

Blood sugar control beyond standard target doesn't improve cognitive decline for diabetics

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Intensive control of blood sugar levels beyond standard targets provides no additional protection against cognitive decline in older people with diabetes than standard treatment, according to a national study coordinated by researchers at Wake Forest Baptist Medical Center.

The first results of the Action to Control [Cardiovascular Risk](#) in Diabetes-Memory in Diabetes (ACCORD-MIND) study appear online today in The [Lancet Neurology](#).

"We know that people with [type 2 diabetes](#) have a much higher risk of [dementia](#) and memory loss than people without diabetes," said Jeff D. Williamson, M.D., chief of the Department of [Geriatrics](#) and Gerontology and principal investigator of the study's coordinating center at Wake Forest Baptist. "What we didn't know was, if you intensively control [blood sugar levels](#) in people who have had a history of trouble controlling them, does the added cost and effort to control blood sugar result in a slowed rate of memory loss? After conducting this study, there remains no evidence that it does.

"We also learned, however, that the intensive [blood sugar control](#) does preserve [brain volume](#)," added Williamson, director of the Roena Kulynych Center for Memory and Cognition Research at Wake Forest Baptist. "What that means for the long term preservation of cognitive function of these patients, we're still trying to figure out."

The ACCORD-MIND trial is a national study sponsored by the National Heart Lung and Blood Institute – part of the National Institutes of Health – designed to examine the effects of different glucose-lowering strategies on the risk for cardiovascular disease.

Wake Forest Baptist was asked to lead the ACCORD-MIND study because of its international reputation in both gerontology and in the conduct of very large clinical trials in the elderly, Williamson explained. A growing area of research focus at the medical center lies in the relationship between chronic diseases, such as diabetes and obesity, and [memory loss](#).

To determine whether intensive blood glucose control would improve cognitive outcomes, the research team recruited nearly 3,000 people with long-standing type 2 diabetes and a high risk for heart disease for the study. Each was assigned either to an "intensive" program to maintain their hemoglobin A1c lower than standard targets at below 6 percent, or to a "standard" program to maintain the levels between 7 and 7.9 percent. Hemoglobin A1c is a marker for control of blood glucose levels. The patients ranged in age from 55 to 80 years old.

All of the participants underwent cognitive testing and more than 600 people also received magnetic resonance imaging (MRI) scans to measure any change in brain volume during the study.

The initial study plan was to measure the participants' cognitive ability (through cognitive tests) and brain volume (through MRI) after 40 months, but an increased risk of dying in the intensive strategy group led the researchers to switch all the participants to the standard glucose-lowering strategy at a median treatment time of 39 months.

Cognitive test scores revealed no difference between the groups. People in the intensive treatment group had larger total brain volume. However,

this result, when weighed against the lack of cognitive benefit, the increased risks of cardiovascular problems and increased mortality in the intensive treatment group, did not support use of the more intensive therapy, the researchers concluded.

"While these findings do not support the use of intensive therapy to reduce the possible effects of diabetes on the brains of older people, it remains important for older adults with type 2 diabetes to continue well-established regimens to keep their blood glucose levels under control," said lead author Lenore J. Launer, Ph.D., of the National Institute on Aging (NIA). "Cognitive health is of particular concern in type 2 diabetes. We will continue to investigate how managing blood sugar levels might be employed to protect people with diabetes from increased risk of [cognitive decline](#) as they age."

Wake Forest Baptist researcher Michael E. Miller, Ph.D., who served as the lead statistician for the trial, added that, while the study's findings do not support the use of intensive blood glucose control therapy beyond standard targets to preserve cognition, there are other things people with diabetes may be able to do to gain benefit.

"It is important to note that the average person in this study had type 2 diabetes for more than 8 years and had demonstrated difficulty in controlling their blood sugar," Williamson said. "Today, many people like this with [diabetes](#) spend lots of money, time and energy worrying about and trying to drive their [blood sugar](#) levels down lower than recommended goals, but we've already shown that using lots of medication to do this does not help prevent heart attacks. This result on memory gives added guidance to those people and some relief from that pressure to take more and more medication. Now, they will be able to focus their attention and money on other things to improve their overall health, such as diet, exercise and behavioral interventions that may work to preserve memory and reduce heart disease."

More information: "Effects of intensive glucose lowering on brain structure and function in people with type 2 diabetes (MIND): a randomised open-label substudy of the ACCORD trial," by Lenore J. Launer, et al., *Lancet Neurology*. Published online September 27, 2011.

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