

Surmounting Staff Scheduling Challenges at Valley Baptist Health System

by Blake Hubbard and Carolyn Pexton

As with most healthcare providers today, maintaining appropriate staffing levels and improving productivity are among the top concerns at Valley Baptist Health System in Harlingen, Texas. During its initial wave of Six Sigma training projects in 2002, the team at Valley Baptist launched an effort to review and improve the staff scheduling process for one nursing unit in orthopedics. Within this particular unit, there had been a history of overtime and use of agency hours that did not seem to correlate with changes in patient volume. Patient census would fluctuate while staffing levels remained the same, and the higher hourly wage for overtime and agencies had begun to strain the overall labor budget.

The primary focus for this project was to improve the unit's ability to meet staffing targets responsibly while protecting the quality of patient care. It is a challenge to reach that optimal level ... avoiding overstaffing yet appropriately meeting daily needs. Paramount in this effort was the notion that targets would be met without adversely affecting customers. Patient satisfaction scores had to remain constant or increase. This mandate was built into the project and measured through the use of upper and lower specification limits.

Also supporting the project were metrics, introduced through the adoption of Six Sigma, to measure productivity for nurses and managers. The dual emphasis on productivity and quality provides a framework for offering cost effective care and aligns with the customer-centered mission at Valley Baptist.

The Project Team

A cross-functional project team, including the following roles, was assembled:

- Chief nursing officer (project sponsor)
- Assistant vice president from human resources
- Nursing house supervisor
- Nurse manager from the cardiac care unit
- An IT representative
- A charge nurse

Any new change initiative can elicit skepticism, but once the team understood the Six Sigma approach of concentrating on fixing the process rather than assigning blame, much of the skepticism subsided. Stakeholder analysis and other CAP (Change Acceleration Process) tools helped to surface their concerns and improve communication.

Defining the Goal

The nursing units in general had struggled to meet their staffing targets and were over budget on labor costs. For this project, the team decided to focus on one orthopedics nursing unit based on three criteria:

- Not extremely specialized or unique/best representation of nursing as a whole
- Very supportive manager
- Clear opportunity for improvement and results

To understand the current scheduling process, the project team used the SIPOC (suppliers, inputs, process, output, customers) tool to develop a high-level process map.

Measuring and Analyzing the Issues

The team gathered historical data from the payroll system to analyze regular time, overtime, agency use, sick time, vacation, jury, funeral leave, and family and medical leave (FMLA). For each data point, they examined twenty-four pay periods. Fortunately, they were able to extract the data they needed from existing systems and avoid manual data collection, which is more labor intensive and can increase the project timeline.

Given the availability of continuous data for the project Y, or effect, and the potential Xs, or causes, regression analysis was the most appropriate tool for understanding the relationship between variation from the staffing goals and vacation, FMLA, sick leave, overtime, agency nurse usage, and so on.

The team determined that three critical Xs could explain 95% of the variation:

- Agency use
- Overtime
- Census

The next step would be to understand underlying factors. Data would point the team to interesting findings that disputed their original theories.

Statistical Sidebar

Central metric: worked hours / equivalent patient days.

Worked hours are those hours during which an employee was actually working—including regular time and overtime, and excluding non-productive hours such as sick and vacation time.

Equivalent patient days is the volume statistic utilized within the Orthopedics Unit. It is the typical patient days number adjusted to reflect short-term observation (STO) patient volume.

The Improve Phase

Since improvements introduced changes in process and human behavior, the acceptance-building techniques of CAP and Work-Out™ tools were key to success. The team conducted a Work-Out session to develop new standard operating procedures

(SOPs) for better management of overtime and agency usage ... both critical drivers in staffing.

The chief nursing officer attended the sessions to underscore the importance of this initiative from a leadership perspective. The project team used the process map to indicate where they might have opportunities for improvement, and then conducted separate Work-Outs on each area. They brought in nursing staff, house supervisors, and other stakeholders to participate in the search for solutions.

Never Assume

This project furnished a classic example as to how Six Sigma can either corroborate or dispel original theories. Management at Valley Baptist had initially assumed they were over budget on labor costs due to sick leave, FMLA, vacation, and people not showing up, which would have naturally necessitated the additional overtime and agency hours. Data and analysis proved those assumptions to be incorrect.

It turns out there were several factors contributing to the staff scheduling challenges:

- Nurses didn't like floating in and out of units. This came up in every Work-Out session.
- The staffing matrix attempted to set parameters based on volume, but compliance was not ideal, and the matrix itself was based on data that was not completely current.
- Maintaining information in the matrix involved labor-intensive, manual processes that were difficult to control.

The team discovered that the use of overtime was not always need-based. Units would regularly schedule 48 hours for each nurse, with the extra 8 hours of overtime built-in as "traditional" usage. This became an accepted practice, and although adjustments were supposed to be made when the patient flow was lighter, this was not happening. On the form used to submit data, the nurses would have to guess what hours they might actually work. The matrix might have indicated compliance, but the payroll data actually showed them clocked in for 14-15 hours instead of 12.

Another critical issue is that the nursing unit lacked appropriate mechanisms for shift coordination and handoff. There were two fully independent teams between the day and night shifts, and there was not a smooth transition between them. Part of the problem stemmed from a lack of written guidelines governing the overtime between shifts. Nurses would finish their regular 12-hour shift and stay on overtime to complete tasks rather than pass them on to the next shift.

Results and the Control Phase

The development of new SOPs has clearly had a positive impact on the organization. It has given staff a plan they can follow and established accountability. Under the unit's new process for transition meetings between shifts, the outgoing nurse takes the incoming nurse to the patient's room, introduces them, and provides a report on the current status and whether there are outstanding orders. In addition to improving operations for the hospital, this change has been well received by patients, as reflected in rising satisfaction scores during the pilot.

The project on staff scheduling has led to an overall reduction in the higher hourly cost of overtime and agency use and has translated to \$460 thousand in potential savings for this one unit. Conservatively, if this project were spread across the health system the savings could exceed \$5 million. It is also important to note that this project started at the 0 sigma level ... and has now been at 6 sigma for nine consecutive pay periods.

This project translates to \$460 thousand in potential savings for one unit. It is also important to note that this project started at the 0 sigma level ... and has now been at 6 sigma for nine consecutive pay periods.

To ensure results are maintained, managers use control charts and trend reports with data from HR, time and attendance, and payroll systems. This provides real-time information on productivity, tracking worked hours versus patient days to show alignment with targets on an ongoing basis.

The bottom line is that nurses, management and patients are all happier as a result of this project. With the pilot in the Control phase, Valley Baptist has held Work-Outs to determine how they might broaden the SOPs and implement this approach across the system in all nursing units.

About the Authors

Blake Hubbard is a Six Sigma Master Black Belt with Valley Baptist Health System. He received his Six Sigma training through GE Medical Systems, his MBA from The University of Texas—Pan American, and his BBA from Stephen F. Austin State University. He is a member of the American College of Healthcare Executives and the American Society for Quality. He can be reached at Blake.Hubbard@valleybaptist.net.

Carolyn Pexton has over seventeen years' experience in communications and healthcare and is currently serving as the director of communications for Performance Solutions at GE Medical Systems. A member of ASQ, she is Six Sigma Green Belt certified and has presented and published on topics including Six Sigma and change management within the healthcare industry. She can be reached by email at Carolyn.Pexton@med.ge.com.

About Valley Baptist Health System

Valley Baptist Health System is a full-service, not-for-profit community health network serving the population of south Texas and beyond. The system is composed of multiple organizations, including Valley Baptist Medical Center, which is a 611-bed acute care hospital providing the number-one rated orthopedics service in Texas, a state-of-the-art children's center, and a lead level III trauma facility. The organization also serves as a teaching facility for The University of Texas Health Science Center.