

Surgical antibiotic prophylaxis use, appropriateness varies in children's hospitals

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A new study found substantial variability in the use and appropriateness of surgical antibiotic prophylaxis for commonly performed operations at children's hospitals in the United States, according to an article published online by *JAMA Pediatrics*.

Surgical site infection (SSI) is a common complication of adult and pediatric surgery. Appropriate use of perioperative surgical [antibiotic prophylaxis](#) (AP) can help to minimize the incidence of SSI in procedures for which AP is indicated. However, inappropriate AP use can have potentially negative consequences, including [adverse drug events](#), *Clostridium difficile* infection, the emergence of antibiotic resistant organisms and increased [health care costs](#). The trend in surgical AP use for [pediatric patients](#) is not well understood.

Thomas J. Sandora, M.D., M.P.H., of Boston Children's Hospital, and coauthors analyzed administrative data from 31 freestanding children's hospitals in the United States from 2010 to 2013.

The study included 603,734 children younger than 18 who had one of the 45 most commonly performed operations. The average age of the children was nearly 5 years old and almost 64 percent were boys.

For the 671,255 operations evaluated, the authors report AP was administered for 348,119 (52 percent) of procedures. Overall, AP use was considered appropriate for 64.6 percent of cases. Appropriate use of AP varied by hospital from 47.3 percent to 84.4 percent and there was

larger variability by procedure within each hospital.

When AP was indicated for a procedure, the median rate of appropriate use by hospital was 93.8 percent; when AP was not indicated, the median rate of appropriate use by hospital was 52 percent, according to the results.

The likelihood of *Clostridium difficile* infection and the administration of epinephrine was higher in children who received AP, the study reports.

The lack of pediatric-specific guidelines for AP use is perhaps the most likely contributing factor to explain variation in AP use between and within hospitals and procedures.

The study includes several limitations, including the possibility of misclassification in administrative data.

"Surgical antibiotic prophylaxis is associated with both potential benefits and risks for individual patients, and it has important public health implications on a population level with respect to antibiotic resistance and health care costs. Additional research is urgently needed to document the procedure-specific risk of SSI among pediatric patients and to establish strategies to improve AP use for children to prevent SSI and minimize unintended consequences," the authors conclude.

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