

Commonly used antibiotics may lead to heart problems

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Scientists have shown for the first time a link between two types of heart problems and one of the most commonly prescribed classes of antibiotics.

In a study published today in the *Journal of the American College of*

Cardiology, researchers at the University of British Columbia (UBC) in partnership with the Provincial Health Services Authority's (PHSA) Therapeutic Evaluation Unit found that current users of fluoroquinolone antibiotics, such as Ciprofloxacin or Cipro, face a 2.4 times greater risk of developing aortic and mitral regurgitation, where the blood backflows into the heart, compared to patients who take amoxicillin, a different type of antibiotic. The greatest risk is within 30 days of use.

Recent studies have also linked the same class of antibiotics to other heart problems.

Some physicians favor fluoroquinolones over other antibiotics for their broad spectrum of antibacterial activity and high oral absorption, which is as effective as intravenous, or IV, treatment.

"You can send patients home with a once-a-day pill," said Mahyar Etmnian, lead author and associate professor of ophthalmology and visual sciences in the faculty of medicine at UBC. "This class of antibiotics is very convenient, but for the majority of cases, especially community-related infections, they're not really needed. The inappropriate prescribing may cause both antibiotic resistance as well as serious heart problems."

The researchers hope their study helps inform the public and physicians that if patients present with cardiac issues, where no other cause has been discovered, fluoroquinolone antibiotics could potentially be a cause.

"One of the key objectives of the Therapeutic Evaluation Unit is to evaluate different drugs and health technologies to determine whether they enhance the quality of care delivered by our programs or improve patient outcomes," said Dr. Bruce Carleton, director of the unit and research investigator at BC Children's Hospital, a program of PHSA.

"This study highlights the need to be thoughtful when prescribing antibiotics, which can sometimes cause harm. As a result of this work, we will continue working with the BC Antimicrobial Stewardship Committee to ensure the appropriate prescribing of this class of antibiotics to patients across British Columbia, and reduce inappropriate prescribing."

For the study, scientists analyzed data from the U.S. Food and Drug Administration's adverse reporting system. They also analyzed a massive private insurance health claims database in the U.S. that captures demographics, drug identification, dose prescribed and treatment duration. Researchers identified 12,505 cases of valvular regurgitation with 125,020 case-control subjects in a random sample of more than nine million patients. They defined current fluoroquinolone exposure as an active prescription or 30 days prior to the adverse event, recent exposure as within days 31 to 60, and past exposure as within 61 to 365 days prior to an incident. Scientists compared fluoroquinolone use with amoxicillin and azithromycin.

The results showed that the risk of aortic and mitral regurgitation, blood backflow into the heart, is highest with current use, followed by recent use. They saw no increased risk aortic and mitral regurgitation with past use.

Etminan hopes that if other studies confirm these findings, regulatory agencies would add the risk of aortic and [mitral regurgitation](#) to their alerts as potential side effects and that the results would prompt physicians to use other classes of [antibiotics](#) as the first line of defense for uncomplicated infections.

More information: Mahyar Etminan et al, Oral Fluoroquinolones and Risk of Mitral and Aortic Regurgitation, *Journal of the American College of Cardiology* (2019). [dx.doi.org/10.1016/j.jacc.2019.07.035](https://doi.org/10.1016/j.jacc.2019.07.035)

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