Lean Six Sigma and I.T. Implementations....

Integrating People, Process, Technology

An educational update to the HIMSS Management Engineering – Performance Improvement Task Force
January 16th, 2008
Who We Are

Columbus Regional Hospital is a regional provider of healthcare services offering comprehensive services:

- Acute inpatient care
- Emergency/ambulance care
- Surgery
- Cancer care
- Birthing Center
- Cardiac services
- Rehabilitation
- Outpatient services
Mission, Vision, and Values

**Mission:**
Improve the health and well-being of the people we serve.

**Vision:**
To be the best in the country at everything we do.

**Values:**
- Strong Leadership
- Teamwork
- Commitment
- Citizenship

- Personal Excellence
- Ethics
- Caring
- Quality

**Pillars:**
- Quality/Safety
- Service
- Satisfaction

- People
- Finance
Learning Objectives:

• Learn and understand the need for a partnership between Lean Six Sigma process redesign and Information Technology implementations

• Learn and understand practical tools and examples from real life projects

Discussion Agenda:

1.) Introduce Lean / I.T. Roadmaps 5 minutes
2.) Real Examples 25 minutes
3.) Pros/Cons & Key Takeaways 10 minutes
Agenda item #1 – 5 minutes

Introduce Lean & I.T. Roadmaps
Lean Six Sigma Process

Current Lean Six Sigma Project Methodology

Focus on “People” and “Process”

* Lean – eliminate waste (speed)
* Six Sigma – standardize (variation)
I.T. Project Implementation Process

Current I.T. Project Methodology

Plan | Readiness Review | Design & Build | Test | Train | P&P’s | Go Live | Post Go-Live

Focus on “Technology”
Agenda item #2 – 25 minutes

Real examples
Real-Life Examples (2006 – present)

- **IT w/ Lean Examples**
  
  *Tools used *DURING* to system implementation*
  
  - *Financial Counseling:* ED, Registration, Patient Financial Services

- **Lean w/ I.T. Example**
  
  *Tools used *PRIOR* to system purchase and implementation*
  
  - *Birthing Center (LDRP):* Fetal Monitoring & Clinical Documentation

- Other projects where this process was utilized include; Document Imaging, Laboratory Requisitions, Payroll Discovery, Dictation/Transcription
Example #1: Lean w/ I.T.

Focus on process Redesign as a part of the I.T. implementation

* ED Registration
* ED Financial Counseling
* Patient Financial Services Financial Counseling
Project Roadmap (PMBOK):

1. Request/Planning
   - Identify Scope
   - Areas affected/included

2. Implementation
   - Strategy
   - Goals
   - Steps/Tasks
   - Process Analysis (Lean Tools)
   - Recommendation
   - Timeline

3. Project Control
   - Outcome/Takeaways
   - Focus on Metrics
   - Accountability to process decisions
Project Request/Planning:

- **SCOPE**: Examine and improve process and system interaction to more accurately:
  - Capture patient demographic information for patient care / safety
  - Increase probability of keeping accounts from going to “bad debt” via financial counseling

**Pillars**: All (Quality/Safety, Service, Finance, People, Growth)
Areas of CRH significantly affected include:

- **Emergency Department** Registration
  - **Key focus**: Patient Demographics

- **Emergency Department** Financial Counseling (Front-end)
  - **Key focus**: Patient pay collections

- **Patient Financial Services** Financial Counseling (Back-end)
  - **Key Focus**: Collections to reduce probability of bad debt
Project Implementation Strategy:

- “System” implementation project timeline 3-4 months
- Early in “system” implementation, use Lean Six Sigma tools to improve, simplify, standardize, and automate process changes
Project Implementation Overview (System):

Project Timeline

June  July  August  September  October  November  December  January

- Request
- Contract
- Planning
- Kickoff
- Design
- Build
- Test
- Live - 01/16
- Procedures, Communication, Training
Project Implementation Strategy (Roadmap):

- Schedule several 3-4 hour sessions with team members (include all) to discuss/examine “current” state processes

- Goal of meeting(s)
  - Develop flow diagrams for each process
  - Identify key Opportunities for Improvement (OFI’s) / Failure Points for each process step
  - Identify baseline metrics where applicable
  - Prioritize each OFI and determine impact of change
  - Determine action plan for each critical OFI and include in system implementation design/build/test

- See examples on next several slides
Questions asked to help facilitate discussion:

1. What is the High Level Flow Diagram of each process (5-7 steps)
2. What are key Opportunities for Improvement (OFI’s) within each step (Failure Points – where/how does the process step fall down)
   - What is the priority of each OFI (critical, high, medium, low)
3. Can metrics be capture for process step
4. What are the key “Inputs” and “Outputs” of each step
5. The lines between each step are just as (if not more) important than the steps themselves
6. Are there any quick wins from the OFI’s identified*
7. Who are the key customers
Project Implementation Overview:

(ED Quick REG)
Value Stream Map

1. Patient presents in ED
2. Patient fills out form (5 key identifiers); goes with chart
3. Quick Reg process in Star in registration area; name, dob, ss, chief complaint, family doctor, hippa
4. Armband prints (RR), facesheet stickers, horizon clinicals pam report, assemble chart; verify name/dob and is placed on pt. Also give pt versys badge
5. Quick reg person puts facesheet in REG basket (no insurance information)
6. Patient triaged by Nurse based on acuity

What are key failure points?
- QRP dealing with and monitoring multiple patients at front desk (questions, wheel chairs, phones, ice packs)
- I.T. equipment failure (printer)
- No address being collected (difference between new pts and exiting pts in system)
- Communication barrier with large hispanic population
- Variation in staff experience, job description, training
- Pt leaves after triage and is never treated
**Project Implementation Overview:**

**Value Stream Map**

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<thead>
<tr>
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<tbody>
<tr>
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<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>With facesheet and consent (blank but stickered) Registration Person (RP); escorts patient to room</td>
<td>Verbally verify information with the facesheet with regard to the guarantor OR Collect information if patient is new</td>
<td>Obtain signatures, cards, and id</td>
<td>Leave patient room and complete the registration in Star (scan cards, etc)</td>
<td>Go back into patient room to return cards (if necessary)</td>
<td>Registration is marked as &quot;done&quot; on tracking board</td>
</tr>
</tbody>
</table>

**What are key failure points?**

- **Step 2** being done on paper - how to streamline to make this electronic????
- Need to figure out where to use Transunion in the Registration process (which step and who??)
- Need to consider variation of needs from Nursing / ED Physicians

**Technology - scanner, pc, printer**

**Communication barrier with large hispanic population**

**Physical facility - layout, proximity**

**Communication between (RP and ED Financial Counselor (EDFC))**

**Variation and challenge from a patient perspective regarding triage between Registration & Nursing - who works with the patient when?**
I.T. w/ Lean Example
Financial Counseling

Project Implementation Overview:

(ED Counseling)
Value Stream Map

1. Patient shows up on tracking board, Financial Counselor (FC) run a medicaid swipe (Mark Y/N)

2. Look in Star to determine if they need to be seen (this gets flagged in tracking board)

3. Nurses review tracking board:
   - See:
     * Patient pay
     * Insurance w/ co-pay
     * Patient w/ deductible

4. Financial counseling begins (use system) with patient. Confirms information (medical / non-medical)

5. Insurance, demographic information confirmed between patient and FC (use system)

6. Ask patient for payment (patient pay is $75)

7. Patient pay explanation to patient

What are key failure points?
- Sometimes can’t verify insurance because of time of day (Insurance company is not open - hours)
- Lack of standardization of insurance cards
- Not all patients leaving the ED see a financial counselor, which is why step 5 is needed (but redundant - also done at REG)
- Multiple patients being discharged simultaneously (creates a bottleneck for FC)
- Need to change the name of the job description: Financial Counselor, change to “Patient Advocate”
- Communication barrier with large hispanic population

Lack of knowledge of person’s ability to pay
Non-Point of Service: After hours/weekends (or whenever) - can stop in the ED and make a payment / seek counseling
Lack of communication (and usage of) the tracking board to get all patients to a financial counselor who are flagged
Project Implementation Overview:

(PFS Counseling)
Value Stream Map

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<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td>Contact with the patient (based on $$); could be aged 60, 90 days - pt pay</td>
<td>Discuss arrangements (payment). Negotiate how long do you need versus how much can you pay</td>
<td>Long term payment plan sent to patient (OR step4)</td>
<td>Financial application (application for assistance) sent w/ 2 weeks return and verification</td>
<td>Receive application and verification (OR) long term payment plan</td>
<td>Setup plan based on step 5</td>
</tr>
</tbody>
</table>

What are key failure points?
- Waiting on verifications (step 5)
- Lack of knowledge of person's ability to pay
- Issues with phone communications
- There is quite a bit of hand written documentation
- Step 1: amount of time can be considerable (60, 90 days (or more))
- Communication barrier with large hispanic population
- Technology issues - shared printers & faxes
# I.T. w/ Lean Example
## Financial Counseling

### Project Implementation Outcome (Process Analysis)

<table>
<thead>
<tr>
<th>VSM Map</th>
<th>Key Failure Points</th>
<th>Priority (5 high)</th>
<th>Metrics Available</th>
<th>Action Plan to realize Process improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 EDQUICKREG</td>
<td>No address being collected (difference between new pts and existing pts in system)</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>2 EDREG</td>
<td>Step 2 being done on paper - how to streamline to make this electronic????</td>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>3 EDREG</td>
<td>Technology - scanner, pc, printer</td>
<td>5</td>
<td></td>
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<tr>
<td>4 EDREG</td>
<td>Communication between (RP and ED Financial Counselor (EDFC))</td>
<td>5</td>
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<tr>
<td>5 EDCOUN</td>
<td>Lack of knowledge of person’s ability to pay</td>
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<tr>
<td>6 PFSCOUN</td>
<td>Waiting on verifications (step 5)</td>
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<tr>
<td>7 PFSCOUN</td>
<td>Lack of knowledge of person’s ability to pay</td>
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<tr>
<td>8 EDREG</td>
<td>Need to figure out where to use Transunion in the Registration process (which step and who??)</td>
<td>4</td>
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<tr>
<td>9 PFSCOUN</td>
<td>There is quite a bit of handwritten documentation</td>
<td>3.5</td>
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<tr>
<td>10 EDCOUN</td>
<td>Not all patients leaving the ED see a financial counselor, which is why step 5 is needed (but redundant - also done at REG)</td>
<td>3</td>
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<tr>
<td>11 EDCOUN</td>
<td>Need to change the name of the job description: Financial Counselor, change to &quot;Patient Advocate&quot;</td>
<td>3</td>
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<tr>
<td>12 EDCOUN</td>
<td>Lack of communication (and usage of) the tracking board to get all patients to a financial counselor who are flagged</td>
<td>3</td>
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<tr>
<td>13 PFSCOUN</td>
<td>Issues with phone communications</td>
<td>3</td>
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<tr>
<td>14 PFSCOUN</td>
<td>Step 1: amount of time can be considerable (60, 90 days (or more))</td>
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<td>15 EDQUICKREG</td>
<td>Communication barrier with large hispanic population</td>
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<tr>
<td>16 EDREG</td>
<td>Need to consider variation of needs from Nursing / ED Physicians</td>
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<tr>
<td>17 EDREG</td>
<td>Communication barrier with large hispanic population</td>
<td>2</td>
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<tr>
<td>18 EDCOUN</td>
<td>Sometimes can’t verify insurance because of time of day (Insurance company is not open - hours)</td>
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<td>19 EDCOUN</td>
<td>Communication barrier with large hispanic population</td>
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<tr>
<td>20 PFSCOUN</td>
<td>Communication barrier with large hispanic population</td>
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<tr>
<td>21 EDQUICKREG</td>
<td>QRP dealing with and monitoring multiple patients at front desk (questions, wheel chairs, phones, ice packs)</td>
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<tr>
<td>22 EDQUICKREG</td>
<td>I.T. equipment failure (printer)</td>
<td>1</td>
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<tr>
<td>23 EDQUICKREG</td>
<td>Variation in staff experience, job description, training</td>
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</table>
I.T. w/ Lean Example
Financial Counseling

Where are we now??:

- Implementation near complete
- Move into “Control” phase
- Metrics/Measures
  - Accountability to decisions
  - Simplify, Standardize, Automate
Example #2: Lean w/ I.T.

Focus on process Redesign prior to vendor selection, system selection, and implementation

* LDRP – Birthing Center Fetal Monitoring and Clinical Documentation
Lean w/ I.T. Example (look at process 1\textsuperscript{st})

LDRP – Fetal Monitoring and Clinical Documentation

Project Roadmap:

1. Request/Planning
2. Vendor Selection (current phase)
3. Implementation – Not started
**Lean w/ I.T. Example (look at process 1st)**

**LDRP – Fetal Monitoring and Clinical Documentation**

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### Project Timeline: Implementation – Not started

**LDRP VENDOR SELECTION - DRAFT**

<table>
<thead>
<tr>
<th>September</th>
<th>October</th>
<th>November</th>
<th>December</th>
<th>January</th>
<th>February</th>
<th>March</th>
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<tr>
<td>01, 02 - Plan-Initate</td>
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<td>03 - Vendor list</td>
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<td>04 - Write RFP</td>
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<td>05 - Issue RFP</td>
<td>06 - Evaluate RFP</td>
<td>07 - Select 1st Rd</td>
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<td>08 - Demonstrations (3 Vendors)</td>
<td>09 - Site visits</td>
<td>10 - Interviews</td>
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<td>Finalize proposals</td>
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<td>11 - Negotiate Contract</td>
<td>12 - Sign Contract</td>
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<td>13 - Project Review</td>
<td>14 - Update IS Plan</td>
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<td>08 - Demonstrations (3 Vendors)</td>
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<tr>
<td>09 - Site visits</td>
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<td>10 - Interviews</td>
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<td>12 - Sign Contract</td>
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<td>13 - Project Review</td>
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<td>14 - Update IS Plan</td>
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<td>15 - Administration - QC (Prep for Six Sigma study - work flow analysis)</td>
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</table>

*Develop work plan (attach to contract)*

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*Note – Lean Six Sigma tool process design discussions began in May 2007*
Lean w/ I.T. Example (look at process 1st)
LDRP – Fetal Monitoring and Clinical Documentation

Benefits of this approach:

• Allowed RFP (Request for Proposal) to be written for future “best” practice
• All Vendor Selection discussions keeping “best” practice in mind
• Resource Allocation: Team building
• Some “quick wins” identified to resolve issue immediately
• Baseline metrics can be captured early*
• Opportunity to exam current system(s) capabilities
### Lean w/ I.T. Example

**#2 – work with LDRP**

<table>
<thead>
<tr>
<th>VSM</th>
<th>OFI</th>
<th>Next Steps</th>
<th>System / Process</th>
<th>Input or Output</th>
<th>Baseline metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prepare Registration kept until “Admitted for Delivery”</td>
<td>Invite Registration to Mtg</td>
<td>Process</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Patient types - (Clinic, OBS, IP) Discuss &amp; determine any improvements</td>
<td>Invite Registration to Mtg</td>
<td>Process</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Check lead on any PrePare opportunities</td>
<td>Invite Kathy to Team Mtg</td>
<td>Process</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Cabinet redesign to facilitate process improvement</td>
<td>Discuss next steps</td>
<td>Process</td>
<td>I</td>
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</tr>
<tr>
<td>3</td>
<td>System – Blood Pressure manual entry</td>
<td>Include in RFP</td>
<td>System</td>
<td>I-3, O-5</td>
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</tr>
<tr>
<td>3</td>
<td>System – Medication Administration</td>
<td>Include in RFP</td>
<td>System</td>
<td>I-3, O-5</td>
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<td></td>
<td>○ Horizon Clinicals</td>
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<td>○ Labor Summary (Mom &amp; Baby)</td>
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<td>○ Med Sheet</td>
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<td>○ Strip (documented on)</td>
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<tr>
<td>3</td>
<td>Baby’s (weight, apgar, gender, bracelet #)</td>
<td>Include in RFP</td>
<td>System</td>
<td>I-3, O-5</td>
<td></td>
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<tr>
<td>3</td>
<td>Mom’s blood type</td>
<td>Include in RFP</td>
<td>System</td>
<td>I-3, O-5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Vitals (Mom – during labor stage 4)</td>
<td>Include in RFP</td>
<td>System</td>
<td>I-3, O-5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>C-Sections: Peri-operative charting / integration with HSM</td>
<td>Invite HSM Team to Mtg</td>
<td>Both</td>
<td>I-3, O-5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Telemetry monitoring (integration with current systems?)</td>
<td>Invite HSM Team to Mtg</td>
<td>Both</td>
<td>I-3, O-5</td>
<td></td>
</tr>
</tbody>
</table>
Agenda item #3 – 10 minutes

Pros and Cons of using Lean tools with I.T.

– Pros
  • Using a systematic process to
    – Reduce variation in processes (standardize)
    – Eliminate waste in processes (simplify)
    – Leverage I.T. to automate processes (automate)
  • Team building – team must take time to meet (trust & communication)
  • Establish baseline metrics to support request (potential ROI)
  • When done before I.T. will assist in RFP and Vendor Selection
  • Cross functional team appreciation for different processes*

– Cons
  • Resource intensive (labor)
  • Time intensive (weeks/months)*
  • Sometimes difficult to find appropriate baseline metrics
Successes & Key Takeaways

- Strong Executive Sponsorship
- Commitment by team to attend meetings/discussions (cross-functional)
- OFI's and Key Failure Points are not a reflection of the individual – need to focus on process step not the individual
- Freeze process changes once system build begins
- Agreement to have open dialogue during meetings
- Significant understanding of overall goals/objectives of project by including all team members in meetings
- Examining current processes require significant time and effort
- Flexible approach to tool completion
- Look for skeletons
- Have fun…(and have food)
- Include vendor in process redesign meetings
- Changing process (behavior/habits) is more difficult than implementing a system
- Need to consider peripheral areas that might be affected by changes in process* (in the E.D. need to consider Nursing and Physicians)
Thank you!

For more information, please contact HIMSS Staff Liaison JoAnn W. Klinedinst, CPHIMS, PMP, FHIMSS at jklinedinst@himss.org