



ALZHEIMER'S DISEASE – FACTSHEET

What is Alzheimer's disease?

Alzheimer's disease is a degenerative disease caused by shrinkage of the brain. It is the commonest cause of dementia and at present there is no cure. Its effects on brain tissue include both the loss of, and damage to, nerve cells (neurones). Whilst it is quite natural for some nerve cells to be lost with age, this loss is excessive in Alzheimer's disease. The shrinkage or 'atrophy' of the brain due to cell loss can be seen during life on a brain scan.

Two key observations have been made from post-mortem studies of the damaged nerve cells of people with Alzheimer's disease:

- the development of tangled bunches of nerve fibres (neurofibrillary tangles) within the nerve cell body;
- the deposition of abnormal plaques (senile plaques) between the nerve cells. The plaques contain a protein called 'beta amyloid'.

The German psychiatrist and pathologist Alois Alzheimer first published his findings on these pathological changes in 1907. These 'tangles and plaques' occur consistently in people affected by Alzheimer's disease and they have also been observed in older people free from dementia.

The presence of these 'tangles and plaques' disrupts the normal conduction of messages within the brain. A nerve cell chemical (acetylcholine) has also been identified as deficient in Alzheimer's disease. The chemical which breaks down acetylcholine (acetylcholinesterase) is blocked by drugs called anticholinesterases. Thus, an anticholinesterase drug raises the level of acetylcholine by preventing its breakdown.

What are the signs and symptoms of Alzheimer's disease?

Alzheimer's disease results in the gradual impairment of cognitive and intellectual functions (such as memory loss and problems with learning new information).

Characteristically, the changes in the early stages of dementia are more subtle and initially involve symptoms of short-term memory loss (forgetting recent events) and disorientation (not knowing the time or place). As the disease progresses symptoms worsen and others appear. These include:

- impaired judgement;
- loss of language skills;
- difficulties in learning and concentration;
- altered sleep patterns;
- impaired physical co-ordination;
- inability to perform familiar tasks;
- personality changes;
- changes in mood (eg. depression);
- changes in behaviour (eg. agitation and aggression);
- delusions (false ideas);
- hallucinations (seeing or hearing things);
- loss of initiative;
- impaired abstract thinking.

Who is affected by Alzheimer's disease?

Alzheimer's disease accounts for around 60 - 70% of all cases of dementia. The disease predominantly affects people in later life, although there are rarer forms of the disease that occur in middle age (young onset dementia). The risk of developing Alzheimer's disease rises from 1 in 1000 under the age of 65, to 4 or 5 in 100 over the age of 65 and 1 in 5 over the age of 80. Over the age of 80 women are at slightly greater risk of developing Alzheimer's disease. Currently no clear evidence of differences across ethnic groups has been established. There are, however, a number of cultural issues that may influence recognition and access across ethnic groups.

What causes Alzheimer's disease?

It is, as yet, unclear what causes Alzheimer's disease. A number of risk factors have, however, been identified. It is currently believed that the cause of Alzheimer's disease is probably a combination of both genetic factors and environmental influences.

Genetic links have been identified in relation to some cases of Alzheimer's disease, specifically:

- certain types of early onset Alzheimer's disease where the disease clearly runs in families;
- late onset dementia (Linked with the apolipoprotein E gene – APOE on chromosome 19);
- Down's syndrome. On post mortem the characteristic changes of Alzheimer's disease are observed within the brain tissue of the majority of people with Down's syndrome aged over 40. In spite of this finding, not all middle aged people with Down's syndrome develop the symptoms of Alzheimer's disease. Suggestions relating to a possible genetic link between Alzheimer's disease and Down's syndrome have focused on the extra chromosome 21 which occurs in Down's syndrome and produces beta-amyloid protein.

Other factors that potentially influence the development of Alzheimer's disease have been identified. Factors that may increase the risk / prevalence include:

- education – lower levels of education resulting in increased risk;
- geographical factors – there has been some evidence of lower prevalence rates for Alzheimer's disease in some developing countries and in more rural areas;
- psychiatric illness – in particular depressive illness is associated with an increased risk;
- medical conditions – a history of certain medical conditions such as previous head injury increases risk;

Factors that may protect against the development of Alzheimer's include:

- medication – the use of anti-inflammatory drugs has been shown to be protective against Alzheimer's disease;
- red wine – some studies have identified the consumption of red wine as having a potentially protective mechanism against the development of the disease;

- oestrogen – there is some evidence to suggest that the female sex hormone, oestrogen, may have a protective effect in relation to Alzheimer's disease. Studies examining the potential use of hormone replacement therapy in the prevention and treatment of the disease are, as yet, inconclusive;

The chemical aluminium has previously been cited as a potential cause of Alzheimer's disease, but the evidence for this is insufficient.

What is the course and prognosis for people with Alzheimer's disease?

Mortality statistics show that the disease lasts, on average, for around 8 years, although this depends on when the condition is diagnosed. People are now coming forward much earlier in their illness and are diagnosed earlier in the stage of the illness.

In general, the first phase of Alzheimer's disease, where memory loss and disorientation are key characteristics, lasts for up to four years. As the disease progresses, more difficulties with daily functioning occur and assistance with daily living is increasingly required. Within the last 1-2 years of life the person requires intensive levels of care and is often cared for in a nursing home setting. During the latter stages of the disease problems with communication are severe, incontinence is often experienced as are difficulties with movement and other psychomotor skills. The cause of death in many cases of Alzheimer's disease is often respiratory infection.

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The views expressed in this factsheet are those of the author, not necessarily those of the NWDC

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