Patient Profiles – Mild Cognitive Impairment (MCI) due to Alzheimer’s Disease (AD)

FROM DETECTION TO DIALOGUE
Practical examples of early-stage Alzheimer’s disease diagnosis

“\text{I go to work every day. I take care of my family. But I feel like I’m slipping. Is it just normal aging?}”

\textbf{MARK, 64 YEARS OLD}
High-functioning patient

\textbf{Detection:} If a patient or caregiver presents with concerns about a change in cognition, it’s recommended that the healthcare provider (HCP) review the cognitive history and focus on evidence of impairment in one or more cognitive domains. Patients with MCI due to AD will maintain functional abilities and not show signs of dementia.\textsuperscript{1,2}

\textbf{Examples of Cognitive Concerns}\textsuperscript{3}

- \textbf{Problems planning or understanding instructions}
- \textbf{Trouble with decision-making}
- \textbf{Poor judgment}
- \textbf{Confusion regarding time or place}
- \textbf{Forgetfulness about appointments or events}
- \textbf{Lack of focus}
For the diagnosis of MCI, American Academy of Neurology (AAN) guidelines recommend: If a patient or caregiver presents with a concern about memory or impaired cognition, HCPs should assess for MCI and not assume the concerns are related to normal aging.⁴

A High-Functioning Patient Suspects Cognitive Impairment

Mark*
64-year-old male
Difficulty learning new process in office; forgetting job details.

**OCCUPATION:** Contracting/construction  
**EDUCATION:** College degree  
**FAMILY HISTORY OF AD/DEMENTIA:** No

**INITIAL DIAGNOSIS:** Age-related memory loss  
**COMORBIDITIES:** Hypertension, hypercholesterolemia

**NEUROLOGICAL TESTS:** Within normal limits (WNL)  
**LABORATORY TESTS:** WNL

**MEDICATION:** Atorvastatin, amlodipine besylate-benazepril

*Not an actual patient. Patient profile provided for illustrative purposes only.

**Examples of Common Screening Tools**⁶⁻⁸

<table>
<thead>
<tr>
<th>Cognitive areas assessed</th>
<th>MMSE</th>
<th>MoCA</th>
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<tbody>
<tr>
<td>Orientation</td>
<td>• Orientation</td>
<td>• Orientation</td>
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<tr>
<td>Attention and concentration</td>
<td>• Attention and concentration</td>
<td>• Memory</td>
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<td>Language</td>
<td>• Language</td>
<td>• Executive functions</td>
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<tr>
<td>Visual construction</td>
<td>• Visual construction</td>
<td>• Conceptual thinking</td>
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<tr>
<td>Memory</td>
<td>• Memory</td>
<td>• Calculations</td>
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<thead>
<tr>
<th>Sensitivity for MCI detection</th>
<th>MMSE</th>
<th>MoCA</th>
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<tbody>
<tr>
<td>Less sensitive; patients with MCI may score as “normal”</td>
<td>More sensitive for detecting MCI</td>
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<table>
<thead>
<tr>
<th>Sensitivity for moderate or severe impairment</th>
<th>MMSE</th>
<th>MoCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate</td>
<td></td>
<td>May be too difficult in patients with moderate or severe cognitive impairment</td>
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<table>
<thead>
<tr>
<th>Administration time</th>
<th>MMSE</th>
<th>MoCA</th>
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<tbody>
<tr>
<td>10 min</td>
<td></td>
<td>10 min</td>
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<table>
<thead>
<tr>
<th>Scoring</th>
<th>MMSE</th>
<th>MoCA</th>
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<tbody>
<tr>
<td>Maximum of 30 points†</td>
<td>25 or above = normal cognitive function</td>
<td>Maximum of 30 points†</td>
</tr>
<tr>
<td>20 to 24 = mild dementia</td>
<td>26 or above = normal cognitive function</td>
<td>25 or lower = cognitive impairment; either MCI or dementia</td>
</tr>
<tr>
<td>13 to 20 = moderate dementia</td>
<td>12 or lower = severe dementia</td>
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†Cutoff varies with age and education.⁹
‡The raw score is adjusted by educational attainment (1 extra point for 10 to 12 years of formal education; 2 points added for 4 to 9 years of formal education).⁷

Other assessment tools include: GP-COG (General Practitioner Assessment of Cognition), Mini-Cog, ACE-R (Addenbrooke’s Cognitive Examination – Revised), Clock Drawing Test, 6-CIT (6-Item Cognitive Impairment Test), MIS (Memory Impairment Screen).⁶⁻⁷

MMSE=Mini-Mental State Examination; MoCA=Montreal Cognitive Assessment.

Brief cognitive assessments can provide evidence of impairment

**AAN guidelines recommend:** HCPs assessing cognitive impairment should use brief, validated cognitive assessment tools, in addition to eliciting a history of cognitive concerns, to build an accurate diagnosis and run tests to rule out other causes.⁴

Evidence of progressive cognitive decline is essential for accurate AD diagnosis and treatment. While no test represents a “gold standard,” use of brief cognitive assessment tools with appropriate patients can aid in the early identification of MCI due to AD and mild AD dementia. Screening assessments will vary based on clinical practice settings and patient response.¹,⁵
Evidence for the diagnosis of MCI due to AD

**DIAGNOSIS:**
MCI due to AD

**Cognitively Normal**

Aβ PET imaging can help distinguish the underlying cause of cognitive impairment

**MRI:**
Hippocampal atrophy, periventricular white matter hyperintensities

**FUNCTIONAL DEPENDENCE:**
Fully independent (FAQ=30/30)

**COGNITIVE ASSESSMENT:**
MMSE=28/30; at 6-month follow-up, patient restated complaints and reassessment was made; MoCA=25/30

To help differentiate the cause of cognitive decline, structural brain MRI may be used to rule out other systemic brain diseases (vascular, traumatic, medical).

Confirming disease pathology with biomarkers

Biomarkers of amyloid beta (Aβ) deposition can be used to help establish the underlying etiology of the clinical syndrome.

Once it is determined that the clinical syndrome is consistent with AD, but that the individual is not demented, the clinician can determine the primary cause. Biomarker tests that can detect Aβ help support the early detection of MCI due to AD by confirming abnormal pathophysiological changes related to Alzheimer’s disease.

The diagnostic value of AD as the cause of MCI provides the clinician an opportunity to intervene before greater neuronal damage occurs, and more cognition and function are lost.

Aβ biomarker tests include:
- Positron emission tomography (PET) imaging
- Cerebrospinal fluid (CSF) test

Measures of Aβ by CSF test and PET imaging are strongly and inversely correlated, reflecting Aβ deposition in the brain.

The earliest signs of Alzheimer’s disease present your earliest opportunity to intervene.

There is a limited window of time for intervention between MCI due to AD and AD dementia.15,16

Start a dialogue with your patient about MCI due to AD

Early diagnosis allows for individual management plans, including multi-domain non-pharmaceutical interventions that may potentially improve cognition.19,20

Alerting your patient or a caregiver about an MCI due to AD diagnosis can provide many benefits, including the potential to reduce patient anxiety by addressing their concerns about symptoms and allowing them to make informed decisions and plan for the future.20

TAKEN ACTION TODAY.

References: