



An estimated 15% to 20% of people over age 65 meet the criteria for mild cognitive impairment—the changes that exist between normal aging and dementia.

CE

CONTINUING EDUCATION SPOTTING THE SIGNS OF MILD COGNITIVE IMPAIRMENT

BY KIRSTEN WEIR

An older woman starts forgetting regular appointments, and balancing her checkbook is more confusing than it used to be. Is this just an inevitable part of aging? Or are these warning signs of more serious problems to come?

Researchers who study Alzheimer's disease and other forms of dementia have long recognized that those diseases are the end point of a long and complex process of neurodegeneration. Pathology in the brain accumulates for years or decades before memory loss and other cognitive symptoms appear. In the years before dementia becomes evident, however, patients typically show subtle but measurable cognitive declines—a syndrome known as mild cognitive impairment, or MCI. "Mild cognitive impairment exists between the cognitive changes of normal aging and dementia,"

CE credits: 1

Learning objectives: After reading this article, CE candidates will be able to:

1. Define mild cognitive impairment and describe subtypes of the syndrome.
2. Discuss how mild cognitive impairment is diagnosed and explain the role of neuropsychologists in diagnosis.
3. Describe strategies that may prevent or slow the progression of mild cognitive impairment.

For more information on earning CE credit for this article, go to www.apa.org/ed/ce/resources/ce-corner.

says Ronald Petersen, MD, PhD, a neurologist and director of the Alzheimer's Disease Research Center at Mayo Clinic and the Mayo Clinic Study of Aging.

Researchers are still seeking ways to treat—or even better, prevent—MCI. But they've made strides toward better understanding and identifying this disorder. And psychologists have an important role to play in both studying and diagnosing this all-too-common condition.

TAXING COGNITIVE LIMITS

MCI affects millions of older Americans. The prevalence of MCI climbs with age, from 6.7% of 60- to 64-year-olds to more than 25% of 80- to 84-year-olds, Petersen and colleagues reported in a summary of the American Academy of Neurology's updated practice guidelines for MCI (*Neurology*, Vol. 90, No. 3, 2018). Overall, they reported, an estimated 15% to 20% of people over age 65 meet the criteria for MCI.

Not everyone with MCI will develop dementia. But progression to dementia appears to be the rule rather than the exception. In one longitudinal study of people diagnosed with MCI, at a mean follow-up of 3.1 years, 65% had progressed to dementia and another 24% had died (Yaffe, K., et al., *Dementia and Geriatric Cognitive Disorders*, Vol. 22, No. 4, 2006).

The cognitive deficits associated with the condition

are, by definition, mild enough that they don't interfere with the major activities of daily living. "Social and occupational functioning remain intact. But people start to notice difficulties with more complex everyday activities," explains George Rebok, PhD, a professor of mental health at the Johns Hopkins University Bloomberg School of Public Health and director of the Johns Hopkins Alzheimer's Disease Resource Center for Minority Aging Research. "Things like balancing a checkbook, preparing a complex meal or following a complicated medication regimen may tax a person's limits," he says.

Although symptoms of MCI are generally minor, the cognitive changes are salient enough to be identified with neuropsychological testing—and have their own formal diagnosis. The International Statistical Classification of Diseases and Related Health Problems (ICD) includes MCI, also called mild neurocognitive disorder. The most recent update of the Diagnostic and Statistical Manual of Mental Disorders (DSM) added this diagnosis as well. Past editions of the DSM included a category for "dementia and other debilitating conditions." When the fifth edition (DSM-5) was released in 2013, it recharacterized dementia as "major neurocognitive disorder," and added a separate category—"mild neurocognitive disorder"—to describe a decline in cognitive

functioning that goes beyond normal changes of aging.

The DSM-5 characterization of mild neurocognitive disorder is something of a catchall. But in practice, clinicians recognize distinct categories of MCI. Broadly speaking, MCI is grouped into two main types, as Petersen and his Mayo Clinic colleague Eric G. Tangalos, MD, described in an overview of the disorder (*Clinics in Geriatric Medicine*, Vol. 34, No. 4, 2018). Amnesic MCI is the more common variety. Marked by memory impairments, it is more likely a precursor to Alzheimer's disease. People with nonamnesic MCI, on the other hand, tend to have deficits in other cognitive functions, such as language, executive functioning or visual-spatial skills. People with nonamnesic MCI are thought to be more likely to progress to other types of neurodegenerative diseases, such as frontotemporal degeneration, primary progressive aphasia or Lewy body dementia.

Nonamnesic MCI is further characterized as either single domain (in which only one cognitive function, such as language, shows impairment) or multiple domain (in which more than one function is impaired).

DIAGNOSING MCI

Researchers continue to explore the mechanisms of MCI and dementia and to look for biomarkers that signal the presence of the disorder. But for now, health-care providers must identify MCI on the basis of a patient's signs and symptoms, including neuropsychological test results. "The notion of MCI remains a concept that's evolving even as

we speak," says Donald Davidoff, PhD, chief of neuropsychology at McLean Hospital in Boston and an assistant professor of psychology at Harvard Medical School. So far, MCI can't be identified with physical markers, adds his colleague Regan Patrick, PhD, also at McLean and Harvard. "MCI remains a clinical diagnosis, and no one is better equipped than neuropsychologists to make that diagnosis."

One thing that makes diagnosis tricky is that MCI can look so different from person to person. Imagine a high-functioning physics professor whose cognitive capacities have always been far above average, Petersen says. "Maybe now he's dropped from two or three standard deviations above the norm on cognitive tests to one above the norm. He's still performing above the normal range, but he may have cognitive impairment," he says. "The results from normative data are very informative, but not definitive, and it still comes down to a clinician to make the final call."

There's also some fuzziness when it comes to determining at precisely what points MCI begins and ends. "Where do you draw the lines between normal aging on one end and dementia on the other?" Petersen asks. "There are some uncertainties around the edges."

There's also no single trajectory for someone who shows signs of impairment. "There's a lot of variability across individuals in terms of how rapidly they progress from MCI to dementia—if they progress at all," Rebok says. Some decline rapidly to dementia, while others live with stable

MCI for years. Still others regain normal cognition—but those who do are at higher risk of future MCI and dementia than those who have never shown signs of cognitive impairment, he adds.

Adding to the confusion, not all cognitive impairment is caused by the pathological brain changes associated with dementia. Cognitive deficits can also be caused by medication side effects, vascular disease or certain psychiatric disorders. Sleep disorders can also lead to cognitive difficulties that mimic symptoms of MCI due to neurodegenerative causes. It's important to rule out other underlying causes, especially since problems like medication interactions or obstructive sleep apnea are treatable. "MCI is often viewed as early Alzheimer's disease, and it may be—but it may not be," says Petersen. "Once you make the diagnosis, then you have to ask what's causing it and rule out any potentially treatable conditions."

PREVENTING AND TREATING MCI

When MCI is due to neurodegenerative causes, however, treatment options are slim. There are currently no FDA-approved medications for MCI. Some physicians prescribe drugs approved for Alzheimer's disease, but research hasn't turned up good evidence that they are helpful in staving off MCI. Even in patients with Alzheimer's disease, existing pharmacological treatments have limited success in controlling or delaying symptoms, and clinical trials of various new drugs were stopped early after failing to show any benefits to participants. "Pharmaceutical companies

ABOUT CE

"CE Corner" is a continuing-education article offered by APA's Office of CE in Psychology.

To earn CE credit, after you read this article, complete an online learning exercise and take a CE test. Upon successful completion of the test—a score of 75% or higher—you can immediately print your certificate.

To purchase the online program visit www.apa.org/ed/ce/resources/ce-corner.aspx. The test fee is \$25 for members and \$35 for nonmembers. For more information, call (800) 374-2721.

As an APA member, take advantage of your five free CE credits per year. Select the free online programs through your MyAPA account.



Researchers are still seeking ways to treat—or even better, prevent—MCI. But they’ve made strides toward better understanding this disorder.

have turned out drug after drug, without any significant results for ameliorating or reversing the process,” Davidoff says.

Such medications may simply be given to patients too late. Symptoms of MCI only appear after decades of damaging changes have accumulated in the brain. “The footprint of these diseases may begin in early adulthood or even late adolescence,” says Robert S. Wilson, PhD, a professor of neurological sciences and behavioral sciences at Rush University Medical Center and a neuropsychologist at the Rush Alzheimer’s Disease Center. “Almost everyone now believes that the fewer cognitive symptoms you have, and the less the pathologies have progressed, the greater chance of any intervention being effective.”

For that reason, many

researchers have set their sights on prevention rather than treatment. A report from the National Institute on Aging and the National Academies of Sciences, Engineering, and Medicine found support for three interventions that may prevent or slow the development of cognitive decline and dementia: increased physical activity; controlling high blood pressure; and cognitive training interventions that aim to enhance problem-solving, memory and speed of processing. Such cognitive interventions may or may not be computer based, but the report found no evidence that commercial “brain training” games have any long-term benefits (Leshner, A.I., et al., Eds., National Academies Press, 2017).

While prevention is a best-case scenario, that doesn’t mean nothing can be done once a

KEY POINTS

1
Mild cognitive impairment, or MCI, affects millions of older Americans. Many people with MCI will develop dementia.

2
There are two main types of MCI: amnesic, marked by memory impairments, and nonamnesic, marked by deficits in other areas, such as language, executive functioning or visual-spatial skills.

3
Researchers are looking for biomarkers that signal the presence of MCI, but for now, health-care providers must identify it on the basis of a patient’s signs and symptoms.

4
There are no FDA-approved medications for MCI. Research has found some evidence that physical exercise and cognitive training could prevent or slow the development of symptoms.

person begins showing signs of MCI. In the American Academy of Neurology’s summary of MCI treatment guidelines, Petersen and colleagues presented evidence that regular exercise training for six months is likely to improve cognition in people with MCI. They also concluded that cognitive training might have benefits in people diagnosed with MCI, though—as in the National Academies report—they found the evidence was mixed.

Still, scientists are continuing to explore cognitive training programs in hopes of improving cognition in people with MCI. “There’s a huge interest in developing nonpharmacological interventions,” says Sylvie Belleville, PhD, a professor at the University of Montreal who studies the cognitive neuropsychology of memory. In one example of such an intervention, she and her colleagues recruited 145 participants with MCI and randomized them to one of three groups: a group receiving a cognitive training intervention that included memory and attentional control strategies, a group receiving a psychosocial intervention that aimed to improve general psychological well-being or a control group with no intervention. Participants who received eight two-hour sessions of cognitive training had improvements in memory that were still evident at follow-ups three and six months later. Neither the participants who received an equal amount of psychosocial training nor the control group showed significant improvements in memory (*Journal of the American Geriatrics Society*, Vol. 66, No. 4, 2018).