Engineering study helps hospital surgical department improve on-time record

By LORA HINES
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Riverside County's largest hospital is performing about 40 more surgeries a month based on production principles learned last year during participation in a University of Southern California Viterbi School of Engineering project.

Riverside County Regional Medical Center in Moreno Valley was one of three hospitals selected for the project, which examined operating room turnover times between surgeries. The project helped administrators shave 10 minutes off the hospital's typical 49-minute turnover times for each of its 10 operating rooms.

That makes time for about two more surgeries a day, which typically are scheduled between 7:30 a.m. and 5 p.m.

"That was dead time during which we were not taking care of patients," said Dr. David Ninan, the hospital's anesthesiology department chairman.

David Belson, a USC industrial and systems engineering professor, said he and his students look for ways to shorten operating room turnover times much the same way as airlines reduce ground time between flights. They interview hospital staff, watch surgeries and review data before recommending how facilities can become more efficient and save money, he said.

"There are a lot of things engineers can do to reduce costs," Belson said.

The project revealed that better staff communication, more accurate surgery scheduling, pre-operation checklists and reliable housekeeping schedules improved operating room efficiency.

Louise O'Rourke, the hospital's operation room nurse manager, said staff members already had looked for operating room efficiencies before joining the USC project. They created a pre-operation flow chart to reduce the number of delays for the first surgeries scheduled each day.

First late, all late

Dr. Arnold Tabuenca, the hospital's medical director, said 40 percent of surgeries scheduled first each day were starting late because the staff had grown to accept a "culture of being late," he said. "Patients were late. Doctors were late. Everyone was late."
Late-starting first surgeries then backed up almost all the following surgeries throughout the day, he said. The hospital's research taught them how to better schedule and prepare for the first surgeries of each day.

Now, at least 95 percent of all the hospital's first surgeries start on time because everyone is held accountable for their time, Tabuenca said. The other 5 percent usually start late because patients arrive late to the hospital, he said.

Clean? Check!

The USC project further revealed improved operating room turnover required more cleaners and a pre-operation checklist, which includes patient transportation arrangements to ensure prompt arrival.

The improvements came as hospital administrators saw the number of surgeries increasing, from about 630 per month in 2007 to 700 per month in 2008. Officials expect that number to continue to rise as more people lose their insurance and rely on the county hospital for health care.

"By increasing our volume, we're going to have to be more efficient in the future," Ninan said. "We need to meet the needs of the community."

Tabuenca said he wants to further reduce operating room turnovers to 30 minutes, which could lead to 40 more surgeries a month. The more surgeries that can be performed mean the quicker patients get the care they need, he said.

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