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### Alzheimer's Disease Today & Tomorrow

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# Alzheimer's Disease Today & Tomorrow

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## Introduction

Alzheimer's Disease (AD) has impacted me on a personal level and professional level. I witnessed my grandfather slowly slip away at the hands of AD over the course of a decade. As a psychiatric nurse, I have provided care for geriatric patients diagnosed with Alzheimer's Disease and stuck in a cycle of acute psychiatric distress and chronic neurodegeneration.

- Over 100 years ago, Dr. Alois Alzheimer first described AD. (Alzheimer's Association, 2016)
- In 1994, former President Ronald Reagan put AD in the spotlight when he publicly shared his diagnosis. (Alzheimer's Association, 2016)
- In 2013, the CDC estimates as many as 5 million Americans suffered from AD.
- By 2050 a nearly three-fold increase in AD cases will impact 14 million Americans (CDC, 2015).

The progress and impact of AD research can be as slow as the pathophysiologic changes in the brain of an Alzheimer's patient. So where are we today and where will we be tomorrow, in relation to Alzheimer's Disease?

## Signs & Symptoms

Preclinical, asymptomatic period may occur years before the early stage of AD, but pathophysiologic changes in the brain are probable during this time (Harvard, 2011).

Three Disease Stages (Alzheimer's Association, 2016):

1. Mild Alzheimer's disease (early-stage)- mild memory and thinking deficits
2. Moderate Alzheimer's disease (middle-stage)- longest stage with progressive memory and cognitive deficits, behavioral and personality changes
3. Severe Alzheimer's disease (late-stage)- continued worsening of cognitive deficits until total loss of cognition and executive functioning, along with personality changes and inability to function independently

Ten Early Signs of Alzheimer's (Alzheimer's Association, 2016):

1. Memory loss that disrupts daily life
2. Difficulty with problem-solving & planning
3. Problems completing familiar tasks
4. Confusion with time or place
5. Trouble understanding special relationships & visual images
6. New problems with speech & written vocabulary
7. Misplacing items & inability to retrace steps
8. Decreased or poor judgment
9. Withdrawal from activities
10. Changes in personality & mood



## Underlying Pathophysiology

Inflammation and ischemia of the brain may influence the development of beta-amyloid plaques and neurofibrillary tangles associated with AD (Narins, 2012). Free radical damage through oxidative processes have been known to damage brain cells (Narins, 2012). Research has identified a link between memory deficits and integrated neuronal cortical defects (Lyketsos, 2012). While viral, immunological, and biochemical factors have been noted as causative suspects, genetics are implicated in familial Alzheimer's disease (FAD) early- onset and late- onset Alzheimer's disease, although to a much lesser extent (Narins, 2012). Genetic defects linked with AD include:

- Amyloid precursor protein (APP) on chromosome 21
- Presenilin 1 (PSEN1) on chromosome 14
- Presenilin 2 (PSEN2) on chromosome 1
- Apolipoprotein E gene-allele 4 (apoE4) on chromosome 19

The precise cause of AD is unknown, but the leading theory of the disease process includes the following (Narin, 2012):

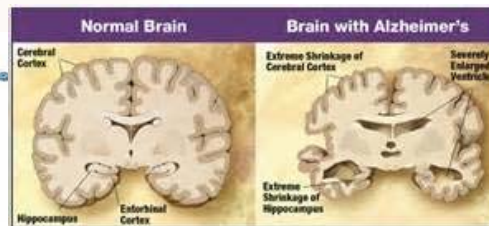
- Collection of beta-amyloid protein plaques outside neurons
- Tau protein form neurofibrillary tangles inside neurons
- Loss of synaptic function
- Destruction of neurons & brain tissue
- Widening of sulci
- Thinning of gyri
- Enlarged ventricles

## Significance of Pathophysiology

The significance of Alzheimer's pathophysiology can be seen as the disease progresses and specific areas of the brain atrophies, resulting in deterioration of patient functioning (Narin, 2012):

- Hippocampus >>> memory (specifically short-term) decline
- Cerebral cortex >>> language, judgment, behavior, and body functions decline
- Posterior frontal lobes >>> motor issues, hypertonicity
- Brain stem >>> loss of vital functioning (digestion, respiration and excretion)

Other significant consequences of AD pathophysiology include vision problems, exaggerated reflexes and seizures putting patients at risk for falls and injuries (Narin, 2012). Spatial and temporal disorientation may result in psychotic-like symptoms such as delusions, paranoia and hallucinations (Narin, 2012). Some patients may exhibit sexually inappropriate behaviors, and others may experience insomnia with nighttime confusion or agitation known as sundowner's syndrome (Narin, 2012). As the disease progresses, so does the patient's loss of independence. Patients become at greater risk for harm to themselves and in some cases others.



## Implications for Nursing Care

There is no cure for Alzheimer's disease and treatment is typically focused on decreasing cognitive impairments and preserving cognitive function while promoting good overall health and well-being (Narin, 2012). Nurses tend to be on the front line for medical care and patient education. Knowledge of the disease process, current and developing treatments and patient preferences are important factors for nursing care.

Early patient education focused on preventative measure and overall good health may be beneficial. Studies have shown that diet and modifiable lifestyle factors are associated with risk for AD and include, obesity, diabetes, hypertension, and hyperlipidemia (Thomas, 2015). Nutritional education is particularly important for AD patients as they are often malnourished and have nutrient deficiencies (Thomas, 2015). Observational studies and controlled trials indicate that regular physical activity can lessen the risk for cognitive decline in the elderly and yoga practice may be beneficial in memory and cognitive function and in turn helpful in the management of AD (Bhargav, 2015).

Research has been focused on modifying the progression of the disease, while developments in diagnostic biomarkers, proteomics and neuroimaging may assist in earlier diagnosis and treatment and detection of high risk individuals (Brodaty, et. Al, 2011). In turn, clinicians may see more patients with definitive AD diagnosis while at a higher level of cognitive functioning than typically seen today (Brodaty, et. Al, 2011). Often clinicians turn to an AD patient's caregiver for assessment information, despite the fact that individuals with dementia can provide reliable and meaningful reports (Mast, 2012).

Integrating person-centered care with diagnostic assessments and treatment planning can improve the quality of care and quality of life for patients dealing with this devastating disease. When used properly, the following supplemental assessment tools can provide valuable information to clinicians, while taking a person-centered approach and building a therapeutic relationship with the patient (Mast 2012).

- Quality of Life (QOL)- AD Scale
- Pleasant Events Schedule (shorter version for AD)
- Alzheimer's Disease Knowledge Scale
- Fear of Alzheimer's Disease Scale (FADS)
- Stigma Impact Scale (SIS)
- Values and Preferences Scale

## Conclusions

As Alzheimer's disease exponentially impacts more lives and our nation's economy, we as clinicians need to be ready to think outside the box. We must stay abreast of current and developing diagnosis assessment tools, treatment options and interventions. It is not enough to simply maintain a person's existence through the years and even decade or more of an Alzheimer's diagnosis. Despite the loss of memory, despite the loss of functioning, there is a person inside the shell that has been left behind by this devastating disease. A person that has touch the lives of his or her family and friends and deserves the same amount of consideration and care as a patient fighting cancer, heart disease or diabetes.

\*Images retrieved from :  
Renegadehealth.com  
Medicinenet.com



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