Reducing Emergency Department Waiting Times Using Lean Methodology

NewYork-Presbyterian Healthcare System
April 14, 2010
Agenda

- Introductions
- Overview of Lean Sigma
- Methodology
- Results in The Emergency Department (ED)
- Why Lean Sigma works
Lean Sigma Overview
Linking Lean with Six Sigma

**Lean**

A methodology focused on process speed, efficiency, and elimination of waste — non value added activities

- Removal of the “8 Wastes”
- Properly Configure Work Cells
- Add Value with Every Step of *any* Process
- Move to Single Piece Flow

**Six Sigma**

A philosophy of continuous improvement focused on eliminating poor quality and process variation

- Attack Variability
- Eliminate Errors
- Utilize the DMAIC Problem Solving Model
- Delivering *what* is expected *when* it is expected
Advantages in healthcare

- Establishes a level of process control and eliminates waste *before* attacking variation
- Ensures not improving an unnecessary process
- Increases the speed of process improvements
  - Six Sigma can take a long time (6 to 9 months)
  - Lean can take as little as 8 to 14 weeks, depending on scope
- Enhances the success rate and impact
Learn to Recognize the Types of Waste

- **Overproduction / Unnecessary Testing**
  Ties up capital, slows results to Dr., Nurse, Patient

- **Transporting / Moving Things**
  Unnecessarily increases testing time, extra work

- **Unnecessary Stock / Inventory**
  Ties up capital, risk of changes

- **Waiting**
  Decreases productivity, wastes personnel resources

- **Unnecessary Motion**
  Increases testing time, unnecessary Lab Tech motion

- **Processing**
  Poorly designed / incapable processes

- **Defects**
  Rework, repeat tests, phone calls

From Taiichi Ohno, Architect of the Toyota Production System

What’s the 8th Form of Waste?
• How often do we ask our people “What’s working and what’s not?”
• How do we get them to offer up ideas?
• What does it take to get them involved in solving the problems?
• The answers prevent the 8th and worst form of waste!
  – You pay staff for knowledge every minute you pay them to work, but if you don’t use it - you waste it!
The Approach is to Provide Long-Term Sustainable Results

A Solution Approach
that Ensures Sustainability

- Assess
- ID Problem
- Define Solution
- Plan
- Gain Acceptance
- Implement
- Control
- Audit

Key to sustainability
Methodology

• Education – 3-day workshop
• Observation – all shifts, all times, day & night
• Video analysis – walk patterns of specimens and workers
• Data analysis – waste vs. value-added steps
• Staff input – 5 minute huddle, hot button list, 20-keys
• Focused rapid improvement events – Kaizens
• Implementation – standard work
• Control – sustain change & audit
The ED
The Fixes for Nyack’s Emergency Department

• Over 100 “things” had to be fixed with the simplest being the hardest – waste baskets!
  – EKG machines – the right one, for the right reason
  – Shifting the “triage room” paradigm
  – Medication room refrigerator
  – Transport of patients
  – Moving patients to the floor after admission
  – Discharging patients from telemetry beds (CCU)
  – CT report time
  – Lab serum pregnancy test time
  – More than 99 “things” just as simple, but so difficult
EKG Times Are A Good Measure Of Good Care!

Nyack Hospital: Distribution of EKG Wait Times (minutes)

- <10: 20%
- 10-20: 20%
- >20: 60%
Centralized Dispatch of ED Transport

- Outcomes of “pilots” decreased CT TAT by an hour!
  - Increased utilization of transport labor resources
  - Standard work implemented 2/5/09
  - Sustained performance of ED transport support with average dispatch times of 2 minutes and transport time of 8 minutes
  - Automated transport dispatch process - internal to the Transport Department, replacing manual system of performance tracking
<table>
<thead>
<tr>
<th>Step No.</th>
<th>Operation Name/Process Description</th>
<th>Acceptable?</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AA receives call to send patient to Radiology, patient unit, or other ancillary department.</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>AA walks to bedside (if nurse not in the nursing station) to inform nurse and find out if patient is ready for transport.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>If patient is ready, AA calls Transport at x7050 and communicates the patients name, <strong>account number</strong>, equipment needs, location where they are to be transported, as well as where the patient currently is in the ER. In an emergency, a radio may be used to contact the Transport Dispatcher.</td>
<td>Yes</td>
<td>Account Number was added to this standard work step.</td>
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<tr>
<td>4</td>
<td>Dispatcher logs the time of the call, as well as all pertinent transport information into the ER transport Log database.</td>
<td>Yes</td>
<td></td>
</tr>
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<td>5</td>
<td>Dispatcher dispatches transporter and records time of dispatch into the ER Transport Database.</td>
<td>Yes</td>
<td></td>
</tr>
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<td>6</td>
<td>Transporter indicates the time received task on his/her transport log and leaves transport office to begin task.</td>
<td>Yes</td>
<td></td>
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<td>7</td>
<td>If patient is going to CTScan, dispatcher will contact CTScan by radio once task is dispatched to alert them of ER patient on the way.</td>
<td>Yes</td>
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</tr>
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<td>8</td>
<td>Transporter picks up patient from the ER. If the patient is going to Ultrasound or Xray, the transporter will alert flow control (2459) that the patient is coming; For Nuclear Medicine patients, transporter will notify that modality on ext. 2477.</td>
<td>Yes</td>
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<td>9</td>
<td>Patient is delivered to the designated location.</td>
<td>Yes</td>
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<td>Transport indicates transport complete time in log, and communicates to dispatcher.</td>
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<td>11</td>
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### Standard Work Sheet

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Emergency Department

November 2007 Percentage Met
Service Promise

- 63% Percentage Failed Promise
- 37% Percentage Met Promise

June 2008 Percentage Met
Service Promise

- 97% Percentage Met Promise
- 3% Percentage Failed Promise
It’s All About the Data!

- Data should “drive the decision” - with information there is power!
  - Problems need to be understood in order to fix
  - Value Stream Maps are a good starting point
  - Established metrics can determine ultimate success
    - Historic information is used as a baseline
    - New information
    - Data that are important to patients, physicians and certification
Emergency Department

Nyack Hospital Emergency Department Percentage Met 30 Minute Service Standard

- Staff begins Standard Work Practices
- Staff Recognizes Value and Buys In to the Program
- Staff Begins Self Policing of Standard Work

Waitless ED Pilots Began
- 67.21%

Triage Pilots began
- 86.39%

Beginning of Huddle Meetings
- 85.45%

Staff Input Received - Data Provided to Staff
- 91.42%

Staff Begins
- 93.47%

- 95.53%

February March April May June July August

30.00% 35.00% 40.00% 45.00% 50.00% 55.00% 60.00% 65.00% 70.00% 75.00% 80.00% 85.00% 90.00% 95.00% 100.00%
• Lean Sigma emphasizes plotting data in multiple ways
  – Helps to discover what you don’t know and root causes
• Following graphs - difference between patient perception after being admitted and overall patient satisfaction
  – There was no difference in the treatment of the patient
  – So why is their perception different?
  – Could it be what happened after the decision was made to admit the patient?
  – The answer is YES!
Press Ganey Waiting Time Scores

Emergency Department Press Ganey
Waiting Time to See Physician Scores for 2008

<table>
<thead>
<tr>
<th>Month</th>
<th>NYS Percentile</th>
<th>Raw Mean Score</th>
<th>n</th>
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</thead>
<tbody>
<tr>
<td>Aug.</td>
<td>64%</td>
<td>73.6</td>
<td>106</td>
</tr>
<tr>
<td>Sept.</td>
<td>80%</td>
<td>77.5</td>
<td>80</td>
</tr>
<tr>
<td>Oct.</td>
<td>72%</td>
<td>76.3</td>
<td>79</td>
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<tr>
<td>Nov.</td>
<td>84%</td>
<td>78.7</td>
<td>67</td>
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<tr>
<td>Dec.</td>
<td>79%</td>
<td>77.3</td>
<td>100</td>
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<tr>
<td>Jan.</td>
<td>47%</td>
<td>70.1</td>
<td>101</td>
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<tr>
<td>Feb.</td>
<td>88%</td>
<td>79.8</td>
<td>73</td>
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<tr>
<td>Mar.</td>
<td>80%</td>
<td>77.7</td>
<td>112</td>
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<tr>
<td>Apr.</td>
<td>92%</td>
<td>81.4</td>
<td>55</td>
</tr>
<tr>
<td>May</td>
<td>98%</td>
<td>84.3</td>
<td>78</td>
</tr>
<tr>
<td>June</td>
<td>98%</td>
<td>84.7</td>
<td>121</td>
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Inpatient ED Wait Time Before Seen Doctor
Press Ganey Scores for 2008

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<td>Aug.</td>
<td>33%</td>
<td>74.3</td>
<td>74</td>
</tr>
<tr>
<td>Sept.</td>
<td>63%</td>
<td>77.0</td>
<td>64</td>
</tr>
<tr>
<td>Oct.</td>
<td>55%</td>
<td>76.2</td>
<td>85</td>
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<tr>
<td>Nov.</td>
<td>21%</td>
<td>71.6</td>
<td>59</td>
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<tr>
<td>Dec.</td>
<td>22%</td>
<td>72.4</td>
<td>77</td>
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Patients Admitted After Being Seen In the ED
Why It Works
1. Addressing staff needs: interests, motivations, “ownership”
2. Relevance — Better care is less costly
3. Root cause - developing solutions for causes
4. “Domino” – leveraging champions to own & pull changes
5. Data Base Metrics - Monitor and Drive Success
6. Meaningful communication
7. Aligning goals and incentives
8. Measurement and control plans
9. Personal accountability for success
10. Managing the “change process”
Focus intently on the elimination of all waste
Maximize productivity and efficiency from existing processes, people, and systems before buying technological solutions …. “Use creativity before capital”
Optimize manual, low-tech systems before automating
Continually pursue improvement (Kaizen) through the aggressive involvement of everyone

Lean is ‘High Touch & Low Tech’ Enabling the Involvement Of Everyone!
Where has Nyack Hospital Taken Lean?

- Radiology
- Accounts Payable
- Dietary
- Laboratory
- Lean in the ED
- Surgery
- Housekeeping
- Data Processing
Benefits of Lean

• The benefits always include increased market share, lowered cost, higher profits and happier customers (and shareholders)

• “Lean” is the only answer known to consistently provide these benefits

• “Lean” never fails if you (R-E-A-L-L-Y) do it

• Saying “Lean” is not doing “Lean”

• When you walk the halls at Nyack, the employees ask “Can I help you?”