

# Memory / Cognitive Function Loss

## A Summary

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## Introduction

Loss of memory and of cognitive function affects people worldwide. Such loss may be the result of different progressive neurological disorders of the brain. It affects both men and women and is common in the elderly. However cognitive decline is not necessarily a function of aging.

## Loss of Memory and Cognitive Function is serious disorder

Memory storage and cognitive function in the human brain includes mainly the right and left cerebral hemispheres. Memory loss may range from normal to a **mild cognitive impairment, or MCI**, or to a more severe disturbance, such as **dementia**. People age 55 to 90 years may have forgetfulness characterized by MCI, but may not be clinically diagnosed as having Parkinson's or Alzheimer's disease.

## Loss of Memory / Cognitive (brain) Function, mental slowing and intellectual decline.

Memory loss may be characterized as the difficulty or failure for immediate or delayed recall. The first type of memory loss relates to the failure to recall, within a few seconds, a specific object. The second type relates to failure to recall a specific object, within a few minutes. Amnesia is an extreme condition in loss of memory. It is a disturbance which results in partial or total inability to recall, altogether, past experiences.

**Cognitive function** is defined as the intellectual process by which one becomes aware of, perceives, or comprehends ideas. Cognitive function embraces the quality of knowing, which includes all aspects of perception; recognition, conception, sensing, thinking, reasoning, remembering and imagining. Cognitive impairment is the difficulty in dealing with or reacting to new or novel information or situations.

**Mental slowing** is the difficulty in processing or completing previously learned tasks in a timely manner or in processing new information quickly. **Intellectual decline** is defined as a loss of information, or an inability to utilize information previously

possessed or utilized by a person. For example a Parkinson patient may be affected by intellectual decline and may have difficulty in recognizing familiar surroundings, or recalling a well known date.

Finally, “**aphasia**” is an extreme loss of cognitive ability; it results from a dysfunction in the dominant hemisphere of the brain and may result in impaired or total loss of the ability to even speak or write.

## **Symptoms**

Symptoms vary. For example in severe loss of cognitive function, symptoms may include difficulty thinking/concentrating, a drop in **IQ**, episodic memory loss, episodic memory gaps, amnesia, spells of aphasia, episodic problems with confusion, problems with fine/gross motor coordination, or brief dramatic changes in emotional status. Memory gaps and other cognitive problems may interfere severely with activities of daily living, such as working, or safe operation of motor vehicles.

## **Causes**

**Effects of aging:** As the natural process of aging progresses, humans experience a progressive decline in overall cognitive (brain) function. This causes loss of ability to store and retrieve from short-term memory, employ abstract reasoning, and easily learn new information. Many neurological diseases directly related to aging, such as Parkinson’s, may also contribute to the loss of memory/cognitive function. However, research at the University of California at Davis confirms that cognitive decline is not a normal part of aging for the majority of elderly people. In fact, only people with high levels of atherosclerosis or diabetes and also those with the apolipoprotein E4 gene associated with Alzheimer’s disease are both at high risk for a decline in cognitive ability as they age.

Aging can influence negatively cognitive function in several ways, including the following:

- Cumulative effect of free radical damage in the brain over the years
- Decline in the energy output of brain cells.
- Significant decline in the levels of key hormones after the age of 40
- Diminished oxygen availability to brain cells (due to atherosclerosis or heart disease, smoking, excessive drinking, drug abuse, limited exercise, poor diet, or stress)
- Changes in lifestyle, diet, and nutrient absorption (causing important nutrient deficiencies).

**Effects of Parkinson disease:** Parkinson’s disease may cause mental slowing, intellectual decline, cognitive impairment, memory loss, anxiety or depression. These symptoms, even in mild form, may or may not be a fore-runner of dementia. Parkinson

patients with dementia may have hallucinations, or delusions, or dis-inhibited behavior (“acting out”). Dementia may or may not be apparent to the patient. Dementia, however, is invariably apparent to the patient’s family, friends, and associates, as its behavioral effects are easily recognized.

**Effects of allergies:** Allergies are known to slow down thinking and create difficulties with memory, attention span and other cognitive parameters. Many patients with allergies often complain of general and mental fatigue, decreased motivation, reduction in general activity, moodiness, increased irritability, feelings of sadness, slowed thinking, problems with memory, and difficulty sustaining attention, particularly during the allergy season.

**Effects of drugs:** Loss of memory/cognitive function may be provoked or aggravated by medications (mental slowing has been observed in Parkinson’s patients). Adverse side effects can result from too high or too low a dosage of medications, unusual reactions to the medications, or from combinations of medications. This is especially common among the elderly, particularly those taking numerous drugs.

Also, a large percentage of patients on the medication known as Leuprolide Acetate, were reported to have experienced short-term memory loss. A smaller percentage experienced more severe disturbances in cognitive function. The symptoms included episodic memory gaps, spells of aphasia, episodic problems with confusion, and brief dramatic changes in emotional tone. Women taking a GnRH analogue also complained of memory loss, forgetfulness and concentration problems.

Abuses of drugs (legal or illegal) and of alcohol can also cause mental impairment. Additionally, excess alcohol consumption causes liver damage, increasing the risk of liver disease, which often leads to dementia.

**Effects of metabolic and neurological disorders** – Thyroid dysfunction, anemia, and nutritional deficiencies, may also contribute to loss of memory/cognitive function. Nutrient malabsorption has a further negative impact on mental function. These problems may go undetected in older people when symptoms are attributed to “simply the aging process”. Multiple sclerosis and normal pressure hydrocephalus (increased fluid in the brain) are also examples of two neurological conditions that affect adversely mental function.

**Effects of infections** – The human brain is susceptible to viral, bacterial, and fungal infections. Common pathogens are known to cross the blood brain barrier and cause cerebral infection, and thus may cause loss of memory/cognitive function.

**Effects from traumatic head injury-** Head trauma can result in transient (concussion) or in long-term mental impairment. A less frequent type of head trauma in older people, known as subdural hematoma, can also result in decline of cognitive function. Subdural

hematoma is the condition of blood leaking into brain cell tissues. This type of injury can occur after very minimal trauma, and its onset can be very gradual if the leak is small. Symptoms are headache, confusion, and lethargy and are often nonspecific.

**Effects of toxicity-** Exposure to substances such as carbon monoxide, aluminum, mercury, lead, cadmium, arsenic, nickel, airborne molds and methyl alcohol cause mental impairment.

**Hormonal changes-** Only recently, hormonal changes that accompany aging have been clearly identified. For example, a sudden drop in the hormones estradiol and progesterone, for example, lead to menopause at about age 50 in women. In addition to symptoms such as hot flashes, decreased bone density & vaginal dryness, symptoms of altered mental function such as mood swings, foggy thinking, and fatigue are common. In men, testosterone levels decrease gradually over time, leading to decreased muscle tissue & bone density, increased abdominal fat & cholesterol, deteriorating heart function, and psychological & sexual changes which can impact mental function. In both sexes, the level of the hormone dehydroepiandrosterone (DHEA-S) falls precipitously with age.

**Tumors-** Abnormal tissue growth (tumors) in the brain can be either primary (originating in the brain itself) or metastatic ("seeds" of tissue that originated in a tumor in another part of the body, and have crossed the blood-brain-barrier). Metastatic tumors are more common. While approximately 70% of brain tumors are benign they, nevertheless, contribute to cognitive dysfunction.

**Depression-** Depression is considered a normal part of aging. The National Mental Health Association reports that over 58% of older adults believe that depression accompanies aging. Depression in older people is often overlooked because symptoms are confused with those of a medical illness. However, depression, stress, anxiety and grief are common causes of memory loss, cognitive impairment, mental slowing or intellectual decline. Fortunately, these psychological afflictions are often transient and, therefore, the mental impairment they cause is treatable.

**Circulatory Disorders** Circulatory disorders, such as heart problems, high blood pressure or stroke can restrict the oxygen available to brain cells by reducing blood flow. Also, many people who feel fine may have a buildup of plaque in their arteries (atherosclerosis), which can eventually limit the oxygen supply to the brain, causing loss of memory/cognitive function.

**Effects of atherosclerosis, diabetes and Alzheimer's :** Research at the University of California at Davis indicates that older people with atherosclerosis or diabetes, in combination with the apolipoprotein E4 gene (ApoE4 – associated with Alzheimer's disease), are at much higher risk for memory loss and cognitive decline as they age.

The studies show that people with high levels of atherosclerosis were three times more likely to show a loss of function than those individuals without atherosclerosis.

**Effects of the Obstructive Sleep Apnea Syndrome (OSAS):** Patients with obstructive sleep apnea syndrome (OSAS) (which includes difficulty sleeping, sleep fragmentation and nocturnal hypoxemia) have shown short-term memory and cognitive impairment.

### **Diagnosis of memory/cognitive loss**

Until now, there hasn't been a clear method for evaluating patients affected with loss of memory or cognitive function. However, recent studies have provided new clinical diagnostic criteria to differentiate between people with mild cognitive impairment (MCI), from healthy people or from those with mild Alzheimer's disease. For example, the studies have shown that patients with MCI do not experience the disorientation, general confusion and inability to perform activities of daily living that are characteristic of Alzheimer's patients. Also, the studies have shown that people with MCI may be at increased risk of developing Alzheimer's disease at a rate of 10 percent to 15 percent per year.

### **Use of the Mini-Mental Status Examination (MMSE) and the digit symbol**

**substitution test:** There are numerous tests that assess mental processing, intellectual functioning, cognitive ability, and memory. The simplest and most widely used tests for diagnosis of memory loss or cognitive impairment are the modified mini-mental state exam and the digit symbol substitution test. These tests help assess short-and long-term memory, spatial abilities, mental processing speed and many other related cognitive abilities. The testing includes having patients recall their date and country of birth, to count from 1 to 5 and then backwards again, to name specific body parts such as an arm or leg, to identify an animal that has four legs, to recognize associations between similar objects and activities, to recall objects that were shown previously, and to follow simple directions, such as folding a piece of paper in half.

### **Alternative therapies for memory / cognitive function loss**

Thousands of published studies substantiate that a decline of memory/cognitive function can be controlled or even prevented. Some of these studies demonstrate that prevention can help maintain optimal brain function, while other studies show measurable benefit in reversing memory/cognitive impairment caused by normal aging or by a specific disease of aging, such as stroke.

Alternative therapies for patients suffering from loss of memory/cognitive function include several protocols of treatment, but mainly Intravenous Glutathione and nutrients that improve circulation to the brain. Whether a patient suffers from Parkinson's, Alzheimer's or some other neurological disorder of the brain, these treatments are very

helpful. For example, Glutathione is an important nutrient and energy source for the brain and acts as a major antioxidant within each cell in patients with neurological brain disorders, or other age related diseases.

Since normal aging also creates a perfusion (circulation) deficit in the brain, even for healthy people, preventive treatments may include intravenous parental nutrition, such as Meyer's cocktail, Phosphatidyl serine, L-Carnitine, and vitamins. Nutrient protocols help improve circulation to an aging brain. Vitamins (particularly vitamin E), play a significant role in slowing the progression from mild cognitive impairment to Alzheimer's disease.

Also, since there is a definite relationship between atherosclerosis and diabetes and loss of memory / cognitive function, treating these disease with chelation therapy, provides a positive benefit. These treatments are beneficial in preventing cognitive impairment or even dementia.

Regardless of the cause of memory/cognitive loss, such treatments can help long-term recovery of mental function, as well as in short-term memory, speech synthesis, concentration, and learning.