

Dementia, Genetics & Your Family

A practical guide to inherited risk, genetic testing, and what relatives should know

A diagnosis of dementia can raise an important question: “Will my children or siblings develop it too?” Most dementia is not caused by a single inherited gene. Having a relative with dementia may increase risk, but it does not mean another family member will develop the condition.

Three different meanings of “genetic”

- **Sporadic:** A condition develops without a clear inherited pattern. This is the most common situation for Alzheimer’s disease and many other dementias.
- **Risk genes:** A genetic variant changes the likelihood of disease but does not determine the outcome. APOE ε4 is the best-known example in Alzheimer’s disease.
- **Disease-causing (pathogenic) variants:** Certain rare variants can strongly predispose a person to a specific inherited dementia. Families may show several affected relatives across generations.

How inheritance differs among dementias

Condition	What families should know
Alzheimer’s disease	Most cases are not single-gene inherited. APOE ε4 increases risk but is not diagnostic. Rare autosomal-dominant early-onset forms involve APP, PSEN1, or PSEN2.
Frontotemporal dementia (FTD)	A substantial minority have a genetic cause. Important genes include C9orf72, GRN, and MAPT; a family history of FTD, ALS, or related symptoms can be a clue.
Lewy body dementia / Parkinson’s disease dementia	Usually not inherited in a simple pattern. Variants in genes such as GBA1 and LRRK2 can influence risk in some families, but testing is not routinely indicated for everyone.
Vascular dementia	Usually reflects vascular risk factors, not one dementia gene. Rare inherited small-vessel diseases include CADASIL (NOTCH3).
Other / mixed dementias	Huntington disease is autosomal dominant (HTT). Prion diseases can rarely be inherited (PRNP). Most mixed dementia and many atypical cases are not single-gene disorders.

Autosomal dominant means an affected parent carrying a disease-causing variant may pass it to each child with a 50% chance. This does not apply to ordinary dementia risk or APOE testing.

Family patterns that deserve closer evaluation

- Dementia beginning unusually young, particularly before age 65, or several affected relatives across generations.
- Multiple relatives with similar dementia symptoms, especially frontotemporal symptoms or dementia together with ALS.
- A known pathogenic variant in the family, or features suggesting a rare inherited condition.
- A relative with a confirmed genetic diagnosis who is willing to share the laboratory report.

What should family members do now?

- Write down a three-generation family history: which relatives were affected, age symptoms began, diagnosis, and whether a diagnosis was confirmed by specialist evaluation.
- Discuss personal risk factors with a primary care clinician: blood pressure, diabetes, cholesterol, smoking, hearing loss, sleep, activity, and social connection.
- If the pattern suggests inherited dementia, ask for referral to a genetics professional or memory-disorders specialist.
- Do not assume forgetfulness is dementia. New cognitive symptoms deserve a clinical evaluation, including possible treatable causes.

Genetic testing: when it helps—and when it may not

Testing a person who has dementia

When an inherited disorder is suspected, testing the affected person first is usually the most informative approach. A confirmed pathogenic variant can help clarify diagnosis and permit accurate testing of adult relatives. A negative test may not exclude a hereditary cause, depending on the genes tested and the family history.

Testing a healthy adult relative

Predictive testing may be considered when a specific disease-causing variant has already been identified in the family. Genetic counseling should come before testing so the person understands possible results, emotional consequences, family implications, and privacy or insurance considerations.

APOE testing is different

APOE testing cannot tell a healthy person whether they will develop Alzheimer's disease. It is generally not recommended as routine predictive testing for asymptomatic relatives. APOE genotyping may be discussed for patients being evaluated for anti-amyloid therapy because $\epsilon 4$ status affects the risk of amyloid-related imaging abnormalities (ARIA). This is treatment-risk assessment, not a definitive dementia test.

Understanding a genetic test result

Result	Meaning
Pathogenic / likely pathogenic	A variant linked to disease; its implications depend on the gene, condition, and inheritance pattern.
Negative	No relevant variant was identified by that test; inherited disease is not always ruled out.
Variant of uncertain significance (VUS)	Not enough evidence to classify it; generally should not guide predictive testing or major family decisions without expert review.

Questions to ask before ordering testing

- What diagnosis or hereditary syndrome are we looking for, and why?
- Should the affected relative be tested first? Which genes or panel would be appropriate?
- What would a positive, negative, or uncertain result change about care?
- Who will explain results and coordinate testing for relatives?
- What are the potential implications for privacy, life insurance, disability insurance, and long-term-care insurance?

Important issues for relatives and caregivers

Children and younger relatives

Predictive testing of minors for adult-onset conditions without childhood medical benefit is generally deferred until they can decide as adults. Family members can still discuss age-appropriate questions and seek genetic counseling.

Privacy and insurance

In the United States, the Genetic Information Nondiscrimination Act (GINA) generally protects genetic information in health insurance and employment, with important limitations. It does not generally cover life, disability, or long-term-care insurance. Rules and coverage vary; review these questions before testing.

Emotional well-being

Genetic risk information can cause anxiety, guilt, family conflict, or uncertainty. Some relatives want to know their risk; others prefer not to know. Both choices deserve respect. Genetic counselors can help families communicate results without pressure.

What helps protect brain health?

No lifestyle change can guarantee prevention, including in someone with elevated inherited risk. Still, managing vascular risk factors, staying physically active, addressing hearing and vision problems, avoiding tobacco, limiting alcohol, sleeping adequately, and remaining socially and mentally engaged support overall brain health.

A family planning checklist

- Collect diagnosis records and ages of symptom onset for affected relatives.
- Ask whether the affected person has had genetic testing; obtain the actual report when possible.
- Discuss referral to a memory specialist or certified genetic counselor if the family pattern is concerning.
- Consider practical matters: healthcare proxy, financial power of attorney, and future care preferences.
- Schedule routine medical care and evaluation of any new cognitive symptoms.

Reliable resources for families

- National Institute on Aging (NIA): nia.nih.gov — Alzheimer's, dementia, and genetics education.
- Alzheimer's Association: alz.org | 800-272-3900 — caregiver guidance, family history, and support.
- Association for Frontotemporal Degeneration: theaftd.org — FTD genetics and family resources.
- National Society of Genetic Counselors: findageneticcounselor.nsgc.org — locate a genetics professional.
- MedlinePlus Genetics: medlineplus.gov/genetics — plain-language information on genes and inherited conditions.
- Huntington's Disease Society of America: hdsa.org — specialized counseling and resources.

Educational information only. Testing decisions should be individualized with the treating clinician and a qualified genetics professional. This handout does not replace medical or genetic counseling.