Measuring the Effectiveness of the Vermont Health Information Exchange in Improving Health Care Outcomes

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Agenda

• Purpose

• VITL Overview

• Section 1: Challenges and Opportunities

• Section 2: VITL Impact Assessment

• Section 3: Preliminary Results

• Section 4: Policy and Technology Investments
Purpose

What are we trying to measure?

...VITL’s partnerships with healthcare organizations
  - Expanding useful technology
  - Assisting with data management
  - Promoting and facilitating wide availability of clinical information in the community

Supporting Vermont’s Health Care Reform Goals
Why is this important? US/VT Health Care Delivery System Evolution

Acute Care System 1.0

- Episodic health care
- Lack integrated care networks
- Lack quality & cost performance transparency
- Poorly coordinated chronic care management

Episodic Non-Integrated Care

Coordinated Seamless Healthcare System 2.0

- Patient/person centered
- Transparent cost and quality performance
- Accountable provider networks designed around the patient
- Shared financial risk
- HIT integrated
- Focus on care management and preventive care

Outcome Accountable Care

Community Integrated Healthcare System 3.0

- Healthy population centered
- Population health focused strategies
- Integrated networks linked to community resources capable of addressing psycho social/economic needs
- Population-based reimbursement
- Learning organization: capable of rapid deployment of best practices
- Community health integrated
- E-health and telehealth capable

Community Integrated Healthcare

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Day 2: Track 3 – Measuring Care, Quality and Outcomes with Data
VITL Overview
VITL Overview

HIE
All acute care facilities and DHMC
FQHCs, 160 primary and specialty providers, VNAs, nursing homes
5 million clinical results/ month
1.2 million persons
Approximately 30,000 VITLAccess queries / month
96.3% cumulative opt in consent rate

PLUS

Health IT Client Services
Clinical workflow
Meaningful use
Security assessments
Interfaces

Technical – Data Quality – Population Health
Section 1: Challenges and Opportunities
Outcomes from Health Information Exchange: Systematic Review and Future Research Needs

- 2015 research report primary funding sources The Agency for Healthcare Research and Quality (AHRQ)
- “Conclusions: The full impact of HIE on clinical outcomes and potential harms is insufficiently studied, although evidence provides some specific support for benefit in reducing use of some specific resources and achieving improvements in quality of care measures. To advance our understanding of HIE, future studies need to use more rigorous designs, and be part of a coordinated, systematic approach to studying HIE. Going forward, HIE will become a more integrated part of health care delivery, and its evaluation needs to be focused on maximizing the improvements that HIE usage brings to overall clinical care.”
**HIE ROI Research (cont’d)**

**HIE Impacts**

- Improved ED care – reduced visit length; lower likelihood of imaging; average charges lower; lower likelihood of admission [1]

- Lab test – expected to decrease by 25% in patients of whom the RHIO’s database is being queried [2]

- HIE may reduce readmissions [3]

- Over 4 years [4]
  - 21% reduction in rate of ordering a specific set of high cost imaging specific studies (reduced radiation exposure)
  - 64% reduction in rate of ordering high cost lab studies

- “HIE was associated with decreased odds of diagnostic imaging ... and increased adherence with evidence based guidelines ...”[5]

- Accessing clinical data through the HIE in ED can reduce the number of orders for laboratory tests and radiology exams by 52% and 36% respectively [6]
Conclusions from Current Research

- HIE is valuable, but that value is difficult to quantify
  \[ \text{Value} = \frac{\text{Quality}}{\text{Cost}} \]
- Existing studies often conducted in ED and hospital settings, and focused on health care utilization

VITL is attempting to measure the impact at a systemic level.
  - Across health service areas
  - Several outcome variables
    - HEDIS & CMS quality measures
  - Several impact measures
    - Technology, data quality, community data accessibility
  - Longitudinal
Section 2: VITL Impact Assessment
Blueprint for Health Study

Linking to Blueprint results

- Study
  - Jones C, MD, et al. Vermont’s community-oriented all-payer medical home model reduces expenditures and utilization while delivering high quality care. Pop Health Mgmt: o;o 2015
  - Comparison between Blueprint practices with a Community Health Team and non-participant practices
  - Medicare, Medicaid and commercial claims data from 2008 to 2013.

- Results
  - “...the participant group reduced expenditures relative to the comparison group...”
  - “Relative to the comparison group, inpatient discharges and days were reduced by 8.8 / 1000 members...”
  - “...the participant group maintained higher rates on 9 of 11 effective and preventive care measures...”
VITL Link to Blueprint Activity

- Blueprint practices transmitting clinical summaries and patient demographics to Blueprint Registry
  [VITL interfaces]

- Primary care practices and Community Health Teams use clinical summaries and patient demographics for reporting and scheduling
  [CCD and ADT]

- VITL collaborates with Blueprint and ACOs on data quality

VITL infrastructure supports Blueprint operations:
Expenditure, utilization and preventive care
VITL HCO Partnerships

- Technical interoperability (technical maturity)
- Semantic interoperability (data quality maturity)
- Community healthcare activity (Information interchange)
Process maturity*

Legal and ethical processes (legality and performance maturity)

Community healthcare activity (Information interchange)
- VITLAccess
- Clinical queries
- Consents
- Client consulting
- Security risk assessment

Technical interoperability (technical maturity)
- 1- Inbound interface
- 1- Outbound interface
- 2+ Inbound interfaces
- 2+ Outbound interfaces
- HCO process maturity

Semantic interoperability (data quality maturity)
- Blueprint Sprint
- ADTs
- CCDs
- Standard terminologies

* Maturity: Demonstration of quality and performance excellence
Introduction to VITL Impact Assessment

Purpose

Demonstrate the value of health information exchange to State policymakers, administration officials, stakeholders, clinicians, citizens

Collaboration with the Blueprint for Health, VITL has developed a coordinated, systematic approach to studying HIE

- VITL has data from years of working with health care organizations
- Blueprint has been promoting Patient-Centered Medical Homes and developing Community Health Teams
Preventive Care Process
1. Order for HbA1c is placed with lab

2. Results are sent to the VHIE

3. Results are sent from the VHIE to the ordering Provider

4. Clinical summary is sent to the VHIE

5. Clinical summary is sent to the Blueprint Registry

6. Community Health Team pulls diabetes population report from the Blueprint Registry

7. CHT supports patient’s preventive care

8. Preventive care by CHT and Provider
Introduction to VITL Impact Assessment (cont’d)

Practice - Lab repurpose (local)

• Measure workflow and transaction interactions with provider staff
  o Review timesheets
  o Conduct interviews at selected HCOs.

• Identify financial and clinical outcomes

Patient - Impact assessment (global)

  o Measure level of engagement with the VHIE
    ▪ Technology – interfaces
    ▪ Data quality – Sprints, well formed CCDs, standard terminologies
    ▪ Community activity – VITLAccess, Client Services consulting
Section 3: Preliminary Results
## Practice - Lab results workflow repurposing

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sites surveyed (only those who responded that there was a transition)</td>
<td>34</td>
</tr>
<tr>
<td><strong>Current</strong> Survey sample significance</td>
<td>Survey site potential is 63; approximately 90% confident with margin of error 10%</td>
</tr>
<tr>
<td><strong>Universe</strong> of health care organization sites who did or could transition</td>
<td>149</td>
</tr>
</tbody>
</table>
| Organizations surveyed                                               | • Primary care
|                                                                      | • Specialist
|                                                                      | • Designated Agency (mental health)
|                                                                      | • Nursing home
|                                                                      | • Home health                                                        |
| Mean salary repurposed / year                                        | $5,438                                                               |
| Vermont projected (Current): Mean salary repurposed / year           | $342,594                                                              |
| Vermont projected (Universe): Mean salary repurposed / year          | $810,262                                                              |
Patient - Impact

Reduced expenditures, reduced utilization, increased patient preventive care related to technical maturity, data quality maturity and community healthcare activity

**Effect of HIT on Expenditures**

Adult Medical Home Population Model 1

Relative Effect of Variable on Expenditures, Excluding SMI

**EXAMPLE ANALYSIS**
Research in progress

- Radiology results workflow repurposing

- Additional impactful partnerships
  - Technical maturity
  - Standard terminologies
  - Client Services consulting on security risk assessments, workflow

- Transitions of care workflow improvements
Section 4: Policy and Technology Investments
Prioritizing Work Efforts / Informing Policy Decisions

What seems to be most impactful to expenditures and utilization reductions, preventive care?