Transforming Patient Flow: A Three-Part Webinar Series on the Theory of Constraints in Healthcare
Faculty

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Learning Objectives

• Understand the core principles of the Theory of Constraints (TOC) and its relevance in improving patient flow within healthcare settings.

• Learn effective strategies for identifying and managing critical resources to optimize system performance.

• Gain insights into designing and implementing execution rules that foster synchronization and collaboration among healthcare professionals to support and optimize vital resources.

• Explore real-world case studies and successful applications of TOC in scheduled healthcare environments, including best practices and lessons learned.
Three Virtual Sessions

- Session 1 (July 25): Identifying the constraint and deciding how to exploit it. The Five Focusing Steps
- Session 2 (August 8): Protecting the constraint. Buffers and their roles
- Session 3 (August 22): Synchronizing and improving the system. Buffer Management

- All session virtual 7-8pm

- Discussions between sessions:
Session 1. Identifying the constraint and deciding how to exploit it. The Five Focusing Steps
Healthcare is complex

- Transfers from other hospitals
- ICU beds
- Floor beds
- Hallway
- Same Day Surgery
- Readmission
- Nursing home/SNF
- Community Hospital
- Home
- Walk-in
- ED and Observation
- Clinic/MD Office
- Ambulance
- ED to ED transfer
- Urgent Care Centers
- Rehab
- Psychiatry
Theoretical model for management approaches to improvement

<table>
<thead>
<tr>
<th>Management Phase</th>
<th>Improvement focus</th>
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<tr>
<td>Planning</td>
<td>Capacity</td>
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<tr>
<td>Execution</td>
<td>Coordination</td>
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Where do the two philosophies fit?

**LEAN**
- Execution
- Coordination
- Capacity

**TOC**
- Planning
- Coordination
- Improvement focus
Main principle

• In every complex system, there are only a few constraints.

Goldratt
Bottlenecks and non bottlenecks

• The output of a system is determined by very few resources
• An hour lost at a bottleneck is an hour lost for the total system
• An hour saved at a non-bottleneck is just a mirage
Why are some “successful” process Improvement Projects not impactful?

• Optimizing a constraint has impact on throughput.
• Optimizing a non-constraint has little impact on throughput.
Resources as bottlenecks

• Temporary bottlenecks
  • These are problems that are recurrent and prevent a smooth flow but are relatively easy to fix. We will use the tool known as buffer management to detect and eliminate temporary bottlenecks.

• Main bottlenecks
  • It is the single physical type of resource, within the defined operations system, that limits the rate (or flow) at which output is generated. Main bottlenecks are not necessarily a specialized resource, but it may require a large investment to duplicate.

• Constraints
  • It is the single physical type of specialized resource, within the defined operations system, that limits the rate (or flow) at which output is generated. Constraints are very specialized resource that is very difficult or too expensive to duplicate.
The Five Focusing Steps (5FS)

1. Identify the System’s constraint
2. Decide how to exploit the system’s constraint
3. Subordinate to the constraint
4. Elevate the constraint
5. Go back to step 1, do not let inertia become the next constraint
Step 1: Identify the System’s Constraint

• In some cases, the constraint is clear.
  • For instance, in an outpatient clinic, the constraint is probably the provider.
  • The provider is a specialized resource that is very difficult or expensive to replace

• In some cases, it is not clear
  • Where is the constraint of a whole hospital that includes ED, Inpatient units, ICU, Operating room, etc.?
Where is the queue? Backlog?

http://blog.tapiture.com/iphone6-line

Queues to look for

• Emergency Department
  • Left without Being Seen (LWBS) (Excellent < 1% vs 3%)
  • Door-to-Doctor Time (Best performance 10-30 minutes vs 1 hour)
  • Door-to-Room Time (Best performance 5 minutes)
  • Admit Decision-to-Depart Time (Excellent 100 minutes vs 4 hours)

• Inpatient
  • LOS >14 days, > 30 days
  • % no longer meeting admission criteria
  • Backlogs for tests, consults
  • % tests done within 24 hours

*
Other Queues

• Ambulatory
  • 3rd next available appointment
  • Waiting rooms
  • Leakage rates/referred out of hospital/network
  • Delayed start times
Waiting

“Waiting is not a healthcare function.”

Pat Sodomka
Constraint

• If you are the constraint, it doesn’t mean you are good or bad

• If you are not the constraint and not always busy, it doesn’t mean you are lazy
Are there system constraints?

Over a thousand patients have been ‘stuck’ in hospital beds as discharge problems persist

Over the past year, an average of 1,200 people were stuck in Massachusetts hospital beds each day because workers could not find a place to discharge them, a new report says, in the latest sign that hospitals continue to struggle with overcrowding even as the COVID-19 pandemic has ebbed.

The patients occupied approximately 15 percent of the state’s staffed medical and surgical hospital beds, according to data from March 2020 through February this year, creating backups in emergency rooms as other patients waited to be admitted.


Sorry. ER patients. People with elective procedures get the hospital beds first.

In a medical emergency, you may have a surprisingly difficult time finding a bed in a hospital. This is because elective admissions — that is, patients whose hospital stays have been scheduled in advance — take priority over emergencies.

What is the rate limiting step and what can be exploited?

- Number of rooms?
- Number of nurses?
- Number of physicians?
Decide how to exploit the constraint

• Once we identified the system’s constraint, we need to decide how to exploit it
• This is the essence of the operational strategy!!
• It provides the guidelines to determine the initiatives to be used to exploit the main critical resource
• All other resources must subordinate to the decisions taken in this step
We need to examine how the constraint time is currently used

• What are the tasks that the constraint is responsible for? Are those the best use of the constraint’s time?
• Can we safely offload some constraint resource tasks to a different resource?
• Can we automate/improve tasks that can only be done by the constraint?
• Can we change the scheduling sequence at the constraint?
• Can we change the task mix at the constraint?
Constraints vs Exploitation

- **Equipment**: The way equipment is currently used limits the ability of the system to produce more services.
- **People**: Lack of skilled people limits the system. Mental models held by people can cause behaviors that limit flow.
- **Policy**: A written or unwritten policy prevents the system from providing more.
Suggested reading

• Suggested reading:
• The Goal by Eli Goldratt
Homework

• Review the workflow in your organization
• Identify 5 important processes and the constraint in the process.
• Examine how the constraint is being utilized at this point
• Do you routinely measure the utilization of the constraint?
• Can you suggest changes in how the constraint time is being used?