eHealth in Utah:
Improving Patient Care Through Health Information Exchange

AHRQ Patient Safety and Health IT Annual Conference, June 2006
“From nearly anywhere in the world, we can withdraw money from our bank accounts, pay bills, apply for a mortgage, book airline tickets and even order groceries online. But more often than not, we can’t share an X-ray digitally from one hospital to another, even if they are on opposing street corners.”

Michael Leavitt, Secretary for the U.S. Department of Health and Human Services (Former Utah Governor)
Benefits of eHealth

• Improve access to care
  – Remote diagnosis
  – Long distance consultation

• Improve quality of care
  – Clinicians access complete patient information for better quality, continuity of care
  – Reduce errors
  – Decision support systems

• Reduce cost of care
  – Reduce unnecessary tests
  – Reduce administrative/reporting burden
  – Improving quality reduces overall cost of care
eHealth = Utah?
eHealth = Utah

• Goals:
  – Electronic medical records for all patients
  – Inter-connected information systems
  – Timely public health surveillance
  – Robust Regional Health Information Organization (RHIO)
Where We Are:

• Functioning, self-sustaining RHIO (the Utah Health Information Network - UHIN)
  – Statewide network
    • 90+% of all UT providers
    • All Medicaid health claims
  – Not for profit
  – In operation since 1993
  – Federated Community Model (all included)
    • Standards-based
    • No centralized data storage
UHIN: Linking Communities
From Southern Utah
And all points between...
Where We Are:

• **UHIN eCoverage**
  – 3rd Party payers’ claims (450+ payers)
  – Medicaid and Medicare
  – Hospitals (100%)
  – Physicians/clinics (85-90%)
  – Laboratories (100%)
  – Local health departments (100%)
  – Mental health centers (100%)
  – Chiropractics (90%)
  – Dentists (some)
UHIN Clinical Pilot Projects
(begining *now*)

- **Discharge summaries**
  - Hospitals to physicians
- **History and physical**
  - Physicians to hospitals; hospitals to physicians, referrals
- **Laboratory results**
  - Labs to physicians/pharmacies,
- **Medication histories**
  - Payers to physicians, hospitals, & pharmacies
Moving to ‘Clinical’ Exchanges

• Goal: Move health care into electronic health information exchange (HIE)
  – Fact: Majority of health care still uses paper
    • Allow pdf
  – Fact: Need to move to formatted messages

• Objectives:
  – Create an evolutionary EDI path that allows paper (via pdf) but encourages user to migrate to formatted files (HL7, NCPDP, etc.)
Where We Are:

- **USING** DATA for patient safety, quality reporting
  - Utah’s 2002 AHRQ grant
  - Quality Indicators
  - Samore, Bateman, et al., JAMA 2005
# 8th Leading Cause of Death

Leading Causes of Death and Estimated Medical Injuries That Contributed to Death: Utah, 2001

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Diseases of heart</td>
<td>2,875</td>
</tr>
<tr>
<td>2 Malignant neoplasms</td>
<td>2,304</td>
</tr>
<tr>
<td>3 Cerebrovascular diseases</td>
<td>867</td>
</tr>
<tr>
<td>4 Unintentional injuries</td>
<td>631</td>
</tr>
<tr>
<td>5 Chronic lower respiratory diseases</td>
<td>522</td>
</tr>
<tr>
<td>6 Diabetes mellitus</td>
<td>509</td>
</tr>
<tr>
<td>7 Influenza and pneumonia</td>
<td>412</td>
</tr>
<tr>
<td><strong>Medical injuries that contributed to deaths (estimate)</strong></td>
<td><strong>407</strong></td>
</tr>
<tr>
<td>8 Intentional self-harm (suicide)</td>
<td>316</td>
</tr>
</tbody>
</table>

### 3rd Leading Reason for Hospitalization

Leading Reasons for Hospitalization and Estimated Adverse Events (AEs) That Led to Admission Among 41 Utah Acute Care Hospitals: 2001

<table>
<thead>
<tr>
<th>Major Diagnosis Category (MDC)</th>
<th>Discharges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Pregnancy, childbirth and puerperium</td>
<td>50,445</td>
</tr>
<tr>
<td>2 Newborn and other neonates (perinatal period)</td>
<td>49,139</td>
</tr>
<tr>
<td><strong>AEs that led to admissions (estimate)</strong></td>
<td><strong>25,918</strong></td>
</tr>
<tr>
<td>3 Circulatory system</td>
<td>24,559</td>
</tr>
<tr>
<td>4 Musculoskeletal system and connection tissue</td>
<td>19,887</td>
</tr>
<tr>
<td>5 Digestive system</td>
<td>16,624</td>
</tr>
<tr>
<td>6 Respiratory system</td>
<td>16,123</td>
</tr>
</tbody>
</table>

Using Administrative Data for Detecting Adverse Events

Positive Predictive Values of ICD-9 Adverse Event Codes

- Misadventures: 77.4
- Adverse drug events: 64.9
- Device events: 56.8
- Surgical adverse events: 25.3
- Infections: 14.7

Clinical Decision Support & Appropriateness of Antimicrobial Prescribing: A Randomized Trial in Utah and Idaho -- Samore, Bateman, et al. JAMA, 2005
Respiratory infection

- Upper respiratory infection

Age Group:
- Adult (18+ years)

Signs and Symptoms

- Suspect strep throat
- Strep signs (check all that apply)
  - Temp > 101 degrees F or Hx
  - Exudate
  - Tender nodes
  - No cough or coryza

- Hx of rheumatic fever
- Documented household exposure (4 hrs close contact w/in 4 days of sx onset)
Providers using the algorithms more tended to prescribe fewer antibiotics for viral diseases...

![Graph showing the relationship between the number of times an algorithm was used and the percent of visits for which antibiotics were prescribed. The graph plots the percent of visits for which antibiotics were prescribed against the number of times the algorithm was used, with a downward trend indicating a decrease in antibiotic prescriptions as the algorithm is used more frequently.]
Where We Are:

- Public Reporting, community health information dissemination
  - IBIS-PH
  - MyHealthCare, SB132
Welcome to IBIS-PH; Utah's Public Health Data Resource

Welcome to Utah's Indicator Based Information System for Public Health (IBIS-PH). This site provides information on the health status of Utahns, the state of the health care system, and Utah public health activities. You can access published reports, indicator profile reports, and query health data directly. For an overview of the information available on this site, go to the "Contents and Usage" page.

The latest publications and data updates available on this site are listed below in the "Website Updates". The "News" section contains the latest web site functional changes and any IBIS-PH related news.

Website Updates

- New Publications
  - Tipping the Scales Toward a Healthier Population: The Utah Blueprint to Promote Healthy Weight for Children, Youth, and Adults (5-3-2006)
  - May Health Status Update: Uninsured in Utah 2005 (5-2-2006)
  - 2004 Health Status Survey Report Health Insurance Coverage (4-10-2006)
  - April Health Status Update: Measuring Depression Among Utah Adults (4-10-2006)

News (1-12-2006)

- Browser Based Font Sizes (1-12-2006)
  All IBIS-PH pages now use your browser's font size setting (typically the "View/Text Size" menu option) which allows the page's font size to be enlarged/reduced.

- Preferences for Query Pages (1-5-2006)
  Based on the Usefulness Survey responses it was clear that some users are not aware of some of the options that are available to them that controls how the query pages can be controlled. Please see the Query User Preferences page which shows the...
Statewide Adverse Events
Online Indicator

Rate of Misadventures per 100 Inpatient Discharges in Utah Acute Care Hospitals, 1999-2004

Statewide Adverse Events
Online Indicator

Rate of Adverse Drug Events per 100 Inpatient Discharges in Utah Acute Care Hospitals, 1999-2004

SB132 – Healthcare Consumer’s Report

- Use “nationally recognized standards”
- AHRQ Patient Safety and Quality Indicators
  - Birth trauma
  - Obstetric trauma with 3rd or 4th degree lacerations
    - Vaginal delivery with and without instrument
    - Cesarean delivery
  - In-Hospital Mortality for Heart Patient
    - Coronary Artery Bypass Graft (CABG)
    - Percutaneous Transluminal Coronary Angioplasty (PTCA)
    - Acute Myocardial Infarction (AMI)
    - Congestive Heart Failure (CHF)
MyHealthCare is designed to help consumers make informed decisions about their medical care.

View Utah Hospital Comparison Reports

Please select a report from list:  

New Consumer Report: Utah Hospital Comparison for Heart Surgeries and Conditions for Years 2002-2004

Hospitals  Health Plans  Long Term Care

Click on one of the above images to view available resources

Please be aware that any links to external Web sites are provided as a courtesy. They should not be construed as an endorsement by the Utah Health Data Committee. Click here to view the Utah Department of Health's disclaimer in its entirety.
Public Reporting on Quality and Safety

UTAH DEPARTMENT OF HEALTH

Utah Hospital Comparison

Heart Surgeries and Conditions for Years 2002 - 2004

Health Data Committee Publication

6/5/06  David N. Sundwall, MD

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Heart Failure Deaths, 2002-2004

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Patients</th>
<th>Actual Deaths</th>
<th>Expected Deaths</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utah Overall</td>
<td>10,152</td>
<td>4.57%</td>
<td>5.03%</td>
<td>***</td>
</tr>
<tr>
<td>Dixie Regional</td>
<td>626</td>
<td>4.8%</td>
<td>5.63%</td>
<td>**</td>
</tr>
<tr>
<td>LDS Hospital</td>
<td>1,192</td>
<td>4.61%</td>
<td>5.81%</td>
<td>***</td>
</tr>
<tr>
<td>McKay-Dee Hospital</td>
<td>756</td>
<td>4.50%</td>
<td>5.22%</td>
<td>**</td>
</tr>
<tr>
<td>Ogden Regional</td>
<td>325</td>
<td>2.46%</td>
<td>5.36%</td>
<td>**</td>
</tr>
<tr>
<td>Salt Lake Regional</td>
<td>299</td>
<td>4.01%</td>
<td>4.94%</td>
<td>**</td>
</tr>
<tr>
<td>St. Mark's Hospital</td>
<td>1,082</td>
<td>4.34%</td>
<td>5.11%</td>
<td>**</td>
</tr>
<tr>
<td>University of Utah</td>
<td>638</td>
<td>4.70%</td>
<td>4.54%</td>
<td>**</td>
</tr>
<tr>
<td>Utah Valley Regional</td>
<td>889</td>
<td>5.34%</td>
<td>4.85%</td>
<td>***</td>
</tr>
<tr>
<td>Veterans Hospital</td>
<td>568</td>
<td>4.23%</td>
<td>4.93%</td>
<td>**</td>
</tr>
<tr>
<td>Cottonwood Hospital</td>
<td>417</td>
<td>5.52%</td>
<td>6.83%</td>
<td>**</td>
</tr>
<tr>
<td>Davis Hospital</td>
<td>299</td>
<td>9.03%</td>
<td>3.85%</td>
<td>**</td>
</tr>
<tr>
<td>Lakeview Hospital</td>
<td>271</td>
<td>4.43%</td>
<td>4.73%</td>
<td>**</td>
</tr>
<tr>
<td>Mountain View Hospital</td>
<td>115</td>
<td>5.25%</td>
<td>4.44%</td>
<td>**</td>
</tr>
<tr>
<td>Pioneer Valley Hospital</td>
<td>293</td>
<td>3.41%</td>
<td>4.91%</td>
<td>**</td>
</tr>
<tr>
<td>Timpanogos Regional</td>
<td>176</td>
<td>5.68%</td>
<td>4.41%</td>
<td>**</td>
</tr>
<tr>
<td>Allen Memorial Hospital</td>
<td>36</td>
<td>0.00%</td>
<td>2.43%</td>
<td>**</td>
</tr>
<tr>
<td>Alta View Hospital</td>
<td>208</td>
<td>4.33%</td>
<td>8.61%</td>
<td>***</td>
</tr>
<tr>
<td>American Fork Hospital</td>
<td>231</td>
<td>5.63%</td>
<td>4.30%</td>
<td>**</td>
</tr>
<tr>
<td>Ashley Valley Hospital</td>
<td>106</td>
<td>2.83%</td>
<td>3.77%</td>
<td>**</td>
</tr>
<tr>
<td>Beaver Valley Hospital</td>
<td>75</td>
<td>0.00%</td>
<td>3.61%</td>
<td>**</td>
</tr>
<tr>
<td>Castleview Hospital</td>
<td>151</td>
<td>5.96%</td>
<td>4.84%</td>
<td>**</td>
</tr>
<tr>
<td>Central Valley Hospital</td>
<td>59</td>
<td>6.78%</td>
<td>4.76%</td>
<td>**</td>
</tr>
<tr>
<td>Fillmore Hospital</td>
<td>49</td>
<td>15.00%</td>
<td>3.42%</td>
<td>**</td>
</tr>
<tr>
<td>Garfield Memorial</td>
<td>51</td>
<td>0.00%</td>
<td>3.32%</td>
<td>**</td>
</tr>
<tr>
<td>Gunnison Valley Hospital</td>
<td>45</td>
<td>2.22%</td>
<td>1.81%</td>
<td>**</td>
</tr>
<tr>
<td>Jordan Valley Hospital</td>
<td>163</td>
<td>7.36%</td>
<td>4.50%</td>
<td>**</td>
</tr>
<tr>
<td>Kane County Hospital</td>
<td>41</td>
<td>2.44%</td>
<td>1.71%</td>
<td>**</td>
</tr>
<tr>
<td>Logan Regional</td>
<td>283</td>
<td>2.83%</td>
<td>4.04%</td>
<td>**</td>
</tr>
<tr>
<td>Mountain West Hospital</td>
<td>167</td>
<td>2.99%</td>
<td>5.41%</td>
<td>**</td>
</tr>
<tr>
<td>San Juan Hospital</td>
<td>42</td>
<td>0.00%</td>
<td>2.35%</td>
<td>**</td>
</tr>
<tr>
<td>Sanpete Valley Hospital</td>
<td>54</td>
<td>0.00%</td>
<td>5.52%</td>
<td>**</td>
</tr>
<tr>
<td>Sevier Valley Hospital</td>
<td>133</td>
<td>5.26%</td>
<td>4.61%</td>
<td>**</td>
</tr>
<tr>
<td>Uintah Basin Hospital</td>
<td>67</td>
<td>5.97%</td>
<td>1.82%</td>
<td>**</td>
</tr>
<tr>
<td>Valley View Hospital</td>
<td>106</td>
<td>1.89%</td>
<td>4.10%</td>
<td>**</td>
</tr>
</tbody>
</table>

Utah overall did better than expected compared to similar hospitals in the U.S.

For more information, please visit: http://health.utah.gov/myhealthcare
Impact on Hospital Patient Safety Efforts

• Conducted chart reviews to verify the injury cases

• Improved coding accuracy

• Utah Hospital Association takes proactive approach to public reporting
How We Got Here:

• UT eHealth benefited from projects in environment…
  – Secretary Leavitt (former UT Governor) was proponent of eGovernment while in Utah
  – 2002 Olympics
  – Innovations of private partners
    • Intermountain Healthcare’s sophisticated systems
  – Medical Informatics Program at the U of U
How We Got Here:

• …and from specific initiatives
  – UHIN
  – Medicaid involvement
    • Require all Medicaid providers statewide to submit claims through UHIN
    • Roles in standards setting, UHIN
  – HealthInsight, DOQIT
  – Digital Health Services Commission
  – Health Data Committee
Lesson Learned: Community-Based

• UHIN

  – Community-Based Development
    • Messaging standards established, agreed-upon by community members
    • Information/report content designed by community members
    • Community involved in setting priorities
Lesson Learned: Incremental Change

• Evolution vs. Revolution
  – “Store and forward” is small modification to existing system
  – Primarily moving existing exchanges to electronic exchanges (few privacy challenges)
Lesson Learned: KISS (Keep It Simple S…)

• Goals
  – Simplify routine document exchange
  – Send/receive documents through a single portal

• Most traffic is local: RHIO
  – Don’t need to connect to the world to scratch 90% of the itch
Lesson Learned: Create Value

• Greater value to the end user leads to greater adoption

• Create compelling, immediate administrative value to end user
  – Reduce cost and hassle of routine data exchanges
  – Value will drive adoption
What Hasn’t Worked (yet):

• Electronic laboratory reporting of notifiable diseases
  – Complex logic
    • serology versus culture
    • positive lab result is NOT diagnosis
  – Standards
    • Commercial labs have proprietary standards for message format and content
    • National HL-7 standards not yet ready for prime time
    • “Free text” used, data not coded, not machine-readable
Implications for State / National Collaboration:

• National standard for privacy policies
  - NGA initiative – HISPC,
    • $ by AHRQ, contract with RTI

• National patient safety policy
  - NGA “Policy Academy” – promote development of state “patient safety policy teams”
    • $ ARHQ, contract with NGA

• Federal / State – conflicting perspectives:
  how sometimes we can’t work with the federal gov’t. – the Biosense example
Implications for Public Health

• Don’t let Public health be an afterthought
• Public Health “Value Added”
  – Giving information back to the community
    • Disease alerts, ‘disease de jour’
    • Decision support for management of public health problems (infection control, lead screening, tobacco cessation)
    • Automated tools for quality improvement
    • Accountable point of contact for community or political concerns
Implications for Public Health

• Public Health Opportunities -- Use eHealth practices to leverage what we’re trying to achieve
  – Assessment (monitor health status)
    • faster, more complete reporting
    • ambulatory care piece
  – Assurance (quality, safety, and access)
    • quality indicators
  – Policy Development
    • data for evidence-based decision making
Final Thought

• Why isn’t this a public utility?