

Patient Profiles – Alzheimer's disease (AD) at the mild cognitive impairment (MCI) stage

FROM DETECTION TO DIALOGUE

Practical examples of early-stage Alzheimer's disease diagnosis

COGNITIVE ASSESSMENT:

Elevated subjective memory complaints;
MoCA=25/30

STAGES OF AD PROGRESSION:

Preclinical

DIAGNOSIS:
MCI due to AD

Mild AD Dementia

Moderate AD Dementia

Severe AD Dementia

BIOMARKER CONFIRMATION:

Amyloid-positive



"I go to work. I take care of my family. But I'm forgetting things more often. Is it just normal aging?"

Mark, 64 years old | High-functioning patient

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

The path to care starts by recognizing symptoms of Alzheimer's disease

Symptoms of AD at the MCI stage may be subtle and could be mistaken for normal aging.¹

Examples of Cognitive Concerns²



**PROBLEMS PLANNING OR
UNDERSTANDING INSTRUCTIONS**



TROUBLE WITH DECISION-MAKING



POOR JUDGMENT



**CONFUSION REGARDING
TIME OR PLACE**



**CONSISTENT FORGETFULNESS
ABOUT IMPORTANT EVENTS**



**PERSISTENT DIFFICULTY
IN MAINTAINING FOCUS**

Diagnostic process in practice: Assessment of a high-functioning patient

Mark—64-year-old male

High-functioning individual, employed in the contracting field, reports difficulty learning



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

HISTORY:

Family history of AD/dementia: No

Patient reports: Missed appointments

Informant reports: Noticeable memory loss, repeats himself

Psychiatric symptoms: None

LAB TESTS:

Blood cell count, electrolytes, glucose, calcium, thyroid function, vitamin B₁₂, folate: Within Normal Range

COMORBIDITIES:

Hypertension (controlled)

COGNITIVE ASSESSMENT:

MCI-sensitive test conducted, MoCA=25/30



DIAGNOSIS: MCI. AD suspected.

Referred to specialist

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 since the memory issues may not be related to normal aging.³

Evidence of progressive cognitive decline is essential for accurate diagnosis in order to initiate a wide range of patient care.⁴

There are many cognitive assessment tools available with varying sensitivity and specificity for different stages of AD.⁵

Brief cognitive assessment tools can aid the early identification of the MCI or mild dementia stage of AD.⁴ Examples of MCI-sensitive neurocognitive tools include: MoCA, SLUMS, Cognigram, and CANTAB Mobile.^{5*}

HCP=healthcare professional; SLUMS=Saint Louis University Mental Status.

*This is not a comprehensive list of tools for assessing cognitive function and is not intended to recommend any particular tool.

Eisai and Cogstate have entered into a development and commercialization agreement. Biogen and Cambridge Cognition have entered into a development and commercialization agreement.

MCI. Alzheimer's disease suspected. Referred to specialist

Specialist examination 1 year after referral

NEUROLOGIC EXAM:

Normal with some mild bilateral upper-extremity action tremor

COGNITIVE ASSESSMENT:

Wechsler Memory Scale-Logical Memory (WMS-LM):
100% immediate recall, 69% delayed recall

FUNCTIONAL DEPENDENCE:

Informant report: Fully independent (3/30 on FAQ)

MAGNETIC RESONANCE IMAGING (MRI):

Hippocampal atrophy, periventricular white matter hyperintensities

BIOMARKER CONFIRMATION (CSF):

Amyloid-positive



The specialist role in AD assessment⁶

- Perform comprehensive cognitive and functional testing
- Perform structural imaging to rule out non-AD causes
- Help support an AD diagnosis with biomarker tests, such as PET or CSF
- Develop a personalized management and follow-up plan
- Direct the patient to additional support resources



DIAGNOSIS: Alzheimer's disease in the MCI stage

According to International Working Group (IWG) recommendations, a diagnosis of AD requires a clinical evaluation and confirmation of AD pathology via biomarkers.⁷

The diagnostic value of AD as the cause of MCI provides the clinician an opportunity to initiate patient care.⁸

Biomarker tests for amyloid beta and tau include⁷:

- Positron emission tomography (PET)
- Cerebrospinal fluid (CSF) analysis

Identifying the earliest signs of Alzheimer's disease presents your earliest opportunity to take action.

The time between MCI due to AD and AD dementia is limited.^{1,9}



DETECT

Listen for cognitive complaints, build a history, and look for the core clinical criteria of the mild cognitive impairment stage of AD^{1,10,11}



ASSESS

Use appropriate tools to confirm cognitive impairment. Rule out non-AD causes with a full workup, including lab tests and an MRI^{3,4}



CONFIRM

If AD is the suspected cause of clinically diagnosed MCI, consider referring to a specialist to confirm AD pathology via biomarker testing^{12,13}

Complete the Alzheimer's disease diagnosis with biomarkers.^{4,14}

Start a dialogue with your patient about the MCI stage of AD

Early diagnosis allows for individual management plans, including multi-domain non-pharmaceutical interventions that may temporarily potentially improve cognition.^{15,16}

Discussing the diagnosis of Alzheimer's disease in the MCI stage with your patient or a caregiver may provide many benefits, including the potential to address questions and provide an opportunity for them to make informed decisions and plan for the future.¹⁶

Detect early. Diagnose early.

References: 1. Alzheimer's Association. Alzheimer's Association Report: 2021 Alzheimer's disease facts and figures. *Alzheimers Dement.* 2021;17(3):327-406. 2. Mayo Clinic. Mild cognitive impairment. <https://www.mayoclinic.org/diseases-conditions/mild-cognitive-impairment/symptoms-causes/syc-20354578>. Accessed October 1, 2021. 3. Petersen RC, Lopez O, Armstrong MJ, et al. Practice guideline update summary: mild cognitive impairment: report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology. *Neurology.* 2018;90(3):126-135. 4. Albert MS, DeKosky ST, Dickson D, et al. The diagnosis of mild cognitive impairment due to Alzheimer's disease: recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease. *Alzheimers Dement.* 2011;7(3):270-279. 5. De Roeck EE, De Deyn PP, Dierckx E, Engelborghs S. Brief cognitive screening instruments for early detection of Alzheimer's disease: a systematic review. *Alzheimers Res Ther.* 2019;11(1):21. doi:10.1186/s13195-019-0474-3. 6. Porsteinsson AP, Isaacson RS, Knox S, Sabbagh MN, Rubino I. Diagnosis of early Alzheimer's disease: clinical practice in 2021. *J Prev Alzheimers Dis.* 2021;8(3):371-386. doi:10.14283/jpad.2021.23. 7. Dubois B, Villain N, Frisoni GB, et al. Clinical diagnosis of Alzheimer's disease: recommendations of the International Working Group. *Lancet Neurol.* 2021;20:484-496. 8. Jack CR Jr, Knopman DS, Jagust WJ, et al. Hypothetical model of dynamic biomarkers of the Alzheimer's pathological cascade. *Lancet Neurol.* 2010;9(1):119-128. 9. Wilson RS, Leurgans SE, Boyle PA, Bennett DA. Cognitive decline in prodromal Alzheimer disease and mild cognitive impairment. *Arch Neurol.* 2011;68(3):351-356. 10. Petersen RC. Mild cognitive impairment. *Continuum (Minneapolis).* 2016;22(2):404-418. 11. Langa KM, Levine DA. The diagnosis and management of mild cognitive impairment: a clinical review. *JAMA.* 2014;312(23):2551-2561. 12. Johnson KA, Minoshima S, Bohnen NI, et al. Appropriate use criteria for amyloid PET: a report of the Amyloid Imaging Task Force, the Society of Nuclear Medicine and Molecular Imaging, and the Alzheimer's Association. *Alzheimers Dement.* 2013;9(1):e1-e16. 13. Shaw LM, Arias J, Blennow K, et al. Appropriate use criteria for lumbar puncture and cerebrospinal fluid testing in the diagnosis of Alzheimer's disease. *Alzheimers Dement.* 2018;14(11):1505-1521. 14. McKhann GM, Knopman DS, Chertkow H, et al. The diagnosis of dementia due to Alzheimer's disease: recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease. *Alzheimers Dement.* 2011;7(3):263-269. 15. Ngandu T, Lehtisalo J, Solomon A, et al. A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): a randomised controlled trial. *Lancet.* 2015;385(9984):2255-2263. 16. Dubois B, Padovani A, Scheltens P, Rossi A, Dell'Agnello G. Timely diagnosis for Alzheimer's disease: a literature review on benefits and challenges. *J Alzheimers Dis.* 2016;49(3):617-631.

Patient Profiles – Alzheimer's disease (AD) at the mild dementia stage

FROM DETECTION TO DIALOGUE

Practical examples of early-stage Alzheimer's disease diagnosis

COGNITIVE ASSESSMENT:
 Elevated subjective memory complaints;
 MMSE*=24/30

**STAGES OF
 AD PROGRESSION:**

- Preclinical
- MCI due to AD
- DIAGNOSIS:
 Mild AD Dementia**
- Moderate AD Dementia
- Severe AD Dementia



BIOMARKER CONFIRMATION:
 Amyloid-positive



"I used to be the mother hen. I knew where everything was. I knew what everyone was doing. Now, I feel more lost every day."

Linda, 75 years old | Declining functionality

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

The path to care starts by recognizing symptoms of Alzheimer's disease

Symptoms of mild AD dementia interfere with daily functioning.¹

Examples of Cognitive Concerns^{2,3}



PROBLEMS PLANNING



DECREASED JUDGMENT



CONFUSION WITH TIME OR PLACE



DIFFICULTY WITH VISUAL AND SPATIAL RELATIONSHIPS



MEMORY LOSS



MOOD CHANGES



SOCIAL WITHDRAWAL



DIFFICULTY WITH FAMILIAR TASKS



LANGUAGE PROBLEMS

This is not an exhaustive list of all symptoms.
 MCI=mild cognitive impairment; MMSE=Mini-Mental State Examination.
 *MMSE is a registered trademark of Psychological Assessment Resources.

Diagnostic process in practice: Assessment of a patient with declining function

Linda—75-year-old female

Widow, former educator, with history of cognitive impairment and recent decline in functional independence



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

HISTORY:

Family history of AD/dementia: No

Patient reports: Increased memory loss, visuospatial issues

Informant reports: Loss of balance, needs to be accompanied

Psychiatric symptoms: Mild anxiety

LAB TESTS:

Blood cell count, electrolytes, glucose, calcium, thyroid function, vitamin B₁₂, folate: Within Normal Range

COMORBIDITIES:

Coronary artery disease and diabetes (controlled)

COGNITIVE ASSESSMENT:

Elevated subjective memory complaints; MMSE*=25/30



DIAGNOSIS: Mild dementia. AD suspected.

Referred to specialist

National Institute on Aging/ Alzheimer's Association (NIA-AA) Guidelines recommend:

Clinicians should assess for Alzheimer's disease and not assume the concerns are related to normal aging.^{4,5}

Evidence of progressive cognitive decline is essential for accurate diagnosis in order to initiate a wide range of patient care.⁶

There are many cognitive assessment tools available with varying sensitivity and specificity for different stages of AD.⁷

Brief cognitive assessment tools can aid the early identification of mild dementia. Examples of neurocognitive tools sensitive to dementia include: MoCA, SLUMS, MMSE,* Mini-Cog.^{6,7†}

MMSE=Mini-Mental State Examination; MoCA=Montreal Cognitive Assessment; SLUMS=Saint Louis University Mental Status.

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Mild Dementia. Alzheimer's disease suspected. Referred to specialist

Specialist examination 1 year after referral

NEUROLOGIC EXAM:

Difficulty with ideomotor praxis testing, like combing her hair, and some diminished balance

COGNITIVE ASSESSMENT:

MMSE*=24/30

FUNCTIONAL DEPENDENCE:

Informant report: Increased dependence (13/30 on FAQ). Dependent for financial matters; traveling out of neighborhood

MAGNETIC RESONANCE IMAGING (MRI):

Ventricular dilation, mild frontal and anterior temporal atrophy

BIOMARKER CONFIRMATION (CSF):

Amyloid- and tau-positive



The specialist role in AD assessment⁸

- Perform comprehensive cognitive and functional testing
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DIAGNOSIS: Alzheimer's disease at the mild dementia stage

According to International Working Group (IWG) recommendations, a diagnosis of AD requires a clinical evaluation and confirmation of AD pathology via biomarkers.⁹

The diagnostic value of AD as the cause of mild dementia provides the clinician an opportunity to initiate patient care.¹⁰

Biomarker tests for amyloid beta and tau include⁹:

- Positron emission tomography (PET)
- Cerebrospinal fluid (CSF) analysis

FAQ=Functional Activities Questionnaire.

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Identifying the earliest signs of Alzheimer's disease presents your earliest opportunity to take action.

The mild dementia stage still presents an opportunity to diagnose and manage the disease.^{3,6,11}



DETECT

Listen for cognitive complaints, build a history, and look for the core clinical criteria of the mild dementia stage of AD^{2,11}



ASSESS

Use appropriate tools to confirm cognitive impairment. Rule out non-AD causes with a full workup including lab tests and an MRI^{4,6}



CONFIRM

If AD is the suspected cause of clinically diagnosed mild dementia, consider referring to a specialist to confirm AD pathology via biomarker testing^{12,13}

Complete the Alzheimer's disease diagnosis with biomarkers.^{2,6}

Start a dialogue with your patient about Alzheimer's disease at the mild dementia stage

Early diagnosis allows for individual management plans, including multi-domain non-pharmaceutical interventions that may temporarily potentially improve cognition.^{14,15}

Discussing the diagnosis of Alzheimer's disease in the mild AD dementia stage with your patient or a caregiver may provide many benefits, including the potential to address questions and provide an opportunity for them to make informed decisions and plan for the future.¹⁵

Detect early. Diagnose early.

References: 1. Alzheimer's Association. Stages of Alzheimer's. <https://www.alz.org/alzheimers-dementia/stages>. Accessed October 1, 2021. 2. McKhann GM, Knopman DS, Chertkow H, et al. The diagnosis of dementia due to Alzheimer's disease: recommendations from the National Institute on Aging–Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease. *Alzheimers Dement*. 2011;7(3):263-269. 3. Alzheimer's Association. Alzheimer's Association Report: 2021 Alzheimer's disease facts and figures. *Alzheimers Dement*. 2021;17(3):327-406. 4. Petersen RC, Lopez O, Armstrong MJ, et al. Practice guideline update summary: mild cognitive impairment: report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology. *Neurology*. 2018;90(3):126-135. 5. Scharre DW. Preclinical, prodromal, and dementia stages of Alzheimer's disease. *Practical Neurology*. 2019 Jun;36-47. 6. Albert MS, DeKosky ST, Dickson D, et al. The diagnosis of mild cognitive impairment due to Alzheimer's disease: recommendations from the National Institute on Aging–Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease. *Alzheimers Dement*. 2011;7(3):270-279. 7. De Roeck EE, De Deyn PP, Dierckx E, Engelborghs S. Brief cognitive screening instruments for early detection of Alzheimer's disease: a systematic review. *Alzheimers Res Ther*. 2019;11(1):21. doi:10.1186/s13195-019-0474-3. 8. Porsteinsson AP, Isaacson RS, Knox S, Sabbagh MN, Rubino I. Diagnosis of early Alzheimer's disease: clinical practice in 2021. *J Prev Alzheimers Dis*. 2021;8(3):371-386. doi:10.14283/jpad.2021.23. 9. Dubois B, Villain N, Frisoni GB, et al. Clinical diagnosis of Alzheimer's disease: recommendations of the International Working Group. *Lancet Neurol*. 2021;20:484-496. 10. Jack CR Jr, Knopman DS, Jagust WJ, et al. Hypothetical model of dynamic biomarkers of the Alzheimer's pathological cascade. *Lancet Neurol*. 2010;9(1):119-128. 11. Petersen RC. Mild cognitive impairment. *Continuum (Minneapolis)*. 2016;22(2):404-418. 12. Johnson KA, Minoshima S, Bohnen NI, et al. Appropriate use criteria for amyloid PET: a report of the Amyloid Imaging Task Force, the Society of Nuclear Medicine and Molecular Imaging, and the Alzheimer's Association. *Alzheimers Dement*. 2013;9(1):e1-e16. 13. Shaw LM, Arias J, Blennow K, et al. Appropriate use criteria for lumbar puncture and cerebrospinal fluid testing in the diagnosis of Alzheimer's disease. *Alzheimers Dement*. 2018;14(11):1505-1521. 14. Ngandu T, Lehtisalo J, Solomon A, et al. A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): a randomised controlled trial. *Lancet*. 2015;385(9984):2255-2263. 15. Dubois B, Padovani A, Scheltens P, Rossi A, Dell'Agnello G. Timely diagnosis for Alzheimer's disease: a literature review on benefits and challenges. *J Alzheimers Dis*. 2016;49(3):617-631.