

What's New in the Patient Safety World

October 2023

Trends in Anesthesia/Sedation for Pediatric CT and MRI

We've done several columns on patient safety issues in children undergoing sedation for MRI or CT scans. Our August 8, 2017 Patient Safety Tip of the Week "[Sedation for Pediatric MRI Rising](#)" summarized some of the concerns and noted a trend toward an increase in sedation for pediatric MRI. Also, the Food and Drug Administration (FDA) released Drug Safety Communications that suggested potential ties between the use of general anesthesia and sedation drugs and neurocognitive deficits in children ([FDA 2016](#), [FDA 2017](#)). That has led to radiologists working in pediatric medical care to reduce the use of these sedation techniques. But, until now, there had been a lack of data showing the system-level impact of such efforts.

Now a research letter in JAMA Pediatrics ([Hayatghaibi 2023](#)) has analyzed data on anesthesia/sedation for computed tomography and magnetic resonance imaging encounters in pediatric emergency departments from 2012 to 2022.

The data was from 619,892 encounters involving 559,604 children under age 18 (average age of 8.6 years) at 33 emergency departments. 13.2% of those encounters included administration of sedation drugs and general anesthesia. The researchers found that the proportion of cases that used sedation drugs and anesthesia decreased from 13.1% in 2012 to 12.1% in 2022. Though statistically significant, that is a modest reduction. Moreover, there was considerable variation by hospital, proportions for children receiving anesthesia ranging from 4.5% to 24.7%.

Children 1 year or older and those imaged with intravenous contrast material, living in rural locations, and with a higher acuity had greater odds of receiving sedation or anesthesia. Compared with CT examinations, children imaged with MRI or another type of imaging had greater odds of receiving sedation/anesthesia. Black and Hispanic children had lower odds of sedation/anesthesia use. Additionally, encounters after 2017 and for children with complex chronic conditions had lower odds of sedation/anesthesia use.

The study apparently only included data from pediatric ED's so the authors note the findings may not be generalizable to primarily adult hospitals.

The study serves as a reminder that there is probably considerable opportunity to further reduce the use of sedation and anesthesia in children undergoing such imaging.

Some of our previous columns on sedation issues in children:

- August 2010 “[Sedation Costs for Pediatric MRI](#)”
- January 25, 2011 “[Procedural Sedation in Children](#)”
- August 2016 “[Guideline Update for Pediatric Sedation](#)”
- January 17, 2017 “[Pediatric MRI Safety](#)”
- August 8, 2017 “[Sedation for Pediatric MRI Rising](#)”
- March 15, 2016 “[Dental Patient Safety](#)”
- March 28, 2017 “[More Issues with Dental Sedation/Anesthesia](#)”
- November 28, 2017 “[More on Dental Sedation/Anesthesia Safety](#)”

References:

FDA (US Food and Drug Administration). FDA drug safety communication: FDA review results in new warnings about using general anesthetics and sedation drugs in young children and pregnant women. FDA 2016; December 14, 2016
<https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-review-results-new-warnings-about-using-general-anesthetics-and>

FDA (US Food and Drug Administration). FDA drug safety communication: FDA Drug Safety Communication: FDA approves label changes for use of general anesthetic and sedation drugs in young children. FDA 2017; April 27, 2017
<https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-approves-label-changes-use-general-anesthetic-and-sedation-drugs>

Hayatghaibi SE, Kandil AI, Zhang B, et al. Trends in Anesthesia/Sedation for Computed Tomography and Magnetic Resonance Imaging Encounters in Pediatric Emergency Departments, 2012-2022. JAMA Pediatrics 2023; Published online August 14, 2023
<https://jamanetwork.com/journals/jamapediatrics/article-abstract/2808370>

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