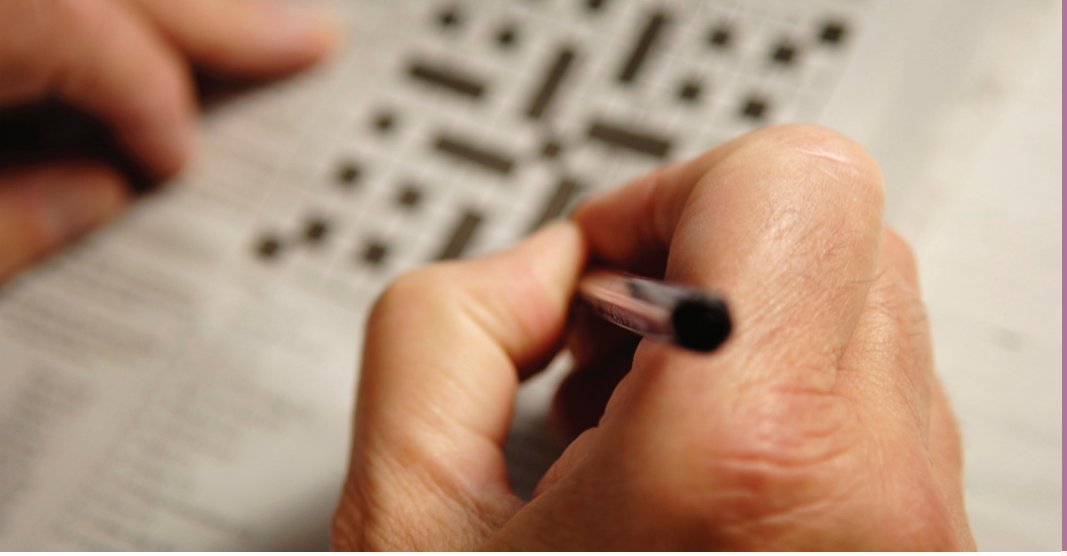

DISEASE FACT SHEET

Alzheimer's Disease

Alzheimer's disease

Named after German physician Dr Alois Alzheimer, who first described the disease in 1906, Alzheimer's disease is a degenerative condition of the brain, characterised by loss of memory and cognitive function. Although there is currently no cure for Alzheimer's disease, it can be managed and the symptoms alleviated for a time. A person may live from three to twenty years with Alzheimer's disease, with the average being seven years.

Alzheimer's is the most common form of dementia, accounting for between 50% and 70% of all dementias. In 2009 the number of Australians with dementia was estimated to be 245,000. Because of our ageing population, the incidence of dementia is estimated to rise above 1.1 million by 2050. Every 5 years after the age of 65, the likelihood of living with dementia doubles and the disease affects 1 in 4 people aged 85 and over. In 2004, the cost of Alzheimer's disease alone in Australia was estimated to be $3.6 billion. There are 2 types of Alzheimer's disease, sporadic and familial. In the sporadic form, the disease is usually diagnosed after the age of 65 and is by far the most common form. In the less common familial form, the disease runs in families and usually affects people in their 40s or 50s.

What causes Alzheimer's disease?

Apart from familial Alzheimer's disease, the cause of Alzheimer's is not currently known. A variety of suspects, including environmental factors, biochemical disturbances and immune processes, are being investigated, although it is most likely to be a combination of factors that cause the disease. It is known, however, that head injury, particularly repeated trauma, increases the risk of developing Alzheimer's disease. Poor cardiovascular health and smoking have also been linked to the disease. A genetic mutation on the ApoE gene is implicated in Alzheimer's and this gene, along with several other genes, is under investigation.

The symptoms of Alzheimer's disease are caused by the loss of nerve cells and pathways in the areas of the brain that are vital to memory and other mental abilities. Plaques which contain misfolded proteins called beta amyloid form in the brain many years before the clinical signs of Alzheimer's are obvious. Another protein, called tau, abnormally aggregates in the brain cells causing them to die. It is not known if this pathology, which is used to definitively diagnose Alzheimer's disease after death, initiates the disease or results from the disease.

What are the symptoms of Alzheimer's?

Alzheimer's disease begins slowly, with the first symptoms usually being mild forgetfulness and visual-spatial confusion. However, as the disease progresses, these symptoms may begin to interfere with daily activities, such as navigating through familiar areas or recognising people or objects.

In the middle stages of the disease, people with Alzheimer's may have difficulty doing basic tasks like brushing their teeth, speaking, reading and writing. Patients may become anxious, agitated or aggressive and will eventually need total care. In the last stages of the disease, deterioration of musculature and mobility occurs. Patients become bedridden and death ensues, often from pneumonia.

"Almost 250,000 Australians are living with dementia"

"On average, a person will live seven years after diagnosis of Alzheimer's disease"

"Every five years after the age of 65, the probability of living with Alzheimer's doubles"

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Breakthrough Medical Research

Garvan Institute of Medical Research, 384 Victoria Street, Darlinghurst NSW 2010
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ALZHEIMER'S DISEASE

"Be part of progress"

How is Alzheimer's diagnosed & managed?

Currently there is no single test to identify Alzheimer's disease. A thorough neurological examination including testing of memory and intellect is given along with other tests, such as blood tests, to rule out the possibility of other diseases such as depression or nutritional deficiencies. Once diagnosed, the symptoms of Alzheimer's disease are managed with a variety of treatments including drug therapy and lifestyle modifications.

Current drug treatments appear to provide some stabilisation in cognitive function for some people with mild to moderate Alzheimer's disease, but they do not alter the progression of the disease. Drugs may also be supplied for secondary symptoms like depression or sleeplessness.

Together with drug therapy, cognitive and behavioural interventions such as counselling or psychotherapy may also prove helpful throughout the disease. Lifestyle and environmental modifications can also be very beneficial to both the person with Alzheimer's disease and their carer. Activities of daily living can be aided by adhering to simplified routines and labeling of household items to help cue the patient. Changes in routine or environment can trigger or exacerbate agitation, whereas adequate rest and avoidance of excess stimulation can help prevent episodes.

What research is Garvan doing in this area?

The Garvan Institute is taking a range of approaches to investigate Alzheimer's disease. Our scientists are researching the mechanisms at the synapses (where one neuron makes a connection with another) that are important in memory formation and trying to understand if these mechanisms are somehow involved in contributing to the neuron dying in Alzheimer's disease.
Another of our research projects involves the possibility of harnessing the brain's own adult stem cells, which normally function to repair injury to the brain and make new nerve cell connections, to help treat Alzheimer's disease and other neurodegenerative conditions. We have identified a molecule that is able to stimulate neurogenesis, which would underpin brain repair. This is important because it is believed that brain repair could provide part of a cure for neurodegenerative diseases. We now have an enormous amount of work to do to understand how this molecule acts to bring about this regeneration, determine if the molecule has any therapeutic potential, and identify other molecules that may be important for stimulating regeneration and stem cell therapies.

Further sources of information

Alzheimer's Australia	www.alzheimers.org.au
Alzheimer's Association (USA)	www.alz.org

Garvan Institute of Medical Research – how you can get involved

The Garvan Institute of Medical Research was founded in 1963. Initially a research department of St Vincent's Hospital in Sydney, it is now one of Australia's largest medical research institutions with approximately 500 scientists, students and support staff. Garvan's main research programs are: Cancer, Diabetes & Obesity, Immunology, Osteoporosis and Bone Biology, and Neuroscience.

Your support makes it possible for the Garvan scientists to continue their great work. You can help by making a donation or a bequest, holding a community fundraiser or volunteering your time for Garvan. For details on how to get involved, please visit www.giving.garvan.org.au or contact us on (02) 9295 8110.

Education is one of Garvan's top priorities. Our Public Engagement Coordinator (PEC) can visit your community group or school to give a talk on a number of science and health related topics. Garvan also offers tours of our facilities on the first Thursday of every month. For further details, visit www.giving.garvan.org.au or call our PEC on (02) 9295 8108.

Garvan Institute of Medical Research
384 Victoria Rd Darlinghurst NSW 2010
(02) 9295 8110 www.giving.garvan.org.au

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