Lean Healthcare Simulation
Segment I: Baseline Performance
Learning Objectives

At the end of this module, you should be able to:

• Explain the mechanics and rules of the simulation

• Execute the process in the simulation

• Experience the difficulties and convey the frustrations inherent in a relatively uncontrolled process

• Apply several simple lean tools to improve clinic performance
Lean Six Sigma can increase healthcare value delivery by:

• Improving healthcare quality
• Decreasing healthcare costs
• It is one piece of a puzzle to solve the US healthcare crisis
For a given medical condition, the patient value stream has many actions and is fragmented among numerous care givers.

This course will focus on only one portion of the full patient value stream.
Creating flow:

- **Focus on what is flowing through the process**
- **Eliminate bottlenecks, minimize buffers**
Let Customers *Pull* Value

- In a **Push** system, each activity delivers its output when it is done.
  - Results in build up of batches with lots of inventory. Defective goods pile up
- In a **Pull** system every activity delivers its output just as the next activity needs its input.
  - Triggered by the end customer
  - Results in smooth flow with no batches or voids
  - Minimizes inventory and rework due to defects.
- **Pull** systems can be implemented in material flow using a Kanban approach.
- Implementation for people flow is more challenging
Lean is not a set of tools. It is a continuous improvement mindset using multiple PDSA cycles.
The Simulation

- A simulation of a group of outpatient clinics
  - A legacy process
  - High variation in workload, processes
  - Poor performance
- A practice field for learning and using lean tools within a consistent problem-solving process

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Simulation Progression

• Segment I: Baseline performance
  • Learn and practice the rules
  • Use simple lean tools to improve legacy process

• Segment II: Applying Lean locally
  • Create a process map and add data for a simple VSM
  • Find waste and bottlenecks
  • Devise clinic process improvement plan
  • Execute and stabilize the improved process

• Segment III: Applying Lean across clinics
  • Face external disruptions and enterprise issues
  • Improve enterprise performance with Rapid Process Improvement and Daily Management System
Learn the simulation

- The simulation rules are straightforward but interact in complex ways.
- It is important that you execute the basic rules correctly so that you can concentrate in future rounds on the simulated process.
- Your table facilitators will walk you through the simulation rules.
• Let’s Play!

Courtesy of Jim Schlosser. Used with permission.
Metrics and Visual Control

- Create an Easel chart to record your progress
- On the x-axis, put 6 rounds
- On the y-axes, put 0 to 10 patients, and 0 to +15 minutes
- Track patients treated, errors (patients untreated or treated incorrectly) and cycle times (average and worst)
6S and Standard Work

- **Sort, Safe, Straighten, Scrub, Standardize, Sustain**
- *Goes beyond clean-ups and neatening*

*Standardization is particularly important in environments with high variation and creative/skilled work*
- Standardize the steps and NVA tasks so that time and effort can be concentrated on the VA tasks
- Eliminate unneeded decisions to lower the “Chaos” level
Visual Control?

Provider status chart in clinic waiting room

Resident status chart in long term care facility

Hydration Chart for residents
- Each column represents a resident
- Each row represents a day
- Each cell is daily fluid intake in ml
- Colors show fluid intakes levels relative to desired amounts

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Courtesy of Faten Mitchell, Quality Improvement Advisor, Health Quality Ontario. Used with permission.
Standardizing your process

- Take a few minutes with your table to attempt to standardize your process execution
  - Make sure you understand and execute your individual process correctly
  - Standardize interactions with other parts of the clinic?
- Sort, Straighten, Scrub and Safe your work area
- Are there any simple visual controls to improve your process flow?
Simulation Round 2

• Let’s Play!

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Segment 1 Thinking Points

- Could you see the process?
- Could you see the bottlenecks?
  - Queuing/Inventory/Waiting
  - Transport, Complexity, etc.
- Do simple lean tools help you execute the process (even if it has problems that the simple tools cannot fix)?
- We will return to the sim to fix some of these problems after we learn a bit more…
Acknowledgements

Contributors
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- Earll Murman – MIT

Collaborators
- Faten Mitchell – Health Quality Ontario