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Patient Guide



Understand Your Test Results: *APOE* Add-On

This guide walks you through your *APOE* Add-On test results and what they may mean for your health.

Results Overview

This test looks at your *APOE* gene to see which of 3 common types you got from each parent: ε2, ε3, or ε4. Because you got a copy from each parent, your result will be 1 of 6 combinations: ε2/ε2, ε2/ε3, ε2/ε4, ε3/ε3, ε3/ε4, ε4/ε4. Your result is linked to a decreased, average, or increased risk of late-onset Alzheimer's disease.

Your result is not a diagnosis. Talking with your healthcare provider or a genetic counselor can help you understand what it means for you and your family.

Three Types of Results

- **Decreased Risk** (ε2/ε2, ε2/ε3)
  Your chance of Alzheimer's is lower than average.
- **Average Risk** (ε3/ε3)
  Your chance is about the same as most people's.
- **Increased Risk** (ε2/ε4, ε3/ε4, ε4/ε4)
  Your chance of Alzheimer's is higher than average.

Test Results Walkthrough

EXAMPLE RESULT: INCREASED RISK (ε4/ε4)

APOE GENOTYPING — ALZHEIMER'S DISEASE & CARDIOVASCULAR RISK

1 **Increased Risk**

Two copies of the *APOE* ε4 allele were detected. This genotype is associated with an increased lifetime risk of late-onset Alzheimer's disease compared to the general population.

GENE	2 GENOTYPE	3 ALLELE 1	3 ALLELE 2	RISK CATEGORY
APOE	ε4/ε4	ε4 (R130, R176)	ε4 (R130, R176)	Increased

4 **CLINICAL INFORMATION**

This test found two copies of the *APOE* ε4 gene variant, a genotype written as ε4/ε4. The *APOE* gene tells the body how to make a protein called apolipoprotein E, which helps move fats like cholesterol through the blood and is especially important in the brain. About 2 to 3 in 100 people have it.

Alzheimer's Disease Risk

Having two copies of *APOE* ε4 is associated with the highest known lifetime risk of late-onset Alzheimer's disease among the common *APOE* genotypes. Risk is estimated at approximately 50 to 60% by age 85, compared to the general population risk of approximately 10 to 15% (PMID: 21556001). This result is also associated with an earlier average age of symptom onset.

APOE ε4 is thought to increase risk in part by reducing the brain's clearance of amyloid-beta protein, though the biology is not fully understood; ε4-associated risk estimates are based mostly on studies of people of European ancestry and may vary by ancestry (PMID: 30517106).

Importantly, ε4/ε4 status is not diagnostic and does not guarantee that a person will develop Alzheimer's disease; risk is also

1 RESULT SUMMARY
Your risk group (Decreased, Average, or Increased), with a short sentence comparing your risk to the general population.

2 GENOTYPE
Your two types of *APOE*, one from each parent. ε4/ε4 means you got ε4 from both parents.

3 ALLELES
Each copy of *APOE* is called an allele. The codes in parentheses, like R130 and R176, are lab details that show which type each copy is.

4 CLINICAL INFORMATION
What your result means for your Alzheimer's risk, your cholesterol and heart health, and your family. Next steps and a table of all 6 results are on page 2 of your report.

What Each Result Means

There are 6 possible results. Your result is highlighted in your report.

Result	Risk	What it means	Estimated chance of Alzheimer's by age 85
ε2/ε2	Decreased	You're at the lowest risk.	Below average
ε2/ε3	Decreased	You're at slightly lower risk than average.	Slightly lower than average
ε3/ε3	Average	You're at average risk. This is the most common result.	~10–15%[2,4]
ε2/ε4	Increased	You're at slightly higher risk than average.	Slightly higher than average
ε3/ε4	Increased	You're at higher risk than average.	~20–25%[3]
ε4/ε4	Increased	You're at the highest risk. Symptoms may start at a younger age.[2]	~50–60%[3] ◀ Example above

Important to know: These numbers are estimates. They come mostly from studies of people with European ancestry, so your risk may be different.[5] Your risk also depends on your age, sex, family history, and health.

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Next Steps



Schedule a Genetic Counseling Session

Experts recommend genetic counseling after *APOE* testing.[4] MyOme offers access to certified genetic counselors who can help you understand what your result means for you and your family. It is included with your report at no additional cost to you.



Follow Up with Your Provider

Your provider can help you understand your result in the context of your age, health, and family history. Healthy habits like staying active and staying mentally and socially engaged may lower your risk.[6]



Check Your Cholesterol and Heart Health

In addition to impacting your brain, the *APOE* gene also helps move cholesterol through your blood. ε4 is linked to slightly higher LDL ("bad") cholesterol, and ε2/ε2 is linked to a rare cholesterol condition.[7] Your provider may review your cholesterol and heart health with you, depending on your result.



Plan for Future Treatment

Some approved Alzheimer's medicines—used only for people who already have early symptoms—can cause a serious side effect called ARIA (brain swelling or small bleeds). People with ε4, especially two copies (ε4/ε4), have a higher chance of this side effect.[8] If you ever need these medicines, your result can help your doctor weigh the risks and benefits.



Consider Sharing Results with Family

Your parents, brothers and sisters, and children may share your *APOE* type. Sharing your result can help them decide if genetic counseling is right for them. Some relatives may prefer not to know their own risk, so think about how and when to share.

Important Considerations

- Your result is not a diagnosis. Many people with ε4 never get Alzheimer's, and people without ε4 can still get it.[3] If you have memory or thinking problems now, talk with your provider.
- This test only looks at *APOE*. It does not check other genes, like rare genes that cause Alzheimer's at a younger age.
- Your result will not change. Your genes stay the same your whole life, so you only need this test once.
- Results help your provider understand your genetic risk. Follow their recommendations, but don't make changes to your care on your own.
- A U.S. law called GINA protects you from genetic discrimination by health insurers and most employers. It does not cover life, disability, or long-term care insurance.

Meaningful Genetic Insights Can Shape Your Health Journey

Visit our website to learn more. For support and additional resources, visit Alzheimer's Association (alz.org) and Alzheimer's Foundation of America (alzfdn.org).

1. Reiman et al. Exceptionally low likelihood of Alzheimer's dementia in APOE2 homozygotes. Nat Commun. 2020; 11:667. PMID: 32015339. 2. Liu et al. Apolipoprotein E and Alzheimer disease: risk, mechanisms and therapy. Nat Rev Neurol. 2013; 9(2):106–118. PMID: 23296339. 3. Genin et al. APOE and Alzheimer disease: a major gene with semi-dominant inheritance. Mol Psychiatry. 2011; 16(9):903–907. PMID: 21556001. 4. Goldman et al. Genetic counseling and testing for Alzheimer disease: joint practice guidelines of the American College of Medical Genetics and the National Society of Genetic Counselors. Genet Med. 2011; 13(6):597–605. PMID: 21577118. 5. Rajabli et al. Ancestral origin of ApoE ε4 Alzheimer disease risk in Puerto Rican and African American populations. PLoS Genet. 2018; 14(12):e1007791. PMID: 30517106. 6. Livingston et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. Lancet. 2020; 396(10248):413–446. PMID: 32738937. 7. Mahley et al. Pathogenesis of type III hyperlipoproteinemia (dysbetalipoproteinemia): questions, quandaries, and paradoxes. J Lipid Res. 1999; 40(11):1933–1949. PMID: 10552997. 8. Salloway et al. Amyloid-related imaging abnormalities in 2 phase 3 studies evaluating aducanumab in patients with early Alzheimer disease. JAMA Neurol. 2022; 79(1):13–21. PMID: 34807243.

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