Rural Health Care Symposium

Using Lean Methods to Improve CAH Performance

David Belson, Ph.D.

USC Department of Industrial & Systems Engineering

The California Hospital Association
The Critical Access Hospital Network (CCAHN)
How are hospitals improving performance?

• Surprisingly, nearly all are using Lean or versions of it (TPS, Six Sigma, QI, PI, IE, Baldridge, etc. etc.)

• Recommended by IHI, VHA, major provider systems, etc.
Presentation

1. Intro, plan today’s session
2. A Lean overview
3. Identify issues and its components
4. Mapping tool
5. Value Stream Map (VSM)
6. Other tools to implement and sustain change
Plan for Today

- Intent is … put Lean to work for you, share your challenges
- Everybody:
  - Who is here?
  - What are your issues?
  - Are you familiar with Lean?
- Overview of Lean
- Are some problems at multiple sites?
- Overview of tools specific to issues identified
- **Work on each topic using PI tools**
- Discuss next steps
What is Lean?

- A set of tools that work
- Applicable to a wide range of problems
- An organized way to do improvement projects
- Creates a culture of ongoing improvement
- Popular in healthcare

It really works!
Outline for Today

1. Explain the basic Lean ideas
2. Some Lean tools you can use
   - Starting a project
   - Finding the important improvements
   - Making the change
   - Implement and sustain results
3. Discuss next steps

Ask questions.
Some Typical Lean Projects

- Better experience for patients (in ED, clinic visit, room stay)
- Increased patient access
- Reduction of materials supply costs
- Reduction in cycle time (such as the patient discharge process)
- Improvement in workplace safety
- Improved workflow and movement for staff
- Elimination of errors
- And lots more
What is Lean?

• “Lean” is a management approach derived from the Toyota Production System (TPS). Focus on reduction of waste and to improve overall customer value.

• The Toyota Production System is a comprehensive system that focuses on continuous improvement. Key elements include:
  • Strategy and objective alignment
  • Focuses on aligning people with purpose and goals
The Goal of Lean in Health Care

Bring the highest quality care to our patients, with the best possible service (as fast as possible), with the lowest cost attainable!

• This is achieved through:
  • Focusing on the patient’s viewpoint: what is most important to them – what they are willing to pay for!
  • Reducing/eliminating waste in our all of our processes.
  • Systems perspective: breaking down silos.
Engaging staff in improvement work
Tools

- Process mapping
- Spaghetti diagram
- Waste reduction
- Five whys
- Value-stream mapping
- Five Ss
- Poke Yoke
- Kanban
- Gemba
- Kaizen event
- Flow
- Pull
- Takt time
- Standardized work
- Andon
- Active Daily Management
+ & more
A traditional Japanese term for an activity that is wasteful and doesn't add value or is unproductive. Reducing Muda (waste) is an effective way to increase profitability.
# Waste Categories in Health Care

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excess Motion</td>
<td>Searching for materials, people, information; gathering supplies from multiple carts/closets, walking between work station</td>
</tr>
<tr>
<td>Waiting</td>
<td>Waiting for others to complete tasks before work can begin on the next task; waiting for tests results; physician waiting for access to OR (between cases)</td>
</tr>
<tr>
<td>Over-Processing</td>
<td>Using more supplies than required to perform the job; gathering more information than required; over-utilization in clinical practice (tests, medications)</td>
</tr>
<tr>
<td>Inventory</td>
<td>Overstocked meds or supplies; supplies not available when/where needed; expired supplies.</td>
</tr>
<tr>
<td>Unused creativity</td>
<td>Variation in practices, confusion/lack of clarity, idle staff, staff not performing at their level of capability</td>
</tr>
<tr>
<td>Over-production</td>
<td>Auto-copies of reports; multiple forms w/ same information, left-over food at meetings</td>
</tr>
<tr>
<td>Rework</td>
<td>Unclear orders; correcting mistakes/errors; redoing work; medication errors; incorrect billing</td>
</tr>
<tr>
<td>Transportation</td>
<td>Moving patients, supplies, equipment from one location to another</td>
</tr>
</tbody>
</table>
Defining the Problem Better

- Here are some tools
Cause & Effect (Fishbone diagram)

A basic tool to organize, visualize and discuss a problem
Fishbone Diagram

- Draw, key issue or problem at head
- Causes or related items are diagrammed
Tools to Analyze Problems

Affinity Diagram

- A collaboration and group discussion tool
- List the possible issues, then group logically, visually
Understanding the Problem Better

• Mapping helps in many ways
Why Make a Map?
Why Make a Map?

- Often the good improvement first step
- Provides understanding, identify problems, share understanding
Process Map (Swim-Lane Type)
Basic Process Flowchart Symbols

- Beginning / End
- Database
- Document
- Process Step
- Decision
- Direction
More Symbols Exist

See readings
Example from Last Week
Flowchart Standard Symbols

- An oval is used to show inputs/outputs to the process or start/end of the process.
- A rectangle is used to show a task or activity.
- A diamond is used to show those points in the process where a choice can be made or alternate paths can be followed.
- D shapes are used to show delays.

Arrows show the direction of flow of the process.

Feedback loop
Process Map
(also called a flowchart, process chart, process map, workflow diagram, etc.)

• Is there a best way?
• When to do it and what does it take?
• Why diagram?
• Who diagrams?
A Simple Example

We decide to buy a book, what are the steps?
(old style, before Amazon)

1. Decide to buy a book
2. Go to the book store
3. Find the book?
4. If no, leave (or buy another book)
5. If there, take it to cashier
6. Leave (with book)
A Simple Example

1. Decide to buy a book
2. Go to bookstore
3. Found the book I want?
   - No → Leave
   - Yes → Pay for Book
4. Go home and read book
Simple Patient Visit Process Map
Now This is Where it Gets a Little Complicated
Questions?

- How much detail?
- Where do you get the info
- What tools are helpful? Necessary?
- How do you know it is correct?
Systems View of Health Care

INPUT

Transformation Process

OUTPUT

Feedback

Labor
Material
Machines
Management
Capital

Goods or Services
Hospital Lab Flowchart

- Lab – interviewed two managers
- Reviewed flow with managers and revised diagram accordingly (versions 2 & 3)
Inpatient specimen, from ward or phlebotomy unit

Lab USC / ISE + LAC Patient Flow Project

1. Physician Order Form
2. Lab USC / ISE + LAC Patient Flow Project
3. Physician Order Form

Version 1

Inpatient specimen, from ward

Receipt of item and paperwork

Specimen and order sent as package

Pneumatic tube

Physician Order Form

Receipt of item and paperwork

Flag for priority processing

Order Management status?

Send results to Medical Records

Affinity transfers order to Misys

Most orders are entered at point of origin, via order management system.

Some (few) tests are sent to outside labs.

Other non DHS; Juv.Hall, Empl. Health

Order Management status?

Most are automatically entered, some are manual.

Some arrive from other locations brought by nurse or transportation svc.

A Div sample as necessary for multiple tests

Color code helps identify priority

Specimen delivered to respective test area in Lab

Test sufficient?

Tests reordered when necessary.

May mean do a different test, add a test or redraw specimen

DR must initiate request

End of process

The results for network patients alone get sent to medical records. O/P, ER, employee health get printed daily at medical records (HIM). IPD gets printed weekly.

Results not OK

HIM or CHC prints results

Results OK

Technologist evaluation

Rerun test or get new specimen from Pt

End

Version 3
Example; an Evolving Map
They always get revised if the process being mapped is complex
Became this, 2\textsuperscript{nd} Version
4th Version
Suggestions:
- Use “clouds” for unclear portions
- Start with beginning and end
- Observe, watch entire process more than once
- Look for steps that are redundant, are loops, are unnecessary (no significant impact if not done)
- Do at various (perhaps 2) levels of detail
- Boundaries; important to make clear
- Identify who are sources, who are users
- Can be used for training purposes
Patient is transferred to Pre-Op Surgeon Visit and make the decision to continue with the surgery or not.

Charging Nurse completes Data Entry to the system.

Anesth. Prep Patients.

Surgeon explains the procedure to the patient.

Transporter picks up patient from the room.

Patient is transferred to Pre-Op.

Pre-Op Nurse takes the Vitals and do the evaluation.

Vitals and Other Evaluations ok?

Points where a delay could be caused.

Pre-Op Nurse visits the Patient and make the decision to continue with surgery or not.

Additional Procedures Required before Surgery?

Surgeon decides to continue with the Surgery?

Nerve Block Needed?

Patient transferred to Post Anesth. Recovery Room.

Patient is transferred to the Post OP recovery room for further analysis.
More Suggestions for Useful Flowcharting

• Distinguish between the ideal processes and the actual set occurring
• Note assumptions and sources
• Incorporate useful details such as time and costs of processes
• Review diagrams with sources
• Test against actual observations
• Include intangible and mental steps
• Ideally, have a second person compare the chart to observation
Process Map (Swim-Lane Type)
Flowchart showing activities by department or function.

“Swim Lane” type.
Swim Lane/Functional Process Map

Business Unit
- Define needs
- Prepare paperwork (CER & installation request)
- Review & approve CER
- Review & approve standard
- Review & approve CER
- CER > $50,000
  - Yes
  - Review & approve CER
  - Acquire equipment
  - Supplier
  - Supplier
- 21 days
- 6 days
- 15 days
- 5 days
- 17 days
- 7 days
- 71 days

I.T.
- Configure & install
- Receive & use
- System failures create delays

Purchasing Manager Accounting
- Issue payment
- Incorrect payments
- Not necessary
- Creates delays
Patient
- Arrives at Self-parks/valet Parking
- Walks to lobby
- Gets badge
- Walks to clinic
- Enters clinic and signs in

Receptionist
- Checks scheduling system for patient
- Within 15 minute grace period?
  - No
    - Reschedules patient
  - Yes
    - Puts sign in sticker on patient list

Medical Assistant

Nurse

Doctor

GI Clinic Swim Lane Process Map
- **Patient Receptionist**
  - Checks patient into system
  - Gives corrected information
  - Finds pre-assembled patient packet
  - Verifies their information
  - Places chart in pending patient chart area
  - Updates patient information in system

- **Medical Assistant**
  - Walks to clinic front desk and grabs patient chart
  - Picks up patient in waiting room and walks patient to vitals room
  - Updates patient information in system
  - Checks patient into system

- **Nurse**
  - Pick up patient in waiting room and walks patient to vitals room

- **Doctor**
6. Logs into system that with patient and takes vitals
7. Walks patient from vitals room to exam room
8. Giving consent forms?
9. Logs out of system and alerts Nurse
10. Walks to patient exam room
11. Logs into system that with patient and does H&P
12. Logs out of system and alerts Doctor
13. Writes notes/orders
14. Logs out of system
Leaves exam room and walks to clinic front desk

Reviews notes for follow up, schedules follow up

Obtains co-pay

Checks for labs, prints patient visit summary

Checks out patient

Starts room turnover

Completes room turnover

Leaves clinic and returns to parking lot

Pays for parking

Leaves

Leaves clinic and returns to parking lot

Pays for parking

Leaves

GI Clinic Swim Lane Process Map
Using Your Flowchart

- Identify who is responsible for what
- Identify ways to simplify
- Identify opportunities for elimination of a step
- Look for unnecessary decisions
- Locate cost only steps
- Can loops be eliminated or shortened?
- Identify bottlenecks
- Use it as a learning and training tool
Other types of maps.
- Diagrams are a good way to present complex information.

- There are many ways to usefully and graphically describe information.

See also http://gsociology.icaap.org/methods/presenting.htm
Overlays are sometimes useful.
Bed Turnaround Process

**Patient leaving**

- Discharge Order written by doctor
- Bed Control Notified
- Patient 1 Departs
- Housekpg Called
- Discharge Waiting Rm. notified
- Pt. Transport Called
- Pt. Transport Arrives

**Bed Control Room Assignment**

- Housekpg Complete

**Bed Available**

**Bed Turnover Time**

**Patient 2**

- Patient 2 Arrives
- Pt. Transport for Pt 2 Called
- Patient Assigned

**Bed Turnover Time**
Bed Management

Bed Control

Nursing Director (staffing)

Separation Desk

Affinity (beds, patients)

Housekeeping

ER (pre admit, patients waiting)

Related reports

Nursing Administration (bed closures)

Wards
(patients leaving, pre discharge, beds closed, beds available, etc.)

OPD (patients waiting)

Patients
Telephone calls, paper
Computer system

Patient Flow Coordinator

DWU

CDU
Diagrams are Sometimes Needed Rather than a “Map”

7:30 AM  

<table>
<thead>
<tr>
<th>Operating Room 1</th>
<th>Operating Room 2</th>
<th>Operating Room 3</th>
<th>Operating Room 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>Surgery</td>
<td>Surgery</td>
<td>Surgery</td>
</tr>
<tr>
<td>Room Turn over</td>
<td>Room Turn over</td>
<td>Room Turn over</td>
<td>Room Turn over</td>
</tr>
</tbody>
</table>

Noon

4:00 PM
1. Surgery end to wheels out, includes:
   - Extubation of patient
   - Move patient to transport bed
   - Completion of paperwork
   - Disposal of drugs
   - Potential causes of delay:
     - Transport bed or staff not ready
     - Recovery bed not available
     - Movement delayed by staff preparing paperwork or other tasks
     - Patient wake-up takes longer than expected

2. Room turnover, wheels out to wheels in, includes:
   - Wheel-out prior patient
   - Move out equipment from prior case
   - Clean room
   - Move in equipment for following case
   - Interview patient in Pre Op
   - Pre med patient in Pre Op
   - Transport patient to operating room
   - Wheel-in following patient
   - Potential causes of delay:
     - Patient not ready in Pre Op
     - Patient paperwork not ready
     - Lab tests not ready
     - Transport staff not available
     - Room not clean
     - Surgeon, anesthesiologist or nursing not available to interview patient or family
     - Move not ordered

3. Wheels in to surgery start, includes:
   - Assembly of clinical staff (surgeon, anesthesiologist, surgeon)
   - Confirmation of plan, “time out” step
   - Move patient from transport bed to surgery bed
   - Prep of patient
   - Intubation of patient
   - Potential causes of delay:
     - Surgeon, anesthesiologist or nursing not available. Circulating nurse not available for needed communications.
     - Equipment & materials not ready
     - Lab tests &/or paperwork not ready
**Activity and Role-Lane Mapping**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Clerk</th>
<th>Nurse</th>
<th>Porter</th>
<th>Doctor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take insurance information</td>
<td>✗</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Move patient</td>
<td></td>
<td>✗</td>
<td>✗</td>
<td></td>
</tr>
<tr>
<td>Record vital signs</td>
<td></td>
<td>✗</td>
<td></td>
<td>✗</td>
</tr>
<tr>
<td>Take history</td>
<td></td>
<td>✗</td>
<td></td>
<td>✗</td>
</tr>
<tr>
<td>Examine patient</td>
<td></td>
<td></td>
<td></td>
<td>✗</td>
</tr>
<tr>
<td>Write pathology request</td>
<td></td>
<td></td>
<td></td>
<td>✗</td>
</tr>
<tr>
<td>Deliver pathology request</td>
<td>✗</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Analyzing the Map

- Value Stream Map (VSM)
Value Stream Map

- **VA**: Value-added time
- **NVA**: Non-Value added time

Wait time plus Non-value added time = 76 minutes & 20 seconds
Value-added time = 16 minutes & 40 seconds
Total visit time = 93 minutes
Value added time percentage = 18% of visit
Example from Last Week
**Example: Value Stream Map**

### Clinic Visit

<table>
<thead>
<tr>
<th>Check-In</th>
<th>Prep</th>
<th>Exam</th>
<th>Check-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Patient completes form (5 m)</td>
<td>1. Takes Vitals (4 m)</td>
<td>1. Asks chief complaint (1 m)</td>
<td>1. Schedules follow-up appointment (1.5 m)</td>
</tr>
<tr>
<td>2. Receptionist reviews form/verify ID (1.5 m)</td>
<td>2. Documents in Chart (1 m)</td>
<td>2. Completes exam (8 m)</td>
<td>2. Collects co-pay (2 m)</td>
</tr>
<tr>
<td>3. Entered into computer (6 m)</td>
<td>3. Reviews patient form (.5 m)</td>
<td>3. Does form for test orders (1 m)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Questions patient on chief complaint (1.5 m)</td>
<td>4. Writes RX (1.2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Documents orders &amp; RX in chart (2)</td>
<td></td>
</tr>
</tbody>
</table>

**Value-Added 36%**

**Non Value-Added 64%**

<table>
<thead>
<tr>
<th>VA</th>
<th>NVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>22</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>3.5</td>
<td></td>
</tr>
</tbody>
</table>

**Clinic Visit**

**Value-Added 36%**

**Non Value-Added 64%**
Example: Value Stream Map

Clinic Visit

Check-In
1. Patient completes form (5 m)
2. Receptionist reviews form/verify ID (1.5 m)
3. Entered into computer (6 m)

Prep
1. Takes Vitals (4 m)
2. Documents in Chart (1 m)
3. Reviews patient form (5 m)
4. Questions patient on chief complaint (1.5 m)

Exam
1. Asks chief complaint (1 m)
2. Completes exam (8 m)
3. Does form for test orders (1 m)
4. Writes RX (1.2)
5. Documents orders & RX in chart (2)

Check-Out
1. Schedules follow-up appointment (1.5 m)
2. Collects co-pay (2 m)

VA 6.5
NVA 6

Value-Added 36%
Non Value-Added 64%
Other tools
Spaghetti Diagram

- To understand actual movement and opportunities for improvement
- Simple, but effective
Pareto Chart

- Identify issues, topics, problems
- Sort count by frequency, then graph or bar chart
Responsibilities Matrix

- Developed by interviews, observation
- Find undesirable duplication, improvement opportunities
- Basis for new processes and assignments

<table>
<thead>
<tr>
<th></th>
<th>Physicians Order</th>
<th>Surgeons Order</th>
<th>Work-Ups</th>
<th>Surgery Consent</th>
<th>Blood Consent</th>
<th>Schedule Surgery</th>
<th>Receive Medical Record</th>
<th>Medical Record Audit</th>
<th>Check Paperwork</th>
<th>Check in Admitting</th>
<th>Get Patient from waiting room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic Clerk</td>
<td>x x x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Scheduler</td>
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<td>x</td>
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<tr>
<td>Pre-Op Nurse</td>
<td></td>
<td></td>
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<td>x x x</td>
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<td></td>
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<tr>
<td>Registration Clerk</td>
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<td></td>
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<td>x x</td>
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</tr>
<tr>
<td>Pre-Op Clerk</td>
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</tr>
</tbody>
</table>
Five **Whys** Technique

- Ask *why* the condition occurred
- Ask again *why* for each answer (up to **five** times is a good rule of thumb)
Other Methods to Evaluate Current Practices or Alternative Changes

- Scatter Diagrams
- Failure Mode and Effects Analysis
- Theory of Constraints
- SIPOC Summarizes: suppliers, inputs, process, outputs, and customers
- Maturity Model of the organization
Value Stream Map

- **VA:** Value-added time
- **NVA:** Non-Value added time

Wait time plus Non-value added time = 76 minutes & 20 seconds
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Total visit time = 93 minutes
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Kaizen Event

- An organized Workshop or event to analyze the current work process (value stream map)
- Brainstorm how to eliminate waste in work process
- Pilot or plan pilot for selected ideas
- Develop plans for full-scale implementation
- Report out to Management/Champion
- Rules for Champion:
  - “Yes, I support this”
  - “No, I cannot because…”
  - “I would like to support, but need more information, specifically…”
Kaizen
Clinic Visit Map
Failure Mode and Effects Analysis
An effective tool to reduce errors. A structured approach to:
Identifying the ways in which a product or process can fail.

<table>
<thead>
<tr>
<th>HFMEA Subprocess Step Title and Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFMEA Step 4 - Hazard Analysis</td>
</tr>
<tr>
<td>HFMEA Step 5 - Identify Actions and Outcomes</td>
</tr>
</tbody>
</table>

**Failure Mode:** First evaluate failure mode before determining potential causes

<table>
<thead>
<tr>
<th>Potential Causes</th>
<th>Scoring</th>
<th>Decision Tree Analysis</th>
<th>HFMEA Step 5 - Identify Actions and Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Severity</td>
<td>Probability Max Score</td>
<td>Action Type (Control, Accept, Eliminate)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single Point Weakness?</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Existing Control Measure?</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Detectability Proceed?</td>
<td></td>
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<td></td>
<td></td>
<td>Actions or Rationale for Stopping</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Outcome Measure</td>
<td></td>
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<td></td>
<td></td>
<td>Person Responsible</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Management Concurrence</td>
<td></td>
</tr>
</tbody>
</table>

Person Responsible
Management Concurrence

---

**HFMEA Step 5 - Identify Actions and Outcomes**

**Action Type:**
- Control
- Accept
- Eliminate

**Actions or Rationale for Stopping**

**Outcome Measure**

**Person Responsible**

**Management Concurrence**
PDSA

- Plan, Do, Study, Act (or PDCA)
- Implementation of change is a cycle, not completed in one step
- Small, incremental change is a good approach
Rapid Improvement: Multiple Cycles

- The cycle:
  - **Act**
  - **Plan**
  - **Study**
  - **Do**
  - **Data**

- If there is *no* improvement, try the cycle again!
  - Try another solution/change
  - Collect data based on the change
  - Pause to plan…what’s your prediction for the next test?

- If there *is* improvement you can:
  - Test in a different shift, area, group
  - Decide how to make the change part of daily work
  - Select another area in process to improve
The PDSA Action Plan Worksheet

- Use the PDSA Action Plan to:
  - Plan tests you will run
    - Who
    - What
    - When
  - Capture predictions
  - Document results and learning
  - Document agreements about next steps

**PDSA Action Plan**

*What are we trying to accomplish?*
[insert SMART Goal]

*How will we know a change is an improvement?*
[insert your key measures - process, outcome and balancing here]

*What changes can we make that will result in an improvement?*
[list which agreed upon changes your team will test here]

**Summary of PDSA Cycles**

<table>
<thead>
<tr>
<th>Describe your planned tests of change (add more rows if needed)</th>
<th>Person Responsible (e.g., who will test)</th>
<th>When to be done (e.g., day, shift)</th>
<th>Where to be done (e.g., unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDSA #1</td>
<td></td>
<td></td>
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<tr>
<td>PDSA #2</td>
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<td>PDSA #3</td>
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<td>PDSA #4</td>
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<tr>
<td>PDSA #5</td>
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</tr>
</tbody>
</table>
A-3

- Single page for objectives, plans and status
- Shared throughout organization
- Standardized format
**TEAM CHARTER**

**24-Apr-09**

**Reporting Unit:**

**Theme:** Standard work for CHF patient care

---

### PROBLEM STATEMENT

Based upon the last available quarterly data, Contra Costa’s 30-day CHF readmission rate has ranged from 28% to 29%, with a median between 15% and 20%. While national studies show that 30% of all CHF readmissions are avoidable, several medical centers have in fact been able to reduce their readmission rates to single-digit percentages. The cost of unplanned hospitalizations is estimated to be in the neighborhood of $14,050 per readmitted patient. This is to say nothing of the negative impact on the patients’ safety and quality of life.

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### PROPOSED ACTIONS

To achieve our targets, we propose to design and, in a series of three 5-day kaizen events, implement an integrated, sequenced treatment pathway for CHF patients, including six components: (1) a standardized, enhanced admission into the treatment pathway, beginning with early identification of all interdisciplinary roles (including residents) focused on the patient; (2) available, optimal, reconciled, and adjusted CHF patient medications pre-prescribed (patients leave the hospital with a 30-day supply); (3) increased delay in discharge and improved quality of hand-off to the “next provider”; (4) agreed-upon, patient-centered follow-up including improved appointment access that is timely, with good letters and good communication (in the absence of such letters), standard CHF teaching for both physicians and learners that is consistent in message and teaching tools, sequenced according to the treatment pathway, beginning upon admission and continuing through discharge and follow up.

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### IMPLEMENTATION PLAN

<table>
<thead>
<tr>
<th>ACTION ITEM</th>
<th>RESPONSIBILITY</th>
<th>DUE DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaizen event 1</td>
<td>Anna Roth</td>
<td>May 18, 2009</td>
</tr>
<tr>
<td>Kaizen event 3</td>
<td>Anna Roth</td>
<td>June 12, 2009</td>
</tr>
<tr>
<td>Kaizen event 4</td>
<td>Anna Roth</td>
<td>July 13, 2009</td>
</tr>
</tbody>
</table>

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### CHECK AND ACT

The CEO will conduct standup meetings focused upon completion of action items listed in Kaizen Bulletins, also affecting targeted measures of improvement,

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### TARGET STATEMENT

By January 1, 2010, patients with CHF discharged from our hospital or seen in our clinic will have: 1) have appropriate contact within 3 days of discharge from the hospital; 2) adhere to an appropriate medication regimen and standards of care; 3) have access to education, and knowledge of management of medications; 4) receive standardized education, diet, activity, medications, weight monitoring, symptom management, and follow-up contact as needed by patient. We anticipate that by improving this measure, we will reduce the all-cause 30-day readmission rate of CHF patients by 50% and improve patient satisfaction by 10%.

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### ANALYSIS

Many causes contribute to our CHF readmission rate, including: a) we can’t find our CHF patients sometimes for 3 days; b) language barriers confound discharge instructions; c) CHF education materials are in English only; d) education is poor and incomplete; e) we lack standard processes; f) patients do not adhere to their plan of care; g) patients lack the ability to change either for financial reasons or because of life style changes; h) our system is designed to consistently provide appropriate care for CHF patients; i) there are many barriers to care, including poor appointment access and access to medications.

---

**Define**

**Control**

**Measure**

**Control**

**Analyze**
Standard Work

- All procedures should have a clear description
- Consistency is critical to clinical practices
- Written procedures are for training and assuring quality
- Change isn't done until standard work is written and everybody knows about it and uses it
Still More Lean Improvement Ideas

- Continuous flow
- Materials efficiency; Kanban, JIT
- Pull vs. Push
Neatness Reduces Waste
5-S

- Neatness supports effectiveness
- Sorting, Set in order, Systematic cleaning, Standardizing, and Sustaining
- Detail tools available
Neat & Clean, Place for Everything, Poke Yoke

How might you be able to use pictures for your project?
Poke Yoke

Six Sigma

- Measure and reduce variability
- Overlaps with Lean, but more focus on Data and Quality than on Productivity and Waste
- Control chart
Other Methods to Improve Current Practices

- SMART goals (specific, measurable, attainable, relevant and time-bound)
- Design of Experiments
- Facility Layout methods
- Checklists
- Change Management
- Cost Effectiveness, ROI analysis
Departmental Performance Boards

- Department goals and performance metrics
  - Focus on process performance
- Updated weekly with stats and trended where indicated
- Identify Improvement opportunities
- Displays feedback from patients (i.e., staff recognition, and/or complaints, etc.)
How Lean Works

A gradual, methodical process of small improvements, performed every day by everyone. It can be summed up as “continuous improvement.”

True North Focus – everyone from top leadership to staff on the line are aligned to the same purpose.

Continuous Flow – work is balanced, roles and expectations are clearly defined, and there is good communication between team members.

Just-in-Time (Pull) – so work is initiated when needed by the customer.

Responsiveness – so the workforce is able to change their activities in response to demand and shifts in daily work requirements.

Workplace Organization – no physical obstacles are in the way, things are easy to find.

Built-in Quality – errors are eliminated reducing the need for rework.
Example: Improve Discharge Process

- Assess the problem
  - Analyze problem with team (Kaizen Event)
  - Mapping the process, verify
  - Root cause analysis, identify where are defects, waste
  - Value Stream Map; steps, time, value

- Develop solutions
  - Change via Kaizen, PDSA cycles, develop Standard work
  - Control chart, benchmarking (HFMA, others)

- Implement and sustain change
  - Set goals and monitor results, distribute broadly
  - Use huddles, performance boards
First Things, First

• Gather a cross-functional team for Kaizen Event with representation from all parts of the process being investigated

• Don’t forget ancillary or support staff

• Don’t assume that all of the necessary knowledge is in the room

• Be prepared to learn things you did not necessarily want to know!
Getting Started - planning

• You must have a plan as well as an understanding of where you are going (A-3, Gantt)
• Think about where Lean fits in your journey
• Successful Lean efforts are integrated in the overall vision of the hospital
A good video about a hospital using Lean is at: https://www.youtube.com/watch?v=jZLtbye--sg and http://www.pbs.org/newshour/videos/#174146

Also, there are many books, including:

• Lean Hospitals: Improving Quality, Patient Safety, and Employee Satisfaction, by Mark Graban

• Transforming Health Care: Virginia Mason Medical Center's Pursuit of the Perfect Patient Experience, by Charles Kenney (Author), Donald M. Berwick (Foreword)

• The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer, by Jeffrey Liker

• The Lean Six Sigma Pocket Toolbook: A Quick Reference Guide to 100 Tools for Improving Quality and Speed, by Michael L. George
Additional Sources

- Books and periodicals
- Professional organizations; AHRQ, IHI, IIE/SHS, SHIP, INFORMS, ACHE, ASQ & others
- Web sites for organizations and consultants, as well as social networking discussions
Questions?
(I may have covered too much, too fast)

Next steps? Pick a problem or more and form a team (Kaizen).

David Belson, PhD
USC, Viterbi School of Engineering
belson@usc.edu
310 916 8995 (cell)
Questions?
Thank You!

David Belson, PhD
Adjunct Professor
Viterbi School of Engineering,
University of Southern California
(310) 916-8995
belson@usc.edu