

Brain amyloid PET scans enhance the diagnosis of Alzheimer's

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The build-up of amyloid protein in the brain is a hallmark feature of Alzheimer's disease, and its detection often relies on the testing of brain and spinal fluid samples. More recently, PET brain scans have been able to highlight the presence of amyloid in the brain and are extensively used in research studies into Alzheimer's, such as clinical trials for new treatments. However, whether amyloid PET scans provide additional and more accurate information to aid dementia diagnosis is not clear cut, and the high costs associated with the scans (between £1,000-3,000 per scan) have so far limited their wider clinical use. Three studies presented today at the Alzheimer's Association International Conference 2016 are challenging this view.

The first study looked at the addition of [brain amyloid](#) PET scans to the battery of tests normally used to diagnose Alzheimer's in Norway, including memory tests and a lumbar puncture to look for Alzheimer's proteins in [spinal fluid](#). Fifty [people](#) who had been referred to the Oslo University Memory Clinic, Norway, due to problems with their memory underwent the standard range of tests along with a brain amyloid PET scan. The researchers found that the results of the PET scans were a key contributor in arriving at a specific diagnosis or ruling out Alzheimer's.

In the second study, a Swedish research team performed brain amyloid PET scans on people with an unclear [dementia diagnosis](#). The preliminary results from 61 of the 135 people in the study show that the PET scans resulted in a change in diagnosis in 68% of study participants. The team also found results from brain and spinal fluid conflicted with

those from the PET scans, with the results agreeing 53-57% of the time. Spinal fluid amyloid tests are not used in routine clinical diagnosis of dementia in the UK.

The third study led by GE Healthcare in the UK analysed data from four previous studies looking at the use of brain amyloid PET scans in the process of dementia diagnosis, combining information from 1106 people. The analysis revealed that the use of brain amyloid PET scans led to a change in diagnosis in 20% of people, indicating Alzheimer's disease as the underlying cause in some people, while ruling it out in others.

Dr David Reynolds, Chief Scientific Officer at Alzheimer's Research UK said:

"Diagnosing dementia is a complex challenge, and doctors have to gather a range of clues to create a picture of what is going on in the brain. Brain amyloid PET scans offer a different insight into brain changes in dementia, showing the presence of amyloid in the brain indicative of Alzheimer's. Although lack of a positive scan can rule out Alzheimer's, the fact that cognitively normal older people can also have a positive scan makes their interpretation more difficult. This new research highlights the value that amyloid brain scans can bring in helping doctors make a more informed diagnosis, either by indicating or ruling out Alzheimer's as the possible cause of someone's dementia symptoms.

"Amyloid PET scans carry a high price tag, and their use in the UK is mainly limited to research studies and [clinical trials](#), to ensure that potential new medicines are tested on the right people. The current drive for life-changing dementia treatments means that in the future, the use of amyloid PET scans or other innovative diagnostic methods will be important to ensure that new medicines reach the right people at the right time. Alzheimer's Research UK is working with government and

policy makers to ensure that the health service is set up to allow patients and doctors to benefit from innovations in diagnosis and treatment as research into [dementia](#) continues to progress."

Provided by Alzheimer's Research UK

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