

Dementia: An In-Depth Review

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Purpose and Objectives

The purpose of this course is to provide an overview about various forms of dementia, including causes, diagnosis, management and therapeutic interventions, and outcomes.

After successful completion of this course, you will be able to:

1. Define dementia
2. Describe types of dementia
3. Discuss pathophysiological changes which occur with dementia
4. Discuss risk factors for each type of dementia
5. Identify the behaviors of each type dementia
6. Identify current pharmacological and non-pharmacological therapies used with dementia patients
7. Explain how dementia is diagnosed
8. Describe cognitive changes associated with other conditions
9. Discuss strategies for interacting with dementia patients
10. Describe the impact of current research and clinical studies

Introduction

Dementia is a general term for a decline in mental capacity severe enough to interfere with activities of daily life. Dementia is not a specific disease, but is used to describe the loss of cognitive functioning. While the aging process can cause loss of some neurons, people with dementia experience far greater loss. Dementia patients can lose the ability to think, remember, or reason, which may lead to behavioral complications (Alzheimer's Association, 2015; National Institutes of Health, 2013b).

Facts and Figures

The prevalence of dementia can be difficult to determine with varied international estimates. This is related to the complexity of diagnosis, as many symptoms can be attributed to the aging process rather than dementia. Many cases can go undiagnosed. One assessment conducted by the Organization for Economic Cooperation and Development (OECD) estimated that dementia affects about 10 million people in 34 OECD member countries. More recent analyses have estimated the worldwide number of people living with dementia is between 27 million and 36 million (National Institute on Aging, 2015).

The prevalence of AD and other dementias is very low at younger ages, and then nearly doubles with every five years after age 65. In the OECD review, for example, dementia affected fewer than three percent of those aged 65 to 69, but almost 30 percent of those aged 85 to 89. The 2010 World Alzheimer Report by Alzheimer's Disease International estimated that the total worldwide cost of dementia exceeded \$600 billion (National Institute on Aging, 2015).

In the United States, eleven million Americans provide unpaid care for someone with dementia. Older African-American and Hispanics are considerably more likely than older whites to have dementias (related to other health issues, like hypertension and diabetes). In addition, people with dementia are high users of healthcare, long-term care, and hospice (National Institute on Aging, 2015).

Types of Dementia

There are various types of dementia. These include:

- Alzheimer's disease (most common)
- Vascular dementia
- Lewy Body dementia
- Frontotemporal disorders
- Mixed dementia
- Cognitive changes associated with Parkinson's disease, Huntington's disease, and multiple sclerosis
- Traumatic brain injury
- Korsakoff Syndrome
- Other conditions

This course focuses on dementias other than Alzheimer's disease. For further information on Alzheimer's disease, review the RN.com course titled "*Alzheimer's Disease: An In-Depth Review*".

Test Yourself

The estimated number of people living with dementia worldwide is between:

- A. 2 million and 3 million
- B. 27 million and 36 million
- C. 55 million and 72 million

The correct answer is: B. 27 million and 36 million.

Inside the Brain: An Interactive Tour

The Alzheimer's Association has a very enlightening tour of the brain and how it is affected by Alzheimer's. Although the video discusses Alzheimer's disease, the information can be applied to all dementias. [Click here](#) to take the interactive tour.

For further information on anatomy and physiology of the brain, review the RN.com course titled "*RN.com's Assessment Series: Neurological Anatomy and Physiology*".

Dementia: What It Is and What It Is Not

Emotional problems, such as anxiety or depression, can make a person more forgetful and can be mistaken for dementia. For instance, someone who has recently retired or who is coping with the death of a spouse may feel sad, lonely, and worried. Trying to deal with these life changes leaves some people confused or forgetful (Alzheimer's Association, 2015).

Dementia is NOT a normal part of aging.

Cognitive Symptoms of Dementia: Aphasia

Aphasia is the inability to communicate effectively. The loss of ability to speak and write is called expressive aphasia. An individual may forget words he has learned, and will have increasing difficulty with communication. With receptive aphasia, an individual may be unable to understand spoken or written words or may read and not understand a word of what is read. Sometimes an individual pretends to understand and even nods in agreement; this is to cover-up aphasia. Although individuals may not understand words and grammar, they may still understand non-verbal behavior (National Institute on Aging, 2014).

Cognitive Symptoms of Dementia: Apraxia

Apraxia is the inability to do pre-programmed motor tasks, or to perform activities of daily living such as brushing teeth and dressing. An individual may forget all motor skills learned during development. Sophisticated motor skills that require extensive learning, such as job-related skills, are the first functions that become impaired. More instinctive functions like chewing, swallowing and walking are lost in the last stages of the disease (National Institute on Aging, 2014).

Cognitive Symptoms of Dementia: Agnosia

Agnosia is an individual's inability to correctly interpret signals from their five senses. Individuals with Alzheimer's disease may not recognize familiar people and objects. A common yet often unrecognized agnosia is the inability to appropriately perceive visceral, or internal, information such as a full bladder or chest pain (National Institute on Aging, 2014).

Psychiatric Symptoms of Dementia

Major psychiatric symptoms include personality changes, depression, hallucinations and delusions.

Personality changes can become evident in the early stages of dementia. Signs include irritability, apathy, withdrawal and isolation. Individuals may show symptoms of depression at any stage of the disease. Depression is treatable, even in the latter stages of dementia.

Psychotic symptoms include hallucinations and delusions, which usually occur in the middle stage of dementia. Hallucinations typically are auditory and/or visual. Sensory impairments, such as hearing loss or poor eyesight, tend to increase hallucinations in the elderly.

Hallucinations and delusions can be very upsetting to the person with the disease. Common reactions are feelings of fear, anxiety and paranoia, as well as agitation, aggression and verbal outbursts.

Individuals with psychiatric symptoms tend to exhibit more behavioral problems than those without these symptoms (National Institute on Aging, 2014). It is important to recognize these symptoms so that appropriate medications can be prescribed and safety precautions can be taken.

Warning Signs of Dementia

Typical Age-Related Change	Dementia Warning Sign
Forgets but remembers later (e.g. forgets where the car was parked, but remembers in seconds)	Experiences memory loss that interferes with daily routine (e.g. forgets how to make coffee or do laundry)
Experiences occasional gaps in memory (e.g. forgets some formula aspect of a math problem, but remembers it later)	Has challenges solving problems performed for years (e.g. mathematical statistician now takes much longer to solve problems)
Occasionally needs help (e.g. needs help writing the grocery list)	Has difficulty accomplishing usual activities (e.g. has no memory of the location of the market visited for years)
Occasionally forgets (e.g. forgets daughter's birthday, but remembers it later)	Has confusion about specific or usual place (e.g. doesn't know home address or make of car having lived in the home for years with the same car)
Experiences visual changes related to aging (e.g. cataracts that affect vision)	Has trouble understanding visual images (e.g. has difficulty determining whether seeing a car or a truck)

Occasionally has gaps in conversation (e.g. stops conversation to search for a particular word)	Experiences increased problems speaking or writing (e.g. has difficulty following a conversation and frequently repeats the same information)
Forgets placement of object, but remembers later (e.g. forgets putting keys in purse, but remembers placing them there later)	Puts things in usual place, but never able to remember the thing or place; never remembers the loss (e.g. loses entire purse and never knew she had one)
Makes an occasional wrong or bad decision (e.g. decides to walk half a mile after recent knee surgery, realizing afterwards probably shouldn't have)	Applies poor judgment with no thought (e.g. overpays the newspaper delivery person, but doesn't remember doing so or ever seeing the person)
Adapts work or social activities for a good reason (e.g. decreases work schedule from five days a week to three days a week after 25 years)	Becomes disinterested in usual social activities (e.g. has difficulty playing bridge with social group after enjoying it for 25 years)
Gets upset with changes in established routine of doing things (e.g. watches noon soap opera daily, daughter makes physician appointment for noon, gets irritated by change in routine)	Has unpleasant mood or personality change that may be frightening because of memory loss (e.g. visits relatives in their home and gets anxious because of the strange environment)

Test Yourself

Match the symptoms with the correct category:

- Has trouble understanding visual images
- Occasionally forgets
- Has difficulty accomplishing usual activities
- Forgets but remembers later

Typical Age-Related Change

Dementia Warning Sign

Correct:

Typical Age-Related Change

- **Occasionally forgets**
- **Forgets by remembers later**

Dementia Warning Sign

- **Has trouble understanding visual images**
- **Has difficulty accomplishing usual activities**

Risk Factors for Dementia

There are some general risk factors for the development of dementia. These include:

- Advancing age
- Alcohol use
- Atherosclerosis
- Diabetes
- Down syndrome
- Family history of dementia
- Hypertension
- Mental illness
- Smoking

(National Institutes of Health, 2013b)

Types of Dementia: Vascular Dementia

Vascular dementia is also known as multi-infarct or post-stroke dementia. This form of dementia accounts for 10-25 percent of all dementia cases (Alzheimer's Association, 2015). Vascular dementia results from injuries to the vessels supplying blood to the brain. These disorders can be caused by brain damage from multiple cerebral vascular accidents (CVA) or any impairment to the small vessels carrying blood to the brain. Even people who have suffered only small CVAs can have a significant risk of developing dementia (National Institutes of Health, 2013b). Vascular dementia is a common comorbidity with Alzheimer's disease in the elderly (Montine, 2014).

Vascular Dementia: Pathophysiology and Diagnosis

Pathologic assessment of vascular dementia has been made difficult by the lack of a clear, standardized, and widely accepted rubric for diagnosis and staging. Vascular dementia is associated with gross ischemic infarcts, lacunar infarcts (in the small vessels), arteriolosclerosis, and microscopically identified infarcts.

Studies have shown that hypoxia and ischemia play a role in the pathology of white matter lesions and development of vascular dementia. Other pathogenic factors include immune activation, dysfunction with the blood-brain barrier, altered cell metabolic pathways, and injuries to glial cells.

Criteria that are used for the pathologic diagnosis of vascular dementia include multiple large and/or specific infarcts in the cerebrum, or three or more microscopic infarcts identified in smaller blood vessels. Another cause of multiple small strokes that can result in vascular dementia is a rare disease called cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL) (Montine, 2014).

Vascular Dementia: Risk Factors

Risk factors for vascular dementia are similar to those associated with cerebrovascular disease and CVA. These include:

- Atrial fibrillation

- Hypertension
- Diabetes
- High cholesterol
- Amyloid angiopathy (amyloid plaques accumulate in the blood-vessel walls, causing them to break down and rupture)

(National Institutes of Health, 2013b).

Vascular Dementia: Symptoms

Symptoms can vary, depending on the area of the affected brain, and the severity of the blood vessel damage. It may be difficult to determine symptoms of vascular dementia, rather than effects of the actual CVA.

Vascular dementia symptoms may be most obvious when they happen soon after a major CVA. Sudden changes in thinking and perception following a CVA may include:

- Confusion
- Disorientation
- Trouble speaking or understanding speech (aphasia)
- Vision loss
- Memory loss may or may not be a suggestive symptom depending on the specific brain area affected

(Alzheimer's Association, 2015).

Vascular Dementia: Treatment

Treatment of vascular dementia includes management of the underlying causes such as atrial fibrillation and high blood pressure; and preventing further CVAs (Alagiakrishnan, 2015). Medications may include:

- **Beta blockers:** medications such as metoprolol, propranolol, and atenolol may be used to treat high blood pressure or atrial fibrillation.
- **Antiplatelets:** medications such as clopidogrel, aspirin, and prasugrel may be used to reduce chance of clot formation.
- **Neuroprotectives:** medications such as rasagiline may reduce ischemic damage to the brain.
- **Antipsychotics:** medications such as Haloperidol, Clozapine, Quetiapine, and Risperidone may be used to manage any psychotic behaviors.
- **Antidepressants:** medications such as Amitriptyline, Bupropion, and Fluoxetine may be used for mood.

Medications used to treat Alzheimer's disease may also benefit individuals with vascular dementia. Other management includes appropriate referral to community services, occupational therapy or

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speech therapy, assistance with advance directives, and consideration of caregiver stress (Alagiakrishnan, 2015; Alzheimer's Association, 2015).

Types of Dementia: Lewy Body

Lewy bodies are abnormal aggregations (or clumps) of the protein alpha-synuclein. When these bodies develop in the cortex of the brain, dementia can result. Lewy body dementia is the third most common type of dementia, with up to 10 percent of cases (Alzheimer's Association, 2015; National Institutes of Health, 2013a).

Lewy Body: Pathophysiology and Diagnosis

Distribution of Lewy bodies in the central nervous system may be found in various areas. Lewy bodies present only in the medulla are usually asymptomatic, or may be associated with symptoms of autonomic dysfunction. Lewy bodies present predominantly in the brain stem and medulla may be asymptomatic, or associated with a diagnosis of Parkinson's disease. Lewy bodies in the brainstem, amygdala, entorhinal cortex, and cingulate gyrus can produce cognitive impairment.

Diffuse distribution in the brainstem and limbic structures can atrophy the cortex. Staining of brain tissue samples for each section can assist in classification of Lewy body dementia. Many times, diagnosis is not made until post-mortem. Pathologic changes of both Lewy body dementia and Alzheimer's disease may be present (Montine, 2014).

Lewy Body: Risk Factors

Specific causes and risk factors have not yet identified for Lewy body dementia. Most people diagnosed with Lewy body dementia have no family history of the disorder, and there have been no identified genes linked to Lewy body dementia (Alzheimer's Association, 2015).

Lewy Body: Symptoms

Symptoms of Lewy body dementia can begin as subtle, and progress over time prior to diagnosis. These include:

- Difficulty sleeping and insomnia
- Loss of smell
- Visual hallucinations
- Memory loss
- Poor judgment
- Confusion
- Difficulty with movement and posture
- A shuffling gait
- Changes in alertness and attention

(National Institutes of Health, 2013a).

Lewy Body: Treatment

Treatment of Lewy body dementia includes management of the symptoms of stiffness, hallucinations, and delusions (National Institutes of Health, 2013a). Medications may include:

- **Cholinesterase inhibitors:** medications such as Donepezil, Rivastigmine, and Galantamine may

be used to treat memory, language, and other thought processes.

- **Antipsychotics:** medications such as Haloperidol, Clozapine, Quetiapine, and Risperidone may be used to manage any psychotic behaviors.
- **Antidepressants:** medications such as Amitriptyline, Bupropion, and Mirtazapine may be used for mood.
- **Antianxiety agents:** medications such as clonazepam may be used to improve sleep

Medications used to treat Alzheimer's disease may also benefit individuals with Lewy body dementia. Other management includes appropriate referral to community services, occupational therapy or speech therapy, assistance with advance directives, and consideration of caregiver stress (Alzheimer's Association, 2015).

Types of Dementia: Frontotemporal Disorders

Frontotemporal disorders are caused by a family of brain diseases that primarily affect the frontal and temporal lobes of the brain. These disorders account for up to 10 percent of all dementia cases (National Institutes of Health, 2013b). Frontotemporal dementia causes cell damage, which leads to tissue shrinkage and reduced function in the brain's frontal and temporal lobes. These lobes control planning and judgment, emotions, speaking and understanding speech, and certain types of movement (Alzheimer's Association, 2015).

Test Yourself

A CVA is associated with what type of dementia?

- A. Lewy body dementia
- B. Vascular dementia
- C. Frontotemporal disorder

The correct answer is: B. Vascular dementia.

Frontotemporal Disorders: Pathophysiology and Diagnosis

Patients with frontotemporal disorders have variable atrophy of the frontal and temporal lobes that is usually asymmetric. These disorders have multiple etiologies and many have characteristic histopathological changes, including defects with genes or mutated proteins.

There is currently no available testing that can conclusively diagnose frontotemporal dementia. Imaging may help with diagnosis by detecting shrinkage of the frontal and temporal lobes of the brain. Frontotemporal disorders are diagnosed based on clinical judgment. Post-mortem testing may help confirm the diagnosis (Montine, 2014).

Frontotemporal Disorders: Categories

There are three types of frontotemporal disorders, which are categorized based on the earliest symptoms identified:

- **Progressive behavior and personality decline:** this includes changes in behavior, personality, judgment, and emotions.

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- Progressive motor decline: this includes changes in physical movement, such as difficulty walking, poor coordination, shaking, and frequent falls.
- Progressive language decline: this includes changes in language ability, such as understanding, speaking, writing, and reading. Primary progressive aphasia is one example of language decline.

(National Institute of Aging, 2010)

Primary Progressive Aphasia: A Closer Look

Primary progressive aphasia (PPA) involves changes in the ability to communicate, including speaking, understanding, reading, and writing. Difficulties with reasoning, memory, and judgment are not usually identifiable at first, but develop over time. Behavioral changes may also occur over time, such as personality and behavior. There are three types of primary progressive aphasia:

- **Semantic PPA (also called semantic dementia):** with this type, an individual slowly loses the ability to understand single words. There may also be difficulty in recognizing familiar faces and common objects.
- **Agrammatic PPA (also called progressive nonfluent aphasia):** with this type of PPA, an individual has trouble saying complete sentences, particularly with adjectives such as “of,” “from,” and “for.” Eventually, the person may no longer be able to speak at all. Difficulty swallowing and with movement may also occur.
- **Logopenic PPA:** with this type, an individual has trouble finding the right words during a conversation, but can understand words and sentences. The person does not have problems with grammar.

(National Institute of Aging, 2010)

Frontotemporal Disorders: Risk Factors

Some forms of frontotemporal dementia are associated with gene mutations. Others may be linked to mutated proteins, including an inherited form (National Institutes of Health, 2013b). About 20 to 40 percent of people with frontotemporal disorders have a family history, with about 10 percent of people inheriting the disorder directly from a parent. In many cases, the cause is unknown (National Institute of Aging, 2010).

Frontotemporal Disorders: Symptoms

In frontotemporal disorders, some people decline rapidly over a few years, while others show only minimal changes for many years. The signs and symptoms may vary greatly among individuals as different parts of the brain are affected (National Institutes of Health, 2013b).

Frontotemporal Disorders: Treatment

Treatment of frontotemporal disorders includes management of the physical and behavioral symptoms (National Institutes of Health, 2013b). Medications may include:

- **Antipsychotics:** medications such as Haloperidol, Clozapine, Quetiapine, and Risperidone may be used to manage any psychotic behaviors.

- **Antidepressants:** medications such as Amitriptyline, Bupropion, and Fluoxetine may be used for mood.

Medications used to treat Parkinson's and Alzheimer's disease may also benefit individuals with frontotemporal disorders. Other management includes appropriate referral to community services, occupational therapy or speech therapy, assistance with advance directives, and consideration of caregiver stress (Alzheimer's Association, 2015).

Test Yourself

The type of primary progressive aphasia that includes difficulty in finding the right words during a conversation is known as:

- A. Semantic PPA
- B. Agrammatic PPA
- C. Logopenic PPA

The correct answer is: C. Logopenic PPA

Types of Dementia: Mixed Dementia

Mixed dementia occurs when abnormalities linked to more than one type of dementia occur concurrently in the brain. Most commonly are combination of Alzheimer's disease and vascular dementia, but other types also occur. Recent studies suggest that mixed dementia may be more common than previously realized (Alzheimer's Association, 2015). Risk factors for mixed dementia include the risk factors for the associated types of dementia.

Mixed Dementia: Symptoms

The symptoms of mixed dementia vary, depending on the types of brain changes involved and the brain areas affected. In many cases, symptoms may be the same or similar to those of Alzheimer's or another type of dementia. In other cases, a person's symptoms may suggest that more than one type of dementia is present (Alzheimer's Association, 2015).

Mixed Dementia: Treatment

Treatment of mixed dementia is difficult. Because most people with mixed dementia are diagnosed with a single type of dementia, the medications prescribed are usually based on the type of dementia that has been diagnosed. No medications are specifically approved by the U.S. Food and Drug Administration (FDA) to treat mixed dementia. Physicians who believe that Alzheimer's disease is among the conditions contributing to a patient's dementia may consider prescribing the drugs that are FDA-approved for Alzheimer's (Alzheimer's Association, 2015).

Did You Know?

There is ongoing research about how underlying disease processes in mixed dementia influence each other. For example, it is not known if symptoms are worse with an individual who has brain changes demonstrating multiple types of dementia. It is also unknown if treating one type of dementia will benefit a patient with multiple dementias (National Institutes of Health, 2013b).

Diagnosing Dementia

An early, accurate diagnosis of dementia helps patients and their families plan for the future. It gives them time to discuss care options with the patient. Early diagnosis also offers the best chance to treat the symptoms of the disease.

To diagnose and identify the type of dementia, healthcare providers typically rely on the information they can gather by interacting with the individual, and speaking with his or her family members. Information gathered for diagnosis includes:

- **A complete medical history:** This includes information about the person's general health, past medical problems, and any difficulties the person has carrying out daily activities
- **Neuropsychological tests:** The provider will typically perform memory and other cognitive (thinking) tests to assess the person's degree of difficulty with different types of problems. These tests can measure memory, problem solving, attention, counting, and language. The results of these tests can be monitored over time.
- **Medical tests:** This includes tests of blood, urine, or spinal fluid. Blood tests may be performed to investigate if a chemical or hormonal imbalance or vitamin deficiency is contributing to the person's difficulties. A lumbar puncture is sometimes performed to help identify the type of dementia
- **Imaging:** Brain scans (usually MRI) are performed in people with dementia to rule out other problems. Imaging can also help healthcare providers identify the type of dementia
- **Psychiatric testing:** Evaluation is done to determine if symptoms are caused by a mental illness

(Alexander & Larson, 2015; National Institutes of Health, 2013b).

Cognitive Changes in Other Disorders: Parkinson's Disease

Parkinson's disease is a chronic neurodegenerative disorder, usually characterized by motor symptoms, including tremor, rigidity, difficulties in balance, bradykinesia (slow movement) or akinesia (loss of voluntary movement). Parkinson's disease affects over four million people worldwide (Solari, Bonito-Oliva, Fisone, & Brambilla, 2013).

Cognitive changes can also occur with Parkinson's disease. These may include:

- Attention deficits
- Memory deterioration
- Inability to plan
- Difficulty in forming concepts or abstract reasoning
- Inability to recognize objects

Treatment of Cognitive Changes in Other Disorders: Parkinson's Disease

Treatment of cognitive changes associated with Parkinson's disease includes symptom management (Solari et al., 2013). Medications may include:

- **Cholinesterase inhibitor:** Rivastigmine may be used to treat memory, language, and other thought processes.
- **Antipsychotics:** atypical antipsychotics, such as Clozapine, Quetiapine, and Risperidone may be used to manage any psychotic behaviors. Other antipsychotics should be avoided, as they can increase motor symptoms.
- **Antidepressants:** tricyclic antidepressants such as Amitriptyline and atypical antidepressants such as Bupropion and Mirtazapine may be used for mood.

Other management includes appropriate referral to community services, occupational therapy or speech therapy; and behavioral and cognitive therapy (Solari et al., 2013).

Cognitive Changes in Other Disorders: Huntington's Disease

Huntington's disease is a hereditary neurodegenerative disease which progressively worsens and is ultimately fatal. Motor symptoms include uncoordinated movements, imbalance, clumsiness, difficulty speaking, difficulty swallowing, and impaired ability to walk (Huntington's Disease Society of America, 2013).

Cognitive changes can also occur with Huntington's disease, and may actually present earlier than motor symptoms. Changes in cognition can be debilitating. These may include:

- Memory deterioration
- Deficits in attention and learning
- Difficulty in forming concepts or abstract reasoning
- Inability to recognize objects
- Difficulty with language and communication

Treatment of Cognitive Changes in Other Disorders: Huntington's Disease

Treatment of cognitive changes associated with Huntington's disease includes symptom management (Huntington's Disease Society of America, 2013). Medications may include:

- Tetrabenazine is the only FDA-approved medication for Huntington's disease motor abnormalities (to decrease uncontrolled movements)
- **Antipsychotics:** medications such as Haloperidol, Risperidone, and Chlorpromazine may be used to manage any psychotic behaviors
- **Antidepressants:** medication such as Citalopram, Fluoxetine, and Sertraline may be used for mood

Other management includes appropriate referral to community services, occupational therapy or speech therapy, and behavioral and cognitive therapy (Huntington's Disease Society of America, 2013).

Cognitive Changes in Other Disorders: Multiple Sclerosis

Multiple sclerosis (MS) is an autoimmune disease of the central nervous system (CNS), that attacks the body's myelin sheaths, which protect neurons. Without this myelin, there is malfunction in communication between the brain and spinal cord. Physical symptoms include weakness, loss of coordination, neuropathic pain, and paralysis (Rahn, Slusher, & Kaplin, 2012).

Cognitive changes can also occur with multiple sclerosis. These may include:

- Memory deterioration
- Impairment of attention and concentration
- Difficulty finding words
- Slower ability to process information
- Decreased abstract reasoning and problem solving
- Difficulty with visual spatial abilities

Treatment of Cognitive Changes in Other Disorders: Multiple Sclerosis

Although medications are currently being studied, those used to treat Alzheimer's disease and other dementias have not been successful with multiple sclerosis patients. With the focus on compensation for symptoms, management includes appropriate referral to community services, coping methods, speech therapy, and behavioral and cognitive therapy (Rahn, Slusher, & Kaplin, 2012).

Test Yourself

Medication has not been found useful in managing cognitive changes in which disorder?

- A. Parkinson's disease
- B. Multiple sclerosis
- C. Huntington's disease

The correct answer is: B. Multiple sclerosis

Cognitive Changes: Traumatic Brain Injury

Traumatic brain injury (TBI) is the disruption of normal brain function caused by a blow or jolt to the head or penetration of the skull by a foreign object, which may occur with trauma, a fall, or sports injuries. Not all blows or jolts to the head disrupt brain function (Alzheimer's Association, 2015).

Symptoms of a traumatic brain injury include:

- Loss of consciousness
- Inability to remember events that occurred immediately before or up to 24 hours after the injury
- Confusion
- Disorientation
- Difficulty remembering new information
- Headache
- Dizziness
- Blurred vision
- Nausea and vomiting
- Tinnitus

- Difficulty speaking coherently
- Insomnia
- Lability

Cognitive Changes: Traumatic Brain Injury

There are three severities of brain injury: mild, moderate, and severe.

- **Mild TBI:** also known as a concussion. There is either no loss of consciousness or the patient is unconscious for 30 minutes or less. Symptoms often appear at the time of the injury or immediately after, but sometimes may not develop for days or weeks. Mild TBI symptoms are usually temporary and clear up within hours, days or weeks, but they can last months or longer.
- **Moderate TBI:** this causes unconsciousness lasting more than 30 minutes. Symptoms of moderate TBI are similar to those of mild TBI but more serious and longer-lasting.
- **Severe TBI:** this causes loss of consciousness for more than 24 hours. Symptoms of severe traumatic brain injury are also similar to those of mild traumatic brain injury but more serious and longer-lasting.

Moderate and severe traumatic brain injury increases the risk of developing dementia (Alzheimer's Association, 2015).

Cognitive Changes: Traumatic Brain Injury

Groups that experience repeated head injuries, such as boxers, football players and combat veterans, are at higher risk of dementia, cognitive impairment and neurodegenerative disease than individuals who experience no head injury. Evidence suggests that even repeated mild TBI might promote neurodegenerative disease. Repeated traumatic brain injury, can cause a condition called chronic traumatic encephalopathy. Individuals with this condition often develop poor coordination, slurred speech, memory impairment, behavioral and mood changes, and other symptoms similar to those seen in dementia.

Subdural hematoma, or bleeding between the brain's surface and its outer covering, can also occur after a fall. These hematomas can cause dementia-like symptoms and changes in cognitive function.

Treatment of the underlying brain injury or subdural hematoma, along with management strategies of dementia, may reverse some symptoms (National Institutes of Health, 2013b).

Cognitive Changes: Korsakoff Syndrome

The most common cause of Korsakoff syndrome is chronic alcohol abuse, although certain other conditions also can cause the syndrome. Other causes include anorexia, starvation, weight-loss surgery, uncontrolled vomiting, AIDS, kidney dialysis, chronic infection, or metastatic cancer.

The syndrome develops as a result of low levels of Thiamine (vitamin B1). Thiamine is necessary for brain cells to produce energy from sugar. Research has shown that severe Thiamine deficiency disrupts neurotransmitters that carry signals for storing and retrieving memories. These disruptions destroy brain cells, create scar tissue, and cause widespread microscopic bleeding (Alzheimer's Association, 2015).

Cognitive Changes: Korsakoff Syndrome

The disorder may also be known as Wernicke-Korsakoff syndrome, because the chronic memory loss often follows an episode of Wernicke encephalopathy. Wernicke encephalopathy is an acute brain reaction to severe lack of Thiamine that causes life-threatening brain disruption.

Cognitive changes occur with Korsakoff syndrome. These may include:

- Inability to learn and retain new information
- Inability to remember recent events
- Long-term memory gaps

Treatment of Cognitive Changes: Korsakoff Syndrome

Treatment of cognitive changes associated with Korsakoff syndrome includes symptom management. Cessation of alcohol intake is important (Alzheimer's Association, 2015). Medications may include:

- Thiamine
- Magnesium
- Potassium
- Librium

Cognitive Changes: Other Conditions

Other conditions that may cause memory loss or dementia include:

- Medication side effects
- Cancer or infections
- Blood clots in the brain
- Vitamin B12 deficiency
- Some thyroid, kidney, or liver disorders

Dementia Review

A brief video that reviews the main points of dementia can be viewed here:

<https://www.youtube.com/watch?v=KIRpFu1Ub8>

Tips in Caring for Dementia Patients

Caregivers who work with dementia patients know that it can be challenging and rewarding. You might not only deal with people with dementia in the work setting but possibly in your personal life, too. Many of these tips may be effective in both settings. As always, the specific care depends on the dementia patient's symptoms and abilities, and also on the policies and procedures of your organization.

- Try to obtain accurate information about the patient (cognitive level, care ability, safety precautions)

- Introduce yourself to the patient, looking at them face-front, and speaking in a caring tone
- Assure the patient that you are there to help
- Assess the patient's level of independence (for example, if the patient needs help walking or using the toilet)
- Assess the patient's activity level (watching TV, doing puzzles, walking)
- Determine ability to consume own meals (observe the person eating)
- Ask if the patient is a wanderer (might require constant monitoring)
- Assess the patient's pain level and intervene appropriately
- Maintain the patient's routine of daily activities for consistency (this reduces anxiety)
- Provide positive feedback and rewards for accomplishments, especially in early stages of the disease process (this is encouraging)
- Continuously and consistently explain all care and activities
- Provide care in clusters to prevent frustration (e.g. combine assessment and bathing together; this prevents having to interrupt the patient numerous times to perform different skills or care)
- Allow patient independence as much as tolerable and safe
- Always put yourself in the place of patients to appreciate what they might be experiencing from their point of view
- Provide reminders for recognition, such as the use of name tags or labels on objects
- (AlzBrain.org, n.d.).

Strategies for Working with Dementia Patients

When working with dementia patients, strategies should be individualized to the patient, based on psychosocial, spiritual, and cultural needs. The behaviors associated with the patient's dementia also require a variety of techniques to use. Strategies can be developed based on the type of impairment the patient is experiencing (AlzBrain.org, n.d.).

Personality, Reasoning, Movement

Symptoms of dementia can cause a change in personality, inability to plan, poor judgment, diminished attention span, decreased concentration, distractibility, and inability to initiate activity. Some strategies to address these concerns include:

- Give clear, step by step directions
- Cues or prompts
- Reduce distractions
- Observe and reduce hazards in the environment

Perceptions, Senses, and Language

Symptoms of dementia can cause a decrease or inability to sense, follow visual or auditory cues, recognize objects by touch, or decreased ability to understand the purpose of objects. Some strategies to address these concerns include:

- Cues or prompts
- Body language or gestures to demonstrate

Vision and Visual Interpretation

Symptoms of dementia can cause a loss of peripheral vision or depth perception, difficulty processing, and rapid movements. Some strategies to address these concerns include:

- Approach the patient from the front
- Maintain eye contact
- Slow movements
- Modify the environment to reduce designs on the walls or floors

Language

Symptoms of dementia can cause aphasia (impaired language), including ability to speak and understand. Some strategies to address these concerns include:

- Cues or prompts
- Body language or gestures to demonstrate

Emotions

Symptoms of dementia can cause fear, outbursts of anger or inappropriate behavior. Some strategies to address these concerns include:

- Distraction
- Provide reassurance
- Redirect the patient with activities

Memory and Learning Processes

Symptoms of dementia can cause loss of short term memory, challenges with direction and time, and confusion. Some strategies to address these concerns include:

- Provide reassurance
- Answer all questions (even if the question is repeated)
- Redirect the patient with activities
- Move slowly between tasks, allowing time for the patient to adjust

Behaviors Associated with Dementia

Behaviors of dementia patients are very individualized, but there are some general tips that may be applied in many situations.

- Try to intervene before a behavior or situation becomes a problem
- Identify, remove, or avoid triggers that cause a challenging behavior
- Do not take the behavior personally
- Try to identify the need or purpose behind the behavior- all behavior has meaning
- Be calm, understanding, patient, and reassuring
- Be alert- watch the behavior and the environment, with a focus on patient safety
- Do not argue or try to convince the patient
- Respond to the feelings and emotions of the patient
- Be creative and adapt to each situation
- Respond to the questions and requests of the patient
- Try different approaches, even if one approach worked previously- the same approach may not

work each and every time

- Discuss strategies with other staff members- what has worked for them?
- Talk to the family and learn what they suggest
- After the situation, evaluate what happened, to incorporate into future plans. What are the individual needs of the patient? What behavior did they demonstrate? When did it happen? Where did it happen? Why did it happen- what do you think the triggers were? How was the response to your interventions?

Tips for Challenging Behaviors

Families are integral to the diagnosis and management of patients with dementia. It can be an emotional experience as they watch their loved ones deteriorate both mentally and physically. It is also difficult for changing relationships and roles within a family that can occur. Responsibilities in a household can also shift, which may add stress to the situation. Most of the care of dementia patients is provided by families as caregivers. Approaches and interventions to help support caregivers of those with dementia include skills training, support groups, and education.

Providing support and assistance to families of patients with dementia is essential. Good communication and effective listening skills are important. Listen to the caregiver's fears and concerns without judging. It is also important to recognize when a caregiver is experiencing stress. Be proactive in identifying when a family member needs help, including allowing them to have time for his or herself (Joanna Briggs Institute, 2010).

Family Support

A strategy to help reduce anxiety when working with a dementia patient is:

- A. Allow the patient to wander
- B. Maintain the patient's routine
- C. Do not allow independence

The correct answer is: B. Maintain the patient's routine

Case Study: Dan

Dan is a 77 year old married male. His wife Mary brings him to the doctor, as she has concerns about his behavior; Mary is very worried. Dan's medical history includes type II diabetes, hyperlipidemia, and benign prostatic hypertrophy. Dan is a former smoker; he smoked for 20 years and quit at the age of 42. Mary is unsure of his family history, but believes that Dan's grandfather had dementia.

Mary states that Dan has had a progressive decline in communication over the past year. It started when he stopped reading, something that he used to do every night, because he told her he was having trouble understanding the words. Mary says that Dan is almost completely unable to write, and she has difficulty understanding him when he is speaking. Mary says that Dan seems to understand her during a conversation, but that he cannot find the words he needs to communicate.

Which type of dementia do you think the physician diagnosed?

Based on communication being the biggest issue, a fairly rapid decline, and possible inherited

factors, the physician suspects Dan has frontotemporal dementia. The physician orders an MRI, which shows that Dan's frontal lobe is smaller than expected, which adds to this suspicion.

Case Study: Dan

During his examination, Dan shows growing frustration at his inability to express himself. He begins banging his fist on his leg. Abruptly, he begins to cry. Mary says that Dan has been experiencing "mood swings", particularly in the past month. She also worries that he is becoming depressed.

What type of aphasia is Dan exhibiting?

Dan is exhibiting symptoms of logopenic PPA. He has trouble finding the right words during a conversation, but can understand words and sentences.

What type of pharmacological and non-pharmacological strategies might work with Dan?

Antidepressants may be used for mood. Dan is not demonstrating psychotic symptoms, so does not need an antipsychotic. Medications used to treat Parkinson's and Alzheimer's disease may also Dan. Other management includes appropriate referral to community services, occupational therapy or speech therapy, assistance with advance directives, and consideration of caregiver stress

Case Study: Jane

Jane is an 83 year old female who suffered a stroke a month ago. She is a widow, and moved in with her son and daughter-in-law after she was discharged from the hospital. Jane continues to have left-sided weakness as residual effects from her stroke. Jane's son has concerns about her behavior since her stroke. He states that she has had trouble speaking, becomes easily confused and disoriented, and she complains that her vision is "failing". The physician evaluates her, and suspects that Jane has dementia.

Which type of dementia do you think the physician diagnosed?

Jane's history of a recent stroke and her symptoms of vision loss, confusion, disorientation, and difficulty speaking suggest she has vascular dementia.

Case Study: Jane

Jane's son and daughter-in-law both work, so there are times when Jane has been left alone. With her increasing confusion, disorientation, and vision loss, there is concern for Jane's safety. It is determined that Jane requires a caregiver to assist.

What are some initial questions to ask when you first start caring for Jane?

Obtain good information about Jane, such as cognitive level, care ability, and safety precautions. Acquire an understanding of Jane's level of independence, such as she needs help walking or using the toilet. Ask if Jane is a wanderer, as she might require constant monitoring.

What are some initial strategies to use when you first start caring for Jane?

Introduce yourself to Jane, looking at her face-front and speaking in a caring tone. Assure Jane that you are there to help. Maintain the Jane's routine of daily activities for consistency, to help reduces anxiety.

Case Study: Jane

Jane's son looks apprehensive when he is answering your questions. He kisses his mother on the head, and appears as if he may cry. You recognize that he is experiencing emotions associated with caring for a loved one with dementia.

What are some key points in your conversation with Jane's son?

Listen to his fears and concerns without judging. Ask questions and anticipate what he may need help with.

Current Research

In 2011 a national effort, the National Alzheimer's Project Act (NAPA), was created for research on Alzheimer's disease and related dementias, including Lewy body dementia, frontotemporal, mixed, and vascular dementias.

The National Plan calls for increased federal funding for dementia research, support for patients and families affected by dementia, increased public awareness, and improved data collection and analysis to better understand the impact of dementia.

Clinical studies offer an opportunity to help researchers find better ways to safely detect, treat, or prevent dementias. Clinical studies supported by the National Institutes of Health focus on Alzheimer's disease and related dementias, and are conducted at medical research centers throughout the United States.

For information about clinical studies for Alzheimer's disease and other dementias, check out:

- www.nih.gov/health/clinicaltrials
- www.nia.nih.gov/alzheimers/clinical-trials

For a comprehensive list of all trials, go to www.clinicaltrials.gov

Conclusion

Dementia is the umbrella term for multiple diseases that cause impairment with memory and cognition. It is not a normal part of the aging process, and can have a delay in diagnosis when symptoms are over looked. Currently, there are no cures for the common dementias. However, some forms of dementia are treatable. A better understanding of dementia disorders through research, as well as their early diagnosis and treatment, will make it possible for affected individuals and their caretakers to live their lives more fully and meet daily challenges.

Resources

- A listing of clinical trials, sponsored by the National Institutes of Health (NIH), other federal agencies, and private industry: www.ClinicalTrials.gov
- Alzheimer's Association: www.alz.org
- Keep Memory Alive: www.keepmemoryalive.org

- MedlinePlus, a Service of the NIH and National Library of Medicine: <http://medlineplus.gov>
- National Institute on Aging: www.nia.nih.gov
- National Institute of Mental Health: www.nimh.nih.gov
- National Institute of Neurological Disorders and Stroke: www.ninds.nih.gov
- U.S. Administration on Aging's Eldercare Locator: www.eldercare.gov

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