LEAN Tools

Lean: Improve processes and eliminate waste

“Lean” refers to a collection of principles and methods that focus on the identification and elimination of non-value added activity (waste) involved in producing a product or delivering a service to customers.¹ Lean process improvement approaches were developed originally for use in the private sector to target manufacturing processes. But, there has been steady progress towards adapting these approaches for use in health care.

Implementing a Lean Project:

1) Identify a pilot project. Identify a process with the most “pain” or the greatest perceived problems. Problems could include backlogs, bottlenecks, complaints, and quality and performance concerns.

2) Hold a Lean event. A Lean event is a highly structured, facilitated event involving a team of staff and stakeholders that is designed to rapidly identify and implement improvements to a process. You can have a value stream mapping event or a kaizen event.
   - **Value Stream Mapping:** A high-level visual representation, from start to finish, of the process flow involved in delivering a desired outcome, service, or product to customers. VSM helps to see waste, the source of the waste, and enables users to target future kaizen improvement events.
   - **Kaizen Event:** Kaizen events bring together a cross-functional team for several days to identify the root causes of problems in a process and implement process changes.

3) Identify metrics. Metrics will show whether there are real improvements after the process has been analyzed and processes changed. They might include the number of process steps, the staffing needs, cycle time, handoffs backlog, or rework.

4) Test the improvements. Use a model like PDSA (plan-do-study-act) to make small changes.

5) Sustain the improvements. Lean methods can be used for one-time, one-shot improvement efforts. But the real value of Lean lies in its focus on continual improvement. Follow up with attendees on the progress made, ask for impressions of the new process, and continue to explore further improvements.

¹ James Womack, Daniel Jones, and Daniel Roos coined the term “lean” in their 1990 book *The Machine that Changed the World* to describe the manufacturing paradigm (often referred to as the Toyota Production System) developed by the Toyota Motor Company based on principles pioneered by Henry Ford.
Value Stream Mapping Worksheet

Process to be studied:

1) Identify the main steps in the process

2) Go through the process and map the process in more detail.
   a) Start on the left and the end on the right hand side of the paper.
   b) Write each procedure down as a ‘process box’.

3) Include a data box below each process with the relevant measured data for each step. Time unit measurements should always be consistent, (i.e., minutes, seconds).
   - Cycle time (CT): The time that elapses between one patient finishing a consultation etc and the next patient finishing a consultation.
   - Value added time (VA): the time that actually adds value to the patient journey
   - Changeover time (C/O): the time taken to switch from one type of process to another
   - Number of people (NP) that are required to undertake a particular process
   - Available working time (AT) of staff on a shift, minus breaks, which makes up the regular pattern of hourly, daily, weekly or monthly work
   - Lead time (LT): The time it takes for a patient to move all the way through a process or value stream.

4) On the left of each process step, insert a triangle showing the number of patients waiting for the next process, and the time it takes to process each patient (cycle time). Thus the journey starts to look like this:

5) Add in the flow of information. With arrows drawn from right to left.

6) Add a timeline at the bottom of the page. Under each process and associated waiting box, insert the lead time for that process (time taken to complete it) over the value adding time in that process. You can then calculate the complete lead time for the journey, and the complete value adding time.
Kaizen Event Worksheet

Identify where to start based on:

**Impact:** It’s a process that affects a large number of stakeholders/customers; it’s a process that consumes a lot of internal resources; or it’s a highly visible process to stakeholders and/or customers.

**Need:** It’s a process that clearly is not working as well as it should (lots of complaints, rework, defects, unhappy employees, etc.) or it’s a core business process that affects many other processes or programs.

**Willingness:** Manager of the affected area has an interest in supporting and making needed changes and workers are open to change and would be able and willing to participate in an improvement event.