

Perioperative antibiotic prophylaxis for children undergoing gastrointestinal surgery

OPINIONS

AIRAZAT M. KAZARYAN

kazaryan@gmail.com

Airazat M. Kazaryan, PhD, specialist at the Department of Gastrointestinal and Paediatric Surgery, Oslo University Hospital and the Department of Surgery, Østfold Hospital Trust, senior consultant in the Department of Surgery, Fonna Hospital Trust, Odda, and visiting scholar at the Institute of Clinical Medicine, University of Oslo.

The author has completed the ICMJE form and declares no conflicts of interest.

PER KRISTIAN KNUDSEN

Per Kristian Knudsen, PhD, senior consultant at the Department of Paediatric Medicine, Oslo University Hospital.

The author has completed the ICMJE form and declares no conflicts of interest.

THOMAS DRETVIK

Thomas Dretvik, specialty registrar at the Department of Gastrointestinal and Paediatric Surgery, Oslo University Hospital.

The author has completed the ICMJE form and declares no conflicts of interest.

KJETIL NÆSS ERTRESVÅG

Kjetil Næss Ertresvåg, Head of section at the Department of Gastrointestinal and Paediatric Surgery, Oslo University Hospital.

The author has completed the ICMJE form and declares no conflicts of interest.

GUNNAR AKSNES

Gunnar Aksnes, PhD, senior consultant at the Department of Gastrointestinal and Paediatric Surgery, Oslo University Hospital. The author has completed the ICMJE form and declares no conflicts of interest.

OLE SCHISTAD

Ole Schistad, senior consultant at the Department of Gastrointestinal and Paediatric Surgery, Oslo University Hospital. The author has completed the ICMJE form and declares no conflicts of interest.

Antibiotic prophylaxis for children undergoing intra-abdominal surgery should be standardised. Recent findings show that the same antibiotic regimen can be given to both children and adults.

Today, children undergoing surgery for disorders in the gastrointestinal tract receive varying antibiotic prophylaxis depending on the hospital and the surgeon. The current standardised regimen for adults in Norway consists of doxycycline and metronidazole, but the use of doxycycline has been regarded as contraindicated for children because of the risk of tooth staining. Recent findings show that there is no danger of tooth staining in children from short-course treatment with doxycycline [\(1\)](#). Consequently, children should receive the same antibiotic prophylaxis as adults.

Lack of standardisation

A comment in an earlier issue of the Journal of the Norwegian Medical Association (Tidsskrift for Den norske legeforening) about optimal antibiotic prophylaxis for appendectomy did not specify the recommended antibiotic prophylaxis for children [\(2\)](#). The current practice is to use a different antibiotic regimen for children than for adults. The Norwegian Directorate of Health's national clinical guidelines for antibiotics in hospitals recommend antibiotic prophylaxis with 400 mg doxycycline and 1 g metronidazole as the first-line treatment in gastrointestinal surgery, including acute appendicitis in adults [\(3\)](#). However, the guidelines do not cover children. In practice, metronidazole is used in combination with either gentamicin, cefotaxime, cefuroxime or cefazolin for children.

The comment on antibiotic prophylaxis and interval appendectomy emphasises the importance of routinely administering doxycycline and metronidazole immediately following the decision to carry out an appendectomy, unless a more serious condition is suspected that requires a therapeutic antibiotic

regimen (4). There are good reasons for using doxycycline and metronidazole to also treat children, including their long half-life and favourable resistance and ecological profile compared with cephalosporin regimens.

«There are good reasons for using doxycycline and metronidazole to also treat children, including their long half-life and favourable resistance and ecological profile»

Traditionally, doxycycline has not been recommended for children under the age of 8 due to the risk of tooth staining. However, recent evidence demonstrates that short-course treatment does not cause tooth staining and that doxycycline can be used in children of all ages when deemed appropriate (1, 4, 5). For example, American health authorities recommend doxycycline for children of all ages with neuroborreliosis and rickettsiosis (up to 21 days of treatment) (5).

On this basis, we recommend using a combination of doxycycline and metronidazole as perioperative antibiotic prophylaxis in gastrointestinal surgery, including acute appendicitis, also for children of all ages.

Recommended dosage

There is currently no recommended dosage for doxycycline in perioperative prophylaxis in children. We propose a single dose of 4.4 mg per kg body weight intravenously or peroral, with a maximum 400 mg (corresponding to the recommended prophylactic dose for adults). The recommended dose of metronidazole for perioperative prophylaxis is 15 mg per kg, with a maximum 1 gram. We recommend that national guidelines be drawn up for perioperative prophylaxis in children, where the combination of doxycycline and metronidazole is considered as an alternative in gastrointestinal surgery.

REFERENCES

1. Bremell D, Trollfors B. Doxycycline can be given to children without risk of staining of teeth. *Lakartidningen* 2017; 114: ERIC. [PubMed]
2. Kazaryan AM, Monrad-Hansen PW, Eftang LL et al. Perioperativ antibiotika-profylakse og intervall appendektomi. <https://tidsskriftet.no/2023/04/kommentar/perioperativ-antibiotika-profylakse-og-intervall-appendektomi> Accessed 18.10.2023.
3. Helsedirektoratet. Kapittel 1. Antibiotikaprofylakse ved kirurgi. <https://www.helsedirektoratet.no/retningslinjer/antibiotika-isykehus/antibiotikaprofylakse-ved-kirurgi/gastrointestinal-kirurgi#gastrointestinal-kirurgi-utenom-brokk> Accessed 26.6.2023.
4. UpToDate. Tetracyclines. <https://www.uptodate.com/contents/tetracyclines?>

search=tetracyclines&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1 Accessed 26.6.2023.

5. Bradley JS, Nelson JD, Barnett ED et al, red. Nelson's Pocket Book of Pediatric Antimicrobial Therapy. 28. utg. Itasca, IL: American Academy of Pediatrics, 2022.

Publisert: 16 November 2023. Tidsskr Nor Legeforen. DOI: 10.4045/tidsskr.23.0658

Received 1.10.2023, accepted 18.10.2023.

Copyright: © Tidsskriftet 2026 Downloaded from tidsskriftet.no 22 February 2026.