

# Self-administered cognition test predicts early signs of dementia sooner

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Dr. Douglas Scharre reviews the results of a patient's cognitive test at The Ohio State University Wexner Medical Center. A new study finds the SAGE test he developed accurately identifies early signs of dementia at least six months earlier than standard testing, allowing treatment to start sooner. Credit: The Ohio State University Wexner Medical Center

Many people experience forgetfulness as they age, but it's often difficult to tell if these memory issues are a normal part of aging or a sign of

something more serious. A new study finds that a simple, self-administered test developed by researchers at The Ohio State University Wexner Medical Center, College of Medicine and College of Public Health can identify the early, subtle signs of dementia sooner than the most commonly used office-based standard cognitive test.

This earlier detection by the Self-Administered Gerocognitive Examination (SAGE test) is critical to [effective treatment](#), especially as new therapeutics for dementia and Alzheimer's disease are being developed and approved.

"New disease modifying therapies are available and others are currently being evaluated in clinical trials, and we know that the earlier [cognitive impairment](#) is detected, the more treatment choices a patient has and the better the treatments work," said Dr. Douglas Scharre, director of the Division of Cognitive Neurology at Ohio State Wexner Medical Center and lead author of the study published in the journal *Alzheimer's Research & Therapy*.

While the test does not definitively diagnose problems like Alzheimer's, it allows doctors to get a baseline of their patients' cognitive functioning, and repeat testing allows them to follow their memory and thinking abilities over time. "Often [primary care physicians](#) may not recognize subtle cognitive deficits during routine office visits," Scharre said.

The eight-year study followed 665 consecutive patients in Ohio State's Center for Cognitive and Memory Disorders. Researchers found that the SAGE test accurately identified patients with mild cognitive impairment who eventually progressed to a dementia diagnosis at least six months earlier than the most commonly used testing method called the Mini-Mental State Examination (MMSE).

Among the 164 patients with baseline [mild cognitive impairment](#), 70

patients converted to dementia. This is a 43% conversion rate over three to four years which is similar to rates from other academic center-based studies, Scharre said. The distribution of dementia diagnoses included 70% Alzheimer's disease dementia, 7% Lewy body dementia, and 9% pure or mixed vascular [dementia](#).

The test can be taken anywhere whenever there are cognitive concerns. It takes only about 10-15 minutes to complete, and the four interchangeable forms are designed to reduce learning effects from recurrent testing over time. The cognitive domains tested with the 11-item test include orientation, language, calculations, memory, abstraction, executive function, and constructional abilities. The MMSE does not test abstractions or executive function abilities.

"Any time you or your family member notices a change in your brain function or personality you should take this test," Scharre said. "If that person takes the test every six months and their score drops two or three points over a year and a half, that is a significant difference, and their doctor can use that information to get a jump on identifying the causes of the cognitive loss and to make treatment decisions."



Frank Rupnik looks at family photos with his wife, Nancy, in their Delaware, Ohio home. Frank was diagnosed with early-stage Alzheimer's disease and takes the digital Brain Test on a tablet every six months that informs his neurologist about any changes in cognition or needed adjustments in treatment. Credit: The Ohio State University Wexner Medical Center

Scharre has worked closely with BrainTest Inc SEZC to develop a scientifically validated digital version of the SAGE [test](#) called [BrainTest](#) that can be taken anywhere on a tablet or touch screen computer. This digital version will also be integrated with the Ohio State Wexner Medical Center's electronic medical records system to better facilitate self-testing, storing and reviewing results for patients and their health care providers.

"Based on cognitive score changes, clinicians and families may decide it

is time to act on safety and supervision needs. This might include, for example, medication oversight, financial assistance, driving limitations, setting up durable Powers of Attorney and other legal arrangements/trusts, change in living arrangements, and enhanced caregiving support," Scharre said.

More than 6 million Americans have Alzheimer's disease, and those numbers are expected to rise to more than 13 million by 2050. Deaths from Alzheimer's and other dementias have increased 16% during the COVID-19 pandemic, according to the [Alzheimer's Association](#).

Access SAGE or BrainTest at [wexnermedical.osu.edu/SAGE](http://wexnermedical.osu.edu/SAGE).

Scharre is a member of the Scientific Advisory Board and is Head of Medical Affairs for BrainTest.

**More information:** Douglas W. Scharre et al, Self-Administered Gerocognitive Examination: longitudinal cohort testing for the early detection of dementia conversion, *Alzheimer's Research & Therapy* (2021). [DOI: 10.1186/s13195-021-00930-4](https://doi.org/10.1186/s13195-021-00930-4)

Provided by Ohio State University Medical Center

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