

Antibiotic Use Linked to Greater Risk of Heart Attack and Stroke

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Lead study author Lu Qi, director of the Tulane University Obesity Research Center at the School of Public Health and Tropical Medicine. (Photo by Paula Burch-Celentano)

Women who take antibiotics over a long period of time are at increased risk of heart attack or stroke, according to new Tulane University research.

The study, published in the [European Heart Journal](#), is one of the largest research efforts to investigate the link between antibiotic use and risk of heart disease and stroke.

Researchers found that women aged 60 or older who took antibiotics for two months or more had the greatest risk of cardiovascular disease, but long duration of antibiotic use was also associated with an increased risk if taken during middle age (aged 40-59). The researchers found no increased risk from antibiotic use by younger adults aged between 20-39.

A possible reason for the higher risk of cardiovascular disease could be because antibiotics alter the balance of the micro-environment in the gut, destroying “good” probiotic bacteria and increasing the prevalence of viruses, bacteria or other microorganisms that can cause disease, said lead study author [Lu Qi, director of the Tulane University Obesity Research Center](#).

“Antibiotic use is the most critical factor in altering the balance of microorganisms in the gut. Previous studies have shown a link between alterations in the microbiotic environment of the gut and inflammation and narrowing of the blood vessels, stroke and heart disease,” Qi said.

Researchers studied 36,429 women who took part in the Nurses' Health Study, which has been running in the U.S. since 1976. Women were asked about their use of antibiotics when they were young (20-39), middle-aged (40-59) or older (60 and older). The researchers categorised them into four groups: those who had never taken antibiotics, those who had taken them for time periods of less than 15 days, 15 days to two months, or for two months or longer.

During an average follow-up period of nearly eight years, during which time the women continued to complete questionnaires every two years, 1056 participants developed cardiovascular disease.

After adjustments to take account of factors that could affect their results, such as age, race, sex, diet and lifestyle, reasons for antibiotic use, overweight or obesity, other diseases and medication use, the researchers found that women who used antibiotics for periods of two months or longer in late adulthood were 32% more likely to develop cardiovascular disease than women who did not use antibiotics. Women who took antibiotics for longer than two months in middle age had a 28% increased risk compared to women who did not.

These findings mean that among women who take antibiotics for two months or more in late adulthood, six women per 1,000 would develop a cardiovascular disease, compared to three per 1,000 among women who had not taken antibiotics.

“By investigating the duration of antibiotic use in various stages of adulthood we have found an association between long-term use in middle age and later life and an increased risk of stroke and heart disease during the following eight years,” said study first author Yoriko Heianza, a research fellow at Tulane University School of Public Health and Tropical Medicine. “As these women grew older they were more likely to need more antibiotics, and sometimes for longer periods of time, which suggests a cumulative effect may be the reason for the stronger link in older age between antibiotic use and cardiovascular disease.”

The most common reasons for antibiotic use were respiratory infections, urinary tract infections and dental problems.

Study limitations include the fact that the participants self-reported their use of antibiotics. However, as they were all health professionals, they were able to provide more accurate information on medication use than the general population.

“This is an observational study and so it cannot show that antibiotics cause heart disease and stroke, only that there is a link between them,” Qi said. “Our study suggests that antibiotics should be used only when they are absolutely needed.”