

Alzheimer's blood test could identify risk up to 10 years before symptoms start

An experimental Alzheimer's blood test could identify risk years before symptoms begin to appear. Image credit: Drs Producoes

- A blood test measuring the Alzheimer's biomarker p-tau217 suggests cognitively healthy older adults with very high levels had an estimated 38% risk of developing cognitive impairment within 5 years, rising to up to 78% over 10 years.
- Elevated p-tau217 levels were associated with future cognitive impairment independently of existing risk measures, such as amyloid PET scan findings and genetic risk factors, including the *APOE4* variant.
- The predictive blood test could help identify people at higher risk for cognitive decline who may be suitable candidates for clinical trials of emerging preventive therapies.
- However, as there are currently no proven disease-modifying treatments for asymptomatic people at high risk, the test is not currently recommended for routine screening of healthy adults.

[Blood-based biomarkers](#) offer a less invasive and more accessible alternative to brain scans or spinal fluid tests for detecting biological changes associated with [Alzheimer's disease](#).

One of the most promising markers is phosphorylated tau 217 (p-tau217), a protein linked to the disease process [long before](#) [Trusted Source](#) memory problems become apparent.

A blood test measuring p-tau217 has [Food and Drug Administration \(FDA\)](#) [Trusted Source](#) approval for certain clinical uses. However, questions remain about how well it can predict whether someone without symptoms will eventually experience cognitive decline.

Now, a new study suggests p-tau217 blood tests may be able to predict the risk of developing symptoms of Alzheimer's in cognitively unimpaired adults up to a decade early.

The study, presented at the [Alzheimer's Association International Conference](#) and published simultaneously in [JAMA](#) [Trusted Source](#), found that older adults with very high blood levels of p-tau217 were substantially more likely to develop cognitive impairment over the following decade than those with lower levels.

However, the study authors add that the test is not yet ready for routine screening of healthy adults, but the findings could play an important role in future prevention trials and personalized risk assessment.

Higher p-tau217 levels linked to greater risk

The researchers, led by experts from the Mass General Brigham Neuroscience Institute, combined data from six observational studies and clinical trials conducted across North America, Japan, and Australia.

The analysis included 2,684 cognitively healthy older adults who underwent blood testing for p-tau217 and brain [positron emission tomography \(PET\) imaging](#) when they joined the studies.

Participants then completed annual cognitive assessments over several years. Across the study population, 478 participants developed cognitive impairment during follow-up.

Notably, individuals with the highest p-tau217 levels at the start of the study had an estimated 38% chance of developing cognitive impairment within 5 years.

Longer-term projections suggested that this risk increased to as much as 78% over 10 years. However, the authors caution that these estimates were based on fewer participants who had been followed for that length of time, making them less certain than the 5-year findings.

“The main takeaway is that very high levels of plasma p-tau217 provide meaningful information about future risk of cognitive impairment among older adults who are initially cognitively unimpaired,” lead author [Rachel Buckley](#), PhD, a cognitive neuroscientist with the Mass General Brigham Neuroscience Institute, told *Medical News Today*.

“Across pooled data from six cohorts, using different plasma assays and definitions of cognitive impairment, we found a consistent pattern: Individuals with very high p-tau217 had an estimated 38% risk of cognitive impairment over 5 years and 78% over 10 years,” said Buckley.

“In addition, p-tau217 provided predictive information beyond amyloid PET, suggesting that it may capture aspects of Alzheimer’s disease biology that are not explained by amyloid plaques alone,” the researcher told us.

However, she added a note of caution:

“These findings should not yet be interpreted as support for routine screening in asymptomatic individuals. Rather, they move us toward individualized p-tau217–based risk estimates for future cognitive impairment over clinically meaningful timeframes, which will be critical as prevention strategies hopefully become a reality in the near future.”

Blood test adds information beyond scans and genetics

Importantly, the blood test may be able to predict future cognitive decline independently of other established Alzheimer’s disease risk factors.

The association with high p-tau217 levels remained significant even after accounting for [beta-amyloid plaques detected on PET scans](#) and genetic susceptibility, including the presence of the [APOE4 variant](#), the strongest known genetic risk factor for [late-onset Alzheimer’s disease](#).

The findings could represent an important advance, moving beyond simply identifying Alzheimer’s-related biology and instead estimating an individual’s likelihood of developing symptoms over time.

Additionally, as the researchers combined data from six separate cohorts, it allowed them to test the findings across a diverse group of participants while observing consistent relationships between elevated p-tau217 levels and later cognitive decline.

“Our models so far are looking pretty good, but while our models are an exciting first step, there are still further developments that are needed, such as testing in more diverse communities, examining the effect of other things that can impact these blood tests (i.e., kidney function), and building in mortality estimates and other comorbidities (such as cardiovascular risk) so that we can continue to refine our estimates,” Buckley noted.

P-tau217 blood test not yet ready for routine screening

Despite the encouraging findings, the researchers emphasize that the test should not currently be used to screen healthy people who have no cognitive symptoms.

At present, there are no widely available disease-modifying treatments proven to prevent Alzheimer’s-related cognitive impairment in those identified as being at increased risk through blood testing alone.

For now, recommendations for older adults remain unchanged. These include adopting lifestyle measures that support overall brain health, such as regular physical activity, a healthy dietary plan, adequate sleep, and staying mentally active.

However, the study authors suggest the role of Alzheimer’s blood biomarkers could change if ongoing clinical trials demonstrate that earlier treatment can delay or prevent Alzheimer’s symptoms. In that setting, blood tests could help identify people most likely to benefit from preventive therapies before cognitive decline begins.

The researchers compared this potential future role to other blood tests that guide an individuals long-term risk of certain conditions and guide preventive treatment decisions.

“I am optimistic that anti-amyloid therapies might be right around the corner for cognitively unimpaired individuals, and once this becomes our new reality, we will be absolutely thinking about early detection with markers such as plasma,” Buckley added.

“Similarly to how we use [A1C](#) for [diabetes](#) and [cholesterol](#) for [cardiovascular risk](#), I would hope we will start to think of plasma p-tau217 as a routine part of annual physicals for older adults to inform their risk of cognitive impairment and whether they may need to be treated. This is of course, our dream, but hopefully that dream will be a reality sooner rather than later.”

– Rachel Buckley, PhD

Study limitations and potential implications

While promising, the authors acknowledge several limitations to their findings. The participants were enrolled in research studies rather than being representative of the general population, raising the possibility of selection bias.

Additionally, although the investigators were able to estimate risk over 10 years, relatively few participants had been followed for that long, which makes those longer-term projections less precise.

Further studies involving broader and more representative populations will be necessary to confirm the results and refine estimates of individual risk.

Still, the study adds to growing evidence that blood biomarkers may become valuable tools for identifying Alzheimer’s disease before symptoms develop.

For now, experts believe the greatest immediate application of p-tau217 testing is likely to be in research, particularly for selecting participants for clinical trials investigating preventive treatments.

However, if therapies capable of delaying or preventing Alzheimer’s disease become available, blood tests such as p-tau217 could eventually help clinicians estimate an individual’s future risk and determine who may benefit from earlier intervention.

“These findings suggest that p-tau217 has meaningful prognostic value in cognitively unimpaired older adults. In particular, very high plasma p-tau217 levels, observed consistently across different plasma assays, can provide important information about an individual’s risk of cognitive impairment over 5- and 10-year timeframes,” Buckley reiterated.

“This is important because these longer-term risk estimates move us closer to a prevention-oriented model of Alzheimer’s disease, where biomarkers could eventually help identify risk early enough to guide preventive interventions when they become available for this population. We hope there will be positive outcomes soon in prevention trials of individuals with evidence of the disease by no cognitive symptoms,” she explained.

When that day comes, our data will provide the initial information for clinicians to gauge risk for cognitive impairment in this population over 10 years – to me, that is extremely valuable. Until then, we do not recommend rolling out blood tests in clinics for cognitively unimpaired adults,” Buckley concluded.

News Source:

<https://www.medicalnewstoday.com/articles/alzheimers-blood-test-could-identify-risk-up-to-10-years-before-symptoms-start#Study-limitations-and-potential-implications>