

# Gene test shows who could benefit from statins to reduce colon cancer risk

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A genetic test can help determine in which patients cholesterol-lowering statin drugs might have the most benefit in also reducing the risk of colorectal cancer, a new study from researchers at the University of Michigan Comprehensive Cancer Center finds.

The researchers had previously shown that statins - which 25 million people worldwide take each day to reduce their risk of cardiovascular disease - can cut risk of [colorectal cancer](#) by 50 percent. But statins do not appear to work equally well for everyone in reducing either colorectal cancer or cardiovascular disease risk.

The new study, which appears in the May 1 issue of *Cancer Prevention Research*, found a genetic variant affects how statins control both colorectal cancer and [cardiovascular disease](#) risk.

"Our research is the first step towards personalized prevention. Some people benefit substantially more from statins than others - for both cholesterol lowering and colorectal cancer prevention. Now we have identified a genetic test that can show who's likely to benefit most from this drug," says senior study author Stephen Gruber, M.D., Ph.D., M.P.H., director of cancer prevention and control at the U-M Comprehensive Cancer Center.

The study was led by Gruber, Steven M. Lipkin, M.D., Ph.D., from Weill Cornell Medical College; Gad Rennert, M.D., Ph.D., from Carmel Medical Center and the Technion-Israel Institute of Technology in Israel;

and Levy Kopelovich, Ph.D., from the National Cancer Institute.

The team looked at 2,138 people in Northern Israel who were diagnosed with colon cancer and 2,049 similar people without colon cancer. All participants were asked about statin use for controlling cholesterol. Statins are not currently used to prevent colorectal cancer.

In addition, the researchers took blood samples from all study participants and analyzed the genes. They found that the gene targeted by statins, HMGCR, is the same gene that predicts the drug's benefit for preventing colorectal cancer. Further, there are two versions of HMGCR - a long version and a short version. The researchers found that statins have more benefit for reducing both colorectal cancer risk and cholesterol in the gene's long version.

"It's the exact same mechanism for lowering cholesterol as it is for lowering colon cancer risk. This is true only for those people who are actually taking statins. The gene test by itself doesn't predict whether you're at an increased risk of [colon cancer](#); it predicts only how well statins lower the risk," Gruber says.

The researchers point out that it's easy to know if statins are successfully lowering cholesterol, but their effect on colorectal cancer prevention is not as apparent. That's where a gene test would come in.

"We think we understand the reasons why statins lower the risk of colorectal cancer. It's probably related to the fact that in addition to lowering cholesterol, they also decrease inflammation - and we know inflammation is a very important part of the way in which colon cancers develop. But regardless of whether it's related to cholesterol levels itself or inflammation, it's more important to know who are the right people to use these drugs for," says Gruber, H. Marvin Pollard Professor of Internal Medicine and professor of epidemiology and human genetics at

the U-M Medical School and School of Public Health.

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