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Issues on Aging
Information and ideas for those serving seniors.

UNDERSTANDING COGNITIVE IMPAIRMENT

One senior to another: "I'm always thinking about the here-after." "Why is that?" asks the other. Replies the first senior, "I'm always going into another room and thinking…..'What am I here after?' "

While jokes about poor memory can be funny, it is no laughing matter when memory actually fades. The stereotypical attitude that all seniors lose their memories is false; psychological studies show that healthy, active people in their seventies and eighties do not differ greatly in cognitive skills or abilities from younger people. Well retained skills include reading, writing, vocabulary, word usage, and arithmetic ability. Cognitive skills that decrease typically involve speed, unfamiliar material, complexity of task, and active problem solving.

Normal intellectual decline in old age generally occurs in four areas. The first is the ability to remember lists of items greater than six or seven. Second is the diminished ability for abstract and complex conceptualization. Third is mental inflexibility, for example; difficulty in adapting to new situations. And fourth is general behavioral slowing. Age-Related Memory Loss is non-progressive, non-disease, age-related decline in memory which can begin as early as age 20 but more often becomes noticeable in the over 50 population.[1]

COGNITION INCLUDES MORE THAN MEMORY

Most people do not realize that cognition, defined as "the mental process of knowing, including aspects such as awareness, perception, reasoning, and judgment," includes more than short-term memory. There are four defined classes of cognitive functions.[2] Higher functions such as thinking are more fragile than more concrete cognitive functions, and may become impaired more easily.

FOUR CLASSES OF COGNITIVE FUNCTIONS

CLASSES	DESCRIPTION OF COGNITIVE FUNCTIONS
Receptive Functions	The taking in of information through the senses, especially vision and hearing, but also smell, taste and touch.
Memory and Learning	*First step:* Registration – new data is taken into the brain, which results in immediate memory. *Second step:* Rehearsal – or review of the data, encodes information into the longer-term memory. Third step: Information retrieval – involves both recall, which involves retrieving data from memory, and recognition, which is dependent on mental storage of data.
Thinking	A complex cognitive function involving two or more bits of memory, and manipulating this data to reach conclusions about its relationship.
Expressive Functions	Demonstrated through observable behaviors, which can be verbal, physical, or emotional.

OTHER FACTORS AFFECTING COGNITIVE PERFORMANCE

There are other significant factors which can greatly affect cognitive performance. These include level of consciousness, the abilities to pay attention, to concentrate, to conceptually track data, and activity rate. Executive functions are those activities which are important to initiate a task and carry it to completion. This includes goal formulation, planning, carrying out goal-directed plans, and doing so with effective performance.

Emotional states can also affect cognitive performance. In particular, anxiety can make it difficult to take in information, encode it into memory and manipulate the data accurately. Depression has such a profound effect on cognitive function that many times depressed people are thought to have dementia. Many of the symptoms are quite similar and it may take a specialist to determine that a depressive reason is the cause for low cognitive performance. Fortunately, depression is often treated successfully with full or partial resolution of the cognitive impairments.

Pain can affect cognitive function, particularly severe, chronic pain which causes an individual to reduce normal activities. Also sleep deprivation due to pain or grief can affect a person's cognitive abilities.

Medication is another major factor affecting cognition; particularly in seniors who on average consume six more prescription drugs each. Many medications, such as those used for anesthesia, pain, sleep, anxiety, sedation and some psychiatric conditions, have a sedating effect. Some drugs such as blood pressure medication or antidepressants can cause people to feel lightheaded. Some medications cause physical side effects which result in anxiety or physical limitations.

A recent change in one's environment is a frequent cause of a temporary cognitive impairment known as delirium. In fact, 75% of people over 65 become confused at some point during a hospital stay, and some remain confused until they are discharged to their home environment. Moving from a home of many years to a new environment also tends to cause cognitive problems until the person adjusts to the new living situation.

MAJOR CAUSES OF COGNITIVE IMPAIRMENT

Alzheimer's Disease

Young onset Alzheimer's Disease is a condition which occurs in people younger than 65, while the term *Alzheimer's Disease* is used to describe the condition which occurs in people over 65. These together account for an estimated 60 – 80% of dementias. According to the Alzheimer's Association, the prevalence of Alzheimer's Disease by age in 2013 is as follows:

Age below 65	4.0%
Ages 65-74	13.0%
Ages 75-84	44.0%
85 and over	38.0%

Early cognitive symptoms in Alzheimer's dementias include failing recent memory, depression and irritability. Early behavioral symptoms often include social withdrawal, emotional blunting, agitation and inattentiveness. Impairments noted on testing are found in attention, short-term memory, orientation, word finding and language disturbance. There may be intrusions or inappropriate recurrence of a response from a preceding test item and in conceptual functions.

Vascular Dementias

This group of dementias is caused by damage to brain cells through impaired circulation to the brain. The subtler of these is caused by hypertension, or high blood pressure. Historically this was considered to be blood pressure higher than 140/90. However, more recently CT scans and other evidence have shown that blood pressures higher than 120/80 can result in impaired cerebral circulation.

Transient Ischemic Attacks (TIAs) are more serious events. These are defined as a temporary obstruction of a cerebral blood vessel lasting less than 24 hours and usually only moments. Symptoms can include impaired vision in one eye, numbness and tingling on one side of the face, hand or arm, and speech impairment. People may have few or many TIAs, occurring frequently or spaced out over months or years. The effect of these small infarctions is development of mild cognitive impairments.[4] But half of all TIA patients ultimately sustain a major stroke.[5] Impairments noted on testing, which depend on where the infarcts occurred, appear in conceptual thinking, comprehension and memory.

Multi-infarct dementia (MID) is the result of accumulated TIAs which cause enough damage to brain cells to permanently impair cognition in one or more areas.[6] Nearly all individuals with MID have, or had, inadequately treated hypertension. More men than women have MID. It may be mistaken for Alzheimer's type of dementia[7], but the symptoms are significantly different. There is usually an acute onset with step-like deterioration. The severity may fluctuate hour-to-hour or day to night. Early in the disease, cognitive deficits predominate while personality deterioration lags behind. Motor abnormalities such as gait disturbance and rigidity may occur. Impairments noted on testing depend on where infarcts are occurring but are most often noted in word finding, conceptual thinking and short-term memory.

Cerebral vascular attack (CVA) or stroke is the most serious of all vascular events. This occurs when there is obstruction (75% of the time) or rupture (25% of the time) of a cerebral blood vessel which causes brain damage due to loss of oxygen and glucose to brain tissue. The consequences range from fatal to some degree of residual cognitive, physical and/or motor impairments. Impairments noted on testing depend on what part of the brain is damaged. Impairments are often noted with word finding, judgment, conceptual thinking and short-term memory. In addition, severe biochemical, as well as situational depression is often a significant factor affecting cognition following stroke.

Other Causes of Dementia

It is not commonly known that alcohol use can affect cognition. However, studies have shown a correlation between social drinking and mild cognitive impairment.[8] Specific impairments in testing showed reduction in abstract reasoning (similarities) and mental flexibility (problem-solving). In chronic alcoholism, most impairments involve tasks associated with frontal lobe activity, i.e., mental flexibility and constructions. Short-term memory is often severely impaired while long-term memory is intact.

Depression is the most common mental health disorder in the aged.[9] In fact, white males over 65 have the highest rate of successful suicide in the country[10]. Depression usually has a defined onset over several weeks as opposed to the more insidious onset of dementia. General symptoms include loss of appetite, disturbed sleep and lack of interest in activities. Structure and content of speech remain intact. General memory may be impaired, but the individual is highly aware of his or her impairments, which is not true of individuals with an organically caused dementia.

EVALUATING COGNITIVE FUNCTION

Cognitive function is measured in several different ways. The simplest method of assessing cognitive abilities is through administration of a standardized screening instrument. This type of brief screening test can be given in 15 minutes in the clinic at the bedside, or in a client's home. A much more thorough neuropsychological examination can often differentiate which type of dementia is present. It is given and interpreted by a PhD psychologist who specializes in this field and requires four to eight hours for administration. Though this exam provides much more detailed information about cognitive function, due to its length and complexity, it may not be suitable for people with significant impairments[11]. Geriatric psychiatrists and licensed medical doctors also evaluate cognitive function along with the mental health issues which can cause symptoms of cognitive impairment. Certain symptoms such as delusion, hallucinations, paranoia, agitation or combative behavior, need to be addressed by a psychiatrist, as medication management is usually indicated to relieve these problems.

There are several easily administered screening tools in common use, including the Mini-Mental State Exam (MMSE), the Mini-Cog and the Delayed Word Recall Exam. As part of its Comprehensive Assessment process, Matrix uses the Cognistat which separately assesses ten domains of cognitive function[12]. These domains and the cognitive functions they measure include:

- *Attention* tests attention, concentration and tracking
- *Orientation* tests attention, perception and memory
- *Comprehension* tests sensation, perception and memory
- *Repetition* tests integration of receptive and expressive speech
- *Naming* tests speech fluency through word finding
- *Memory* tests short term memory through both recall and recognition
- *Calculation* tests arithmetic conceptual function and memory
- *Similarities* tests conceptual function, including perception, memory, conceptual tracking, and expressive behavior
- *Judgment* tests logical thinking, comprehension of relationships and practical judgments

Scoring each of these subtests separately, the Cognistat defines the specific abilities and impairments of each client[13]. This information allows for greater accuracy in care planning. For example, individuals whose score is normal in all other subtests and have a borderline Memory score are likely to have a age related memory loss and not dementia. However, impairment in Memory and one additional subtest, especially Orientation, is often indicative of cognitive impairment. People who pass Memory are impaired on other subtests may have a vascular condition. And impairments on non-cognitive items may indicate a psychiatric disorder and not dementia. To screen for depression-caused impairments, Matrix uses the Geriatric Depression Scale for seniors and the Beck Depression Inventory for younger adults.

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CASE SUMMARY

Mrs. P., a 79-year-old widow, frequently called her attorney and cried about being lonely, begging him to help her. Her attorney referred her to Matrix for an assessment, saying that she had become isolated in her condo for the past two years with 24-hour live-in caregivers. It was reported that Mrs. P's two children lived out of state, visited briefly every two or three years, and apparently were not on good terms with their mother. A niece who lived nearby tried to visit Mrs. P, but recently hadn't been well received. She did express concern about her aunt's condition to the attorney.

When the Matrix Care Manager went to see Mrs. P for the assessment, she found her propped up in bed on pillows wearing an old, frayed nightgown, with the aide stationed in a chair at her side. Her gray, stringy hair fell past her shoulders and several broken teeth were visible in the front of her mouth. A bottle of wine stood on the nightstand, and she drank repeatedly from the glass she held. In a commanding manner, she demanded the aide replenish the wine in her glass regularly. She chain smoked during the entire assessment, and insisted that the aide remain in the chair right next to the bed. If the aide tried to get up and move away, she yelled at her to return to the chair.

Mrs. P was unable to provide any past medical history nor describe the purpose of her three bottles of mediation which were on her bed tray. Two of these medications were sleeping pills, and one was an antidepressant. None of them should be taken with alcohol. When the Care Manager later obtained a pharmacy printout of the frequency and quantity of mediation purchases, she found that Mrs. P was taking four times the normal adult dose of these drugs. In addition, the two physicians who were prescribing them were old friends of her husband, and according to the aide, had not seen her for at least two years. During the assessment, the Care Manager was able to take Mrs. P's blood pressure, which was 176/98. It was not possible to administer the Cognistat due to Mrs. P's repetitiveness, inattention and drug/alcohol induced sedation.

When Mrs. P finally allowed the aide to leave the room briefly, the aide told the Care Manager that Mrs. P was consistently verbally and physically abusive to her privately hired (and later determined, unlicensed and unsupervised) caregivers. She had refused to get out of bed for the last two years except to use the restroom, and refused to shower, shampoo her hair or brush her teeth. She ate no solid food except for soft-boiled eggs and toast. She drank a quart of milk and a liter of sweet red wine daily, and smoked two to three packs of cigarettes each day. All groceries, wine, cigarettes and medications were delivered by neighborhood stores, and bills were paid by her attorney-in-fact, an accountant who used to work for her husband's business. Mrs. P refused to allow the aides to control her medication intake, and took her pills indiscriminately whenever she felt depressed or unable to sleep. She frequently slept for twelve hours or more, during which time the aides were able to escape from the chair next to her bed.

It was clear to the Care Manager that Mrs. P was addicted to drugs, cigarettes and alcohol, and that she was suffering from both depression and some type of dementia. These combination of problems required that Mrs. P be evaluated and treated for her addictions and any other underlying health problems, including her high blood pressure. The following morning the Care Manager placed a conference call to the attorney and the niece to describe her findings. She recommended that Mrs. P be taken by ambulance to a local hospital, and said that she would arrange for an internist and geriatric psychiatrist to admit and care for her. She also suggested that the attorney notify the aides that their services would not be needed for an indefinite period of time, and that the locks on her condo doors be changed.

With the approval of the attorney and niece, the Care Manager contacted a primary care physician and psychiatrist who both agreed to accept Mrs. P as a patient. The Care Manager then went to the apartment and explained to Mrs. P that she would need to go to the hospital for an evaluation. Even though Mrs. P said she refused to go, the Care Manager called 911 and successfully intervened with the police and paramedics. This resulted in Mrs. P's being transported to a local hospital, where the physicians practiced and where she was admitted.

During a month-long hospitalization, Mrs. P was diagnosed with three types of dementia: Alzheimer's Disease, multi-infarct dementia, and alcoholic dementia. She was weaned from her alcohol and prescription drugs, and then restarted on a different antidepressant. Her blood levels of the antidepressant were monitored to ensure that she had a therapeutic level of the drug in her blood. She received aggressive treatment for her high blood pressure in an effort to avoid further mini-strokes. Due to her extremely poor short-term memory, participation in group therapy was not possible. However, Mrs. P did benefit from individual therapy to deal with unresolved grief from her husband's death.

Discharge needs included a supportive environment in which alcohol intake could be prevented, medications were controlled and administered by nursing staff, and where Mrs. P could smoke under supervision. The Care Manager was able to locate an assisted living unit which met these criteria, and in addition had a strong recreation program and lovely gardens where Mrs. P enjoyed walking during good weather. Also, a companion was hired to visit her every other day for socialization, nail care, and occasional outings. Mrs. P continued to do well in the assisted living home for nearly four years until she suffered a major stroke and passed away shortly thereafter.

How Matrix Can Help

- Matrix has been providing care management, health advocacy and consulting services for over 26 years for seniors and people with disabilities and their families. Our staff of highly trained, expert registered nurses is able to help people obtain the information and assistance they need to maximize their health and wellness.
- Matrix RN Care Managers administer the Cognistat screening tool as part of the Comprehensive Assessment. The Cognistat measures ten different areas of cognitive function which defines the specific abilities and impairments of each client. This information allows for greater accuracy in care planning.
- Matrix RN Care Managers are knowledgeable about home health care options and MN licensing regulations regarding in home health care. Matrix RN Care Managers serve as RN Supervisors for Matrix Home Care Specialists caregivers and are skilled at developing client focused plans of care and coordinating needed services.
- Matrix RN Care Managers and home caregivers understand the special needs of elders, those with complex medical needs, those with dementia of all levels, adults with disabilities and those who are dying and receive ongoing education, coaching and support to meet the individual needs of every Matrix Home Care client.