"July Effect" Negligible For Spine Surgery Outcomes

The "July Effect"—the notion that the influx of new residents and fellows at teaching hospitals in July of each year adversely affects patient care and outcomes - was examined in a very large data set of hospitalizations for patients undergoing spine surgery. Researchers at the Mayo Clinic and the University of Virginia Health System found a negligible effect on periprocedural outcomes among patients treated by spine surgery. Detailed results of their thorough study are furnished in the article *The Effect Of July Admission On Inpatient Outcomes Following Spinal Surgery. Clinical Article*, by Jennifer S. McDonald, Ph.D., Michelle J. Clarke, M.D., Gregory A. Helm, M.D., Ph.D., and David F. Kallmes, M.D., published online in the *Journal of Neurosurgery: Spine*.

To the authors' knowledge, this study is the largest of its kind, and its results confirm findings of many other smaller studies. The findings are particularly important to patients. Dr. McDonald states, "We hope that our findings will reassure patients that they are not at higher risk of medical complications if they undergo spinal surgery during July as compared to other times of the year."

The researchers searched the Nationwide Inpatient Sample (NIS), the largest publically available all-payer database of information on hospitalized patients in the United States, for the years 2001 through 2008. The NIS contains data from a large sample of hospitals that reflects approximately 20 percent of annual hospitalizations. The researchers scoured the database using diagnostic codes from the International Classification of Diseases, 9th Revision Clinical Modification to identify every case of spinal surgery related to spinal fusion, decompression, discectomy, or laminectomy. Data on patient demographics, diagnoses, and details of hospitalization, and data on hospital demographics (private or government ownership, urban or rural location, teaching or nonteaching facility, and size) were collected.

Almost one million spinal surgery hospitalizations were identified. Hospitalizations were broken down into admissions in July and admissions in other months. Patient subgroups were created for additional analyses focusing on patients who were sicker and had more complications, patients undergoing simple or more complicated surgeries, and patients undergoing elective surgery. The primary outcomes in this study were in-hospital mortality, discharge disposition (to home or a long-term facility), and pos-toperative complication. Length of stay and total costs of hospitalization were also examined. Outcomes were compared between July admissions and admissions during other months.

The researchers found that the incidences of all outcomes studied were higher in teaching hospitals than in non-teaching hospitals. In the teaching hospitals, small but statistically significant higher rates of post-operative infection and patient

discharge to a long-term facility were found during July when compared with other months. These differences were very small in magnitude but significant due to the large sample size of the study. Patients who underwent complex surgical procedures in teaching hospitals in July were more likely to be discharged to a long-term facility or experience post-operative infection, but these differences were also very small in magnitude. In-hospital mortality and other post-operative complications did not differ according to the month of admission. In addition, no "July effect" was observed in higher-risk patients, patients who were admitted for elective surgery, or patients undergoing simple spinal procedures.

The authors conclude that their "study of nationwide hospitalizations over an eight-year period indicates that influx of new residents and fellows in July has a negligible effect on periprocedural outcomes following spinal surgery." The article contains four tables and several graphs comparing data from teaching and non-teaching hospitals. There is also an appendix, only available online, that contains 16 additional tables showing the results of the thorough statistical analysis.

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