

## Even in normal range, high blood sugar linked to brain shrinkage

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People whose blood sugar is on the high end of the normal range may be at greater risk of brain shrinkage that occurs with aging and diseases such as dementia, according to new research published in the September 4, 2012, print issue of *Neurology*, the medical journal of the American Academy of Neurology.

"Numerous studies have shown a link between type 2 diabetes and brain shrinkage and dementia, but we haven't known much about whether people with blood sugar on the high end of normal experience these same effects," said study author Nicolas Cherbuin, PhD, with Australian National University in Canberra.

The study involved 249 people age 60 to 64 who had blood sugar in the normal range as defined by the [World Health Organization](#). The participants had brain scans at the start of the study and again an average of four years later.

Those with higher fasting [blood sugar levels](#) within the normal range and below 6.1 mmol/l (or 110 mg/dL) were more likely to have a loss of [brain volume](#) in the areas of the hippocampus and the amygdala, areas that are involved in memory and cognitive skills, than those with lower blood sugar levels. A fasting blood sugar level of 10.0 mmol/l (180 mg/dL) or higher was defined as diabetes and a level of 6.1 mmol/l (110 mg/dL) was considered impaired, or prediabetes.

After controlling for age, high blood pressure, smoking, alcohol use and

other factors, the researchers found that blood sugar on the high end of normal accounted for six to 10 percent of the [brain shrinkage](#).

"These findings suggest that even for people who do not have diabetes, blood sugar levels could have an impact on brain health," Cherbuin said. "More research is needed, but these findings may lead us to re-evaluate the concept of [normal blood sugar](#) levels and the definition of diabetes."

Provided by American Academy of Neurology

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