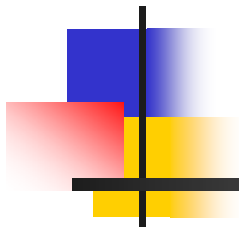


The Power of Lean Thinking in Healthcare Organizations: Using Lean Tools and Principles to Maximize Customer Value



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Goals & Objectives

To give you a basic understanding of the background, relevance, philosophy, methodology, and application of applying Lean in your healthcare organization to impact the entire customer value stream.



Background & Experience

- Education
- Initial Exposure to Lean/Toyota Production System
- Aerospace/Automotive/Consulting Experience
- Healthcare Process Improvement Experience
 - Professional
 - Teaching



A Unified System

- “What we need to do is learn to work in the system, by which I mean that everybody, every team, every platform, every division, every component is there not for individual competitive profit or recognition, but for contribution to the system as a whole on a win-win basis.”

- Dr. W. Edwards Deming

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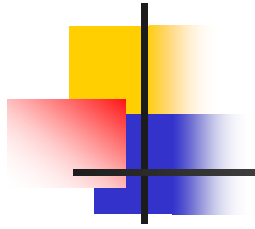
Making the system work!

- "The obligation of any component is to contribute its best to the system, not to maximize its own production, profit, or sales nor any other competitive measure. Some components may operate at a loss to themselves in order to optimize the whole system, including the components that take a loss."
 - Dr. W. Edwards Deming, *The New Economics*



Outline

- Background
- What is Lean?
- Is Lean relevant to Healthcare?
- Is Lean just another process improvement “fad”?
- What are the common mistakes made using Lean?
- Where do I start?
- Questions



Background

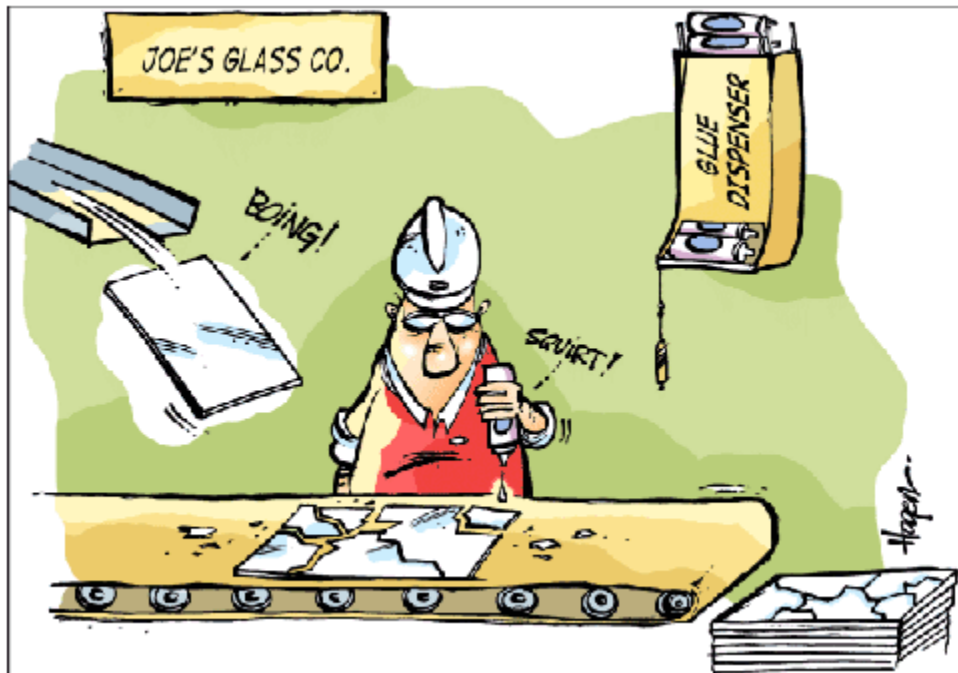


How did we get here?

Findings from *Institute of Medicine's (IOM) Crossing the Quality Chasm (2001):*

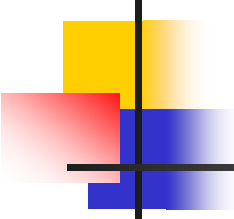
1. *Ineffectiveness of care*
2. *Lack of efficiency in delivery system*
3. *Inadequate safety*
4. *Insufficient patient-centeredness*
5. *Inadequate timeliness of care*

Does this look familiar?



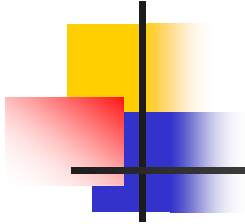
“Every system is perfectly designed to produce the results it produces.”

– Frederick W. Taylor, 1856-1915



Is Lean/TPS new and revolutionary?

- Based upon the work of Dr. W. Edwards Deming (father of statistical quality control), Henry Ford & the scientific method.
- Very simple, practical, and high-impact tools and methodologies to achieve well defined Lean objectives.
- “Plan-Do-Study-Act” simplified to “Plan-Do-Learn” by Toyota

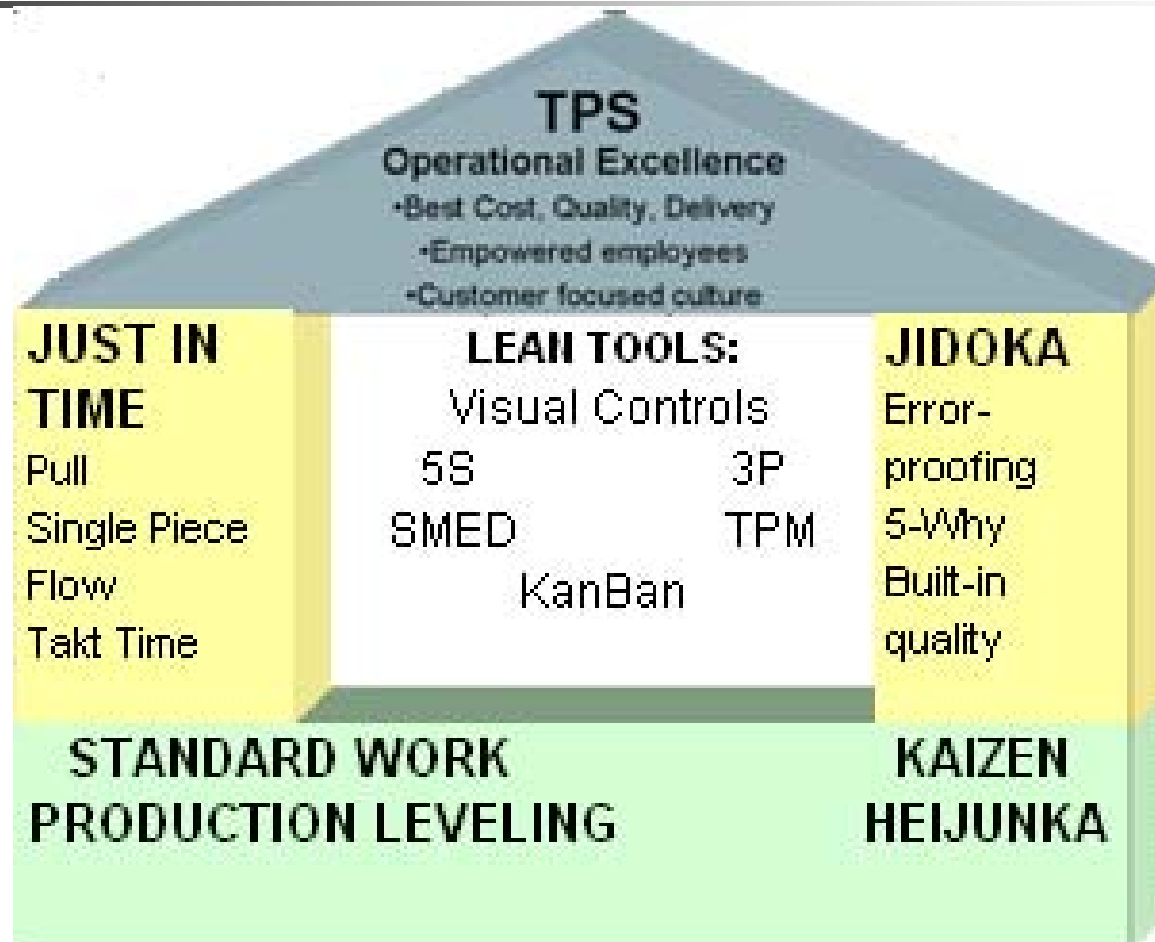


What is Lean?

What is Lean / Toyota Production System (TPS)?

- “A comprehensive process improvement methodology that streamlines operations from concept to customer delivery, reduces inventory, speeds production, reduces cost, and improves quality and response time using state-of-the-art industrial engineering tools.”
 - Maynard’s Industrial Engineering Handbook, Fifth Edition

Toyota Product System "House"



If it can't be measured, does it matter?

- “Not everything that can be counted counts, and not everything that counts can be counted.”
 - Albert Einstein (1879 - 1955)
- “The most important figures one needs for management are unknown and unknowable...what is value, for instance, or the multiplying effect of a happy customer.”
 - W. Edwards Demming, *Out of the Crisis*



Value Stream Perspective

- Focused on the customer/patient
 - What adds value from the patient/customer perspective and what doesn't?
- Whole is greater than the sum of its parts
 - Usually the greatest process improvement is what goes on between interacting departments.
- System vs. Department perspective



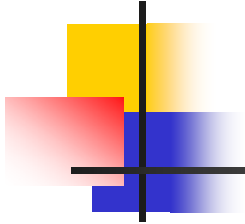
Lean Wastes

- What are examples of these that you have seen in your healthcare organization?
 1. Overproduction?
 2. Waiting ?
 3. Unnecessary transport or conveyance (moving “things”)?
 4. Over processing or incorrect processing?
 5. Excess inventory?
 6. Unnecessary movement (people moving)?
 7. Defects (primary focus of 6-Sigma)?



Waiting as a Waste!

- In manufacturing, overproduction is the fundamental waste that leads to the other 7 wastes.....
-What is the fundamental waste in healthcare?
- **Waiting!**



Is Lean relevant to Healthcare?



The high human costs of process variability

- **≈ 90,000 deaths resulting from medical errors**
 - **Miscommunication**
 - **Mislabeled of medications**
 - **Mis-diagnosis**
- **≈ 98,000 deaths every year from hospital acquired infections**
 - **≈ 50% hand washing compliance**
 - **Unnecessarily long LOS resulting in greater infection rate**
 - **Variability in Central Line placement process**
- **188,000 annual preventable deaths + skyrocketing costs + overseas competition = crisis!**
- **Medical Practitioners not following evidence based medicine and potentially providing sub-standard patient care.**

Standardization vs. Standard Work

■ What is standardization?

- Applying the same processes and solutions across an organization or between organization regardless of unique characteristics or challenges of the organization (Bureaucracy!)
- “Fitting a square peg into a round hole”
- Leads to a “work-around” culture and non-standard work practices

■ What is standard work?

- Consistently applying customized solutions to local, specific challenges and problems in a reliably manner.
- “Fitting a carefully cut peg into a uniquely shaped hole”



Comparisons between Auto & Healthcare industry

- Threat to the Big-3 auto manufacturers in the early 1980's from Japanese manufacturers.....

VS.

- Threat to US healthcare system posed by medical tourism to locations such as India.....



Common quotes about applying Lean in Healthcare:

- "Patients aren't cars"
- "You can't use standardized work on patients"
- "Our patients are sicker than theirs, so we can't use those interventions"
- "There is too much variability in patients to use standard work"
- "Lean changes will just make us do more with less and work even harder"
- "After Lean changes are made, we will lose our jobs"
- "etc,....."

Quotes about Process Improvement in healthcare

- “This is just another “flavor of the month” initiative”
- “I am too busy to do process improvement”
- “I am too busy with patient care to deal with process improvement”
- “The real problem is with the doctors/nurses/etc, not me”
- “That is the quality department’s responsibility, not mine”
- “etc,.....”



Primary Objectives of Lean

- Primary objectives of Lean:
 - Eliminate Waste (from the patient's perspective)
 - Increase speed through the system
 - Create Pull/Flow
 - Create value for the patient
 - Create reliability and predictability
 - Focus on Longer Term Success rather than just short term returns
 - Make problems visible so that they can be addressed
 - Develop and empower leaders and change agents throughout the system
 - Link departments closely together



What should I focus on?

- Most lead times, in manufacturing and healthcare, are at least 95% non value added
- If you cut the Value Added process cycle time by 50%, how much have you impacted the overall cycle time?
 - Answer: 2.5 %
- If you cut the non-Value Added cycle time by 10%, how much have you impacted the overall cycle time?
 - Answer: 9.5 %, almost a 4x greater impact!

Does Lean work outside of Japan? YES!

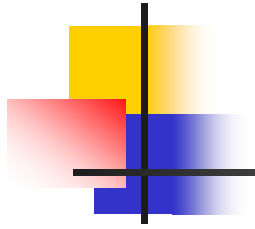
- **Is the Toyota Production System only effective in Japan with their distinct culture?**
- **Example: New United Motor Manufacturing Inc. (NUMMI, Fremont, CA)**
 - **Joint venture between GM & Toyota**
 - **GM wanted to learn how Toyota achieved such quality & profitability**
 - **Toyota wanted to get experience with the US supplier system**
 - **Before Toyota was involved, it was the worst GM plant in the country and had UAW unionized workers**
 - **Within several years, NUMMI was the most productive, highest quality US automotive plant with much more satisfied employees**
 - **Same Plant**
 - **Same Workers**



Does Lean work in the Healthcare insurance industry? YES!

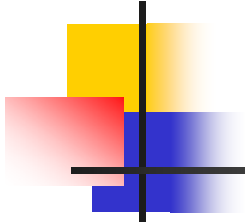
Midwest health insurance provider results:

- Created Value Stream vision for the 24/7 Nurse Line:
 - reduce number of callbacks needed to members by 87%,
 - reduced callback time by over 50%, improved quality
 - prepared Standard Work for their Work at Home program
- BCR Process VSM: Reduce average cycle time by 67% while increasing productivity
- Trained Leadership and Staff in Lean; Created and delivered an all-employee Lean Overview (videotaped), two and three-day basic concepts training
- Provided Lean Office standup, leadership coaching/training, and mentoring

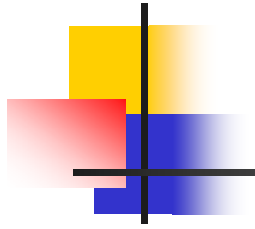


Is Lean/TPS just another process improvement “fad”?

No!



- **Organizations have tremendous knowledge about the problems they face on a daily basis, but don't have the culture, tools, or support to address them.**
- **PI "fads" promise, quick, easy, painless improvements using repetitive and universally applied "checklist" approaches that don't adapt well to a wide variety of organizational issues.**
- **Lean doesn't promise quick, easy returns, but does promise substantial, long term results if it is applied with commitment, discipline, and proper support.**



What are the common process improvement mistakes using Lean?



80/20 rule for Process Improvement

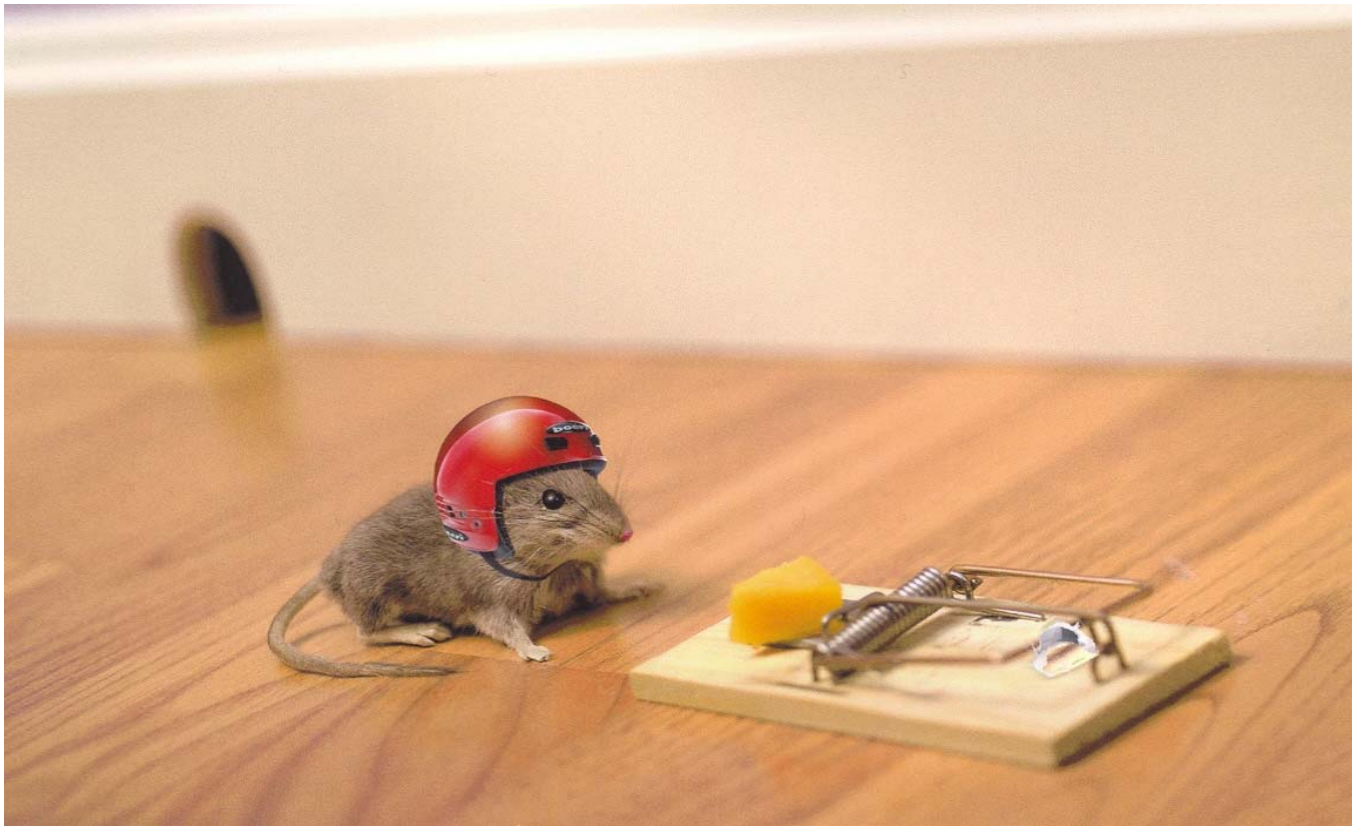
- Standard Approach: 80% analyze data/20 % implementing & Testing
- High-Impact Approach: 20% analyze data/80 % implementing & Testing
→ Plan, Do, Learn!



Balancing Speed & Quality of Change

- **If you focus too much on the speed of change (i.e. targeted volume of changes per month), there is not sufficient observation time to gather the required data or to sustain previous initiatives as modifications need to be made.**
- **If you focus too much on the quality of change and don't link together the process improvements with processes above and below a process in the Value Stream, then the system impact will not be significant.**
- **Avoid a "one-size fits all" approach to Process Improvement and stay focused on the "Value Stream" perspective!**

Where do I start?



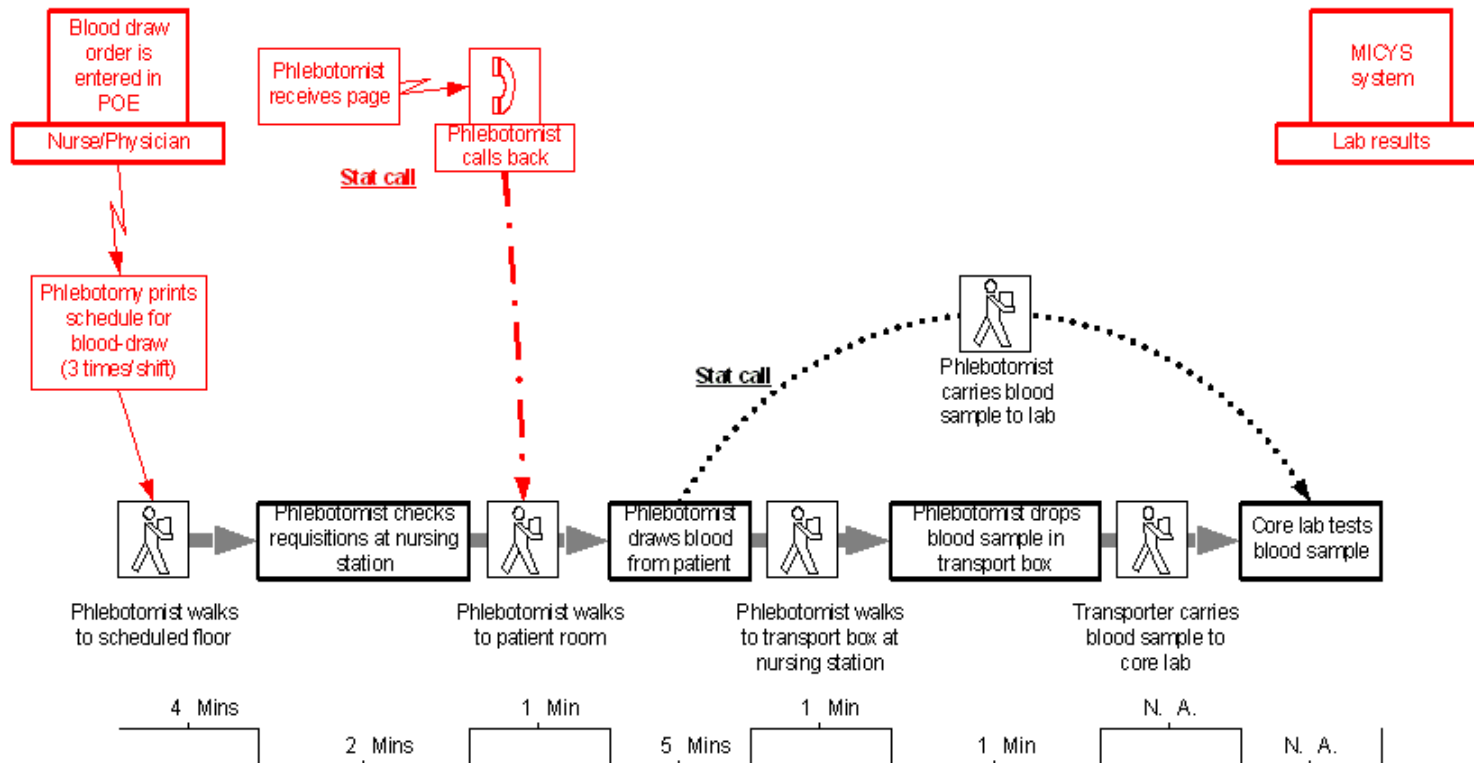


“Chalk Circle” observations

- Learning to See!
- Chalk circle observations
- Too close to a process to see what is going on
- “Paradigm” can blind from seeing what is actually going on!

Value Stream Mapping

PHLEBOTOMY HIGH-LEVEL VALUE STREAM MAP (CURRENT STATE)

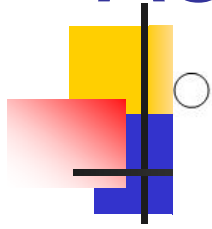


"5-Why's" to get to a root cause

- Technical details of sophisticated 5-Why's methodology:
 - Why?
 - Why?
 - Why?
 - Why?
 - Why?
 - *(if you haven't gotten to the root cause, keep asking Why!)*

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A3 Problem Solving



THEME: "What are we trying to do?"

To: _____
 By: _____
 Date: _____

Background

- Background of the problem
- Context required for full understanding
- Importance of the problem

Target Condition

- Diagram of proposed new process
- Countermeasures noted as fluffy clouds
- Measurable targets (quantity, time)

Current Condition

- Diagram of current situation (or process).
- Highlight problem(s) with storm bursts.
- What about the system is not IDEAL.
- Extent of the problem(s), i.e., measures.

Implementation Plan

What?	Who?	When?	Where?
Actions to be taken	Responsible person	Times, Dates	
Cost:			

Cause Analysis

- List problem(s)
- Most likely direct (or root) cause:

Why? Why?
 Why? Why? Why?
 Why? Why?

Follow-Up

Plan	Actual Results
<ul style="list-style-type: none"> • How will you check the effects? • When will you check them? 	<ul style="list-style-type: none"> • In red ink/pencil. • Date check done. • Results, compare to predicted.



Summary

- **Lean principles are fundamental, proven, evolutionary, and not a fad.**
- **Value Stream Process Improvement provides a framework to avoid sub-optimization of Process Improvement Efforts and impact the entire customer experience and organization.**
- **You cannot assume that there is a “system” in place so that impacting one process in a series of interdependent processes will result in a system-wide performance metric improvement.**
- **Don't let unreliable and overabundant data prevent you from making the changes today to fix your hospital!**



Plan, Do, Learn!

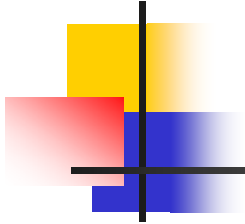
Resources to help you learn more about Lean:

Brock Husby, bhusby@umich.edu, (321)446-9654

Essential Readings:

- 1. The Toyota Way/The Toyota Way Fieldbook (Prof. Jeffrey Liker)**
- 2. Learning to See (Mike Rother & John Shook)**
- 3. The Machine that Changed the World (James P. Womack, Daniel T. Jones, Daniel Roos)**
- 4. Toyota Production System (Taiichi Ohno)**
- 5. Lean Thinking (James P. Womack, Daniel T. Jones)**

Questions?





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