

## Is it Just Dementia and Not Alzheimer's?

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Actually, dementia and Alzheimer's disease are NOT the same. The terms "dementia" and "Alzheimer's" are sometimes used interchangeably. Dementia, as a global syndrome, impacts mental cognitive tasks such as memory and reasoning. Dementia is NOT a disease. Alzheimer's IS a disease which is a type of dementia. Dementia, according to the World Health Organization, currently impacts 47.5 million individuals. In the United States alone, some 7 million age 65 and older have Alzheimer disease. This disease is projected to increase to 13.8 million by 2050 including 7 million people age 85 and older. Dementia negatively affects memory, thinking and behaviors which interfere with daily living. Latest public data indicates 303 Americans are dying every day from Alzheimer's.

Many conditions can cause dementia, including neurodegenerative diseases like Alzheimer's, Parkinson's, Huntington's Disease, Lewy body dementia, brain damage due to injury or stroke (vascular dementia), depression, chronic drug use, diabetes, metabolic disorders and mass/tumor presence in the brain. In Alzheimer's, (which represents 60-80 percent of all cases of dementia according to the US Alzheimer's Association), Parkinson's and Huntington's diseases, each of these diseases causes different brain cells to be damaged.

Often times people can have more than one type of dementia. Mixed dementia can be caused by multiple health conditions. Diagnosis of mixed dementia, unfortunately, can only be confirmed once the individual... has expired... through medical autopsy.

Alzheimer's and the various forms of dementia share many of the same symptoms including a decline in the ability to think, memory impairment and communication impairment. Alzheimer's specifically also includes difficulty remembering recent events or conversations, depression, impaired judgement, disorientation, confusion, behavioral changes and in advanced stages difficulty speaking, swallowing or walking.

Diagnosis, and subsequent treatment of Alzheimer's, requires regular periodic evaluations as it is a chronic ongoing condition causing slow degenerative decline of the brain. There is no cure but use of certain medications like cholinesterase inhibitors (donepezil, rivastigmine, galantamine) can slow progression of the disease and may improve quality of life. Not to be disregarded however are recent studies which suggest these medications can cause increased hospitalizations as a major side effect due to ineffectiveness. Other used medications can include N-methyl-d-aspartate receptor antagonists such as memantine. These antagonists are typically reserved for moderate to severe disease. No single expected outcome for people Alzheimer's exists. Some people live with the mild cognitive damage for a long time (years), while others experience rapid onset of symptoms and quicker disease progression in three years. Importantly, the journey with Alzheimer's disease is different for each individual. Many additional medications are currently being studied in clinical trials in the US and Europe.

Typically, the diagnosis of Alzheimer's or dementia begins with an extensive neurological assessment. There are many different assessments used worldwide. These assessments involve asking different questions relating to awareness of current and past events, ability

to convert and draw pictures of different suggested items, remembrance of a short list of words with an impairment rating of the patient results (normal, moderate or severe). Australia has been a leader in developing and implementing various assessments. Some of the assessments used internationally include the AMTS (Abbreviated Mental Test Score-Australia), AD8 (Eight Item Dementia Screening Interview-United States), FAB (Frontal Assessment Battery to discriminate between dementias-New Zealand), GPCOG (General Practitioner Assessment of Cognition-Australia), MOCA (Montreal Cognition Assessment-Canada), PAS (Psychogeriatric Assessment Scales-Australia), RUDAS (Rowland Universal Dementia Assessment Scale-A Multicultural Cognitive Assessment- Australia), ACE-R (Addenbrooke's Cognitive Examination-New Zealand) and the NPI/NPI-Q (Neurological Psychiatric Inventory Questionnaire for Patients and Caregivers-many countries). Several excellent clinical comparisons between vascular and neurodegenerative types of dementia reported in the literature have been completed in Italy, Chile, Europe and the United States.

Following use of the neurological assessments, brain imaging studies are often conducted to create a picture of the brain and can include MRI (magnetic resonance imaging to determine inflammation, bleeding and structural issues), CT (computed tomography scan to look for abnormal characteristics in the brain like neurofibrillary nerve tangles and nerve synapse(junction) blocking) and PET (positron emission tomography scan to detect one has significant risk for Alzheimer's disease).

The most sophisticated Alzheimer biomarkers test is the Tau/Ab42 test which can distinguish Alzheimer disease from other forms of dementia. It is not available as a routine laboratory test and is only available in research settings or memory clinics. This test measures amyloid beta 42 and tau protein in the cerebrospinal fluid. The amyloid beta 42 is a peptide which when is present through increased production is responsible for formation of senile plaques. Tau, a structural protein in the brain, is responsible for producing the neurofibrillary tangles of nerves. Neurofibrillary tangles and senile plaques are the two main diagnostic features of Alzheimer's disease. What causes these brain changes is still unknown although many possible causes have been offered for this complex disease as mentioned earlier in this editorial.

As research advances worldwide, the development of a new blood test which measures the amount of amyloid protein in a person's blood with prediction accuracy of 94% has been developed by Washington University in Saint Louis, Missouri, USA. Development of a potential vaccine to prevent Alzheimer's disease is being studied and developed at the University of New Mexico in Albuquerque, New Mexico, USA. Recent reports indicate that China has already developed a vaccine for Alzheimer's and begun administering it to younger individuals.

As a final comment regarding dementia and Alzheimer's, researchers at the John Hopkins University School of Medicine in Maryland, USA with support from the United States National Institutes of Health (NIH), have learned that brain changes may occur 30 years before Alzheimer's symptoms appear. This learning was confirmed by evaluating cerebrospinal fluid levels and brain imaging for individuals followed for the 30 year duration. The researchers concluded that it may be possible to use brain imaging and spinal fluid analysis to assess risk of Alzheimer's diseases at least 10 years or more before the most common symptoms occur, such as mild cognitive impairment, which advances to the later stages of Alzheimer's disease.

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