

Surgeons report that 12-hour shifts improve patient outcomes, lower costs

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For covering emergency and urgent operations, hospitals have traditionally assigned general surgeons to 24-hour on-call schedules, which often puts them in a situation where they need to operate and make complex medical decisions after being on duty for 18 or 20 hours or more. However, Texas Tech University Health Sciences Center, Lubbock, Tex., has used a model to cap surgeon shifts at 12 hours for covering surgical emergencies, and a study has shown that it led to shorter hospital stays and lower overall costs for patients with acute appendicitis, according to findings presented at the American College of Surgeons Clinical Congress 2019.

"We found a decrease in perforation rates of appendicitis with the acute-care surgery (ACS) [model](#). Although it wasn't the original intention of the model we created we also found a decreased [hospital](#) length of stay, which has a trickle-down effect of having a decreased cost," said Robyn Richmond, MD, associate program director for the general surgery residency program at TTUHSC. "With the ACS model, we are getting patients to the operating room faster, so therefore they're in the hospital a shorter amount of time, which overall results in decreased cost." The researchers claim this is the first study of patient outcomes comparing the ACS and traditional staffing models head-to-head.

Texas Tech University Health Sciences Center is an academic tertiary referral center. The study involved a retrospective review of patients admitted with acute appendicitis from September 2018 to June 2018, when the health center transitioned from the traditional 24-hour call

model to ACS, which involves having an acute-care surgeon in the hospital for a 12-hour shift. Study coauthor Ariel P. Santos, MD, MPH, FRCS, FACS, assistant professor of surgery, explained that the researchers chose to study [acute appendicitis](#) because it is the most common urgent operation performed.

In presenting updated results from the podium, study coauthor Beatrice Caballero, MS, reported that patients treated by surgeons in the ACS model had an average length of stay of 0.73 days vs. 2 days for those treated under the traditional model ($p=0.001$), and had no reported cases of organ space infection vs. a rate of 7.1 percent in the traditional group ($p=0.036$). On average, ACS patients were seen by a surgeon more than an hour sooner after they arrived at the hospital: 2 hours, 9 minutes vs. 3 hours, 14 minutes ($p=0.001$). Per-patient costs with the ACS model were \$1,452 vs. \$9,834 per patient ($p=0.001$).

"There have been studies that have shown that patients do better with acute care surgeons in the hospital, but what our institution's study also shows is that this arrangement also helps with cost, and that's important to convince hospitals and departments to try to support the model of acute care surgeons," Dr. Richmond explained.

The measure of surgeon well-being was not a specific outcome of the study, but improving wellness and working conditions for surgeons was the impetus for developing the ACS model by Sharmila Dissanaiké, MD, FACS, chair of the department of surgery. "We have not studied this factor, but subjectively our faculty is more satisfied that there is a continuity of care that we didn't have with a 24-hour call schedule," Dr. Santos said.

"We believe that it is improving morale not only for the ACS surgeons but also for the [general surgeons](#) who now no longer have to take general surgery call," Dr. Richmond said. "They can concentrate building their

elective practices, without being interrupted by the demands of being on call." Another important consideration for attending surgery faculty is that general surgery remains an attractive field to the residents as well as medical students rotating through the department, Dr. Richmond noted. "We think it's important for upcoming generations of surgeons too to see what a flexible schedule we have on place," she said.

Dr. Santos explained that the continuity of care arises from the attending surgeon working 12-hour shifts on consecutive days, so that the surgeon is more likely to be in the hospital and follow-up with the patient on the day after surgery than she would be doing 24-hour call. "The sign-off between surgeons and surgical teams is also much more efficient with the 12-hour shift," he added.

The next step for the researchers is to evaluate other variables that may impact outcomes, Dr. Santos said. "A multivariable analysis will eventually need to be done to make sure that the outcomes we obtain are truly attributable to the shift model," he said. "Is it wellness of the surgeon, or the skill of the surgeon or some other variable? We want to make sure we eliminate those variables that potentially could change the outcome as well as the result."

Provided by American College of Surgeons

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