



# DEMENTIA

## INCIDENCE

Dementia is the loss of multiple intellectual functions over time. Cognitive functions refer to a broad range of intellectual activities including memory, language and complex motor skills such as dressing, driving etc. Dementia is an important clinical entity because 10% of individuals over age 65 suffer this disability. Dementia may be either fixed or progressive and head trauma is the most common cause of dementia under age 30. Dementia comes from the Latin term “de mens” or “out-of-mind” and these syndromes include both intellectual and psychiatric manifestations. The clinical features and rate of progression of dementia vary by individual and the type of the brain damage. The cognitive symptoms of dementia include amnesia, aphasia, apraxia and agnosia. The psychiatric manifestations include hallucinations, delusions, personality changes and disruptive behaviors.

Dementia is caused by the death or permanent dysfunction of brain cells. The human brain functions like a giant computer and neurons (i.e., nerve cells) serve as a basic memory unit. Different brain regions serve different functions and all information is stored on neurons. The loss of permanent dysfunction of neurons produces selective, specific deficits depending on the location and function of the damaged neuron group. Patients live for 8-10 years following diagnosis. The clinical course can be divided into early, middle and late stages, each lasting 2-5 years.

### DEMENTIA

- Cognitive Loss
- Psychiatric Symptoms

## COGNITIVE SYMPTOMS

Memory impairment is the most common symptom in dementia. The human brain utilizes two types of memory – short-term and long-term. Short-term memory is programmed in the temporal lobe, i.e., hippocampus, while long-term memory is stored over extensive nerve cell networks in the temporal and parietal lobes. Patients with Alzheimer’s disease develop short-term memory loss as the first sign of impairment while long-term memory loss occurs only with progression of symptoms. Alzheimer victims live in the past because they cannot remember the present.

- Amnesia - memory
- Aphasia - communication
- Apraxia – motor skills
- Agnosia - recognition

Language problems are the second most common symptom in dementia. Expressive or motor language ability is controlled by the frontal lobe and damage to this area renders the patient unable to speak coherently. Understanding spoken words and organization of meaningful verbal thought is produced in the temporal lobe. Although the primary receptive auditory cortex is spared by most dementias, damage to the association cortex renders many patients able to hear but not understand. Language centers in the temporal lobe are divided into primary receptive, i.e., hearing, and association, i.e., understanding.

Apraxia is the inability to perform pre-programmed motor tasks. All motor skills learned during development are subject to erasure by dementia. Sophisticated motor skills require extensive learning and are the first functions to be lost with dementia, e.g., playing the piano, job-related skills, etc. Less complicated tasks such as dressing, bathing, toileting, etc., are eventually erased by the disease. More instinctive functions such as chewing, swallowing, and walking are lost in the last stages of the disease.

Agnosia is the inability to recognize previously learned sensory inputs. The five senses (i.e., smell, taste, sight, touch, and hearing) have designated brain regions that interpret the sensory input (i.e., association cortex). A common deficit is visual agnosia where the patient is unable to recognize the faces of relatives or friends. Tactile agnosia is inability to recognize touch or feel of objects. A common but unrecognized agnosia is the inability to appropriately perceive visceral information such as a full bladder or chest pain.

Dementia produces multiple other cognitive losses; however, clinicians must be familiar with the four A's, i.e., amnesia, aphasia, agnosia and apraxia, to assure that basic assessments are completed and serious behavioral consequences are avoided.

## **PSYCHIATRIC SYMPTOMS**

Psychiatric manifestations of dementia are more troublesome than cognitive loss. Psychiatric symptoms produce caregiver burnout and significant risks to patients. Demented individuals frequently develop hallucinations in either the auditory or the visual sense. Hallucinations are common, i.e., 25% of patients, and usually respond to psychotropic medications.

Delusions are common in demented patients, i.e., up to 40%, and these persistent false beliefs frequently cause caregiver distress. Delusions of infidelity, theft, abandonment, or abuse are frequently expressed by the demented patient and these symptoms will respond to antipsychotic medications.

- Hallucinations
- Delusions
- Depression
- Abnormal Behavior

Depression is caused by death of brain stem neurons that produce serotonin or norepinephrine. Common symptoms of depression include weight loss, withdrawal, irritability, behavioral problems or disruptive vocalization (i.e., screaming). Demented patients may not be able to describe depressive symptoms and staff should consider this diagnosis in any patient with a loss of functions. Standard antidepressant therapy is effective.

Hostile or aggressive behavior is common in dementia and almost 75% of demented individuals will exhibit verbal or physical aggression. Patients often demonstrate significant personality change including apathy. The type and severity of psychiatric or behavioral problems is depended upon the stage of dementia. Each patient has a variable mixture of psychiatric symptoms that often begin in the middle stages of disease.

## **ASSESSMENT**

The assessment of a patient with dementia includes a careful clinical history, physical examination, neurological examination, mental status examination and laboratory assessment. Blood, urine or brain imaging tests for Alzheimer's disease are less accurate than a careful examination by a trained clinician. No test predicts risk for developing Alzheimer's disease. The clinical history must include extensive details about the nature and onset of intellectual losses including duration of symptoms, sequence of intellectual losses and sequence of timing for cognitive versus psychiatric manifestations. The family history is essential to determine risk for depression and dementia. The social history assesses intellectual achievement and life-long learning. The initial assessment must include a review of all medications and medical problems as well as past history of psychiatric illness. Anticholinergic medications may produce or worsen cognitive loss.

### **ASSESSMENT**

- History
- Physical Exam
- Neurological Exam
- Mental Status Exam
- Laboratory Studies

The proper examination of a patient with dementia includes a physical examination, mental status examination, and appropriate laboratory testing. Neuropsychological testing can be performed in complicated cases or patients with borderline intellectual loss. The physical

examination should include a complete neurological exam. Alzheimer's disease generally lacks focal neurological findings and the presence of specific neurological deficits or a movement disorder suggests a diagnosis other than Alzheimer's disease (See Page 6). The general medical examination should screen for evidence of cardiovascular disease, hypertension and diabetes.

The mental status examinations should include a simple cognitive screen such as the mini-mental status examination (MMSE) as well as language assessment, sensory competency (i.e., hearing and eyesight).

#### **MMSE Scores and Severity of Dementia**

Over 26 = Normal  
20.26 = Mild  
20.10 = Moderate  
Below 10 = Severe

#### **MENTAL STATUS EXAM**

- Hearing and Eyesight
- Language
- Cognitive Screen
- Mood / Thought / Behavior

A mental status examination is an assessment of the patient's intellectual and emotional function. A typical mental status examination assesses thought processes, mood, cognition and behavior. The examiner searches for hallucinations or delusions in the thought process and determines whether the patient is depressed. The mini-mental status examination is the minimum assessment that is appropriate for screening of intellectual loss. This test assesses severity of intellectual loss and patients who score below 15 are frequently unable to give informed consent for health or financial matters.

The definition of dementia requires documentation of multiple intellectual losses. The mini-mental status examination tests memory (recall), language (three-step instruction), and complex motor skills, i.e., apraxia, (drawing of interlocking pentagrams) See Page 7. The clinical history also provides evidence for cognitive loss when inquiring about activities of daily living such as bathing, grooming, driving, etc. The combined clinical history and mini-mental status examination should provide sufficient evidence to warrant a diagnosis of dementia. The Psychogeriatric Dependency Rating Scale (PGDRS) provides a valuable checklist of behaviors

and Activities of Daily Living (ADL) functions on a single page (See Page 8). Neuropsychologists can provide more precise, detailed information but this service is not available to many patients.

Physicians are hesitant to perform a complete dementia assessment because of time constraints and limited reimbursement for this examination. A team approach can remedy this problem.

The mental health center can perform the clinical history for dementia, the mental status examination and the cognitive screen while the physician can perform the physical exam including the neurological assessment as well as ordering appropriate laboratory tests. The basic dementia laboratories include a complete blood count, an SMA-18, folate, B12 and thyroid panel. A CAT scan without contrast is indicated. Additional studies are optional.

- LAB STUDIES**
- CBC
  - SMA-18
  - Thyroid Profile
  - Folate
  - B12

Once the patient is diagnosed with Alzheimer’s disease, the treatment team begins to assist the family caregiver as well as the patient. An accurate clinical diagnosis is essential to the prescription of therapies as well as prediction of future course. A variety of therapies are presently available to slow the progression of Alzheimer’s disease. Most therapies are ineffective for patients with MMSE scores below 10. Caregivers require a broad range of information concerning disease, behavioral management, legal issues or preparing for long-term care and free materials are available to these individuals by calling 1-800-457-5679. A team approach allows thorough examination of dementia patients and proper assistance to both the afflicted individual and the family.

The pathological diagnosis of dementia requires a gross examination of the brain and a microscopic assessment. The diagnosis of Alzheimer’s disease is achieved by examination of silver-stained tissues to assess the numbers and location of senile plaque and neurofibrillary tangles. The clinico-pathological correlation demonstrates that the premortem diagnosis is accurate in 90% of the cases where the examiner is skilled in dementia assessment. Most general pathologist lacks the expertise and laboratory support to confirm a diagnosis and exclude other potential causes of dementia. A significant number of patients have two diseases in the brain (e.g., mixed dementia, Alzheimer’s with vascular or Alzheimer’s with diffuse Lewy body disease). The neuropathologist may be unable to diagnoses dementia in one to three percent of cases as some brains lack distinct pathological features that allow confirmation of a specific diagnosis.

The clinical diagnosis of dementia requires a careful clinical history, physical examination, neurological examination, mental status examination and exclusionary laboratory testing. The primary care physician frequently lacks the time, training, or reimbursement to perform a complete assessment. Each patient with dementia deserves one careful evaluation to exclude treatable or arrestable diseases. The dementia evaluation can be broken into components and these duties shared between the physician and the mental health center. A comprehensive management program includes a basic assessment, caregiver support, prevention or disease retardation, high-quality end-of-life care and a postmortem examination.

### COMMON, IMPORTANT, EARLY MANIFESTATIONS OF DEMENTIA IDENTIFIED BY A BASIC EVALUATION

TYPE	SEVERITY OF EARLY COGNITIVE LOSS	SEVERITY AND TYPE OF EARLY PSYCHIATRIC SYMPTOMS	ASSOCIATED MEDICAL PROBLEMS	COMMON NEUROLOGICAL FINDINGS	ASSOCIATED LABORATORY FINDINGS
Alzheimer's	Moderate ▪ Amnesia	Mild ▪ Anxiety ▪ Depression	None	None	None
Vascular	Moderate	Moderate ▪ Depression ▪ Psychosis	Hypertension Cardiovascular Disease	Focal Deficits	Strokes on CT
Alcoholic	Mild	Moderate ▪ Apathy	Alcoholic Heart, liver, pancreas or peripheral nerve	▪ Ataxia ▪ Sensory Loss	Abnormal: Liver, blood, indices
Diffuse Lewy Body	Moderate ▪ Fluctuating	Moderate ▪ Visual hallucinations	None	Parkinsonism	None
Fronto-temporal Dementia	Mild	Moderate ▪ Apathy ▪ Personality	None	None	None

Any kind of dementia can produce any combination of symptoms. Some patients have mixed dementia.

**MINI-MENTAL STATE EXAM**

**NAME:** \_\_\_\_\_

**ID NUMBER:** \_\_\_\_\_

**BLDG** \_\_\_\_\_

**Maximum  
Score**

**Score**

**ORIENTATION**

5 ( ) What is the (year) (season) (date) (day) (month)?

5 ( ) Where are we: (state) (county) (town) (hospital) (floor)?

**REGISTRATION**

3 ( ) Name 3 objects: 1 second to say each. Then ask the patient all 3 after you have said them. give 1 point for each correct answer. The first repetition determines the score. Then repeat them up to six times until he learns all 3. Count trials and record:

Trials \_\_\_\_\_

**ATTENTION AND CALCULATION**

5 ( ) Serial 7's. 1 point for each correct. Stop after 5 answers. Alternatively spell "world" backwards.

**RECALL**

3 ( ) Ask for the 3 objects repeated above. Give 1 point for each correct.

**LANGUAGE**

9 ( ) Name a pencil and watch. (2 points)

( ) Repeat the following: "no ifs, ands, or buts". (1 point)

( ) Follow a three-stage command:  
"Take a paper in your right or left hand, fold it in half and put it on the floor". (3 points)

Read and obey the following:

( ) Close your eyes. (1 point)

( ) Write a sentence. (1 point) Must contain subject/verb and be sensible.

( ) Copy design. (1 point) Correct if has ten angles and two intersect.

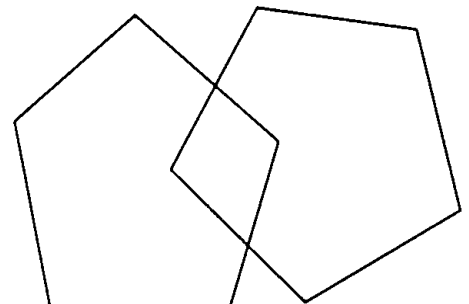
**Total Score** \_\_\_\_\_

**ASSESS level of consciousness along a continuum**

**Alert                      Drowsy                      Stupor                      Coma**

**Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

**AMK-MR0051C**



**PSYCHOGERIATRIC DEPENDENCY RATING CASE-SHEET**

NAME: \_\_\_\_\_ DOB: \_\_\_\_\_ AGE: \_\_\_\_\_

ASSESSED BY: \_\_\_\_\_ GRADE: \_\_\_\_\_

DATE: \_\_\_\_\_

1. ORIENTATION		2. BEHAVIOR			SCORE:
YES (0)	NO (1)	N (0)	O (1)	F (2)	
_____	_____	_____	_____	_____	Disruptive
_____	_____	_____	_____	_____	Manipulating (behavior to get way)
_____	_____	_____	_____	_____	Wandering
_____	_____	_____	_____	_____	Socially Objectionable (ex. spit, undress)
_____	_____	_____	_____	_____	Demanding Interaction
_____	_____	_____	_____	_____	Communication Difficulties
_____	_____	_____	_____	_____	Noisy
_____	_____	_____	_____	_____	Active Aggression (ex. hit, scratch)
_____	_____	_____	_____	_____	Passive Aggression (uncooperative - no reason)
_____	_____	_____	_____	_____	Verbal Aggression
_____	_____	_____	_____	_____	Restless
_____	_____	_____	_____	_____	Destructive - Self
_____	_____	_____	_____	_____	Destructive - Property
_____	_____	_____	_____	_____	Affect - Elated (manic behavior)
_____	_____	_____	_____	_____	Delusions/Hallucinations
_____	_____	_____	_____	_____	Speech Content (perseveration or confabulation)

**3. PHYSICAL** SCORE \_\_\_\_\_

**N** = Never  
**O** = Occasionally = (manifestation of behavior 2 of 5 days or less)  
**F** = Frequently = (manifestation of behavior 3 of 5 days or more)

HEARING	MOBILITY	NO GUIDANCE (0)	VERBAL GUIDANCE (1)	PHYSICAL ASSISTANCE (2)	PERSONAL HYGIENE
(0) _____ FULL	(0) _____ FULL	_____	_____	_____	ORAL
(1) _____ SLIGHT (requires distinct speech)	(1) _____ STAIRS (assistance)	_____	_____	_____	WASHES FACE/HANDS
(2) _____ SEVERE (requires loud speech)	(2) _____ AIDS (cane/walker)	_____	_____	_____	CLEANS AFTER TOILETING
(3) _____ DEAF	(3) _____ ASSISTANCE	_____	_____	_____	BRUSH HAIR
	(4) _____ CHAIRFAST	_____	_____	_____	BATH ENTRY (in/out)

VISUAL	DRESSING	N (0)	O (1)	F (2)
(0) _____ FULL	(0) _____ FULL	_____	_____	_____
(1) _____ SLIGHT(glasses)	(1) _____ VERBAL GUIDANCE ONLY	_____	_____	_____
(2) _____ SEVERE(needs guidance)	(2) _____ PARTIAL(assistance)	_____	_____	_____
(3) _____ BLIND	(3) _____ ASSISTANCE (Has to be dressed always)	_____	_____	_____
		_____	_____	_____

SPEECH	SPECIAL PHYSICAL DISABILITIES:	(specify)
(0) _____ FULL		
(1) _____ SLIGHT (dysarthria)		
(2) _____ SEVERE (almost unintelligible)		
(3) _____ MUTE (no speech)		

**SCORING GUIDELINES:** Score each of the three divisions by totaling each item marked. The grade is a total of all three divisions.

Answer all questions. Add free comment overpage if desired.

AMK-MR005