

## MILD COGNITIVE IMPAIRMENT (MCI)

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### What is MCI?

Memory loss has long been recognized as a common accompaniment of aging. The inability to recall the name of a recent acquaintance or the contents of a short shopping list are familiar experiences for everyone, and this experience seems to become more common as we age.

Over the last few decades, the medical community has changed its view of memory loss in the elderly. These problems were viewed in the past as inevitable accompaniments of aging, often referred to as “senility” or “senior moments.”

More recently, physicians have shifted their view of memory loss, such that memory impairment of a certain degree is now considered pathological, and thus indicative of some kind of disease process affecting the brain. The threshold most physicians use to make this judgment is that memory loss has progressed to such an extent that normal independent function is impossible; for instance, if one can no longer successfully manage one’s own finances or provide for one’s own basic needs. This degree of cognitive impairment has come to be referred to as dementia. Dementia has many potential causes, the most common of which is probably Alzheimer’s Disease.

However, many older individuals may complain of memory problems, but still manage to independently accomplish all their customary tasks. Usually, their ability to function well is based on compensation for these difficulties, such as increased reliance on a calendar or on reminder notes, lists, etc. In some cases, these memory difficulties are a sign that worsening memory loss is on the horizon.

Until recently, physicians were not able to provide any specific information concerning the significance of these complaints, or what they mean for the future. However, in the last few years, there has been a substantial increase in the number of clinical research studies focusing on patients with these complaints. Although much more work needs to be done, the characterization of this problem and its outcome is much better now than in the past. The syndrome of subjective memory problems has come to be commonly known as “Mild Cognitive Impairment” (MCI), although other terms have been used, including “Cognitive Impairment, Not Dementia” (CIND).

### Symptoms

The patient with MCI complains of difficulty with memory. Typically, the complaints include trouble remembering the names of people they met recently, trouble remembering the flow of a conversation, and an increased tendency to misplace things,

or similar problems. In many cases, the individual will be quite aware of these difficulties and will compensate with increased reliance on notes and calendars.

Most importantly, the diagnosis of MCI relies on the fact that the individual is able to perform all their usual activities successfully, without more assistance from others than they previously needed.

### **MCI vs. Normal Aging**

How do the memory difficulties in MCI differ from those of normal aging? This is a very difficult question to which there is, as yet, no definitive answer.

Several studies have examined the cognitive performance of patients with MCI. These have demonstrated that, in general, these patients perform relatively poorly on formal tests of memory, even when compared with other individuals in their age group. They also show mild difficulties in other areas of thinking, such as naming objects or people (coming up with the names of things) and complex planning tasks. These problems are similar, but less severe, than the neuropsychological findings associated with Alzheimer's disease.

Careful questioning has also revealed that, in some cases, mild difficulties with daily activities, such as performing hobbies, are evident.

### **Relationship between MCI and Dementia**

What is the significance of memory complaints in MCI? Recent studies have suggested that these types of complaints are more meaningful than previously thought.

Several studies have demonstrated that memory complaints in the elderly are associated with a higher-than-normal risk of developing dementia in the future. Most commonly, the type of dementia that patients with MCI are at risk to develop is Alzheimer's disease, though other dementias, such as Vascular Dementia or Frontotemporal Dementia may occur as well. However, it is also clear that some patients with these complaints never develop dementia.

Certain features are associated with a higher likelihood of progression. These include confirmation of memory difficulties by a knowledgeable informant (such as a spouse, child, or close friend), poor performance on objective memory testing, and any changes in the ability to perform daily tasks, such as hobbies or finances, handling emergencies, or attending to one's personal hygiene.

One factor that had to be controlled for in many of these studies was depression, as many patients with depression also complain about their memory. Several studies have suggested that certain measurements of atrophy (shrinkage) or decreased metabolism

on images of the brain (PET or MRI scans) increase the chances of developing dementia in the future.

Although these above factors increase the chances of going on to develop dementia, it is not possible currently to predict with certainty which patients with MCI will or will not go on to develop dementia. Thus, many of these measures, particularly the measurements from brain images, are still considered to be useful only for research.

### **Evaluation**

There is no established approach to evaluating individuals with MCI. At the UCSF Memory and Aging Center, these individuals undergo a thorough evaluation of their complaints, including a medical history, neurological exam and at least a brief neuropsychological evaluation. The medical history usually requires the participation of a knowledgeable informant.

Depending on the results of this evaluation, further testing may necessary, including blood-work and brain imaging. This evaluation is similar to that given to individuals with more severe memory problems, and is directed towards better defining the problem and looking for medical conditions that might have an effect on the brain (infections, nutritional deficiencies, autoimmune disorders, medication side effects, etc.). An important part of this process is screening for depression, particularly in individuals with mild memory complaints.

Although normal performance on neuropsychological testing does not guarantee that the individual will not develop dementia, the current data indicate that normal results are relatively reassuring, at least for the near future (next few years).

### **Treatment**

There is currently no specific treatment for MCI. Studies are in progress to investigate the usefulness of treatments for Alzheimer's disease, such as cholinesterase inhibitors and vitamin E, in preventing cognitive deterioration in patients with MCI, and the results of these studies should be available within the next couple of years.

In the future, new treatments being developed for Alzheimer's disease will likely be tried for patients with MCI as well. If any unusual causes of memory impairment are uncovered in the process of an evaluation, such as vitamin deficiency or thyroid disease, specific treatments should be instituted.

### **Recommendations for Elderly Patients with Memory Complaints**

A general recommendation for individuals concerned about their memory would be to discuss these concerns with their significant other (friend, spouse, child, etc.), as well as

their physician. Bringing the outside informant to the physician appointment is often very helpful in the evaluation process.

The medical evaluation of the problem should include a thorough exploration of the memory complaints, including what type of information is being forgotten and when, the duration of the problem, and whether other cognitive complaints are occurring (problems with organization, planning, visuospatial abilities, etc). The physician should be aware of the patient's medical history, the medications taken, etc. As subjective memory complaints can be associated with depression, screening for depressive symptoms is always warranted.

Additional assessment could include neuropsychological testing to document objectively any memory deficit and to assess its severity. Because the interpretation of neuropsychological testing in this setting is in part dependent on age and education, such testing should be performed by an individual familiar with the use and interpretation of these tests.

In addition, though no specific recommendations have been made regarding other testing, it would seem prudent to treat the diagnostic workup for patients with MCI as one would the workup for dementia, including screening for reversible causes of cognitive impairment.

### **Implications of a Diagnosis of MCI**

Many patients with MCI are actually already convinced that they have dementia. Being told that this is part of normal aging, as might have occurred in the past, is not necessarily reassuring.

The availability of a specific diagnosis for an individual's complaints endorses the validity of their observations, rather than denying them. Furthermore, it can be useful for patients to know that many people with MCI do not progress to dementia even after several years. However, the recognition that this complaint is associated with an increased risk of dementia should prompt an individual to evaluate their support systems (family, living situation) in preparation for the possibility that they may deteriorate in the future.

Lastly, as new medical interventions for Alzheimer's disease are developed in the future, these are likely to be tried on patients with MCI as well. If data from such trials indicates a beneficial effect in slowing cognitive decline, the importance of recognizing MCI and identifying it early will increase.