Management: Removing Constraints

By Tim Connor and Janice Cerveny
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Executive Overview

Tim Connor and Janice Cerveny say a popular manufacturing methodology is the solution to overcrowded EDs and high lengths of stay.

Backups in Emergency

We are all familiar with today's crammed EDs, nursing units filled to capacity, frustrated managers who know they will not have the budget to effectively deliver services even before the fiscal year starts, and quality programs that don't seem to touch these issues in a significant way.

It isn't as though executives aren't making an effort. Many solutions have been tried, from cutting supply costs to the complete structural redesign of the hospital around care delivery. But none seem to cure the significant issues facing hospitals. Indeed, many have unintended side-effects that exacerbate the situation.

Hospitals are large and complicated. Their departments are staffed with droves of specially trained people. Processes have emerged in hydra-like abundance (one hospital identified fourteen departments directly involved with delivering emergency care alone), and hospitals don't just deliver one service but hundreds.

The complicated, service-diverse, human-specific nature of hospitals makes them a rich target for litigation—there are so many places to look for mistakes. The same characteristics make healthcare one of the most heavily regulated industries.

But perhaps hospitals aren't unique. The scenario described above is nearly identical to the one facing frustrated fictional character Alex Rogo in Eliyahu Goldratt's widely read The Goal. But can a continuous improvement methodology from manufacturing that eliminates backlogs, exposes 40% to 50% more capacity, and produces dramatic lead time reductions with little or no increase in operating expense be applied to hospitals?

Breakthrough Improvement

At the time we began to apply Goldratt's approach, Munroe Regional Medical Center had experienced 10 years of uninterrupted, continuous quality improvement, with management involvement at all levels. There was a lead team structure, an active quality council, as many as 80 teams functioning in a year (averaging 10 and 20 at any one time), and a department that worked full time to support the effort. Expenditures, including costs for staff training, averaged around $1 million per year. One team made recommendations totaling over $2 million, all of which were implemented.

But even with all these changes and a number of significant successes, the hospital was not able to make cross-functional improvements sustainable from year to year. Cooperative efforts between nursing and medical records, laboratory and nursing, and radiology and nursing were undertaken with enthusiasm, but within a year or two had reverted to the original situation. It wasn't until we

applied Goldratt's Theory of Constraints (TOC) that things began to change.

The Root of the Problem

TOC's central premise is that every system has a constraint that blocks it from generating more of its goal. If management identifies that constraint and focuses all effort on improving it while aligning all other non-constraining process improvement efforts to ensuring its optimal performance, the system's throughput increases dramatically, often with negligible impact on operating expense.

Until we understood the constraining process, we did not have a solid, organization-wide focus that would bring about breakthrough improvement. Once we uncovered it, we reduced length of stay by more than 24 hours in a three-month period (something that often takes years to accomplish).

We discovered that patient care (nursing) was the recurring department in many of the issues. We considered this a coincidence at first, but then discovered there was more to it. A detailed interview process uncovered the fact that the actual constraint was the delivery of inpatient care. Analysis showed that there were about 20 pinch points that resulted from poor hospital interactions with this process. For example, medication deliveries to nursing units were scheduled to meet pharmacy requirements, and the result was medications were frequently missing during afternoon medication rounds.

As we undertook the TOC process, we were on track to open up between 1,500 and 2,000 more bed days per year, all without a significant addition in staff except at some low wage levels. New revenues from those bed days were predicted to be about $11 million annually—five times what we predicted the process would cost.

Significantly, we saw interdepartmental conflict almost disappear. It was amazing to watch managers sharing "hidden" FTEs and working to help other departments deal with expensive issues as they came up. For example, the lab director traded a position she had been unable to fill to emergency, which used it to add phlebotomy staff. The addition helped reduce the (often late) draws needed once the patient had been admitted. This arose from a focus on the constraining process, a focus everyone understood would make a decisive difference.

Once we established a focus on improving this core process, we began to refocus (align) other departments' efforts on reducing the cycle time of that process. Laboratory became concerned with getting reports onto the charts to meet nursing and doctor targets. Pharmacy examined nurses' issues with drug availability and made significant improvements based on those needs. Transport, radiology, and others began seeking ways to improve flow through that inpatient process. The result was that patients began to move through faster.

Astonishing Successes

Using Goldratt's approach, we significantly affected three major issues: cycle time (length of stay) went from 5.3 days to 4.2 days within three months, millions in new revenue started to come in, and staff retention levels went up (currently tied for best in the state at 15.6%). Most importantly, staff members recognized that they could finally have an effect on long-standing problems.

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