

Local anesthetic systemic toxicity in children: a review of recent case reports and current literature - an infographic

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SUMMARY

Local anesthetic systemic toxicity (LAST) in children is an understudied complication of regional anesthesia but is uniquely different in many ways when compared with adult LAST. The estimated risk of LAST in children is 8/100,000 (95% CI, 0.3 to 1.6) whereas that risk in adults is approximately 27/100,000. In this review of the literature and case reports, Ramesh and Boretsky discovered that 68% of LAST events in children occurred under general anesthesia and only 42% received lipid emulsion as treatment.¹ Ultrasound was not used in 87% of the cases when LAST occurred and a vascular marker (epinephrine) was not used in 84% of cases. Over half of the cases were in children under 3 years of age with 73% occurring in males. Penile blocks, caudal blocks, and dental local infiltrations represented the most frequent procedures where toxicity occurred. Notably, dentists and primary care physicians are more likely to use greater than the maximum recommended dosage of local anesthetic.

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Correction notice This article has been corrected since it published Online First. The infographic image has been corrected.

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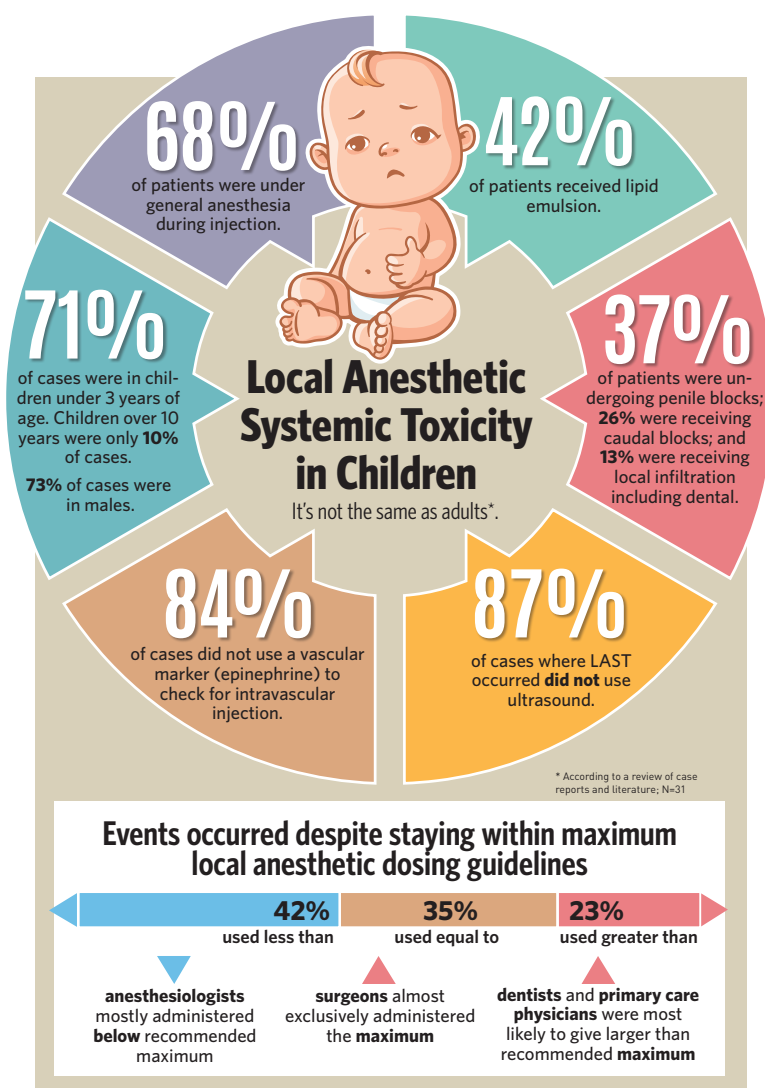
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REFERENCE

- 1 Singaravelu Ramesh A, Boretsky K. Local anesthetic systemic toxicity in children: a review of recent case reports and current literature. *Reg Anesth Pain Med* 2021;46:909–14.



Ramesh AS. Local anesthetic systemic toxicity in children - A review of recent case reports and current literature. *Reg Anesth Pain Med*. 2021. <http://dx.doi.org/10.1136/rapm-2021-102529>
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