

# Aspirin may be less effective heart treatment for women than men

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A new study shows that aspirin therapy for coronary artery disease is four times more likely to be ineffective in women compared to men with the same medical history.

Historically, studies have shown that aspirin therapy is less effective in women than in men, but it has remained unclear how much less effective and whether this affects patient outcomes, said Michael Dorsch, clinical pharmacist and adjunct clinical instructor at the University of Michigan College of Pharmacy.

Dorsch is the lead author of the paper, "Aspirin Resistance in Patients with Stable Coronary Artery Disease," which appears online today in the *Annals of Pharmacotherapy*.

Originally, Dorsch and his team set out to determine if patients with a history of heart attacks were more apt to be aspirin resistant than those with coronary artery disease but no history of heart attack. They found that gender and not medical history was a predictor for aspirin resistance, Dorsch said. The results surprised him.

"I was surprised by how big of a difference it was for females," said Dorsch, who has appointments at the U-M Health System and the U-M College of Pharmacy, and started the study as a resident at the University of North Carolina. "This is another piece of information that affirms we need more studies in women."

Aspirin therapy is a cornerstone in managing heart disease because it inhibits blood clotting. Aspirin therapy can reduce the risk of a nonfatal heart attack or stroke by about 23 percent, and an estimated 20 million men and women take a low dose of aspirin (81-325 mg daily) to control heart disease. But despite its effectiveness, there is evidence that aspirin is less effective in some patients, and researchers don't really know why. This can be frightening because most doctors do

not check for aspirin resistance before prescribing aspirin therapy and therefore presume it's working in the patient when it may not be, he said.

There isn't enough evidence to show if people who are aspirin resistant can simply take larger doses, but Dorsch warns that people taking aspirin on the advice of a doctor shouldn't stop therapy on account of these results.

Not only did the study quantify how much more effective aspirin therapy is for men than for women, it is also the first study that Dorsch knows of to measure aspirin resistance in men and women with stable coronary artery disease. Previous studies have looked at the impact of aspirin therapy on people who have had a heart attack.

For the study, researchers randomly selected 100 patients who were visiting their cardiologist for a regularly scheduled appointment. All had coronary artery disease but only half had a history of heart attack. Researchers used a device called VerifyNow Aspirin Assay to test the percentage of platelet reactivity after blood samples were exposed to a chemical that causes clotting.

Aspirin works by causing platelet inhibition in the blood, which means that platelets cannot stick together and this slows the formation of blood clots that cause a heart attack or stroke.

"This does happen in women, but it doesn't happen in as many women and it's not as effective," Dorsch said. The testing device uses an optical sensor to "see" what percentage of the platelets in the blood sample clump together. Anything less than 40 percent platelet inhibition is considered aspirin resistant.

"We really don't know the mechanism," Dorsch said. "It could be that women have a more active platelet system in the body so it's less likely that platelet action would be inhibited."

In the future, researchers hope to look at aspirin therapy outcomes in women only and see if those outcomes can be changed. The majority of testing for aspirin therapy has been on men, so not much is known about how women respond.

"Heart disease is the number one killer of women in the United States. Future research should be aimed at finding out the cause of this increase in aspirin resistance and the effect on outcomes in women with heart disease." Dorsch said.

Source: University of Michigan

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