

Mild cognitive impairment (MCI)

Mild cognitive impairment (MCI) is an early stage of memory loss or other cognitive ability loss (such as language or visual/spatial perception) in individuals who maintain the ability to independently perform most activities of daily living.

Mild cognitive impairment causes cognitive changes that are serious enough to be noticed by the person affected and by family members and friends but do not affect the individual's ability to carry out everyday activities. Approximately 12-18% of people age 60 or older are living with MCI.

MCI can develop for multiple reasons, and individuals living with MCI may go on to develop dementia; others will not. For neurodegenerative diseases, MCI can be an early stage of the disease continuum including for Alzheimer's if the hallmark changes in the brain are present.

In some individuals, MCI reverts to normal cognition or remains stable. In other cases, such as when a medication causes cognitive impairment, MCI is mistakenly diagnosed. It is important that people experiencing cognitive changes seek help as soon as possible for diagnosis and possible treatment.

Symptoms

Experts classify mild cognitive impairment based on the thinking skills affected:

- **Amnesic MCI:** MCI that primarily affects memory. A person may start to forget important information that he or she would previously have recalled easily, such as appointments, conversations or recent events.
- **Nonamnesic MCI:** MCI that affects thinking skills other than memory, including the ability to make sound decisions, judge the time or sequence of steps needed to complete a complex task, or visual perception.

Diagnosis

Mild cognitive impairment is a clinical diagnosis representing a doctor's best professional judgment about the reason for a person's symptoms. Individuals living with MCI who have an abnormal brain positron emission tomography (PET) scan or spinal fluid test for amyloid beta protein, which is the protein in amyloid plaques (one of the two hallmarks of Alzheimer's), are considered to have a diagnosis of MCI due to Alzheimer's disease.

The Alzheimer's Association partnered with the National Institute on Aging (NIA) to convene expert workgroups to update the diagnostic guidelines for MCI due to Alzheimer's disease, suggesting that, in some cases, MCI is an early stage of Alzheimer's or another dementia.

The guidelines recommend finding a biomarker (a measurable biological factor, such as levels of a protein, that indicates the presence or absence of a disease) for people with MCI to learn whether they have brain changes that put them at high risk of developing Alzheimer's and other dementias.

If it can be shown that changes in the brain, cerebrospinal fluid and/or blood are caused by physiologic processes associated with Alzheimer's, the revised guidelines recommend a diagnosis of MCI due to Alzheimer's disease.

A medical workup for MCI includes the following core elements:

- Thorough medical history, where the physician documents current symptoms, previous illnesses and medical conditions, and any family history of significant memory problems or dementia.
- Assessment of independent function and daily activities, which focuses on any changes from a person's usual level of function.
- Input from a family member or trusted friend to provide additional perspective on how function may have changed.
- Assessment of mental status using brief tests designed to evaluate memory, planning, judgment, ability to understand visual information and other key thinking skills.
- In-office neurological examination to assess the function of nerves and reflexes, movement, coordination, balance and senses.
- Evaluation of mood to detect depression; symptoms may include problems with memory or feeling "foggy." Depression is widespread and may be especially common in older adults.
- Laboratory tests including blood tests and imaging of the brain's structure.

If the workup doesn't create a clear clinical picture, the doctor may recommend neuropsychological testing, which involves a series of written or computerized tests to evaluate specific thinking skills.

Causes and risks

The causes of MCI are not yet completely understood. Experts believe that many cases — but not all — result from brain changes occurring in the very early stages of Alzheimer's or other neurodegenerative diseases that cause dementia.

The risk factors most strongly linked to MCI when the underlying cause is neurodegenerative disease and not another cause are advancing age, family history of Alzheimer's or another dementia, and conditions that raise risk for cardiovascular disease.

Treatment and outcomes

In June 2021, the U.S. Food and Drug Administration (FDA) approved aducanumab (Aduhelm™) as a treatment for Alzheimer's. The FDA specified the treatment should be initiated in patients in the Alzheimer's disease stage studied in the clinical trials — people with MCI or mild dementia stage of disease.

Aducanumab (Aduhelm™) was studied in people living with early Alzheimer's disease and MCI due to Alzheimer's who showed evidence of a buildup of amyloid plaques in the brain. The therapy has not yet been tested on people with more advanced cases of dementia or Alzheimer's disease or those without clinical symptoms. We encourage people who are interested in learning more about this treatment, for themselves or a loved one, to have a conversation with their health care provider.

More research is needed on the biological changes associated with normal aging, MCI and Alzheimer's and other dementias to better understand the causes of and risk factors for MCI and the prognosis for those with the condition.

Individuals who have been diagnosed with MCI should be reevaluated every six months to determine if symptoms have progressed.

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