

# Ninety Percent of Stroke Risk Due to 10 Risk Factors

**Eighty percent of stroke risk due to five lifestyle factors, international study finds**

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FRIDAY, June 18 (HealthDay News) -- A large international study has found that 10 risk factors account for 90 percent of all the risk of stroke, with high blood pressure playing the most potent role.

Of that list, five risk factors usually related to lifestyle -- high blood pressure, smoking, abdominal obesity, diet and physical activity -- are responsible for a full 80 percent of all stroke risk, according to the researchers.

The findings come from the INTERSTROKE study, a standardized case-control study of 3,000 people who had had strokes and an equal number of healthy individuals with no history of stroke from 22 countries. It was published online June 18 in *The Lancet*.

The study -- slated to be presented Friday at the World Congress on Cardiology in

Beijing -- reports that the 10 factors significantly associated with stroke risk are high blood pressure, smoking, physical activity, waist-to-hip ratio (abdominal obesity), diet, blood lipid (fat) levels, diabetes, alcohol intake, stress and depression, and heart disorders.

Across the board, high blood pressure was the most important factor, accounting for one-third of all stroke risk.

"It's important that most of the risk factors associated with stroke are modifiable," said Dr. Martin J. O'Donnell, an associate professor of medicine at McMaster University in Canada, who helped lead the study. "If they are controlled, it could have a considerable impact on the incidence of stroke."

Controlling blood pressure is important, he said, because it plays a major role in both forms of stroke: ischemic, the most common form (caused by blockage of a brain blood vessel), and hemorrhagic or bleeding stroke, in which a blood vessel in the brain bursts.

In contrast, levels of blood lipids such as cholesterol were important in the risk of ischemic stroke, but not hemorrhagic stroke.

"The most important thing about hypertension is its controllability," O'Donnell said. "Blood pressure is easily measured, and there are lots of treatments."

Lifestyle measures to control blood pressure include reduction of salt intake and increasing physical activity, he said.

He added that the other risk factors -- smoking, abdominal obesity, diet and physical activity -- in the top five contributors to stroke risk were modifiable as well.

High intake of fish and fruits, for example, were associated with a lower risk of stroke, according to the study.

The researchers pointed out several potential limitations of the study, including the

sample size, which they said "might be inadequate to provide reliable information" about the importance of each risk factor in different regions and ethnic groups.

Many of the same risk factors have cropped up in other studies, but this is the first stroke risk study to include both low- and middle-income participants in developing countries and to include a brain scan of all participating stroke survivors, according to the researchers.

The countries joining in the study were Argentina, Australia, Brazil, Canada, Chile, China, Colombia, Croatia, Denmark, Ecuador, Germany, India, Iran, Malaysia, Mozambique, Nigeria, Peru, Philippines, Poland, South Africa, Sudan and Uganda.

The INTERSTROKE study confirms that high blood pressure "is the leading cause of stroke in developing countries" as well as developed nations, Dr. Jack V. Tu, of the University of Toronto, wrote in an accompanying editorial. He added that it highlighted the need for health authorities in those countries to develop strategies to reduce high blood pressure, salt intake and other risk factors.

A second phase of the INTERSTROKE study is underway, with researchers looking at the importance of risk factors in different regions, ethnic groups and types of ischemic stroke. They'll also study the association between genetics and stroke risk. The researchers plan to enroll 20,000 participants.

Dr. Larry B. Goldstein, director of the Duke Stroke Center, noted that the study underscored what's already known about stroke risk.

"The bottom line is that the risk factors for low- and middle-income countries seem to be pretty similar to those of Western countries," Goldstein said. "The findings reiterate the importance of attention to lifestyle factors in stroke risk -- diet, smoking, physical activity."

**SOURCES:** Martin J. O'Donnell, M.D., associate professor, medicine, McMaster University, Hamilton, Ontario, Canada; Larry B. Goldstein, M.D., director, Duke

Stroke Center, Durham, N.C.; June 18, 2010, World Congress of Cardiology, Beijing, China, June 18, 2010, *The Lancet*, online

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