

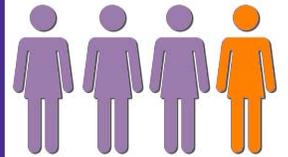
Alzheimer disease and the *APOE* gene

Alzheimer disease (AD) is a common type of dementia. The most common form of the disease, called late-onset Alzheimer Disease, usually starts after age 60. By 85 years old, nearly 1 in 3 people has AD. Late-onset AD is caused by a combination of genetic, environmental, and lifestyle factors. One genetic risk factor for late-onset AD is a gene called **apolipoprotein E** or ***APOE***.

The *APOE* gene and Alzheimer disease

Everyone has two copies of the *APOE* gene, one inherited from each biological parent. *APOE* does not cause AD, but is known to influence it. One variant of this gene, called the epsilon 4 ($\epsilon 4$) variant, increases the chance for late-onset AD. However the $\epsilon 4$ variant may affect people differently, making it impossible to give an accurate risk for AD based only on an *APOE* result. About 1 in every 4 people has at least one copy of the $\epsilon 4$ variant. A smaller number of people (1 in 50) have two copies of the $\epsilon 4$ variant.

1 in 4 people has
an *APOE*- $\epsilon 4$ variant



Genetic testing can look at the *APOE* gene, but the result cannot predict who will eventually develop AD. Test results do not change medical care since there are no treatments that prevent or slow AD. Currently, routine testing of the *APOE* gene is not recommended by any professional organization. For this reason, Kaiser Permanente does not routinely order *APOE* testing.

Research on the *APOE* gene may help. Study teams are trying to learn why the $\epsilon 4$ variant adds to a person's risk for AD. This could lead to treatments in the future.

Your genes don't define you.

Knowing your *APOE* variants is not enough. People from all backgrounds can develop AD, whether or not they have an $\epsilon 4$ variant. For example:

- Having one or two $\epsilon 4$ copies doesn't mean you will definitely develop AD
- You can develop AD without any copies of the $\epsilon 4$ variant
- Your ancestry may influence the risk: $\epsilon 4$ carriers with African American (Black) or Hispanic/Latino ancestry may have a lower AD risk than those with Caucasian (White) ancestry.

STEPS YOU CAN TAKE

There is no medicine that lowers the risk for AD, but some lifestyle choices may help with brain health.



Exercise



Eat healthy foods



Keep your mind active



Get enough sleep



Don't smoke

Support is available

Kaiser Permanente has a variety of programs that can help you with lifestyle changes. If you are still concerned about your risk for AD after talking with your doctor, you can ask to talk with a genetic specialist.

If you have a close relative who had AD before age 65, it may help to review your family history with a genetic specialist. Early-Onset Alzheimer disease is a rare form of AD that often develops between the ages of 30 to 60 years old. Many people in a family can be affected. *APOE* testing does not give you information about Early-Onset AD. Genetic testing for Early-Onset AD looks at genes other than *APOE*.