

# Genetic and Biomarker Testing for Alzheimer Disease



INDEPENDENT CARE HEALTH PLAN

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## Medicare Advantage Medical Coverage Policy

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#### Disclaimer

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## Related Medicare Advantage Medical/Pharmacy Coverage Policies

Aduhelm (aducanumab-avwa)

Genetic Testing

Genetic Testing for Diagnosis of Inherited Conditions

## Related Documents

Please refer to [CMS website](#) for the most current applicable National Coverage Determination (NCD)/Local Coverage Determination (LCD)/Local Coverage Article (LCA)/CMS Online Manual System/Transmittals.

Type	Title	ID Number	Jurisdiction Medicare	Applicable States/Territories
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Genetic and Biomarker Testing for Alzheimer Disease

			Administrative Contractors (MACs)	
NCD	Monoclonal Antibodies Directed Against Amyloid for the Treatment of Alzheimer's Disease (AD)	<a href="#">200.3</a>		
LCD	MolDX: Molecular Diagnostic Tests (MDT)	<a href="#">L36807</a>	J5, J8 - Wisconsin Physicians Service Insurance Corporation	IA, IN, KS, MI, MO, NE
LCA	Billing and coding: MolDX: ApoE Genotype	<a href="#">A55141</a>		
LCA	Billing and coding: MolDX: Molecular Diagnostic Tests (MDT)	<a href="#">A57772</a>		
LCD	MolDX: Repeat Germline Testing	<a href="#">L38429</a>		
LCA	Billing and coding: MolDX: Repeat Germline Testing	<a href="#">A57100</a>		
LCD	MolDX: Molecular Diagnostic Tests (MDT)	<a href="#">L36021</a>	J15 - CGS Administrators, LLC	KY, OH
LCA	Billing and coding: MolDX: ApoE Genotype	<a href="#">A54244</a>		
LCA	Billing and coding: MolDX: Molecular Diagnostic Tests (MDT)	<a href="#">A56973</a>		
LCD	MolDX: Repeat Germline Testing	<a href="#">L38288</a>		
LCA	Billing and coding: MolDX: Repeat Germline Testing	<a href="#">A57141</a>		
LCD	MolDX: Molecular Diagnostic Tests (MDT)	<a href="#">L35160</a>	JE - Noridian Healthcare Solutions, LLC	CA, HI, NV, American Samoa, Guam, Northern Mariana Islands
LCA	Billing and coding: MolDX: ApoE Genotype	<a href="#">A55094</a>		
LCA	Billing and coding: MolDX: Molecular Diagnostic Tests (MDT)	<a href="#">A57526</a>		

LCD	MolDX: Repeat Germline Testing	<a href="#">L38351</a>		
LCA	Billing and coding: MolDX: Repeat Germline Testing	<a href="#">A57331</a>		
LCD	MolDX: Molecular Diagnostic Tests (MDT)	<a href="#">L36256</a>		
LCA	Billing and coding: MolDX: ApoE Genotype	<a href="#">A55095</a>		
LCA	Billing and coding: MolDX: Molecular Diagnostic Tests (MDT)	<a href="#">A57527</a>	JF - Noridian Healthcare Solutions, LLC	AK, AZ, ID, MT, ND, OR, SD, UT, WA, WY
LCD	MolDX: Repeat Germline Testing	<a href="#">L38353</a>		
LCA	Billing and coding: MolDX: Repeat Germline Testing	<a href="#">A57332</a>		
LCD	MolDX: Molecular Diagnostic Tests (MDT)	<a href="#">L35025</a>		
LCA	Billing and coding: MolDX: ApoE Genotype	<a href="#">A53652</a>	JJ, JM - Palmetto GBA	AL, GA, NC, SC, TN, VA, WV
LCA	Billing and coding: MolDX: Molecular Diagnostic Tests (MDT)	<a href="#">A56853</a>		
LCD	MolDX: Repeat Germline Testing	<a href="#">L38274</a>		
LCA	Billing and coding: MolDX: Repeat Germline Testing	<a href="#">A58017</a>		

## Description

Alzheimer disease (AD) is the most common form of dementia. It is a neurologic condition characterized by loss of mental ability severe enough to interfere with normal activities of daily living, lasting at least 6 months and not present from birth. AD usually occurs in adulthood and is marked by a decline in cognitive functions such as remembering, reasoning and planning.

Molecular biomarkers such as beta-amyloid (A $\beta$ ) and Tau proteins may be detected through cerebrospinal fluid (CSF). Other proposed methods for collecting biomarkers for AD diagnosis and screening include plasma and skin biopsy.

Genetic testing has also been proposed to aid in the diagnosis of a type of AD known as early-onset familial AD (EOFAD). EOFAD is a rare form of AD in which onset occurs at 30 to 60 years of age. Most cases are caused by a pathogenic variant in one of three known genes: *APP*, *PSEN1*, *PSEN2*.

### Coverage Determination

*iCare follows the CMS requirement that only allows coverage and payment for services that are reasonable and necessary for the diagnosis or treatment of illness or injury or to improve the functioning of a malformed body member except as specifically allowed by Medicare.*

*Genetic tests must demonstrate clinical utility, analytical and clinical validity and fulfill the CMS “reasonable and necessary” criteria. Analytic validity (test accurately identifies the gene variant), clinical validity (test identifies or predicts the clinically defined disorder) and clinical utility (test measurably improves clinical outcomes) of the genetic test is supported by generally accepted standards that are based on credible scientific evidence published in peer-reviewed medical literature generally recognized by the relevant medical community, specialty society recommendations, and views of physicians practicing in relevant clinical areas. The test must be ordered by a physician who is treating the beneficiary and the results will be used in the management of a beneficiary’s specific medical problem.*

*For jurisdictions with no Medicare guidance, iCare will utilize the [MolDX program](#) and Technical Assessments for molecular assays as the standard to evaluate clinical utility, analytical and clinical validity in conjunction with adhering to Medicare’s reasonable and necessary requirement.*

*In interpreting or supplementing the criteria above and in order to determine medical necessity consistently, iCare may consider the following criteria:*

**CSF testing for A $\beta$  and Tau proteins** will be considered medically reasonable and necessary when treatment with an US Food & Drug Administration (FDA) approved A $\beta$  monoclonal antibody drug (eg, lecanemab [Leqembi]) is being considered.<sup>35</sup>

**DNA analysis for APOE epsilon 4 allele (APOE  $\epsilon$ 4) for AD** will be considered medically reasonable and necessary when treatment with an FDA approved A $\beta$  monoclonal antibody drug (eg, lecanemab [Leqembi]) is being considered.<sup>35</sup>

*The use of the criteria in this Medicare Advantage Medical Coverage Policy provides clinical benefits highly likely to outweigh any clinical harms. Services that do not meet the criteria above are not medically necessary and thus do not provide a clinical benefit. Medically unnecessary services carry risks of adverse outcomes and may interfere with the pursuit of other treatments which have demonstrated efficacy.*

## Coverage Limitations

[US Government Publishing Office. Electronic code of federal regulations: part 411 – 42 CFR § 411.15 - Particular services excluded from coverage](#)

The following test types are examples of testing services that may not be considered a benefit (statutory excluded) and denied as Medicare excluded tests:<sup>45</sup>

- Tests considered screening in the absence of clinical signs and symptoms of disease that are not specifically identified by the law; **OR**
- Tests that confirm a diagnosis or known information; **OR**
- Tests to determine risk for developing a disease or condition; **OR**
- Tests performed to measure the quality of a process; **OR**
- Tests without diagnosis specific indications; **OR**
- Tests identified as investigational by available literature and/or the literature supplied by the developer and are not a part of a clinical trial

These treatments and services fall within the Medicare program's statutory exclusion that prohibits payment for items and services that have not been demonstrated to be reasonable and necessary for the diagnosis and treatment of illness or injury (§1862(a)(1) of the Act). Other services/items fall within the Medicare program's statutory exclusion at 1862(a)(12), which prohibits payment.

Genetic tests that have not demonstrated clinical utility, analytical and clinical validity via the [MoIDX Program](#) will not be considered medically reasonable and necessary. A review of the current medical literature shows that the evidence is insufficient to determine that these services are standard medical treatments. There remains an absence of randomized, blinded clinical studies examining benefit and long-term clinical outcomes establishing the value of these services in clinical management.

**Biomarker testing for AD** is considered not medically reasonable or necessary for any indications other than those listed above including, but may not be limited to:

- CSF testing for alpha-Synuclein (eg, SYNTap biomarker test); **OR**
- Plasma testing for any of the following:
  - A $\beta$  and/or Tau proteins
    - A $\beta$  peptide testing (eg, SOBA-AD assay)
    - A $\beta$ 42/40 ratio and APOE proteotype assay (eg, PrecivityAD [0412U])
    - A $\beta$ 42/40 ratio and p-Tau217 ratio (eg, PrecivityAD2)
    - A $\beta$ 42/40 ratio testing (eg, Quest AD-Detect [0346U])
    - P-Tau181 and APOE  $\epsilon$ 4 assay (eg, Elecsys Amyloid Plasma Panel)

- p-Tau181 testing (eg, LucentAD)
- U-p53AZ (AZ 284) biomarker testing (eg, AlzoSure Predict test); **OR**
- Skin biopsy (eg, DISCERN test [0206U and 0207U], Syn-One test)

A review of the current medical literature shows that the evidence is insufficient to determine that these tests are standard medical treatment for these indications. There remains an absence of randomized, blinded clinical studies examining benefit and long-term clinical outcomes establishing the value of this service in clinical management for these indications.

**Genetic testing for AD** is considered not medically reasonable or necessary for any indications other than those listed above including but may not be limited to, *APOE* genotyping.<sup>11,12,13,14,15</sup> A review of the current medical literature shows that the evidence is insufficient to determine that this service is standard medical treatment for these indications. There remains an absence of randomized, blinded clinical studies examining benefit and long-term clinical outcomes establishing the value of this service in clinical management for these indications.

### Summary of Evidence

#### **Genetic Testing for AD**

Effective April 7, 2022, CMS provides national coverage for FDA approved [monoclonal antibodies directed against amyloid for the treatment of Alzheimer's disease \(AD\)](#) when furnished in accordance with Section B under coverage with evidence development (CED) for an individual who has a clinical diagnosis of mild cognitive impairment (MCI) due to AD or mild AD dementia, both with confirmed presence of amyloid beta pathology consistent with AD.<sup>35</sup>

There are several widely investigated biomarkers for the molecular and degenerative process of AD that can be supportive of a diagnosis of AD but are not yet recommended for routine diagnostic purposes. Plasma biomarkers (eg, SOBA-AD assay, Quest AD-Detect) show promise but do not currently have an established role in clinical practice; more studies are needed. Decreased APOE and APOE ε4 plasma levels (eg, Elecsys amyloid plasma panel, PrecivityAD) as well as a variety of other plasma/serum and CSF proteins (eg, AlzoSure Predict test, LucentAD, PrecivityAD2, SYNTap biomarker test) have been assessed for predictive value for AD in persons without dementia and in patients with MCI. Ongoing research is investigating the role of such biomarkers that may help distinguish AD from other forms of dementia.<sup>47</sup>

### **Coding Information**

Any codes listed on this policy are for informational purposes only. Do not rely on the accuracy and inclusion of specific codes. Inclusion of a code does not guarantee coverage and/or reimbursement for a service or procedure.

CPT® Code(s)	Description	Comments
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81401	MOLECULAR PATHOLOGY PROCEDURE LEVEL 2	
81405	MOLECULAR PATHOLOGY PROCEDURE LEVEL 6	
81406	MOLECULAR PATHOLOGY PROCEDURE LEVEL 7	
82172	Apolipoprotein, each	
82542	Column chromatography, includes mass spectrometry, if performed (eg, HPLC, LC, LC/MS, LC/MS-MS, GC, GC/MS-MS, GC/MS, HPLC/MS), non-drug analyte(s) not elsewhere specified, qualitative or quantitative, each specimen	
83520	Immunoassay for analyte other than infectious agent antibody or infectious agent antigen; quantitative, not otherwise specified	
0206U	Neurology (Alzheimer disease); cell aggregation using morphometric imaging and protein kinase C-epsilon (PKCe) concentration in response to amylospheroid treatment by ELISA, cultured skin fibroblasts, each reported as positive or negative for Alzheimer disease	
0207U	Neurology (Alzheimer disease); quantitative imaging of phosphorylated ERK1 and ERK2 in response to bradykinin treatment by in situ immunofluorescence, using cultured skin fibroblasts, reported as a probability index for Alzheimer disease (List separately in addition to code for primary procedure)	
0289U	Neurology (Alzheimer disease), mRNA, gene expression profiling by RNA sequencing of 24 genes, whole blood, algorithm reported as predictive risk score	
0346U	Beta amyloid, A $\beta$ 40 and A $\beta$ 42 by liquid chromatography with tandem mass spectrometry (LC-MS/MS), ratio, plasma	
0358U	Neurology (mild cognitive impairment), analysis of $\beta$ -amyloid 1-42 and 1-40, chemiluminescence enzyme immunoassay, cerebral spinal fluid, reported as positive, likely positive, or negative	
0412U	Beta amyloid, A $\beta$ 42/40 ratio, immunoprecipitation with quantitation by liquid chromatography with tandem mass spectrometry (LC-MS/MS) and qualitative ApoE isoform-specific proteotyping, plasma combined with age, algorithm reported as presence or absence of brain amyloid pathology	
<b>CPT® Category III Code(s)</b>	<b>Description</b>	<b>Comments</b>
No code(s) identified		
<b>HCPCS Code(s)</b>	<b>Description</b>	<b>Comments</b>

No code(s) identified

## References

1. Alawode DT, Heslegrave AJ, Ashton NJ, *et al.* Transitioning from cerebrospinal fluid to blood tests to facilitate diagnosis and disease monitoring in Alzheimer's disease. *J Intern Med.* 2021;290(3):583-601.
2. Alzheimer's Association. First practice guidelines for clinical evaluation of Alzheimer's disease and other dementias for primary and specialty care. <https://alz.org>. Published July 22, 2018. Accessed July 6, 2023.
3. Alzheimer's Association. Introduction to the recommendations from the National Institute on Aging and the Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease. <https://alz.org>. Published April 2011. Accessed July 7, 2023.
4. Alzheimer's Association. The diagnosis of dementia due to Alzheimer's disease: recommendations from the National Institute on Aging and the Alzheimer's Association workgroup. <https://alz.org>. Published April 2011. Accessed July 7, 2023.
5. Alzheimer's Association. The diagnosis of mild cognitive impairment due to Alzheimer's disease: recommendations from the National Institute on Aging and Alzheimer's Association workgroup. <https://alz.org>. Published April 2011. Accessed July 7, 2023.
6. American Academy of Neurology (AAN). Practice guideline update summary: mild cognitive impairment. Report of the Guideline Development, Dissemination, and Implementation Subcommittee of the American Academy of Neurology. <https://www.aan.com>. Published January 16, 2018. Accessed July 7, 2023.
7. American Academy of Neurology (AAN). Special Article. Aducanumab use in symptomatic Alzheimer disease evidence in focus. A report of the AAN guidelines subcommittee. <https://www.aan.com>. Published April 12, 2022. Accessed July 7, 2023.
8. American College of Medical Genetics and Genomics (ACMG). Consensus statement on use of apolipoprotein e testing for Alzheimer disease. American College of Medical Genetics/American Society of Human Genetics Working Group on ApoE and Alzheimer Disease. <https://www.acmg.net>. Published 1995. Accessed July 7, 2023.
9. American College of Medical Genetics and Genomics (ACMG). Genetic counseling and testing for Alzheimer disease: joint practice guidelines of the American College of Medical Genetics and the National Society of Genetic Counselors. <https://www.acmg.net>. Published June 2011. Accessed July 7, 2023.



10. American Psychiatric Association (APA). Practice guideline for the treatment of patients with Alzheimer's disease and other dementias. <https://www.psych.org>. Published October 2007. Accessed July 7, 2023.
11. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: ApoE genotype (A53652). <https://www.cms.gov>. Published October 1, 2015. Updated August 31, 2023. Accessed October 10, 2023.
12. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: ApoE genotype (A54244). <https://www.cms.gov>. Published October 1, 2015. Updated August 31, 2023. Accessed October 10, 2023.
13. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: ApoE genotype (A55094). <https://www.cms.gov>. Published October 10, 2016. Updated August 31, 2023. Accessed October 10, 2023.
14. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: ApoE genotype (A55095). <https://www.cms.gov>. Published October 10, 2016. Updated August 31, 2023. Accessed October 10, 2023.
15. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: ApoE genotype (A55141). <https://www.cms.gov>. Published February 16, 2017. Updated August 31, 2023. Accessed October 10, 2023.
16. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: molecular diagnostic tests (MDT) (A56853). <https://www.cms.gov>. Published August 15, 2019. Updated October 1, 2023. Accessed October 10, 2023.
17. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: molecular diagnostic tests (MDT) (A56973). <https://www.cms.gov>. Published September 5, 2019. Updated October 1, 2023. Accessed October 10, 2023.
18. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: molecular diagnostic tests (MDT) (A57526). <https://www.cms.gov>. Published November 1, 2019. Updated October 1, 2023. Accessed October 10, 2023.
19. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: molecular diagnostic tests (MDT) (A57527). <https://www.cms.gov>. Published November 1, 2019. Updated October 1, 2023. Accessed October 10, 2023.
20. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: molecular diagnostic tests (MDT) (A57772). <https://www.cms.gov>. Published November 1, 2019. Updated July 1, 2023. Accessed October 10, 2023.

21. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: repeat germline testing (A57100). <https://www.cms.gov>. Published June 14, 2020. Updated July 1, 2023. Accessed October 10, 2023.
22. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: repeat germline testing (A57141). <https://www.cms.gov>. Published May 31, 2020. Updated July 1, 2023. Accessed October 10, 2023.
23. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: repeat germline testing (A57331). <https://www.cms.gov>. Published August 3, 2020. Updated July 1, 2023. Accessed October 10, 2023.
24. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: repeat germline testing (A57332). <https://www.cms.gov>. Published August 3, 2020. Updated July 1, 2023. Accessed October 10, 2023.
25. Centers for Medicare & Medicaid Services (CMS). Local Coverage Article (LCA). Billing and coding: MoIDX: repeat germline testing (A58017). <https://www.cms.gov>. Published May 31, 2020. Updated July 1, 2023. Accessed October 10, 2023.
26. Centers for Medicare & Medicaid Services (CMS). Local Coverage Determination (LCD). MoIDX: molecular diagnostic tests (MDT) (L35025). <https://www.cms.gov>. Published October 1, 2015. Updated May 4, 2023. Accessed October 9, 2023.
27. Centers for Medicare & Medicaid Services (CMS). Local Coverage Determination (LCD). MoIDX: molecular diagnostic tests (MDT) (L35160). <https://www.cms.gov>. Published October 1, 2015. Updated May 4, 2023. Accessed October 9, 2023.
28. Centers for Medicare & Medicaid Services (CMS). Local Coverage Determination (LCD). MoIDX: molecular diagnostic tests (MDT) (L36021). <https://www.cms.gov>. Published October 1, 2015. Updated May 4, 2023. Accessed October 9, 2023.
29. Centers for Medicare & Medicaid Services (CMS). Local Coverage Determination (LCD). MoIDX: molecular diagnostic tests (MDT) (L36256). <https://www.cms.gov>. Published October 1, 2015. Updated May 4, 2023. Accessed October 9, 2023.
30. Centers for Medicare & Medicaid Services (CMS). Local Coverage Determination (LCD). MoIDX: molecular diagnostic tests (MDT) (L36807). <https://www.cms.gov>. Published February 16, 2017. Updated April 27, 2023. Accessed October 9, 2023.
30. Centers for Medicare & Medicaid Services (CMS). Local Coverage Determination (LCD). MoIDX: repeat germline testing (L38274). <https://www.cms.gov>. Published May 31, 2020. Updated December 30, 2021. Accessed October 9, 2023.

31. Centers for Medicare & Medicaid Services (CMS). Local Coverage Determination (LCD). MoIDX: repeat germline testing (L38288). <https://www.cms.gov>. Published June 7, 2020. Updated November 24, 2022. Accessed October 9, 2023.
32. Centers for Medicare & Medicaid Services (CMS). Local Coverage Determination (LCD). MoIDX: repeat germline testing (L38351). <https://www.cms.gov>. Published August 3, 2020. Updated December 30, 2021. Accessed October 9, 2023.
33. Centers for Medicare & Medicaid Services (CMS). Local Coverage Determination (LCD). MoIDX: repeat germline testing (L38353). <https://www.cms.gov>. Published August 3, 2020. Updated December 30, 2021. Accessed October 9, 2023.
34. Centers for Medicare & Medicaid Services (CMS). Local Coverage Determination (LCD). MoIDX: repeat germline testing (L38429). <https://www.cms.gov>. Published June 14, 2020. Updated December 30, 2021. Accessed October 9, 2023.
35. Centers for Medicare & Medicaid Services (CMS). National Coverage Determination (NCD). Monoclonal antibodies directed against amyloid for the treatment of Alzheimer's disease (AD) (200.3). <https://www.cms.gov>. Published April 7, 2022. Accessed October 9, 2023.
36. ECRI Institute. Genetic Test Assessment. Abeta42 and pTau181 biomarker cerebrospinal fluid-based assays for aiding diagnosis of Alzheimer's disease. <https://www.ecri.org>. Published January 18, 2023. Accessed June 23, 2023.
37. ECRI Institute. Genetic Test Assessment. Cerebrospinal fluid-based assays for aiding diagnosis of Alzheimer's disease. <https://www.ecri.org>. Published December 31, 2022. Accessed June 23, 2023.
38. ECRI Institute. Genetic Test Assessment. PrecivityAD test (C<sub>2</sub>N Diagnostics, LLC) for aiding Alzheimer's disease diagnosis. <https://www.ecri.org>. Published February 1, 2021. Accessed June 23, 2023.
39. Hayes, Inc. Clinical Utility Evaluation. *APOE* genetic testing for Alzheimer disease. <https://evidence.hayesinc.com>. Published May 2, 2018. Updated March 18, 2022. Accessed June 23, 2023.
40. Hayes, Inc. Clinical Utility Evaluation. Genetic testing for *APP*, *PSEN1*, and *PSEN2* for early-onset Alzheimer disease. <https://evidence.hayesinc.com>. Published April 2, 2018. Updated March 18, 2022. Accessed June 23, 2023.
41. Hayes, Inc. Evolving Evidence Review. Aduhelm (aducanumab) for early-stage/mild Alzheimer disease. <https://evidence.hayesinc.com>. Published June 17, 2022. Updated June 27, 2023. Accessed July 8, 2023.
42. MCG Health. Alzheimer disease (early onset) – *APP*, *PSEN1*, and *PSEN2* genes. 27<sup>th</sup> edition. <https://www.mcg.com>. Accessed June 23, 2023.

43. MCG Health. Alzheimer disease (late onset) – APOE genotyping. 27<sup>th</sup> edition. <https://www.mcg.com>. Accessed June 23, 2023.
44. National Center for Biotechnology Information (NCBI). Genetic Testing Registry. Alzheimer’s disease overview. <https://www.ncbi.nlm.nih.gov>. Published October 23, 1998. Updated December 20, 2018. Accessed July 7, 2023.
45. Palmetto GBA. Molecular diagnostic program (MoIDX®): coverage, coding, and pricing standards and requirements (M00106). <https://www.palmettogba.com/MoIDX>. Published December 2019. Accessed September 27, 2023.
46. Testing.com: for health professionals. APOE genotyping, Alzheimer disease. <https://www.testing.com>. Updated November 9, 2021. Accessed July 7, 2023.
47. UpToDate, Inc. Clinical features and diagnosis of Alzheimer disease. <https://www.uptodate.com>. Updated May 2023. Accessed June 23, 2023.
48. UpToDate, Inc. Epidemiology, pathology and pathogenesis of Alzheimer disease. <https://www.uptodate.com>. Updated May 2023. Accessed June 23, 2023.
49. UpToDate, Inc. Evaluation of cognitive impairment and dementia. <https://www.uptodate.com>. Updated May 2023. Accessed June 23, 2023.
50. UpToDate, Inc. Genetics of Alzheimer disease. <https://www.uptodate.com>. Updated May 2023. Accessed June 23, 2023.
51. UpToDate, Inc. Mild cognitive impairment: prognosis and treatment. <https://www.uptodate.com>. Updated May 2023. Accessed June 23, 2023.
52. UpToDate, Inc. Treatment of Alzheimer disease. <https://www.uptodate.com>. Updated May 2023. Accessed June 23, 2023.
53. US Preventive Services Task Force (USPSTF). Cognitive impairment in older adults: screening. <https://www.uspreventiveservicestaskforce.org>. Published February 2020. Accessed July 7, 2023.

## Change Summary

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