Using the Lean Model for Performance Improvement

Presented by Content Expert:
Cindy Mand
Director, Lean Enterprise
BloodCenter of Wisconsin, Milwaukee, WI
Learning Objectives

1. History of Lean and it’s Roots in Health Care
2. Lean Philosophy, Key Principles, Concepts and Foundation Tools
3. Where Lean Can Be Applied
4. Advantages and Disadvantages of Lean
5. Critical Success Factors for Successful Application, Integration and Sustainable Results
6. Synergies with Other Continuous Improvement Methodologies
Definition of Lean

A systematic approach to identifying and eliminating waste through continuous improvement by flowing the product at the demand of the customer in the pursuit of perfection.
Kaizen

“Continuous Improvement”
Lean Philosophy

Ship, Water, Rocks
A Closer Look At Cost

Traditional Thinking
Cost + Profit = Price

Lean Thinking
Price – Cost = Profit
House of Lean

Best Quality  Lowest Cost
Short Lead Time  Best Safety High Morale

Just in Time
Right product for Right patient at Right time

Takt Time
Kanban

Respect for People
Suggestion Programs

Kaizen

Built in Quality
Make problems visible

Root Cause Analysis
Mistake Proof

Standard Work & Visual Management

5S
5 Lean Principles

• Identify **value** from the standpoint of the customer.
• Identify the **value stream** through the steps required to create each product/service - from concept to launch and order to delivery - and remove the wasted steps.
• Make the process of value creation **flow** smoothly and quickly to the customer.
• **Demand (pull)** comes from the customer.
  • Pursue **perfection** by constantly improving the product or service and the value stream.
P1: Voice of the Customer

• How do you capture what the customer wants?

• What does the customer want?
Customer Value

- **Value added** is something the customer is willing to pay that changes
  - Form
  - Fit
  - Function

- **Non-Value Added** = WASTE

- **Non-Value Added Essential** are things that don’t add value but may need to be done due to regulations or standards.
To truly improve, an organization must clearly understand all the forces and actions that might impact the delivery of treatment for a specific medical condition. This understanding can be accomplished by creating a patient value stream map.
Producing or processing and moving one item at a time (or a small and consistent batch of items) through a series of processing steps as continuously as possible, with each step making just what is requested by the next step.

One-piece flow or single piece flow
P4: Pull When Customer Needs It

Way of managing activity that minimizes work in-process and dramatically improves throughput time by eliminating wait time between steps/operations.

- Signal
- Upper Volume Limit
- Kanban
P5: Strive for Perfection!

• Endless opportunities for improving the utilization of all types of assets.

• Systematic elimination of wastes will reduce operating costs AND meet customer needs at a lower price.
Lean Concepts – Value Stream

All of the actions, both value-creating and non value-creating, required to bring a product from concept to launch and from order to delivery. These include actions to process information from the customer and actions to transform the product on its way to the customer.
Lean Concepts - Waste

• Transportation
• Inventory (Unnecessary)
• Motion (Unnecessary)
• Waiting
• Overproduction
• Overprocessing
• Defects

Adds Costs – No Value
Transportation
Excessive movement of people, information or materials.

“We have to go x-ray, after x-ray someone will take you the lab”.
Excess Inventory
Excessive storage and delay of information or products.

“We’re running out of room. We need to expand!”

Source: Vansco Electronics Ltd.
Excess Motion
Any motion that does not add value to the product or process.

“There’s got to be an easier way!"

Source: Vansco Electronics Ltd.
Waiting
Long periods of inactivity for people, information or materials.

"Doctor Heimlich is quite busy, but I'm sure he'll be able to squeeze you in."
Overproduction
Producing more/sooner than the internal or external customer needs.

“Great, I’ve got enough done to last a few days.”
Over processing
Work around, wrong tools, cumbersome systems

Source: Mark Anderson, Andertoons.com

This presentation is part of an on-line series, brought to you through a collaboration between the Wisconsin Office of Rural Health and the Wisconsin Hospital Association. Property of the Wisconsin Office of Rural Health.
Defects
Paperwork errors, quality problems
## Examples of Waste in Health Care

<table>
<thead>
<tr>
<th>Type</th>
<th>Laboratory Example</th>
<th>Patient Care Example (Oncology)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defects</td>
<td>Mislabeled patient specimens</td>
<td>Wrong medication delivered to patient</td>
</tr>
<tr>
<td>Overproduction</td>
<td>“Just in case” blood tubes drawn from patients, but not used</td>
<td>Patients seen by MD faster than can be treated with chemotherapy, causing delays</td>
</tr>
<tr>
<td>Transportation</td>
<td>Moving specimens long distances from receiving to testing</td>
<td>Long walks from MD clinic to chemotherapy</td>
</tr>
<tr>
<td>Waiting</td>
<td>Specimens waiting in batches for testing</td>
<td>Patients waiting due to physician lateness or schedule exceeding capacity</td>
</tr>
<tr>
<td>Inventory</td>
<td>Expired test reagents</td>
<td>Expired chemotherapy drugs</td>
</tr>
<tr>
<td>Motion</td>
<td>Technologist walking due to poor layout</td>
<td>Nurses searching for missing or poorly located supplies</td>
</tr>
<tr>
<td>Over Processing</td>
<td>Time/date stamps on labels that are not used</td>
<td>Time spent creating a schedule that is not followed</td>
</tr>
<tr>
<td>Human Potential</td>
<td></td>
<td>Employee ideas not listened to</td>
</tr>
</tbody>
</table>
Basic 6 - Lean Tools

- Value Stream Map
- Spaghetti Map
- Takt Time
- Kaizen Blitz
- Visual Management & 5S
- Kanban
Value Stream Map

Graphical tool to help you see and understand the flow of the material and information as a product makes its way through the value stream.
Total Cycle Time = 4.1 Hours to Admit A Patient
Spaghetti Map

- A graphic showing the movements of the patients and caregivers.

Before
Total travel = 1415 ft

After
Total travel = 434 ft
5S +1

Sort - All unneeded tools, parts and supplies are removed from the area

Set in Order - A place for everything and everything is in its place

Shine - The area is cleaned as the work is performed

Standardize - Cleaning and identification methods are consistently applied

Sustain - 5S is a habit and is continually improved

---

+ 1 Safety
Work areas are safe and free of hazardous or dangerous conditions
5S Examples

**Colored Coded Bins**

**BEFORE**

**AFTER**

Standard set-up in all supply drawers

This presentation is part of an on-line series, brought to you through a collaboration between the Wisconsin Office of Rural Health and the Wisconsin Hospital Association. Property of the Wisconsin Office of Rural Health.
Takt Time

Effective working time per time period divided by customer demand per time period.

*Example*

450 minutes
-------------- = 3 minutes
150 pieces

Average cycle time observed
42.23 minutes

TAKT Time 11.89 minutes
Kaizen Blitz

A team-focused, intense, short-term project to improve a process that takes 2-5 days.
Kanban

- A system that uses replenishment signals to simplify inventory management
  - Signals (usually cards) hold product details
    - What to make, when to make it, how much to make, and where to send it
  - Cards stay attached to a bin that holds the product
  - When bin is empty, it is returned to the start of the assembly line for replenishment
  - Full bins are returned to the customer, and the cycle continues
A small stock of every item sits in a dedicated location with a fixed space allocation.
Mistake Proofing

Prevention of tray disposal with trash

Lawn Mower Blade Safety Interlock
Where Lean Can Be Applied

• Any organization

• Anything that has a process
Advantages/Disadvantages of Lean

**Advantages**
- Increased customer satisfaction
- Increased productivity
- Financial impact
  - Reduction of inventory - Less space necessary to hold inventory
  - Reduced waste – Decreased production cost
  - Increased competitive advantage
    - Faster response to the customer
    - Lower cost
    - Higher quality
- “New” culture
- Improved utilization of space/work areas
- Improved ability to react to changes

**Disadvantages**
- Difficulty involved with changing processes to implement Lean principals
- Commitment and resources required
- It’s not the silver bullet! But what is?

**IMPROVED QUALITY & OUTCOMES!**
<table>
<thead>
<tr>
<th>Element</th>
<th>Traditional</th>
<th>Lean</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Slow &amp; Uncertain</td>
<td>Fast &amp; Positive</td>
<td>Quality &amp; Coordination</td>
</tr>
<tr>
<td>Teamwork</td>
<td>Inhibited</td>
<td>Enhanced</td>
<td>Effective Teams</td>
</tr>
<tr>
<td>Motivation</td>
<td>Negative, Extrinsic</td>
<td>Positive, Intrinsic</td>
<td>Strong Motivation</td>
</tr>
<tr>
<td>Skill Range</td>
<td>Narrow</td>
<td>Broad</td>
<td>Job Enrichment</td>
</tr>
<tr>
<td>Supervision</td>
<td>Difficult and Fragmented</td>
<td>Easy &amp; Localized</td>
<td>Fewer Supervisors in the long run</td>
</tr>
</tbody>
</table>
Critical Success Factors

1. Top Management Support
2. Focus on the Goal
3. Focus on the Long Term
4. Involve everyone at all levels of the organization
5. Involve customers and supplies
Lean Deployment

- Personal Lean
- Pilot Area
- Functional Area
- Enterprise Wide
Synergies With Other Improvement Methodologies

This presentation is part of an on-line series, brought to you through a collaboration between the Wisconsin Office of Rural Health and the Wisconsin Hospital Association. Property of the Wisconsin Office of Rural Health.
Deming

Practical Problem Solving
Apply Lean to eliminate waste and reduce the process lead time.

Apply Six Sigma focused on the reduction of process variation.
Resource List

- Lean Thinking
- Lean Guide to Transforming Healthcare
- The Gold Mine

This presentation is part of an on-line series, brought to you through a collaboration between the Wisconsin Office of Rural Health and the Wisconsin Hospital Association.
For More Information

Cindy Mand
BloodCenter of Wisconsin, Milwaukee, WI
P: 414-937-6041
E: cynthia.mand@bcw.edu

Wisconsin Office of Rural Health
Kathryn Miller
Rural Hospitals & Clinics Program Manager
P: 800-385-0005
E: kmiller9@wisc.edu

Wisconsin Hospital Association
Dana Richardson
Vice President, Quality Initiatives
P: 608-274-1820
E: drichardson@wha.org

This presentation is part of an online series, brought to you through a collaboration between the Wisconsin Office of Rural Health and the Wisconsin Hospital Association. Property of the Wisconsin Office of Rural Health.