

Weekend emergency surgeries deadlier for children

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Children who undergo simple emergency surgeries, such as hernia repairs or appendix removals, on weekends are more likely to suffer complications and even die than children getting the same kind of treatment during the week, according to results of a Johns Hopkins Children's Center study.

The Johns Hopkins team says that although the number of deaths was small, the marked difference in death and risk of other complications points to a worrisome "weekend effect" observed across hospitals nationwide that calls for an in-depth examination of possible after-hours safety lapses and clinical glitches.

The research findings, published in the July issue of the *Journal of Pediatric Surgery*, are based on an analysis of 22 years' worth of surgical records involving nearly 440,000 pediatric admissions nationwide.

Specifically, [children](#) who underwent urgent or emergency procedures on weekends were 63 percent more likely to die than those treated during the week, the study showed. The investigators emphasize that an individual patient's risk of dying was miniscule and the actual deaths attributable to the weekend effect were very few—30 over the 22 years.

"Numerically speaking, the number of deaths was quite small, but even a single preventable death is one too many. This demands that we examine any factors that may cause or contribute to such occurrences and find ways to prevent them," says senior investigator Fizan Abdullah, M.D.,

Ph.D., a pediatric surgeon at the Johns Hopkins Children's Center.

Although the reasons for this weekend effect were not part of the study, the researchers say some possible factors that may fuel the higher risk include decreased weekend staffing, slower response times and decreased availability of certain imaging and lab tests.

For their analysis, the investigators compared death and complication rates between some 112,000 children treated on weekends with 327,000 patients treated during the week. In addition to higher risk of dying, weekend procedures carried a higher likelihood of surgical complications, such as inadvertent wound lacerations or punctures, which suggest clinician error or equipment malfunction either during or after surgery. Children undergoing procedures on weekends were 40 percent more likely to develop such complications. In addition, weekend patients were 14 percent more likely to need blood transfusions despite being no more likely than weekday patients to suffer serious blood loss during surgery. Abdullah and colleagues say the reasons for this elevated [blood transfusion](#) risk remain unclear but may be due to factors related to post-surgical care. Blood transfusions, although lifesaving, carry their own risks, including a higher rate of wound infection due to temporary suppression of a patient's immune system.

The surgeries examined in the study are considered generally safe and relatively simple and included appendix removal, [hernia](#) repairs, draining and cleaning of infected wounds, bone fracture treatment, and surgeries to drain excess fluid in the brain. Overall, cases that showed up at the emergency room on weekends were no more severe than weekday cases, so the conditions themselves did not fuel the higher complication and death risk, the researchers say. The disparity in outcomes persisted even after researchers adjusted their analysis to account for any possible differences in disease severity.

"These are provocative findings and, we hope, a conversation starter," says study lead author Seth Goldstein, M.D., a [pediatric surgery](#) resident at Johns Hopkins. "Our next step is to understand the what, how and why behind this alarming disparity."

The Johns Hopkins Children's Center recently launched a program that tracks how children fare in the 30 days following surgery. The data gleaned from the program, the researchers say, should help reveal any glitches or potential vulnerabilities and inform interventions to reduce risk. Such factors may play out differently in individual hospitals, so it is important for each institution to gauge its own weekend outcomes and make adjustments where needed, the investigators say.

"Hospitals must tease out factors such as how many people were there in the OR and ER, how many nurses were on a specific unit, what imaging was done and how soon, and then correlate all these with how well patients do after surgery," Abdullah says.

Provided by Johns Hopkins University School of Medicine

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