HEALTHCARE Analytics
SYMPOSIUM & EXPO

July 24-25, 2012
Hyatt McCormick Place | Chicago, IL

www.healthdatamanagement.com/conferences/HCS
Using Data to Yield High Impact Business Intelligence

Wednesday, July 25, 2012

Brent J. Estes
President and CEO, Rush Health
About Rush

Rush University Medical Center

• 673 Beds
• 36,000 admissions
• 391,700 outpatient visits
• 32,000 surgeries

Rush University

• 2,000 Students: Medicine, Nursing, Allied, and Business
• $138 million in research expenditures (2012)

Rush Health

• 205,101 outpatient visits (2012)

Full Epic Enterprise Suite

Rush System for Health
Focus on Quality and Outcomes

**Rush University Medical Center**
- US News top hospital in 10 programs
- Leapfrog Top Hospital
- Nursing Magnet (1st all adult hospital in IL)
- UHC Top Hospital in Quality and Accountability
- Most Wired Hospital for past 10 years

**Rush Health**
- NCQA Certified Credentials Verification Organization since 2004 (delegated credentialing)
- NCQA Certified in 5 Disease Management Programs since 2006
- PQRS Reporting Registry with CMS since its inception in 2007
- NCQA Patient Centered Medical Home – Level III for 7 Physician Practices
"Our mission is to integrate and coordinate high quality, patient-focused, cost-effective healthcare products and services meeting the needs of the patient, employer community, and provider."
Business Intelligence Needs

Support Clinical Integration & Population Management

- Support Patient Care
- Improve Clinical Outcomes
- Monitor Performance for 3rd Parties (Payers, Leapfrog, etc.)
- Monitor Network “Health”, Growth and Performance

Support Payer Contracting Arrangements

- Track Payer Compliance with Contract Terms
- Manage Global Contracts
- Manage Pay-for-Performance Arrangements

Support Employer Outreach as Growth/Branding Strategy

- Understand Employer Mix
- Understand Employer Population and Utilization
Data Challenges in Our Environment

- Building interfaces across many platforms
- Consistency across sources / decentralized control
- Churning / changing of systems
- Managing load cycles
- Linking patient across multiple sites of care
- Master Data Management and Data Steward Engagement
- Implementing complex meta-data rules / processes to address data quality and other data limitations
- Incomplete data (need more clinical data such as EMR)

#1 Issue: Integrating Multiple Sources
Master Patient Index

**Goals of MPI**

- Link a patient’s transactions by one Identifier (the MPI)
- Create & maintain patient’s “golden record”
- Add other attributes to the patient (e.g. clinical conditions)

**Impact of MPI**

- Create a record of unique patient care across network
- Facilitate chronic disease management by providing data tools
- Achieve CPI targets and P4P goals
## Master Patient Index Implementation

### Get Clean

- **Before:**
  - 1.7 Million Patient Records
- **After:**
  - 650K Unique Patients
- **Average:**
  - 5 ID’s / Patient
- **Manual Validation,** set confidence level

### Stay Clean

- **Weekly Loads**
  - Match against existing cross-table
  - Currently 1.06 Million Patients

### Monitor

- **Audit matches**
- **Twins and other complexities**
- **Validation**
Benefits of Integrated Data Platform

**Data Management**
- Common Patient Identifier
- Common Master Data
- Conformed File Interface

**Business Management**
- Consistent Reporting
- Single Source of Truth
- Common Revenue Cycle Process

**Patient Care**
- Shared Clinical Data
- Improved Efficiency
- Decreased “Leakage”

**Physician Relations**
- Decreased Infrastructure Costs
- Incentive Opportunities Maximized (ARRA/PQRS)
- Integrated Medical Staff

When Coupled with Business Intelligence Acumen, Different Questions can be Asked – And Answered
Population Management Asks Different Questions

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Full Epic Enterprise Suite

Rush System for Health

Population Analysis takes into account the entire network and all services provided to each patient over time.

- How many unique patients do we serve?
- What are their conditions and outcomes?
- How many of our patients are “active”?
- How many of our patients are new to Rush?
- Cost / Profitability per patient?
Patient Centered Medical Home Goals

- Improved Patient Outcomes
- Financial / Pay for Performance
- Achievement of NCQA Recognition
- Improved Patient and Physician Satisfaction
- Elevate the Status of Chronic Care at Rush and in the Community
Case Study: Population Management

Patient Centered Medical Home and Accountable Care concepts utilize this approach.

- By condition
- By utilization of services
- By lab results

Set Standards

- Target Outcomes
- Processes to Manage Outcomes
- Trending

Pay for Performance

- Retrospective sampling
- Population measures

Identify Patient Populations

Measure Performance

- By physician
- By practice
- By network

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Patient Centered Medical Home Focus

1. Recruitment & training of pilot practice physicians and staff
2. Practice Re-design to incorporate NCQA elements
3. EMR Revisions to improve data collection
4. Implement Nurse Care Coordinators to perform the new tasks
5. Patient Registry for case management
6. Coordination of multiple hospital/ambulatory functions
Developing Tools to Identify Populations

- By condition
- By utilization of services
- By lab results

Identify Patient Populations

Patient Outreach
- Medical Home
- Patient Mailings
- Classes

Measure Performance
- By retrospective sampling
- By population measures

Pay for Performance
- By network
- By practice
- By physician
Development and Roll Out of Patient Registry

Clinicians need the right information at the right time to support best patient outcomes

- Flexible
- Comprehensive

Developed Clinical Mart to Store Patient Condition Information

- CAD
- Diabetes
- Obesity
- CHF
- Asthma

Derived Key Outcomes from Across the Entire Network

- # ER Visits
- # Hospitalizations
- # Medical Home Visits
- # Other Outpatient Visits
- Seen in Last 6 Months
- High Cost ($20k-120K)
- Total Charges
- Lab Results and Date: LDL, HbA1c, etc.
- Last Provider Seen in Network
Solution: Patient Registry

Currently Targets Key Chronic Diseases: Diabetes, Asthma, CAD, CHF

Data Structure and Application Design Can Easily Define Numerous Populations
Patient Outreach to Manage Populations

Identify Patient Populations
- By condition
- By utilization of services
- By lab results

Patient Outreach
- Medical Home
- Patient Mailings
- Classes

Measure Performance
- By retrospective sampling
- By population measures

Pay for Performance
- By network
- By practice
- By physician
**Impact of the Patient Registry**

Clinicians have the **right information** at the **right time** to support best patient outcomes

- Flexible
- Comprehensive

Better understanding of population

- Can see all sites of care (RUMC vs. ROPH example)
- Frequency of ER and Hospitalizations
- Overall cost profile
- Medical Home and Other visits

Measuring Outcomes

- HbA1c and LDL Trending downward
- ER and hospitalizations
Results in Medical Homes

Changes in Use of Service
By Medical Home Apr 2011 to Apr 2012

16.08%
-7.73%
-10.17%

Medical Home Visits  ER  Hospital
Results in Medical Homes

Changes in Average A1C in DM
In Medical Homes Apr 2011 to Apr 2012

- 18% Reduction
- 84% with re-test showed improvement
Next Generation Analysis
Condition Specific Outreach: Diabetic Patients HbA1C Levels

- Patient Count by A1C Level
- Patient Count by Gender
- Total Charge Amount by A1C Level
- Patient Count by A1C Results
- Avg Visit Count by A1C Result
- Avg Charge Amount by A1C Result

<table>
<thead>
<tr>
<th>Patient ID</th>
<th>Patient Name</th>
<th>Patient Last Age</th>
<th>Gender Code</th>
<th>Chronic Conditions</th>
<th>Grand Total Charge Amount</th>
<th>Total Visit Count</th>
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</thead>
<tbody>
<tr>
<td>11175732</td>
<td>Peter Berg</td>
<td>68 M</td>
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<td>CAD Diabetes</td>
<td>9,494,095.80</td>
<td>34</td>
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<td>12375571</td>
<td>Shannon,</td>
<td>59 F</td>
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<td>CAD Diabetes</td>
<td>3,320,097.99</td>
<td>44</td>
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<tr>
<td>13593836</td>
<td>Josiah McGowan</td>
<td>36 M</td>
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<td>Diabetes Obesity</td>
<td>3,015,164.40</td>
<td>8</td>
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<td>11099815</td>
<td>Quinn Sparks</td>
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<td>CHF Diabetes</td>
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<td>13852774</td>
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<td>CAD CHF Diabetes</td>
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<td>11343214</td>
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<td>12673662</td>
<td>Nasmin Good</td>
<td>77 M</td>
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<td>CAD CHF Diabetes</td>
<td>2,159,658.22</td>
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</tr>
</tbody>
</table>
PCMH/Population Management Opens Doors

- Wellness
- Employer Relations
- Worksite Initiatives Central Intake
- Disease Management
- Case Management
- Expanded Readmission Management
Measuring Performance / Pay for Performance

Identify Patient Populations
- By condition
- By utilization of services
- By lab results

Patient Outreach
- Medical Home
- Patient Mailings
- Classes

Measure Performance
- Retrospective sampling
- Population measures

Pay for Performance
- By physician
- By practice
- By network
Performance Targets Set Annually and Vary for Member Providers

**Discipline Specific (Chronic and Preventive Care)**
- Individual / Practice / Network

**Physician Programs (PQRS, Continuing Education)**

**Physician Hospital Collaborative Programs (CORE measures for CHF, CAD, etc.)**

**Hospital Programs**
Pay for Performance Tracking (P4P Mart)

121 Measures overall coming from multiple sources

- 111 chart audit measures, including physician, practice & network targets/actual
- 2 PQRS-related measures
- 4 Physician-Hospital collaborative measures

Calculated distribution of funds by physician / practice

- Enter final earned P4P pool from payers
- Determine all eligible providers
- Calculate incentive pool per physician per measure
- Physician payments impacted by patients’ access

Show each provider their results

- Target and actual results for all their relevant measures
- Possible and earned/unearned dollars
### Example of PCP P4P Report Card

<table>
<thead>
<tr>
<th>Program</th>
<th>Measure</th>
<th>Goal</th>
<th>Physician Performance</th>
<th>Practice Performance</th>
<th>Network Performance</th>
<th>Earned Amount</th>
<th>Unearned Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma-PCP</td>
<td>Percent with Asthma Action Plan</td>
<td>40%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>50.00%</td>
<td>$0.00</td>
<td>$583.07</td>
</tr>
<tr>
<td>Asthma-PCP</td>
<td>Percent with Asthma Controller</td>
<td>92%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>90.00%</td>
<td>$583.07</td>
<td>$0.00</td>
</tr>
<tr>
<td>CAD</td>
<td>Percent with Antiplatelet Anticoagulant use</td>
<td>95%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>98.00%</td>
<td>$304.79</td>
<td>$0.00</td>
</tr>
<tr>
<td>CAD</td>
<td>Percent with LDL</td>
<td>85%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>90.00%</td>
<td>$304.79</td>
<td>$0.00</td>
</tr>
<tr>
<td>CHF</td>
<td>Percent with LDL Less Than 100</td>
<td>75%</td>
<td>75.00%</td>
<td>80.00%</td>
<td>78.00%</td>
<td>$304.79</td>
<td>$0.00</td>
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<tr>
<td>Diabetes</td>
<td>Percent with EF Less Than 40 and on ACEI or ARB</td>
<td>90%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>99.00%</td>
<td>$362.45</td>
<td>$0.00</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Percent with EF Less Than 40 and on Beta Blocker</td>
<td>95%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>98.00%</td>
<td>$362.45</td>
<td>$0.00</td>
</tr>
<tr>
<td>CHF</td>
<td>Percent with Ejection Fracture</td>
<td>95%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>97.00%</td>
<td>$362.45</td>
<td>$0.00</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Percent with BP Less Than or Equal to 130/80</td>
<td>95%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>97.00%</td>
<td>$362.45</td>
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<tr>
<td>Diabetes</td>
<td>Percent with Foot Exam</td>
<td>95%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>97.00%</td>
<td>$362.45</td>
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<tr>
<td>Diabetes</td>
<td>Percent with HbA1C</td>
<td>95%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>97.00%</td>
<td>$319.30</td>
<td>$0.00</td>
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<tr>
<td>Diabetes</td>
<td>Percent with HbA1C Less Than 7</td>
<td>95%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>97.00%</td>
<td>$319.30</td>
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<td>Diabetes</td>
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<td>97.00%</td>
<td>$319.30</td>
<td>$0.00</td>
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<tr>
<td>Diabetes</td>
<td>Percent with LDL Less Than 100</td>
<td>95%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>97.00%</td>
<td>$319.30</td>
<td>$0.00</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Percent with Nephropathy Exam or Treatment</td>
<td>95%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>97.00%</td>
<td>$319.30</td>
<td>$0.00</td>
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<tr>
<td>Diabetes</td>
<td>Percent with Optic Exam</td>
<td>95%</td>
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<td>97.00%</td>
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<tr>
<td>Preparative Health Care</td>
<td>Percent with Cervical Cancer Screening</td>
<td>95%</td>
<td>100.00%</td>
<td>100.00%</td>
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<td>Preparative Health Care</td>
<td>Percent with Colon Cancer Counseling</td>
<td>95%</td>
<td>100.00%</td>
<td>100.00%</td>
<td>97.00%</td>
<td>$319.30</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

**Total Earned Amount:** $5,659.07
**Total Unearned Amount:** $2,280.26
Next Steps and Challenges

Migration towards platform consistency
- Optional for physicians
- Competition for resources

Maximizing infrastructure value
- Align strategy and support
- Avoid redundancies

User engagement
- Integration of BI with business management
- Change management

Integration of third party data
- Diagnostics
- Affiliates
Benefits of Integration Extend Across All Services

<table>
<thead>
<tr>
<th>Clinical Performance</th>
<th>Payer Contracting</th>
<th>Employer Relations</th>
<th>Provider Services</th>
<th>Business Development</th>
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</thead>
<tbody>
<tr>
<td>Patient Mart/MPI</td>
<td>Modeling</td>
<td>Population Identification</td>
<td>Medical Home Capabilities</td>
<td>Leakage Analysis</td>
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<tr>
<td>PQRS Registry</td>
<td>Active Surveillance</td>
<td>Trend Analysis</td>
<td>Benchmarking &amp; Best Practices</td>
<td>Network Expansion</td>
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<tr>
<td>Performance Tracker</td>
<td>Remediation</td>
<td>Custom Engagement Programs</td>
<td>Practice Management Optimization</td>
<td>New Models of Payment</td>
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<td>Registries and Outreach</td>
<td>Performance Guarantees</td>
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<td>Strengthened Bond</td>
<td>ACOs</td>
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<td>P4P</td>
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<td>Direct Contracting</td>
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</tbody>
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Questions

Contact Information:

brent_j_estes@rush.edu