Lessons Learned from State and RHIOs:
Organizational, Technical and Financial Aspects

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Framework

- States and regions are different things
- Regions are not exclusively part of states
  - Tennessee borders 8 other states
  - 20-25% of patients seeking care in two Memphis hospitals were from other states
- People move a lot
- Even if health care delivery organizations do their jobs completely, their collective efforts will not achieve our goals for a transformed health care system
- We may be competing over the wrong things – e.g., data
- It’s not “do we invest in HIT”? It’s whether the investment is institution-centric or patient-centric.

Sources:
Workflow….All Directed “Inside”…and Insufficient:

- Total institutional IT expenditures across a number of health care sectors are expected to exceed $40 billion in 2005.
- Studies have shown that nearly 30% of US healthcare spending -- up to $300 billion each year -- is for treatments that may not improve health status, may be redundant, or may be inappropriate for the patient's condition^1.
- All-consuming attention to internal operations reflects “a healthcare landscape that’s slim on resources but heavily laden with demand from varying internal constituencies.”
- 11% of a Medicaid Managed Care population sought care in an ED more than once a year.
- The average use for this group was 5 visits per year!
- These visits are not always to the same ED
- Some day, our ability to deliver more efficient and effective care in our institutions will reach an asymptote….and it will not be enough.

Sources:
Data supplied by a Medicaid Managed Care Organization  07/2003-07/2004
"Health Spending Projections for 2002-2012" by Heffler, Keehani, Clemens, Won, Zezza; Feb 7 2003, p 54-56.
Why Hospitals (or Clinics, or Plans) are Insufficient

A tale of…..Mobility, Redundancy, & Absence

• In 2002-03, 41 million Americans changed their residence (20% of these to another county, another 20% to another state). 21% of children age 4 or less moved during the same period

• 11% of a Medicaid Managed Care population sought care in an ED more than once a year.

• The average use for this group was 5 visits per year…and not to the same ED

• Studies have shown that nearly 30% of US healthcare spending -- up to $300 billion each year -- is for treatments that may not improve health status, may be redundant, or may be inappropriate for the patient's condition¹.

• Recent claim that important clinical data missing in one in seven primary care visits. Physicians believe this loss results in delays or duplications 50% of the time.

Sources:
Data supplied by a Medicaid Managed Care Organization 07/2003-07/2004
Thompson, Brailer - “Decade for Health Information Technology: ….”
U.S. Census Bureau and J. P. Schachter, “Geographical Mobility: 2002 to 2003.”
Reaching Out to Other Venues of Care

- Your physicians and other clinical professionals working outside your institution require different information sets.
- Most physicians are self-employed, and 60% of them work in practices with two or fewer other physicians.
- Transitions in care impact your ability to provide care (out-patient, in-patient, home care, long-term care).
- A regional perspective may force you to re-think what “competition” means in your market.

We Share a Common Goal

- **Inform clinical practice**
  - Create incentives for EHR adoption
  - Reduce risk of EHR investment
  - Promote EHR diffusion in rural & underserved areas

- **Connect clinicians**
  - Foster regional collaborations
  - Develop a national health information network

- **Improve the health of populations**
  - Encourage use of Personal Health Records
  - Enhance informed consumer choice

- **Involve consumers**
  - Unify public health surveillance architectures
  - Streamline quality and health status monitoring
  - Accelerate research and dissemination of evidence

*The NHII is “a comprehensive knowledge-based network of interoperable systems of clinical, public health, and personal health information that would improve decision-making by making health information available when and where it is needed.”*

But Our Initial Steps May Differ

• Secure Networks – adopted by some IPAs and regions. Focus on communications, e-prescribing
• Service-Specific infrastructure – based on claims engines or e-prescribing
• Employer/Community Models – take a comprehensive view starting with compensation by payers to those who use HIT or adopt clinical programs requiring HIT
• Provider-Specific Networks – Hospitals and large clinics first, then expand to payers, consumers
• Consumers – consumer-driven models associated with specific plans or delivery organizations
Value: Be Conservative and Take Multiple Perspectives

**Providers**
- Timely access to relevant data for improved decision making
- Rapid access -- anywhere, anytime
- Reduced clerical and administrative costs
- More efficient and appropriate referrals
- Increased safety in prescribing/monitoring compliance; alerts to contraindications
- Better coordinated care
- Potential additional revenue sources (e.g. preventive care)
- Enhance revenue through decrease in rejected claims

**Public Health Agencies**
- More comprehensive data
- Greater participation by physicians
- Easier integration of information from disparate sources
- Early detection of disease outbreaks or cases that suggest a local epidemic
- Outcomes analysis
- Bio-terrorism preparedness

**Payers**
- Improved customer service
- Improved disease and care management programs
- Improved information to support research, audit and policy development

**Patient**
- Improved quality of care through better informed caregivers
- Safer care
- Decreased cost of care

**Pharmacies/PBMs**
- Reduced administrative costs
- Increased medication compliance

**Commercial Labs**
- Enhanced public relations; exclusive contracts
- Decreased write-offs from unnecessary tests
- Decreased EDI costs; increase efficiencies

**Overall Value**

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**Volunteer eHealth Initiative**
**Integration == Better Life**

*The infrastructure being established will create opportunities to improve data collection and aggregation processes with the public health arena*

<table>
<thead>
<tr>
<th>Public Health Area</th>
<th>Opportunities</th>
</tr>
</thead>
</table>
| Immunizations                                  | • Increase automation and volume of data collected in the State Immunization database (TWIS) from provider sources through integration with the Volunteer eHealth Initiative RHIO  
   • Provide physicians with ability to see complete immunization records within RHIO to limit number of applications to access |
| Newborn Screening and Lead Poisoning Prevention | • Difficult to submit or receive information. Today must use mail or telephone to request information  
   • Secure access through the internet can improve value |
| Child Health                                   | • Integration of the immunization, newborn screening, genetics, and lead poisoning data to provide a holistic view of clinical history  
   • Enables improved continuity in care for patients who change physicians or move to a different area of the state |
| Disease Surveillance                            | • May simplify reporting infectious diseases to appropriate agencies  
   • Potential to improve early identification of public health threats |
| Home Visitation Programs                       | • More integrated information will ease in transitions of care from hospital to home and support other home visitation programs |

Source, Vanderbilt & Accenture Study
Few Data are Required to Address Many Clinical Challenges

Outcomes evaluated
Bold Items indicate priorities

• Asthma
• Group B Strep
• Cancer Screenings
• Diabetes Management
• Immunizations
• Hypertension
• Post MI care
• Congestive Heart Failure
• Sickle Cell Pain Management
• Depression
• Medication Management
• Reducing Redundant Testing
• Well Child Screening
• ER Utilization

Data Elements
Detailed requirements for each element to be defined
Bold items indicate greatest significance

• Medications
• Problem list
• Lab Results
• Radiology Results
• Cardiology Results
• Weight
• Allergies
• Encounter data
  • Where was patient seen
  • When was patient seen
  • What was done during visit

Source, Vanderbilt & Accenture Study
But How Difficult is it to Acquire These Data?

- Commercial laboratories
- Office laboratories
- Patient demographics
- Prescription drug data
- Allergies
- Problem Lists
- Radiographs
- Electrocardiograms
- Printed reports
- Patient-provided information
RHIOs and HISPs

Regional Health Information Organization
- Multi-stakeholders organizations enable the exchange and use of health care information for the general good
- Business organization
- Focused on the region

Health Information Services Provider
- Technical services organizations
- Can contract with a range of organization types including RHIOs
- Focused on the technologies

Source: Interoperability Consortium: An Alliance of Accenture Cisco CSC Hewlett-Packard IBM Intel Microsoft & Oracle, *Development and Adoption of a National Health Information Network*, January 18, 2005
Lessons Learned: the Need for RHIOs

- A community emphasis requires a new organizational framework focused on the individual and requiring the participation of all providers of care for that individual
  - Identity – who is Dr. X? Who is patient Y?
  - Authority – can Dr. X. see my records?
  - Standards – can systems “talk” to each other?
  - Certification – do systems use standards?
  - Quality – am I getting the care I need?
  - Legal – Stark, HIPAA, safe harbor compliance
Lessons Learned: HISPs

RHIOS in turn Require Health Information Services Providers (HISPs)

• Provide technical services to a RHIO
• Assure evolution and compliance
• Can work across RHIOs or other organizations to gain economies of scale
• Work upward – to the national level – to assure that the technology standards employed will communicate with others as individuals move from one RHIO to another.
All parties recognize that health care is regional and that a significant number of individuals seeking care in Tennessee are residents of one of the 8 bordering states. Note – other regional initiatives and state-wide HIT initiatives funded by AHRQ or HRSA in the state include UT Memphis, UT Knoxville, Vanderbilt, and Kingsport-Johnson City.
Establish trust and architecture; then expand

Begin with the end in mind. . .

**Phase:**
- **Launch**
  - **Functionality:** Infrastructure established
  - **Participants:** Establish commitment and trust
- **Build Momentum**
  - **Functionality:** Layer on additional functionality
  - **Participants:** More participants added (e.g. additional providers, rural expansion, public health)
- **Realize Full Vision**
  - **Functionality:** Expanded to address information needs from the point of care to public health
  - **Participants:** All/majority of potential participants involved

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“Valuable but much easier”

“More valuable but much more difficult to begin”

Amount of Information Exchanged

**Time**

Higher

Lower

Lower

Higher

Higher

**Patient Care Value**

**Amount of Information Exchanged**

**“Valuable but much easier”**

**“More valuable but much more difficult to begin”**

“**It is more important to first build the highway than the hotel or fast food place,**“ Clem McDonald, MD, FACP, Regenstrief Institute, Indianapolis, IN.
Technology: Low Entry Costs and then Evolve

Volunteer eHealth Initiative Data Bank

Health Care Entity Internal Systems

Volunteer eHealth Initiative Data Bank

Identifier Information
- Patient Identifier numbers
- Facility identifier
- Patient name
- Date of birth
- Gender
- Social security number

Data
- Demographics
- Lab
- Transcribed reports
- Pharmacy
- Orders

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Person 1
Composite Information
Link 1
Link n

Person 2
Composite Information
Link 1
Link n

Person 3
Composite Information
Link 1
Link n

Person n
Composite Information
Link 1
Link n

Exchange receives data & manages data transformation
- Participation Agreement
- Patient Data
- Secure Connection
- Batch / Real-Time
- Mapping of Data
- Parsing of Data
- Standardization of Data
- Queue Management

Organizations will have a level of responsibility for management of data
- Issue Resolution
- Data Integrity
- Entities are responsible for managing their Data

Data bank compiles and aggregates the patient Data at the regional level
- Compilation Algorithm
- Security
- Authentication
- User Access

Data is published from data source to the exchange

"Pharmacy"
Publish Data

"Laboratory"
Publish Data

Publish Data

"Pharmacy"
Publish Data

Publish Data

Record Access Service

FAX Server

Web User

Printer

Volunteer eHealth Initiative
Value to a Participating Hospital

The overall benefit to the core healthcare entities has potential to reach $24.2 million*.

Assumptions

- Based on data obtained from Memphis Managed Care (TLC) and extrapolated for the remaining population
- Research factors are applied to calculate the benefits
- Deployment schedule is limited initially to EDs and Labor & Delivery; years four and five will extend to all healthcare providers
- Inflation and volumes remain constant

Financial Measures

<table>
<thead>
<tr>
<th>Financial Measures</th>
<th>Dollar Savings (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced inpatient hospitalization</td>
<td>$5.6</td>
</tr>
<tr>
<td>ED communication distribution</td>
<td>$0.1</td>
</tr>
<tr>
<td>Reduced IP days due to missing Group B strep tests</td>
<td>$0.1</td>
</tr>
<tr>
<td>Decrease in # of duplicate radiology tests</td>
<td>$9.0</td>
</tr>
<tr>
<td>Decrease in # of duplicate lab tests</td>
<td>$3.8</td>
</tr>
<tr>
<td>Lower emergency department expenditures</td>
<td>$5.6</td>
</tr>
<tr>
<td><strong>Total Benefit</strong></td>
<td><strong>$24.2</strong></td>
</tr>
</tbody>
</table>

*If data is exchanged across all facilities within the three-county region the overall benefit has potential to reach $48.1 million.
Volunteer eHealth Initiative

NPV - $4.3 Million (estimated)

Assumptions
- Based on data obtained on the core healthcare entities and Memphis Managed Care
- Research factors are applied to calculate the benefits
- Deployment schedule is limited initially to EDs and Labor & Delivery; years four and five will extend to all healthcare providers
- Inflation and volumes remain constant
- The costs to move and support the RHIO data center are not included in the five-year forecasts
- The RHIO support desk infrastructure is not established; Vanderbilt will provide this service
- Labcorp will not charge the project for their effort
- The average cost for a core healthcare entity for implementation and operation activities is $30,000 per year.

The State of Tennessee and the Core Healthcare Entities realize a higher financial gain when you consider the different stakeholder contributions.

<table>
<thead>
<tr>
<th>State of Tennessee</th>
<th>Core Healthcare Entities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payback Period = 2.7</td>
<td>Payback Period = 1.2</td>
</tr>
<tr>
<td>Return on Investment = 1.6</td>
<td>Return on Investment = 8.18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(Million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0</td>
</tr>
<tr>
<td>$2</td>
</tr>
<tr>
<td>$4</td>
</tr>
<tr>
<td>$6</td>
</tr>
<tr>
<td>$8</td>
</tr>
</tbody>
</table>

Net Financial Benefit ($ Million)

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Potential Benefit to a 600-bed hospital

Illustrative Example

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<th>Financial Measures</th>
<th>Dollar Savings (thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced inpatient hospitalization</td>
<td>$857</td>
</tr>
<tr>
<td>ED communication distribution</td>
<td>$12</td>
</tr>
<tr>
<td>Reduced IP days due to missing Group B strep tests</td>
<td>$30</td>
</tr>
<tr>
<td>Decrease in # of duplicate radiology tests</td>
<td>$1,489</td>
</tr>
<tr>
<td>Decrease in # of duplicate lab tests</td>
<td>$636</td>
</tr>
<tr>
<td>Lower emergency department expenditures</td>
<td>$600</td>
</tr>
<tr>
<td><strong>Total Benefit</strong></td>
<td><strong>$3,624</strong></td>
</tr>
</tbody>
</table>

Assumptions

- Licensed Beds: 600
- Radiology Procedures: 200,000
- ER Visits: 50,000
- Admissions: 20,000
- Births: 4,000
Develop a Realistic Budget and Discuss it

• Budget Breakdown

• Budget Assumptions
  - Resources are hired or subcontracted as the budget specifies
  - The cost estimates are approximate; after design the a more detailed estimate will be developed for the release implementation
  - The cost estimates do not contain contingency
  - The cost estimates do not include change management resources
  - The cost estimates do not include the effort incurred by the individual entities
  - G&A and overhead have been allocated across the categories within the budget
  - The Project Team category for year one includes the funding for the six-month planning effort

• Staffing Allocation

- Hardware includes computer and database hardware
- Software includes merge algorithm & standards software and system & database software
- Maintenance includes the budget for network and hosting services, enterprise PMI and StarChart maintenance (this is 15% of the hardware and software costs)
## Everyone Must Play a Part

### State
- Encourage information exchange coverage across the State
- Set standards and policies as required for statewide interoperability
- Work in collaboration with neighboring states
- Provide financial support as appropriate
- Ensure compliance with Federal Standards across projects
- Facilitate negotiation and data collection from sources that can benefit all regions (e.g., RxHub, SureScripts, National Lab Companies)

### Regional Information Exchange
- Facilitates collaboration among participating stakeholders
- Contains information from all participating stakeholders
- Coordinates data publication from stakeholders
- Provides neutral governance organization
- Sets and implements regional policy (e.g., security, authorization, privacy, and authentication)
- Identification management and support for regional patient identification
- Pursues opportunity to expand exchange capabilities such as patient portal access or decision support

### Participating Organization
- Agrees to participate in a regional information exchange
- Serves as a medical data source
- Publish information to the exchange and/or utilizes information from the exchange
- Supports Entity workflow
- Encourages use and adoption
- Governs decision making as it relates to the organization
- Identification management and support for organization patient identification

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**Volunteer eHealth Initiative**
Workflow: a Regional Perspective

- Can providers and others participate in a transition to an efficient, consumer-focused, regional approach while meeting their “inward” responsibilities?
- Can they identify ways in which they can work with their communities and our “competitors” to achieve a regional transformation in health care delivery?
- Can our health care systems evolve in this direction without major regulatory pressure?
- Can providers achieve these changes and remain solvent? (one person’s “savings” is another’s revenue loss)
- Is “transformation” possible without obsolescence in some sectors of the health care system?
- Can these transformations improve global changes to an extent not achievable by other means?
Transformational Change is our Heritage

- **Stagecoach**
  $1000 – 5 or six months
- **Sea**
  18,000 miles – months
- **Panama**
  6,000 miles – yellow fever
- **Train (1870)**
  $150 – 5 days – First Class!!