

# Improve 'Throughput' by Targeting Bottlenecks

BY JOYCE FRIEDEN

TAMPA — Analyzing your hospital's "throughput" can reveal ways to decrease crowding, increase patient and employee satisfaction, and possibly improve your hospital's bottom line, Dr. Paul Hain said at a meeting on pediatric hospital medicine.

Throughput—the measure of how fast patients enter and exit a facility—is important for several reasons, said Dr. Hain, associate chief of staff at Monroe Carell Jr. Children's Hospital at Vanderbilt in Nashville, Tenn. In addition to increasing satisfaction, improving throughput can help with patient safety and boost a hospital's reputation. And improving the bottom line can free up construction capital, a valuable commodity at many hospitals.

To learn more about improving throughput, Dr. Hain suggested that physicians read "The Goal," a novel by Eliyahu Goldratt and Jeff Cox that incorporates the throughput evaluation process. The novel uses an approach called the "Theory of Constraints," which involves these steps:

► **Make sure the organization's goal has been articulated.** "This can be a big problem," Dr. Hain said. "You have to get really focused on what you want to talk about."

► **Identify the constraint.** Look for the bottleneck or backup that is impeding the flow of patients.

► **Exploit the constraint.** That is, make sure that whatever is causing the bottleneck is at least working at full capacity. For

example, if the bottleneck in the emergency department is that it takes 42 minutes to print a patient identification (ID) label, make sure that the label machine is working all the time and is never idle.

► **Subordinate all other processes to working on the constraint.**

"Everything else bows to the constraint, so if the constraint is the ID printing machine, the fact that the nurses don't like the triage area, that the doctors don't think the scheduling is fair, that the patients are angry—none of that fixes the problem. The only thing you're focusing on to improve flow is making sure your ID printer prints all the time," Dr. Hain said.

► **Elevate the importance of the constraint.** This includes allocating capital to the problem if needed, so in this example it might mean buying a faster label machine.

► **Look for the next bottleneck.** Start the process all over again if a new bottleneck becomes apparent after your efforts have resolved the initial problem. "Now that's not your constraint, but something else is. ... Look at the entire chain ... and find one [place] that's absolutely the backup," Dr. Hain advised at the meeting, which was sponsored by the Society of Hospital Medicine, the American Academy of Pediatrics, and the Academic Pediatric Association.

Another way to improve throughput is

by using "Queuing Theory," which adjusts capacity to match variation in demand. "Emergency departments aren't unpredictable," he said. "You never know when the next trauma is coming in, but

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you know what times of day tend to be busier than others, and you can staff up for them."

Other methods for examining throughput include "Six Sigma" (applying a theory that says variation is waste), "Statistical Process Control" (graphing data using subsets of events to describe a large set), and "Lean Thinking" (eliminating

steps in a process that don't add value).

Dr. Hain described how his hospital used a throughput evaluation to improve triage times in the emergency department (ED). Of the 50,000 patients seen annually in the ED, 16% end up being admitted, and those admissions account for 46% of the hospital's total admissions.

The hospital decided to focus on decreasing the length of stay for its level 4 and level 5 ED patients, which averaged 170 minutes in winter and 110 minutes in summer. The staff set a goal of reducing average length of stay to 60 minutes, without decreasing patient safety or satisfaction and without increasing readmissions.

First, they asked staff members to put up adhesive paper notes explaining why patients didn't leave as fast as they should have. "That was the whole project for 2 weeks," he said. Based on those results

and other information, they changed the location of some triage activities and added staffing for the busier times.

Since the change, "patient satisfaction has gone through the roof" and the average in-and-out-time for "fast track" ED patients who are not very ill is 60 minutes, Dr. Hain said. Staff members originally thought that this change would cost the hospital money, but it appears to be cost-neutral in the long run because the staff is deployed more efficiently.

Dr. Hain said that his hospital improved throughput in other areas, resulting in what he said was one of the lowest severity-adjusted lengths of stay in the country. Measures included setting up an "access center"—a one-stop shopping area for incoming calls, bed management, and environmental services—and using computers to improve communication among the electronic order entry, patient tracking, and bed board areas. These efforts—combined with integrated case management, social work, child life programs, and 24-hour in-house administrative coordinators to oversee beds and throughput—brought down the length of stay, he said.

Although there are many areas in the hospital where the staff could have begun analyzing throughput, starting with the ED worked well because it was a discrete operation and it became an "early win" that staff members could build upon for use in similar projects, he said.

Dr. Hain said he had no conflicts of interest. ■

► A related video is at [www.youtube.com/HospitalistNews](http://www.youtube.com/HospitalistNews) (search for 68287).

## LEADERS: DR. MARJORIE BESSEL

### Positioning Hospitalists as Change Agents

Dr. Marjorie Bessel doesn't shy away from making big changes.

In the last 3 years, she helped to transition her former hospital to a 100% hospital-employed hospitalist program, and presided over the implementation of an electronic medical record system. She was one of the first hospitalists in the East Valley of Arizona, and now serves as the chief medical officer at Banner Desert Medical Center in Mesa, Ariz.



MARJORIE  
BESSEL, M.D.

Now she's at it again—preparing for the "big bang" implementation next year of the computerized physician order entry (CPOE) and physician documentation components of the EMR system at her 600-bed tertiary care center.

Dr. Bessel said she thinks hospitalists are well positioned to preside over major changes in hospital structure and culture. "They have a really great understanding of how a hospital works and, even better, an understanding of where there are opportunities for improve-

ment," she said. "That really positions them to be great change agents."

Dr. Bessel said she put that idea into practice a few years ago when she was facing a big challenge. She was hired as the chief medical officer at the Banner Mesa Medical Center, and was assigned to preside over the closing of that center and the opening of a new state-of-the-art facility, the Banner Gateway Medical Center in Gilbert, Ariz.

As part of the transition, Dr. Bessel also oversaw the switch from a paper system to an EMR system and restructured the hospitalist program from a patchwork of groups to a larger, 100% hospital-employed model.

During the switch to the electronic system with CPOE, she relied heavily on her new staff of hospitalists, who received early training to become the "super users" who would assist the rest of the staff.

Turning the hospitalist staff into super users required many extra hours of training and practice time before the system

went live, Dr. Bessel said. As super users, they were taken through in-depth patient scenarios on the new system and shown how to document every aspect of care from preadmission and daily visits to medication reconciliation and discharge planning.

On day 1 of the EMR transition at the Banner Gateway Medical Center, hospitalists were helping cardiologists and other specialists enter progress notes and order medications.

By achieving super user status early on, hospitalists can "help all the other physicians who are probably not going to be at super user status at the beginning," Dr. Bessel said. In addition, that role "helps the hospitalist have that communication and collaboration with the other physicians."

Dr. Bessel said she is already applying such a model at the Banner Desert Medical Center, where the hospitalists have been enthusiastic about getting a sneak peek at the new EMR system for physician documentation and CPOE.

The physician components of the EMR system will go live in November 2010.

With more and more hospitals moving to comprehensive EMR and CPOE systems, Dr. Bessel advises getting the hospitalist team involved early. She also suggested that hospital officials try to identify a physician champion—a "super, super user"—and let that physician lead the rest of the team through the transition, she said.

But her fundamental piece of advice to other physicians on how to survive—and maybe even thrive—under the strain of major change is to keep an open mind.

"If you get stuck in the resistance to change, then you never really truly can get to that level of 'how can this work better for me,'" she said. ■

By Mary Ellen Schneider

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