DEMENTIA: CLERKSHIP TALK

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Objectives today

- 1) Demonstrate the ability to properly administer the Montreal Cognitive Assessment (MoCA) and Folstein exams, and be able to explain the significance of deficits in any of the domains tested.

Objectives today Part 1

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- 2) Conduct an interview to elicit the diagnosis of Alzheimer's disease and screen for features of Lewy Body dementia, vascular dementia, and frontotemporal dementia, and demonstrate an understanding of the importance of collateral sources of information.

Objectives today Part 2

- 1) Demonstrate the ability to properly administer the Montreal Cognitive Assessment (MoCA) and Folstein exams, and be able to explain the significance of deficits in any of the domains tested.
- 2) Conduct an interview to elicit the diagnosis of Alzheimer's disease and screen for features of Lewy Body dementia, vascular dementia, and frontotemporal dementia, and demonstrate an understanding of the importance of collateral sources of information.
- 3) Demonstrate an understanding of the unique stressors and demands placed on the family and caregivers of dementia patients, and counsel caregivers and patients on sources of support and information on dementia.

What's your background?

- Dementors...
- What do you plan to do in the future?

Theme: The "Family Medicine Approach"

- How does being a Family Physician potentially help when approaching a patient with … cognitive impairment?

Theme: The "Family Medicine Approach" 1

- How does being a Family Physician potentially help when approaching a patient with … cognitive impairment?
  - Relationship, trust

Theme: The "Family Medicine Approach" 2

- How does being a Family Physician potentially help when approaching a patient with … cognitive impairment?
  - Relationship, trust
  - Family: context, collateral history

Theme: The "Family Medicine Approach" 3

- How does being a Family Physician potentially help when approaching a patient with ... cognitive impairment?
  - Relationship, trust
  - Family: context, collateral history
  - Following patients over time: progression

Theme: The "Family Medicine Approach" 4

- How does being a Family Physician potentially help when approaching a patient with … cognitive impairment?
  - Relationship, trust
  - Family: context, collateral history
  - Following patients over time: progression
  - Awareness of co-morbidities, medications

Theme: The "Family Medicine Approach" 5

- How does being a Family Physician potentially help when approaching a patient with … cognitive impairment?
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  - Family: context, collateral history
  - Following patients over time: progression
  - Awareness of co-morbidities, medications
  - Awareness of "whole person", illness experience (Pt and family), functional impact

Theme: The "Family Medicine Approach" 6

- How does being a Family Physician potentially help when approaching a patient with … cognitive impairment?
  - Relationship, trust
  - Family: context, collateral history
  - Following patients over time: progression
  - Awareness of co-morbidities, medications
  - Awareness of "whole person", illness experience (Pt and family), functional impact
  - Care for pt with pretense of looking after other problems; time to approach Dx over weeks

Overview of approach to the Dx of dementia as family physicians...

- 1) Recognize cognitive impairment (signs and symptoms) incl effect on IADLs, ADLs
- 2) Have a logical approach to Hx, PE...
  - How would different types of cognitive impairment present?
  - When would you consider rare causes of dementia?
  - Interviewing family
- 3) Brief cognitive tests (MMSE, MoCA, Clockdrawing)
- 4) Reverse the reverse-ables, treat the treat-ables...
  - Lab tests
  - Role for other tests eg imaging (eg CT head)
- 5) Working with families, caring for the pt over time

Approach to the diagnosis of dementia as family physicians...

- 1) Recognize cognitive impairment (signs and symptoms) incl effect on IADLs, ADLs

1) Recognize cognitive impairment (signs and symptoms)

- `Functional approach``: impact on a Pts independence and ability to function.
- ADL: grooming, toileting, bathing, dressing, transferring, continence, and eating
- IADL: telephone use, shopping, transportation, budget management, adhering to medication regimens, cooking, housekeeping, and laundry

Approach to the diagnosis of dementia as family physicians...Part 1

- 1) Recognize cognitive impairment (signs and symptoms) incl effect on IADLs, ADLs
- 2) Have a logical approach to Hx, PE...
  - How would different types of cognitive impairment present?
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Diagnostic Criteria for Dementia

The presence of an acquired impairment in memory, associated with impairment in one or more cognitive domains, including:

- Executive function (e.g., abstract thinking, reasoning, judgment)
- Language (expressive or receptive)
- Praxis (learned motor sequences)
- Gnosis (ability to recognize objects, faces or other sensory information)

Impairments in cognition must be severe enough to interfere with work, usual social activities or relationships with others.

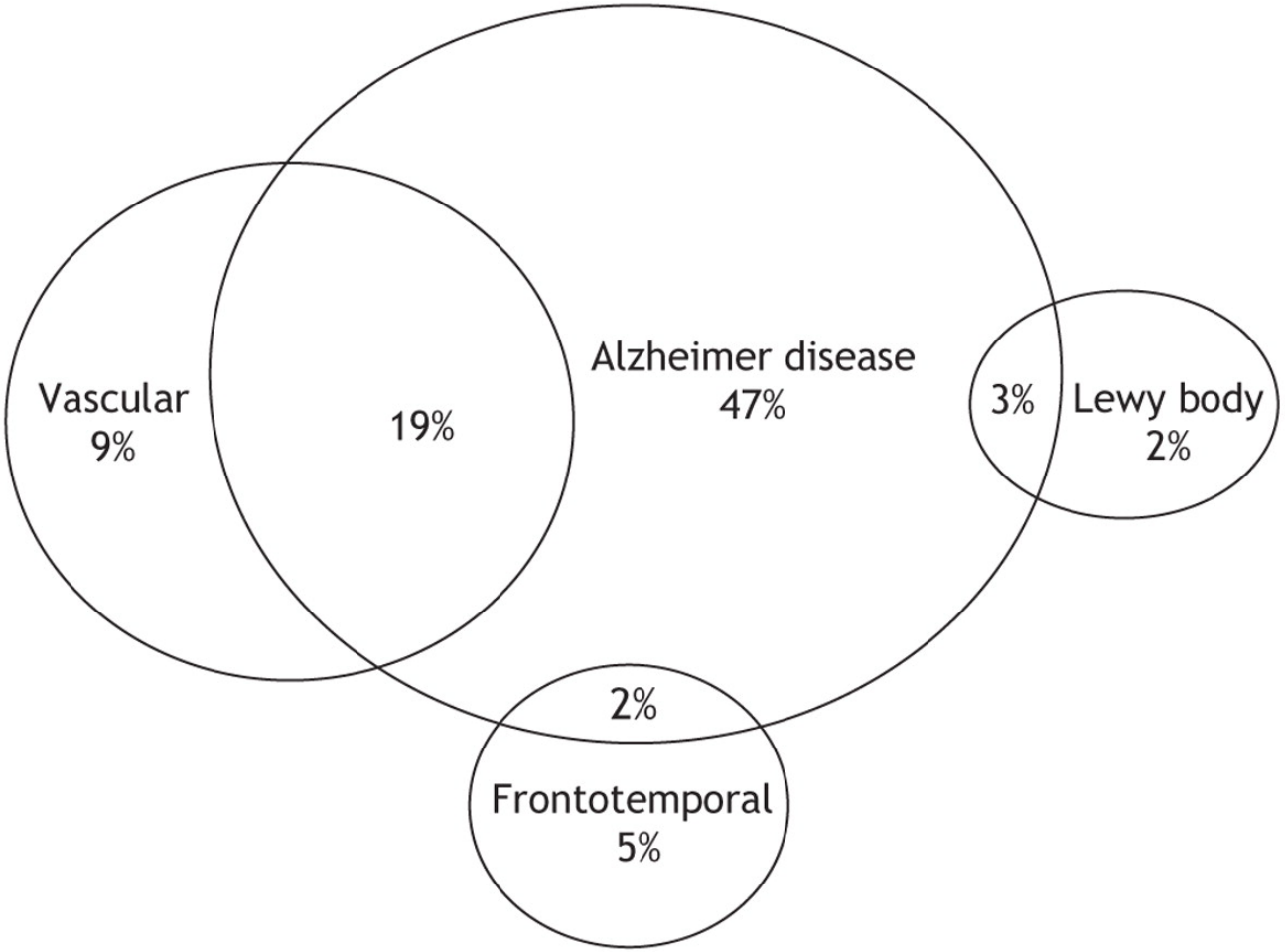
Source: *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition, text revision.[7]

Feldman H H et al. CMAJ 2008;178:825-836

2) Have a logical approach to Hx, PE…

- How would different types of cognitive impairment present?
  - What are the common types of Dementia?
  - What is “pseudodementia”?
  - What is “Mild Cognitive Impairment?”
- When would you consider rare causes of dementia?
- Interviewing family

Types of dementia commonly seen in Canadian memory clinics.6
Note: Other mixed types of dementia make up 10% of the total number of cases.



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Chertkow H CMAJ 2008;178:316-321

Alz Dx criteria

Box 4: Diagnostic criteria for Alzheimer disease of the National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association (NINCDS-ADRDA criteria)

- Dementia established by means of clinical diagnosis and cognitive testing
- Progressive worsening of memory and other cognitive functions
- No disturbance of consciousness
- Absence of systemic disorders or other brain diseases that could account for the progressive cognitive decline
- Supportive features include:
  - Altered behavioural patterns
  - Family history of similar disorders, particularly if confirmed neuropathologically
- Features that make a diagnosis of Alzheimer disease uncertain or unlikely include:
  - Sudden onset
  - Focal neurologic findings, including hemiparesis, sensory loss, visual field deficits, incoordination
  - Early presence of a gait disorder or seizure

Adapted, with permission, from McKhann et al.[36]

Feldman H H et al. CMAJ 2008;178:825-836

Approach to the diagnosis of dementia as family physicians... Part 2

- 1) Recognize cognitive impairment (signs and symptoms) incl effect on IADLs, ADLs
- 2) Have a logical approach to Hx, PE...
  - How would different types of cognitive impairment present?
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- 3) Brief cognitive tests (MMSE, MoCA, Clockdrawing)

How to use the MMSE part 3

3) Brief cognitive tests (MMSE, MoCA, Clockdrawing)

Table 1: Brief cognitive screening tests to assist in the diagnosis of dementia

Test	Cognitive domains evaluated	Time to administer, min	Score range	Validation samples	Accuracy estimates	Comments
Mini-Mental State Examination (MMSE)	Memory (immediate recall), orientation, attention, language, visuo-construction, praxis	10–15	0–30	Community and clinic samples: dementia patients v. normal controls	Sensitivity 44%–100%[16] Specificity 46%–100%[16]	Widely used in research and clinic settings but lacks sensitivity to detect mild cognitive impairment levels
Modified Mini-Mental State Examination	Memory (immediate and delayed recall), orientation, attention, language, visuo-construction, praxis	20–25	0–100	Large community sample: Alzheimer patients v. normal controls	Area under the curve 0.93[17]	Widely used in research and clinic settings but lacks sensitivity to detect mild cognitive impairment levels
Clock-drawing test	Executive functioning, visuo-construction	5–10	0–4 to 0–20*	Research clinic sample: dementia patients v. patients without dementia	Sensitivity 20%–60%[18] Specificity 60%–93%[18]	Widely used in research and clinic settings but lacks sensitivity to detect mild cognitive impairment levels
Montréal Cognitive Assessment	Memory (immediate and delayed recall), orientation, attention, executive functioning, language, visuo-construction	15–25	0–30	Clinic samples: Alzheimer patients v. normal controls	Sensitivity 100%[2] Specificity 87%[2]	More sensitive than MMSE in detecting Alzheimer disease and mild cognitive impairment

Approach to the diagnosis of dementia as family physicians... Part 3

- 1) Recognize cognitive impairment (signs and symptoms) incl effect on IADLs, ADLs
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  - Lab tests
  - Role for other tests eg imaging (eg CT head)

Approach to the diagnosis of dementia as family physicians... Part 4

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- 5) Working with families, caring for the pt over time

Clinical characteristics, other causes of dementia

Box 5: Key characteristics of non-Alzheimer disease dementias

Frontotemporal dementia

- Younger age of onset than Alzheimer disease
- Hallmark features typically include either:
  - Prominent behavioural changes (e.g., social conduct dysregulation, disinhibition, perseveration and emotional blunting) OR
  - Prominent language impairment (e.g., progressive nonfluent aphasia or semantic problems, with breakdown of word meaning and knowledge)

Dementia associated with Lewy bodies or with Parkinson disease

- Clinical features of these 2 conditions overlap considerably
- Dementia associated with Parkinson disease begins with idiopathic Parkinson disease for ≥ 1 year before the onset of dementia, whereas dementia associated with Lewy bodies begins with a cognitive and behavioural disorder that can have concurrent parkinsonian features
- Neuropsychiatric features include visual hallucinations and fluctuations in disease course

Vascular dementia

- Typically evolves in stepwise fashion but can also progress insidiously
- Hallmark cognitive feature of a dysexecutive syndrome
- Focal neurologic findings frequently found early in the disease course

Feldman H H et al. CMAJ 2008;178:825-836

Diagnostic workup for dementia - handout

Box 1: Recommendations for the diagnosis of dementia* (part 1 of 2)

Brief cognitive tests

- A range of brief cognitive tests, including the Montréal Cognitive Assessment,[2] the DemTect,[3] the 7-Minute Screen,[4] the General Practitioner Assessment of Cognition[5] and the Behavioural Neurology Assessment Short Form,[6] may be more accurate than the Mini-Mental State Examination in discriminating between dementia and the normal state. There is insufficient evidence to recommend one test over the others [grade B recommendation, level 2 evidence; new recommendation].
- Brief cognitive tests have not been developed to differentiate between dementia subtypes and should not be used for this purpose [grade D recommendation, level 2 evidence; new recommendation].

Clinical diagnosis

- The diagnosis of dementia remains clinical. There is good evidence to retain the diagnostic criteria currently in use[7] [grade A recommendation, level 2 evidence; new recommendation].
- The sensitivity of clinical diagnosis for possible or probable Alzheimer disease based on the NINCDS-ADRDA criteria† remains high. The specificity is lower. The continued use of the NINCDS-ADRDA criteria is recommended [grade A recommendation, level 1 evidence; new recommendation].
- "Mild" Alzheimer disease can be diagnosed with a high degree of specificity, when the presenting clinical picture is one of memory impairment [grade B recommendation, level 1 evidence; new recommendation].

Laboratory investigations

- For all patients who have a clinical presentation consistent with Alzheimer disease with typical cognitive symptoms or presentation, only a basic set of laboratory tests should be ordered to rule out causes of chronic metabolic encephalopathy producing chronic confusion and memory loss [grade B recommendation, level 3 evidence; recommendation unchanged].
  - Complete blood count (to rule out anemia)
  - Thyroid stimulating hormone (to rule out hypothyroidism)
  - Serum electrolytes (to rule out hyponatremia)
  - Serum calcium (to rule out hypercalcemia)
  - Serum fasting glucose (to rule out hyperglycemia)
- The serum vitamin B_{12} level should be determined in all older adults suspected of having dementia or cognitive decline [grade B recommendation, level 2 evidence; new recommendation].
- Older adults found to have a low vitamin B_{12} level should be given vitamin B_{12} (either orally or parenterally) because of potential improvement of cognitive function and the deleterious effects of low vitamin B_{12} levels on multiple organ systems, besides the effects on cognition [grade B recommendation, level 2 evidence; new recommendation].
- Determination of serum folic acid or red blood cell folate levels in older adults in Canada is optional and may be reserved for patients with celiac disease, inadequate diet or other condition that prevents them from ingesting grain products [grade E recommendation, level 2 evidence; new recommendation].
- There is currently insufficient evidence to support the need for the determination of serum homocysteine levels in older adults with suspected dementia or cognitive decline [grade C recommendation, level 3 evidence; new recommendation].
- There is currently insufficient evidence that treatment of elevated serum homocysteine levels affects cognition [grade C recommendation, level 3 evidence; new recommendation].
- Genetic testing, including screening for the apolipoprotein E gene, is not recommended for the purpose of diagnosing Alzheimer disease because the positive and negative predictive values are low [grade E recommendation, level 2 evidence; new recommendation].

Neuroimaging with computed tomography and magnetic resonance imaging

- Cranial computed tomography scanning is recommended if one or more of the following criteria are present [grade B recommendation, level 3 evidence; recommendation unchanged]:
  - Age < 60 years
  - Rapid (e.g., over 1-2 months) unexplained decline in cognition or function
  - Short duration of dementia (< 2 years)
  - Recent and significant head trauma
  - Unexplained neurologic symptoms (e.g., new onset of severe headache or seizures)
  - History of cancer (especially types that metastasize to the brain)
  - Use of anticoagulants or history of bleeding disorder
  - History of urinary incontinence and gait disorder early in the course of dementia (as may be found in normal pressure hydrocephalus)
  - Any new localizing sign (e.g., hemiparesis or a Babinski reflex)
  - Unusual or atypical cognitive symptoms or presentation (e.g., progressive aphasia)
  - Gait disturbance
- There is fair evidence to support the use of structural neuroimaging with computed tomography or magnetic resonance imaging to rule in concomitant cerebrovascular disease that can affect patient management [grade B recommendation, level 3 evidence; new recommendation].

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Feldman H H et al. CMAJ 2008;178:825-836

4) Reverse the reverse-ables, treat the treat-ables...

- Lab tests (eg CBC, Na, B12, Ca, TSH, glucose, VDRL, Urinalysis)
- Role for other tests eg imaging (eg CT head)
  - What conditions are you ruling in or out?

Neuroimaging with computed tomography and magnetic resonance imaging

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  - Age < 60 years
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DDx Cognitive Impairment: Delirium

TABLE 1

Diagnostic Criteria for Delirium

A. Disturbance of consciousness (i.e., reduced clarity of awareness about the environment) with reduced ability to focus, sustain, or shift attention.

B. A change in cognition (e.g., memory deficit, disorientation, language disturbance) or development of a perceptual disturbance that is not better accounted for by a preexisting, established, or evolving dementia.

C. The disturbance develops over a short period of time (usually hours to days) and tends to fluctuate during the course of a day.

D. Evidence from the history, physical examination, or laboratory findings indicate that the disturbance is caused by direct physiologic consequences of a general medical condition.

DDx Cognitive Impairment: Delirium cont

TABLE 4
Distinguishing Characteristics of Delirium, Dementia, Psychotic Disorders, and Depression

Disorder	*Distinguishing feature*	*Associated symptoms*	*Course*
Delirium	Fluctuating levels of consciousness with decreased attention	Disorientation, visual hallucinations, agitation, apathy, withdrawal, impairment in memory and attention	Acute onset; most cases remit with correction of underlying medical condition
Dementia	Memory impairment	Disorientation, agitation	Chronic, slow onset, progressive
Psychotic disorders	Deficits in reality testing	Social withdrawal, apathy	Usually slow onset with prodromal syndrome; chronic with exacerbations
Depression	Sadness, loss of interest and pleasure in usual activities	Disturbances of sleep, appetite, concentration, and energy; feelings of hopelessness and worthlessness; thoughts of suicide	Single episode or recurrent episodes; may be chronic

BOX 6. MNEMONICS FOR DIAGNOSING DELIRIUM

Causes

I WATCH DEATH

Infection
Withdrawal
Acute metabolic
Trauma
CNS pathology
Hypoxia
Deficiencies
Endocrinopathies
Acute vascular
Toxins or drugs
Heavy metals

Life-threatening causes

WWHHHHIMPS*

Wernicke's encephalopathy
Withdrawal
Hypertensive crisis
Hypoperfusion/hypoxia of the brain
Hypoglycemia
Hyper/hypothermia
Intracranial process/infection
Metabolic/meningitis
Poisons
Status epilepticus

* Created by Gary W. Small, MD

Deli

ACU

Antib
Card
Urina
Theo
Etha
Corti
H2 b
Antip
Narc
Geria
ENT
Insom
NSA
Muse
Seizu

5) Working with families, caring for the pt over time

- Sharing the diagnosis, dealing with the fallout (fears, ideas, expectations)
- Communicating with families
- Emotional support for pt, family over time
- Assessing capacity
- Driving
- Move different care settings (LTC)

Box 1: Recommendations for the diagnosis of dementia* (part 1 of 2)

Brief cognitive tests

- A range of brief cognitive tests, including the Montréal Cognitive Assessment,[2] the DemTect,[3] the 7-Minute Screen,[4] the General Practitioner Assessment of Cognition[5] and the Behavioural Neurology Assessment Short Form,[6] may be more accurate than the Mini-Mental State Examination in discriminating between dementia and the normal state. There is insufficient evidence to recommend one test over the others [grade B recommendation, level 2 evidence; new recommendation].
- Brief cognitive tests have not been developed to differentiate between dementia subtypes and should not be used for this purpose [grade D recommendation, level 2 evidence; new recommendation].

Clinical diagnosis

- The diagnosis of dementia remains clinical. There is good evidence to retain the diagnostic criteria currently in use[7] [grade A recommendation, level 2 evidence; new recommendation].
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- "Mild" Alzheimer disease can be diagnosed with a high degree of specificity, when the presenting clinical picture is one of memory impairment [grade B recommendation, level 1 evidence; new recommendation].

Laboratory investigations

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Neuroimaging with computed tomography and magnetic resonance imaging

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- There is fair evidence to support the use of structural neuroimaging with computed tomography or magnetic resonance imaging to rule in concomitant cerebrovascular disease that can affect patient management [grade B recommendation, level 2 evidence; new recommendation].

Neuropsychological testing

- The diagnosis and differential diagnosis of dementia is currently a clinically integrative one. Neuropsychological testing alone cannot be used for this purpose and should be used selectively in clinical settings [grade B recommendation, level 2 evidence; new recommendation].
- Neuropsychological testing may aid in:
  - addressing the distinction between normal aging, mild cognitive impairment or cognitive impairment without dementia, and early dementia [grade B recommendation, level 2 evidence; new recommendation];
  - addressing the risk of progression from mild cognitive impairment or cognitive impairment without dementia to dementia or Alzheimer disease [grade B recommendation, level 2 evidence; new recommendation]; and
  - determining the differential diagnosis of dementia and other syndromes of cognitive impairment [grade B recommendation, level 2 evidence; new recommendation].

*Based on recommendations from the Third Canadian Consensus Conference on Diagnosis and Treatment of Dementia, held in March 2006.
†The criteria of the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS) and the Alzheimer's Disease and Related Disorders Association (ADRDA) are provided in Box 4.

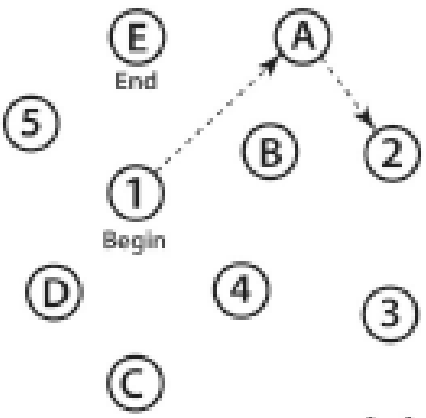
HANDOUT

MONTREAL COGNITIVE ASSESSMENT (MOCA)

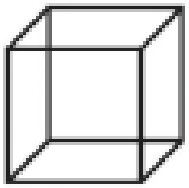
Version 7.1 Original Version

NAME :
Education :
Sex :
Date of birth :
DATE :

VISUOSPATIAL / EXECUTIVE



Copy cube



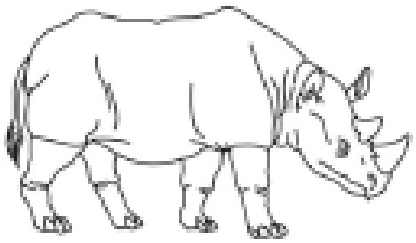
[ ] [ ]

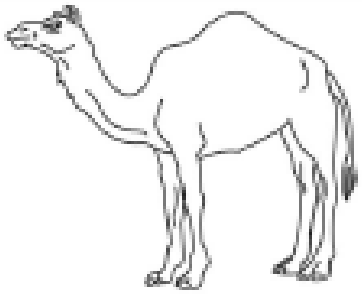
Draw CLOCK (Ten past eleven) (3 points)

[ ] Contour [ ] Numbers [ ] Hands

POINTS ___/5

NAMING





[ ] [ ] [ ]

___/3

MEMORY

Read list of words, subject must repeat them. Do 2 trials, even if 1st trial is successful. Do a recall after 5 minutes.

	FACE	VELVET	CHURCH	DAISY	RED
1st trial					
2nd trial					

No points

ATTENTION

Read list of digits (1 digit/ sec.):

Subject has to repeat them in the forward order [ ] 2 1 8 5 4

Subject has to repeat them in the backward order [ ] 7 4 2

___/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors

[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B

___/1

Serial 7 subtraction starting at 100 [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65

4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt**

___/3

LANGUAGE

Repeat : I only know that John is the one to help today. [ ]

The cat always hid under the couch when dogs were in the room. [ ]

___/2

Fluency / Name maximum number of words in one minute that begin with the letter F [ ] _____ (N ≥ 11 words)

___/1

ABSTRACTION

Similarity between e.g. banana - orange = fruit [ ] train – bicycle [ ] watch - ruler

___/2

DELAYED RECALL

	FACE	VELVET	CHURCH	DAISY	RED	
Has to recall words WITH NO CUE	[ ]	[ ]	[ ]	[ ]	[ ]	Points for UNCUED recall only
Category cue						
Multiple choice cue						

Optional

___/5

ORIENTATION

[ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City

___/6

www.mocatest.org

Normal ≥ 26 / 30

TOTAL ___/30

Add 1 point if ≤ 12 yr edu

Administered by: _____

Mini-Mental State Examination (MMSE)

Patient's Name: _____ Date: _____

Instructions: Score one point for each correct response within each question or activity.

Maximum Score	Patient's Score	Questions
5		"What is the year? Season? Date? Day? Month?"
5		"Where are we now? State? County? Town/city? Hospital? Floor?"
3		The examiner names three unrelated objects clearly and slowly, then the instructor asks the patient to name all three of them. The patient's response is used for scoring. The examiner repeats them until patient learns all of them, if possible.
5		"I would like you to count backward from 100 by sevens." (93, 86, 79, 72, 65, ...) Alternative: "Spell WORLD backwards." (D-L-R-O-W)
3		"Earlier I told you the names of three things. Can you tell me what those were?"
2		Show the patient two simple objects, such as a wristwatch and a pencil, and ask the patient to name them.
1		"Repeat the phrase: 'No ifs, ands, or buts.'"
3		"Take the paper in your right hand, fold it in half, and put it on the floor." (The examiner gives the patient a piece of blank paper.)
1		"Please read this and do what it says." (Written instruction is "Close your eyes.")
1		"Make up and write a sentence about anything." (This sentence must contain a noun and a verb.)
1		"Please copy this picture." (The examiner gives the patient a blank piece of paper and asks him/her to draw the symbol below. All 10 angles must be present and two must intersect.) 
30		TOTAL