Alzheimer's disease is the most common cause of dementia, both in the general population and in people with Down syndrome. It occurs more frequently and at a younger age in people with Down syndrome than in the general population.

The relationship between Down syndrome and Alzheimer's disease is complex. Studies have shown that by the age of 40, almost all people with Down syndrome have evidence of the brain changes characteristic of Alzheimer's disease. This does not mean that everyone with Down syndrome will develop symptoms of the dementia of Alzheimer's disease.

Brain changes associated with Alzheimer's disease

There is a complex connection between chromosome 21 (of which people with Down syndrome have three copies instead of two) and Alzheimer's disease. The amyloid precursor protein (APP), which is a part of the nerve fibre tangles that typically appear in Alzheimer's disease, is localised on chromosome 21. Having three copies of the APP gene results in excess production of APP and may cause acceleration of the brain changes that typify Alzheimer's disease in people with Down syndrome.

The mechanisms that trigger these brain changes are not yet fully understood, even though great steps have been made in research in this area. A current aim of research is to find a way to slow down the onset of these brain changes.

Prevalence in people with Down syndrome

Although the brain changes associated with Alzheimer's disease are seen in people with Down syndrome by around 40 years, onset of the disease is not inevitable. Current research studies suggest that only about 50 percent of people with Down syndrome will develop clinical symptoms of Alzheimer's disease by the age of 60 years, and the average age of diagnosis in people with Down syndrome is reported to be at around 55 years.

The importance of living a full life

Currently, there is no way to prevent the brain changes that may occur in people with Down syndrome. However, leading as full, healthy and active a life as possible may help reduce the risk of developing dementia. This includes keeping up interests in work and recreation, friends and family, maintaining good health, diet and fitness, and having regular medical checkups.

Other conditions that can be treated

People with Down syndrome are susceptible to a number of other physical and mental health issues that lead to a decline in abilities and could be mistaken for dementia. These include hypothyroidism, sleep apnoea, sensory impairments, depression or the side effects of some medications.

If you are concerned about changes in mood, personality, behaviour, learning, memory or skills in doing everyday activities, or other symptoms that you think could indicate the onset of Alzheimer's disease, you should inform the
person’s doctor and see a specialist to have these symptoms investigated.

**Where to get help**

- Your doctor
- Your local community health centre
- Down Syndrome Victoria Tel. 1300 658 873 or email info@dsav.asn.au
- National Dementia Helpline Tel. 1800 100 500

**Things to remember**

- There is a relationship between Down syndrome and Alzheimer's disease; however, there is still a lot to learn about this.
- Not every person with Down syndrome will develop the clinical symptoms or behavioural changes typical of Alzheimer's disease.
- People with Down syndrome are susceptible to several conditions that could be mistaken for dementia. See a specialist for advice.
- Carers or family should pass on information to the doctor about any changes they notice.

**This page has been produced in consultation with and approved by:**

Down Syndrome Association of Victoria