

# Neurosurgical residents improve quality and reduce costs

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Neurosurgical resident-led effort to improve quality and reduce costs in a leading academic institution Charlottesville, VA (October 15, 2013). An incentive program to reduce the number of unnecessary diagnostic laboratory tests performed in neurosurgical patients at UC San Francisco (UCSF) was highly successful. Resident trainees in neurosurgery identified five frequently scheduled laboratory tests that rarely yield information that would change patient care. A new set of guidelines was developed to determine when these tests should be performed. The result was a 47% reduction in the number of targeted tests, which was attended by cost savings of \$1.7 million in one year. Details on this program are discussed in "Targeted reduction in neurosurgical laboratory utilization: resident-led effort at a single academic institution. Clinical article," by Seunggu J. Han, M.D., Rajiv Saigal, M.D., Ph.D., John D. Rolston, M.D., Ph.D., Jason S. Cheng, M.D., Catherine Y. Lau, M.D., Rita I. Mistry, M.P.H., Michael W. McDermott, M.D., and Mitchel S. Berger, M.D., published today online, ahead of print, in the *Journal of Neurosurgery*.

Given the ever-increasing costs of medical care, many health care institutions are seeking ways to keep costs down while maximizing patient care. Staff physicians are expected to aid in this goal, and residents are now called on to participate as part of their training. Dr. Han and colleagues tell us that at UCSF, the medical center and the office of graduate medical education leadership joined forces to produce a program-specific quality improvement program in 2008. Each fiscal year, small financial incentives are offered to residents to encourage

them to identify areas in which quality of care in their specialty can be improved and to implement actions toward this goal.

According to the authors, in fiscal year (FY) 2011-2012, the 18 residents in the Department of Neurological Surgery identified five diagnostic laboratory tests that they deemed usually unnecessary. Although frequently performed in critical care patients, tests for serum levels of total calcium, ionized calcium, chloride, magnesium, and phosphorus are unlikely to reveal abnormal findings in neurosurgical patients, and the findings that do appear usually don't lead to a change in treatment plans in these patients.

With input from UCSF neurosurgeons and hospital internists, the residents developed a new set of guidelines specifying when these tests should be ordered. The residents proposed that use of the five tests could be reduced by half and were offered a small financial incentive (\$400 per resident) if they could achieve that goal.

The authors recount that in FY 2010-2011, one year before the project, the total number of tests for serum total calcium, ionized calcium, chloride, magnesium, and phosphorus was 45,023 in the neurosurgical service. During FY 2011-2012, this number was reduced 47% to 23,660. Costs of these tests to health care payers and the institution also dropped substantially: there was a \$1.7 million reduction in billable charges to health care payers (patients, insurance companies, Medicare/Medicaid) and a \$75,000 decrease in direct costs to the medical center (for supplies used in performing the tests).

During the year of the project, quality metrics were carefully monitored to ensure that the quality of care delivered to neurosurgical patients was not compromised by the reduction in tests ordered. These quality metrics included a review of inpatient admissions, average length of stay in the hospital and time spent in the intensive care unit, the 30-day readmission

rate, and other patient-related statistics. There was no indication that the reduced number of tests and consequent costs savings had a negative impact on [patient care](#).

In describing the quality improvement program at UCSF, the authors state, "During the 4 years of the program, the medical center has been able to achieve its highest rankings in patient satisfaction, decrease the use of unnecessary [laboratory tests](#), and improve the rates of hand washing and vaccination."

The authors discuss other studies that have shown the success of financial incentives in engaging physicians and residents in quality improvement efforts, particularly when the incentives are combined with an educational component. In the project described in this study, that component consisted of new guidelines on when to order the targeted tests as well as monthly feedback and reminders on how many tests were ordered.

The neurosurgical residents didn't quite make their proposed quota—a 50% reduction in the number of targeted tests—and thus they did not receive their financial reward of \$400 each. Nevertheless, their accomplishment benefited patients, health care payers, and the hospital.

When asked about the importance of this paper, the authors replied, "We've shown that engaging residents can have a dramatic impact on the value of care being delivered at academic medical centers. In many ways the larger benefit of our experience is in the training program's perspective, as the trainees are now graduating with skills in quality improvement and practice-based learning through a system-based practice approach."

**More information:** Han SJ, Saigal R, Rolston, JD, Cheng JS, Lau CY, Mistry RI, McDermott MW, Berger MS: Targeted reduction in

neurosurgical laboratory utilization: resident-led effort at a single academic institution. Clinical article, *Journal of Neurosurgery*, published online, ahead of print, October 15, 2013; [DOI: 10.3171/2013.8.JNS13512](https://doi.org/10.3171/2013.8.JNS13512)

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