Using Six Sigma Concepts to Improve Revenue Cycle

Presented by
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Managing Director, Revenue Cycle
Centra Health – Lynchburg Virginia

March 4, 2014
STAY STRONG!

WEEKEND IS COMING SOON
BE CALM
STAY CALM
WORK HARD
FINISH IT
REPEAT
Agenda

- Introduction to Centra
- Foundations to success
- Leveraging IT for AR Performance
- Imbedding Six Sigma Concepts
- Observation Project Example
- DNFB Project Example
- AR Performance
About Centra Health

Three Acute Care Hospitals Based in Lynchburg, Virginia
Lynchburg General, Virginia Baptist, Southside Community

Available Beds:

<table>
<thead>
<tr>
<th>Type</th>
<th>Beds</th>
<th>Admissions:</th>
<th>ED Visits:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td>575</td>
<td></td>
<td>36,000+</td>
</tr>
<tr>
<td>Acute Rehab</td>
<td>20</td>
<td></td>
<td>128,000+</td>
</tr>
<tr>
<td>Acute Psych</td>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Acute</td>
<td>447</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insurance Type</th>
<th>Percentage</th>
<th>HMO / PPO</th>
<th>Commercial</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicare</td>
<td>50.9%</td>
<td></td>
<td>25.3%</td>
<td></td>
</tr>
<tr>
<td>Medicaid</td>
<td>14.2%</td>
<td></td>
<td>1.9%</td>
<td></td>
</tr>
<tr>
<td>Self Pay</td>
<td>5.8%</td>
<td></td>
<td>1.8%</td>
<td></td>
</tr>
</tbody>
</table>

Admissions: 36,000+
ED Visits: 128,000+
Employees: 6,000+
2011, 2012 & 2013 HFMA MAP Award
Excellence in Revenue Cycle

HFMA Maryland Chapter
Healthcare Financial Management Association
Revenue Cycle Structure

VP of Finance

Managing Director

Director of Patient Access

Director of Health Information

Director of Patient Accounting

Director of Clinical Coding & Documentation

Director of Physician Rev Cycle

RAC Auditors

Revenue Integrity

hfma™ maryland chapter
healthcare financial management association
### Stratified Performance Metrics

#### Management Level
- Gross AR Days, Jan ‘05 = 72.9; Jan ‘11 = 39.9; Sep ‘13 = 41.2
- Net AR Days = 40.3
- DNFB, Jan ‘10 = 8.3; Jan ‘11 = 4.2; Sep ‘13 = 5.7
- Bad Debt % of Gross Revenue (consolidated) = 2.2% (charity, 3.8%)
- Cash % of Net Revenue = 97.3%
- Cost to Collect = 2.6% fully allocated

#### Department (example)
- Registration Accuracy %
- Chart Delinquency
- IP Charts Coded / Hour
- Average Call Wait Time
- Final & First Pass Denial %

#### Employee (example)
- Up Front Collections
- Lines / Hour
- IP Charts Coded / Hour
- Claims Follow-up / Day
- Denials
IT Leveraged

- AR Analytics
- Reporting
- Call Center
- Dialers
- Voice Recognition
- Coding
- DRG Grouping
- Documentation Improvement
- Office Based PM

Revenue Compass
Ontario Artiva
Dolby Transcription
3M Encoder
3M CDIS
AthenaNet

McKesson on STAR

- Financial Clearance Workstation
- Registration Accuracy
- Financial Counseling
- Propensity to Pay
- Insurance Verification
- Contract Management
- Denial & Appeals
- Claims Management
- Patient Friendly Statements
- Online Virtual Business Office
- Electronic Documentation
- Remittance Advice

HFMA Maryland Chapter
Healthcare Financial Management Association
Six Sigma

- LEAN Concepts
- DMAIC Principals
- Revenue Cycle Directors
- Process Improvement Department
- Observation Project (Green Belt)
- DNFB Reduction Project (Green Belt)
- Overtime Reduction Project (Yellow Belt)
Observation Six Sigma Project Example
Correct billing hours start when physician writes order for observation and stops when medically necessary treatment is stopped.

Accommodation code process is not linked to physician order or end of medical treatment.
Billing Compliance Improvement for Observation Services

For period January 1, 2012 to June 30, 2012, total Medicare gross charges for observation services was $5,863,406 with net reimbursement of $1,309,547. Greater than 90% of accounts were medically necessary and had valid physician orders.

Baseline Process Capability

**Defect**: Failure to accurately report observation hours that have a valid physician order, qualifying HCPCS code, are deemed medically necessary and number of hours based on start and stop times.

- **Units (N)**: 117
- **Defects (D)**: 90
- **Opportunities (O)**: 1
- **DPMO** = \( \frac{90}{117} \times 1,000,000 = 769,231 \)
- **Defect %** = \( \frac{90}{117} = 76.9\% \)
- **Yield %** = 23.1%

**Sigma level** = 0.75 Sigma

Establish Target Performance

**New Goal**: Increase accuracy of reporting billing hours to a yield of 95.7% thereby reducing the defect rate to 4.3%

- **Units**: 117
- **Defects (D)**: 5
- **Opportunities**: 1
- **DPMO** = \( \frac{5}{117} \times 1,000,000 = 42,735 \)
- **Defect %** = \( \frac{5}{117} = 4.3\% \)
- **Yield %** = 95.7%

**Sigma level** = 3.2 Sigma

Baseline Defect Rate: 76.9%  Reduce to Target Defect Rate of 4.3%
Proposed Solutions

1. Stop using bed accommodation code for capturing observation hours. Employ a temporary employee in CCD to apply rules and charge hours based on medical documentation.

2. Re-educate and train Patient Access and Nursing Staff to update accommodation code appropriately and timely.

3. Clinical staff to enter order for start and stop times. Stop using bed accommodation code for capturing observation hours.

4. Expand Case Management coverage to include monitoring of observation hours and charge entry of hours (direct key). Stop using bed accommodation code.

5. Future State w/Clinical Diagnostic Unit – Case Management concurrent review of observation hours. Directly enter observation hours based on rules.

Prioritization of solutions

<table>
<thead>
<tr>
<th>Effort</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ / Hrs</td>
<td>Low</td>
</tr>
<tr>
<td>$$$ / Hrs</td>
<td>High</td>
</tr>
</tbody>
</table>

1. High Benefit / Low Effort
2. $ / Hrs
3. $$$ / Hrs
4. ★
5. ★
New Process for Observation Billing Hours

Billing Compliance Improvement for Observation Services

1. Valid Physician Order
2. Hours calculated from date / time of physician order to end of active medical necessity treatment
3. Hours are medically necessary
4. Hours exclude surgical procedure and recovery room time.
Billing Compliance Improvement for Observation Services

**Baseline Process Capability**

**Defect**: Failure to accurately report observation hours that have a valid physician order, qualifying HCPCS code, are deemed medically necessary and number of hours based on start and stop times.

- Units (N): 117
- Defects (D): 90
- Opportunities (O): 1
  - DPMO = (90/117) * 1,000,000 = 769,231
  - Defect % = 90 / 117 = 76.9%
  - Yield % = 23.1%

**Sigma level** = 0.75 Sigma

**New Process Performance**

**Actual**: Increase accuracy of reporting billing hours to a yield of 94.0% thereby reducing the defect rate to 5.9%

- Units: 67
- Defects (D): 4
- Opportunities: 1
  - DPMO = (4/67) * 1,000,000 = 59,701
  - Defect % = 4/67 = 5.9%
  - Yield % = 94.1%

**Sigma level** = 3.0 Sigma

Baseline Defect Rate: 76.9%  New Process Defect Rate of 5.9%
Monitoring Process Performance

Monthly monitoring effective May 1, 2013.

Claim edits with missed observation hours or HCPCS code for period March 1, 2013 through June 30, 2013. Error rate range from 0% to 5.66%
“When you get to the end of your rope. Tie a knot and hang on.”
— Franklin D. Roosevelt

“Every strike brings me closer to the next home run.”
— Babe Ruth
Discharge Not Final Billed (DNFB) Project
DNFB Green Belt Project

**Define**

**Understanding Total DNFB**

DNFB – Total Value of Discharged Not Final Billed
Average Gross Daily Revenue

Scope of the project focused on inpatient (IAL & IAV) stays.
**Define**

**VOC**

Coders: During a recent survey, the Inpatient Coders were asked for the top three reasons they are unable to complete an account during first review. Reasons included missing documentation, conflicting documentation, and outstanding coding queries.

Quote – “We are able to complete abstract about 70% of time on first review of account.”

Finance/Patient Accounting: Based on quantitative analysis of available data, a consultant recently concluded that Centra has a balance sheet improvement opportunity in Discharged Not Final Billed (DNFB) days.

**VOC Collection Methods:**
Interviews and Survey

**Key Issues**

- Missing documentation or elements.
- Incomplete or inconsistent documentation or elements.
- Coding Queries outstanding.
- Data accuracy risks associated with delayed coding and documentation.
- Potential impact on quality Measures.
- Decreased cash flow.
- Increased total Accounts Receivable.
- Delay in patient billing.
- Delay in account resolution.

**CTQ’S**

Abstract Complete in less than 4 days by August 15, 2010.

Complete and accurate documentation/elements available within 24-48 hours of discharge on Inpatient Acute Lynchburg General (IAL) and Inpatient Acute Virginia Baptist (IAV) accounts.

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**Key Customer CTQ:** Accurate, complete final bill in less than 4 days from discharge date for IAL and IAV accounts by August 15, 2010
**High Level Process Map - SIPOC**

**Define**

**Suppliers**
- Physicians
- Nurses
- Ancillary Departments
- Patient Access
- Case Management
- Health Information Management
- Clinical Coding & Documentation (CCD)
- MIS/CFI
- Third Party Payors

**Inputs**
- Patient Demographics
- Physician Documentation
- Nursing Documentation
- Ancillary Documentation
- Patient Status (IP vs OP)
- Discharge Disposition
- Charges (late or incorrect)
- Medical Records
- McKesson Systems

**Process**

1. Start (Discharged Patient)
2. Account Released to CCD From HI
3. Sort and Select Records to Code
4. Determine if Acct Can Be Coded & Abstracted
5. Begin Abstracting
6. Complete Coding & Abstracting
7. Review Documents to Determine Principal Dx, Secondary Dx, (MCC/CC), and Procedure Codes

**Outputs**
- Abstract Complete
- Final Bill
- Abstract Incomplete

**Customer**
- Patient Accounting
- Finance
- Patient
- Third Party Payors
- Clinical Coding & Documentation (CCD)
- Performance Improvement
- (Quality Measures)
- Physicians
## Analyze

<table>
<thead>
<tr>
<th>Physician Group</th>
<th>Median Days</th>
<th>Minimum Days</th>
<th>Maximum Days</th>
<th>Standard Deviation</th>
<th>N =</th>
<th>Avg Account Value</th>
<th>Total Account Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>9</td>
<td>4</td>
<td>36</td>
<td>7.42227</td>
<td>75</td>
<td>$40,384</td>
<td>$3,028,800</td>
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<tr>
<td>Orthopedists</td>
<td>14</td>
<td>4</td>
<td>31</td>
<td>8.06544</td>
<td>57</td>
<td>$24,452</td>
<td>$1,393,764</td>
</tr>
<tr>
<td>Surgeons</td>
<td>10</td>
<td>4</td>
<td>37</td>
<td>7.91278</td>
<td>113</td>
<td>$19,887</td>
<td>$2,247,231</td>
</tr>
<tr>
<td>Internal Medicine</td>
<td>8</td>
<td>4</td>
<td>37</td>
<td>8.09985</td>
<td>163</td>
<td>$16,641</td>
<td>$2,649,483</td>
</tr>
<tr>
<td>Hospitalists</td>
<td>9</td>
<td>4</td>
<td>34</td>
<td>7.16408</td>
<td>93</td>
<td>$15,372</td>
<td>$1,429,596</td>
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<tr>
<td>OB/GYN/PEDS</td>
<td>10</td>
<td>4</td>
<td>36</td>
<td>8.16722</td>
<td>23</td>
<td>$13,081</td>
<td>$300,863</td>
</tr>
<tr>
<td>Total Data Set</td>
<td>9</td>
<td>4</td>
<td>37</td>
<td>7.82500</td>
<td>525</td>
<td>$20,857</td>
<td></td>
</tr>
</tbody>
</table>

*Even though there is no statistical difference in centering and spread among physicians groups, all were chosen for DNFB awareness and improvement.*
<table>
<thead>
<tr>
<th>Potential Xs Controllable Inputs</th>
<th>Centering</th>
<th>Variation</th>
<th>Practical Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing Elements</td>
<td>Medicaid Cert has a statistically higher median at 15 days</td>
<td>Discharge Summary has a statistically higher standard deviation of 8.245 days</td>
<td>Discharge Summary and Medicaid Cert are critical to days in coding.</td>
</tr>
<tr>
<td>Physician Groups</td>
<td>Not statistically different</td>
<td>Not statistically different</td>
<td>All physician groups can benefit from DNFB goal awareness</td>
</tr>
<tr>
<td>STAR Patient Type</td>
<td>Not statistically different</td>
<td>IAV have a higher standard deviation at 9.454</td>
<td>LGH account is more predictable than VBH account</td>
</tr>
<tr>
<td>Discharge Day of Week</td>
<td>Statistically different DAY MED P Value Sun 9.5 0.003 Mon 10.0 0.000 Tue 9.0 0.000</td>
<td>Not statistically different</td>
<td>Sunday, Monday, and Tuesday discharges result in higher median days in coding</td>
</tr>
</tbody>
</table>

**The Identified Critical Xs**
- Missing Elements (Discharge Summary, Medicaid Cert)
- Patient Type (IAV)
- Discharge Day of Week (Sunday, Monday, and Tuesday)

**Statistical and Practical Summary of Analysis**
<table>
<thead>
<tr>
<th>Critical X</th>
<th>Root Cause</th>
<th>#</th>
<th>Potential Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing Element - Medicaid Cert</td>
<td>Not a priority with physician/CM staff</td>
<td>1</td>
<td>Compliance Form to track Case Management activities which impact DNFB</td>
</tr>
<tr>
<td>Missing Elements - Discharge Summary</td>
<td>Transcriptionist does not attach report to correct account</td>
<td>2</td>
<td>Patient type and location added to Dolbey for accurate patient identification.</td>
</tr>
<tr>
<td></td>
<td>Untimely transcription turn around time</td>
<td>3</td>
<td>Monitoring transcription turn around times by work type/facility</td>
</tr>
<tr>
<td></td>
<td>Unclear dictation results in blanks in reports.</td>
<td>4</td>
<td>Blanks in dictated reports are reviewed and corrected by supervisor</td>
</tr>
<tr>
<td></td>
<td>Physician delay/refuse to dictate DCS</td>
<td>5</td>
<td>Publish DNFB BHI Metric to Centra Exe &amp; enlist help to monitor &amp; intervene physician chart completion</td>
</tr>
<tr>
<td></td>
<td>Physician lack timely record completion</td>
<td></td>
<td>Change Priority of Transcription for Discharge Summary. Eliminate Outsourcing</td>
</tr>
<tr>
<td></td>
<td>Competing priorities for transcription</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Delay in Discharge Summary completion</td>
<td>7</td>
<td>Code without Discharge summary</td>
</tr>
<tr>
<td></td>
<td>Physicians not aware of missing elements until deficiencies assigned in Portal.</td>
<td>8</td>
<td>HI monitors report of chart deficiencies not assigned within 48 hours</td>
</tr>
<tr>
<td>IAV Patient Type</td>
<td>Priority of coding based on dollars causing coding of IAL first</td>
<td>9</td>
<td>Code accounts based on Date of Discharge</td>
</tr>
<tr>
<td>Discharge Day of Week (Sun, Mon, Tue)</td>
<td>Lack of weekend coverage for HI and CCD</td>
<td>10</td>
<td>24/7 indexing and analyzing coverage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
<td>Expand coding coverage when possible to weekend and vacation coverage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
<td>Cross trained analyzers and indexers</td>
</tr>
<tr>
<td>“Just Do It” Solutions</td>
<td>Lack of measurement tool between systems</td>
<td>13</td>
<td>Daily DNFB report published across Revenue Cycle</td>
</tr>
<tr>
<td></td>
<td>HPF/Servers/Allscripts/Interface</td>
<td>14</td>
<td>Increased HPF transaction capacity; Review HPF workflow design</td>
</tr>
<tr>
<td></td>
<td>Nursing staff holds paper records on Units</td>
<td>15</td>
<td>Actively monitor chart release from nursing units to include follow up actions.</td>
</tr>
<tr>
<td></td>
<td>Authorizations not entered</td>
<td>16</td>
<td>Evaluate other DNFB edits besides abstract complete for correction</td>
</tr>
<tr>
<td></td>
<td>Knowledge of DNFB outside of Revenue Cycle, Culture of DNFB Urgency</td>
<td>17</td>
<td>Create Corporate Scorecard Metric that separates DNFB from AR days</td>
</tr>
<tr>
<td></td>
<td>Competing priority between concurrent and retro review</td>
<td>18</td>
<td>Decrease turn around time between Inpatient Coders &amp; Documentation Specialists (Retro Chart Review)</td>
</tr>
<tr>
<td></td>
<td>Physicians slow to complete deficiencies in Portal</td>
<td>19</td>
<td>Involve Documentation Specialists in active completion of coding queries</td>
</tr>
</tbody>
</table>
In HBI, a report was developed to monitor physician deficiencies relating to incomplete medical documentation. The Centra Execs will monitor deficiencies and work collaboratively with physicians relative to timely chart completion. This new process was implemented on 9/10/10.

Reports from Horizon Business Insights give details to help monitor physician deficiencies relative to chart completion.
Centra AR Performance

% Bad Debt & Charity of Gross Revenue

- Bad Debt (minus recoveries)
- Charity
- Total

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Total</th>
<th>2014</th>
<th>Total</th>
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<tbody>
<tr>
<td>Bad Debt</td>
<td>2.0%</td>
<td>2.2%</td>
<td>2.5%</td>
<td>2.3%</td>
<td>1.7%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Charity</td>
<td>5.6%</td>
<td>6.2%</td>
<td>5.9%</td>
<td>4.0%</td>
<td>4.0%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Total</td>
<td>3.6%</td>
<td>4.0%</td>
<td>3.4%</td>
<td>4.0%</td>
<td>4.0%</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

YTD 2011  YTD 2012  YTD 2013  YTD 2014  JAN '14

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healthcare financial management association
Speaker Biography

• Joseph “Joe” Koons is currently Managing Director of Revenue Cycle at Centra, a non-profit three hospital health system located in central Virginia. His responsibilities include: Patient Access, Patient Accounting, Physician Group Revenue Cycle, Clinical Coding and Documentation, Health Information, Revenue Integrity and RAC Audit management. In his more than 19 years of health care AR management experience, Joe has held AR management positions with leading proprietary and non-profit health systems. Joe received a Master’s degree in Health Care Administration from Central Michigan University and a Bachelor’s degree in Economics from Florida State University. He is certified by HFMA as a Fellow and by AAHAM as a Certified Revenue Cycle Executive. He enjoys traveling, a good book and spending time with his wife Tricia and their two children, Kaitlyn and Caleb.