Dementia: Screening, Diagnosis, and Recommendations

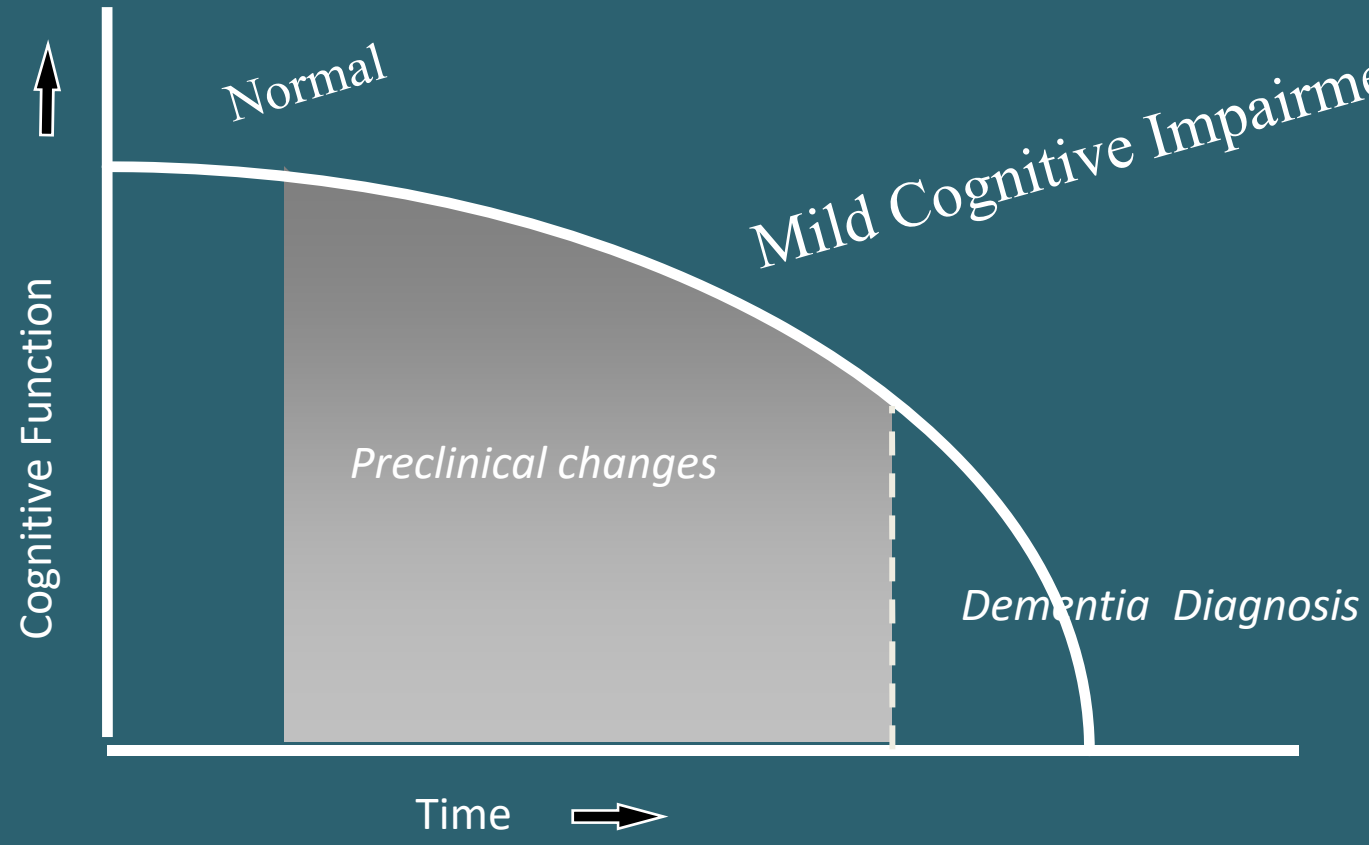
Linda M Ercoli, PhD

UCLA Semel Institute

Outline

- Cognition in Aging
- Dementia
- Screening for Dementia
- Recommendations

Cognition and Aging



Normal Aging Changes

- Speed of information processing slows
- Word finding difficulties
- Slower to learn and retrieve
- Executive control is less efficient
  - Switching attention (multitasking)
  - Monitoring for errors
  - Organizing one's thoughts

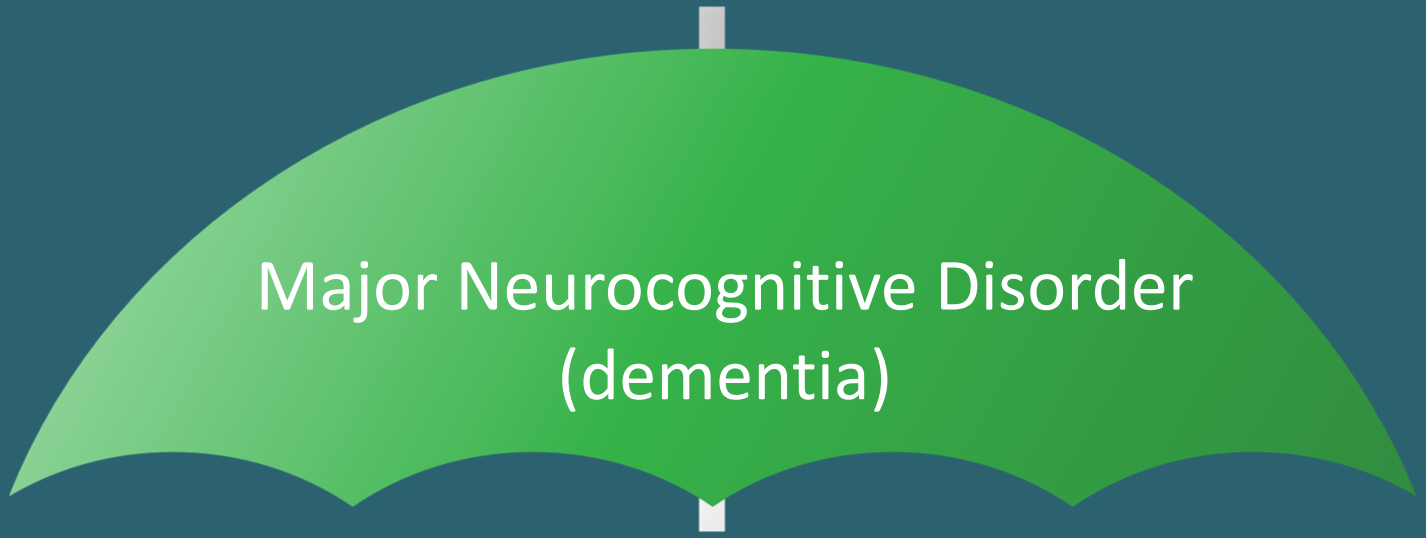
Mild Neurocognitive Disorder
(aka Mild Cognitive Impairment)

- Transitional stage between aging and AD
- Milder degree of cognitive impairment than in Major ND
  - Detectable on cognitive tests
- Preservation of or minimal changes in functional abilities
- Increased rate of progression to dementia (15%/year) mostly to Alzheimer's
- Unstable condition

Diagnostic and Statistical Manual-V; Petersen 2004; Albert et al., Alzheimers Dement 2011;7(3):270-9.

Major Neurocognitive Disorder (aka Dementia)

- Cognitive impairment that is severe enough to cause significant difficulties with daily functioning (functional impairment)
- Personality change
- Social/occupational functioning problems
- Mood problems and psychosis
- Acquired, underlying brain disorder

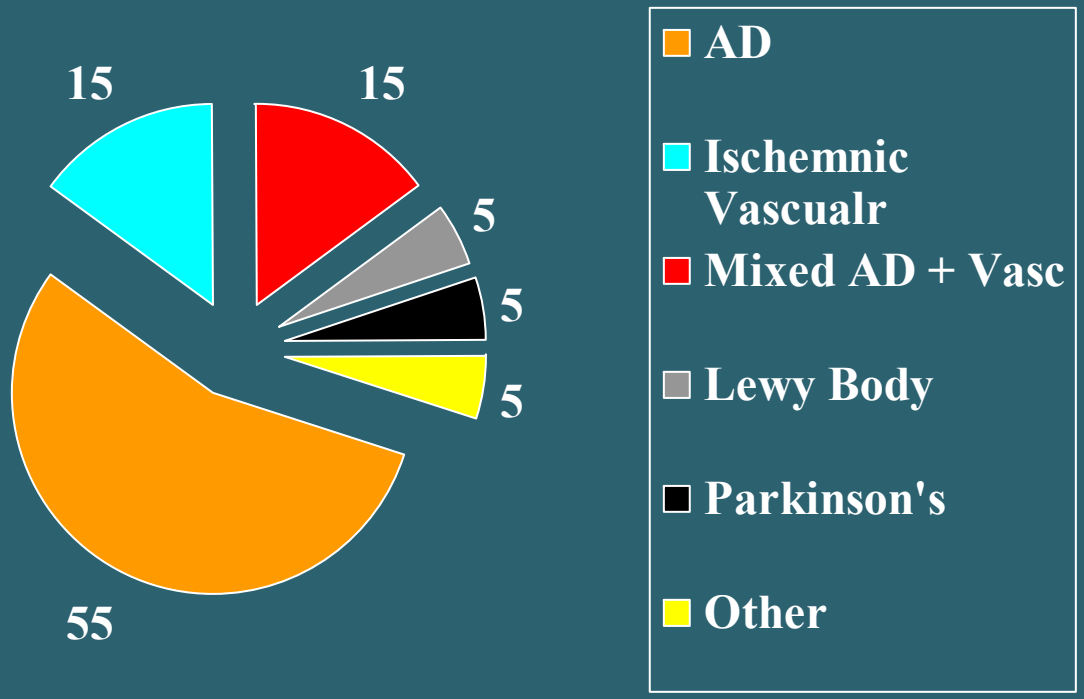


Alzheimer’s Lewy Body Vascular Parkinson's
Frontotemporal Alcohol HIV Brain Injury
Progressive Supranuclear Palsy Creutzsfeltd-Jakob
Encephalopathies
Normal Pressure Hydrocephalus
Reversible Types of Dementias

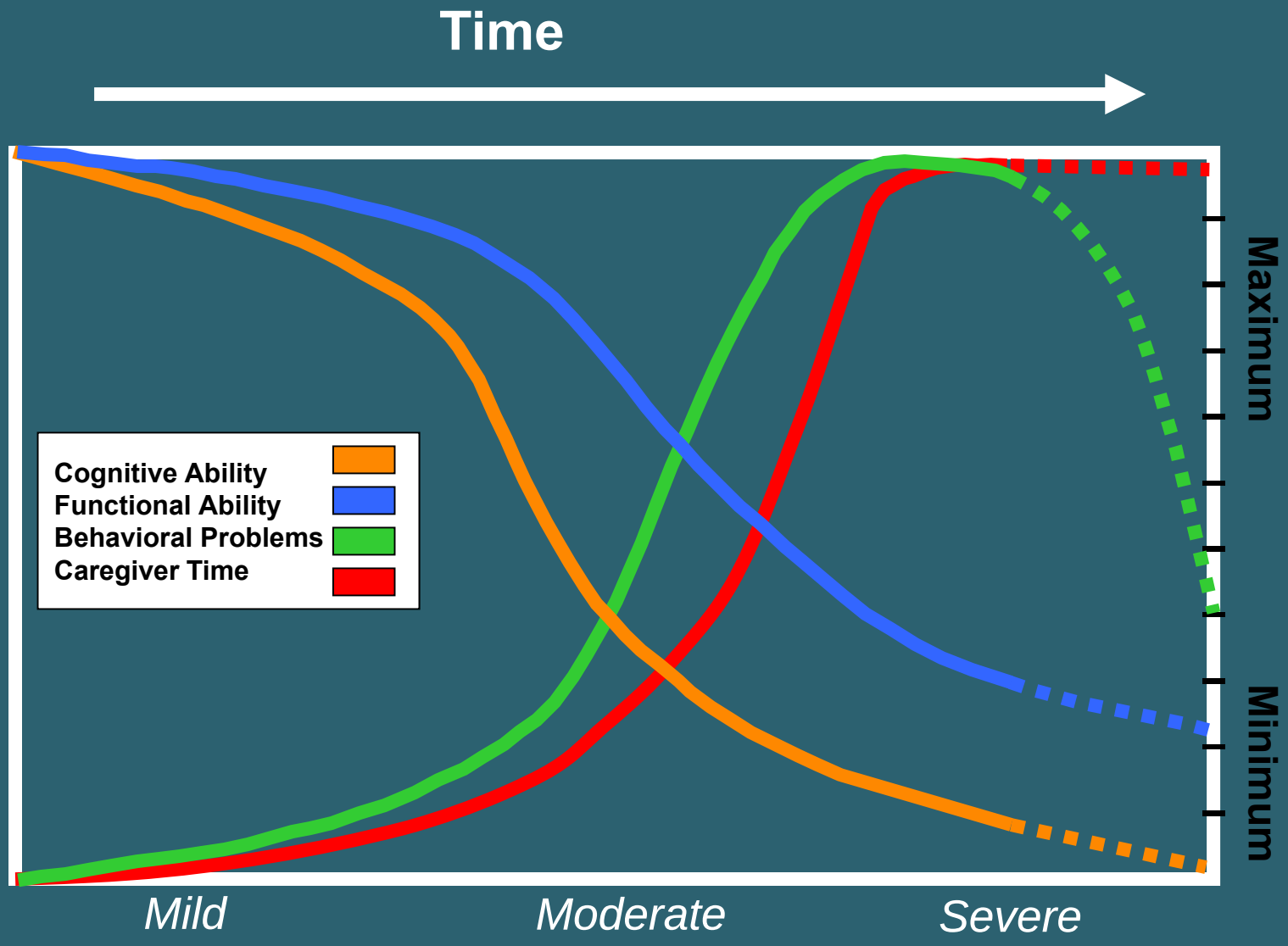
Dementia:

5.8 million Americans

Alzheimer's disease (AD) is most common--55% of all dementias



Dementia Symptom Continuum



Classic or Typical AD in the Early Stages

- Gradual Onset & Slow Decline Course
  - Early Cognitive changes
    - Typically memory/amnestic syndrome is earliest cognitive symptom
    - Executive problems (multi-tasking, problem solving)
    - Language problems (naming, fluency)
- Psychiatric sx
  - possible late life depression, anxiety
  - Suspiciousness, delusions, hallucinations
  - Agitation
- Motor typically normal in Late Onset AD
- Usually socially appropriate early on
- Typically drastic personality change is not an early sign

Warning Signs of Dementia

- What families report
- What you may observe
- What tests may show

Cognitive Signs of AD and Other Dementias

- Memory loss that disrupts daily life --early sx of AD
  - Forget appointments, medications, misplace objects often; repeat self, forgets to pay bills, can't remember what they read
- Executive dysfunction
  - Sequencing, multi-tasking and problem solving deficits
  - Impulsivity
- Visuospatial: Gets lost while driving to a familiar location
- Disoriented: Lose track of dates, seasons, time
- Agnosia: Problems recognizing objects and people
- Anomia: Calling things by the wrong name

Alzheimer's Association

Warning Signs of Dementia

- Poor judgment, lack of awareness of problems.
  - Giving $ to telemarketers, lack of awareness of limitations (dangerous driving, denial of memory problems)
- Withdrawal from work or social activities.
- Pays less attention to grooming and personal hygiene.
- Psychiatric: Changes in mood and personality .
  - Irritable, quick to anger
  - Hallucinations, delusions
  - Depressed, anxious,
  - Inappropriate
  - Amotivated, apathetic

Alzheimer's Association

Non-Cognitive Warning Signs of Dementias

- Late onset depression
  - Alzheimer's or Vascular based dementia, Lewy Body
- Motor and Gait Disturbances
  - Usually found in Parkinson's plus dementias, some FTLDs
- Other
  - Often seen in Lewy body, Parkinson's plus syndromes
  - Attention lapses
  - REM Sleep disorder (acting out dreams)
  - Autonomic disturbance
  - Visual Hallucinations

Screening for Cognitive Difficulties

MOCA
MINI-COG

Goal of Cognitive Screening

- Identify individuals in need of further work-up
- Identify individuals in need of intervention or help
- Goal is not to diagnose!

Diversity Impacts Cognitive Test Performance

- Age
- Gender
- Education, literacy
- Race, ethnicity
- Culture and acculturation
- Language fluency and bilingualism
- Disability status
- Socioeconomic status
- Exposure to or attitudes towards testing
  - History of discrimination

Assessing for Disparities That Can Impact Testing

- Ask questions about education
  - How much, when, where
  - GED vs Diploma
  - Disruptions, special education, learning disabilities
  - Quality of education
- Ask about native language and language usage now
- Is there poverty
- Is/was there discrimination, segregation

What is an Ideal Screening Tool?

- Brief 1 – 10 minutes
- Easy to administer
- Acceptable to patients
- Minimally affected by sex, education, language, culture
- Have high sensitivity and specificity
- Should directly test several areas of cognition
  - Memory
  - Executive function
  - Attention

Lorentz et al., 2002, Can J Psychiatry; vol 47; Stuss et al., 1996; Arch Neurol, 53.

Sensitivity, Specificity

- **Sensitivity:**
  If a person has a disease, how often will the test be indicate disease is present?
  - A “good” score correctly identifies someone with good cognition.
- **Specificity:**
  If a person does not have the disease how often will the test indicate no disease present?
  - A “poor” score correctly identifies someone with cognitive problems

False Negatives and False Positives

- Falsely identifying cognitive impairment when there is none can be due to:
  - Low education, learning disability
  - Cultural biases, ESL, lack of rapport
  - Hearing and vision problems
  - Mood problems
  - Day of testing factors (lack of sleep; feeling ill, hunger etc)
- Missing cognitive impairment can be due to:
  - High education (test not difficult enough)
  - Test does not tap into the problem area of the client

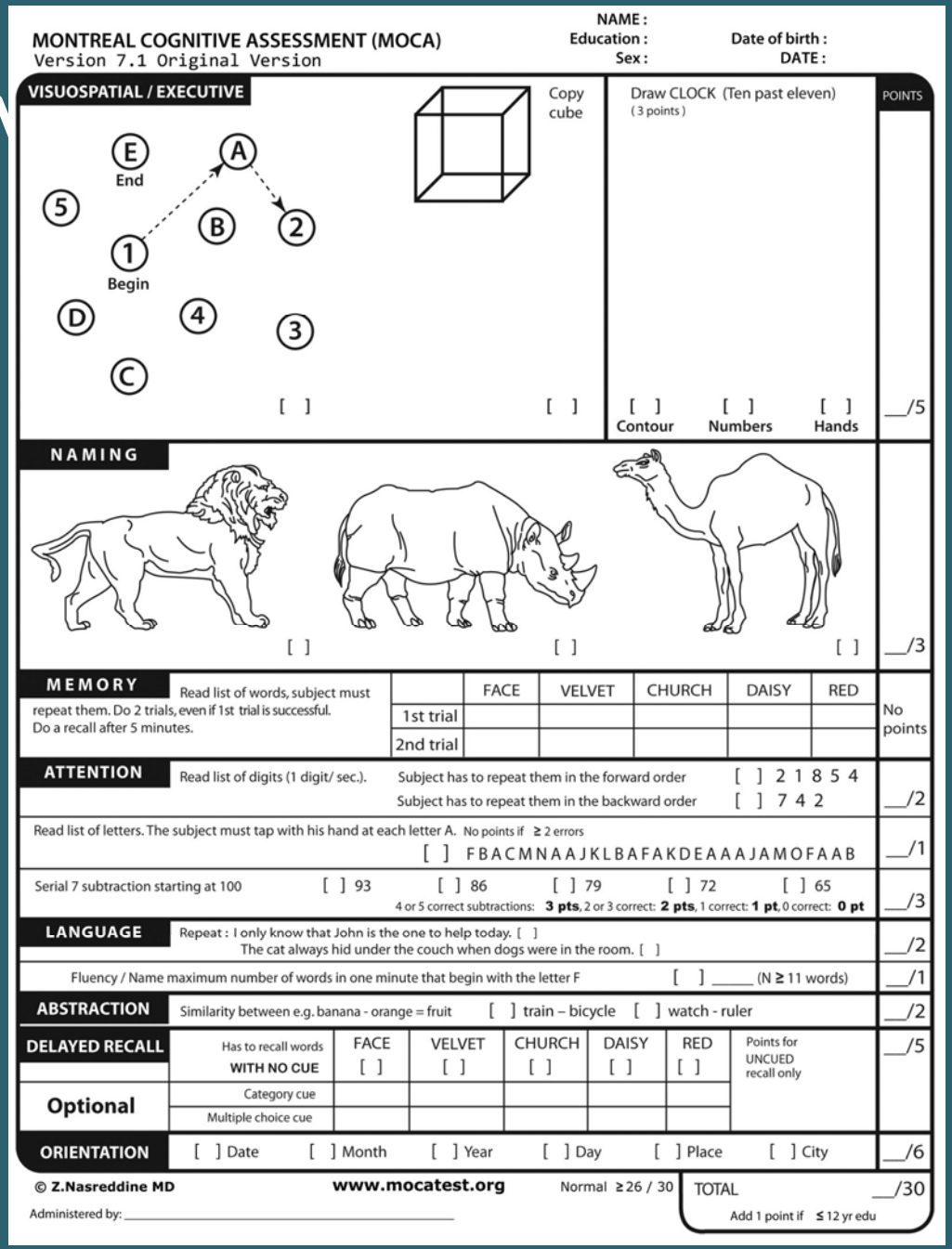
Montreal Cognitive Assessment (MoCA) Test

- Valid for detecting mild cognitive impairment and dementia
- Reliable
- Short (10 min)
- Acceptable to most clients
- Available in multiple languages
- Assesses multiple areas of cognition—better scope than other screening tests (e.g. MMSE)
- Identifies both MCI and dementia.

Nasreddine et al., 2005

- Orientation
- Cognitive Set Shifting
- Visuospatial
- Attention and vigilance
- Reasoning
- Language
- Memory

- Available in multiple languages
- www.mocatest.org



MONTREAL COGNITIVE ASSESSMENT (MOCA)
Version 7.1 Original Version

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

VISUOSPATIAL / EXECUTIVE — POINTS

Copy cube

Draw CLOCK (Ten past eleven) (3 points)

[ ] Contour [ ] Numbers [ ] Hands __/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

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

__/5

ORIENTATION [ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City __/6

© Z.Nasreddine MD www.mocatest.org Normal ≥ 26 / 30

TOTAL __/30
Add 1 point if ≤ 12 yr edu

Administered by: _____

MoCA Cut-Offs vs Norms

- Use cut-off to flag people as mci/dementia vs normal
- Use norms to identify the percentile where patient falls compared to same-age/education peers
  - Advantage: Reduces misclassification compared to using cut-off
  - Score falling below 16th%ile is indication of MCI
  - Below 3rd %ile = borderline to sever cognitive impairment

Which Cut-Off Do We Use?

- Original MoCA cut-off of 25/26 may be too stringent (13% false positive diagnosis of MCI) in lower education groups.
- Use 23/24 in low education < 12 years population
- Dementia/MCI vs normal: is 19/20
- Consider using normative data instead.

(Luis et al , 2009 meta-analysis)

Other Less Stringent Cut-Offs for MCI vs Normal

- **24/25 (Damian et al., 2011; Ciesielska, 2015; meta-analysis of over 9000 people)**
- 23/24 (Luis et al , 2009 meta-analysis)
- 22/23 (Rossetti et al., 2011) Multi Ethnic Norms

Multiethnic Norms
Rosetti et al., 2011

- Conducted as part of the Dallas Heart Study
  - longitudinal, population based, multiethnic study of factors contributing to progression from normal health to cardiovascular disease risk.
- Ethnically diverse, 50% Af-Am
- Broad education range
- Excluded people with cognitive complaints

Multiethnic Norms
Rossetti et al., 2011

- Conducted as part of the Dallas Heart Study
- Ethnically diverse, 50% Af-Am, 33% White, 11% Hispanic, 2% “Other”.
- Over 2,600 participants
- All subjects able to speak English
- Broad education range
- Excluded people with cognitive complaints

Table 2 Montreal Cognitive Assessment score by age and education level

	Years of education							
	<12		12		>12		Total by age	
Age group, y	No.	Mean (SD) median	No.	Mean (SD) median	No.	Mean (SD) median	No.	Mean (SD) median
50-60	62	19.94 (4.34) 20	172	22.25 (3.46) 22	424	24.34 (3.38) 25	659	23.37 (3.78) 24
55-65	60	19.60 (4.14) 20	143	21.58 (3.93) 22	369	24.43 (3.31) 25	573	23.20 (3.96) 23
60-70	57	19.30 (3.79) 19	113	20.89 (4.50) 21	246	24.32 (3.04) 25	418	22.69 (4.12) 23
65-75	38	18.37 (3.87) 19	67	20.57 (4.79) 21	122	24.00 (3.35) 24	228	22.05 (4.48) 23
70-80	14	16.07 (3.17) 17	23	20.35 (4.91) 20	42	23.60 (3.47) 24	79	21.32 (4.78) 22
Total by education	230	20.55 (4.04) 21	608	22.34 (3.97) 23	1,306	24.81 (3.20) 25	2,148	23.65 (3.84) 24

Rosetti et al., 2011

Dementia on the MoCA

- Is functional impairment present
- Could language, culture, low education or sensory problems affect score?
- Score
  - 18 or less in English speakers with 12 years of education
  - 17 or less in non-native English speakers or patients with less than 12 years education

Mini-Cog

- The Mini-Cog consists of a three item recall and a clock drawing test.
- A Functional Activities Questionnaire is used in combination with the
- Mini-Cog.
  - Patient is asked to repeat three unrelated words, such as penny, apple, table.
  - Draw a clock showing a “ten minutes after 11” as the specific time. Instructions: Draw the face of a clock
  - The patient is then asked to recall the three words.
  - after one minute, or after the Clock Drawing

Mini-Cog Scoring

- Recall must be perfect to receive 1 pt
- Clock draw: closed circle, all numbers in correct position, hands in correct position (3 pts).
- **Interpretation:**
  - A score of less than 4 indicates the need for further evaluation, (MoCA, MMSE)

What's Next When Patient Has Cognitive Difficulties on Screening?

- MCI—refer for neuropsychological testing for more information on cognitive capabilities
- Dementia and MCI: Refer for Work-up

The Work-Up

- History and physical
  - Symptoms
  - Onset and course
- Lab tests and MRI/CT brain scans to rule out treatable causes of dementia
- Neuropsychological testing (MCI)
- As needed:
  - Other brain scans, tests, EEG
  - Genetic testing ordered variably

Work-up

- Neuropsychological testing
  - Memory
  - Attention
  - Reasoning
  - Language
  - Visuospatial
  - Motor/Psychomotor
- Compare to normative groups
- Look for patterns of strengths and weaknesses

Practical Recommendations

- Involve family as much as possible
- Write instructions out for the client
- Use visuals/diagrams
- Patient uses a notebook
- Automatic debit and deposit
- Pill organizers
- Phone call reminders, Alarm clocks

Referrals/Recommendations

- Alzheimer's Association (Greater LA vs National)
  - Education
  - Caregiver resources, stress
  - Support group for caregivers (also see local organizations/hospitals)
  - Advanced directives
- Culturally appropriate referrals
  - E.g. Alzheimer's LA has Spanish, Chinese, Japanse language information
  - International Alzheimer's Association

Behavioral Problems in Dementia

- Common
- Most every patient with dementia will demonstrate some form of behavioral disturbance during the course of illness
- Behavioral disturbances result in
  - Increased caregiver burden
  - Poorer quality of care for patient
  - Premature placement

Useful General Techniques

- Prompting
- Reassurance
- Distracting/Redirecting
- Exercise
- Activity, keeping busy, feeling fulfilled

Videos……..

Thank You


děkuji
lack!
faafetai lava
salamat
Gracias
Tak
a dank
dankon
mahalo
köszönöm
Thank you!
Merci
obrigada
sukriya
Danke
dzięki
תודה
Grazie
شكرا
terima kasih
dhanyavadalu
Dank U
спасибо
σας ευχαριστώ
ありがとう
Tack
谢谢
KIITOS
Toda
благодаря
teşekkür ederim!,