

Antibiotics during childhood and development of appendicitis—A nationwide cohort study (1) Antonsen et al. *Aliment Pharmacol Ther.* 2021 Jan;53(1):87-93.

Background & Method: A complete cohort of all live-born children in Denmark from 1 Jan 1995 to 31 Dec 2014 was identified using the Danish Civil Registration System.

- Information on antibiotic uses, diagnosis of appendicitis and subsequent appendectomy to the cohort of children were retrieved.
- Aim of this study was to investigate if exposure to antibiotics in a pediatric population increases the risk of developing appendicitis during childhood and adolescence.
- Outcome measure was development of appendicitis.

ACADEMIC P.E.A.R.L.S

Pediatric Evidence And Research Learning Snippet



Does use of Antibiotics in Paediatric Population Increases the risk of Appendicitis? Antonsen et al. *Aliment Pharmacol Ther.* 2021 Jan;53(1):87-93.

Exposure to antibiotics	Events/ person-years	Crude rate/ 1000 person- years	Rate ratio (95% CI)
At least one course	11 000/10 445 254	1.05	1.72 (1.61 to 1.85)
1-2 courses	2445/3 778 742	0.65	1.46 (1.35 to 1.57)
3-4 courses	2586/2 632 368	0.98	1.67 (1.54 to 1.80)
5-6 courses	2040/1 652 439	1.23	1.80 (1.66 to 1.95)
7+ courses	3929/2 381 705	1.65	2.02 (1.87 to 2.18)

Results: A total of 1,385,707 children were included in the cohort.

- Children who received at least one course of antibiotics vs. no antibiotics during the follow-up, had an increased relative risk (RR) of 1.72 (95% confidence interval 1.61-1.85) of developing appendicitis.
- There was a dose-response relationship between the number of antibiotic courses and the risk of appendicitis (RR 1.04 [1.04-1.04] per antibiotic course). The highest RR was seen in children who had received 7+ courses of antibiotics (RR 2.02, 1.87-2.18).
- Highest rate of appendicitis was seen in those exposed early in life (0-6 months) compared to those exposed after 24 months of age (RR 1.46 [1.36-1.56]).

Conclusion:

- This nationwide prospective cohort study shows that antibiotic exposure in a pediatric population is associated with a dose-dependent increased risk of appendicitis during childhood and adolescence.
- Children exposed to broad-spectrum antibiotics had a higher risk of developing appendicitis than children exposed to narrow-spectrum antibiotics.

EXPERT COMMENT

Any intervention (like antibiotics) which interferes with gut microbiota in children can cause permanent changes in microbiome leading to increased incidence of diseases like inflammatory bowel disease (2) and appendicitis in future. Although exact mechanisms are not well established but we should use antibiotics only when strongly indicated and if possible, then preferably narrow spectrum.”

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Reference

1. Antonsen, J, Hansen, S, Morgen, CS, Jess, T, Jorgensen, LN, Allin, KH. Antibiotics during childhood and development of appendicitis—a nationwide cohort study. *Aliment Pharmacol Ther.* 2021; 53: 87–93. <https://doi.org/10.1111/apt.16084>
2. Hviid et al. Antibiotic use and inflammatory bowel diseases in childhood. *Gut.* 2011 Jan;60(1):49-54.