

# MRI could predict Alzheimer's disease, improving treatment

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UQ scientists have found MRI's could be used to predict Alzheimer's disease.  
Credit: Tane Sinclair-Taylor

Scientists at the University of Queensland have discovered that magnetic resonance imaging (MRI) could be used to predict the risk of Alzheimer's disease.

The discovery could greatly improve outcomes for Alzheimer's patients, as [early diagnosis](#) could increase the effectiveness of [drug](#) treatments.

The study, led by Associate Professor Elizabeth Coulson of UQ's

Queensland Brain Institute, found that people with a shrinking basal forebrain were seven-times more likely to have worsened cognitive function within 18 months.

"Existing Alzheimer's disease drugs try to enhance the function of the degenerating basal forebrain, but often too much damage is already done by the time drugs are administered," Associate Professor Coulson said.

"Early diagnosis is important for being able to treat people with Alzheimer's disease earlier, and work out a personal treatment course for them.

"If we can give the existing drugs to people earlier, when they first display evidence of a decline in their basal forebrain, even perhaps before they are diagnosed with Alzheimer's disease, then hopefully those drugs will be more effective."

More than 330,000 Australians suffer from Alzheimer's disease and are primarily treated with cholinergic drugs that target the basal forebrain, which degenerates with the condition.

Lead author and QBI PhD student Georg Kerbler said the study used data from the CSIRO's Australian Imaging, Biomarkers and Lifestyle Flagship Study of Ageing.

They analysed data involving more than 220 elderly people, including 145 healthy people, 40 showing [mild cognitive impairment](#), and 38 with Alzheimer's disease.

"We're now working on validating these findings so a method to assess basal forebrain dysfunction can be rolled out into hospitals in the future," Mr Kerbler said.

"Our MRI method is currently a specialised research tool, and routine diagnosis needs to be performed in hospital MRI departments."

Large clinical trials have found that the effects of cholinergic drugs used to treat Alzheimer's disease are often transient and mild; but some patients appear to benefit from them for many years.

Geriatrician and Prince Charles Hospital Internal Medicine Services Head of Research Dr Eamonn Eeles, said the outcomes of using such drugs could be improved if they were given to patients earlier.

**More information:** Georg M Kerbler, Jürgen Fripp, Christopher C Rowe, Victor L Villemagne, Olivier Salvado, Stephen Rose, Elizabeth J Coulson, Alzheimer's Disease Neuroimaging Initiative, "Basal forebrain atrophy correlates with amyloid  $\beta$  burden in Alzheimer's disease," *NeuroImage: Clinical*, Volume 7, 2015, Pages 105-113, ISSN 2213-1582, [dx.doi.org/10.1016/j.nicl.2014.11.015](https://doi.org/10.1016/j.nicl.2014.11.015).

Provided by University of Queensland

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