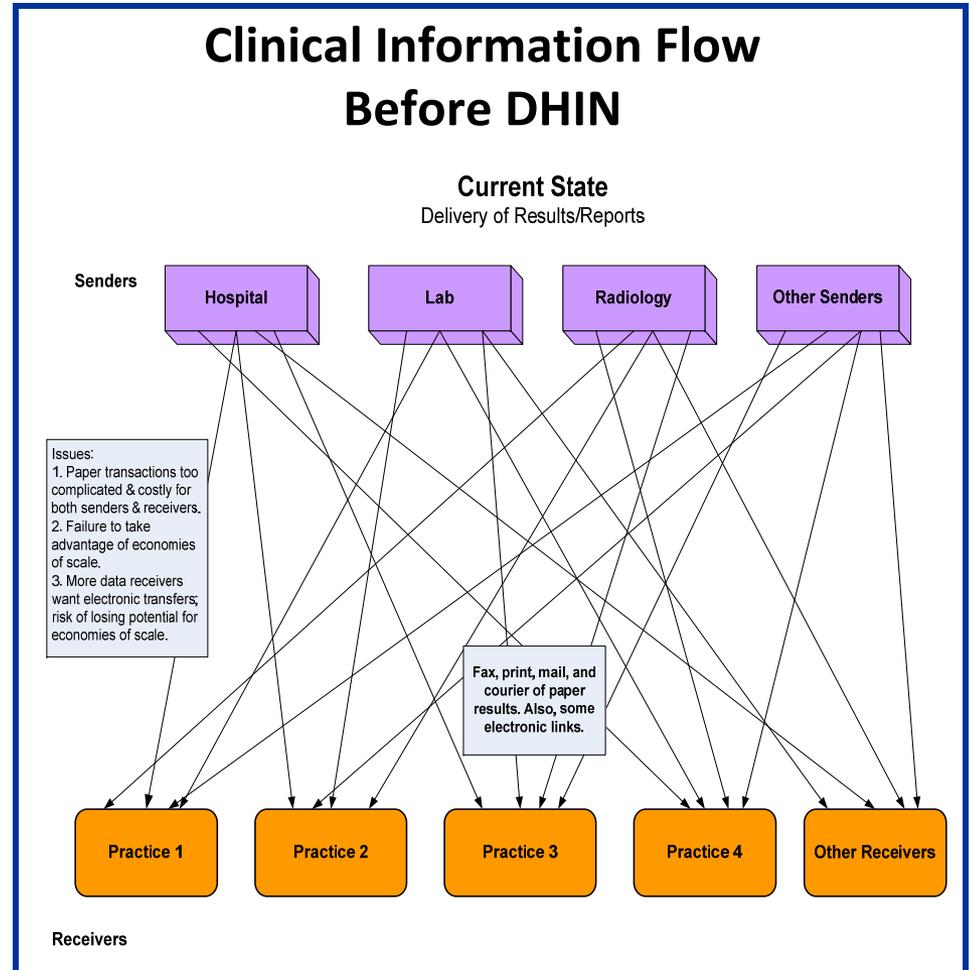
- Electronic results delivery (especially lab data)
- Ability to view key information across organizations
- Streamline referrals between doctors and services
- Deliver results and reports directly into their electronic medical records systems

What “Data Senders” Said They Need

- A system that allows them to send results and reports to providers in a faster, safer and more cost-effective way
- A better way to receive and share data
- A level playing field for all hospitals and labs
- A system that does not require large investments and changes in internal systems
- A system that all practices can use, regardless of their level of technology (paper vs. electronic)

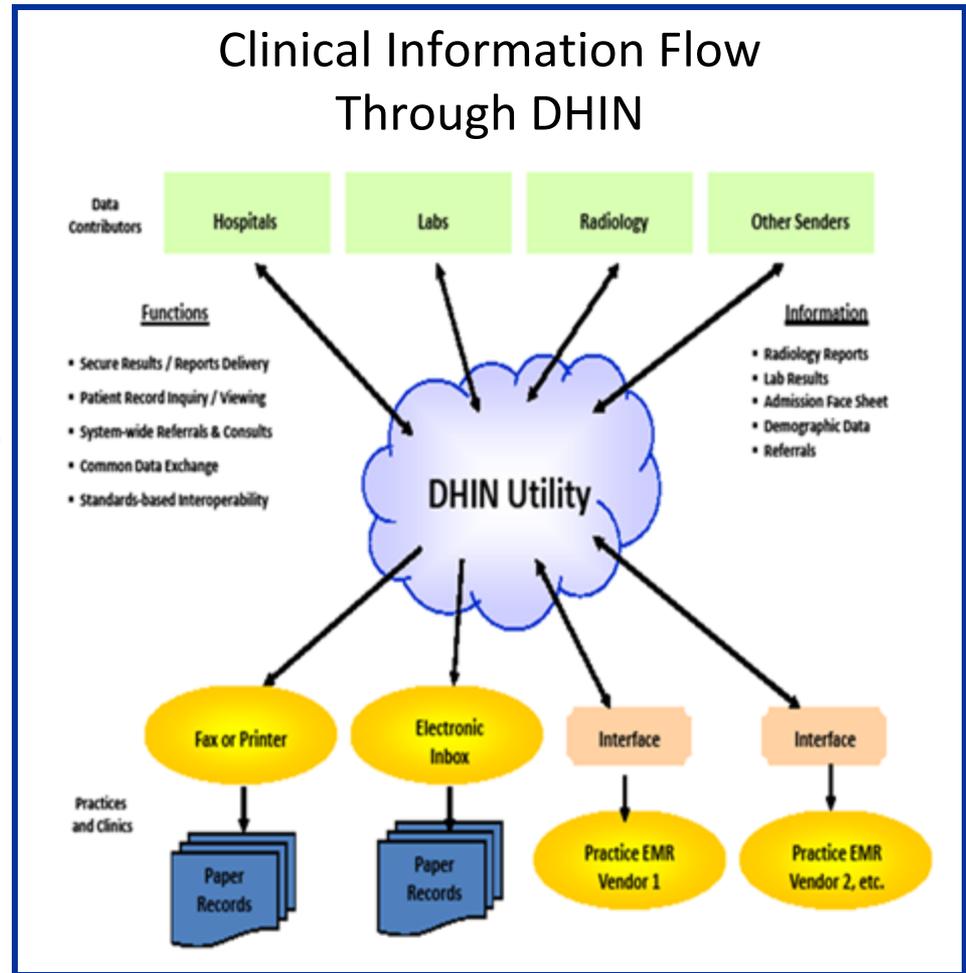
The Problem

- Many sources of clinical information (test results and reports, hospital admissions, transcribed reports, etc...)
- Many formats for how that information is provided to those who have a need to know
- Missing information when the patient is in need of care has adverse affects on the patient's health



The Solution: DHIN

- One source for information from all participating data senders
- Eliminates need for expensive interfaces to/from each information source
- Meets federal standards and provides one format for all results
- Creates efficiencies for doctors and those who send them clinical information
- Eliminates need for traditional delivery methods



DHIN Data Senders

Christiana Care Health System

DuPont Hospital for Children*

St. Francis Hospital (2010)

Bayhealth Medical Center

VA Hospital (FedCONNECT)*

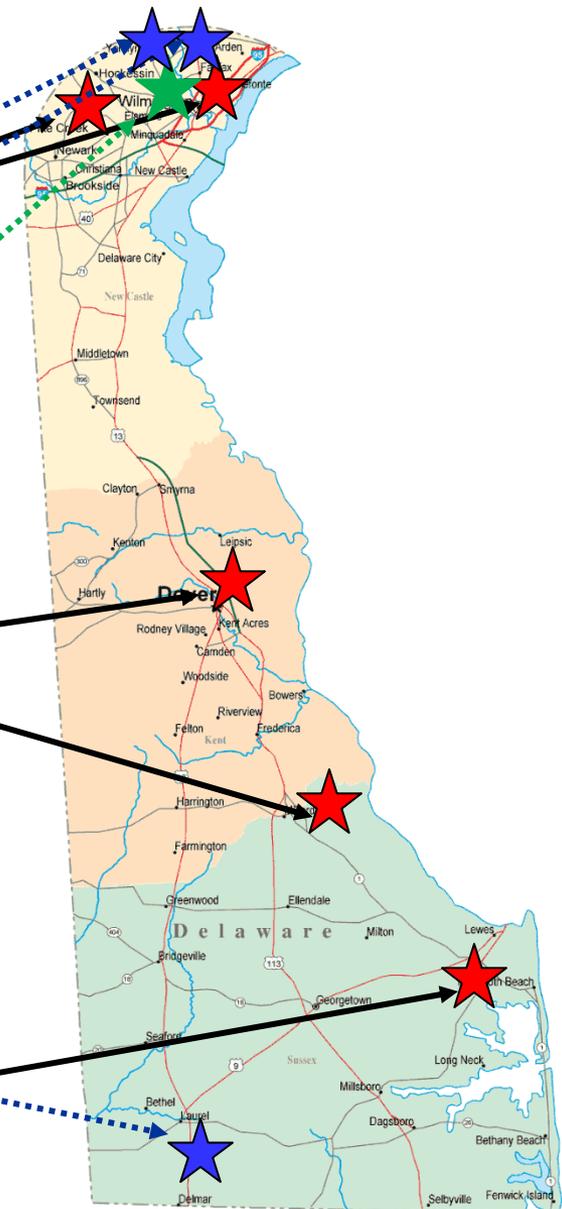
LabCorp

Doctors Pathology Services

Nanticoke Memorial Hospital*

Quest Diagnostics

Beebe Medical Center



*Future participants: support from federal funds



Continuously Adding Value Through New Features/Functions

FY 2007

- Secure Results & Reports Delivery from 5 hospitals & LabCorp
- Laboratory Results
- Pathology Results
- Radiology Reports
- Admission Face Sheets
- Flexible User Preferences
- Security & Access Controls
 - User authentication
 - Log-in Management
 - Audit Logging and Reporting

FY 2008

- Two-tiered, delegated master patient index
- Record Locator Service
- Interfaces to physician office electronic medical records (EMR) systems
 - *Negotiated discounts of 75% off of EMR vendor charges passed onto the doctor*
- Real-time Automated Public Health Biosurveillance Reporting
- Business Process Mapping

Continuously Adding Value Through New Features/Functions

FY 2009

- Patient Centric Community Health Record
 - Patient search
 - Enhanced security protocols
- Additional EMR Connections with discounted fees to physicians
- Nationwide Health Information Network (NHIN) Connectivity
- Quest Diagnostics and Doctors Pathology Services - Live

FY 2010 – FY2011

- Transcribed Reports
- Medication History Search
- St. Francis Hospital
- Laboratory Order Entry from EMR
- Radiology Image Viewing
- Additional EMR Connections with discounted fees to physicians
- Support for physicians in qualifying for Medicare and Medicaid federal incentive payments
- NHIN Referral Network Demonstration



Helps DE Providers Meet Federal Requirements

- Reduce up-front costs supporting gradual health IT adoption
 - Lab Order Initiation from EHR*
 - Community Connectivity
 - Public Health Reporting
 - Medication History Search and Reconciliation
 - Privacy and Security Protocols
 - Standards-based Data and Messages
- Prevent added investment into current IT systems
 - Hospital Transcription Interfaces
 - Referral Network/Transitions of Care *
 - Quality Reporting*
 - Radiology Image Interfaces*
- Support Non-Priority Providers & Services
 - Public Health
 - Mental Health & Substance Abuse
 - Home Health
 - Long-Term Care
 - Radiology



* Planned Functions



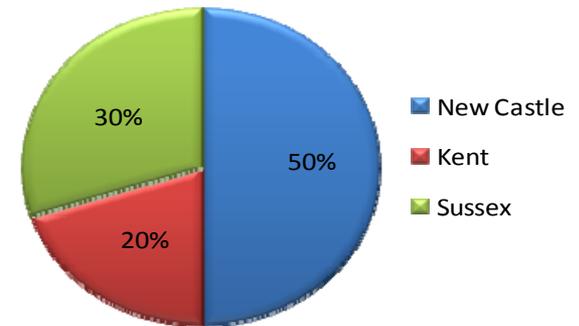
Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

More than Half of Delaware Providers are Using DHIN

The distribution of DHIN users is consistent with the distribution of health care providers in the State of Delaware

DHIN users also are diverse and representative of the State's provider population with regard to specialty. DHIN users practice the following specialties:

% of DHIN Users

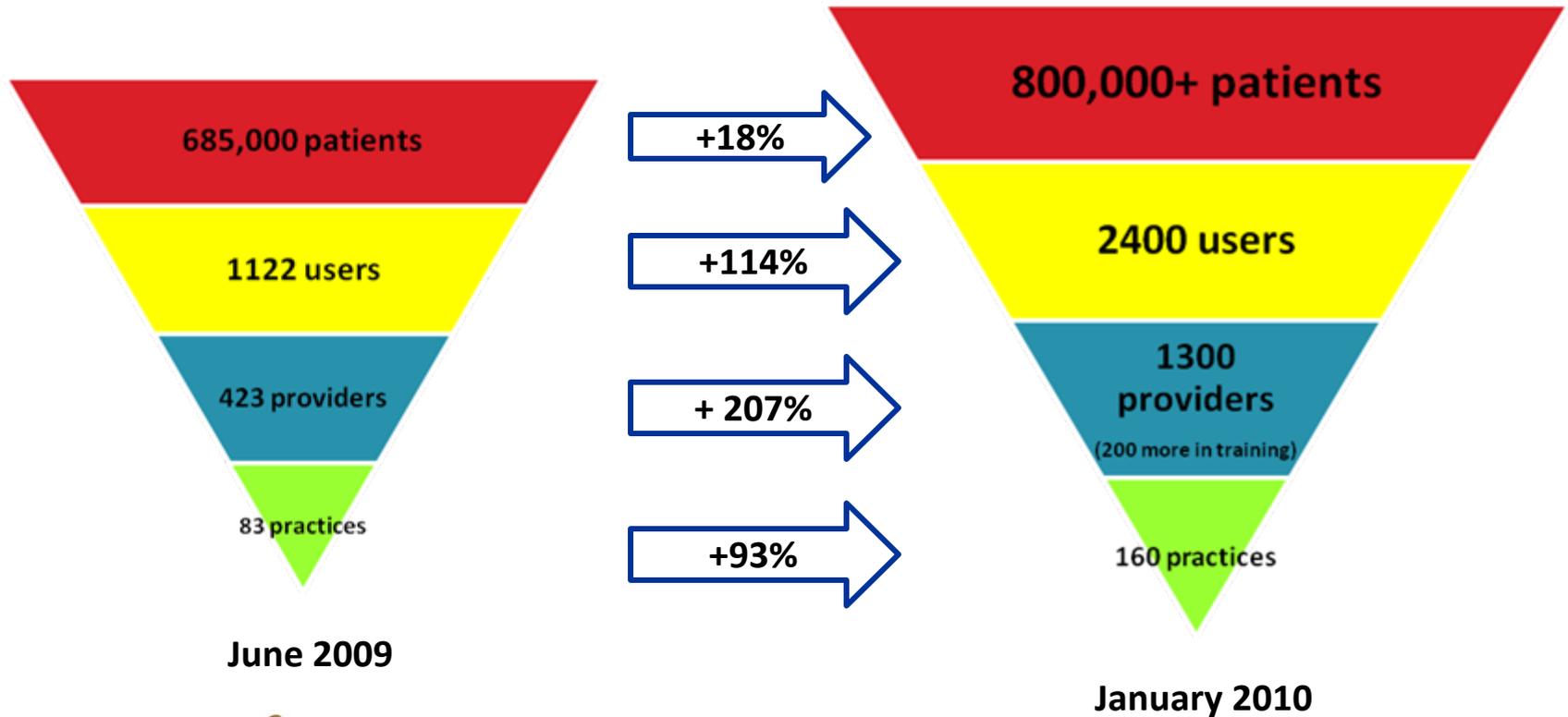


Anesthesiology
Cardiology
Ear, Nose & Throat
Emergency Medicine
Family Medicine
Gastroenterology
Hematology
Home Health

Hospital-based Medicine
Internal Medicine
Long-Term Care
Mental Health
Neurology
Neurology-Imaging
Obstetrics/Gynecology
Oncology
Orthopaedics

Orthopaedic Surgery
Pathology
Pharmacy
Podiatric Medicine
Public Health
Pulmonology
Surgery
Surgical Oncology
Urology

DHIN Scaled to Meet Growing Demand

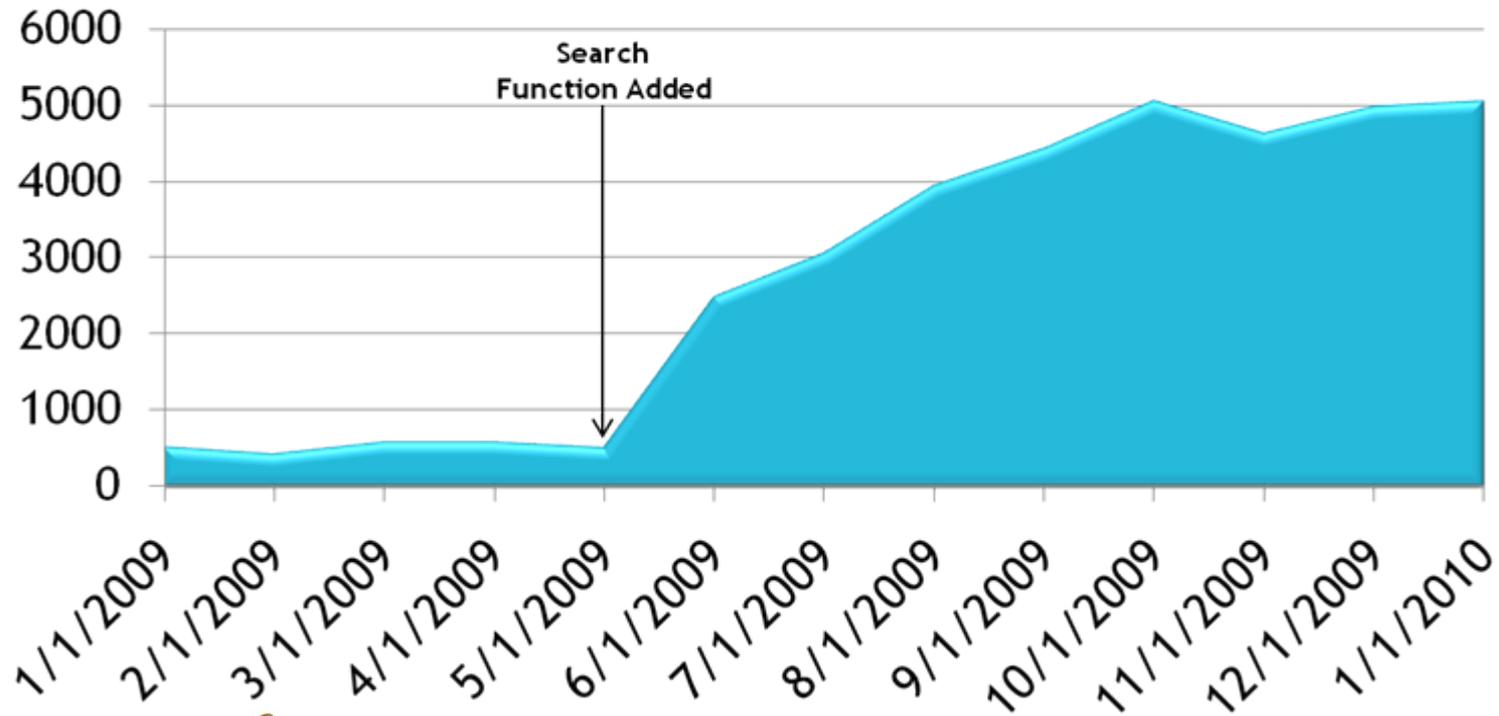


June 2009

January 2010

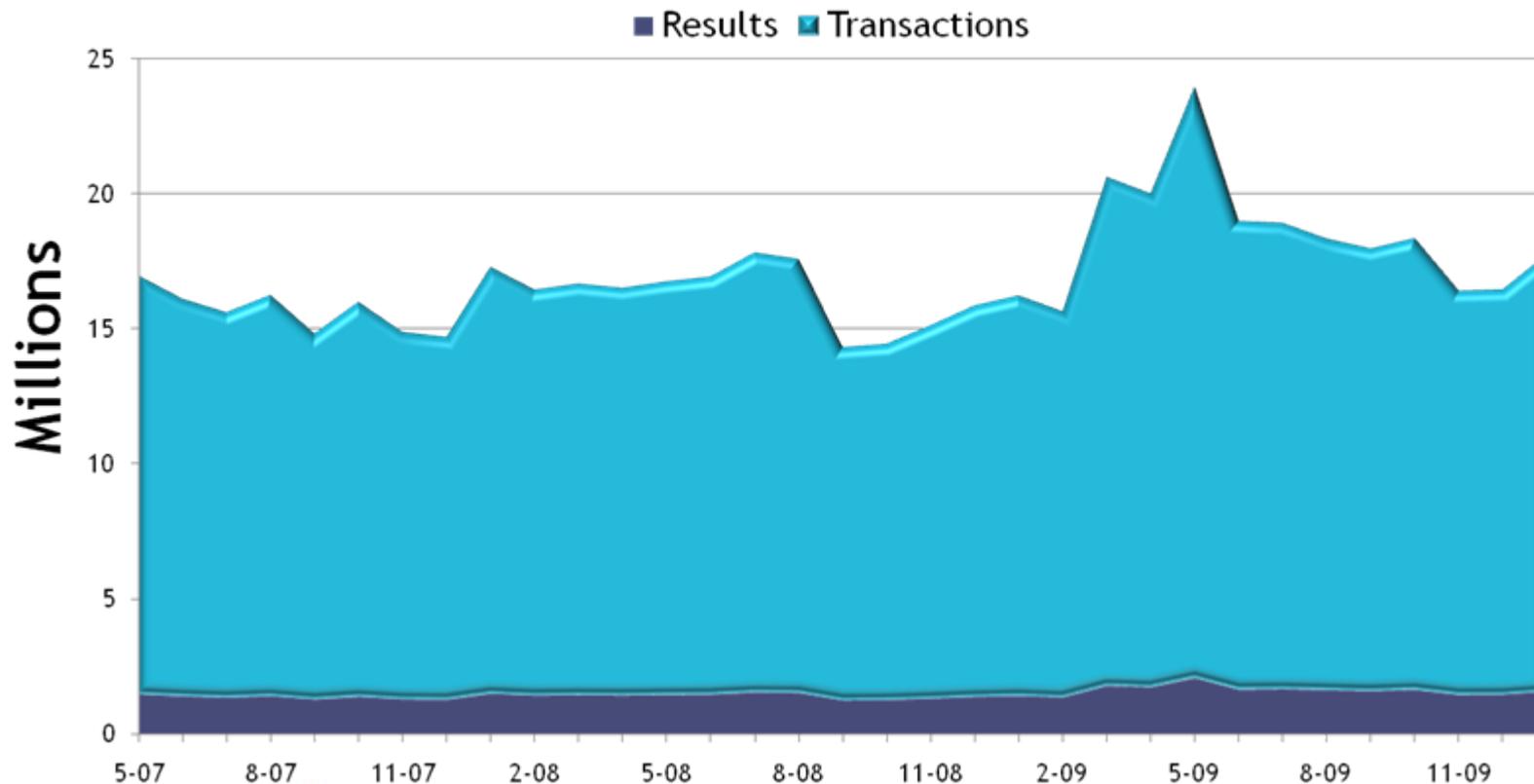
DHIN Usage Increased 1000% In Past Year

DHIN Logins 2009



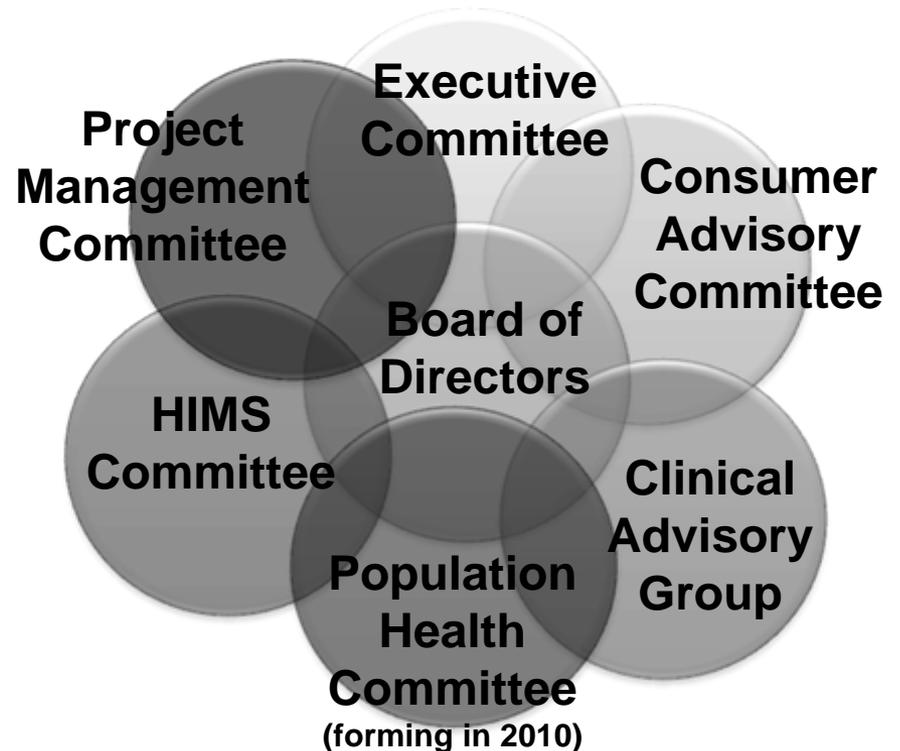
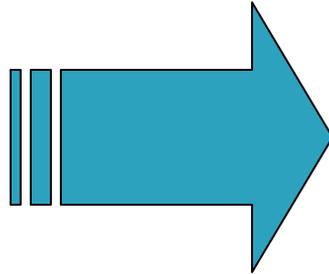
DHIN Processes More than 15M Transactions Per Month

Monthly DHIN Transactions



DHIN Governance is Based on Trust & Consensus

- Physicians
- Hospitals & Labs
- Consumers
- Business
- Insurance
- State Government



Participant Commitment & Resources

- Leadership Engagement, Input and Buy-in at All Levels and Across All Stakeholders
- Dedicated Project Management
- Assigned Testing Resources
- Financial Commitment
- Diverse Funding – Public and Private



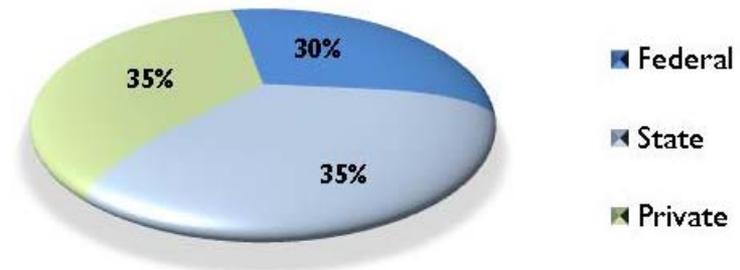
Sustainability Principles

- Build a strong foundation
- Start simple and plan for operational sustainability
- Those paying for the system should define the model
- Add value functions that bring new stakeholders to the table

Keys To Success

Leveraged DHIN Funding

- State's investment in DHIN over four years = \$8.0 mil
 - \$9.0 million over 3 years was requested in 2006*
 - Average annual per capita State funding = \$2.15
 - Average annual per capita leveraged funding = \$3.94
- \$1 for \$1 match on State funding by the private sector
- \$1.8 mil in current Federal contracts
- Additional Stimulus Funding for Health Information Exchange



Thank You!

gina@aim2bbest.com



Feedback Survey

In order to provide the highest quality teleconferences we depend on your feedback. Please take a moment to fill out our survey.

Questions & Answers

Our Panel:

Mark Frisse, M.D., M.S., M.B.A., Professor of Biomedical Informatics at Vanderbilt University

Patricia Fontaine, M.D., M.S., Associate Professor of Family Medicine and Community Health at the University of Minnesota Medical School

Gina Perez, M.P.A., President of Advances in Management, Inc. and Executive Director, Delaware Health Information Network

**AHRQ National Resource Center
for Health Information Technology**



AHRQ

Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov

Coming Soon!

Our Next Event

A webinar examining health information
technology and quality

Stay tuned for exact date and time
and information on how to register

Thank You for Attending

This event was brought to you by the
AHRQ National Resource Center for Health IT

The AHRQ National Resource Center for Health IT promotes best practices in the adoption and implementation of health IT through a robust online knowledge library, Web conferences, toolkits, as well as AHRQ-funded research outcomes.

Slides and a recording of this Web conference will be available on the AHRQ National Resource Center Web site within a week.

<http://healthit.ahrq.gov>

**AHRQ National Resource Center
for Health Information Technology**



AHRQ

Agency for Healthcare Research and Quality
Advancing Excellence in Health Care • www.ahrq.gov