

Good news for seniors: Study finds antibiotics not linked to dementia

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For healthy older adults, using antibiotics is not associated with an increased risk of cognitive impairment or dementia, according to a study published in the December 18, 2024, online issue of *Neurology*.

Cognitive impairment is when someone has subtle changes in thinking and memory like forgetting events and losing items more often. Dementia is when thinking and memory problems become more advanced and affect a person's ability to complete daily tasks.

"Antibiotics have been found in previous research to disrupt the gut microbiome, which is the community of tiny organisms that live in our intestines and support digestion," said study author Andrew T. Chan, MD, MPH, of Harvard Medical School in Boston, Massachusetts.

"Because the [gut microbiome](#) has been found to be important for maintaining overall health, and possibly cognitive function, there was concern that antibiotics may have a harmful long-term effect on the brain. Given that [older adults](#) are more frequently prescribed antibiotics and are also at higher risk for [cognitive decline](#), these findings offer reassurance about using these medications."

The study involved 13,571 healthy people who were older than 70. Researchers defined "healthy" as not having [heart disease](#), dementia, serious physical disabilities or any health problems that might shorten their life to less than five years.

All participants were free of cognitive impairment and dementia during the first two years of the study. During this time, researchers determined participants' antibiotic use by reviewing prescription records. A total of 63% of people used antibiotics at least once during that time.

Participants were divided into two groups, those who used antibiotics and those who had never used antibiotics. Researchers also divided them into groups based on how many antibiotic prescriptions they had in the first two years, from zero to five or more prescriptions, so they could review if more antibiotics increased a person's risk.

Participants were then followed for an average of five more years, during which 461 people developed dementia and 2,576 people developed cognitive impairment.

Researchers then examined if antibiotic use during the first two years was associated with changes over time in thinking and memory skills.

Participants took a series of cognitive tests at the start of the study, after one year, and then every two years thereafter. Tests measured thinking and memory skills like attention, executive function and language.

Researchers then looked at the scores and compared people who took antibiotics to those who did not. They did not find a difference between the two groups.

After adjusting for factors such as family history of dementia, cognitive function at the start of the study and medications known to affect cognition, researchers found that antibiotic use was not associated with increased risks for cognitive impairment or [dementia](#) when compared to not using these medications.

Researchers also found no associations with cumulative antibiotic use, continued use and specific types of [antibiotics](#).

A limitation of the study was that it followed participants for a short period of time, meaning researchers were unable to determine if there may be long-term effects of antibiotic use on cognition. Chan noted that longer studies are needed.

More information: Yiqing Wang et al, Antibiotic Use and Subsequent Cognitive Decline and Dementia Risk in Healthy Older Adults, *Neurology* (2024). DOI: 10.1212/WNL.0000000000210129 , [n.neurology.org/lookup/doi/10.1212/WNL.0000000000210129](https://www.n.neurology.org/lookup/doi/10.1212/WNL.0000000000210129)

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