Dementia is an increasingly prominent health concern in the United States. Approximately 4 million Americans have dementia and, as the elderly population grows, that number will increase to up to 14 million by 2025 if no intervention to prevent, cure, or delay the onset of dementia is forthcoming. In addition to the devastating psychologic toll on both patient and family, dementia management is costly. For example, the average lifetime cost to the patient with Alzheimer’s disease (AD) is $174,000, and neither Medicare nor private health insurance covers the long-term care needed by many in the later stages of the disease. With so many afflicted in the United States, AD alone costs more than $100 billion to manage each year. Delaying the onset of AD could save $9 billion by 2007.

Recognizing fully developed dementia is not difficult, but the early stages are often characterized by symptoms commonly misidentified as “normal aging”—forgetfulness and mild disorientation. At what point do symptoms such as forgetting a person’s name and seemingly frequent misplacement of car keys constitute the first stages of a dementing illness, and not simply the pathophysiology of growing old? The American Medical Association distinguishes the characteristics of behavior typical of aging from behavior that indicates dementia (Table 1). A relatively recent phenomenon under investigation is the concept of “mild cognitive impairment (MCI).”

Mild cognitive impairment (MCI) is an important but not yet well-defined concept. During the past few decades, several researchers have attempted to define and identify those with memory or cognitive impairment, with or without functional impairment, due to aging, disease, or both. It is not possible to obtain reliable estimates on the prevalence of MCI, but it is clearly increasing as the number of elderly in our society grows. The most recent definition of MCI focuses on memory impairment and has been used to identify those at high risk of Alzheimer’s disease (AD). For those with MCI the conversion rate to AD appears to be 10% to 15% per year. This article briefly reviews the progress to date in defining MCI and the role it may play in identifying those at high risk of developing AD or any other type of dementia. The authors review guidelines from the American Academy of Neurology and other sources for the appropriate screening of older adults in a primary care practice. Although MCI is not yet a clearly defined clinical entity, identifying older adults with memory and/or cognitive impairment is an important clinical opportunity for 2 major reasons—recognizing a potential problem for which a patient and family members should plan, and alerting the physician to the need for regular monitoring of the patient’s cognitive function.

**ABSTRACT**

Mild cognitive impairment (MCI) is an important but not yet well-defined concept. During the past few decades, several researchers have attempted to define and identify those with memory or cognitive impairment, with or without functional impairment, due to aging, disease, or both. It is not possible to obtain reliable estimates on the prevalence of MCI, but it is clearly increasing as the number of elderly in our society grows. The most recent definition of MCI focuses on memory impairment and has been used to identify those at high risk of Alzheimer’s disease (AD). For those with MCI the conversion rate to AD appears to be 10% to 15% per year. This article briefly reviews the progress to date in defining MCI and the role it may play in identifying those at high risk of developing AD or any other type of dementia. The authors review guidelines from the American Academy of Neurology and other sources for the appropriate screening of older adults in a primary care practice. Although MCI is not yet a clearly defined clinical entity, identifying older adults with memory and/or cognitive impairment is an important clinical opportunity for 2 major reasons—recognizing a potential problem for which a patient and family members should plan, and alerting the physician to the need for regular monitoring of the patient’s cognitive function.

mend” (MCI). No consensus has yet developed on whether MCI is a distinct syndrome, a prodrome of dementia, or a normal manifestation of the aging process. Because there is no consensus on a definition, prevalence cannot be stated with certainty.

From clinical experience, physicians know there are aspects of medicine that are problematic for both the physician and the patient. These include emerging phenomena (eg, a syndrome or disease) for which research has not yet provided diagnostic criteria and treatment strategies, as well as conditions for which the boundaries between the normal and pathologic states have not been delineated; identifying these conditions is inherently challenging. The construct of MCI is a clear example of both, and places the patient, his or her loved ones, and the physician in difficult situations. This article presents our current understanding (including the gaps) of MCI and calls for future research into its diagnosis and treatment. MCI may ultimately be important to primary care practitioners because of its increasing prevalence in our society, its adverse effects on the quality of life and activities of daily living in those afflicted with it, and its potential to predict future AD or dementia.

**DEFINITIONS**

In 1962 Kral made the first attempt to distinguish between memory loss due to normal aging or depression, and memory loss that is the first sign of dementia; he used the phrase “benign senescent forgetfulness” to define the memory loss that accompanies aging or depression.4 Levy in 1994 and Crook et al in 1986 used the term “age-associated memory impairment” when they attempted to define and quantify the memory loss associated with aging. They defined the condition as a decline of at least 1 standard deviation (SD) below the mean on a memory test—where the comparison group was young adults. They also used the term “age-associated cognitive decline” to indicate they recognized that other cognitive domains, such as executive function and decision making, were involved.5,6

The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR)* defines age-related cognitive decline as “an objectively identified decline in cognitive functioning consequent to the aging process that is within normal limits given the person’s age.” This diagnosis notes problems with remembering names or appointments or difficulty in solving problems as examples of its manifestation. The *DSM-IV-TR* also notes that this diagnosis is made by exclusion, after other mental disorders or neurologic conditions have been eliminated as possible causes.7

**Cognitive Impairment, No Dementia**

While early researchers focused on quantifying the cognitive changes associated with normal aging, other groups were focusing on the cognitive decline associated with the dementias. Graham et al coined the more recent term “cognitive impairment, no dementia (CIND)” to describe cognitive impairment due to a wide array of causes—focal abnormalities, lifelong developmental disabilities, or psychiatric illnesses—but without dementia.8 Those who would currently be described as having MCI were included in this category. CIND is important clinically because prevalence in the elderly is about twice that of all the dementias combined, yet it remains a heterogeneous collection of disease states and therefore not useful for developing treatment strategies. The concept of CIND has the strength of not prematurely separating an individual into “normal” or “ill” groups, and of not prematurely attributing an etiology to the syndrome; CIND is clearly a “grab bag” of multiple syndromes and etiologies.

---

**Table 1. Distinguishing the Changes of Typical Aging From Dementia**

<table>
<thead>
<tr>
<th>Typical Aging</th>
<th>Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independence in daily activities preserved</td>
<td>Person becomes critically dependent on others for key independent-living activities</td>
</tr>
<tr>
<td>Complains of memory loss but able to provide considerable detail regarding incidents of forgetfulness</td>
<td>May complain of memory problems only if specifically asked; unable to recall instances where memory loss was noticed</td>
</tr>
<tr>
<td>Patient is more concerned about alleged forgetfulness than are close family members</td>
<td>Close family members much more concerned about incidents of memory loss than patient</td>
</tr>
<tr>
<td>Recent memory for important events, affairs; conversations not impaired</td>
<td>Notable decline in memory for recent events and ability to converse</td>
</tr>
<tr>
<td>Occasional word-finding difficulties</td>
<td>Frequent word-finding pauses and substitutions</td>
</tr>
<tr>
<td>Does not get lost in familiar territory; may have to pause momentarily to remember way</td>
<td>Gets lost in familiar territory while walking or driving; may take hours to eventually return home</td>
</tr>
<tr>
<td>Able to operate common appliances even if unwilling to learn how to operate new devices</td>
<td>Becomes unable to operate common appliances; unable to learn to operate even simple new appliances</td>
</tr>
<tr>
<td>Maintains prior level of interpersonal social skills</td>
<td>Exhibits loss of interest in social activities; exhibits socially inappropriate behaviors</td>
</tr>
<tr>
<td>Normal performance on mental status examinations, taking education and culture into account</td>
<td>Abnormal performance on mental status examination not accounted for by education or cultural factors</td>
</tr>
</tbody>
</table>

*Positive findings in any of these areas generally indicate the need for further assessment for the presence of dementia.*

Reprinted with permission from the AMA Dementia Guide: Guide to Diagnosis, Management, & Treatment of Dementia. American Medical Association; May 2004.2
CURRENT DEFINITION OF MCI

The most widely accepted current definition of MCI is that of Petersen et al, who define MCI as "the clinical condition between normal aging and AD, in which persons experience memory loss to a greater extent than one would expect for age, yet they do not meet currently accepted criteria for clinically probable AD."9 A subgroup, "amnestic MCI" is used by some experts in the field to emphasize the memory loss component of the decline in cognitive function. Criteria for amnestic MCI include: memory complaint, preferably corroborated by an informant; impaired memory function for age and education; preserved general cognitive function; intact activities of daily living; no dementia.9

Because a modest decline in most or all cognitive capacities appears to be a part of the natural aging process, one of the criticisms of earlier definitions is that the impairment is measured against norms from young populations instead of age-adjusted or even education-adjusted norms for the elderly. Some definitions, including the Petersen definition, require a memory complaint with no functional impairment, whereas others require a functional impairment. Thus, at present, the concept of MCI can be considered a consequence of normal aging, a distinct syndrome, a risk factor for dementia, or an early stage of dementia.

Burns and Zaudig recently described MCI as a “transitional stage between normal aging and dementia” that reflects the clinical situation of a person with memory complaints and objective evidence of cognitive impairment but no evidence of dementia.10 In a proposed spectrum, shown in the Figure, they assume that MCI is a precursor to AD, and indeed there is evidence to support this (discussed below). The spectrum begins with normal aging followed by asymptomatic AD, in which histopathologic changes (eg, neuritic plaques and neurofibrillary tangles) may be present without clinical symptoms. Continuing along the spectrum, patients may have subjective complaints of cognitive impairment, but it is only when the cognitive impairment can be objectively measured that the term “MCI” can be used.

According to the proposed spectrum, MCI can be further defined as mild, moderate, or severe; but what is “mild”? Some researchers have defined mild MCI as a score 1 SD below the mean score on a memory test—where the comparison group consisted of others in the same age group as the patient. However, a 1-SD difference implies that 66% of the population will score higher than the patient being tested, and one third will be identified as having MCI. On the other hand, what is “severe MCI” and how does it differ from dementia?

This author proposes that in general, normal aging, MCI, dementia, and AD can be differentiated based on the following parameters: a decline in cognitive abilities from a previous level, impairment in 2 or more areas of cognition, interference with functioning, and patient awareness of the impairment (Table 2).

EPIDEMIOLOGY

Given the multiple definitions for MCI, estimates of prevalence and incidence vary widely. Published, population-based studies of age-associated memory impairment offer prevalence rates of 17% to 34%.6,11-14 Clearly, these estimates vary based on the definition of the impairment used in each of the studies.

CLINICAL PRESENTATION

The patient with MCI (with or without functional impairment) usually will first present to the primary care physician with a complaint of forgetfulness or with a complaint from a family member that the patient repeats the same question or story several times, having no memory of the previous conversation. Along with excluding causes such as drug side effects, depression, psychosocial stress, or other concomitant medical conditions, this author strongly urges the physician to obtain corroborating reports from informants.

A recent case-control study by Tabert et al evaluated whether patients with memory impairment were aware of their functional deficits and whether self-reported or informant-
reported deficits predicted if the patient developed AD. The study team evaluated 107 patients who presented to a memory disorders clinic and their matched controls. The functional parameters assessed during the study included activities such as writing checks, paying bills, and keeping financial records; shopping alone; playing games of skill; making coffee or tea; preparing a balanced meal; keeping track of current events; remembering appointments, family occasions, and medication schedules; traveling out of the neighborhood; housekeeping; and using the telephone. Survival analyses showed that patients with more informant-reported deficits had a significantly greater likelihood of developing AD than those with more self-reported deficits. In other words, the discrepancy indicated the patient’s lack of awareness of his or her own functional deficits and strongly predicted that the patient would develop AD. This study also highlighted the unreliability of relying on self-reported functional difficulties when evaluating a patient.

PROGRESSION

Several studies have shown that memory impairment is an important predictor of AD. Most recently, Tuokko et al evaluated patients in the Canadian Study of Health and Aging. Their 5-year longitudinal follow-up of persons with CIND or no cognitive impairment showed that those with CIND had a higher conversion rate to dementia (47% vs 15%, respectively). Those with impaired memory, informant-reported change in memory, or functional impairment were more likely to become demented.

Another Canadian study evaluated the predictive value of a battery of neuropsychologic tests taken by patients thought to be at high risk of developing dementia. The patients’ primary care physicians referred them to the study because the patients had had at least 3 months of symptomatic memory problems that impaired functioning but had not been diagnosed with dementia illness. The investigators followed the patients for 2 years and approximately 20% progressed to dementia.

The Mayo Alzheimer’s Disease Registry followed 155 persons with MCI defined by the Petersen criteria and found that 12% converted to dementia each year. After 6 years, 80% of this group had developed dementia. Predictors of a more rapid decline included presence of the apolipoprotein E4 allele, poor performance on the cued recall test, and hippocampal atrophy on magnetic resonance image (MRI).

Finally, a 4-year follow-up of patients in the University of Washington Alzheimer’s Disease Patient Registry showed a 12% conversion rate to AD per year (50% at 4 years) for those who had isolated memory impairment but did not meet the criteria for dementia. No specific psychomotor test was able to predict conversion.

TREATMENT

Acetylcholinesterase Inhibitors and Investigational Agents. The most frequently used class of drugs for treating the cognitive deficits in dementia or AD, acetylcholinesterase inhibitors, is being studied in patients with MCI. Two studies have been published that evaluate other classes of drugs for treating patients with MCI: a dopamine receptor agonist (piribedil) and a modulator of AMPA-type glutamate receptors (ampakine CX516). Piribedil was compared with placebo in 30 patients with a Mini-Mental Status Examination (MMSE) score of 21 to 25. Study participants received 50 mg piribedil or placebo once daily for 90 days. The results show improvement in MMSE score at 90 days in 63.3% of the piribedil group vs 26.7% of the placebo group (P < .01). Although this is a small study and the patients were Indian (the authors noted that the MMSE has not been validated in Indians), the results suggest that additional studies with piribedil are warranted. The study of ampakine CX516 is under way; the rationale and study design have been published.

Estrogen Plus Progesterone. The Women’s Health Initiative (WHI) was a large, 40-center, randomized, placebo-controlled study comparing estrogen plus progesterone (E+P) vs placebo in almost 5000 women from diverse communities. The WHI Memory Study (WHIMS) is an ancillary study of the WHI that enrolled 4894 postmenopausal women aged 65 years or older from 39 of the 40 WHI centers. The WHIMS evaluated the effects of E+P on cognitive impairment and on the incidence of MCI and dementia. The results showed, after a median follow-up of 4.05 years, that E+P did not increase the incidence of MCI (hazard ratio 1.07; 95% confidence interval [CI], 0.74-1.55; P = 0.72) but neither did it protect against it. In contrast, taking E+P

Table 2. Levels of Cognitive Decline: From “Normal” Aging Through Alzheimer’s Disease

<table>
<thead>
<tr>
<th>“Normal” Aging</th>
<th>MCI</th>
<th>Dementia</th>
<th>AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 or 2 areas of decline common Not present</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
</tr>
<tr>
<td>Interference with function Not present</td>
<td>Not present</td>
<td>Present</td>
<td>Present</td>
</tr>
<tr>
<td>Patient aware of impairment</td>
<td>Complaints of decline common</td>
<td>Some criteria require this to be present</td>
<td>Not necessary to be present</td>
</tr>
</tbody>
</table>

MCI = mild cognitive impairment; AD = Alzheimer’s disease.
increased the incidence of dementia at a statistically significant level (hazard ratio 2.05; 95% CI, 1.21-3.48; \(P = .01\)). Overall, 61 women were diagnosed with probable dementia, of whom 66% (\(n = 40\)) were in the E+P group.

In a related component of this study, 4381 participants provided at least 1 valid cognitive function score. E+P did not improve cognitive function compared with placebo (mean follow-up of 4.2 years), and most women in the treatment group did not experience clinically relevant cognitive decline (ie, a decrease of \(\geq 2\) SDs in the MMSE score). Of those who did experience clinically relevant cognitive decline, more were in the E+P than in the placebo group (6.7% vs 4.8%, \(P = .008\)). Thus, E+P is clearly not useful for preventing or treating MCI.

**Cognitive Training.** Cognitive training interventions may reverse age-related declines in cognition. A study of 2832 volunteers aged 65 to 94 years (MMSE >22) compared 3 types of cognitive interventions (3 treatment groups) with a no-contact control group. Each treatment group received a different type of intervention—memory, reasoning, or speed of processing—in 10 small-group training sessions (60 to 75 minutes per session) during 5 to 6 weeks. After 11 months, a random sample (60% of the participants) received a booster program (4 additional sessions); the follow-up period was 2 years. The interventions led to modest benefits, improving the targeted cognitive functions immediately after treatment; these gains were enhanced in those who participated in the booster program. The modest benefits were maintained for 2 years, but no effects on everyday functioning were observed (Table 3). Thus, cognitive interventions appear to reverse age-related decline. The amount of cognitive function gained was equivalent to the amount that would have been lost with normal aging, but longer follow-up may be needed to see if these interventions benefit daily functioning.

**RECOMMENDATIONS FOR PRIMARY CARE CLINICIANS**

The American Medical Association (AMA), the US Preventive Services Task Force (USPSTF), the Canadian Task Force on Preventive Health Care, and the American Academy of Family Physicians (AAFP) have published guidelines stating there is insufficient evidence to formally recommend screening for cognitive deficits in asymptomatic individuals. However, the AMA and the AAFP recommend that physicians be alert for cognitive and functional decline in elderly patients.

**AMERICAN ACADEMY OF NEUROLOGY GUIDELINES**

The American Academy of Neurology (AAN) guidelines on the early detection of MCI state that "there were sufficient data to recommend the evaluation and clinical monitoring of persons with MCI due to their increased risk of developing dementia." The guidelines note that tools for assessing the degree of cognitive impairment, which can be used in populations with a high rate of MCI such as the elderly, include the MMSE, the Kokmen Short Test of Mental Status, the 7-Minute Screen, and the Memory Impairment Screen.

The AAN notes that these recommendations are based on a decline from the previous level of cognitive functioning, beyond what one would expect with normal aging (although they do not define precisely the level of decline with normal aging). The guidelines also state that cognitive decline may be affected by age, education, family history of dementia, genetic susceptibility, and depression. For example, the median scores for the MMSE vary dramatically by age and education level (Table 4).

**SCREENING FOR MCI**

**Research.** Incorporating screening for MCI into a primary care practice is challenging, as illustrated in a 3-year, population-based cohort study in Stockholm, Sweden, that evaluated procedures for identifying people who were in the preclinical phase of AD and dementia. They used a simple, 3-step procedure in the general population, assuming people would present first to a primary care physician. The procedure included self-report of memory complaints, tests of global cognitive functioning, and domain-specific cognitive tests. The main outcome measure was whether the patient had developed AD and dementia at 3 years.

Investigators assessed memory complaints with a single direct question: “Do you currently have any problems with your memory?” They used the MMSE to assess global cognitive impairment; and established that a score of 1 SD below age- and education-specific norms would be the definition of cognitive impairment. Neurologic testing of episodic memory, verbal fluency, and visuospatial skill were used to assess global cognitive functioning. They evaluated episodic memory by asking the patient for free recall of rapidly and slowly presented random words, and free and cued recall of words that could be

---

**Table 3. Effects on Cognition With Cognitive Training Interventions in Older Adults (% Showing Reliable Improvement)**

<table>
<thead>
<tr>
<th>Cognitive Training</th>
<th>Immediately</th>
<th>After 2 Years</th>
<th>(P)</th>
<th>No Booster</th>
<th>Booster</th>
<th>(P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory</td>
<td>26</td>
<td>23</td>
<td>&lt; .001</td>
<td></td>
<td>21</td>
<td>.044</td>
</tr>
<tr>
<td>Reasoning</td>
<td>74</td>
<td>49</td>
<td>&lt; .001</td>
<td>72</td>
<td></td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Speed</td>
<td>87</td>
<td>68</td>
<td>&lt; .001</td>
<td>92</td>
<td></td>
<td>&lt; .001</td>
</tr>
</tbody>
</table>

Data from: Ball K, et al.
organized into phrases. Verbal fluency was assessed by asking patients to produce a list of as many grocery items as possible in 60 seconds. Block design, clock setting, and clock reading tests evaluated visuospatial skills.

At 3 years, the 3-step procedure had positive predictive values of 85% to 100% (CI, 62% to 100%) for dementia, but none of the tests alone were sufficiently predictive. However, only 18% of those in the preclinical phase of dementia were identified using this 3-step procedure. This is not a surprising finding given that only about one half of patients in the preclinical phase of AD and dementia have memory complaints 3 years before diagnosis.31 Not surprisingly in the Swedish study, tests evaluating memory provided the most sensitive indicator of AD or dementia.

Clearly, the challenge for researchers is to find a method by which primary care physicians—in the context of very limited office time—can identify those at risk of developing AD or dementia. It is the author’s belief that no method now available has been shown to provide the positive and negative predictive values necessary to make a recommendation for widespread use in clinical practice.

**Recommendations.** Should screening for MCI be done in primary care practice? Until a clear definition of MCI exists, and until screening is demonstrated to have benefit by leading to treatment, diminished morbidity, or prevention, screening for MCI cannot be recommended. Although memory complaints are somewhat predictive of AD, the predictive value of memory complaints for MCI in nonselected samples—such as those seen in a typical practice—are unknown. Nonetheless, once treatment strategies are developed, being able to predict cognitive decline will be important, even though it will present significant ethical dilemmas. The benefits will include beginning treatment for dementia earlier than if it were detected through natural progression, helping patients and families prepare financially and legally for the ensuing illness (eg, power of attorney, driving, finances, long-term care planning), and improving the understanding of loved ones who are frustrated by the patient’s loss of cognitive function.

The author predicts that accurate methods for MCI screening will be developed. Until then, doctors should be familiar with the concept and diagnosis of MCI. There is general agreement that geriatric patients should receive screening and treatment for hypertension and dyslipidemia, both of which are risk factors for vascular and cerebrovascular disease. Preventing or controlling these risk factors offers numerous health benefits, one of which may be preventing dementia. Also, many studies have shown that physical, social, and mental activity may prevent dementia, but whether this will be true prospectively needs to be studied in well-designed clinical trials. Nevertheless, physicians should encourage their patients to pursue these activities, as they also offer other psychological and physical benefits.31-33

## CURRENT AND FUTURE RESEARCH

Researchers are seeking to improve the specificity of cognitive tests for identifying MCI and possible subtypes. Neuroimaging studies of patients with MCI are also under way to correlate changes in brain structures (eg, hippocampal atrophy) with early signs of dementia. Currently, the author and his colleagues are conducting the Memory and Medical Care Study (MMCS), an observational, longitudinal study of community residents aged 65 years or older.

The objectives of the study are to determine whether those meeting criteria for MCI or dementia have been assessed and diagnosed by their physicians, and whether the care they receive influences outcomes such as the likelihood and timing of nursing home placement, the development of noncognitive symptoms of dementia, expenditures for care, and quality of life.34 The results of this and similar longitudinal studies have the potential to determine whether identifying those with MCI can be done accurately, and whether adverse outcomes can be prevented or ameliorated with early identification.

### Table 4. Median Scores of Mini-Mental State Examination by Age and Education Level

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>4th Grade</th>
<th>8th Grade</th>
<th>High School</th>
<th>College</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 to 24</td>
<td>22</td>
<td>27</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>25 to 29</td>
<td>25</td>
<td>27</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>30 to 34</td>
<td>25</td>
<td>26</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>35 to 39</td>
<td>23</td>
<td>26</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>40 to 44</td>
<td>23</td>
<td>27</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>45 to 49</td>
<td>23</td>
<td>26</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>50 to 54</td>
<td>23</td>
<td>27</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>55 to 59</td>
<td>23</td>
<td>26</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>60 to 64</td>
<td>23</td>
<td>26</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>65 to 69</td>
<td>22</td>
<td>26</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>70 to 74</td>
<td>22</td>
<td>25</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>75 to 79</td>
<td>21</td>
<td>25</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>80 to 84</td>
<td>20</td>
<td>23</td>
<td>25</td>
<td>27</td>
</tr>
<tr>
<td>&gt; 84</td>
<td>19</td>
<td>23</td>
<td>26</td>
<td>27</td>
</tr>
</tbody>
</table>

Adapted with permission from Crum RM, Anthony JC, Bassett SS, Folstein MF. Population-based norms for the Mini-Mental State Examination by age and educational level. *JAMA* 1993;269:2386-2391.
Studies are needed to determine whether a diagnosis of MCI will have adverse effects.

**CONCLUSION**

Although MCI is not yet a clearly defined clinical entity, identifying older adults with definite memory and/or cognitive impairment is important for several reasons: it opens a potential therapeutic window, strengthens the physician-patient relationship, and allows the patient and family to distinguish between the causes of memory loss and cognitive dysfunction—usual aging, dementia, or an acute condition such as delirium. In the future it is likely that identifying MCI will be beneficial for the patient and the family, but this remains to be established empirically.

**REFERENCES**