



NDSS Home > Information & Resources > Health > Alzheimer's Disease and D...

SEARCH |

Health Topics

- Alzheimer's Disease
- Associated Conditions
- Atlantoaxial Instability
- Blood Diseases
- Cosmetic Surgery
- Dental Care
- Dental-Periodontal Disease
- Dimethyl Sulfoxide
- DS Clinics and UCEDDs
- Dual Diagnosis
- Ear, Nose, Throat
- Early Intervention
- Endocrine
- Growth Charts
- Healthcare Guidelines
- Healthcare Guidelines - How to Use Them
- Heart
- Interferon and Down Syndrome
- Neurology
- Physical Therapy
- Piracetam
- Sexuality
- Speech
- Thyroid
- Vision & Hearing
- Vitamin Related Therapies
- Your Baby and DS

Health Programs

Alzheimer's Disease and Down Syndrome

By: Dr. Ira Lott

Alzheimer's Disease, a degenerative neurological disorder characterized by progressive memory loss, personality deterioration and loss of functional motor capabilities, is far more common in individuals with Down syndrome than the general population. However, not all individuals with Down syndrome will develop Alzheimer's disease, and even those showing Alzheimer's-type symptoms may not have Alzheimer's disease since other conditions can mimic the symptoms.

Q. How common is Alzheimer's disease in individuals with Down syndrome?

A. Estimates vary, but a reasonable conclusion is that 25 percent or more of individuals with Down syndrome over age 35 show clinical signs and symptoms of Alzheimer's-type dementia. The percentage increases with age. In the general population, Alzheimer's disease does not usually develop before age 50, and the highest incidence (in people over age 65) is between five and 10 percent. The incidence of Alzheimer's disease in the Down syndrome population is estimated to be three to five times greater than in the general population.

Q. What are the symptoms of Alzheimer's disease?

A. Early symptoms include loss of memory and logical thinking; personality change; decline in daily living skills; new onset of seizures; changes in coordination and gait; and loss of continence in bladder and bowel habits.

Q. How is a final diagnosis made?

A. Alzheimer's disease is difficult to diagnose. It is important to be certain Alzheimer's-type symptoms do not arise from other conditions, namely thyroid disorders, depressive illness by psychiatric criteria, brain tumor, recurrent brain strokes, metabolic imbalances and various neurological conditions.

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The diagnosis of Alzheimer's disease is made on the basis of clinical history, showing a slow, steady decrease in cognitive function and a variety of laboratory tests which provide contributory evidence, including electroencephalogram, brain stem auditory evoked response, computerized transaxial tomography and magnetic resonance imaging, among other tests and measurements.

Q. Is there a baseline test that can be repeated at intervals to determine specific decrease in cognitive function?

A. Psychologists often use questionnaires answered by family members, companions or caretakers that assist in the early detection of dementia. It is recommended that individuals with Down syndrome be tested at age 30 to provide a baseline reading, and periodically thereafter. If the tests show deterioration, further tests must be made to rule out conditions that present similar or overlapping symptoms.

Q. What information has research yielded about a link between Alzheimer's disease and Down syndrome?

A. Current research investigating how certain genes on Chromosome 21 may predispose individuals with Down syndrome to Alzheimer's disease. A number of centers are testing therapies in Down syndrome that appear to benefit patients with Alzheimer's disease in the general population.

Q. How can research into Alzheimer's disease and Down syndrome be advanced?

A. As is true for Alzheimer's disease in the general population, a full understanding of the disorder involves post-mortem examination of brain tissue. Contributions to a brain tissue repository for purposes of extending knowledge about the relationship between Down syndrome and Alzheimer's disease will help to advance research in this area. For information for families and physicians considering such a donation, please contact the National Down Syndrome Society at 800-221-4602.

Summary

- Individuals with Down syndrome are three to five times more likely than the general population to develop Alzheimer's disease. Onset of Alzheimer's may begin as early as age 30 in the Down syndrome population as compared to age 50 in the general population.
- Symptoms of a variety of other diseases and conditions mimic the symptoms of Alzheimer's disease: personality change, decline in daily living skills, memory loss, changes in coordination and gait and other changes. Diseases and conditions such as depression, thyroid disorders, brain tumor, recurrent brain strokes, metabolic imbalances and various

neurological conditions must be ruled out prior to a diagnosis of Alzheimer's disease.

- It is recommended that individuals with Down syndrome take a baseline test of cognitive function at age 30, and that this test be repeated annually to determine any deterioration in this function. Some Alzheimer's disease symptoms can be treated, although there is no current means of curing or arresting the disease.
- Current research suggests a causative link between the extra "gene dosage" from the third chromosome 21 of Down syndrome and Alzheimer's disease. To advance research, donations of brain tissue from individuals with Down syndrome and Alzheimer's disease are being sought.

If you would like additional information on Alzheimer's disease and Down syndrome, please refer to the NDSS Resource List on Alzheimer's disease, available online at www.ndss.org or through the NDSS Helpline, (800) 221-4602.

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