

# Higher case load lowers cost of repairing bones that protect eye

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Adding to evidence that "high-volume" specialty care in busy teaching hospitals leads to efficiencies unavailable in community hospitals, a new study by Johns Hopkins researchers finds that patients undergoing repair of traumatic eye socket injuries at its busy academic medical center fared just as well at far less cost than those treated at all other Maryland hospitals.

The study's findings, the researchers say, suggest that major cost savings can be had from economies of scale such as utilization of supplies, spending less time in the operating room and potentially from more streamlined pre- and post-operative processes when [patients](#) seek [eye](#) trauma care at a hospital that specializes in those procedures.

"The presumption has always been that treatment at teaching hospitals is inherently more expensive given the specialized care they provide and the costs of their graduate medical education responsibilities. However, somewhat counter-intuitively, our research shows it's actually significantly less expensive and just as effective to treat these types of injuries at academic medical centers," says Michael P. Grant, M.D., Ph.D., director of the Eye and Orbital Trauma Center at the Wilmer Eye Institute at Johns Hopkins. "The cost of health care is on everyone's minds. Maybe a good way to save money and stretch our [health care](#) dollars would be to direct even more patients to the specialists who frequently treat these injuries."

Grant led the study published in the December issue of the journal

## *Ophthalmology.*

In the study, the researchers analyzed the records of 499 patients who underwent orbital reconstruction at 22 Maryland hospitals between 2004 and 2009. Almost half of the patients (248) received care at the state's designated eye trauma center at Wilmer, 86 were treated in other parts of Johns Hopkins Medicine and 165 patients were spread out among 21 other Maryland hospitals.

When researchers took into account age, gender and other health problems of the patient, the average costs of treating orbital trauma at the regional eye trauma center was \$6,194, as compared to \$12,692 at the other 21 hospitals. When researchers only examined the less complex cases, which still required surgery but only one night in the hospital, the results were similar, with average costs of \$4,277 at the regional center versus \$7,150 at the other hospitals. Roughly 60 percent of such surgeries were conducted in an inpatient setting over the course of the five-year study.

Grant emphasizes that patients appeared to do equally well medically regardless of where their surgery took place.

Orbital fractures—breaks in the thin but rigid bones that make up the eye socket—are most commonly the result of motor vehicle crashes, ball-related sports injuries and violence or any other blunt trauma to the area around the eye. Such a fracture can result in permanent double vision and a change in appearance in which the affected eye looks smaller than the uninjured one if the fracture is not repaired. The operation to repair the fracture requires an incision behind the eyelids and the placement of specialized medical-grade plastic or titanium implant over the broken bones. The thin bones in the eye socket are generally too small to repair directly. Patients typically spend only one night in the hospital.

A study like his, Grant says, is made possible because Maryland has a tightly regulated system for setting uniform rates that hospitals can charge, and the data are available publicly for analysis.

Grant, an assistant professor of ophthalmology and plastic surgery at the Johns Hopkins University School of Medicine, says he believes the difference in cost is the result of the center's high volume and standardized protocol for treating patients. Having a high volume means a smaller number of surgeons perform a greater number of the procedures, and as a result have optimized techniques and typically spend less time in the operating room. In addition, they are likely to use fewer supplies, including costly implants. A high-volume center, like the one at Johns Hopkins, also has a highly experienced nursing staff that is very familiar with and devoted to specific procedures and protocols for trauma patients. Therefore, they are able to deliver a very high level of care on the regular surgical nursing floor, diminishing the need for placement in a more expensive ICU setting.

"A busy specialized center takes the variability out of an unplanned operation, making it much more like a routine or elective surgery," Grant says. "If you're more familiar with a procedure, you know where the pitfalls lie and can better anticipate them. This way, you don't fall into the trap of under- or overtreatment, both of which can potentially increase cost."

The Wilmer Eye and Orbital Trauma Center treats the highest number of serious eye injuries in the country, based on data reported to the U.S. Eye Injury Registry.

In centers where the surgeon doesn't perform such procedures routinely, more resources can be used and longer operative times are possible, which adds to cost of treatment. Also, a longer operative time can lead to a more protracted post-operative course and additional hospital time.

Also, if nurses on the floor aren't familiar with the specialized needs of patients, they may be less comfortable treating them on a standard surgical unit and instead have these patients assigned to the ICU, where higher acuity patients are typically treated, Grant says.

In future research, Grant says he would like to examine more specific outcome measures. He says that the measures used in the study showed similarities among hospitals in terms of mortality and readmission rates, but he would like to study outcomes more directly related to this type of injury.

Provided by Johns Hopkins University School of Medicine

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