July Effect

Each July, 4th-year medical students become 1st-year resident physicians and have much greater responsibility in making management decisions. In addition, incumbent residents and fellows advance to their next postgraduate year and face greater challenges. It has been suggested that among patients who have resident physicians as members of their neurosurgical team, this transition may be associated with increased rates of morbidity and mortality, a phenomenon known as the “July Effect.”

In a study, Lieber et al compared morbidity and mortality rates between the initial and later months of the academic year to determine whether there is truly a July Effect that has an impact on this patient population.

The authors compared 30-day postoperative outcomes of neurosurgery performed by surgical teams that included resident physicians in training during the first academic quarter (Q1, July through September) with outcomes of neurosurgery performed with resident participation during the final academic quarter (Q4, April through June), using 2006-2012 data from the prospectively collected American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database.

Regression analyses were performed on outcome data that included mortality, surgical complications, and medical complications, which were graded as mild or severe.

To determine whether a July Effect was present in subgroups, secondary analyses were performed to analyze the association of outcomes with each major neurosurgical subspecialty, the postgraduate year of the operating resident, and the academic quarter during which the surgery was performed. To control for possible seasonal trends in certain diseases, the authors compared patient outcomes at academic medical centers to those at community-based hospitals, where procedures were not performed by residents. In addition, the efficiency of academic centers was compared to that of community centers in terms of operative duration and total length of hospital stay.

Overall, there were no statistically significant differences in mortality, morbidity, or efficiency between the earlier and later quarters of the academic year, a finding that also held true among neurosurgical subspecialties and among postgraduate levels of training. There was, however, a slight increase in intraoperative transfusions associated with the transitional period in July (6.41% of procedures in Q4 compared to 7.99% in Q1 of the prior calendar year; $p = 0.0005$), which primarily occurred in cases involving junior (2nd- to 4th-year) residents. In addition, there was an increased rate of reoperation (1.73% in Q4 to 2.19% in Q1; $p < 0.0001$) observed mainly among senior (5th- to 7th-year) residents in the early academic months and not paralleled in our community cohort.

There is minimal evidence for a significant July Effect in adult neurosurgery. Our results suggest that, overall, the current resident training system provides enough guidance and support during this challenging transition period [1)].

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Lieber BA, Appelboom G, Taylor BE, Malone H, Agarwal N, Connolly ES Jr. Assessment of the “July Effect”: outcomes after early resident transition in adult neurosurgery. J Neurosurg. 2016 Jul;125(1):213-21. doi: 10.3171/2015.4.JNS142149. Epub 2015 Dec 15. PubMed PMID: 26666349.