

# Oh brother: Family ties determine who gets heart disease

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The genetic family ties that bind brothers and sisters also link their risk for developing clogged arteries and having potentially fatal heart attacks, scientists at Johns Hopkins report. And according to researchers, brothers bear the brunt of the burden.

In a study to be published in the Nov. 1 edition of the *American Journal of Cardiology*, the Hopkins team found that, regardless of age or lifestyle factors, if any sibling, brother or sister, suffers a heart attack, or chest pain from blocked arteries, the chances of any healthy brothers developing similar problems rises within 10 years by 20 percent.

For sisters, the risk was less but still evident, at 7 percent. And, researchers say, the younger the age of the sibling who first develops heart disease, the greater the risk that other brothers' and sisters' arteries will also narrow, harden and clog.

"The risk was greater than previously thought and makes clear the existence of a substantial, if uneven hereditary link in heart disease among brothers and sisters," says senior study investigator Diane Becker, M.P.H., Sc.D.

Becker adds that, eventually, a genetic blood test to assess sibling risk in families with a history of heart disease could reduce that risk by encouraging earlier lifestyle and drug interventions.

"In the meantime," she says, "brothers and sisters in families with a

history of heart disease really need to monitor their health more closely and in consultation with their physician, and consider if drug therapy and better diet, exercise and lifestyle habits are needed.”

Becker, a professor at The Johns Hopkins University School of Medicine and Bloomberg School of Public Health, and her team of researchers say they were most surprised by the very high level of sibling risk.

Existing statistical risk analyses, such as the Framingham Risk Score, would not predict so high a disease risk among men until well into their 80s or 90s, she says. The Framingham score, she notes, determines how likely a person is to suffer fatal or nonfatal coronary heart disease within 10 years and calculates risk based on a summary score of such factors as age, sex, cholesterol levels, blood pressure, diabetes and smoking.

“Knowing that your brother or sister had a heart attack, or that a sibling suffered chest pain and was rushed to a hospital stand out as possibly the most important predictor of whether or not another sibling develops blocked arteries, which can lead to a fatal heart attack,” says study lead investigator Dhananjay “Jay” Vaidya, M.B.B.S., Ph.D., an assistant professor at Hopkins.

“Genetic factors are clearly to blame,” he says, “although just how that works is unclear.” Vaidya suggests that genes could make these people more susceptible to known disease risk factors, or that genes could make people more vulnerable to some as-yet-unknown risk factor.

In their study, Becker’s group used information collected from 1983 to 2006 as part of a larger study known as the Sibling and Family Heart Study, which involves risk-factor monitoring in 800 siblings between the ages of 30 and 60. Study participants come from nearly 350 families in the Baltimore region and were generally healthy, but all had at least one

sibling with premature coronary heart disease that had required hospitalization. Half of the participants were women; 20 percent were black.

Blood tests and physical exams were conducted at the beginning of the study to assess each individual's risk factors.

Earlier findings by the team in 2005 showed that people who have a family history of heart disease needed to keep their weight down. In these families, the Hopkins team found that siblings who were obese or overweight had a 60 percent increased risk of suffering a serious heart ailment, such as a heart attack, before the age of 60.

As follow-up to their latest findings, Becker says she and her colleagues have done a genome-wide scan at deCode Genetics in Reykjavik, Iceland, a company known for its rapid genetic study of that country's genetically isolated inhabitants to hunt for the genes linked to sibling risk.

"If we can crack this code, then we hope to develop a blood test for identifying families at risk long before any symptoms manifest themselves," she says.

Source: Johns Hopkins Medical Institutions

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