Tackling the Capacity Crisis: Successful Bed Management Strategies

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It's 3 p.m.… do you know where your beds are? Ask this question in a roomful of hospital administrators, and you might be somewhat bewildered by the response. Rather than hearing a simple "Yes," you're more than likely to either encounter some sort of a count accompanied by an in-depth qualification or set off a discussion regarding an organization's "hidden" opportunities.

To be sure, capacity management is no easy task. Multiple bed management functions—occurring prior to admission through discharge—and their interrelations affect patient and bed status and how this information is relayed. Although challenging, taking efforts to improve the hospital's ability to manage demand is critical for optimal financial performance.

The "Costs" of Crowd Control

How important is efficient patient throughput to the bottom line? For starters, it cuts to the very root of a hospital's business. Patients annoyed with long waits may leave without treatment or become so dissatisfied that they choose other providers for future health care—a particularly troubling prospect given that the ED is often the first to experience the effects of full capacity and 50 percent or more of a hospital's admissions typically originate in the ED.

Also, treatment delays and the chaotic environment that often accompanies throughput challenges can contribute to costly medical errors, as demonstrated through data from the Joint Commission on Accreditation of Healthcare Organizations. And recruiting and retaining top-quality talent in such an environment can become increasingly difficult.

Adding more beds is rarely a viable option. Expense can be quite significant. EDs are notoriously plagued by patient access issues—yet the cost of building more space and adding beds to an ED averages about $1 million per bed. And in some states, hospitals have won certificate of need approvals for new projects by agreeing to scale back on beds. Clearly, hospitals have strong financial incentive to learn better ways to work with what they've got.

A Fresh Look at Throughput

One reason why EDs can be particularly prone to crowding is inpatient backup. Such was the experience at the University of Rochester Medical Center, Rochester, N.Y., a 739-bed system that includes the University of Rochester School of Medicine and Dentistry, the University of Rochester Medical Faculty Group, Strong Memorial Hospital, and the Golisano Children's Hospital at Strong. URMC's Level 1 trauma center handles about 95,000 visits each year. At times, the ED would board 20 to 30 patients overnight simply waiting for them to be admitted.

About two years ago, URMC decided to attack part of the problem by focusing on its observation patients. "We noticed that we had a large number of patients, such as those with chest pain, who were being admitted to the hospital but who were going home within 24 hours," says Sandra Schneider, MD, FACEP, chair and professor, Department of Emergency Medicine. To address this issue, URMC expanded its eight-bed observation unit in the ED to 24 beds. For two years straight, the unit stayed full. As a result, URMC released more than 8,000 bed days, which it was able to fill with other patients. Within the past six months, URMC expanded the unit once more to 36 beds, making it one of the largest in the country. The unit also now admits patients for up to 48 hours. It is staffed by a physician during the day, with mid-level provider coverage around the clock.

The ED also has made other changes, such as using advanced triage. "Having a triage nurse order labs and initiate care has helped reduce ED congestion," Schneider says.

In addition, the ED has added a graphical user interface feed to the ED, which is a solution that displays the status of patient X-rays and lab tests. This technology eliminated the need for ED staff to regularly "log in" to check test status, since the hospital does not currently use integrated electronic health records. Total bill for the solution: a one-time cost of about $400.

Trimming Turnaround Times with Baby Steps

The Level 1 trauma center at San Antonio's University Hospital, part of University Health System, draws patients from 22 counties in Texas. A major goal at the 500-bed safety net hospital was to reduce inpatient bed turnaround time, which hovered around 160 minutes back in 2002. Diversion also was a major concern for the ED, which covers a region of 25,000 square miles—larger than some states.

Haunted by Inefficiency?

Gaps in a hospital's admissions and discharge processes lead to a number of organizational inefficiencies that are a constant revenue drain. How often are you wasting resources by having staff deliver meals or meds to the rooms of discharged, or "phantom" patients?

To tackle the issue, the hospital developed two process improvement teams, according to David Hnatow, MD, FAAEM, FACEP, associate professor and chief, division of emergency medicine. One team focused on ED process improvement, and the other centered on inpatient process improvement.

"Over the course of a year, our teams tested 52 new ED processes and more than 30 inpatient processes aimed at streamlining protocols in areas such as pharmacy, radiology, and case management," Hnatow says. The teams used formal quality improvement methods, namely rapid cycle change tests. With this approach, staff tested changes on a small scale, measured the results against pre-established metrics, and then determined whether the change was successful. Such an approach helped the organization bypass some of the political and financial pitfalls endemic to larger efforts.

Among the many solutions that resulted from examining department protocols was an elegantly simple one: two glass jars kept at each nursing station. When a patient checked out, the nurse wrote the patient's room number on a red slip and stuck it in one of the jars. When housekeeping had cleaned the room, they removed the red slip and replaced it with a green slip with the same room number in the other jar. The drawback was that the solution didn't "track" data. However, each green slip did provide a visual cue to the unit clerk that a clean bed was ready to fill. "It was an early win that showed that small changes add up and create additional beds," Hnatow says.

Like their peers at the University of Rochester Medical Center, administrators at University Hospital decided to implement a clinical decision unit. This 23-hour observation unit helps channel patients with problems like asthma attacks and rapid rule-outs of chest pain. Since it opened in March 2005, the clinical decision unit has helped free up valuable telemetry beds and has trimmed the average wait for a telemetry bed from 36 hours to about two hours. These benefits, unlike the glass jar fix, required an upfront investment. Opening the clinical decision unit required capital, additional hospitalist staff, and some equipment.

Some of the other changes made at University Hospital:

- Eliminating an outdated policy that prohibited housekeeping staff from removing sheets, which slowed turnaround time
- Adding a dedicated nurse with admission, discharge, and transfer duties, who helps process pending discharges to free up available beds
- Creating a transitional care unit for patients who no longer require acute care
- Posting approximate discharge times on patient doors
- Creating a discharge lounge, where discharged patients can await patient education, medication, or transportation.

As a result of its efforts, University Hospital slashed its bed turnaround times within two years from 160 minutes to just 23 minutes—about an 80 percent decrease. Patient wait times also dropped. Before undertaking these changes, patients waited an average of 9 hours for a hospital bed. That's down to just about two hours these days. Diversion is still an issue, but Hnatow concedes that demand will continue to be an issue for the safety net hospital.

In addition, the hospital is currently revamping its scheduling processes in the operating room. Specifically, it is looking at ways to book elective surgeries more efficiently. "These types of changes run in parallel with ED changes to improve overall patient access," Hnatow says.

Hailing the Hallway

Back in the 1990s, the ED at New York's Stony Brook University Hospital was suffering a fate shared by many others across the country. Originally built in the 1970s to handle about 24,000 visits a year, the ED had volumes topping off at nearly triple that amount. The gridlock grew as beds became more limited.

The answer for the 405-bed hospital was actually simple, according to Carolyn Santora, MS, RN, CNAA BC, associate director of heart and trauma nursing: "We just needed to admit patients to where they belonged."

To address the issue, a committee formed to write a "full capacity protocol," or what some call an "adopt-a-boarder" program. Per the protocol, patients awaiting admission are transferred "upstairs" to beds in acute care hallways when the ED is no longer able to treat patients in a timely manner. No more than two boarders are added to any unit.

Launched in 2000, the project isn't a favorite of inpatient nursing staff, but it has demonstrated marked results. ED patient satisfaction increased from the bottom percentile to the 80th percentile, while inpatient satisfaction has held steady. It has also positively affected length of stay. An internal study found that the average LOS is .8 days shorter when patients are moved to an inpatient hallway, compared with an ED hallway. "When patients go to the hallway on the floor where they will be admitted, the experts in their care actually start their care. But downstairs, they are still just waiting," Santora says.

In the first year, the hospital found that "full capacity" was sometimes a relative term. More than 25 percent of patients who were slated to board in an inpatient hallway actually got a bed right away. Another 25 percent of patients spent less than an hour in the hallway. Inpatient nursing ratios increased for some nurses, though never beyond a 7-to-1 ratio.

Over the years, the hospital has liberalized the policy so that the medical director no longer needs to approve when the protocol is set in motion—only the bed coordinator needs to be notified by the ED. Despite the program's success, Santora concedes that a full capacity protocol is not a cure for the problem. As she says, "Your real goal should be that a patient never winds up in a hallway, so you need to keep working on the patient flow issues in your institution."

When Bed Czars Rule

Bed management is not unlike air traffic control, and one Illinois provider was facing a real crisis in 2001. In June of that year, Ingalls Health System, a 500-bed community hospital in Harvey, Ill., spent the equivalent of 10 full days on hospital bypass. The ED was overwhelmed, and doctors were frustrated because they couldn't admit patients.

"We had to take some very drastic action," says Jim Smith, former director of physician integration at Ingalls who is currently consulting manager for IMA Consulting in Chadds Ford, Penn. He served as the capacity management guru at Ingalls and was director of the patient throughput initiative, which lasted two years.

First, the hospital needed a "quick-relief valve" to manage patient flow and show a dramatic improvement to the medical staff. Within 30 days, Ingalls administrators created a patient throughput center—known as

the admission and discharge center—to serve as a staging area for patients who have an order for direct admission but cannot be admitted because a bed is not available. The admission and discharge center was placed in a converted office area of the first floor, next to the hospital's admitting department and preadmission testing center. Then installation began for five patient areas, which could be expanded to seven after 4 p.m. by using the preadmission testing center.

The admission and discharge center is still in place today. There, staff assess the patient and initiate care, while patients complete the necessary paperwork. "The inpatient nurses love it because patients come 'packaged' with the front-end, labor-intensive work already done," Smith says. Ingalls was the first to add such a center in the Chicago area, and other hospitals have followed.

Ingalls also added a "bed czar," whose official title is director of patient access, although she is not responsible for admitting. At hospitals around the country, bed czars have a range of titles, but their responsibilities are basically the same. They manage patient flow by ensuring the timely transfer of patients from the ED to the inpatient units.

Several other key changes also followed, such as establishing an 11 a.m. discharge time and adding a patient tracking system to monitor delays in admission. In June 2002, Ingalls had reduced diversion hours to 51, down about 79 percent from the year before. By trimming diversion hours, Ingalls not only helped boost its inpatient revenue to 26 percent over budget, but it also eased the stress on admitting and discharge.

One other noteworthy success was that LOS for intrahospital transfers of cardiac catheterization patients at Ingalls dropped from 5.15 days to 4.9 days. The change came after Ingalls no longer admitted patients the evening prior to scheduled cardiac catheterization, as had been customary practice. Instead, staff managed the patient's preparation by means of the hospital's admission and discharge center the morning of the procedure. Such a change is particularly significant when one considers the impact LOS can have on capacity management. A 2002 study by the Health Care Advisory Board, *Maximizing Hospital Capacity, Expediting Patient Throughput in an Era of Shortage,* found that reducing LOS by just one day is equivalent to adding 49 new beds in a typical 300-bed hospital.

Unveiling Hidden Beds

One of the goals of a bed czar is to uncover so-called "hidden" beds on inpatient units that can be filled by ED patients. At Mississippi Baptist Medical Center, a 500-bed teaching hospital in Jackson, it wasn't uncommon for staff to find 20 such beds each day.

Part of the solution was to add a bed czar, known at the medical center as a bed placement coordinator. Administrators also added an eight-bay, direct-admit unit to relieve some of the backlog in the ED, says Dotti Simpson, RN, MHS, bed placement coordinator. The unit stays open from 9 a.m. to 9 p.m. and is staffed by admission nurses.

Mississippi Baptist Medical Center also hoped to eliminate the problem of hidden beds by adding new bed management software. In 2003, the bed management team asked information systems for its help examining various commercial bed board products. They convened a taskforce with members from every affected department. After several discussions, leadership decided on bed tracking software that would be integrated with the existing patient discharge system,

rather than one that used an interface. An integrated tool works with a hospital's patient management database and draws all of the information directly from that database. Interface systems connect data from different vendors and share that information.

In years past, serious technology support tools were not available to support patient throughput efforts. But today, vendors can provide hospitals with solutions to automate their bed board tracking, patient tracking, and transport processes. Some software can model different actions in a "what if" mode. Still, most hospitals have not automated their processes to support patient throughput. For bed management staff considering such options, the CIO or other senior information systems executive can be an invaluable partner.

At Mississippi Baptist Medical Center, staff education was an important step toward ensuring the success of the new bed board.

"We had a lot of emphasis on training and dedicated one nurse educator to training for several weeks just before our go-live date," says Susan McDaniel, senior programmer analyst. In two weeks, staff trained about 900 employees in housekeeping, transport, nursing, and other departments.

The rollout went smoothly, and some results were almost immediate. "Our ED wait times went from 58 minutes to 12 minutes, on average," says bed czar Simpson. "And post-anesthesia recovery unit wait times have dropped from 42 minutes to 20 minutes, on average." What's more, staff now find only an average of 1.4 hidden beds per day.

In addition to the automated bed management software, Mississippi Baptist Medical Center is in the process of rolling out software that will automate its patient tracking and patient transport processing in some units.

Leadership also plans to install 19-inch LCD monitors on the floors, which will replace the white boards that housekeeping uses to monitor bed status.

A Process and Technology Solution

In 2003, the Level 1 trauma center at Lehigh Valley Hospital and Health Network, Allentown, Penn., faced ED diversions ranging from 170 hours to 220 hours a month. In response, administrators launched an enterprisewide project, which they dubbed "Growing Organizational Capacity."

The project, sponsored by the COO and chief medical officer, won senior management buy-in from the beginning. It was led by the senior vice president for nursing, vice chairman of the ED, and vice president for operations.

"This process is too big to start in the ED or bed management," says Lisa Romano, MSN, RN, administrator of patient logistics/patient access. "You're going to be making cultural changes that won't feel good to some folks but that need to happen to keep the flow. They have to know that it is an organizational priority."

Centralization was an important piece of the plan at Lehigh. Leadership decided to "eliminate the silos" and bring three separate bed management functions under one roof. Today, Romano is responsible for inpatient admissions for three hospital campuses, which include about 850 beds. The patient logistics department—which includes admitting plus other functions—oversees throughput issues and develops processes that favor "pull" over the traditional "push." In a pull system, the inpatient units proactively move patients into beds through measures such as discharging patients who are ready or moving patients to other units, when appropriate.

As is the case at Mississippi Baptist Medical Center, software is an important tool for Lehigh. This includes transport tracking, which allows staff to recognize transport of discharged patients as a "dirty bed." Preadmission tracking and bed tracking models are two other pieces that help speed patient throughput. For example, the bed tracking software is set up to dispatch a team of housekeepers devoted to cleaning beds of discharged and transferred patients only. Lehigh's electronic bed boards are posted on the floors, so staff can see updates in real time. This step has helped Lehigh trim its bed turnaround time from 210 minutes to 60 minutes.

To speed notification of patient discharges, Lehigh added six FTEs to the transport team to replace volunteer staff that were responsible for moving discharged patients. Although the volunteers were free, they were not responsible for discharge notification. An in-house study found that delay in discharge notification resulted in $1 million in lost opportunities because of ambulance diversions, Romano says. Since adding the transport FTEs, average discharge notification time is down from 74 minutes to nearly 0.

Reducing OR holds was another priority, so the staff established a post-anesthesia care unit alert system. Lehigh now has a protocol for various levels of PACU bed demand and capacity and reduced OR holds by 95 percent.

Other big results: Lehigh reduced ED diversions by 30 percent in the first year. Through FY05, Lehigh grew 8 percent in network admissions without adding physical beds—just by using resources more efficiently. In addition, Press Ganey patient satisfaction scores jumped from the 30 percentile to the 98 percentile.

For a hospital to maintain such results, administrators must give staff a financial incentive to take bed and capacity management seriously, Romano says.

At Lehigh, effective throughput is part of employee performance evaluation and management goals. Doing so helps put an end to staff saying, "I'll take that patient after lunch." Data collected by today's new software tools also help enforce accountability. "This is about making throughput an organization priority, at every single level," Romano says. "The days of manual bed management systems are over."

"Who Has the Beds?"

Answering this question was once a matter more subject to art than science, but some hospitals are making strides. Some organizations, such as San Antonio's University Hospital, are sharing what they've learned along the way through collaborations like Urgent Matters, a $6.4 million initiative of the Robert Wood Johnson Foundation, housed at The George Washington University.

Khoa Nguyen, MPH, an improvement expert with Urgent Matters, has studied hundreds of hospitals combating capacity issues. A key piece of advice he offers is to tackle the issues as an enterprise.

"Whether the tools and processes you choose are low tech or high tech, leaders must embrace this as hospitalwide change," Nguyen says. "Then they must embed capacity management metrics into hospital dashboards and performance evaluation."

Sites of Interest

For tools and tips to improve patient throughput, consider the following resources:

- Institute for Healthcare Improvement, www.ihi.org/IHI/Topics/Flow
- Urgent Matters, www.urgentmatters.org

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