



### Cognitive Domains (per DSM-5)

- Complex attention (managing distractions)
- Executive function (decision-making)
- Learning and memory (repeating things)
- Language (expressive or receptive)
- Perceptual-motor (use of tools)
- Social cognition (recognizing emotions)

Note: knowledge is not a domain of cognition

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### DSM 5 Definition of Neurocognitive Disorder

- Diagnostic Statistical Manual 5<sup>th</sup> Edition – 2013



- Neurocognitive Disorder replaced “Dementia”
- Expanded population included
- Reduced misunderstanding and reluctance to diagnosis

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### Neurocognitive Disorder

#### What it is NOT

- Not due to delirium
- Not due to other mental disorder

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## Neurocognitive Disorder (NCD)

- a) Mild NCD (similar to Minimal Cognitive Impairment)
  - Moderate Cognitive Decline (one or more domains)
  - NOT Interfering with independence
- b) Major NCD (similar to dementia)
  - Significant Cognitive Decline (one or more domains)
  - Interfering with independence

**Severity:**

- mild -iADL difficulty,
- moderate -ADL difficulty
- severe - fully dependent

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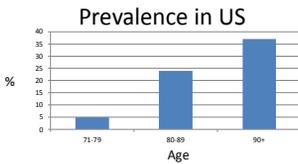
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## Scope of NCD

- Affects up to about 5.5 million Americans



- Health, long-term care, and hospice care costs were \$183 billion in 2011
  - Comparable to diabetes, much greater than cancer

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## Causes of NCD

Listed in DSM-5

- Alzheimer's Disease
- Frontotemporal lobar degeneration
- Lewy Body disease
- Vascular dementia
- Traumatic Brain injury
- Substance/medication induced
- HIV infection
- Prion Disease (Creutzfeldt-Jacobs)
- Parkinson's Disease
- Huntington's disease

Due to Another Medical Condition

- Normal pressure hydrocephalus
- Hypoxia
- Heart failure
- Autoimmune (lupus)
- Metabolic (B12 deficiency, liver or kidney disease)
- Neoplastic (brain tumor)
- Endocrine (Hypothyroidism)
- Other infectious diseases (neurosyphilis)
- Multiple Sclerosis
- Episodic (seizure, migraine)
- Due to multiple etiologies

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## Why Assess Cognition

- Screening
  - Patient (caregivers) without concern
  - High risk (elderly, pre-operative, head trauma)
- Diagnosis
- Assessment of Severity / Pattern
- Treatment planning
- Monitoring

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## How to Assess Cognition

- Functional history (patient and family)
- Cognitive Testing
  - Bed-side tools
  - Observed Functional assessment
  - Neuropsychological testing
- Environmental (home) assessment
- Brain imaging
- Laboratory tests

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## Functional History Related to Cognition

- What do you do in a typical day?
- Do you drive, use computer, manage finances?
- What types of meals do you prepare?
- What do you read?
- How often do you leave your home?
- Do you make phone calls?
- Who are these people in your family?
- Where is your room?

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### Before You Assess Cognition: Normalize and Reassure

- “Now I am going to do some tests of your thinking.”
- “This is a routine part of my examination.”
- “We do this for everyone.”
- “Some parts may seem silly or may be difficult.”

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### Mini-Cog

- Re-state 3 words (e.g. apple, penny, watch)
- Draw Clock  
Inside the circle draw the hours of a clock as if a child would draw them  
Place the hands of the clock to represent the time “forty five minutes past ten o'clock”
- Recall the three words

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### Mini-Cog Scoring

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|---|---|
| <p><b>Negative Screen for NCD</b></p> <ul style="list-style-type: none"> <li>• 3 objects recalled</li> <li>• 1-2 objects recalled + able to draw clock correctly</li> </ul> | <p><b>Positive Screen for NCD</b></p> <ul style="list-style-type: none"> <li>• 1-2 objects recalled + unable to draw clock correctly</li> <li>• 0 objects recalled</li> </ul> |
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## Montreal Cognitive Assessment

- 30 point scale
- Many domains
- Adaptable for vision or loss of use of hands
- Sensitivity is >96% for Alzheimer’s Disease.
  - Fewer than 4/100 with Alz. disease (cutoff >26)
- Specificity 35%-87% for Alz. Disease (cutoff > 26)
  - Many to most of those without Alz. disease fail
- Adjust scoring for age, education

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## Domains in Cognitive Assessment DSM-5 vs. MOCA

<b>Cognitive Domains (DSM-5)</b>	<b>Montreal Cognitive Assessment</b>
• Complex attention	• Visual spatial/executive
• Executive function	• Naming
• Learning and memory	• Memory
• Language	• Attention
• Perceptual-motor	• Language
• Social cognition	• Abstraction
	• Delayed Recall
	• Orientation

~Mocatest.org

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## Advantages of MOCA vs. MMSE and SLUMS Tools

- Free
- Includes executive function
- Clear instructions available

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**www.mocatest.org**

## MOCA Visuospatial/Executive

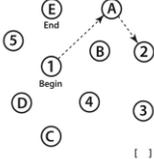
**MONTREAL COGNITIVE ASSESSMENT (MOCA)**  
Version 7.3 Original Version

Education: \_\_\_\_\_ Date of birth: \_\_\_\_\_  
Sex: \_\_\_\_\_ DATE: \_\_\_\_\_

**VISUOSPATIAL / EXECUTIVE**



Copy cube



Draw CLOCK (Ten past eleven)  
(3 points)

POINTS

/5

[ ] Contour
[ ] Numbers
[ ] Hands

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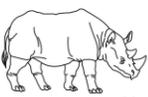
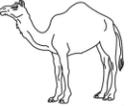
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## MOCA Naming

**NAMING**

[ ]
[ ]
[ ]

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## MOCA Memory (immediate)

<b>MEMORY</b>	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	No points
1st trial							
2nd trial							

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## MOCA Attention

<b>ATTENTION</b>	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		
	[ ] FBACMNAAJKLBAFAKDEAAAJAMOFABA		/1
	Serial 7 subtraction starting at 100 [ ] 93 [ ] 86 [ ] 79 [ ] 72 [ ] 65		
	4 or 5 correct subtractions: <b>3 pts.</b> 2 or 3 correct: <b>2 pts.</b> 1 correct: <b>1 pt.</b> 0 correct: <b>0 pt.</b>		/3

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## MOCA Language and Abstraction

<b>LANGUAGE</b>	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
<b>ABSTRACTION</b>	Similarity between e.g. banana - orange = fruit [ ] train - bicycle [ ] watch - ruler		/2

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## MOCA Delayed Recall

<b>DELAYED RECALL</b>	Has to recall words	FACE	VELVET	CHURCH	DAISY	RED	
	<b>WITH NO CUE</b>	[ ]	[ ]	[ ]	[ ]	[ ]	
	Category cue:						
<b>Optional</b>	Multiple choice cue						

Points for UNCUED recall only

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### MOCA Orientation

ORIENTATION	[ ] Date	[ ] Month	[ ] Year	[ ] Day	[ ] Place	[ ] City	_/_/6
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### Documentation of Cognition

- Should be part of comprehensive assessment on admission and discharge to every health care program/setting
- Document whenever changes in cognition occur
- Document details
  - Copy of tool
  - Score on each subscale
  - Current functional abilities/disabilities

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### Documentation of Cognition

#### AVOID:

- Alert and oriented
- Confused
- Summary score of tests (e.g. 24/30)

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## What if Positive Screening for NCD

- Cognitive Performance Assessment
- Further testing for specific diagnosis
- Monitoring for progression/improvement
- Education for:
  - Coping (patient and caregivers)
  - Planning for future
- Pharmacological and non-pharmacological treatments
- Collaborative Care

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## Cognitive Performance Test (CPT)

Six common activities of daily living (ADL) tasks  
e.g. DRESS, SHOP, TOAST, PHONE, WASH and TRAVEL

Standardized performance and scoring (usually OT)

Used to predict level of supervision required

[~Burns, J Geriatr Psychiatry Neurol, 1994](#)

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## Neuropsychology Testing

- Detailed assessment of many domains
- Adapted for patient areas of difficulty
- Adapted for communication barriers
- Interpreted relative to various diagnoses
- At least several hours, up to thousands of dollars

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## Collaborative Care in NCD

- Physicians
- Occupational therapy
- Speech therapy
- Physical therapy
- Nursing
- Social Work
- Psychology
- Caregiver Coaching
- Pharmacy
- Legal
- Spiritual care
- Support and Advocacy groups

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## Summary

- Cognition is a complex concept
- Difficulties with cognition are relatively common among elderly
- Cognitive assessment has a variety of purposes
- There are a variety of ways to assess cognition
- Cognitive assessment should be a routine part of care for the elderly
- Documentation of cognitive assessment should be thorough

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