

Is heart disease genetic destiny or lifestyle?

November 15 2010

Is cardiovascular health in middle age and beyond a gift from your genes or is it earned by a healthy lifestyle and within your control?

Two large studies from Northwestern Medicine confirm a healthy lifestyle has the biggest impact on cardiovascular health. One study shows the majority of people who adopted healthy lifestyle behaviors in young adulthood maintained a low cardiovascular risk profile in middle age. The five most important healthy behaviors are not smoking, low or no alcohol intake, weight control, [physical activity](#) and a healthy diet. The other study shows cardiovascular health is due primarily to lifestyle factors and healthy behavior, not heredity.

The studies will be presented Nov. 15 at the American Heart Association Scientific Sessions 2010 in Chicago.

"Health behaviors can trump a lot of your genetics," said Donald Lloyd-Jones, M.D., chair and professor of preventive medicine at Northwestern University Feinberg School of Medicine and a staff cardiologist at Northwestern Memorial Hospital. "This research shows people have control over their heart health. The earlier they start making healthy choices, the more likely they are to maintain a low-risk profile for [heart disease](#)."

Why Many Healthy Young Adults Become High Risk

The first Northwestern Medicine study investigated why most young adults, who have a low-risk profile for heart disease, often tip into the

high-risk category by middle age with high blood pressure, [high cholesterol](#) and excess weight.

The unhealthy shift is the result of lifestyle, the study found. More than half of the young adults who followed the five healthy lifestyle factors for 20 years were able to maintain their low-risk profile for heart disease through middle age. (The five healthy lifestyle factors are not smoking, low or no [alcohol intake](#), weight control, physical activity and a healthy diet.)

"This means it is very important to adopt a healthy lifestyle at a younger age, because it will impact you later on," said Kiang Liu, lead author of the study and a professor of preventive medicine at the Feinberg School.

There are big benefits to reaching middle age with a low-risk profile for heart disease. These individuals will live much longer, have a better quality of life and generate lower Medicare bills. A low-risk profile means low cholesterol, low blood pressure, no smoking, no diabetes, regular physical activity, a healthy diet and not overweight.

The study followed 2,336 black and white participants, ages 18 to 30 at baseline, for 20 years. Researchers tracked participants' diet, physical activity, alcohol consumption, smoking, weight, blood pressure and glucose levels at the baseline year, year seven and year 20. The participants are part of the CARDIA (Coronary Artery Risk Development in Young Adults) multi-center longitudinal study sponsored by the National Heart, Lung and Blood Institute.

After 20 years, the prevalence of a low-risk profile was 60 percent for participants who followed all five healthy [lifestyle factors](#), 37 percent for four factors, 30 percent for three factors, 17 percent for two and 6 percent for one or zero. The results were similar for men only, women only, black only and white only.

"From a public health point of view, this shows we should put more emphasis on promoting a [healthy lifestyle](#) in young adulthood," Liu said. "We need to educate and encourage younger people to do this now, so they'll benefit when they get older."

Tracking Three Generations of Families for Cardiovascular Health

The second Northwestern Medicine study examined three generations of families from the Framingham Heart Study to determine the heritability of cardiovascular health. Heritability includes a combination of genetic factors and the effects of a shared environment such as the types of foods that are served in a family.

Only a small percentage of the United States population – 8 percent -- has ideal levels of all the risk factors for cardiovascular health at middle age.

The study found that only a small proportion of cardiovascular health is passed from parent to child; instead, it appears that the majority of cardiovascular health is due to lifestyle and healthy behaviors.

"What you do and how you live is going to have a larger impact on whether you are in ideal cardiovascular health than your genes or how you were raised," said Norrina Allen, the lead study author and a postdoctoral fellow in preventive medicine at the Feinberg School.

The Northwestern Medicine study looked at three generations of families including 7,535 people at age 40 and a separate group of 8,920 people at age 50. The goal was to see who was in ideal cardiovascular health at these two critical periods in middle age.

Both Northwestern Medicine studies build on previous research from the department of preventive medicine that has provided the core for the national definition of [cardiovascular health](#) over the past decade, noted Lloyd-Jones.

"We really need to encourage individuals to improve their behavior and lifestyle and create a public health environment so people can make healthy choices," Lloyd-Jones said. "We need to make it possible for people to walk more and safely in their neighborhoods and buy fresh affordable fruit and vegetables in the local grocery store. We need physical activity back in schools, widely applied indoor smoking bans and reduced sodium content in the processed foods we eat. We also need to educate people to reduce their calorie intake. It's a partnership between individuals making behavior changes but also public health changes that will improve the environment and allow people to make those healthy choices."

Provided by Northwestern University

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