

# Intensive blood pressure control may lower risk for cognitive problems in more people

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Several years ago, researchers published in *JAMA* a promising discovery: intensively lowering blood pressure appeared to reduce the risk for cognitive decline in people 50 and older with high blood pressure. But questions remained about whether the strategy was safe or effective in people whose diastolic blood pressure—the bottom number in a blood pressure reading—was low. Some data suggested intensive control might raise the risk for dementia in this group.

A new study led by researchers in China suggests otherwise. The findings, published Monday in the American Heart Association journal *Hypertension*, show no evidence that intensive systolic (top number) [blood pressure](#) control is harmful to people whose diastolic blood pressure is low. Compared to people whose systolic blood pressure was lowered to standard levels, people who intensively reduced their systolic levels had a lower risk for probable dementia or mild cognitive impairment, regardless of whether their diastolic levels were high or low before treatment.

"I think this further supports the general notion that for most people, intensive [blood pressure control](#) is safe and has [potential benefits](#)," said Dr. Rebecca Gottesman, chief of the stroke branch at the National Institute of Neurological Disorders and Stroke Intramural Research Program in Bethesda, Maryland.

Gottesman, who was not involved in the research, said the study addressed an important gap in the scientific literature about who could benefit from intensive blood pressure control. "It gives us at least some confidence that across diastolic blood pressure levels, it is similarly safe."

A [blood pressure reading](#) has two numbers. The top number measures systolic pressure, the force against artery walls when the heart beats. The bottom number, diastolic pressure, measures the same force between

beats.

Previous studies have established high systolic blood pressure, especially during midlife, as a risk factor for [cognitive decline](#) and dementia and have shown that lowering it reduces that risk.

Mild cognitive impairment, or MCI, is defined as having more difficulty thinking, remembering and reasoning than other people of the same age. Dementia creates more severe challenges which interfere with the ability to perform basic functions of daily life.

In the new analysis, researchers used data from the SPRINT MIND trial, short for Systolic Blood Pressure Intervention Trial—Memory and Cognition In Decreased Hypertension, which randomly assigned people 50 and older with high [systolic blood pressure](#) to an intensive blood pressure control target (less than 120 mmHg) or a standard one (less than 140 mmHg). Cognitive function was measured using a series of tests at the start and throughout the course of follow-up.

The SPRINT study—designed to collect data for five years—was halted after slightly more than three years, when it became clear that intensively lowering blood pressure significantly reduced the risk for cardiovascular disease and death. Researchers continued to analyze the data collected to that point for the MIND portion of the study, which looked at how intensive blood pressure control affected dementia risk. They found that, compared to standard blood pressure control, intensive control did not reduce dementia risk but did have a significant impact on reducing MCI.

This latest research looked deeper into the relationship between intensive blood pressure control and dementia risk, with a focus on whether intensive control could harm cognitive function in people with very low [diastolic blood pressure](#). It also looked at whether intensive control lowered [blood flow](#) to the brain, a condition associated with accelerated

cognitive decline and higher dementia risk. Cerebral blood flow was measured in a subset of 348 participants (193 in the intensive group and 155 in the standard group) using [magnetic resonance](#) imaging at the time of enrollment and 48 months after people were assigned to their blood pressure-lowering groups.

There were 4,278 people in the intensive blood pressure control group and 4,285 in the standard group, with an average age of 68. Researchers further divided each group into four subgroups based on their diastolic pressure. Those in the lowest fourth had diastolic pressure levels less than or equal to 70 mmHg, and those in the highest group had diastolic levels 87 mmHg or higher.

The new analysis showed people with the lowest diastolic pressure levels had higher rates of cognitive decline than those with higher diastolic pressure. However, regardless of diastolic pressure, people in the intensive blood pressure-lowering group had lower rates of probable dementia or [mild cognitive impairment](#) than those in the standard group. There was no evidence that intensive blood pressure control harmed cerebral blood flow.

The findings suggest there may be greater cognitive benefit to intensive blood pressure control for people with very high diastolic pressure, compared to those with very low diastolic levels, Gottesman said. "But these are small numbers, so we don't want to make too much of it."

For one thing, people with very low diastolic pressure are different than those with higher pressure, Gottesman said. The authors noted that those in the lowest diastolic group were more likely to be older and have more health problems.

It's also possible that people in the low diastolic group were already in the early stages of dementia, Gottesman said. "There is some evidence

people with dementia will have a drop in blood pressure, and that's why you see no benefit in the group with very low diastolic levels," she said. "The ship may have already sailed for them."

One weakness of the study, Gottesman said, is that because the SPRINT trial was halted early, there were less than four years of follow-up data to analyze. "When it stopped, it might have been too early for cognitive outcomes to show because they take longer to accrue," she said. "If this went on for decades, I don't know if it would show intensive blood pressure control was safe for these people."

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