

Role of the Geriatrician in Family Medicine

Big Sky Conference: North Dakota Academy of Family Physicians
 Wednesday, January 23, 2019
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DISCLOSURE OF FINANCIAL RELATIONSHIP
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Academic Appointment
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Grant/Research Support
 Douglas L. Johnson Endowed Chair for Neurosciences, Northwestern Memorial Foundation.

Speaker's Bureau, Consultant, Advisory Board, Major Shareholder
 I have no actual or potential conflict of interest in relation to this program/presentation

"Off-label" uses of medications
 I will not be discussing any "off-label" uses of any medications


Unapproved/investigative use of a commercial device
 I do not anticipate discussing unapproved/investigate use of commercial products/devices

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Objectives

1. Identify
2. Review sc
3. Learn when t



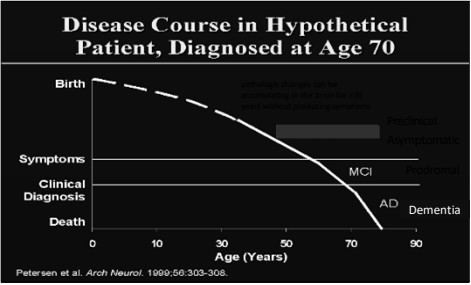
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Identifying Depression




4

COGNITIVE DISEASE
 From Preclinical to MCI to Dementia



Disease Course in Hypothetical Patient, Diagnosed at Age 70

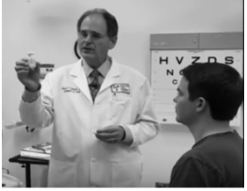
Petersen et al. *Arch Neurol*. 1999;56:303-308.

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Preclinical/Asymptomatic Dementia

- Neurodegenerative changes may precede dementia by as much as 20 years
- **Symptoms**
 - Loss of sense of smell
 - Adult onset depression/anxiety
 - Getting lost
 - Sleep
 - Appetite
 - Psychosis
 - Apathy
 - Agitation
 - Disinhibition




Martin Samuels' Cranial Nerve Examination
<https://www.youtube.com/watch?v=ONR0yGL00M>



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Mild Cognitive Impairment



- Concern regarding a change in cognition
- Impairment in one or more cognitive domains
 - evidence of **lower performance** in one or more cognitive domains that is greater than would be expected for the patient's age and educational background.
 - If repeated assessments are available, then a decline in performance should be evident **over time**.
 - This change can occur in a variety of cognitive domains, including memory, executive function, attention, language, and visuospatial skills. An impairment in episodic memory (i.e., the ability to learn and retain new information) is seen most commonly in MCI patients who subsequently progress to a diagnosis of AD dementia.
- Preservation of independence in functional abilities
 - Amnesic MCI (aMCI) is a syndrome in which memory dysfunction predominates
 - Nonamnesic MCI refers to impairment primarily of other cognitive features (e.g., language, visuospatial, executive)^{1,2}

Adapted American Academy of Neurology 2017

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What is Dementia?

Major Neurocognitive Disorder

- Dementia is a descriptive diagnosis and **not** a disease (or cause).
- It is **progressive**
- Cognitive problems are sufficient to impair a person's ability to **keep a job, live independently** or represents a significant decline from previous level of functioning
- No other illness or systemic condition is responsible for the cognitive decline, especially **not delirium**

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DEMENTIA DIAGNOSTIC CRITERIA

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DSM-5 criteria for major neurocognitive disorder (previously dementia)

- Evidence of significant cognitive decline from a previous level of performance in one or more cognitive domains*:
 - Learning and memory
 - Language
 - Executive function
 - Complex attention
 - Perceptual-motor
 - Social cognition
- The cognitive deficits interfere with independence in everyday activities. At a minimum, assistance should be required with complex instrumental activities of daily living, such as paying bills or managing medications.
- The cognitive deficits do not occur exclusively in the context of a delirium
- The cognitive deficits are not better explained by another mental disorder (eg, major depressive disorder, schizophrenia)

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LAWTON IADLS AND KATZ ADLS

The Lawton Instrumental Activities of Daily Living Scale

A. Ability to Use Telephone

1. person knows how to dial and use pay phone
2. knows how to use pay phone
3. knows how to use pay phone
4. knows how to use pay phone

B. Transport

1. take own car to work with infrequent stops
2. take own car to work with frequent stops
3. take own car to work with frequent stops
4. take own car to work with frequent stops

C. Food Preparation

1. Plan, prepare, and serve simple meals
2. Prepare simple meals
3. Prepare simple meals
4. Prepare simple meals

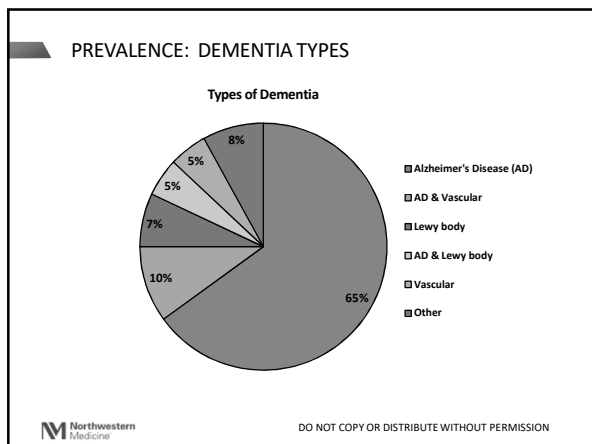
D. Shopping

1. determine how to get to store with own car
2. determine how to get to store with own car
3. determine how to get to store with own car
4. determine how to get to store with own car

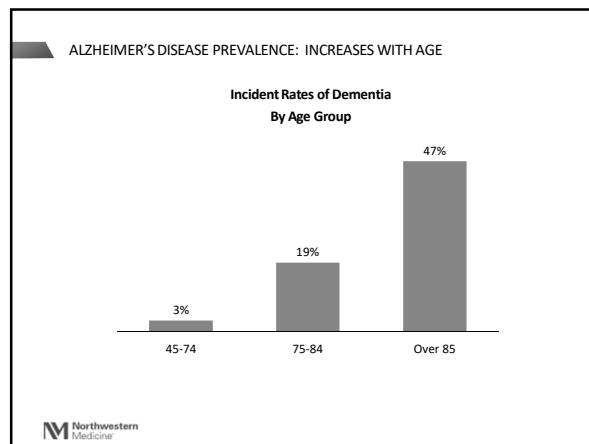
Katz Index of Independence in Activities of Daily Living

Activities (0 or 0 points)	Independence (1 point) No supervision, direction or personal assistance or total care	Dependence (0 points) With supervision, direction, personal assistance or total care
Bathing	0	Needs help with bathing more than one part of the body, getting in or out of the bathtub or shower; requires total bathing
Dressing	4	Needs help with dressing self or needs to be completely dressed
Toileting	4	Needs help with getting to the toilet and cleaning self or uses bedpan or commode
Transferring	5	Needs help in moving from bed to chair or requires a complete transfer
Continence	5	Is partially or totally incontinent of bowel or bladder (accidents or leakage)
Feeding	5	Needs partial or total help with feeding or requires parenteral (tubed) feeding

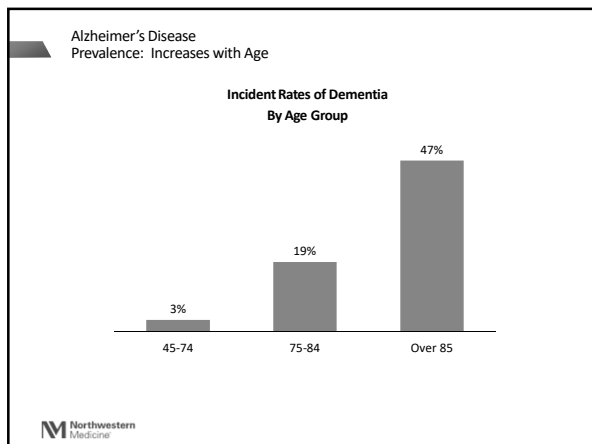
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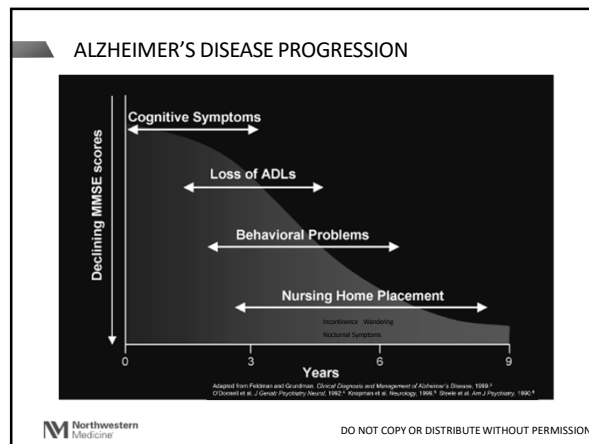
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CONSEQUENCES OF BEHAVIORAL SYMPTOMS

- Increased morbidity
 - Patients forget to take medications, do not eat or drink water adequately
- Increased health care costs
 - Missed appointments, increased calls by family to the doctor's office
- Increased readmission rates
 - Alzheimer's Disease 15%
 - Alzheimer's Disease and related disorders 18.3%
- Caregiver issues
 - Increased caregiver burnout and morbidity
 - Increased caregiver turnover

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WHY IS EARLY IDENTIFICATION KEY?

No disease modifying medications available yet.

- **Behavior Management:** Many neuropsychiatric symptoms are **treatable** (e.g. depression, sleep)
- **Advance Care Planning:** Helps families plan for the future, making living arrangements, take care of financial and legal matters, educate about behavior strategies and develop support networks – hopefully reducing caregiver burden. **Powers of Attorney: Health, Finances**
- **Safety Issues:**
 - forgetting to turn off stove or other appliances,
 - forgetting to pay bills,
 - getting lost when driving,
 - forgetting they are taking care of minor children/impaired adults,
 - forgetting emergency phone number 911.

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DEPRESSION IN DEMENTIA

- 15-27% of individuals >65 yrs old living in the community have depressive symptoms.
- Seniors have 50% higher health care costs if depressed
- Look for crying, tearfulness, hopelessness, self-deprecating comments.
- Look for change in appetite, sleep and energy level.
- Prevalence in women over 60 yrs old may be twice that of men of same age.
- White males over 65 yrs old account for 81% of all suicides annually.
- Can amplify cognitive deficits
 - Executive dysfunction
 - Slowed processing of information
 - Retrieval memory problems

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DSM 5 CRITERIA FOR MAJOR DEPRESSIVE DISORDER

Five (or more) present during the same 2 week period and represent a change from previous functioning; **at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.** Not attributable to another medical condition.

- **Depressed mood**, most of the day, nearly every day
- **Markedly diminished interest** or pleasure in all, or almost all, activities
- **Significant weight loss** when not dieting or **weight gain** (e.g. A change of more than 5% of body weight in a month)
- **Insomnia or hypersomnia** nearly every day.
- **Psychomotor agitation or retardation** nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
- **Fatigue** or loss of energy nearly every day.
- **Feeling of worthlessness or excessive or inappropriate guilt** (which may be delusional)
- **Diminished ability to think or concentrate**, or indecisiveness
- **Recurrent thoughts of death** without a specific plan

No history of manic/hypomanic or psychotic disorder

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DEPRESSION CHANGES HOW PEOPLE PERCEIVE THE WORLD

BrainFacts.org 18 Dec 2013

- People with depression often say that they experience the world differently from others.
- "time seems to drag on" and this altered perception of time may lead to feelings of helplessness, or the feeling that one is not in control of their lives
- cannot differentiate between low and high fat concentrations
- reduced sensitivity to visual contrast compared with healthy controls.
- Disordered sleep, reduced energy
- Reduced sex drive

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Recovery and care of

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Why Screen for Dementia in the Office?


- More common than coronary heart disease and diabetes!
- Progressive disease requiring monitoring over time
 - For driving, living situation, decision making
- Treatment consideration
 - to try to preserve function as long as possible
- Family education
 - Key to quality of life for the patient
 - Family can learn how to help patient (www.alz.org)
 - Safety issues

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Difficulties in screening for/diagnosing Alzheimer's?






- **Misattribution:** Memory loss is misattributed to normal aging by physician and family. Until problems arise (e.g. unpaid bills, not taking medicines), family assumes patient is functional
- **Loss of insight:** "La belle indifference," is typically early, so patients will not complain of memory problems
- **Social skills:** Can be preserved through moderate dementia, so interviewing the patient may not reveal problems
- **Barriers in the office visit:**
 - Time constraint of the 12-15 minute visit
 - Electronic medical record and "smart phrases" A&O X3
 - Lack of confidence in own skills
 - Fear of offending patient by asking mental status questions
 - Limited sensitivity of screening tests



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The History: Looking for Moderating Factors and Reversible Cause

- Medications (The anticholinergics!) 
- Physical Problems: Pain, Disease 
- Impaired attention: Hearing & Vision Loss 
- Sleep problems (e.g. sleep apnea)
- Habits (Alcohol consumption) 
- Depression, Anxiety, Stress 

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Workup for Dementia

Studies Recommended by the American Geriatrics Society for Patients with Suspected Dementia

LABORATORY TESTS	IMAGING TESTS	TESTS TO CONSIDER IN PATIENTS WITH SPECIFIC RISK FACTORS
Calcium level	Computed tomography or magnetic resonance imaging of the brain if any of the following are present:	Cerebrospinal fluid analysis
Complete blood count	– Abrupt or rapid decline	Human immunodeficiency virus test
Complete metabolic panel	– Age younger than 60 years	Lyme titer
Folate level	– Focal deficits	Rapid plasma reagin test
Thyroid-stimulating hormone level	– Preexisting conditions	
Vitamin B ₁₂ level	– Consider positron emission tomography if definitive diagnosis will change management decisions	

Note: A callout bubble points to 'Vitamin D' in the table.

— The only tests routinely recommended by the American Academy of Neurology for all patients with suspected dementia are thyroid-stimulating hormone and vitamin B₁₂ levels. ²¹

Adapted from Am Fam Physician. 2011. Oct 15;84(8):895-902

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Geriatric Depression Scale: Short Form

Choose the best answer for how you have felt over the past week:

1. Are you basically satisfied with your life? YES / NO
2. Have you dropped many of your activities and interests? YES / NO
3. Do you feel that your life is empty? YES / NO
4. Do you often get bored? YES / NO
5. Are you in good spirits most of the time? YES / NO
6. Are you afraid that something bad is going to happen to you? YES / NO
7. Do you feel happy most of the time? YES / NO
8. Do you often feel helpless? YES / NO
9. Do you prefer to stay at home, rather than going out and doing new things? YES / NO
10. Do you feel you have more problems with memory than most? YES / NO
11. Do you think it is wonderful to be alive now? YES / NO
12. Do you feel pretty worthless the way you are now? YES / NO
13. Do you feel full of energy? YES / NO
14. Do you feel that your situation is hopeless? YES / NO
15. Do you think that most people are better off than you are? YES / NO


Answers in bold indicate depression. Score 1 point for each bolded answer.
 Scores < 5 points: suggestive of depression
 Scores > 10 points: almost always indicative of depression.
 Scores > 15 points should warrant a follow-up comprehensive assessment.

Source: <http://www.starford.usd.edu/~ymcagge/GDS.html>



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Issues with the MMSE




- 10-15 minutes to administer
- No alternate forms
- Language and cultural bias (e.g. *no ifs, ands, or buts*)
- Highly educated individuals can score 28/30 or higher and still have dementia
- Does not assess executive function and so can miss frontotemporal dementia
- Copyrighted; now enforced by PAR \$1.36/administration

Benefits...

- Everyone is trained in it
- Helpful for tracking decline (>3 pt. decline clinically significant)

Folstein MF et al. J Psychiatr Res. 1975; 12:189-98.



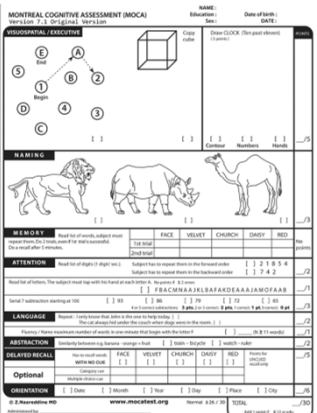

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MOCA

Montreal Cognitive Assessment

- Public domain
- ~ 15 minutes vs. 10 minutes
- Executive function (clock is too small)
- Valid confrontation naming
- Recall and recognition memory
- 3 alternate forms minimize practice
- ~60 languages
- Blind, but not deaf (English & Spanish)
- Physical disability

Score	Interpretation
27+	Intact
18-26	MCI
10-17	Mod Cog Imp
<10	Severe

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Screening Cognitive Function During the Annual Visit


"The Mini-Cog™ Plus"

<http://mini-cog.com/>

- Mini-Cog™ (3 words, Clock Drawing) ~ 2 minutes
- 3 word test – initial presentation
- Clock Drawing
- 3 word test – delayed recall

Animal Naming (impaired if <14 animals)	60 seconds (timed)
---	--------------------

- Time efficient (~ 4 minutes)
- Detects early dementias
- Can be used to differentiate dementias
- Less language/culture/education bias
- High yield True Positives
- Establishes baseline for repeated screening
- Target Population: 65 years and older with new patients or annual visit
- Public Domain



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Mini-Cog™

Instructions for Administration & Scoring

ID: _____ Date: _____

Step 1: Three Word Registration

Look directly at person and say: "These lists contain 3 items going to say three words that I expect you to repeat back to me when I try to remember. The words are listed in bold letters from the previous list. Please say the word 'meow'." If the person is unable to repeat the words after three attempts, move on to Step 2 (Clock Drawing).

The following and other words have been used in one or more clinical studies: ** For repeated administration, use of an alternative animal is recommended.

Version 1 Banana Sunflower Daisy	Version 2 Lemon Sausage Daisy	Version 3 Mango Kitten Birdy	Version 4 Kiwi Rabbit Finger	Version 5 Crab Garlic Husky Pineapple	Version 6 Mushroom Moose
---	--	---------------------------------------	---------------------------------------	---	--------------------------------

Step 2: Clock Drawing

Say: "Now I want you to draw a clock for me. First, put in all of the numbers when they go? When that is complete, say 'Now, let the hands go to past 11'."

Use preprinted circle (see next page) for this exercise. Repeat instructions as needed. This is not a memory test. Minus 1 point if the clock is not complete within three minutes.


Step 3: Three Word Recall

Ask the person to repeat the three words you listed in Step 1. Say: "What were the three words I asked you to remember?" Record the word # & version number and the patient's answers below.

Word List Version: _____ Patient's Answers: _____

Scoring

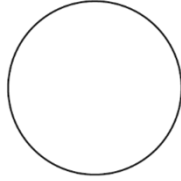
Word Recall	0/3 points
Clock Draw	0/1 point
Total Score	0/4 points



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Clock Drawing

ID: _____ Date: _____



References

1. Borison S, Sciarra JM, Chen R et al. The Mini-Cog as a screen for dementia: Validation in a population-based sample. J Am Geriatr Soc. 2002;50(4):504-10.
2. Borison S, Sciarra JM, Borison S et al. Improving identification of cognitive impairment in primary care. Int J Geriatr Psychiatry. 2004;19:267-74.
3. Loozeck M, Sciarra JM, Borison S et al. Improving identification of cognitive impairment in primary care. Int J Geriatr Psychiatry. 2004;19:267-74.
4. Tsai K, Chen J et al. Cognitive tests to detect dementia: A systematic review and meta-analysis. JAMA Intern Med. 2013;173:151-60.
5. McCarroll J, Anderson P et al. Screening for cognitive impairment in an elderly patient population: Accuracy of the mini-cog. J Am Geriatr Soc. 2005;53:209-15.
6. McCarroll J, Anderson P et al. Finding dementia in primary care: The results of a clinical dementia project. J Am Geriatr Soc. 2005;53:209-15.
7. Sciarra JM, Borison S. The Mini-Cog: Re-evaluating the test with the expert and novice users. Int J Geriatr Psychiatry. 2005;20:16-22.



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Scoring of the Mini-Cog™

3-Item Recall Score:

Numeric: 1 point for each word recalled without cues, for a 3-item recall score of 1, 2, or 3.

Clock Drawing Score:

- 2 points for a normal clock or drawing.
 - A normal clock must include all numbers (1-12), each only once, in the correct order and direction (clockwise).
 - There must also be two hands present, one pointing to the 11 and one pointing to 2.
 - Hand length is not scored
- 0 (zero) points for an abnormal clock

Scan Mini-Cog™ into EMR

- Observe change over time

Northwestern Medicine <http://mini-cog.com/mini-cog-instrument/scoring-the-mini-cog/>

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Mini-Cog™

Scoring of the 3 words recall

Figure 1. The Mini-Cog scoring algorithm. The Mini-Cog uses a three-item recall test for memory and the intuitive clock-drawing test. The latter serves as an "informative distractor," helping to clarify scores when the memory recall score is intermediate.

```

    graph TD
      A[MINI-COG] --> B[Recall = 0]
      A --> C[Recall = 1-2]
      A --> D[Recall = 3]
      B --> E[DEMENTED]
      C --> F[Clock Abnormal]
      C --> G[Clock Normal]
      F --> H[DEMENTED]
      G --> I[NONDEMENTED]
      D --> J[NONDEMENTED]
    
```

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Mini-Cog™ Plus : Animal Naming Administration and Scoring

1. State, "I would like you to name as many animals as you can think of in one minute. I will tell you when to start and stop. Do you understand the directions?"
2. Tell the patient to start naming animals. Write down the animal names as they say them. Any kind of animal (e.g. mammals, insect, birds, fish reptiles etc.) is acceptable. Write down repeated animals, but do not score repeats. After one minute, tell the patient to stop.
3. Scoring:
 - Count each unique animal listed.
 - Juvenile and adult, different sex counts as one animal (e.g. calf, cow, bull).
 - Different breeds are okay: Airedale, lab, schnauzer, etc. but if they also say the breed name (e.g. dog), do not count the word "dog," only the breed types
 - For screening purposes, a score of less than 14 is considered impaired.
 - Qualitatively,
 - many repetitions represent perseverations and may indicate executive dysfunction
 - Several mispronunciations of words may reflect education, learning disability, aphasia.

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ANIMAL NAMING

Introduction: "I'd like to ask a question to check your memory."

Instruction: "Tell me the names of as many animals as you can think of, as quickly as possible."

Procedure: Time for 60 seconds and record all responses.
If the person stops before 60 seconds, say "Any more animals?"
If the person says nothing for 15 seconds, say "A dog is an animal."
"Can you tell me more animals?"

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____

Scoring: Count the total number of animals (NOT including repetitions or non-animal words).
Next step: If the score is less than 14, further testing should be done.

Juvenile and adult, different sex counts as one animal (e.g. calf, cow, bull). Different breeds are okay: Airedale, lab, schnauzer, etc. but if they also say the breed name (e.g. dog), do not count the word "dog," only the breed types

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Soper MD, MA, Sherman PhD, SP, Lohoe PhD, A, Woodard PhD, D. Screening for Dementia in Community-Based Memory Clinics. Wisconsin Medical Journal 2006;101(7):32-39

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Mini-Cog™ Plus: Animal Naming Adapted from the WI Dementia Consortium Study

- Animal Naming < 14 Animals in 60 seconds is impaired
- Wisconsin Alzheimer's Institute (WAI) found a sensitivity of 85% and specificity of 88% for this cut score

Diagnostic Group	Abnormal <14	Normal >= 14
Normal Cognition	12%	88%
Alzheimer's Disease	85%	15%
Other Dementia	85%	15%

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CLOCK DRAWING: CHANGE IN PERFORMANCE OVER TIME

2005 2007

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Scoring of Mini-Cog™ Plus

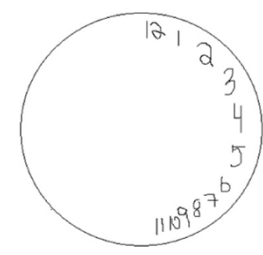


History: Osteoarthritis
 Mini-Cog™: 0/3 words
 Animals: 10

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Scoring of Mini-Cog™ Plus




History: mild left-sided weakness, left visual field extinction
 Mini-Cog™: 2/3 words
 Animals: 18

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Scoring of Mini-Cog™ Plus



History: 2 years of disease, Early hallucination, Parkinsonism,
 Mini-Cog™: 2/3 words
 Animals: 12

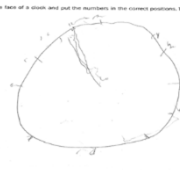
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**Alzheimer's Disease
 Diagnosis, Disease Course and Treatment Novelties: Case Example 1**

Clock Drawing Task

Instructions: Please draw the face of a clock and put the numbers in the correct positions. Then, draw in the hands of the clock in 60 seconds.



Animals in 60 seconds:

1. 10	11. 10
2. 10	12. 10
3. 10	13. 10
4. 10	14. 10
5. 10	15. 10
6. 10	16. 10
7. 10	17. 10
8. 10	18. 10
9. 10	19. 10
10. 10	20. 10

History: Hypertension
 0/3 words

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**Alzheimer's Disease
 Diagnosis, Disease Course and Treatment Novelties: Diagnosis**

What does this patient most likely have?

- Dementia of the Alzheimer's Type
- Vascular Dementia
- Lewy Body Dementia
- Frontotemporal Dementia
- None of the Above

Clock Drawing Task



Animals in 60 seconds:

1. 10	11. 10
2. 10	12. 10
3. 10	13. 10
4. 10	14. 10
5. 10	15. 10
6. 10	16. 10
7. 10	17. 10
8. 10	18. 10
9. 10	19. 10
10. 10	20. 10

History: Hypertension
 0/3 words

14 Animals, 0/3 words


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**Alzheimer's Disease
 Diagnosis, Disease Course and Treatment Novelties: Case Example 2**

Clock Drawing Task

Instructions: Please draw the face of a clock and put the numbers in the correct positions. Then, draw in the hands of the clock in 60 seconds.



Animals in 60 seconds:

1. 10	11. 10
2. 10	12. 10
3. 10	13. 10
4. 10	14. 10
5. 10	15. 10
6. 10	16. 10
7. 10	17. 10
8. 10	18. 10
9. 10	19. 10
10. 10	20. 10

History: Hypertension, Diabetes
 3/3 words

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Alzheimer's Disease
Diagnosis, Disease Course and Treatment Novelties: Diagnosis

What does this patient most likely have?

- Dementia of the Alzheimer's Type
- Vascular Dementia
- Lewy Body Dementia
- Frontotemporal Dementia
- None of the Above

History: Osteoarthritis
0/3 words

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Alzheimer's Disease
Diagnosis, Disease Course and Treatment Novelties: Case Example 3

Clock Drawing Task
Instructions: In the space below, please draw the face of a clock and put the numbers in the correct positions. Then, draw in the hands as you see them after eleven.

History: Osteoarthritis
0/3 words

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Alzheimer's Disease
Diagnosis, Disease Course and Treatment Novelties: Diagnosis

What does this patient most likely have?

- Dementia of the Alzheimer's Type
- Vascular Dementia
- Lewy Body Dementia
- Frontotemporal Dementia
- None of the Above

History: Osteoarthritis
0/3 words

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What
Neuro

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WHAT IS NEUROPSYCHOLOGY?

- Neuropsychology:** subspecialty of clinical psychology.
 - Examines how the brain processes, interprets and reacts to the stimuli around it
 - Studies the relationship between behavior, emotion, and cognition on the one hand, and variations in **brain** function produced by genetics, injury or disease, on the other.
- Neuropsychologists:** Clinical Psychologists (PhD or PsyD) with a 2-year post-doctoral APPCN (Association of Postdoctoral Programs in Clinical Neuropsychology) accredited fellowship in accordance with Houston Conference Guidelines (1998) or grandfathered in.

http://www.oxfordjournals.com/lookup/definition?american_english/psychology
http://www.oxfordjournals.com/lookup/definition?american_english/psychology
http://www.oxfordjournals.com/lookup/definition?american_english/psychology

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Neuropsychology

- Consultative, Diagnostic Service
 - Differential Diagnosis (primarily outpatient)
 - Normal aging or other disease (e.g. Parkinson's) versus dementia
 - Reversible causes of dementia (e.g. depression)
 - Psychiatric condition versus malingering
 - Baseline and Level of functioning (especially inpatient)
 - Presurgical evaluation (e.g. DBS, temporal lobectomy)
 - Decisional capacity
 - Ability to leave AMA
- Specialization
 - Adult: dementia, seizures, MS, Parkinson's neurooncology (brain tumors, awake craniotomies), stroke, concussion/TBI (return to work)
 - Pediatric: neurological disorders (spina bifida, hydrocephalus, epilepsy), medical problems (prematurity, diabetes, heart disease, toxicology (chemotherapy, drug exposure))

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Neuropsychological Exam

- Exam involves
 - One hour interview of patient and caregiver
 - 2-4 hours of testing (paper and pencil, computer)
 - 2-4 hours scoring and interpretation (results available after at least a week)
 - Report to requesting physician
 - 1 hour feedback with patient and family, when requested
- Typically single evaluation except
 - with adults resolving concussion/TBI, MCI, progressive neurological disorders such as MCI, MS, Parkinson's
 - children with TBI/concussions, genetic and neurological disorders, or with emotional and behavioral control issues

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HOW THE BRAIN PROCESSES INFORMATION

Information

Genetics, Environment, Physiology, Pathology, Age, Medication

WAKEFULNESS/AROUSAL

ATTENTION/MOOD/MOTIVATION

LANGUAGE

COMPLEX

PERCEPTION
LEARNING
MEMORY
REASONING
EXECUTIVE FUNCTIONS
COMPONENT


PERSONALITY

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FOUR DOMAINS OF COGNITION

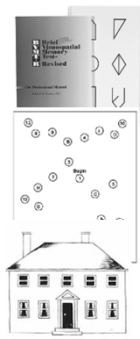
- Executive functions
 - attention/concentration
 - abstraction
 - calculation
 - judgment
 - planning
 - insight
- Language
- Memory
- Visuospatial functioning



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The Neuropsychology Exam



The American Liner New York struck a mine near Liverpool Monday Evening. In spite of a blinding snowstorm and darkness, the sixty passengers, including 18 women were all

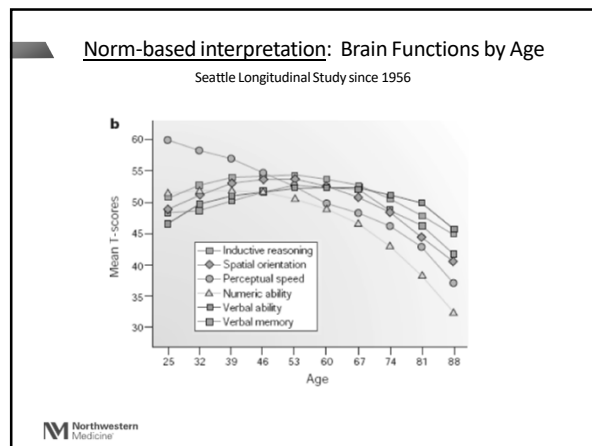
	I	II	III	IV	V
Drum					
Curtain					
Ball					
Coffee					
School					
Parent					
Moon					
Garden					
Hut					
Farmer					
House					
Turkey					
Color					
House					
River					

RECOGNITION

	Yes	No	House	Yes	No
Coffee			Farmer		
Curtain			Color		
Ball			Silver		
Flute			Chicken		
Curtain			Plumber		
Parent			None		
Face			Moon		
Spell			House		
Rule			Flower		
Garden			Onion		
Hut			School		
Turkey			Drum		
Spoon			Ball		
River			Cap		

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How does Neuropsychology work?

- Measurement:** describing how well the brain functions in processing information it receives through the senses and apply that information to everyday behavior
- Standardized** presentation to maximize validity and reliability for generalizable results
- Norm-based** compares performance to predefined population (e.g. age)

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INTERPRETING TEST PERFORMANCE TRAILS B, MOANS NORMS

Word	Color	C/W	Part A	Part B	JLO	Percentile Ranges
< 41	< 23	< 4	> 110	> 263	---	< 1
41-44	23	4-6	108-110	250-263	---	2
45-48	34-26	7-13	91-107	240-249	---	3-5
49-52	27-39	14	83-93	217-239	0-10	6-10
53-63	40-41	15	73-82	234-236	11-13	11-18
64-70	42-45	16-20	59-72	180-233	14-16	19-28
71-76	46-48	21-22	53-58	145-179	17-18	29-40
77-82	49-51	23-25	43-52	135-144	19-20	41-59
83-88	52-57	26-28	40-42	101-134	21-22	60-71
89-93	58-60	29	36-39	92-100	---	72-81
94-96	61-65	30-32	32-35	82-91	23-24	82-89
97-98	66-71	33-36	29-31	78-81	25	90-94
99-104	72-75	37-39	28-28	66-69	26	95-97
105	78-80	40-43	23-25	45-65	27-28	98
106-109	81	44	21-22	41-44	29	99
110-114	82	45	19-20	34-40	30	> 99
> 114	> 82	> 45	< 19	< 34	> 30	> 99

20% to 78%ile considered average for this age range. Score means did better than 60-71% of people

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Case

- John Cosgrove is a 71-year-old, right-handed married Caucasian male with 18 years of education (MBA). He presented with his wife after recently getting lost on the way to his daughter's home. She lives 15 minutes away from his home in the Chicago area. He was missing for 6 hours until he was found in his car, which he had pulled over onto the shoulder, just outside of Milwaukee. He cannot explain how this happened and shrugs it off as happenstance. Mrs. Cosgrove said that other than some instances of forgetfulness that she has attributed to normal aging, she has not noticed any change in Mr. Cosgrove. She completed the questionnaires in the office and they were unremarkable. They are here to see you at the insistence of their children.
- Medical history includes hypertension, diabetes, obstructive sleep apnea.

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Case: Office Screening

- Mr. Cosgrove put a "1" where the 12 should go and then put in "6, 3, and 9." When asked to put in the rest of the numbers, he realized his mistake and corrected. When asked to place the hands he first put the minute hand at the 1 and then corrected.
- He recalled 2/3 words.
- He was able to name 19 animals.

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Case: Neuropsychological Testing

The neuropsychological profile reveals the following salient deficits: executive functioning involving:

- Abstract reasoning:** Clock, proverbs, 3MS Similarities
- Inhibitory control** involving withholding a response (go-no-go).
- Cognitive flexibility** reflecting management of non-overlearned situations in which new strategies must be developed (Trails B, phonemic fluency, semantic fluency).

Visuospatial was intact except for difficulty with a copying a complex figure which demonstrated difficulty with the spatial organization of the figure. Language, as measured by confrontation naming was intact. Memory was intact.

Mr. Cosgrove's profile with essentially intact ADLs would be consistent with a nonamnestic MCI. As MCI can evolve into dementia, he should be followed. Risk would be for a vascular dementia.

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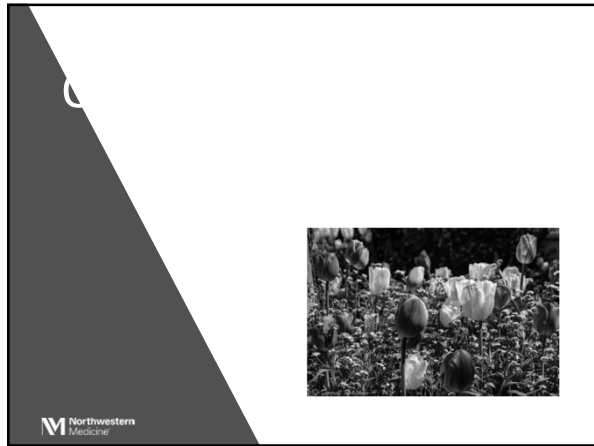
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Summary

1. Identify
2. Review so
3. Learn when

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