

# Antibiotic usage associated with increased risk of rheumatoid arthritis

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A new study has provided evidence that antibiotic usage is associated with an increased risk of developing rheumatoid arthritis.

Researchers from Keele University and the Quadram Institute analysed data from [primary care](#) medical records. They found that the odds of

developing rheumatoid arthritis were 60% higher in those exposed to [antibiotics](#) than in those not exposed.

The odds increased with the number of antibiotics treatments, and how recently they were taken.

Rheumatoid arthritis affects 400,000 people in the UK and this study suggests it affects 26 in 100,000 people who have taken antibiotics. Rheumatoid arthritis is likely to be caused by a complex mix of genetics and different environmental factors, so this study isn't reason to stop taking antibiotics where they are needed. But it does open up a new avenue of exploration to finding the triggers, which could be vital in the search for ways of preventing this condition.

Although this study was large, it can't say for sure whether it is the antibiotics that increase the risk, or the infection itself.

The type of infection was important. Upper respiratory tract infections treated with antibiotics were more associated with rheumatoid arthritis cases, but this association wasn't seen in untreated cases. The analysis of the type of antibiotic showed that all classes increased the risk of developing rheumatoid arthritis, so this suggests the risk could be derived from the antibiotics. This has also been seen in other recent studies associating [antibiotic usage](#) with an increased risk of other autoimmune conditions, including type 1 diabetes and autoimmune liver disease.

As well as targeting the bacteria behind infections, antibiotics affect the microbiome. This complex ecosystem of microbes helps maintain our own health and plays an important role in modulating the immune system. A number of small studies have found that the microbiome in people with rheumatoid [arthritis](#) is less diverse, but this is the first study that has investigated the effect of antibiotic usage.

Professor Christian Mallen, Head of School for Primary, Community and Social Care at Keele University, said: "This exciting work offers another glimpse into the complexity of understanding [rheumatoid arthritis](#), opening the door for future work in this area. New collaborations, such as the one between the Quadram Institute and Keele University, allow exciting new interdisciplinary research that is needed to progress understanding in this field."

Dr. Lindsay Hall, Group Leader at the Quadram Institute on the Norwich Research Park, said: "The more we learn about the complexity of the microbiome, and how factors including antibiotics impact these diverse microbial ecosystems, the more insights we have into how this may alter key health outcomes. The challenge now is to unpick the mechanisms that link the microbes to different conditions, including RA, so that we can develop new therapeutics."

The study was published in *BMC Medicine*.

**More information:** Alyshah Abdul Sultan et al. Antibiotic use and the risk of rheumatoid arthritis: a population-based case-control study, *BMC Medicine* (2019). [DOI: 10.1186/s12916-019-1394-6](https://doi.org/10.1186/s12916-019-1394-6)

Provided by Keele University

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