Lean Thinking

“The endless transformation of waste into value from the customer’s perspective”.

Womack and Jones, *Lean Thinking*
Increase Value Added Work and Reduce Waste:
- Increase Throughput
- Lower Cost
- Improve Quality

![Diagram showing Current State and Future State with categories of Waste and Value Add]
Lean Thinking

- Structured approach for reviewing processes and removing non-value added activities to provide patient care with less material, capital, space, time and effort

- Tools reveal:
  - Current work flow
  - Flow of information
  - Forms of waste
“Spaghetti Diagram”
What is a Value Stream

A value stream involves **all the steps**, both value added and non value added, required to complete a **product or service** from beginning to end.

What is a Value Stream Map

- Visual Representation of a Value Stream
- Pencil & Paper Tool
- Helps Reveal Waste & Problems with Flow
- Establishes a common language to document processes
- Provides a blueprint for improvement
Value Stream Maps
What Makes Them Unique?

• Visualizes the process flow from a **Systems Perspective**
• Includes **Information Flow** and links it to process flow
• Documents **Performance** of the process
  – End results in meeting customer requirements
  – Metrics to highlight waste
  – Process and quality become visible
CURRENT THINKING

WASTE NOT DEFINED
REACT TO LARGE EXAMPLES
REACTIVE IMPROVEMENT

REQUIRED THINKING

WASTE IS "TANGIBLE"
IDENTIFY MANY SMALL OPPORTUNITIES
LEADS TO LARGE OVERALL CHANGE
CONTINUOUS IMPROVEMENT

Shift Mindset

Types of Waste

- Processing
- Correction
- Over-Production
- Inventory
- Waiting
- Material Movement
- Unreasonable-ness
- Unevenness
Waste Definitions

7 Types of Waste and 2 Main Contributors

**Correction**: Rework

**Overproduction**: Making more than necessary; working ahead

**Motion**: Unnecessary people travel, searching

**Material Movement**: Unnecessary handoffs, filing, distances of material & information

**Waiting**: People waiting for machines, information or people

**Inventory**: Information or material waiting in queue

**Processing**: Redundant or unnecessary work

**Unevenness**: Waste created due to inconsistency

**Unreasonableness**: Waste created due to overburden on people, machine or portion of process
Value Stream Map Example
Lean Fundamentals

• Process
  – Create continuous **flow** to surface problems
  – Use **pull** to avoid overproduction
  – **Level** the workload
  – Build the culture of **stopping** to fix problems, quality right the first time
  – Machines serving people (jidoka)

• Signals for stopped flow (andon)

Source: Liker: *The Toyota Way*
Continuous Flow

Patients requiring consults/family discussions remain in exam rooms due to lack of space and create lengthy delays in turnover.

Lean Concept:
- Create continuous flow

Facilitate throughput by incorporating consult rooms into design and establish practice of pulling patients requiring consults from rooms to this dedicated area.

Waste of Waiting
Lean Fundamentals

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Source: Liker: *The Toyota Way*
Load Leveling:

Appointments for each clinic begin at 10:30 a.m.
Patients arrive at one time and form long line.

Wastes of Unevenness & Overproduction:
Batching of work, working ahead

Lean Concepts:
- Level Workload
- Visual Management
- Pull

Spread out appointments and schedule only when the system is actually ready to begin the work
Lean Fundamentals

• Process
  – Create continuous flow to surface problems
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Source: Liker: *The Toyota Way*
Lean Fundamentals

• Process
  – Create continuous **flow** to surface problems
  – Use **pull** to avoid overproduction
  – **Level** the workload
  – Build the culture of **stopping to fix problems**, quality right the first time
  – **Machines serving people**

• Signals for stopped flow

Source: Liker: *The Toyota Way*
Lean Fundamentals

- **Process**
  - **Standardization**
    - Standard Work
    - Workplace Organization
  - Use **visual controls** so no problems are hidden
  - **Flexibility**

Source: Liker: *The Toyota Way*
Standardization:

Before

After
Standardization:

Before

After
Lean Fundamentals

• Process
  – Standardization
    • Standard Work
    • Workplace Organization
  – Use visual controls so no problems are hidden
  – Flexibility

Source: Liker: *The Toyota Way*
Visual Management:

Something is missing!
<table>
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<th>Room</th>
<th>Name</th>
<th>Age/Gender</th>
<th>Chief Complaint</th>
<th>Arrive</th>
<th>In</th>
<th>LOS</th>
<th>P</th>
<th>Attending</th>
<th>Resident</th>
<th>Nurse</th>
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</table>
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  - Standardization
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  - Flexibility

Source: Liker: *The Toyota Way*
Flexibility:

Open layout

Flexible casework
Lean Fundamentals

• **People**
  – Engagement of faculty and staff
  – Grow leaders that understand the work, live the philosophy, and teach it to others

• **Problem solving**
  – Go and see
    • Going to the source to personally observe and verify data
  – Make decisions slowly, by consensus; implement rapidly
  – Become a learning organization

Source: Liker: *The Toyota Way*
Lean Process

1. **Issue Scope**
   - Determine the problem to be improved

2. **Current State**
   - Understanding how things currently operate. This is the foundation for the future state

3. **Future State**
   - Designing a lean flow through the application of Lean principles

4. **Implementation Plan**
   - Developing a detailed plan of implementation to support objectives (what, who, when)

5. **Implementation**
   - The real work!