

Long-term antibiotic use in early to mid-life linked to cancer-inducing polyps

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Long term antibiotic use in early to mid life may be linked to a heightened risk of abnormal growths in the colon and rectum—known as polyps or colorectal adenomas—which precede the development of most cases of bowel cancer, reveals research published online in the journal *Gut*.

The findings add to emerging evidence that the type and diversity of bacteria in the gut, referred to as the 'microbiome,' may have a key role in the development of cancer, say the researchers.

Previous research has indicated that exposure to antibiotics may be associated with a heightened risk of developing [bowel cancer](#), but these studies have involved relatively short monitoring periods, so undermining the strength of the associations found. And the potential association with polyp risk has not been explored.

To try and get round these issues, the research team drew on data from the Nurses Health Study. This has been monitoring the health of 121,700 US nurses who were all aged between 30 and 55 when they entered the study in 1976. Since joining, study participants have filled in detailed questionnaires every two years on demographics, lifestyle factors, medical history and disease development, and every four years on their dietary habits.

For the purposes of the current study, analysis of the data was restricted to 16,642 women who were aged 60 and older in 2004, able to provide a

history of antibiotic use between the ages of 20 and 59, and who had had at least one bowel investigation (colonoscopy) between 2004 and 2010.

During this period, 1195 adenomas were newly diagnosed in this group.

Recent use of antibiotics within the past four years wasn't associated with a heightened risk of an adenoma diagnosis, but long term use in the past was.

Compared with those who hadn't taken antibiotics for any extended period in their 20s and 30s, those who had taken them for two months or more were 36% more likely to be diagnosed with an adenoma.

This association held true irrespective of whether the adenoma was considered high or low risk for bowel cancer, but was stronger for growths located in the proximal, rather than the distal, colon.

The proximal colon refers to the caecum (pouch at the junction of the small and large intestines), ascending colon, hepatic flexure (the sharp bend between the ascending and transverse colon), transverse colon, and the splenic flexure (the sharp bend between the transverse colon and descending colon). The distal colon refers to the descending or sigmoid colon.

Similarly, women who had taken antibiotics for two months or more during their 40s and 50s were 69% more likely to be diagnosed with an adenoma than those who hadn't taken these drugs for any extended period.

Once again, this association held true, irrespective of whether the adenoma was high or low risk for bowel cancer, and was more strongly linked to proximal colon adenomas.

And compared with women who had not been on antibiotics for any length of time from their 20s to their 50s, those who had taken these drugs for more than 15 days between the ages of 20 and 39, and between the ages of 40 and 59, were 73% more likely to be diagnosed with an [adenoma](#).

This is an observational study so no firm conclusions can be drawn about cause and effect, added to which the researchers didn't gather information on the type or formulation of antibiotic taken, and some adenomas might have been present before antibiotics were used.

Nevertheless, there is a plausible biological explanation for the associations found, they suggest.

Antibiotics fundamentally alter the gut microbiome, by curbing the diversity and number of bacteria, and reducing resistance to 'hostile' bugs, they say. Previous research points to depletion of certain types of bacteria and an abundance of others in patients with bowel cancer.

This might all have a crucial role the development of bowel cancer, added to which the bugs that require antibiotics may induce inflammation, which is a known risk for the development of bowel [cancer](#), say the researchers.

"The findings, if confirmed by other studies, suggest the potential need to limit the use of [antibiotics](#) and sources of inflammation that may drive tumour formation," conclude the researchers.

More information: Long term use of antibiotics and risk of colorectal adenoma, [DOI: 10.1136/gutjnl-2016-313413](https://doi.org/10.1136/gutjnl-2016-313413)

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