Overview of Lean at URMC
Agenda

Introduction to Lean at URMC

Strategy for Lean at URMC

Understanding Waste

Introduction to Tools & Techniques
Healthcare, As It Is Currently Delivered in The US, is Unsustainable

Estimated that healthcare wasted $765,000,000,000 annually
  • ~30% of all spending

Deaths due to preventable medical errors are the 6th leading cause of death
  • 98,000 annually at a cost of $29,000,000,000

A knee replacement in the US costs ~$25,000, in Sweden the same procedure costs $8,000 and patients receive a 5 year guarantee
Lean is a Continuous Improvement Methodology Based on the Toyota Production System (TPS)

A philosophy empowered by the application of lean principals and tools

Toyota focused on idea of creating value for their customer

- Value to the customer is delivering highest quality product at the lowest possible cost
- Value is created through the elimination of waste
  - Waste adds cost to the process but does not change fit, form or function of the product
  - Customer is not willing to pay for waste
Although Lean Originated in Manufacturing, It Can Be Applied to Any Industry

All work is made up of processes

- Building a car
- Marketing a product to consumers
- Providing healthcare services

All process can and should be improved

- Complete the process with higher level of quality
- Complete the process faster
- Complete the process more efficiently
- Complete the process based on customer need/demand
Many Healthcare Organizations Have Successfully Applied Lean to their Processes

Seattle Children’s Hospital has been using for more than 10 years
- 50% reduction in ICU blood stream infections
- $2.5M reduction in supply-related costs
- 6% reduction in cost per patient
- 20% in ICU ALOS

Denver Health has used lean since 2006
- $139M in hard financial benefits
- Moved from 26th to 6th on UHC Quality and Accountability Aggregate Score
- Only healthcare organization to receive Shingo Award for Operations Excellence

Additional organizations
- Virginia Mason
- Kaiser Permanente
At Its Core, Lean is a Different Way of Thinking About the Work People Do

Fundamentally, lean is about leveraging employee knowledge and experience to identify and eliminate waste from our processes so we can spend more time, effort, resources on the stuff that matters to our patients and less on the stuff that doesn’t
Put Even More Simply

Lean is

• Leveraging people’s knowledge and experience
• To deliver value to our patients
• Through the elimination of waste

Lean is done by

• Going to see
• Asking why
• Showing respect
Lean Depends on Leveraging the Experts Within Processes – Those Doing the Work

Get the best ideas

- The best people to identify issues are those doing the work
- The best people to identify countermeasures are those doing the work

Leveraging employees shows them respect

- For their experience
- For their ideas

Easier to get buy in and hold people accountable for ideas they have developed themselves
Value in Healthcare Can Take Three Different Forms

Financial
• What does what we are doing cost?
• What does what we are doing generate in revenue?

Utility (Quality & Safety)
• What are we delivering?

Emotional (ICARE Values)
• How do our faculty and staff feel about what we are doing?
• How do our patients feel about what we are doing?
Respect is a Key Principal of Lean as Waste is Essentially Disrespectful

Waste is disrespectful of society because it squanders scarce resources

Waste is disrespectful to employees as it asks them to do work with little or no value

Waste is disrespectful to patients as it asks them to navigate processes with little or no value

In organizations where respect is high, waste will naturally be low
Lean is Dependent on Open, Honest Sharing of Issues

No way to fix issues that are hidden

If people consistently deviating from existing process, need to challenge the process not the people

Issues need to be objectively quantified
  • Enables prioritization to ensure putting effort where it is most needed
  • Enables ability to measure impact on the issue

All faculty and staff need to feel empowered to raise issues

Leaders need to visibly support this

Problems are opportunities

“No problem” is a problem
Lean Emphasizes Trying Ideas Quickly Provided They Meet Change Criteria

- Low risk to safety and quality
- Low cost to implement
- Easy to implement
- Easy to reverse

Best way to determine if an idea will work is to JUST DO IT
By Applying Lean Thinking, Tools and Techniques, Significant Benefits Can be Realized

<table>
<thead>
<tr>
<th>Happier Patients</th>
<th>Happier Employees</th>
<th>Happier Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Get appointment quickly and efficiently</td>
<td>• Spend time on the ‘good’ parts of the job</td>
<td>• High patient satisfaction scores</td>
</tr>
<tr>
<td>• Get in to see physician on time</td>
<td>• Feel empowered to make positive changes in the workplace</td>
<td>• High quality scores</td>
</tr>
<tr>
<td>• Coordinated medical records</td>
<td>• Take pride in the job they are doing</td>
<td>• High employee satisfaction scores</td>
</tr>
<tr>
<td>• Coordinated medical treatment</td>
<td>• Feel valued as an employee</td>
<td>• Reduced expenses</td>
</tr>
<tr>
<td>• Clean, organized surroundings</td>
<td>• Clean, organized workplace</td>
<td>• Efficient use of physical resources</td>
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<td></td>
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<td>• Can say ‘yes’ to more opportunities</td>
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</tbody>
</table>
Agenda

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Introduction to Tools & Techniques
Lean is Not Another Thing to Do, it’s How You Do What You Have to Do
### URMC Culture of Continuous Improvement Requires Two Pronged Approach

<table>
<thead>
<tr>
<th>Ever Better Everyday</th>
<th>Targeted Improvement Efforts (TIEs &amp; Kaizens)</th>
</tr>
</thead>
</table>
| • Lean Practitioners throughout the hospital in both clinical and non-clinical roles  
  - Lean Practitioners all have full-time roles outside of lean | • TIEs selected based on alignment to strategic objectives and process criteria  
  • Process is broken  
  • Solution not known  
  • Process spans departments |
| • Initial training on lean fundamentals  
  - Additional training on application of tools | • Coordinated through Lean Office |
| • Day to day lean  
  - Ever Better Boards/Brilliant Brainstorms  
  - Just Do It  
  - Small scale PDSA  
  - 5S+ | • TIEs executed in a consistent, structured way  
  • Regular, standardized reporting required |
| • Regular reports on progress including both qualitative and quantitative measures |
URMC Lean Certification Program Supports the Two Pronged Approach

Future Vision

- 3 – 5 within Strong, 1 at Highland
- One per value stream e.g. ED, WCC, revenue cycle
- CERTIFIED LEAN EXPERT - One per large department
- CERTIFIED LEAN PRACTITIONER - At minimum one for each small dept, three for large depts
- All faculty and staff

- All faculty and staff

General awareness of lean (Novice – know WHAT)

Understands core principles such as waste elimination (Advanced Beginner – know WHAT)

Understands and uses of basic tools (Competent – know HOW)

Able to apply more complex tools (TIE) and thinking, able to teach principles, basic tools (Competent + - know HOW)

Able to teach all components (Proficient – know WHY)

Able to adapt, intuitive understanding (Expert – know WHY)
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### Forms of Waste in Health Care aka TIM WOOD

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### Over or Under Processing

- Using wrong level of staff for a given task
- Under or over staffing
- Not fully using an employee’s skills and potential
- Using too many supplies
- Performing services a patient doesn’t need

### Over-Production

- Unnecessary repetition of tests
- Batching of tests, reports
- Doing more than the next process step can handle
- Too many instruments in the Operating Room
- Tests, reports not acted on

### Defects/Rework/Correction

- Medication errors
- Incorrect surgeries
- Poor patient outcomes
- Re-doing tests
- Adverse drug effects
- High infection rates
- Patient readmits
Another Way to Think About Waste is Identifying Obstacles Between You and Your Objective

What we currently do / where we are today

Obstacles / waste

What we want to be doing / where we want to be tomorrow
Example – Streamlining Discharge Process, One Obstacle was Ability to Find All Forms

Denver Health Discharge Forms - Closed

Denver Health Discharge Forms - Open
Test Your Own Knowledge - exercise

What are some examples of waste in your department?
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Different Types of Lean Tools – Tools to Identify Waste, Tools to Eliminate Waste & Reporting

<table>
<thead>
<tr>
<th>Identify Waste</th>
<th>Eliminate Waste</th>
<th>Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever Better boards/Waste Trees</td>
<td>5S+</td>
<td>A3</td>
</tr>
<tr>
<td>Impact Difficulty (aka the Big Easy)</td>
<td>Targeted Improvement Effort (TIE/Kaizen)</td>
<td>Six Sigma</td>
</tr>
<tr>
<td>Value / Process Stream Mapping</td>
<td>Fishbone Diagram</td>
<td>Newspaper</td>
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<tr>
<td></td>
<td>RACI</td>
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</tbody>
</table>
Lean tools help break down a large problem into smaller obstacles

Focus is on implementing countermeasures (reversible experiments) to overcome those obstacles

Large Complicated Problem

The big problem is a collection of many smaller problems
### Ever Better Board

<table>
<thead>
<tr>
<th>Complete as a team</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is the challenge facing your area?</td>
</tr>
<tr>
<td>• Can be general (ex. Wouldn’t it be great if we implemented 5S+)</td>
</tr>
<tr>
<td>• Can be targeting a specific goal (ex. Wouldn’t it be great if no patient waited more than 10 minutes in waiting area)</td>
</tr>
<tr>
<td>2. Where are you now in terms of this goal?</td>
</tr>
<tr>
<td>3. Where would you like to be next (ex. in 3 months)?</td>
</tr>
<tr>
<td>4. What is stopping you from achieving this target?</td>
</tr>
<tr>
<td>5. Team/individuals submit ideas for removing obstacles/waste here</td>
</tr>
<tr>
<td>6. Board owner places on matrix while determining next steps</td>
</tr>
<tr>
<td>7. Once it has been determined that action will be taken, update Post-It and place here</td>
</tr>
<tr>
<td>8. Capture completed initiatives here to track success</td>
</tr>
<tr>
<td>9. Ever Better Board “owner” name and phone number</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Current Condition</th>
<th>Obstacles/Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2</strong></td>
<td><strong>4</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Next Target Condition</th>
</tr>
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<tr>
<td><strong>3</strong></td>
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</table>

<table>
<thead>
<tr>
<th>New Ideas:</th>
</tr>
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<tbody>
<tr>
<td><strong>5</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Under Review:</th>
</tr>
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<tr>
<td><strong>6</strong></td>
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<table>
<thead>
<tr>
<th>In Progress</th>
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<tbody>
<tr>
<td><strong>7</strong></td>
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<table>
<thead>
<tr>
<th>Completed:</th>
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<tr>
<td><strong>8</strong></td>
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</table>

**Wouldn’t it be great if...**

- Name: Waste/obstacle: Idea: Planned action: Target date: Accountability:

**In Progress:**

**Completed:**

**Questions? Contact:**

**UR | Lean Medicine**
Take pride in a workspace that respects you and our customers.

- **SORT** and remove things from the workplace that are not required
- **SET IN ORDER** all the supplies, materials, tools, and paper that are required
- **SHINE** the workplace as this shows respect for the workplace
- **STANDARDIZE** to ensure that the sorting, setting in order, and shining are maintained
- Ensure what is standardized is **SUSTAIN**ed
5S+ Increases Patient and Staff Satisfaction

Which office would you rather visit?

Source: Healthcare Information and Management Systems
Measuring Success
What Gets Measured Gets DONE!

**PLAN**
- What is our objective? Why?
- What are we going to measure? How?

Ensure your metrics are
- Measurable
- Objective
- Meaningful
- Accessible

Set targets to be challenging but achievable

**ACT**
- Adjust how we work
- Adjust the metric

Just do it!

- Celebrate successes!

**DO**
- Measure

**STUDY**
- Communicate to all stakeholders
- Analyze using the right tools, avoid pitfalls

- Determine the IMPLICATION
Visual Management Systems

- Devices that are intentionally designed to share information at a glance, without having to say a word.

- Visual Management Systems:
  - Standard
  - Countermeasures used to adjust process
  - Actual observation does not match the standard
  - Response in real time
  - Visual alert

1. Low Strength
   - Visual Indicator

2. Visual Signal

3. Visual Control

4. Guarantee

High Strength
Example – Cancer Center Clinic On-Time Board

Each MD/PA/NP has a color magnet for each day

**Blue** – indicates who is in patient’s room (MD, RN, NP, SW, etc.)

**Green** – Provider is running on time

**Red** – Provider running more than 30 minutes behind & green magnet gets replaced by red magnet
**Value Stream Mapping**
Knowing where to go next starts with knowing where you are

**Post-it note Color Code**
- **Process**
- **Obstacles & Waste**
- **Value**
- **Data & People**
- **Ideas**

**Types of Value Stream Maps**
- **Value Stream Map**
- **Value Stream Map with Swimlane**
- **Block diagram**
- **Spaghetti diagram**

**Preparation for Value Stream Mapping**
- Identify the owner(s) of the Value Stream and those that represent all the “players” in the Value Stream
- Communicate the plan with the team (5-7 members) and make sure to invite outside eyes and/or a coach
- Gather support information; want the map to be “actual” and not what it’s “supposed to be”
- Logistics; make sure you have supplies and that the meeting is on everyone’s calendar!

**Executing a Value Stream Map**
- Review your process, set the beginning and the end points
- Identify major processes and sub processes
- Document all steps in the process on a post it note
- Identify wastes/obstacles associated with each process area and add to map on Post-it
- Identify countermeasures for wastes and obstacles within the process and add to map
- Review each of these for common themes
- Confirm the process you mapped by observing the work
- Prioritize what to tackle; assign Action Registry
### Lean Initiative Report (A3)

<table>
<thead>
<tr>
<th>Initiative name</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sponsor(s)</td>
<td></td>
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<tr>
<td>Captain(s)</td>
<td>Coach</td>
</tr>
</tbody>
</table>

#### 1. Reason for action

Wouldn’t it be great if...

Define customer(s)

#### 2. Anticipated benefits of initiative

- Financial
- Utility (Quality & Safety)
- Emotional (ICARE experience)

#### 3. Baseline condition

Where are you now as you begin this initiative? Use metrics but also descriptive words about the process if appropriate. This baseline condition should not change throughout your improvements efforts.

#### 4. Target condition

Where do you want to be? Again, use metrics and a narrative if appropriate.

#### 5. Wastes/obstacles

What is getting in the way of achieving your target condition?

#### 6. Countermeasures

If we do X, we expect to achieve Y.
### 7. Action registry

<table>
<thead>
<tr>
<th>Task</th>
<th>Responsible person</th>
<th>Due date</th>
<th>Percent complete</th>
<th>Date complete</th>
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<tbody>
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</tbody>
</table>

### 8. Confirmation

<table>
<thead>
<tr>
<th>Metric</th>
<th>Baseline</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>What are you measuring?</td>
<td>What was initial state of metric?</td>
<td>What would confirm target state has been reached?</td>
<td>What did you actually measure?</td>
</tr>
</tbody>
</table>

### 9. Insights

*What did you learn about the process?*

*What would you tell others about to begin this process?*
For More Information, Contact Lean Office

Tricia Hough  273-3273
Jenny Argentieri 273-1312
Dave Long 276-6213
Matt Engel 275-6633

http://sites.mc.rochester.edu/lean-performance-improvement.aspx

http://inside.mc.rochester.edu/sites/Lean/default.aspx