



Maximizing Patient Flow & Reducing Inpatient Hospital LOS

Incremental steps to
create culture change

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A perfect storm was brewing at Fox Chase Cancer Center (FCCC) in Philadelphia, Pennsylvania. An NCI-Designated Cancer Center and academic teaching hospital with Magnet® status, FCCC has a large ambulatory care business, as well as a 100-bed cancer specialty hospital. In 2009 we faced an increasing number of “crunch days,” with a high number of scheduled admissions and an uncertain number of available beds. Staff were experiencing increasing stress stemming from the bed capacity issue.

Among the factors contributing to “crunch days” were both the hospital physical environment (semi-private rooms were often blocked due to patients with infections, terminal illness, or other issues) and the infrastructure (many manual systems in place for the admissions, discharge, and transfer processes). From the start, it was clear that the bed capacity problem was highly complex in nature, involving multiple key stakeholders and causative factors.

Our QI Efforts

In February 2009 FCCC achieved re-designation as a Magnet institution, and we turned our attention to a bed-management quality improvement (QI) project to address both patient flow and inpatient hospital length of stay (LOS) issues. Initiated as a high-profile QI project, the effort received endorsement from senior administration.

From the beginning, FCCC utilized a multidisciplinary approach to address the bed capacity issue. The project team was led by nursing and was composed of members of the medical staff, including hospitalists, surgeons, medical oncologists, admissions department, finance department,

information technology, system analysts, patient registration, social workers, and pharmacy.

Taking a best-practices approach, the team's first steps included conducting a Magnet hospital listserv query for best practices related to the office of admission, discharge, and transfer (ADT); reviewing Advisory Board webinars and publications related to ADT; and scheduling Hospital Association of Pennsylvania webinars related to hospital case management. The team then evaluated the feasibility of implementing the following best practice approaches:

- A roving ADT nurse (carved out of an existing floating RN FTE)
- A process to evaluate schedule "smoothing" in the OR
- Pre-wired discharge dates and times worked out between the healthcare team, patient, and family
- A hospitalist model of medical management
- Performance dashboards and metrics
- Daily staffing and bed huddles
- An Admitting Officer of the Day
- Streamlined discharge notification
- Online appointment notification
- Expanded case manager coverage
- Electronic bed management software implementation.

Roving ADT Nurse

This QI strategy aimed to overcome staff barriers to timely acceptance of incoming admissions and transfers. On inpatient units, nurses were often reluctant to quickly accept a new admission or a transfer because they were busy and trying to exert control over their workflow. So they would tell patients, "You can have your ride come after dinner." Or, "Why don't

you stay for lunch? You can go home this afternoon." At one time, FCCC had a much more relaxed culture about admissions and discharges.

The roving ADT nurse is deployed to units with heavy admission or discharge activity. We chose to focus on admissions into the unit and not the discharge function because we wanted the nurses that had established a relationship with the patient to discharge their patients. So the ADT Nurse focused on patients being admitted or transferred into units.

We conducted the roving ADT nurse pilot for one year. The ADT nurse position was created using existing float RN hours (1 FTE). The job description essential skills included having a broad clinical background with critical care experience, exemplary interpersonal skills, and flexibility. The ADT nurse worked three 12-hour shifts (11 am to 11 pm) on high census days (usually Wednesdays, Thursdays, and Fridays) and an additional 8-hour shift per pay period. We deployed the ADT nurse based on unit activity and her hours were charged to the respective cost centers.

At approximately three-month intervals, staff evaluated the effectiveness of the role. At about the one-year mark, the ADT nurse resigned due to relocation, and we decided to eliminate the position when faced with a workforce reduction imperative. As we had some marginal success with this approach, we plan to reintroduce the position in July 2013, on two surgical units with high patient turnover.

Schedule "Smoothing" in the OR

Another factor contributing to the bed "crunch" was extreme variability in our census. Although admissions were fairly predictable for medical oncology, on the surgical side, which accounts for about 65 percent of our inpatient census, admissions

BEST PRACTICES RESOURCES

- Maximizing Hospital Capacity: Expediting Patient Throughput in an Era of Shortage, Advisory Board Company, 2002.
- Throughput Gap Analysis, Advisory Board Company, 2002.
- ADT Efficiency Toolkit: Benchmarking, Analyzing, and Managing Admissions, Discharges, and Transfers, Advisory Board Company, 2009.
- Preventing Unnecessary Readmissions: Transcending the Hospital's Four Walls to Achieve Collaborative Care Coordination, Advisory Board Company, 2010.
- Effective Interventions to Reduce Re-hospitalizations: a Compendium of 15 Promising Interventions, Institute for Healthcare Improvement, 2009.
- Patient Flow: Strategies to Improve Throughput and Control Surge Capacity, HCPro, 2009.
- Smooth the Elective OR Schedule? A Large Hospital Makes It Happen, OR Manager, April 2006.
- Schedule Smoothing: Applying Operations Management Principles in the OR, Advisory Board 2007.
- Finding the Right Flow: Smoothing Operations in the OR Leads to Success in the ED, Partners, 2009.

were extremely variable. Census variations were stressing nursing resources and straining bed capacity. In collaboration with the chief of surgery and the director of peri-operative services, we explored these issues with a goal to better manage variability in inpatient admissions from OR and PACU (post-anesthesia care unit).

One issue we identified was the scheduling of medical staff conference and vacation time. If, for example, all medical staff on a service left to attend the same conference, that entire service could be out of commission for days and the unit's census would plummet, leading to inefficient use of clinical personnel resources. Therefore, the team promoted buy-in for establishing parameters on vacation and conference attendance to ensure representation by all services at all times.

To better understand census variability, the team:

- Analyzed 16 months of data (July 2009 through October 2010), including day of the week and admission type (AM, ICU, SDS)
- Calculated percentage of inpatient admission rates by surgeon/per OR day
- Calculated percentage of inpatient days generated per OR day.

Overall, inpatient days generated per OR day were quite consistent. Variation was related more to hospital length of stay, especially in the ICU. Bottlenecks occurred when multiple patients needed critical care reservations at the same time and those beds were not available.

To improve this process, we modified the block schedule and promoted more timely transitions to the step-down level of care. We extended the number of step-down beds so that we had greater ability to move patients quickly from critical care to the step-down areas.

Pre-wired Discharge Dates & Times

This strategy was not deemed a good fit for our institution. Patients travel to FCCC from a multi-state area. For those facing a two- or three-hour travel distance, coordinating rides at certain times can be very difficult for extended family members. It is also difficult to coordinate with medical staff who may not be available to complete discharge paperwork or medication reconciliation to meet a pre-wired discharge date and time schedule.

Hospitalist Model of Medical Management

The goal was to enhance medical management and expedited patient throughput. We increased interdisciplinary team rounding to improve collaboration with case managers by enhancing day-to-day communication about where the patient was in his or her disease course and treatment. We also worked to “hard-wire” medication reconciliation processes.

To improve patient throughput, we developed a direct referral unit with medical oversight by the hospitalist service. FCCC does not have an emergency department; however, a community hospital on campus connects to FCCC via a bridge. Some of our patients use that emergency department; others go to surrounding ERs for emergency care. The direct referral unit functions similarly to an urgent care area for existing patients. It is open until 7 pm on weekdays and expanded its hours to include Saturdays in 2012.

Having a direct referral unit has created some bed capacity because a subset of patients can be treated and then discharged from the direct referral unit rather than having to be admitted as inpatients. Thus, the direct referral unit has created more capacity for those needing acute level of care.

Performance Dashboards & Metrics

Another goal was to establish quality and performance metrics related to patient flow. You can't manage what you don't measure. Developing performance dashboards and metrics has really helped in this area. Prior to 2009, we did not receive much data related to case management or patient flow. To develop our dashboards and metrics, we considered the following indicators:

- Bed turn-around times
- PACU transfer delays (by unit and reason)
- Average LOS
- Average LOS by top medical and surgical DRGs compared to Medicare and Cancer Alliance Hospitals' averages
- 24-hour stay analysis
- LOS variance analysis
- 30-day unplanned readmission analysis
- Average time to bed assigned.

We assessed these factors to determine if there were opportunities for incremental improvements. We actually developed a tool to look at how quickly beds were turned over. We assessed PACU transfer delays because we saw opportunities to improve the timeliness of moving patients out of the PACU. We developed a tool that allows us to look at where delays are by unit, time of day, and reason for the delay. For example, a unit where a nurse was always busy or at lunch or in a meeting indicated that nursing behaviors might need to change. The indicators provided some hard data that could be used to help effect those types of cultural changes on a unit.

We started looking more critically at average LOS data. We also collaborated with Finance to obtain quarterly information about our top surgical and medical DRGs and how our LOS results compared to the Medicare and Cancer Alliance Hospital averages. We developed quality-monitoring tools related to our LOS variances and unplanned 30-day readmissions. We

wanted to better understand those variations and identify opportunities to improve.

Daily Staffing & Bed Huddles

We implemented this low-cost, high-impact strategy with a goal of enhancing staff communication related to aligning and negotiating staffing resources and patient bed assignments based on projected ADT activity. While we had often held staffing huddles, we had not tried bed huddles. So we combined these into a daily staffing and bed huddle. Attendees include the inpatient managers, the OR manager or director, Admissions RN, and Staffing Office representative. The huddle allows staff to negotiate not only the admissions and transfers coming in but also to assess the staffing resources and how these might be best utilized between units.

This brief daily meeting is held at 9 am in the Chief Nursing Officer's (CNO) office. Productivity overall is much higher when we can maintain the "sweet spot" in terms of census on a given unit. If peak census or staffing issues arise, we have the option of holding ad hoc meetings throughout the day and include the CNO and Environmental Services director. Additionally, we put mechanisms in place to alert clinicians—usually by high-census alert email—that beds are needed and if there are patients that are going to be discharged that day, the process needs to be expedited.

In tandem with the daily huddle, the Admissions nurse makes rounds throughout the hospital, not only in the morning but at other times during the day when needed. This process helps units develop a rapport with this staff member and fosters a collaborative culture.

Admitting Officer of the Day

In implementing an AOD, the goal was to have a process for escalating medical decision-making when beds were tight. The AOD responsibility is rotated among senior attending physicians, including medical oncologists, hospitalists, and surgeons. The Department of Medicine creates a monthly AOD scheduling calendar. The Admitting Officer of the Day is available for consultation on weekdays from 9 am to 5 pm, and bases admission and transfer decisions on clinical criteria and priority of care. While the AOD may not be called upon often, when the hospital is at peak census, the AOD may be used multiple times a day. This position helps reduce the pressure on the Admissions Department RN.

Streamlined Discharge Notification

In the past, FCCC's discharge notification process involved multiple phone calls. The unit nurse discharging a patient called the secretary, who would call the housekeeper and the Admissions Office, and so on. Clearly, our priority was to reduce the number of phone calls.

Now notification of discharge is sent through a text page application accessible through the staff portal. The expectation is that notification is posted within 15 minutes by the unit team leader or designee. The patient's name and room number is

entered and the text is then sent to the appropriate departments and staff, e.g., Admissions Office, Housekeeping, and the nursing supervisor. When the room is ready, the Housekeeping supervisor enters a notification via text pager that the room is "complete." The Admissions Office then updates the electronic bed board with this information.

The scheduling of post-hospital appointments was also holding up the discharge process. Now, through an online appointment notification application, the scheduled appointment is entered and an electronic notification is sent to the Scheduling Department. Usually within the first 24 hours after discharge, the Scheduling Department contacts the patients or their families to confirm that appointment.

Expanded Case Manager Coverage

An area with potential for improvement centered around unplanned weekend discharges. Often these discharges were being "held" until Monday so that the case manager could coordinate complex post-hospital services. In the past, weekday staff were scheduled to rotate to cover weekends, but this process had a negative impact on job satisfaction. Running "short" during the week created additional stress for staff. To address this issue, we created a 0.1 FTE position (8 hours/2-week pay period) to cover a four-hour Saturday shift. By expanding this coverage by four hours on Saturday, with minimal impact to our operational budget, we reduced the number of cases that waited over the weekend and slightly reduced the average LOS.

Electronic Bed-Management Software


Previously, physicians or clinicians in the clinic would fill out paper forms to schedule an admission. These forms would either go into an interdepartmental envelope or they would be faxed to the Admissions Department. The obvious problem was that forms would get lost. In late 2009 FCCC transitioned to Invision bed-management software.

An interdisciplinary implementation taskforce team focused specifically on the IT application. This team met biweekly and developed an application using this software that standardized bed requests so that they are all electronic. As part of this process, workflows for routine and urgent bed requests were standardized. An application to provide serial clinical updates of "Urgent Admissions or Transfers" every 6 hours was developed. If at that point, the patient is still waiting to get transferred, that nurse calls the other institution and enters an update to determine if the patient is still medically appropriate for transfer. The online bed board functionality also provides census updates that can be accessed from any PC and viewed by any clinician.

The electronic bed management system has resulted in increased efficiency for ADT staff, no "lost" requests, improved accuracy and appropriateness of admissions requests, ability to obtain data, and greater physician accountability to screen incoming transfers.

One of the most important steps was aligning bed management efficiencies with the cancer center's strategic plan and

individual and unit performance goals. Typically, inpatient units were under-reporting actual and potential discharges. “Hiding” beds was viewed as a reasonable means of controlling work flow. Achieving staff buy-in for a change in this culture was a challenge. We worked to achieve this shift by using analogies—a busy hospital is hopefully a financially prosperous hospital with more job security for existing staff. We implemented rounding by nursing supervisors, basically doing bed checks to verify actual census. We shared data with units about their census and their profitability. We also conducted one-on-one counseling

with staff who were non-compliant in reporting discharges. Now several years in, we have achieved buy-in. Staff understand that if you’re working on these units you will be busy every day, as we flex our resources to maximize productivity and escalate the pace operationally to ensure patients are receiving care in the appropriate setting. 

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BENCHMARKING OUR LOS

In addressing bed capacity issues, our team also looked at how FCCC’s LOS data compared by doing some benchmarking. Once outliers were identified, we looked for ways to improve. Our team set a goal to reduce LOS in at least three outlier DRGs in FY 2011. The case managers were charged with identifying three projects targeting selected DRGs.

1. **Decrease LOS for DRGs 393 & 394:**
 - Cycle TPN and tube feedings at home vs. hospital
 - Consider home antibiotic therapy when feasible
2. **Decrease LOS for DRGs 583, 407, 327, 734 & 656:**
 - Develop surgical resident and fellow orientation to case management
 - Develop a patient education brochure “Partners in Care—Expectations after Surgery”
 - Make a formal request to Executive Committee of Staff to include case management in new physician orientation
3. **Decrease LOS for DRGs 004, 011, 516, 013, 129 & 130:**
 - Ensure earlier de-cannulation of tracheostomies by developing a clinical pathway.

Working with medical records and coding staff on the front end, we assigned average LOS based on probable DRGs linked with the admissions diagnosis. This information is provided electronically to all of the case managers based on their census report. Initially medical staff did not completely buy in to the LOS project. Once we explained that these projections were based on data in the Medicare database and were a starting place to begin to work on this issue—buy-in improved.

We now provide LOS projections to case managers within

24 hours of patient admission. (Medical Records or coding staff assign LOS based on probable DRGs linked with admission diagnosis.) The projected LOS target is communicated to the healthcare team, patient, and family.

Case managers have access to an electronic tool called the LOS variance tool. When actual LOS varies with projected LOS at admission, the case manager uses this quality monitoring tool, which is not part of the medical chart. The case managers can pull up the patient and enter the reason for the LOS with a drop-down menu. At the end of the month, they can print out a report. As part of this process—if delays in care are occurring or the process is just not moving according to plan—case managers are encouraged to bring their cases to their case management physician liaison for possible physician coaching.

FCCC conducted several LOS projects using the FOCUS-PDCA format. The case managers primarily led these projects. Being leaders in terms of LOS reduction was a new role for these staff, who are bachelors-prepared nurses who received training and coaching on how to review outlier data and analyze some of their cases. Between FY10 and FY11, of the 14 outlier DRGs examined, 11 showed a LOS reduction and 6 were outperforming the Medicare and Cancer Alliance Hospitals’ average length of stay. For the case managers, these results affirmed that it was possible to have an impact with their projects.

As FCCC has shortened LOS over time, we’ve been proactive in simultaneous monitoring of 30-day unplanned re-admission rates. FCCC found that these rates have been very consistent and LOS reduction does not seem to have adversely impacted re-admissions.