Bed Management—Decreasing Bed Turn Around Times by 30%

Bed management is a critical "behind the scenes" operation in hospitals. Any patient, physician, or associate in contact with in-patients experiences the impact of this operational process. Issues with this process are seen in ED Diversion status, ED Boarding, delays in room assignments for surgical patients, and delayed admissions for direct admits. All of these contribute to patient and physician dissatisfaction, community relations issues, associate morale and loss of revenue. This case study highlights the use of lean and six sigma techniques to improve the bed management process of a large hospital. By using this approach in a makeover event style of implementation this hospital was able to reduce the bed turn around times by 30%.

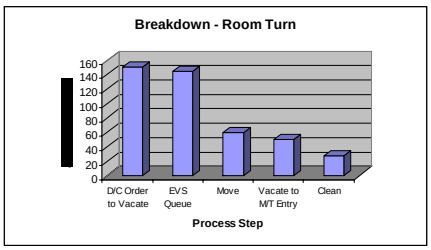
Extreme Makeover Events with Healthcare Excellence Institute are the most powerful mechanism to deliver tangible and sustainable change in healthcare today. A typical event lasts 5 days during which an area is assessed, key issues are identified and a new process is designed and implemented using the principles and methods of lean. The event is staffed by a team of 8—12 process owners who are trained on day one of the event and subsequently guided through the extreme makeover event by our experts.
The deliverable of this process is not a report or consulting recommendation, but rather real change in the form of robust, efficient and patient focused processes owned by your associates.

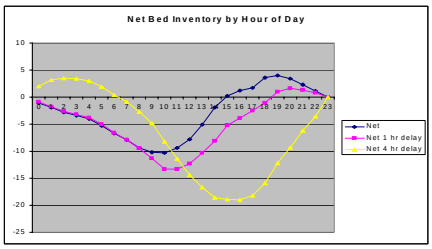
Patients requiring in-patient rooms at this hospital were often forced to wait a long time until a room was available and ready. The hospital was a 300+ bed facility with a large and busy ED (this ED department had a 35% admit rate). The problem, as for most hospitals, was especially severe for ICU and telemetry beds. This facility was known to periodically be on diversion due to bed shortages in these critical areas. Physicians, patients, and administrators alike were dissatisfied with the process since it resulted in patient care issues as well as lost revenue. Associates were frustrated with their inability to provide proper beds quickly.

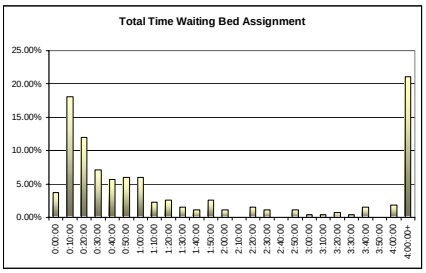
In an effort to manage the process, the nursing administrator held morning and afternoon bed briefings to discuss staffing and patient needs for each day. Most of the room assignment decisions were made by the house supervisor which kept that individual busy and less available to conduct other important functions. A bed tracking software package was being used by the housekeeping department, with the prevailing thought that it was working well, although the units complained that it took too long to clean rooms. Many believed nursing to be the primary cause of bed availability issues due to "bed hoarding" until shift change, presumably so that nursing would not have to take on more patients during an ongoing shift. The "proof" of this theory was that rooms became available around 7:00 pm each evening which corresponded to the shift change. The Associate Administrator wanted to change the process to decrease the wait time of bed assignment and thus diversion hours. An upgrade to the existing software had been proposed as a possible solution. While she was willing to invest funds if it solved the issue, she decided to use an *Extreme Makeover* approach and determine if the software upgrade was the appropriate solution or an element thereof.

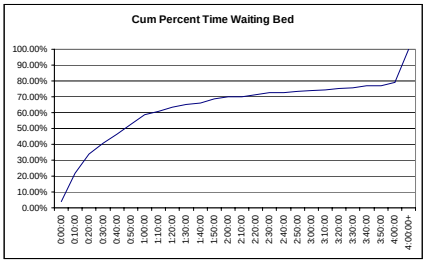
Getting Started
As with many activities, taking the first step is the most difficult. To get started assemble your leadership team and identify 2-3 areas that must be improved, for patient satisfaction, staffing, financial or other reasons. Clarify what outputs and results need improvement. Once you have identified the areas of interest, we will be on site with you to select the best area for the first event, retrieve and analyze the initial data and prepare your staff for the event.

Working with a team of Lean Six Sigma experts, she assembled an internal team that consisted of a House Supervisor, Patient Access Nurse, Admitting Representative, Unit Nurse, Unit Clerk, and herself. The team went through approximately 6 hours of training in lean six sigma techniques and began by assessing the process from "customer touch to customer touch" with the support and guidance of the lean six sigma team.









The analysis above shows the actual process times associated with each process step, the distribution of patient wait times for beds and the inventory model built to understand the availability of beds corresponding to the demand for beds by time period. The analysis was used to redesign the process in such a way that demand and availability was better synchronized.

The project team gathered data and process times for all process steps. Historic data was also obtained to understand the rate of patient arrivals and departures. The team collaborated over their observations of the process and data analysis and made a number of surprising discoveries: During the observations it was found that housekeeping was getting called by a number of associates so that at times several housekeepers were dispatched to the same room. The room cleaning process was relatively fast (30 minutes) once a housekeeper arrived. The house supervisor was extremely busy with her role managing calls coming to her mobile phone and she was constantly checking to determine the best place for each patient. This involved coordinating staff such that levels were adequate in desired units. The data from the detailed analysis showed that it took between five and seven hours from the time a discharge order was written to the time the room was ready for re-assignment. Reducing this by two hours would effectively free 10 beds during the critical time of day.

Since the team began with a "customer touch to customer touch" view, they decided that the process actually began when a patient was ready to leave versus when a patient was ready for a bed. This led to an inventory management logic for designing the new process. Using this logic the team began the third day of the event by designing the new process using process design tools based on inventory management as well as lean and six sigma principles. The solution elements included: Work management using a visual control system, metrics to measure process performance, decision support tools for bed assignment, and a cross functional — high performance work team. The tools provided a full understanding of bed statuses for the entire hospital as well as current and anticipated patient demand. One tool that was developed was a control board that provided both current and future patient needs in one place. The new board provided not only visibility of individual room status and patient needs, but also of a view of operations. This allowed the management of the entire hospital and associated processes to proactively manage the system.

Since the nursing units needed to be trained prior to implementation, the process changes could not be implemented immediately as is normally the case. To enable the changeover, the team assembled a complete training and communications package which was rolled out over the next three weeks throughout the entire facility.

On the designated day the team assembled and completed the final process elements including the physical layout of the area. The new process was launched and ***2 hours*** were cut immediately from the process. The newly co-located high performance work team took calls for patients needing rooms, and once the needs were assessed by access nurses the room assignment was performed if the patient was ready for the room, or the need was recorded in the position for future and anticipated demand.

Data Analysis in Extreme Makeovers
The data analysis skills used for these events are generally from the field of operations analysis, six sigma and process physics. We utilize inventory optimization, queuing, statistical process control and other techniques applied to projects like bed management to design processes that will function to the desired outcome.

System / Diagnosis	Primary	Overflow 1	Overflow 2	Overflow 3
Renal, Hemodyalisis, CAPD	2A	Based on other Diagnosis (see below)		
Rehab, HBNF	3B	x	x	x
Infectious Disease, Pulmonary	3E	4E / 5E	x	x
Positive TB	3E	x	x	x
Urology, Gyn	4E	3E	5E	5B /6B /7B
Pediatrics, Obstetrics	4E	x	x	x
Rehab	4B	x	x	x
Neurological, Neuromuscular	5B	6B	7B	5E / 4E

Decision making tools and visual controls allow the team to take care of patients consistently and quickly.

Why Lean Works in Healthcare

Lean leverages the knowledge of your associates, the intricacies of your hospital and culture with the process assessment and Lean design expertise of our associates. Instead of delivering reports, which rarely get implemented, we deliver actual change. Since associates are fully involved in the assessment, design and implementation the solution is not merely 'bought into' but rather owned by your associates. Extreme makeovers not only improve processes, they improve teamwork, morale and the skill set in the organization. It is this unique combination of internal resources and external structure, tools and guidance that delivers truly remarkable results.

Simultaneously the team was notified immediately as a patient left a room which then allowed housekeeping to dispatch cleaning personnel based on room availability and the area of most need within the entire system. This dispatching and prioritization mechanism prevented the previous problem of multiple housekeepers arriving at the same time and ensured that the rooms in units with the highest needs were cleaned first.

The team began using a display board to track the process performance over time. Some of the metrics used were: Average cycle time from the patient being ready to the patient being in a bed for all encounters, the average of the 5-highest-case cycle times of each day and the percentage of patients discharged prior to 11:00 AM each day. The team instituted a daily performance briefing to find ways to continue to improve the process.

By providing the team with the right skill mix, tools to make decisions consistently, and the visibility of both bed and patient status, they were able to dramatically decrease the amount of time required to provide beds for patients. To further improve the process a prototype board for the nursing units was designed showing potential discharges in a systematic way. Using the boards, the floors can provide more accurate information to the central bed management team. Due to the success of the unit board, it was subsequently rolled out to all nursing units.

One of the unexpected benefits the team found was that the house supervisors were freed from conducting the bed assignment activity. As a result they were able to address other, often critical, patient needs. Incorporation of access nursing into the function allowed for a rapid and consistent flow of information with respect to patient needs. In addition, decisions for unit assignments were made to optimize both the response time to patients and the level of care. Finally the new process allowed the twice daily bed briefings to be eliminated. This returned one hour each day to each associate of each nursing unit which allowed for an increase of 17 labor hours per day now available to conduct other activities across the hospital.

The mission of **Healthcare Excellence Institute** is to help organizations create safe and efficient healthcare delivery processes by adopting proven world class strategies such as Lean / Toyota Production System to the complexities of healthcare.

To find a solution your to process performance issues please contact us at:

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