

Alzheimer's drug is huge leap forward for sufferers

Game-changing jab could be offered by NHS

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The new drug can slow cognitive decline or even halt it altogether, the evidence suggests Photo JONATHAN BRADY/PA

The first powerful treatment for Alzheimer's is on the horizon after a new drug was found to combat the changes to the brain that cause the disease.

Scientists hailed the breakthrough as the best news in dementia research for a quarter of a century and others said that it could be a "game changer".

British people in the early stages of the condition are being signed up for a large-scale clinical trial of the monthly injection, which appears to break up the poisonous lumps that

form in the brains of sufferers. The drug can also slow cognitive decline or even halt it altogether, early evidence shows.

David Reynolds, chief scientific officer at Alzheimer's Research UK, said the treatment could be available on the NHS in five years if the findings were confirmed on a bigger scale and the benefits outweighed the side-effects.

The breakthrough comes weeks after a Singaporean pharmaceutical company announced that it had stopped mental deterioration in one in seven of its patients with a pill called LMTX or LMTM.

Alzheimer's is the most common form of dementia in Britain, affecting at least 850,000 people. Its symptoms include confusion, memory problems and loss of speech. It is implicated in tens of thousands of deaths each year.

No drugs have so far been approved to reverse the physical progress of the disease. However, an experimental compound called aducanumab seems to turn the brain's immune system against the noxious clots of protein that characterise Alzheimer's, according to a study published in the journal *Nature*.

Independent experts welcomed the results, which came from a year-long preliminary trial involving 165 patients, as the most promising they had seen, but there was also caution after decades of disappointment.

Scientists at Biogen, a biotechnology company in Boston, Massachusetts, and Neurimmune, its Swiss partner, discovered the molecule when they were testing different chemicals from human immune "memory" cells against the

protein that is widely thought to be the biggest cause of Alzheimer's, known as amyloid beta.

Their clinical trial, carried out in the US, showed that a drug cloned from this compound greatly reduced the levels of amyloid beta in patients' brains, particularly at high doses. It also cut the rate of cognitive decline by about 50 per cent and seems to have halted it entirely in some cases, although the groups were too small for the findings to be definitive.

It will now be tested on 2,700 patients with mild or early Alzheimer's, including several hundred in Britain. The study is expected to finish by the end of the decade, meaning that the drug could be approved in the early 2020s.

One expert who was not involved in Alfred Sandrock, from Biogen, said: "This is the best news that we have had in our 25 years and it brings new hope."

The two biggest barriers to the drug will now be proving that it works across more early-stage patients and dealing with the side-effects encountered by about a quarter of participants. Some suffered build-ups of fluid outside their brain cells, which may be caused by small leaks in blood vessels or by a type of swelling called oedema.

The authors believe that when aducanumab is injected into the bloodstream about 1 in 1,000 particles crosses over into the brain and binds to the clusters of toxic protein before attracting immune cells called microglia, which clear the amyloid beta away.

The history of Alzheimer's care has been littered with false hopes over the 25 years during which present-day scientists have sought a treatment. Gordon Wilcock, emeritus professor

of geratology at the University of Oxford, said he had “feelings of déjà-vu” after the failure of several other drugs.

In July LMTX was revealed to have frozen the symptoms of Alzheimer’s, but only for patients who were not taking other drugs for the disease. There are also hopes for solanezumab, which is expected to emerge from final-stage clinical trials this year, although it has fallen twice before at this hurdle.

SEARCHING FOR A CURE

- Four weeks ago a Singaporean drugs company called TauRx revealed that its pill, LMTX, had stopped the mental symptoms of Alzheimer’s for 15 per cent of the patients in a clinical trial. However, its effects seem to be cancelled out by taking other medication, leading some experts and investors to dismiss the tests as a failure.
- Another candidate, solanezumab, was generally perceived to have failed four years ago. It is now back in a fresh round of clinical trials that should be completed by the end of the year and it seems to offer the most immediate prospect of relief for patients with mild Alzheimer’s disease.
- Both solanezumab and the new drug, aducanumab, appear to make the brain attack the clumps of amyloid beta protein that are widely thought to be the leading cause of the condition. If the drug can stop further mental deterioration in patients it

will confirm this theory, paving the way for more effective treatments.

- The wild card in the pack is the Bredesen Protocol, a programme of lifestyle changes such as exercise, improved sleep and nutritional supplements. It is claimed to have helped a handful of Alzheimer's patients to recover. However, independent scientists are concerned that the evidence is anecdotal and patchy. A clinical "pre-trial" is planned in the US and Britain.