

## **Recent Breakthrough in Alzheimer's Detection: Blood Test Highly Accurate**

By Cynthia Bostic

Recently, the Washington University School of Medicine in St. Louis created a highly accurate blood test to detect if a person has Alzheimer's disease. They conducted a study comprised of about 500 people varying in locations to test if this should be the way that Alzheimer's should be diagnosed. It costs way less than the scans and spinal taps do. It detects amyloid plaques that tend to show in Alzheimer's patients even before they start exhibiting signs. This cuts away time and costs in Alzheimer's research. This breakthrough will be a big step in the right direction to detecting Alzheimer's early on and hopefully finding a cure one day.

Alzheimer's is a disease that develops slowly over time and can be hard to diagnose. It can slowly strip a person's mind and leave them a shell of what they were before. While it usually develops in your late 60's, the disease gets worse and leads to loss of mental function. According to the National Institute of Health, "the process that destroys the brain involved two proteins called beta-amyloid and tau." These build up in the brain and entangle with cells. Before the blood test, we had to rely on PET scans and spinal taps to be able to diagnose Alzheimer's and those can rack up quite a bill.

This study's test focuses on detecting the signs in patients diagnosed with Alzheimer's and is looking to detect people with the disease that are not showing symptoms. A senior author on the study, Randall J. Bateman, MD, claims that "our study shows that the blood test provides a robust measure for detecting amyloid plaques associated with Alzheimer's disease, even among patients not yet experiencing cognitive declines" (Everding, 2022). This is then "based

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on the ratio of the levels of the amyloid beta proteins A $\beta$ 42 and A $\beta$ 40 in the blood” (Everding, 2022). Bateman and his colleague, David Holtzman, MD, have a commercial test that was “certified in 2020 under the Clinical Laboratory Improvement Amendments (CLIA)” (Everding, 2022). This is run by the Food and Drug Administration in collaboration with the disease control and Medicare services. The CLIA has made the test available for doctors in the United States but is not covered by most health insurance (Everding, 2022).

This study has been proven accurate because it is also being studied in other labs using different protocols (Everding, 2022). Dr. Adam Boxer and his team from the University of California, San Francisco, were also looking into a blood test for detecting Alzheimer’s but looking for the presence of tau and predict how Alzheimer’s develops (National Institute of Health, 2020). They conducted their study of 400 patients and looked at ptau181 in the plasma. Their study proved that ptau181 in plasma was different in healthy people and those with Alzheimer’s confirmed in autopsies (National Institute of Health, 2020). According to the NIH, “a research team in Sweden reported similar findings in a second paper published in the same journal issue.” They used the same test as Dr. Adam Boxer and his team and looked at Alzheimer’s and other neurological diseases. It was mentioned that they were able to differentiate between the two as clearly “as they could with a spinal fluid ptau181 test and a PET brain scan for tau protein” (National Institute of Health, 2020). This benefits the patients from not having to go through a painful procedure and spending thousands on a brain scan.

The search for an easier and cheaper way to detect Alzheimer’s early on has been a long time coming. PET scans are an “average cost of \$5,000 to \$8,000 per scan” and a spinal tap that

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is “about \$1,000” (Everding, 2022). The spinal tap process is a painful procedure that involves a big needle being inserting into your lower spine. Many patients have opted out of this because of how painful it is. This blood test will cut the cost of procedures almost in half and cuts down the time that it takes to enroll patients in clinical trials for the PET scans. While looking into this, Everding found that, “screening with blood tests alone could be completed in less than six months and cut costs by tenfold or more, the study finds.” Making this blood test, could make it easier for bringing in patients for clinical trials that are trying to find cures for the disease. This blood test is estimated to cost \$500 to determine if someone has Alzheimer’s before they are showing signs or if they want to check because they have a family history of the disease.

Bateman and his colleagues crosschecked their blood samples with patients already enrolled in ongoing Alzheimer’s clinical trials ranging from the United States to Sweden (Everding, 2022). They found that using a “high-precision immunoprecipitation mass spectrometry technique” would get them the best results from the blood test. They then calculated in when the presence of *APOE4*, a genetic variant that is connected to having Alzheimer’s, “the accuracy of the blood test was 88% when compared to brain imaging and 93% when compared to spinal tap” (Everding, 2022). These finding are only proving how effective the blood test will be moving forward in Alzheimer’s research.

While there are little risks to be seen with a test making it detect early signs Alzheimer’s, there are some downsides to if a person is covered or what may affect the test. Money can hold a lot of people back from getting the care that they need and deserve. Since this blood test isn’t covered by most health insurance, a lot of people would have to pay the \$500 for the test. The

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scientists conducting the study are also not sure about “whether blood is collected after fasting or the type of anti-coagulant used in blood processing” (Everding, 2022). They think that these could alter the results of the test and could result in a false positive or negative. The cost and possibility of a false test result is a possibility with all blood tests.

Overall, this blood test can be beneficial when diagnosing Alzheimer’s as it can detect signs and symptoms that are not yet noticeable in a patient. This test is also cost effective and efficient. The amount of time it takes to complete this blood test is far less than that of other tests for Alzheimer’s. Tests and trials having been proving the blood test as reliable; however, further research and studies are still needed to fully develop this test.

### References

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