

Fetal exposure to antibiotics in mid to late pregnancy linked to childhood asthma risk

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Fetal exposure to antibiotics in mid to late pregnancy may be linked to a heightened risk of childhood asthma, suggests research published online in the *Archives of Disease in Childhood*.

The finding was observed only among babies born vaginally, so the link

may be influenced by method of delivery at birth, say the researchers.

Antibiotic use during [pregnancy](#) is increasing, and previously published studies indicate that these drugs may indirectly affect the [developing fetus](#), largely, it is thought, because they alter the mum's [gut microbiome](#), which initially determines the microbiome of her infant.

But it's not clear either whether the timing of exposure or the method of delivery might make any difference.

To find out more, the researchers drew on participants in the Danish National Birth Cohort (DNBC), which was set up in 1996 to explore the impact on health of prenatal and early life exposures.

The mums-to-be were referred to the DNBC by their family doctor at their first antenatal visit at 6-10 weeks of pregnancy between 1996 and 2002. Of the 96,832 [children](#) born to these women, 32,651 were included in this study.

Relevant health and lifestyle information about the [mothers](#), prenatal exposures, and [child health](#) was obtained by telephone and online questionnaires.

Phone interviews were carried out at 16 and 30 weeks of pregnancy and once after the birth.

The mums then filled in online questionnaires about their children's health when they were 11 years old.

Compared with mothers who hadn't taken antibiotics while pregnant, those who did, were more likely to report asthma themselves, to have smoked during pregnancy, to be overweight/obese, and were less likely to be first time mothers—all potentially influential factors. But they

were of similar age.

During the monitoring period from birth onwards, 4238 (13%) children developed asthma. Of these, 804 (15%) had mothers who took antibiotics while pregnant.

In all, 5522 (17%) children were born to mothers who had taken antibiotics while pregnant. And children whose mothers had taken antibiotics while pregnant had 14% higher odds of developing asthma.

But no such association was found for antibiotics taken during the first three months of pregnancy (first trimester).

Compared to children whose mothers hadn't taken antibiotics, those whose mothers did in mid to [late pregnancy](#) (4-9 months), had 17% higher odds of developing asthma.

But the overall association between [fetal exposure](#) to antibiotics and childhood asthma was observed only in children born vaginally rather than after a [caesarean section](#) (4568;14%), with the absolute difference just over 2%.

In children born vaginally, the odds for more serious childhood asthma— requiring treatment in the preceding year— were 34% higher than they were for children born vaginally but whose mothers hadn't taken antibiotics while pregnant.

This is an observational study, and as such, can't establish cause. Nor did the researchers factor in early life antibiotics or breastfeeding, both of which might have been influential.

But they write: "Our results are in keeping with the hypothesis that effects of antibiotics impact the maternally derived microbiome in

vaginally born children and that this may increase the odds of childhood asthma."

And they conclude: "The profligate use of [antibiotics](#) in pregnancy should be balanced against the increasing evidence on adverse long-term health outcomes in the offspring, as well as broader concerns regarding antimicrobial resistance."

More information: Antibiotic exposure during pregnancy and childhood asthma: a national birth cohort study investigating timing of exposure and mode of delivery, *Archives of Disease in Childhood* (2021). [DOI: 10.1136/archdischild-2020-319659](https://doi.org/10.1136/archdischild-2020-319659)

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