Getting More from Lean and Six Sigma Projects by Engaging Employees through Visual Communication

Lab Quality Confab 2014
Today’s Speaker

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Acknowledgements
• Co-Author: V Kazarov MBA, Manager of Anatomic Pathology
• D Frishberg MD, Vice-Chair of AP
• M Amin MD, Chairman
• K Clark MHA, Administrative Director
• 500 Employees
• 70 MDs and PhDs
Cedars-Sinai Medical Center

• One of largest not-for-profit medical center with 886 licensed beds
• More than 10,800 full-time employees, 2100 physicians on medical staff, 2800 nurses and more than 2000 volunteers, over 500 residents and fellows
• Annually, more than 6400 babies delivered, 32,000 operating room procedures, 83,000 emergency department visits, 49,000 admissions and 611,000 outpatient visits
Serving the Los Angeles community
Recognized as a Leading Hospital

- U.S. News Best Hospitals Honor Roll 2014-15
- ANCC Magnet Recognition
- Consumer Choice #1 2013/2014

Cedars-Sinai
Department of Pathology and Laboratory Medicine

- 5 million tests
- 170 outreach requisitions
- Full service anatomic pathology services, including >1000 heart biopsies per year
- Core competency: Clinical Effectiveness
- Quality Systems, Lean and Six Sigma are core strategies for “Performance Excellence” (Value Creation & Delivery)
Lean and Quality Management Systems are complementary

<table>
<thead>
<tr>
<th>Structure</th>
<th>Process</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Facilities and Safety</td>
<td>5. Purchasing &amp; Inventory</td>
<td>10. Assessments – internal &amp;</td>
</tr>
<tr>
<td></td>
<td>8. Information Management</td>
<td>12. Process Improvement</td>
</tr>
</tbody>
</table>

QMS based on CLSI guidelines
QMS Provides Stability for Improvement

Stability in 4’Ms required

- Machine (Test Method)
  - Quality Control
    - Maintenance or Calibration
      - Instrument Fault or Defect
    - Computer or IT
      - Specimen or Requisition
        - Supplies
          - Inventory Level
      - Reagent
    - Measurement System Accuracy
      - Reproducibility
      - Repeatability
  - Measurement
    - Resolution/Discrimination
      - Validity
      - Difficulty
      - Repeatability
  - Method
    - Supervision
      - Training & Competency
        - Staffing
          - Scheduling
          - Communication
        - Validity
      - Methodology
        - Procedure Followed
      - Procedure Followed
        - Accuracy, Well-Written
        - Read & Understood
      - Physical Environment
        - Distractions
        - Space
      - Ergonomics
        - Space
      - Contamination, particles
        - Space
      - Mother Nature (Environment & Safety)
    - Goal or Problem

Stability in 4’Ms required
Today’s Agenda

- What is employee engagement?
- What is visual communication?
- What is visual management?
- Benefits of visual display
- Examples of visual display

Engagement/Empowerment is a cultural enabler for Lean Culture.
Improvements in healthcare often involve developing organizational capabilities.

Communication with the workforce is essential for aligning improvement strategies to day-to-day operations.

Employee engagement is a critical factor that can determine success or failure.
What is Employee Engagement?

- **Commitment**, both emotional and intellectual, to accomplish work, mission, and vision of the organization.

- Contributing factors are multifactorial such as trust, motivation, communication, development, recognition, etc.
Visual Communication

- **Visual Communication** is any device used in the work environment to tell us at a glance how work should be done and whether it is deviating from the standard i.e. gaps: target vs. actual

- What can we monitor visually? Almost anything:

  - **Quality performance:**
    - Productivity
    - Safety
    - Efficiency
    - Accuracy

  - **Employee Performance:**
    - Absenteeism
    - Interaction
    - Communication
    - Teamwork
Visual Management

• Step 1: Displaying goals and objectives in the workplace

• In this day of computerized reports, often communication is *ineffective*, with frontline employees having no link between activity and organizational objectives.

• Up-to-date “*Quality Corners*” communication board is a first step.
Visual Management in Lean

- **Visual Management** is taken to higher levels (not virtual).
  - An **improvement tool** that utilizes visual aids, for understanding at a glance.
- **Visual Control**. Any communication tool...that tells us at a glance how work should be done and whether it is deviating from the standard.

Visual Control: Toyota Way Principle #7
Communication with Visible Goals

- 5 year
- 1 year
- Hospital MBOs
- Department

(1) Visual Display makes a Public Commitment, and Communicates.
(2) Must connect people to the goals.
(3) Leadership is a cultural enabler for Lean Culture.
(4) Engagement requires communicating alignment.
Visual Quality Awareness Modules

• Online training modules with quizzes
• 12 QSEs plus lean wastes
• Awareness training for all employees (1 module per month) for a year

• What is Quality in Health Care?
• Who is our Customer?
• What is a Process?
• What is a Nonconforming Event?

(1) Without Knowledge/Awareness you will NOT get Engagement (they will be detached)
(2) Enlighten first with “WHY”
Visual Communication History

• Predates Lean to *cavemen*
• Link between visual graphs and efficiency noted early in the industrial age in the United States *(1910-30)*, e.g., Gantt chart and Shewart charts
• Toyota mastered standardized procedures; and simple visual instructions at the workbench – *(1930s-40s)*
• Ishikawa taught the Basic 7 QC Tools – *(1940s-50s)*
• Kanban, 5S, Andon - *(1950s)*

Humans are visually, tactilely and audibly oriented. Best visuals are right at the work site.
Visual Electronic Documents

- Visual procedures off the shelf and available at the point-of-use
- Streamlined with redundant procedures eliminated
- Simple **visual instructions** for important procedures
- Used in Training
- Basis for Training Checklists (Visual Management)
- Enabler for better Forms (Visual Management)
- Simple visual instructions for important procedures approved as Attachment (Visual Management)
Three main categories of “Root Causes” of **Error and Variations in Quality**

- **Inadequate procedure**
  - missing, incomplete, poorly written or incorrect, outdated, etc.

- **Inadequately followed procedure**
  - lack of training, inaccessible procedure, multiple versions, etc.

- **Inadequate system**
Standard Operating Procedures (SOPs)

- Procedures should have Step-by-Step Instructions.
- It is better to use a *table format* in your SOPs

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Turn power off.</td>
</tr>
<tr>
<td>2</td>
<td>Open front door.</td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Basic Quality Control Tools

- No heavy statistics required:

1. Flowchart
   aka “Process Flow Map (PFM)”
2. Cause & Effect Fishbone
   aka “Ishikawa Diagram”
3. Check Sheet
4. Graph
   for example, Run Chart
5. Histogram
6. Pareto Chart
7. Control Chart
8. Scatter Diagram
(1) Humans are motivated by work that keeps them informed about how their efforts affect the outcome; (2) GOALS and METRICS are Top Motivators for human beings.
Quality Corners, cont

PDSA Forms posted
Visual Dashboard

Visual Instructions
Visual Quarterly Report-Outs

• Visual PowerPoint Presentations
• Facts and data required
• Focus becomes IMPROVEMENT
• Helps Accountability
• Recognition for the “doers” (not bosses)
• Platform for Information Sharing (Yokoten) = “best practice sharing”
Visual Graphs and Charts

Intra-Operative Blood Ordering Workflow

Phlebotomist Staffing-by-Workload
Lean Six Sigma Yellow Belt Course

- Employees learn to identify waste, read/make charts and graphs, PDSA
Visual Management using White Boards

• In Lean, all forms of visual aids are used: electronic dashboards, checklists and whiteboards.
• A different kind of pilot was started in CSMC Anatomic Pathology using whiteboards.
• *It’s not about boards!*
• It’s how they are used....
It’s Not about the Boards

Rounding on Staff is an excellent tool to teach managers to talk to staff (based on Studer).

Thedacare Daily Huddle Board Pilot

Focus on Problem solving

What a mess!
Visual Management involves and aligns the team and compels action.

**Seeing as a group**
- Production Status
- Inventory Levels
- Machine Availability

**Knowing as a Group**
- Delivery Commitments
- Goals and schedules
- Management rules

**Acting as a Group**
- Consensus on rules and objectives
- Involvement in improvement activities

Goal: Leveled Production

Excess capability (which is *arguably* Muda)

Over burden (which is definitely Muri)

Unevenness or variability in both capability and demand = Mura
# Hour-By-Hour Boards

<table>
<thead>
<tr>
<th>Time</th>
<th>Target (Goal)</th>
<th>Blocks Cut</th>
<th>How many blocks were cut today?</th>
</tr>
</thead>
<tbody>
<tr>
<td>10am</td>
<td>245</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>11am</td>
<td>369</td>
<td>375</td>
<td></td>
</tr>
<tr>
<td>12pm</td>
<td>495</td>
<td>500</td>
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</tr>
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</table>
### Refined White Board – Grossing Room

#### Voice of Operations

<table>
<thead>
<tr>
<th></th>
<th>MON 4-22</th>
<th>TUES 4-23</th>
<th>WED 4-24</th>
<th>THURS 4-25</th>
<th>FRI 4-26</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2</strong></td>
<td>150</td>
<td>46</td>
<td>252</td>
<td>101</td>
<td>127</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>37</td>
<td>82</td>
<td>64</td>
<td>146</td>
<td>67</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>70</td>
<td>116</td>
<td>33</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>69</td>
<td>190</td>
<td>200</td>
<td>143</td>
<td>190</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>-</td>
<td>47</td>
<td>47</td>
<td>13</td>
<td>147</td>
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<tr>
<td><strong>8</strong></td>
<td>89</td>
<td>182</td>
<td>147</td>
<td>104</td>
<td>137</td>
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<tr>
<td><strong>10</strong></td>
<td>134</td>
<td>44</td>
<td>135</td>
<td>92</td>
<td>24</td>
</tr>
<tr>
<td><strong>11</strong></td>
<td>-</td>
<td>-</td>
<td>57</td>
<td>49</td>
<td>79</td>
</tr>
<tr>
<td><strong>SMALLS</strong></td>
<td>116</td>
<td>142</td>
<td>229</td>
<td>163</td>
<td>186</td>
</tr>
<tr>
<td><strong>BIGS</strong></td>
<td>473</td>
<td>565</td>
<td>672</td>
<td>554</td>
<td>551</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>589</td>
<td>707</td>
<td>901</td>
<td>717</td>
<td>741</td>
</tr>
</tbody>
</table>
Intangible Benefits seen in AP

Teamwork:
• Unity/constancy of purpose
• Alignment & Shared Mental Models
• Communication & Situational Awareness

Plus:
• Employee Involvement
• Employee development
Tangible Benefits seen in AP

• Employees are engaged and working together:
  1. Employee Commitment scores (how content): Improved on survey
  2. Employee Engagement scores (how engaged): Improved on survey

• Work Cell Productivity Project Accomplishments:
  – Increased Productivity by 15%
  – Reduced budget by 2 FTEs
  – Improved Biopsy Turn Around Time by 57%
  – Site Errors Reduced 57%
  – Specimen ID Errors Reduced 35%
Visual Display and Controls: Quality Improvement Initiative

• Designed visual controls to slow down staff and document employee verification of specimen identity information throughout the lab processes

Lean Paradox: *Be More Like the Tortoise Than the Hare*
AP Approach: Accessioning

Improving accuracy of computer Data Entry step (Accessioning)

- Defined current state: 6% error rate
- Defined goal: below 2%
- Engaged Staff through Visual Communication
- Unannounced quarterly audits
Visual Controls: Accessioning

Data Entry
Tech highlights or places “✓” mark on requisition next to:

✓ Date of Service
✓ Patient name
✓ MRN
✓ Ordering & cc MD
✓ Specimen Source

Provided visual controls to see at a glance that data entry verification steps were made and accurately entered into the computer system.

Results: 70% reduction in errors; process implemented permanently.
Visual Controls: Slide Labeling

- **Example: Histology**
  Tech places “dots” on slide label next to:
  - case number
  - patient name

- Provided visual controls to see at a glance that specimen labeling verification steps were made

**Results:** Practically ZERO errors in slide labeling errors; procedures implemented permanently until bar-code read system.
Specimen Labeling
Visual Controls: Grossing Room

GROSS:
A. BIOPSY BLADDER TUMOR POSTERIOR WALL
Labeled with the patient's name, labeled "biopsy bladder tumor", a soft pink-tan tissue fragment measuring 0.4 x 0.3 x 0.2 cm.
A1. 1

B. LEFT BLADDER BASE
Labeled with the patient's name, labeled "left bladder base", a tissue fragment measuring 0.3 x 0.2 x 0.2 cm. Entirely submitted.
B1. 1

GROSS:
A. DUODENAL BX
Labeled with the patient's name, (Smith, Jane), designated "duodenal bx", seven pieces of soft, tan-pink tissue ranging in size from 0.1 to 0.4 cm in greatest dimensions.
A1. 7

B. ANTRAL BX
Labeled with the patient's name, (Smith, Jane), designated "antral bx", and pieces of soft, tan-pink tissue measuring 0.3 and 0.4 cm in greatest dimensions.
B1. 2
Visual Control in Mistake-Proofing

One type of Mistake-Proofing:

• Inspections involving self-checking and successive checking (by downstream process)
• Simple, informative and very effective
• MYTH BUSTER: Lab people often mistake this to be “inefficient”; some plants conduct 100% successive inspection of priority processes.
• Provides quick detection and containment of defects (Jidoka pillar)

“Built-In Quality”: includes Mistake-Proofing by workcell employees
AP Celebrating Successes through Visual Recognition Systems

• Staff Meetings: PowerPoint Presentations
• Luncheons
• AP Community Board Postings
  – Standing Ovations
  – Lab Exemplar Award
  – Safety Star Award
  – Massage Therapy
  – Spot Bonuses

CS-PATHway
Other Visual Tools in Lean

- 5S (to visually see the abnormality)
  - In Immunopathology, excessive waste of motion reduced and 2 FTEs were redeployed to other tasks
- Kanban (a visual “sign”)
  - Successive inventory system in Immunopathology
  - Under consideration for several areas
- One-Page PDSA form (A-3 reporting)
  - (for problem solving and visual communication)
- Color Coding, Andon lights, tape on floor, etc. (visual cues)

CS-PATHway
CONCLUSIONS from AP

• Visual Communication using Whiteboards is a valuable tool to improving communication and increasing teamwork in the medical laboratory.

• Visual Display is essential to quality and performance improvement initiatives.

• Dashboards and White boards are complementary (not competing) tools
# Lessons Learned

<table>
<thead>
<tr>
<th>VISUAL MANAGEMENT (Enabling)</th>
<th>ALTERNATIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transparency</td>
<td>Information held in the boss’ office</td>
</tr>
<tr>
<td>Discipline for correct procedure</td>
<td>Blame-and-shame, yelling</td>
</tr>
<tr>
<td>Continuous Improvement</td>
<td>Status quo or major capital investment</td>
</tr>
<tr>
<td>Visual aids for job facilitation</td>
<td>No help for workers</td>
</tr>
<tr>
<td>On-the-job effective training</td>
<td>Ineffective training – waste of time</td>
</tr>
<tr>
<td>Shared ownership</td>
<td>Management dictation</td>
</tr>
<tr>
<td>Management by facts</td>
<td>Subjective judgment, wishful thinking</td>
</tr>
<tr>
<td>Unification, constancy of purpose</td>
<td>Fragmentation, local optimization, fiefdoms, silos, etc.</td>
</tr>
</tbody>
</table>
The Power of Visual Communication through Infographics

From: The Toyota Way
THANK YOU!

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