

# Increasing triglyceride levels linked to greater stroke risk

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A study by researchers in Denmark revealed that increasing levels of non-fasting triglycerides are associated with an increased risk of ischemic stroke in men and women. Higher cholesterol levels were associated with greater stroke risk in men only. Details of this novel, 33-year study are now available online in *Annals of Neurology*, a journal published by Wiley-Blackwell on behalf of the American Neurological Association.

According to the World Health Organization (WHO) cardiovascular diseases are the number one cause of death globally—responsible for an estimated 17.1 million deaths worldwide ( 2004), with 5.7 million due to stroke. The American Stroke Association states that stroke is the third leading cause of death in the U.S. and 87% of all cases are attributed to [ischemic stroke](#), occurring when the supply of blood to the brain is obstructed. The obstruction or blockage is typically caused by the build-up of fatty deposits inside blood vessels (atherosclerosis).

Medical evidence suggests that elevated non-fasting [triglycerides](#) are markers of elevated levels of lipoprotein remnants, particles similar to low density lipoprotein (LDL), or bad cholesterol, both of which are thought to contribute to plaque build-up. "Interestingly, current guidelines on stroke prevention have recommendations on desirable cholesterol levels, but not on non-fasting triglycerides," said lead study author, Dr. Marianne Benn from Copenhagen University Hospital. "Our study was the first to examine how the risk of stroke for very high levels of non-fasting triglycerides compared with very high cholesterol levels in the general population."

The Danish team followed 7,579 women and 6,372 men who were enrolled in the Copenhagen City Heart Study, all of whom were white and of Danish decent. Participants had non-fasting triglycerides and cholesterol measurements taken at baseline (1976-1978) and were followed for up to 33 years. A diagnosis of ischemic stroke was made when focal neurological symptoms lasted more than 24 hours. During the follow-up period, completed by 100% of participants, 837 women and 837 men developed ischemic stroke.

Results confirmed in both women and men, stepwise increasing levels of non-fasting triglycerides associated with increased risk of ischemic stroke. In women, triglycerides levels of 1-2 mmol/L (89-177 mg/dL) carried a relative risk of 1.2 and levels of 5 mmol/L (443 mg/dL) or greater were associated with a 3.9-fold greater risk, compared with women whose triglycerides levels were less than 1 mmol/L (89 mg/dL). At similar triglyceride levels men had a relative risk that ranged from 1.2 to 2.3. Increasing cholesterol levels did not associate with greater risk of ischemic stroke, except in men whose cholesterol levels were equal to 9 mmol/L (348 mg/dL) or more (relative risk of 4.4).

"Our findings suggest that levels of non-fasting triglycerides should be included in stroke prevention guidelines which currently focus on total cholesterol and LDL [cholesterol](#) levels," concluded Dr. Benn.

**More information:** "Non-fasting Triglycerides, Cholesterol and Stroke in the General Population." Anette Varbo, Børge G. Nordestgaard, Anne Tybjærg-Hansen, Peter Schnohr, Gorm B. Jensen, and Marianne Benn. *Annals of Neurology*; Published Online: February 21, 2011 ([DOI:10.1002/ana.22384](https://doi.org/10.1002/ana.22384) ).

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