



## Method Developed by VTT Targets Diagnosis of Early Alzheimer's Disease



### *Half of patients could be diagnosed a year earlier than current clinical practice*

A software tool called PredictAD developed by VTT Technical Research Centre of Finland promises to enable earlier diagnosis of the disease on the basis of patient measurements and large databases. Alzheimer's disease currently takes on average 20 months to diagnose in Europe. VTT has shown that the new method could allow as many as half of patients to get a diagnosis approximately a year earlier.

VTT has been studying whether patients suffering from memory problems could be diagnosed with Alzheimer's disease at an earlier stage in the light of their measurement values. The study involved processing patient measurements using VTT's PredictAD system, which was developed to support clinical decision-making. The findings were published in the Journal of Alzheimer's Disease in November 2012.

VTT has developed a novel approach for measuring the state of the patient reliably and objectively in cooperation with clinicians of University of Eastern Finland and Copenhagen University Hospital Rigshospitalet. The system compares the patient's measurements with measurements of other patients in large databases and provides an index and a graphical representation reflecting the state of the patient. Modern hospitals have huge data reserves that could be utilised in diagnostics by systematic mathematical modelling. Successful early diagnostics combined with new forms of care may reduce suffering and delay the institutionalisation of patients.

VTT's decision support system and imaging methods developed by VTT and Imperial College London were studied using ADNI material compiled in the United States. The study covered the records of a total of 288 patients suffering from memory problems, 140 of whom were diagnosed with Alzheimer's disease on average 21 months after the initial measurements.

The study showed that half of the patients could have been given a diagnosis of Alzheimer's disease around a year earlier. The accuracy of the predictions was comparable to clinical diagnosis. Treatments designed to slow

down the progress of the disease could therefore be started earlier.

Early prediction of the disease is also important from the perspective of drug trials. If patients whose disease is still in the early stages can be included in trials, the treatment can be expected to be more effective.

The method will be tested at several memory clinics in Europe over the next few years. VTT's goal is to expand the method to also cover several other illnesses that cause dementia in addition to Alzheimer's disease.

Alzheimer's disease is the most common cause for dementia. It was estimated that there were 35.6 million people living with dementia worldwide in 2010, and that the number will rise to 65.7 million by 2030. The estimated costs of dementia were 604 billion USD worldwide in 2010. About 70% of the costs are made Western Europe and North America. Dementia accounts for about 1% of the world's gross domestic product. (Alzheimer's Disease Int., 2010) <http://www.alz.co.uk/research/world-report>

Alzheimer's is the sixth-leading cause of death in the USA, and the only major disease where mortality is still on the rise. [http://www.alz.org/alzheimers\\_disease\\_facts\\_and\\_figures.asp#quickfacts](http://www.alz.org/alzheimers_disease_facts_and_figures.asp#quickfacts)

The full report can be read in the Journal of Alzheimer's Disease 32:4.

Mattila J, Soininen H, Koikkalainen J, Rueckert D, Wolz R, Waldemar G, Lötjönen J; for the Alzheimer's Disease Neuroimaging Initiative. Optimizing the diagnosis of early Alzheimer's disease in mild cognitive impairment subjects. *J Alzheimers Dis.* 2012;32(4):969-79. doi: 10.3233/JAD-2012-120934. <http://iospress.metapress.com/content/81h2t67710622437/?p=1a783f40934d41b1b0ebfe2ce284ed01&pi=2>

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