Leveraging Information to Lead Health System Organizations

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University of Utah Hospitals & Clinics
Salt Lake City, Utah

Learning Objectives

- Describe how organizations are using macro and micro data to drive decisions.
- Discuss what analytics mean in today's health care arena.
- Apply business intelligence to the analysis of data.

University of Utah Hospitals & Clinics

- 4 Hospitals
- 11 Neighborhood Health Centers
- 200 Medical Specialties
- 1,000 Board-Certified Physicians

What Is Our Challenge?
2012 US Healthcare Expenditures per Capita

State Rankings of Healthiness v. Cost

Facing Up to Variability of Quality & Cost

Costs by Age Categories

The Problem: Current Growth Rate

The Fiscal Gap
Is There a Solution?

Is your system acquiring other hospitals and/or physicians?

a. Yes
b. No
c. I don’t know

Is your system focusing on population health initiatives?

a. Yes
b. No
c. I don’t know

Is your system participating in any insurance risk programs?

a. Yes
b. No
c. I don’t know

Is your system focused on cost control more than quality improvement?

a. Yes
b. No
c. Equal emphasis
d. I don’t know

Population Percentile Ranked by Health Care Spending

Concentration of Health Spending in the U.S., 2004

Top 1%: 23%
Top 5%: 49%
Top 10%: 64%
Top 15%: 74%
Top 20%: 80%
Top 50%: 97%
Bottom 50%: 3%
5 Solutions?

- Maintain Health
  - Exercise and Diet
- Disease Prevention
  - Immunization, Unhealthy Practices
- Effective and Efficient Care
- Chronic Disease Management (50% of cost on 5% of patients)
- Societal Choices

5 Solutions?

- Maintain Health
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- Societal Choices

Where is the Government’s Focus?

The Game Changers

- American Recovery and Reinvestment Act of 2009 (The “Stimulus”)
  - Requires Meaningful Use of Health Information Technology
- Requires Protection and Affordable Care Act of 2010 (Obamacare)
  - Medicaid Expansion
  - Insurance Exchanges
  - High Deductible Health Plans
  - Guaranteed Issue of Health Insurance, Regardless of Pre-Existing Condition
  - Minimum Essential Benefits (Prevention, Maternity, Mental Health)
- Budget Control Act of 2011 (The Sequester)
  - Reduces Medicare Payments to Hospitals, to Help Reduce the Federal Budget Deficit
- American Taxpayer Relief Act of 2013 (The Fiscal Cliff)
  - Reduces Medicare Payments to Hospitals, to Avoid Tax Increases

The Market is Changing...

- We are being asked to deliver greater value
  - Improved clinical outcomes
  - Improved experience of our patients
  - Lower cost
- We are being asked to care for the health of a population
- Payment systems and methodologies are changing... rewarding those who accept risk and deliver value
- We are being asked to increase funding in support of the academic mission as other sources of funding are diminished

Healthcare Inflation Continues to Outpace National Inflation

So What is Reform Really About?

- Healthier Population
- Lower Use
- Lower Prices
- Higher Quality

Is your institution increasing costs at a slower rate than CPI?

a. Yes
b. No
c. I don’t know

Cost
Total Expense per CMI Adjusted Discharge

Foundational Problem: Measuring Value

“... A fundamental and largely unrecognized problem: We don’t know what it costs to deliver health care to individual patients, much less how those costs compare to the outcomes achieved.”

“Understanding costs could be the single most powerful lever to transform the value of health care.”

- Robert S. Kaplan & Michael E. Porter

Is your organization’s quality of care better than average?

a. Yes
b. No
c. I don’t know

Is your organization’s cost of care better than average?

a. Yes
b. No
c. I don’t know
### The Role of Information in Decision Making and Moving the Organization

**Starting Point**
- Do you have a clear vision of where you are going?

**Value Equation**

\[
V = \frac{Q + S}{C}
\]

- Do you clearly understand how you are currently performing?

**The Role of Information is to Help You Understand Where You Are, Assist You in Making the Best Decisions and Reveal Your Progress Toward Your Vision of the Future**
Current State of BI

Since June BI User Group:

• Users >419 +262 (121%)

• Universes Prod: 27 +13 (93%)

• Reports 5,900 +4,722 (399%)

Universes in Production

General Ledger 01
General Ledger 02
Value Driven Outcomes
Meaningful Use
Appointment and Schedules
PB Accounts
PB Anesthesia
PB Transaction
PB Front Collection
Clinical
UHC Core Measures
 encounter
Competitive Market
AR Aging

FY14 Operational Strategy

• Purpose
  – Track progress toward operational goals

• Features to highlight
  – Navigation
  – Interactivity

Clinical Drill Analysis

Click MRN to Drill to Patient Profile
Click Vitals to Drill to Vitals Detail

Meaningful Use

• Purpose
  – Provide required reporting to Chairs, Administrators, and Physicians on Meaningful Use requirements

• Universe
  – Meaningful Use

• Features to Highlight
  – Report bursting
  – Filter bar

Thrombosis

• Purpose
  – Report on Major Bleeding events and protocols

• Universe
  – Clinical
Value Driven Outcomes

Value Driven Outcome Overview

REPORTS AND DASHBOARDS

- Clinical Data Sources
- Financial Data Sources
- Clinical and Financial Data Marts
- Quality & Outcome Rules
- Encounter-Level Costs
- Encounter and Patient-Level Quality and Outcomes
- Cost Allocation Methods

Example: Emergency Appendectomy, 3.12 LOS

Emergency Department
- Labor Supplies
- Medical Cost
- Operating Room
- Other Services
- Surgical ICU
- Step-down and Floor Units
- Total Cost of Providing Patient Care

Drilling into the Cost

- Professional Cost Allocations

Cost Source: 5 Depts

Cost Source: 16 Orgs

Professional Cost $X.XXX.XX

Example: Emergency Appendectomy (47.01 Laparoscopic Appendectomy), 3.12 Clinical LOS

<table>
<thead>
<tr>
<th>Description</th>
<th>Code</th>
<th>Qty</th>
<th>Cost</th>
</tr>
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<tbody>
<tr>
<td>DR. RADIOLOGY CT ABD/Pelvis w/Contrast HR</td>
<td>XX</td>
<td>XX.XX</td>
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<tr>
<td>DR. RADIOLOGY GL</td>
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<td>XX.XX</td>
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<td>DR. RADIOLOGY HR</td>
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<tr>
<td>DR. SURGERY Postop FU HR</td>
<td>XX</td>
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<td></td>
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<tr>
<td>DR. SURGERY SBSQ HOSPITAL CARE/DAY HR</td>
<td>XX</td>
<td>XX.XX</td>
<td></td>
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<tr>
<td>DR. SURGERY CRITICAL CARE ILL/INJURED HR</td>
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<tr>
<td>DR. NEUROLOGY ECG Routine HR</td>
<td>X</td>
<td>XX.XX</td>
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<tr>
<td>DR. NEUROLOGY ED-HIGH SEVERITY HR</td>
<td>X</td>
<td>XX.XX</td>
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<th>Cost Source: 5 Depts</th>
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<td>Anesthesiology</td>
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<tr>
<td>Surgery</td>
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<td>Neurology</td>
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<td>Radiology</td>
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| Professional Cost $X.XXX.XX |
Facility Cost Allocations

Value Driven Outcomes Analytics

Value Driven Outcomes Reporting

• Physician Comparison, Cost per Case

Drill to Detailed Cost Information

Engagement is a Key Success Factor

Facility Cost $X,XXX.XX

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VDO Care Processes

Sponsor: Chair/Chief
MD Leader
Interdisciplinary Team
Dedicated Support
90-Day Timeline

Value Equation

\[ V = \frac{Q}{(QUALITY)} + \frac{S}{(SERVICE)} - \frac{\$}{(COST)} \]

Examples

Joint Replacement

Physician Lead: Chris Pelt, MD
Sponsor: Charles Saltzman, MD
Multidisciplinary Team:
Nursing
Physical Therapy
Ambulatory Clinic
Case Management
Value Engineering
Decision Support
EDW
Quality & Patient Safety

Perfect Care Composite: Joint Replacement

<table>
<thead>
<tr>
<th>National Metrics</th>
<th>Local Metrics</th>
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</thead>
<tbody>
<tr>
<td>30 day readmission</td>
<td>Early mobility</td>
</tr>
<tr>
<td>8 SCIP measures</td>
<td>ED visit within 90 days</td>
</tr>
<tr>
<td>35 HAC/PSI metrics</td>
<td>Discharge unit</td>
</tr>
<tr>
<td></td>
<td>Anesthesia technique</td>
</tr>
</tbody>
</table>
Hospitalist Lab Utilization

Opportunity: Average direct cost for labs are high
- Patients do not like laboratory draws
- 30-50% of labs deemed to be unnecessary
- 20-40% reduction obtainable without change in mortality or readmissions

• Goal
  - Reduce average direct cost per discharge for hospitalist labs by 30%
• Measures
  - Average direct cost per discharge
  - CMI adjustment as required
  - Monthly feedback at hospitalist meeting regarding costs per discharge

Action Plan
First Year Savings
$452,000/year

Spine Surgery Improvements

- Established a University-wide Ortho, Neuro, and PMNR Spine Governance Group
- Establishing a single market facing presence to include both Ortho and Neuro
  - i.e. One website, One phone number, One marketing campaign
- Pricing agreement with reduced number of vendors
- More lumbar and cervical fusions and less scoliosis (multi-level fusions)
**Combined Spine Volume**

**Combined Spine Margin**

**Combined Spine CM%**

**Exceptional Patient Experience**

**Exceptional Patient Experience**

**Patient Satisfaction**

Patient satisfaction scores among the BEST IN THE U.S.

“Every medical system in the country should embrace online reviews.”
Vent 48 Total Value Results

<table>
<thead>
<tr>
<th>Basis</th>
<th>Savings Rate</th>
<th>12 mo. total</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,747 fewer vent hours</td>
<td>$10.99 per vent hour</td>
<td>$96K</td>
<td>For UHPP Only, not in total</td>
</tr>
<tr>
<td>Regression analysis:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vent Hours (\rightarrow) DC</td>
<td>$37.22 per vent hour</td>
<td>$325.6K</td>
<td>Wrongly assumes LOS is independent of Vent hours</td>
</tr>
<tr>
<td>1458 fewer LOS days</td>
<td>$88.21 per vent hour</td>
<td>$771.6K</td>
<td>Vent to LOS correlation not as strong as Vent to DC correlation</td>
</tr>
<tr>
<td>Capacity Created by 1458 acute days</td>
<td>$1117 per acute day</td>
<td>$1,628.4K</td>
<td>Capacity Creation</td>
</tr>
<tr>
<td>18 fewer VAP cases</td>
<td>$23.6K per VAP case</td>
<td>$425K</td>
<td>Cost Avoidance: Based on difference in DC</td>
</tr>
<tr>
<td>Total</td>
<td>$1117</td>
<td>$3,151K</td>
<td></td>
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</table>

How Can Pharmacy Add More Value?

- Alignment – Value Equation
- Quality – Competitive Outcomes
- Employee Effectiveness – Simplify, Consistent
- Clinical Effectiveness – Process Redesign
- Financial Effectiveness – Leverage Pharmacy

The Role of Pharmacy
Medication Reconciliation

• Program
  – Inpatient pharmacy review of all medications prior to discharge

• Results
  – Pharmacist called provider to address a medication error 40-50% of the time, 90-100% at HCH
  – Decreased readmission rate in CHF patients by 39% when added weekend coverage
  – Improved patient satisfaction
    • Talked with pharmacist about medications 71% to 82%
    • Wait time for discharge medications 73% to 84%

Outpatient Drugs to Inpatients

Just Ask the CMO

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Inpatient Drug Expense (Restricted Medications)</th>
<th>Inpatient Revenue Lost (Restricted Medications)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY10</td>
<td>$475,000</td>
<td>$1.3 million</td>
</tr>
<tr>
<td>FY11</td>
<td>$85,000</td>
<td>$240,000</td>
</tr>
</tbody>
</table>

• Initiative reduced drug expense
  – Limiting dispensing of restricted medications in inpatient setting
  – Maximize 340b purchases

Central Refill Authorization
Central Refill Authorization Utilization

Opportunity: Improve timeliness and efficiency of refilling prescriptions
- Current process requires more FTEs
- No standard process for refill authorization
- Current workflow takes clinic staff away from patient care

• Goal
  - Create central refill authorization center
  - Take over refill request from clinic pharmacies
• Projected benefit
  - $300,000 – Salary and benefits
  - Increased clinic staff availability
  - Decreased waiting time for refills
  - Decreased refill request to providers

Anesthesia

“Green Anesthesia” 6-Month Post Award Review
Isoflurane & Desflurane Spend: July 1, 2009 – December 31, 2011

Understanding

The Fiscal Gap
Unfunded federal obligations, 2014

Social Security $7.7 trillion
National Debt $17.4 trillion
Medicare $38.7 trillion

Total (as a net present value) = $63.8 trillion+

2012 US Healthcare Expenditures per Capita
Similar Life Expectancy

Source: Brent C. James, M.D., M.Stat. Executive Director, Institute for Health Care Delivery Research Intermountain Healthcare Salt Lake City, Utah

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State Rankings of Healthiness v. Cost

State Rankings of Healthiness v. Cost

"The Salt Lake City benchmark results in the greatest estimated reduction in acute care hospital spending. If, over the four years of our study, hospital utilization rates had been at the level of Salt Lake City, Medicare spending for inpatient care would have been reduced by 32.4%.”


Clear Vision of the Future

\[ V = \frac{Q + S}{S} \]

(Quality) (Service)

(Cost)

Understanding is the Key

There is a way to do it better – find it.

- Thomas Edison

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