

# Mild cognitive impairment (MCI)

Some people experience changes in memory and other cognitive (thinking) functions greater than that usually experienced with ageing, but without other signs of dementia. This is called mild cognitive impairment (MCI). This sheet provides information about what MCI is and what it means to be told that you have MCI.

## What is mild cognitive impairment?

Mild cognitive impairment is a medical condition, generally defined as impairment in cognitive abilities (the thinking functions of the brain) greater than expected for age, which does not significantly interfere with daily life and is not severe enough to warrant a diagnosis of dementia. MCI might also be described as a 'mild neurocognitive disorder' or 'prodromal dementia' but the definition is the same. For further information about the words describing dementia see help sheet **About Dementia 23: Dementia Terminology**.

The types of difficulties experienced by someone with MCI vary from person to person. MCI may involve problems with memory, language, attention, processing visual and spatial information, complex thinking functions, or problems in a combination of these areas. In MCI these problems are less severe than those experienced by people with dementia.

The term 'mild' in MCI is used in comparison to the more severe functional impairments of dementia. It does not mean that the person with MCI experiences only mild problems. In fact, their symptoms might be very concerning to them and/or their family.

The following criteria are used by medical practitioners in determining if a person has MCI:

- report of cognitive problems, preferably confirmed by another person
- abnormal cognitive function detected with standard assessment tests
- evidence of decline in one or more cognitive skills
- essentially normal ability to perform daily activities
- absence of dementia

Determining if a person has MCI can sometimes be problematic. Cognitive impairment can have many varied causes, making MCI a broad umbrella term that can encompass a large number of underlying diseases or injuries. The prognosis for any individual very much depends on the underlying cause. As such, there is some controversy about the usefulness of the clinical category of MCI. Some experts suggest it should be dropped from diagnostic criteria. However, a survey of Australian clinicians found that most were diagnosing MCI and felt it was important to distinguish it from dementia and from normal ageing. Currently, a great deal of further research is being conducted into better understanding MCI.

### **How is MCI detected?**

MCI is usually detected using a range of tests and assessments. This begins with the doctor talking to both the person and, if possible, a close friend or family member, to get a thorough understanding of the cognitive problems they are experiencing, their medical history, the medications they are taking, and any other relevant information.

A physical examination and blood tests may be done in order to rule out other causes of cognitive impairment such as depression, medication problems or a nutritional deficiency. People suspected of having MCI will also be tested with general tests of cognitive function, to measure their memory, language, attention and other skills.

Increasingly, brain scans are also being used in the diagnostic process for MCI. Computerised Tomography (CT) and Magnetic Resonance Imaging (MRI) are used to assess abnormalities in brain structure and Positron Emission Tomography (PET) is used to assess changes in glucose metabolism or levels of proteins and other chemicals in the brain. These may provide additional information about the likely underlying cause of the cognitive impairment. Measurements of protein levels in the cerebrospinal fluid (CSF) are sometimes used. These require a lumbar puncture (spinal tap) to be performed.

The tests used to detect MCI are mostly the same as those used to diagnose dementia. For further information about these, see help sheet **Dementia Q&A 10: Tests used in diagnosing dementia**.

## **Does MCI lead to dementia?**

Research does indicate that people with MCI are more likely to develop dementia, especially Alzheimer's disease. In fact, MCI is often thought of as a transitional state between normal ageing and early dementia. Some researchers suggest that it would be better to drop the category of MCI and concentrate efforts on earlier diagnosis of dementia.

However, MCI does not always lead to dementia and if it does, it can take many years to do so. A substantial proportion of people diagnosed with MCI do not progress and are found to have stable or even improved cognitive function when it is retested over time.

Various studies show differing results in their estimates of how many people with MCI will progress to dementia, but typically it is reported that 10% to 15% of people with MCI progress to dementia per year. In the general population, only 1% to 2% of older people develop dementia per year. So having MCI considerably increases the likelihood of subsequently developing dementia.

Research is continuing into why some people with MCI progress to dementia while others do not, and how to predict whether an individual with MCI will go on to develop dementia. There is currently no way of knowing for certain who will progress, who will stay the same and who will get better. However, the clinician assessing the person will take together the results of all the tests conducted to make a judgement about prognosis if they can. There are certain factors that are now recognised as increasing the risk that a person with MCI will progress to dementia. These include older age, greater severity of cognitive impairment and certain ‘biomarkers’ from brain imaging and other tests.

### **What are the types of MCI?**

There are two major types of MCI – amnestic and non-amnestic. In amnestic MCI, memory impairment is the most prominent symptom. This is the most common form of MCI. People with amnestic MCI may progress over time to develop Alzheimer’s disease.

In non-amnestic MCI, a cognitive skill other than memory, such as language or attention, is most impaired. This type of MCI may progress to other forms of dementia such as dementia with Lewy bodies, frontotemporal dementia, vascular dementia or atypical Alzheimer’s disease.

### **Can MCI be treated?**

Currently, there is no specific treatment for MCI. There is some evidence that nutritional supplements might support brain functions affected in the earlier stages of dementia, but as yet no supplements or drug therapies have been definitively proven to be effective. There is some preliminary evidence that the cholinesterase inhibitor drugs used to treat Alzheimer’s disease might delay the progression from MCI to dementia, but other studies have not shown this and more research is needed.

Cognitive training (exercising memory and other cognitive skills) has been suggested as potentially useful for MCI, and some studies have shown improvements in memory, attention, mood or quality of life. It remains unclear though how long these effects last, how meaningful they are in everyday life and whether progression to dementia can be delayed. Other researchers are developing programs that might help people with MCI make the most of their remaining cognitive skills and teach them strategies to compensate for cognitive problems. Several studies have shown that frequent participation in mentally stimulating activities is associated with lower risk of cognitive decline, so this might prove to be beneficial for people with MCI.

Research has also demonstrated the importance of regular physical exercise for keeping the brain healthy as we age. Some studies suggest that cognitive decline is reduced in people with MCI who undertake regular exercise such as walking.

Maintaining a healthy diet is also important for brain function. Higher adherence to the Mediterranean diet has been associated with a lower risk of progression from MCI to dementia. This diet includes lots of fruit, vegetables, legumes, fish, nuts and olive oil. Its healthy effects are attributed to the antioxidants and unsaturated fats in these foods.

Vascular risk factors such as diabetes, high blood pressure and high cholesterol contribute to cognitive decline. Effective treatment of these conditions is therefore very important for preventing any exacerbation of cognitive decline in MCI. Obesity and smoking also increase the risk of cognitive decline and should be addressed if necessary.

Further research is needed to better understand the relationships between these lifestyle and health factors and the progression of MCI. In most cases a person diagnosed with MCI will not undergo any medical treatment as such, but will be regularly monitored for changes in their cognitive abilities. Counselling may assist people with MCI and their families to find ways to adjust to the changes they are experiencing and to learn about ways to compensate for their cognitive difficulties.

## **What are the implications of MCI?**

The implications of detecting MCI can be viewed as mostly positive. Many people with MCI are very aware of and concerned about their cognitive problems. Knowing that they have MCI confirms to them that their concerns are valid and there is a medical reason for their symptoms. They can put strategies in place to manage the problems they have and access support services that can help.

Knowing that they are at a higher risk of developing dementia allows people with MCI to plan for the possibility that they may deteriorate in the future, to evaluate their support systems and to make important legal, financial and personal decisions such as appointing powers of attorney. They can also take steps to establish and maintain a healthy, active lifestyle, which might help delay cognitive decline.

People with MCI are more prone to developing psychiatric problems, such as depression and anxiety, and also to developing sleep disorders. They may also experience heightened stress and changes in personality and behaviour. While these things will not happen to everyone with MCI, it is important to treat them appropriately if they do occur.

Regular monitoring is critical since the course of cognitive changes with MCI will vary for each individual. Detection and monitoring of MCI allows dementia to be identified at an early stage if it does develop. This is important given that current treatments for dementia are most effective in the early stages of the condition. People can then also be assisted with information and support services to help them live with dementia and plan for their future needs.

As new treatments for dementia become available, it is likely that detection of MCI will become even more important. In addition, approaches to prevent dementia can be expected to be potentially helpful to those with MCI.

## References

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Thanks to Associate Professor Michael Woodward for reviewing this material

## Further Information

Dementia Australia offers support, information, education and counselling. Contact the National Dementia Helpline on **1800 100 500**, or visit our website at **[dementia.org.au](http://dementia.org.au)**



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